

PRELIMINARY DRAINAGE REPORT

Kimsey Hotel & Apartment

7120 E. Indian School Road
Scottsdale, AZ 85251

Prepared For:

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10-ZN-2020

Plan Check No.: TBD



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1. INTRODUCTION

This Preliminary Drainage Report represents the storm water analysis for the HoJo Development (The Triangle) proposed in Scottsdale, Arizona. The purpose of this Preliminary Report is to provide the hydrologic and

hydraulic analysis, required by the City of Scottsdale, to support the proposed development. This report includes discussions and calculations defining the storm water management concepts for the collection and conveyance necessary to comply with the drainage requirements of the City of Scottsdale and Maricopa County. Preparation of this report has been done in accordance with the requirements of the City of Scottsdale Design Standards & Policies Manual (DS&PM) 2018 ¹, and the Drainage Design Manuals for Maricopa County, Arizona, Volumes I² and Volume II³.

2. LOCATION AND PROJECT DESCRIPTION

2.1 LOCATION:

The subject property consists of land located south of the 3rd Avenue and Craftsman Court, the between 3rd Avenue and Indian School Road in Scottsdale, AZ:

- A portion of the southeast 1/4 of Section 22, Township 2 North, Range 4 East of the Gila and Salt River Base and Meridian, Maricopa County, Scottsdale, Arizona.

Parcel ID:

- Parcel 173-50-034
- Parcel 173-50-108A
- Parcel 173-50-117B

Refer to **FIGURE 1 - Vicinity Map** for the project's location with respect to major cross streets.

2.2 EXISTING AND PROPOSED DEVELOPMENTS SURROUNDING THE SITE:

- West: The site is bound by an alley with the following across as follows:
Parcel 173-50-129; Marshall Way Plaza; Zoning is C-2
Parcel 173-50-114; Pink Plaza; Zoning is C-2
- East: Parcel 173-50-119E, 173-50-094, -100A; commercial shops, Zoning D-/OR-2
- North: Across 3rd Avenue: Parcel 173-50-019; Foxy Spray Tans; Zoning is C-2
Across 3rd Avenue: Parcel 173-50-146; Cadre Condominiums; Zoning is C-2
- South: Across Indian School Road are parcels:
Parcel 130-12-013, -012, -011; Commercial offices; Zoning is C-2.
Parcel 130-12-007A

2.3 EXISTING SITE DESCRIPTION:

The project area includes approximately 144,173 sf. ft. (3.310 acres) of land designated as D/DMU-2 PBD DO per C.O.S. zoning case 10-ZN-2020. The site is currently developed and includes three commercial developments with parking lots: Howard Johnson Inn, The Venue and a commercial building comprised of several retail stores. The developments are separated by parking areas.

Per Topographic Survey prepared by AWL Land Surveying, the site slopes from northwest to southeast at approximately 1.00%. Elevation varies from approximately 1266.24 at the northwest corner to approximately 1262.21 at the southeast corner. The site drains to the perimeter streets and alley.

Refer to **FIGURE 2** attached for an aerial of the site.

2.4 PROPOSED SITE DEVELOPMENT:

Site development includes the demolition of the Howard Johnson Inn, The Venue structures and their designated parking lots as well as the construction of a new hotel, residential building and townhome complex. The development will include one proposed access on the north side to 3rd Avenue, two access

entrances to the alley on the west, and will maintain the two existing driveway entrances to Indian School Road. An underground parking structure is proposed for the development. Refer to **Appendix III** - Grading Plan for site layout.

2.5 FLOOD HAZARD ZONE:

FIRM Map Number 04013C2235M dated September 18, 2020 indicates the site is designated as Zone "X". As such, it is defined as areas determined to be outside the 0.2% annual chance floodplain and therefore is not in a special flood hazard area.

Refer to **FIGURE 3** for the FIRM.

3. EXISTING DRAINAGE CONDITIONS

3.1 OFF-SITE DRAINAGE PATTERNS

The topographic survey provides the following information for offsite drainage:

- There is an existing alley to the west approximately 16' wide that slopes from north to south. The alley conveys drainage from the site onto Indian School Road.
- The existing sidewalks to the north and south of the site drain into their adjacent streets, 3rd Avenue and Indian School Road, respectively.
- Adjacent roads have curb and gutters conveying flow within the rights-of-way. Flows from Indian School Road are collected at the southwest corner of the site by EX. CB-1 and at the center by EX. CB-2 with by-pass flowing east.
- An existing inlet, EX. CB-3, located east of the EX-3 drainage area concentration point, collects runoff from EX-3 and adjacent parking area. Refer to **Appendix IV** for site photos.
- Based on existing conditions obtained by the topo and site photos, the site sits 1-2' above the pavement grade along the east parcels. Therefore, it was concluded that the existing site is not affected by any offsite flows.
- Refer to Section 5.1 for additional discussion of safety of finish floor elevations.

3.2 ONSITE DRAINAGE

Based on the topographic information:

- Only drainage areas EX-1 and EX-2 located at the north end of the property drain to 3rd Avenue.
- The runoff along 3rd Avenue flows east where it is ultimately conveyed onto N. Scottsdale Road.
- Drainage area EX-3 and EX-4 drain to the neighboring parcel to the east, but stormwater ultimately makes its way to Indian School Road.
- Drainage area EX-7 drains to the alley adjacent to the west but ultimately discharges to Indian School Road.
- Drainage areas EX-5B and EX-6 drain to Indian School Road and flows are captured by catch basins along Indian School Road.

Refer to Appendix II for **Existing Conditions Drainage Area Map**.

The Rational Method was utilized to compute the on-site peak discharges. The Rational Method equation is calculated as shown below:

$$Q=C_{wt}IA$$

Where: C_{wt} = The runoff coefficient relating runoff to rainfall

I = Average rainfall intensity in inches/hour, lasting for T_c

T_c = The time of concentration (using five minutes for the developed areas)
 A = The contributing drainage area in acres

Refer to section 4.3 for land characteristics.

Table 1 below is a summary of existing Q₁₀₀ runoff:

TABLE 1:

Existing Runoff Calculations					
Drainage	Area	C _w	intensity	Q	
<u>Area ID</u>	<u>(acres)</u>	<u>(-)</u>	<u>(in/hr)</u>	<u>(cfs)</u>	
Contributing Areas to 3rd Ave					
EX-1	0.20	0.95	7.44	1.41	CP-1
EX-2	0.67	0.95	7.44	4.74	CP-2
Totals	0.87	0.95		6.15	
Contributing Areas to Indian School Road					
EX-3	0.24	0.95	7.44	1.70	CP-3
EX-4	0.36	0.95	7.44	2.54	CP-4
EX-5A	0.12	0.95	7.44	0.85	CP-8
EX-5B	0.36	0.94	7.44	2.52	CP-5
EX-6	1.04	0.87	7.44	6.73	CP-6
EX-7	0.19	0.95	7.44	1.34	CP-7
Totals	2.31	0.91		15.68	

Overall project area includes **3.18 Acres at C_{wt} = 0.92** (Existing conditions, to back of sidewalk)

Refer to the **Existing Cwt Exhibit (Exhibit A)** and **Existing Conditions Drainage Area Map (Exhibit C)** in **Appendix II**.

4. PROPOSED STORM WATER MANAGEMENT

4.1 DESIGN INTENT:

On-site drainage will be directed off-site via overland flow to the historical outlets. This is a re-development of existing commercial land; therefore, the City of Scottsdale specifies that on-site retention shall be provided as described in Section 4.2 below.

The majority of the entire site is proposed impervious with minor increases in runoff compared to existing conditions.

Refer to **Appendix II** for **Proposed Conditions Drainage Area Map**.

4.2 DESIGN STORM REQUIREMENTS:

In accordance with City of Scottsdale requirements, stormwater storage for the 100-year 2-hour storm event is required based on maintaining existing retention volume plus the difference between the pre

vs. post development runoff from the 100-year 2-hour storm event if increased or first flush, whichever is greater.

4.3 LAND CHARACTERISTICS:

The proposed project site consists mainly of roofs and covered gathering areas, sidewalks and minor landscape areas along the south and north boundaries. Based on the DS&PM, runoff coefficients for the 100-year storm event used are as follows:

- C=0.95 for building or concrete
- C=0.95 for paved surface
- C=0.45 for undisturbed natural desert or desert landscape

HYDROLOGIC ANALYSIS: The hydrologic analysis is determined using the procedures in the City of Scottsdale Design Standards & Policies Manual and the Drainage Design Manual for Maricopa County, Arizona, Volume I. The Rational Method was utilized to compute the on-site peak discharges. The Rational Method equation is displayed as shown below:

$$Q=C_{wt}IA$$

Where: C_{wt} = The runoff coefficient relating runoff to rainfall

I = Average rainfall intensity in inches/hour, lasting for T_c

T_c = The time of concentration (Using Five minutes for the developed areas)

A = The contributing drainage area in acres

Table 2 below is a summary of Proposed Q_{100} runoff.

TABLE 2:

Proposed Runoff Calculations				
Drainage	Area	C_w	intensity	Q
Area ID	(acres)	(-)	(in/hr)	(cfs)
<u>Contributing Areas to 3rd Ave</u>				
DA-1	0.41	0.95	7.44	2.90
DA-2	0.40	0.93	7.44	2.77
Totals	0.81	0.94		5.67
<u>Contributing Areas to Indian School Road</u>				
DA-3	1.08	0.95	7.44	7.63
DA-4A	0.12	0.95	7.44	0.85
DA-4B	0.38	0.94	7.44	2.66
DA-5	0.52	0.90	7.44	3.48
DA-6	0.31	0.95	7.44	2.19
Totals	2.41	0.94		16.81

Overall project area includes **3.18 Acres at $C_{wt} = 0.94$** (Proposed conditions, to back of curb) Refer to the **Proposed Cwt Exhibit (Exhibit B), Proposed Conditions Drainage Area Map (Exhibit D)** and Calculations in **Appendix II**.

Table 3 summarizes the calculated onsite peak flows for the 100-yr storm event under proposed and existing conditions.

TABLE 3:

Runoff Calculations Summary			
Outfall	Proposed	Existing	Difference
3rd Avenue	5.67	6.15	-0.48
Indian School Road	16.81	15.68	1.13

The increase in flow to Indian School Road is approximately 1 cfs and the storm drains have the capacity to accommodate the project flow based on calculations in Appendix II and Section 4.6. A 24" roof drain will be installed connecting to existing catch basin EX. CB-2 from Building 6 which will transfer roof runoff directly into the public storm drain system.

4.4 STORMWATER RETENTION:

PRE VS POST: Based on topographic survey there is no retention provided on the existing development. Based on the performed calculations above, existing condition and proposed development storage requirements for the 100-yr, 2-hr storm event are calculated as follows:

TABLE 4:

Pre vs. Post Required Storage Volume Calculation Summary					
$V = A * (C_{wpost} - C_{wpre}) * D / 12$					
Area	C_{wpost}	C_{wpre}	Depth	Volume Req.	
<u>(acres)</u>	<u>(-)</u>	<u>(-)</u>	<u>(in)</u>	<u>(acre-ft)</u>	<u>(CF)</u>
3.22	0.94	0.92	2.16	0.012	504.95

FIRST FLUSH: First Flush storage required is calculated in accordance with COS– DS&PM. According to the DS&PM, sites less than one (1) acre in size may be waived from the First Flush requirement with approval from staff. The area considered in the first flush calculation is the disturbed area minus any true roof top area. As shown in the Proposed Conditions Roof Area Exhibit (Exhibit E) in Appendix II, the areas considered in the first flush calculation (**0.92 ac**) quantified to be less than 1 acre. As such, the site could be considered exempt from the first flush requirement.

Refer to **Proposed Conditions Roof Area Exhibit (Exhibit E)** in **Appendix II** for areas considered in the first flush calculation.

4.5 STORMWATER RETENTION WAIVER:

The proposed development includes an underground parking structure to the limits of the property thereby eliminating potential open or underground retention areas. Runoff to the north (3RD Avenue) is reduced by 0.48 cfs. The total increase to the south (Indian School Road) is 1.13 cfs and the street and storm drains have capacity to accommodate the project flows based on projected peak flows in Table 3 and offsite flows presented in section 4.6. First flush treatment is not required. Therefore, a Request for Stormwater Storage Waiver for 504.95 cf will be applied for based on section 4-1.203 DS&PM. Refer to **Appendix IV** for Stormwater Retention Waiver.

4.6 OFFSITE STORM SYSTEM ANALYSIS:

For the purpose of this report, the calculated runoff was used to analyze the effects of the increase in runoff to the existing system based on the existing peak flows presented in the Lower Indian Bend Wash Area Drainage Master Study Hydrology and Hydraulics Report, Contract No.: FCD 2011C019, dated December 2017.

The hydraulic grade line and capacity was analyzed for the existing 48" RGRCP reach along E. Indian School Road. The reach begins at the upstream manhole, MJ8W2STEISRL, located at the Alley and E. Indian School Road intersection and continues east to N Scottsdale Road at manhole MJ23W2STSRL, refer to Appendix V for an excerpt of the Lower Indian Bend Wash ADMP corresponding to the analyzed reach along Indian School Road.

The onsite peak flows from Table 6 were calculated through the use of the Rational Method and indicate that there is a 1.13 cfs increase to Indian School Road. The hydraulic analysis was performed for the existing 36" storm drain (upstream) and the 48" (downstream) to verify the capacity of the existing system in respect to the additional flow. The analysis was performed using Flowmaster to analyze the existing 36" and 48" RGRCP reach based on the existing peak flow of 32.4 cfs and 71.5 cfs at pipes **C6W2STEISRL** and **C1W2STEISRL**, respectively, obtained from the Lower Indian Bend Wash ADMP, and the additional 0.71 cfs obtained from the calculated on-site peak flow. Refer to **Appendix V** for Inlet Summary Table and Pipe Discharge Tables in the Lower Indian Bend Wash ADMP.

36" Pipe C6W2STEISRL: 32.4 cfs (Existing) + 1.13 cfs (Post) = **33.53 cfs**

48" Pipe C1W2STEISRL: 71.5 cfs (Existing) + 1.13 cfs (Post) = **72.63 cfs**

Hydraulic calculations indicate that 52.94 cfs is available for the existing 36" RGRCP (S=0.63%) at full capacity and 114.01 cfs available for the existing 48" RGRCP (S=0.63%) at full capacity. The existing 36" and 48" RGRCP storm drains are capable of conveying the total post conditions flow increase of 1.13 cfs. Refer to **Appendix II** for pipe capacity calculations.

4.7 ADEQ WATER QUALITY REQUIREMENTS:

The total disturbed area of this site is approximately 3.18 acres. The Arizona Department of Environmental Quality requires that any site disturbance over an acre is required to submit an NOI. An NOI will be submitted to ADEQ for this site after the first submittal of the construction documents as this site disturbance is over 1 acre.

5. FLOOD SAFETY FOR DWELLINGS

5.1 FINISHED FLOOR ELEVATIONS

This project lies in an "X" Flood Zone. Therefore, the proposed building finished floor elevations will be set a minimum of 12 inches above the 100-year high-water elevation of any adjacent streets and drainage paths and a minimum of 14 inches above the lowest top of curb of the lot. This will ensure that each building will be well above the 100-year water level. All buildings with the exception of Buildings 4 and 5 are set 14 inches above the lowest top of curb but are set more than 12 inches above the 100-year water surface elevation at the ultimate outfall. The site ultimate outfall is located at the southeast corner at an elevation of 1261.15. The ultimate outfall elevation is greater than 14" below the minimum finish floor elevation.

TABLE 5:

FFE Summary			
BLDG	Finish Floor Elevation	Lowest Top of Curb	Difference
(ID)	(ft)	(ft)	(in)
1	66.00	64.62	16.56
2	66.00	64.42	18.96
3	66.00	62.81	38.28
4	65.00	64.00	12.00
5	65.00	63.98	12.24
6	64.50	62.40	25.20

6. CONCLUSIONS

6.1 OVERALL PROJECT:

1. The finish floor elevations will be designed a minimum of 12 inches above the 100-year water surface in adjacent streets and drainage paths (with exception of buildings 4 & 5) and a minimum of 14 inches above the lowest top of curb of the lot.
2. A stormwater storage waiver will be requested for the redevelopment of the site.

6.2 PROJECT PHASING:

This project will be constructed in a single phase.

7. WARNING AND DISCLAIMER OF LIABILITY

RE: following page.

8. REFERENCES

1. *Design Standards & Policies Manual, City of Scottsdale – January 2018*
2. *Drainage Design Manual for Maricopa County, Arizona, Volume I, Hydrology, Flood Control District of Maricopa County, Fourth Edition, December 14, 2018*
3. *Drainage Design Manual for Maricopa County, Arizona, Volume II, Hydraulics, Flood Control District of Maricopa County, December 14, 2018*

GRADING & DRAINAGE LANGUAGE

WARNING AND DISCLAIMER OF LIABILITY

The City’s Stormwater and Floodplain Management Ordinance is intended to minimize the occurrence of losses, hazards and conditions adversely affecting the public health, safety and general welfare which might result from flooding. The Stormwater and Floodplain Management Ordinance identifies floodplains, floodways, flood fringes and special flood hazard areas. However, a property outside these areas could be inundated by floods. Also, much of the city is a dynamic flood area; floodways, floodplains, flood fringes and special flood hazard areas may shift from one location to another, over time, due to natural processes.

WARNING AND DISCLAIMER OF LIABILITY

The flood protection provided by the Stormwater and Floodplain Management Ordinance is considered reasonable for regulatory purposes and is based on scientific and engineering considerations. Floods larger than the base flood can and will occur on rare occasions. Floodwater heights may be increased by constructed or natural causes. The Stormwater and Floodplain Management Ordinance does not create liability on the part of the city, any officer or employee thereof, or the federal, state or county government for any flood damages that result from reliance on the Ordinance or any administrative decision lawfully made thereunder.

Compliance with the Stormwater and Floodplain Management Ordinance does not ensure complete protection from flooding. Flood-related problems such as natural erosion, streambed meander, or constructed obstructions and diversions may occur and have an adverse effect in the event of a flood. You are advised to consult your own engineer or other expert regarding these considerations.

I have read and understand the above.

Plan Check #	Owner	Date
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Scottsdale, AZ 85260

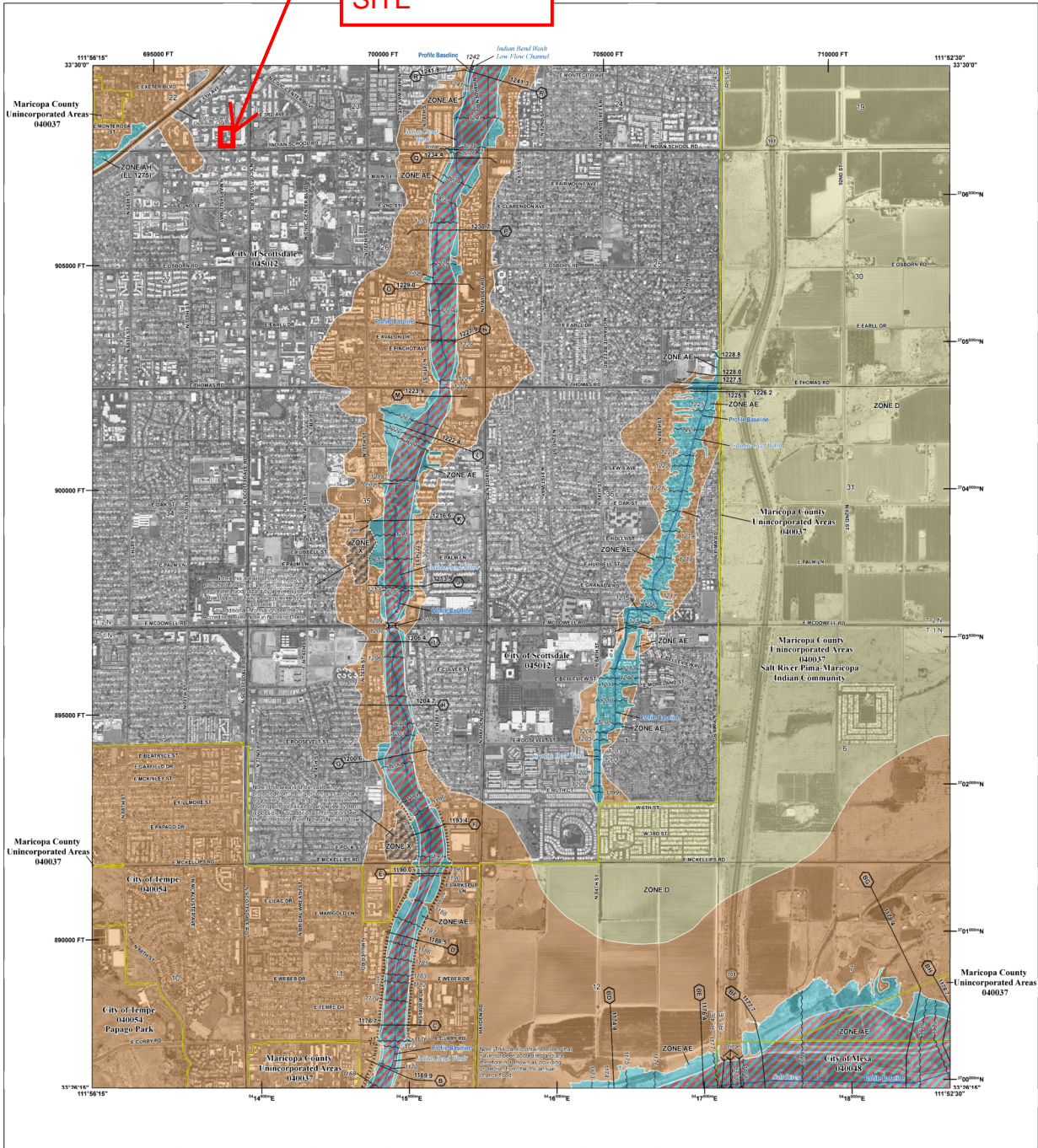
Sustainability Engineering Group

info@azSEG.com 480.588.7226

www.azSEG.com

FIGURE 2
AERIAL MAP

PROJECT SITE



FLOOD HAZARD INFORMATION

SEE FIRM REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT
THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT [HTTPS://MSC.FEMA.GOV](https://MSC.FEMA.GOV)

SPECIAL FLOOD HAZARD AREAS	Without Base Flood Elevation (BFE) Zone AE, AO, AH, VE, AR
	Regulatory Floodway
	0.2% Annual Chance Flood Hazard. Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X
	Future Conditions 1% Annual Chance Flood Hazard Zone X
	Area with Reduced Flood Risk due to Levee See Notes Zone X
	Area with Flood Risk due to Levee Zone D
OTHER AREAS OF FLOOD HAZARD	Area of Minimal Flood Hazard Zone X
	Area of Undetermined Flood Hazard Zone D
OTHER AREAS	Channel, Culvert, or Storm Sewer
	Levee, Dike, or Floodwall
GENERAL STRUCTURES	Cross Sections with 1% Annual Chance Water Surface Elevation
	Coastal Transect
	Coastal Transect Baseline
	Profile Baseline
	Hydrographic Features
	Base Flood Elevation Line (BFE)
	Limit of Study
OTHER FEATURES	Jurisdiction Boundary

NOTES TO USERS

For information and questions about this Flood Insurance Rate Map (FIRM), available products associated with the FIRM, including historic versions, the current map date for each FIRM panel, how to order products, or the National Flood Insurance Program (NFIP), in general, please call the FEMA Flood Map Service Center website at <https://fema.gov>. Available products may include previously issued editions of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered directly from the website.

Communities seeking hard or softcopy FIRM panels must obtain a current copy of the relevant panel as well as the current FIRM index. These may be ordered directly from the Flood Map Service Center at the number listed above.

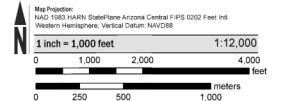
For community and countywide map data refer to the Flood Insurance Study Report for that jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-8622.

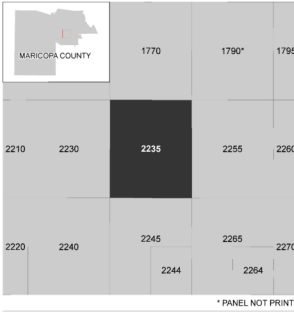
Base map information shown on this FIRM was derived from U.S. Census Bureau TIGER files, dated 2014, and digital data provided by the Flood Control District of Maricopa County. Digital orthorectification was provided by the Flood Control District of Maricopa County. The imagery was derived from 2014 and was produced with a 1:6 foot ground sample distance.

ACCURACY OF DATA: Users are advised to check with their local community to obtain more information, such as the estimated level of protection provided (which may exceed the 1-percent-annual-chance level) and Emergency Action Plan, or the levee system shown as providing protection for areas on this panel. To mitigate flood risk in residential risk areas, property owners and residents are encouraged to consider flood insurance and floodproofing or other protective measures. For more information on flood insurance, increased parking should visit the FEMA Website at <http://www.fema.gov/national-flood-insurance-program>.

SCALE



PANEL LOCATOR



FEMA National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM FLOOD INSURANCE RATE MAP

MARICOPA COUNTY, ARIZONA
and Incorporated Areas

PANEL 2235 OF 4425

Panel Contains:

COMMUNITY	NUMBER	PANEL	SUFFIX
MARICOPA COUNTY	040037	2235	M
MESA, CITY OF	040048	2235	M
SCOTTSDALE, CITY OF	040012	2235	M
TEMPE, CITY OF	040054	2235	M

VERSION NUMBER: 2.3.3.2
 MAP NUMBER: 04013C235M
 MAP REVISED: September 18, 2020

APPENDIX I

Rainfall Data



NOAA Atlas 14, Volume 1, Version 5
Location name: Scottsdale, Arizona, USA*
Latitude: 33.4955°, Longitude: -111.9279°
Elevation: 1262.91 ft**



* source: ESRI Maps
 ** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sarah Dietz, Sarah Heim, Lillian Hiner, Kazungu Maitaria, Deborah Martin, Sandra Pavlovic, Ishani Roy, Carl Trypaluk, Dale Unruh, Fenglin Yan, Michael Yekta, Tan Zhao, Geoffrey Bonnin, Daniel Brewer, Li-Chuan Chen, Tye Parzybok, John Yarchoan

NOAA, National Weather Service, Silver Spring, Maryland

[PF_tabular](#) | [PF_graphical](#) | [Maps_&_aerials](#)

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)¹										
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.183 (0.154-0.223)	0.240 (0.202-0.292)	0.326 (0.273-0.395)	0.392 (0.326-0.473)	0.481 (0.393-0.578)	0.550 (0.444-0.658)	0.620 (0.492-0.740)	0.693 (0.539-0.825)	0.789 (0.598-0.941)	0.862 (0.641-1.03)
10-min	0.279 (0.234-0.340)	0.365 (0.307-0.444)	0.496 (0.415-0.602)	0.596 (0.496-0.720)	0.733 (0.599-0.880)	0.838 (0.676-1.00)	0.944 (0.748-1.13)	1.05 (0.821-1.26)	1.20 (0.910-1.43)	1.31 (0.976-1.57)
15-min	0.345 (0.290-0.421)	0.452 (0.381-0.550)	0.614 (0.514-0.746)	0.739 (0.614-0.893)	0.908 (0.742-1.09)	1.04 (0.838-1.24)	1.17 (0.927-1.40)	1.31 (1.02-1.56)	1.49 (1.13-1.78)	1.63 (1.21-1.95)
30-min	0.465 (0.390-0.567)	0.609 (0.513-0.741)	0.827 (0.692-1.00)	0.995 (0.827-1.20)	1.22 (0.999-1.47)	1.40 (1.13-1.67)	1.58 (1.25-1.88)	1.76 (1.37-2.10)	2.00 (1.52-2.39)	2.19 (1.63-2.62)
60-min	0.576 (0.483-0.702)	0.754 (0.635-0.917)	1.02 (0.857-1.24)	1.23 (1.02-1.49)	1.51 (1.24-1.82)	1.73 (1.40-2.07)	1.95 (1.55-2.33)	2.18 (1.70-2.60)	2.48 (1.88-2.96)	2.71 (2.02-3.24)
2-hr	0.667 (0.569-0.796)	0.864 (0.736-1.03)	1.16 (0.983-1.38)	1.38 (1.16-1.64)	1.69 (1.40-1.99)	1.92 (1.57-2.26)	2.16 (1.74-2.54)	2.41 (1.91-2.83)	2.74 (2.12-3.22)	2.99 (2.26-3.54)
3-hr	0.726 (0.615-0.873)	0.931 (0.793-1.13)	1.22 (1.04-1.47)	1.46 (1.22-1.74)	1.78 (1.47-2.12)	2.04 (1.66-2.42)	2.31 (1.85-2.74)	2.59 (2.04-3.07)	2.98 (2.28-3.53)	3.30 (2.46-3.91)
6-hr	0.874 (0.757-1.03)	1.11 (0.963-1.30)	1.42 (1.23-1.67)	1.67 (1.43-1.95)	2.01 (1.70-2.33)	2.28 (1.90-2.63)	2.56 (2.10-2.95)	2.84 (2.28-3.29)	3.23 (2.53-3.75)	3.54 (2.71-4.11)
12-hr	0.977 (0.855-1.14)	1.24 (1.08-1.44)	1.57 (1.36-1.81)	1.83 (1.58-2.11)	2.17 (1.86-2.50)	2.44 (2.07-2.81)	2.72 (2.27-3.13)	3.00 (2.47-3.45)	3.38 (2.71-3.91)	3.67 (2.89-4.27)
24-hr	1.17 (1.04-1.32)	1.48 (1.32-1.67)	1.92 (1.71-2.17)	2.27 (2.02-2.55)	2.75 (2.42-3.09)	3.13 (2.74-3.51)	3.53 (3.07-3.96)	3.94 (3.40-4.42)	4.51 (3.85-5.06)	4.96 (4.19-5.58)
2-day	1.26 (1.13-1.42)	1.61 (1.44-1.82)	2.12 (1.89-2.38)	2.52 (2.24-2.83)	3.08 (2.72-3.46)	3.53 (3.10-3.96)	4.00 (3.49-4.50)	4.50 (3.89-5.06)	5.19 (4.44-5.85)	5.74 (4.86-6.49)
3-day	1.33 (1.19-1.50)	1.71 (1.52-1.92)	2.25 (2.00-2.53)	2.68 (2.37-3.01)	3.29 (2.90-3.69)	3.78 (3.31-4.24)	4.30 (3.74-4.83)	4.85 (4.18-5.45)	5.62 (4.79-6.32)	6.24 (5.26-7.04)
4-day	1.41 (1.25-1.59)	1.80 (1.60-2.03)	2.37 (2.11-2.67)	2.84 (2.51-3.19)	3.50 (3.08-3.92)	4.03 (3.52-4.51)	4.60 (3.99-5.15)	5.20 (4.47-5.84)	6.05 (5.14-6.79)	6.74 (5.67-7.58)
7-day	1.56 (1.39-1.76)	1.99 (1.78-2.25)	2.63 (2.34-2.97)	3.15 (2.79-3.55)	3.88 (3.42-4.36)	4.47 (3.91-5.02)	5.10 (4.43-5.73)	5.76 (4.96-6.48)	6.70 (5.70-7.54)	7.46 (6.28-8.41)
10-day	1.70 (1.51-1.91)	2.17 (1.93-2.44)	2.86 (2.54-3.22)	3.42 (3.03-3.84)	4.21 (3.70-4.71)	4.83 (4.23-5.40)	5.50 (4.78-6.15)	6.20 (5.35-6.94)	7.18 (6.12-8.05)	7.97 (6.72-8.94)
20-day	2.08 (1.86-2.33)	2.68 (2.39-3.00)	3.54 (3.16-3.95)	4.19 (3.73-4.67)	5.07 (4.48-5.65)	5.74 (5.06-6.40)	6.42 (5.64-7.17)	7.12 (6.22-7.95)	8.05 (6.97-9.02)	8.77 (7.53-9.84)
30-day	2.43 (2.17-2.73)	3.13 (2.79-3.50)	4.13 (3.67-4.61)	4.88 (4.34-5.44)	5.90 (5.21-6.57)	6.68 (5.88-7.43)	7.48 (6.55-8.32)	8.29 (7.23-9.23)	9.39 (8.12-10.5)	10.2 (8.78-11.4)
45-day	2.82 (2.52-3.15)	3.63 (3.25-4.06)	4.78 (4.28-5.34)	5.64 (5.03-6.29)	6.76 (6.01-7.54)	7.61 (6.74-8.49)	8.46 (7.47-9.45)	9.32 (8.18-10.4)	10.4 (9.11-11.7)	11.3 (9.79-12.7)
60-day	3.12 (2.80-3.48)	4.03 (3.62-4.49)	5.30 (4.75-5.90)	6.22 (5.56-6.92)	7.42 (6.62-8.26)	8.31 (7.39-9.25)	9.20 (8.15-10.2)	10.1 (8.89-11.2)	11.2 (9.84-12.5)	12.1 (10.5-13.5)

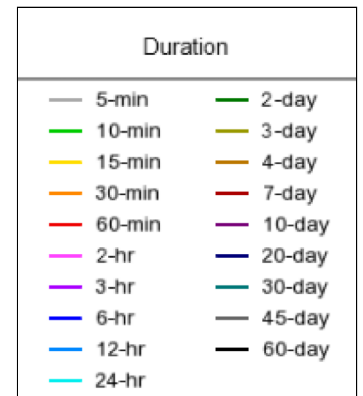
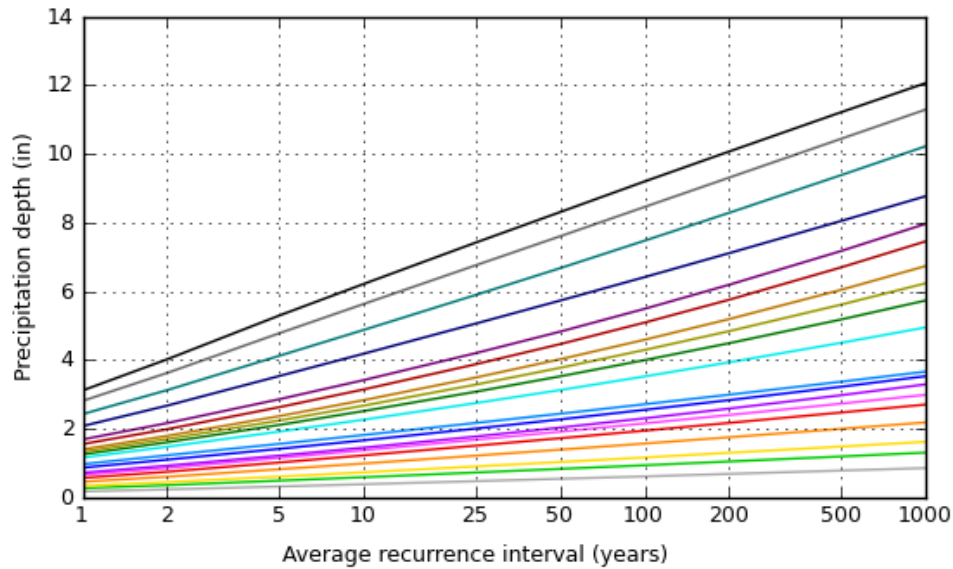
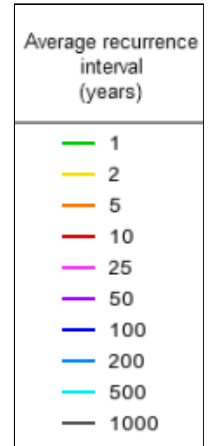
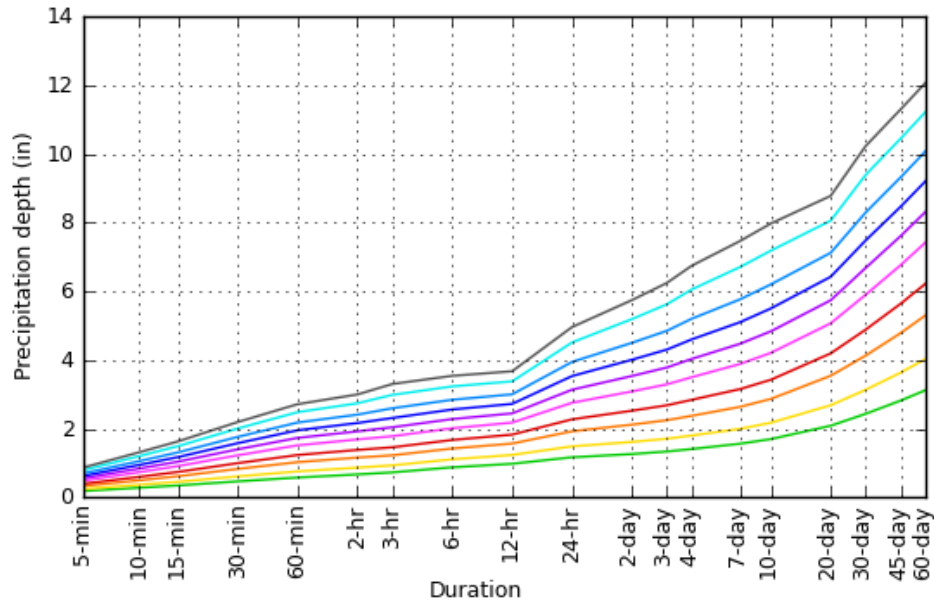
¹ Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS). Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values. Please refer to NOAA Atlas 14 document for more information.

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PF graphical

PDS-based depth-duration-frequency (DDF) curves

Latitude: 33.4955°, Longitude: -111.9279°



[Back to Top](#)

Maps & aerials

Small scale terrain



NOAA Atlas 14, Volume 1, Version 5
Location name: Scottsdale, Arizona, USA*
Latitude: 33.4955°, Longitude: -111.9279°
Elevation: 1262.91 ft**



* source: ESRI Maps
 ** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sarah Dietz, Sarah Heim, Lillian Hiner, Kazungu Maitaria, Deborah Martin, Sandra Pavlovic, Ishani Roy, Carl Trypaluk, Dale Unruh, Fenglin Yan, Michael Yekta, Tan Zhao, Geoffrey Bonnin, Daniel Brewer, Li-Chuan Chen, Tye Parzybok, John Yarchoan

NOAA, National Weather Service, Silver Spring, Maryland

[PF_tabular](#) | [PF_graphical](#) | [Maps_&_aerials](#)

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches/hour)¹										
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	2.20 (1.85-2.68)	2.88 (2.42-3.50)	3.91 (3.28-4.74)	4.70 (3.91-5.68)	5.77 (4.72-6.94)	6.60 (5.33-7.90)	7.44 (5.90-8.88)	8.32 (6.47-9.90)	9.47 (7.18-11.3)	10.3 (7.69-12.4)
10-min	1.67 (1.40-2.04)	2.19 (1.84-2.66)	2.98 (2.49-3.61)	3.58 (2.98-4.32)	4.40 (3.59-5.28)	5.03 (4.06-6.01)	5.66 (4.49-6.76)	6.32 (4.93-7.54)	7.20 (5.46-8.59)	7.87 (5.86-9.41)
15-min	1.38 (1.16-1.68)	1.81 (1.52-2.20)	2.46 (2.06-2.98)	2.96 (2.46-3.57)	3.63 (2.97-4.36)	4.15 (3.35-4.97)	4.68 (3.71-5.59)	5.23 (4.07-6.23)	5.95 (4.52-7.10)	6.51 (4.84-7.78)
30-min	0.930 (0.780-1.13)	1.22 (1.03-1.48)	1.65 (1.38-2.01)	1.99 (1.65-2.40)	2.45 (2.00-2.94)	2.80 (2.26-3.34)	3.15 (2.50-3.76)	3.52 (2.74-4.19)	4.01 (3.04-4.78)	4.38 (3.26-5.24)
60-min	0.576 (0.483-0.702)	0.754 (0.635-0.917)	1.02 (0.857-1.24)	1.23 (1.02-1.49)	1.51 (1.24-1.82)	1.73 (1.40-2.07)	1.95 (1.55-2.33)	2.18 (1.70-2.60)	2.48 (1.88-2.96)	2.71 (2.02-3.24)
2-hr	0.334 (0.284-0.398)	0.432 (0.368-0.517)	0.578 (0.492-0.688)	0.690 (0.580-0.820)	0.843 (0.700-0.994)	0.960 (0.786-1.13)	1.08 (0.872-1.27)	1.20 (0.953-1.41)	1.37 (1.06-1.61)	1.50 (1.13-1.77)
3-hr	0.242 (0.205-0.291)	0.310 (0.264-0.375)	0.408 (0.345-0.490)	0.485 (0.407-0.580)	0.593 (0.491-0.705)	0.679 (0.554-0.805)	0.769 (0.616-0.911)	0.863 (0.680-1.02)	0.993 (0.759-1.18)	1.10 (0.818-1.30)
6-hr	0.146 (0.126-0.172)	0.185 (0.161-0.218)	0.237 (0.205-0.278)	0.279 (0.239-0.325)	0.336 (0.284-0.389)	0.380 (0.317-0.440)	0.427 (0.350-0.493)	0.474 (0.381-0.549)	0.539 (0.423-0.625)	0.591 (0.452-0.687)
12-hr	0.081 (0.071-0.094)	0.103 (0.090-0.119)	0.130 (0.113-0.150)	0.151 (0.131-0.175)	0.181 (0.154-0.208)	0.203 (0.171-0.233)	0.226 (0.188-0.260)	0.249 (0.205-0.287)	0.280 (0.225-0.324)	0.305 (0.240-0.355)
24-hr	0.049 (0.043-0.055)	0.062 (0.055-0.070)	0.080 (0.071-0.090)	0.095 (0.084-0.106)	0.115 (0.101-0.129)	0.131 (0.114-0.146)	0.147 (0.128-0.165)	0.164 (0.142-0.184)	0.188 (0.160-0.211)	0.206 (0.174-0.232)
2-day	0.026 (0.023-0.030)	0.034 (0.030-0.038)	0.044 (0.039-0.050)	0.053 (0.047-0.059)	0.064 (0.057-0.072)	0.074 (0.065-0.083)	0.083 (0.073-0.094)	0.094 (0.081-0.105)	0.108 (0.092-0.122)	0.120 (0.101-0.135)
3-day	0.019 (0.017-0.021)	0.024 (0.021-0.027)	0.031 (0.028-0.035)	0.037 (0.033-0.042)	0.046 (0.040-0.051)	0.052 (0.046-0.059)	0.060 (0.052-0.067)	0.067 (0.058-0.076)	0.078 (0.067-0.088)	0.087 (0.073-0.098)
4-day	0.015 (0.013-0.017)	0.019 (0.017-0.021)	0.025 (0.022-0.028)	0.030 (0.026-0.033)	0.036 (0.032-0.041)	0.042 (0.037-0.047)	0.048 (0.042-0.054)	0.054 (0.047-0.061)	0.063 (0.054-0.071)	0.070 (0.059-0.079)
7-day	0.009 (0.008-0.010)	0.012 (0.011-0.013)	0.016 (0.014-0.018)	0.019 (0.017-0.021)	0.023 (0.020-0.026)	0.027 (0.023-0.030)	0.030 (0.026-0.034)	0.034 (0.030-0.039)	0.040 (0.034-0.045)	0.044 (0.037-0.050)
10-day	0.007 (0.006-0.008)	0.009 (0.008-0.010)	0.012 (0.011-0.013)	0.014 (0.013-0.016)	0.018 (0.015-0.020)	0.020 (0.018-0.023)	0.023 (0.020-0.026)	0.026 (0.022-0.029)	0.030 (0.025-0.034)	0.033 (0.028-0.037)
20-day	0.004 (0.004-0.005)	0.006 (0.005-0.006)	0.007 (0.007-0.008)	0.009 (0.008-0.010)	0.011 (0.009-0.012)	0.012 (0.011-0.013)	0.013 (0.012-0.015)	0.015 (0.013-0.017)	0.017 (0.015-0.019)	0.018 (0.016-0.020)
30-day	0.003 (0.003-0.004)	0.004 (0.004-0.005)	0.006 (0.005-0.006)	0.007 (0.006-0.008)	0.008 (0.007-0.009)	0.009 (0.008-0.010)	0.010 (0.009-0.012)	0.012 (0.010-0.013)	0.013 (0.011-0.015)	0.014 (0.012-0.016)
45-day	0.003 (0.002-0.003)	0.003 (0.003-0.004)	0.004 (0.004-0.005)	0.005 (0.005-0.006)	0.006 (0.006-0.007)	0.007 (0.006-0.008)	0.008 (0.007-0.009)	0.009 (0.008-0.010)	0.010 (0.008-0.011)	0.010 (0.009-0.012)
60-day	0.002 (0.002-0.002)	0.003 (0.003-0.003)	0.004 (0.003-0.004)	0.004 (0.004-0.005)	0.005 (0.005-0.006)	0.006 (0.005-0.006)	0.006 (0.006-0.007)	0.007 (0.006-0.008)	0.008 (0.007-0.009)	0.008 (0.007-0.009)

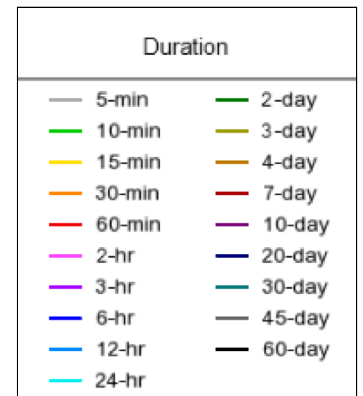
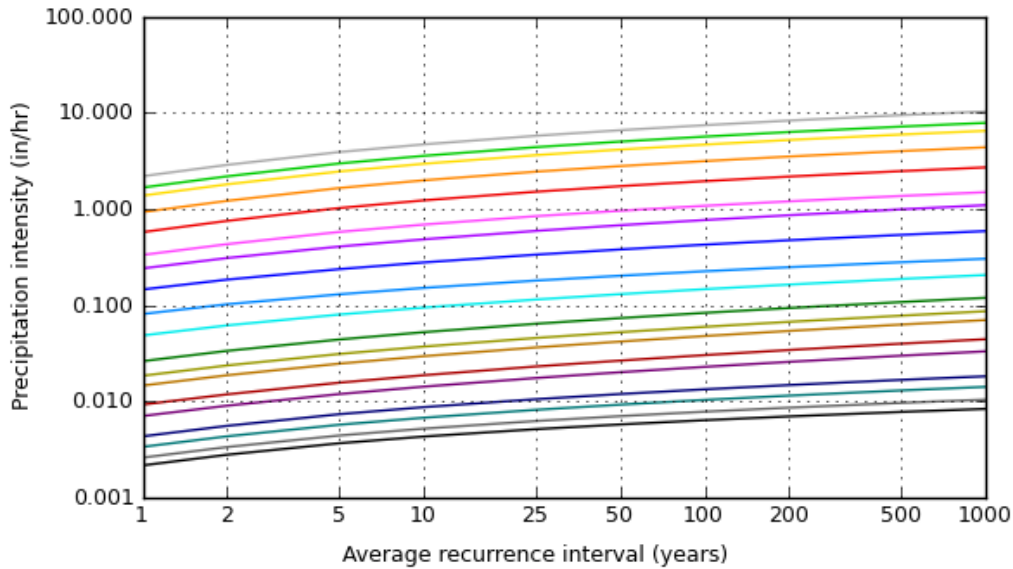
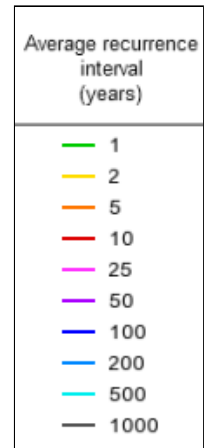
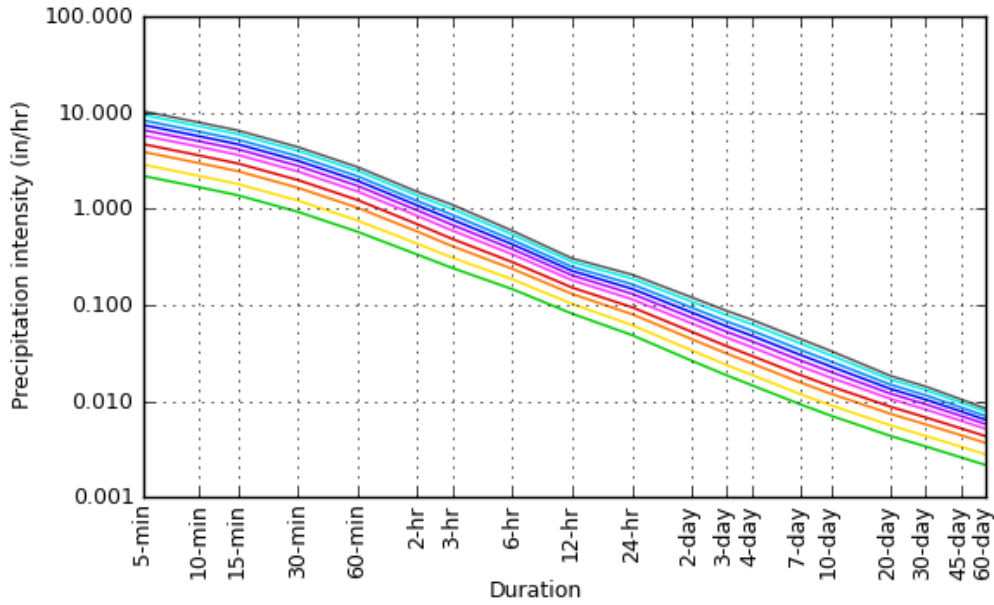
¹ Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS). Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values. Please refer to NOAA Atlas 14 document for more information.

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PF graphical

PDS-based intensity-duration-frequency (IDF) curves

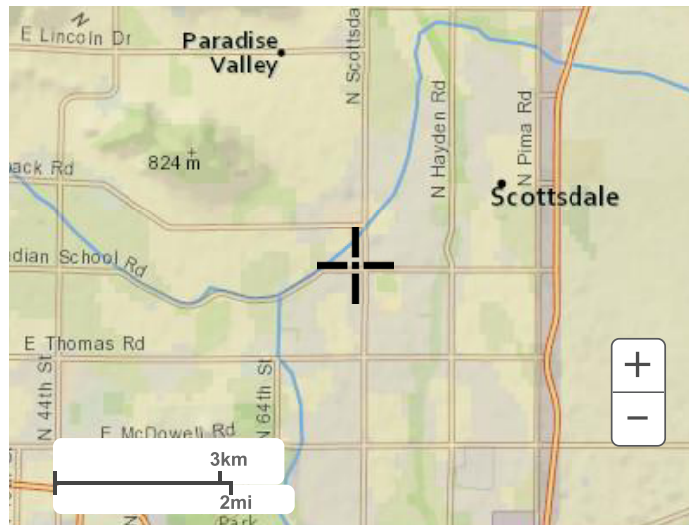
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Maps & aerials

Small scale terrain



Large scale terrain



Large scale map



Large scale aerial

APPENDIX II

Calculations

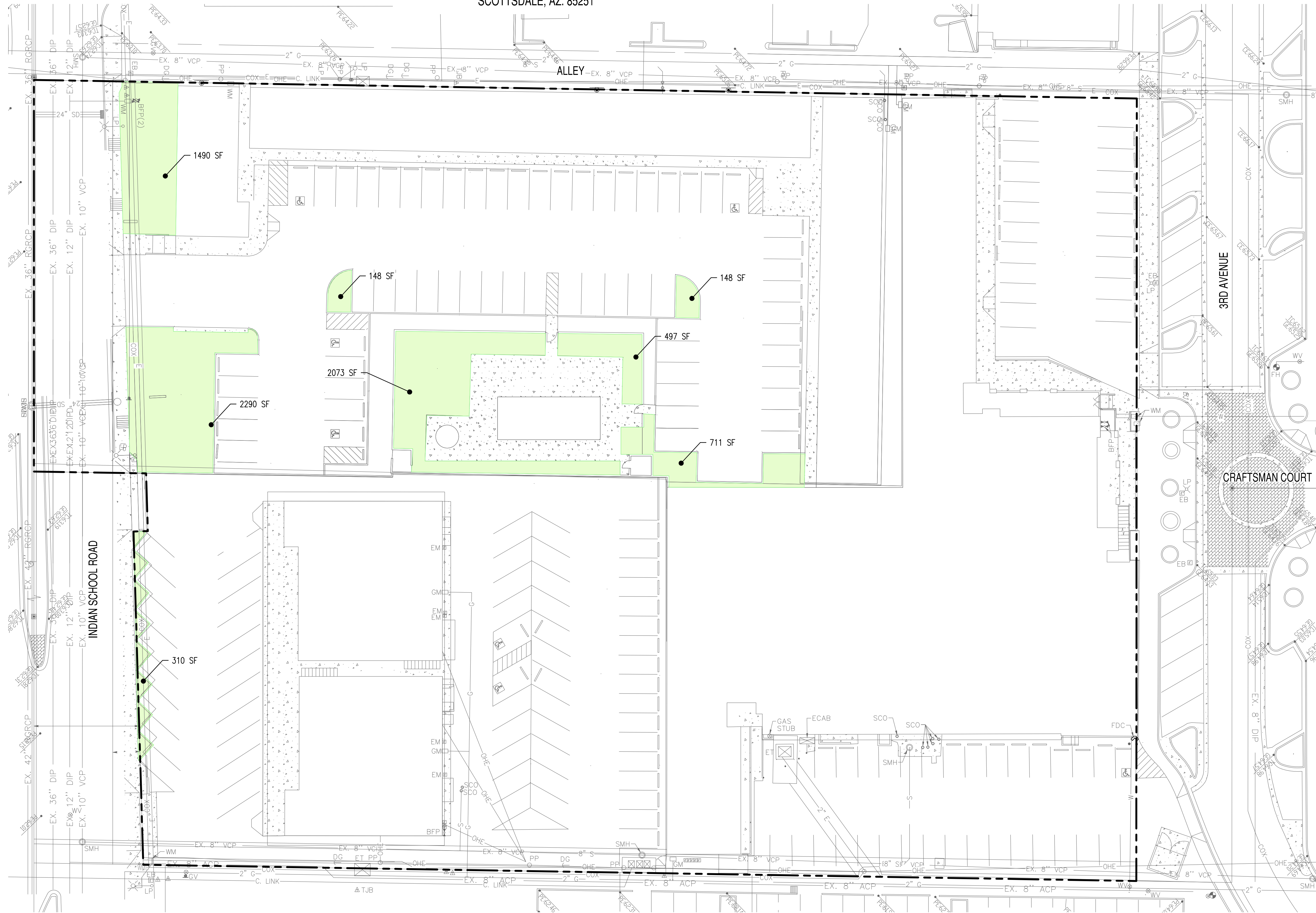
Weighted Runoff Coefficient-Calculations (C_w)

PROPOSED OVERALL SITE C_w					
	BUILDING or CONCRETE	ASPHALT	DESERT LANDSCAPE	TOTAL AREA	C _w
C-VALUE	0.95	0.95	0.45		
AREA (ac)	2.50	0.63	0.09	3.22	0.94
DA-1	0.41	0.00	0.00	0.41	0.95
DA-2	0.14	0.24	0.02	0.40	0.93
DA-3	1.04	0.03	0.01	1.08	0.95
DA-4A	0.12	0.00	0.00	0.12	0.95
DA-4B	0.21	0.16	0.01	0.38	0.94
DA-5	0.47	0.00	0.05	0.52	0.90
DA-6	0.11	0.20	0.00	0.31	0.95

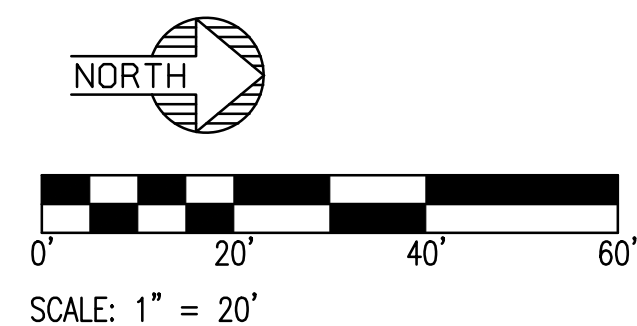
EXISTING OVERALL SITE C_w					
	BUILDING or CONCRETE	ASPHALT	DESERT LANDSCAPE	TOTAL AREA	C _w
C-VALUE	0.95	0.95	0.45		
AREA (ac)	1.66	1.34	0.18	3.18	0.92
EX-1	0.20	0.00	0.00	0.20	0.95
EX-2	0.67	0.00	0.00	0.67	0.95
EX-3	0.00	0.24	0.00	0.24	0.95
EX-4	0.00	0.36	0.00	0.36	0.95
EX-5A	0.12	0.00	0.00	0.12	0.95
EX-5B	0.35	0.00	0.01	0.36	0.94
EX-6	0.13	0.74	0.17	1.04	0.87
EX-7	0.19	0.00	0.00	0.19	0.95

KIMSEY HOTEL & APARTMENT
 7110 E. INDIAN SCHOOL ROAD, 7117 E. 3RD AVENUE.
 SCOTTSDALE, AZ. 85251

EXISTING CONDITIONS CWT EXHIBIT



	ON-SITE PERVIOUS =	0.18 AC	Cwt=0.45
	ON-SITE IMPERVIOUS =	3.00 AC	Cwt=0.95
	TOTAL Cwt =	3.18 AC	@ Cwt=0.92



NOT FOR
CONSTRUCTION

SUSTAINABILITY
ENGINEERING
GROUP



8280 E. GELDING DRIVE SUITE 101, SCOTTSDALE, ARIZONA 85260
 WWW.AZSEG.COM TEL. 480.988.7226 FAX. 480.259.9534



PROJECT: KIMSEY HOTEL & APARTMENT
 LOCATION: 7110 E. INDIAN SCHOOL ROAD, 7117 E. 3RD AVENUE, SCOTTSDALE, AZ. 85251

DRAWN: LP 10/07/2021
 DESIGNED: LP 10/07/2021
 QC: _____
 FINAL QC: _____
 PROJ. MGR.: AF 10/11/2021
 DATE: 10/11/2021
 ISSUED FOR: DRB

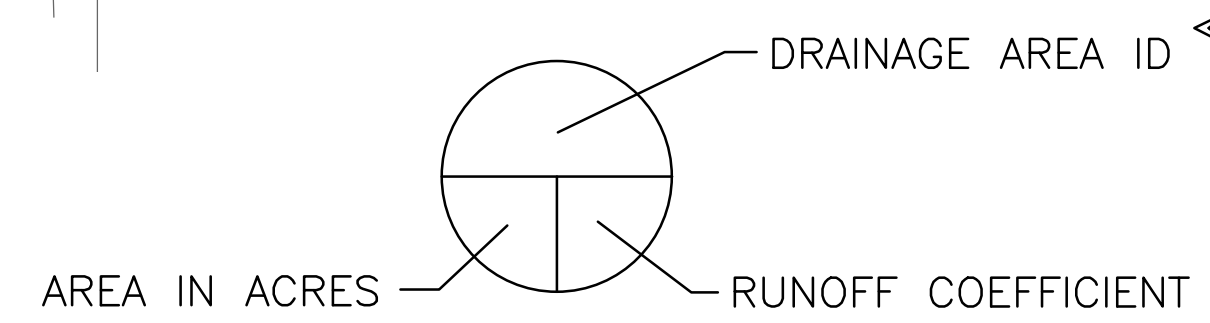
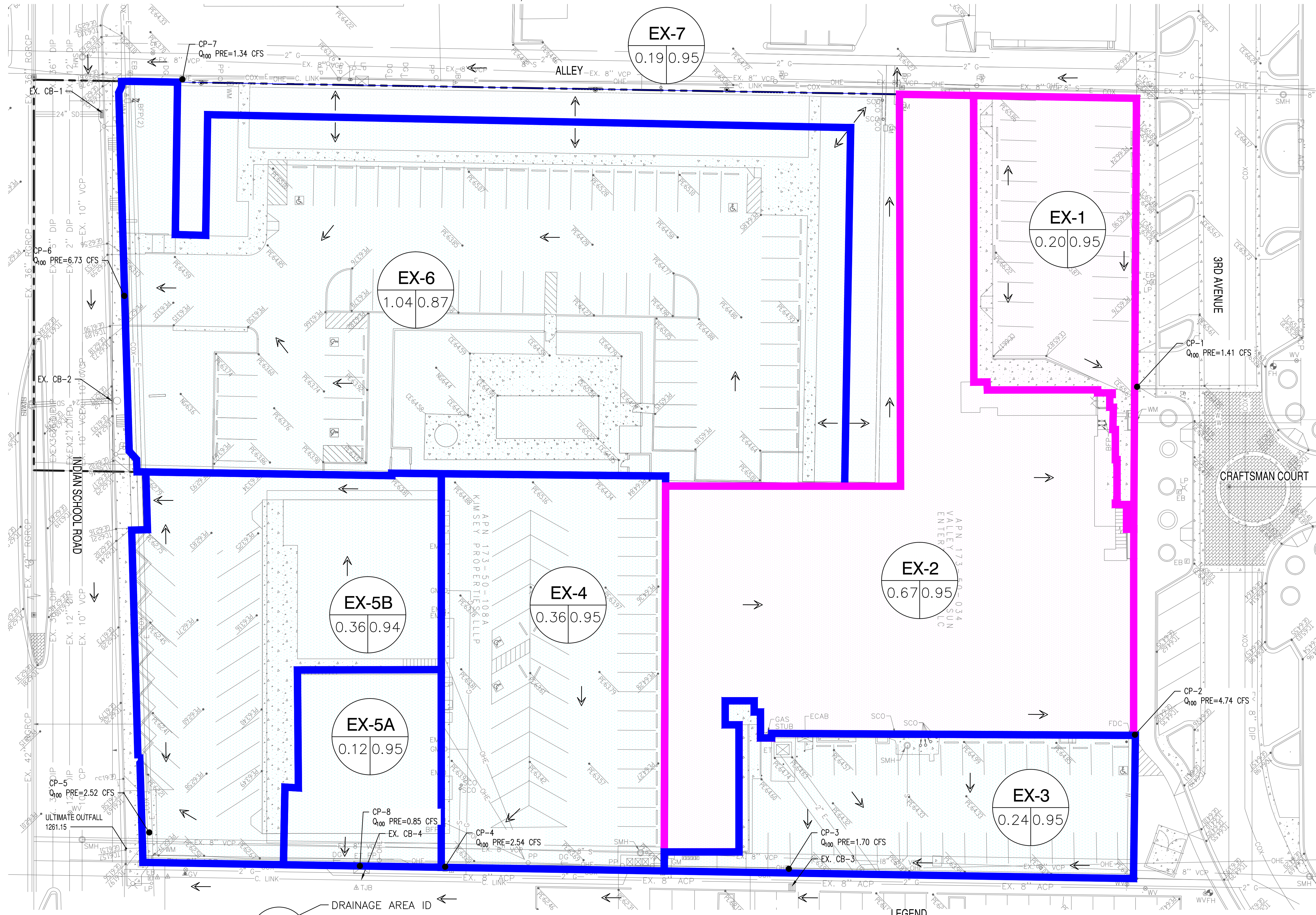
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 PAGE NO.: _____ SHEET NO.: EXHIBIT A

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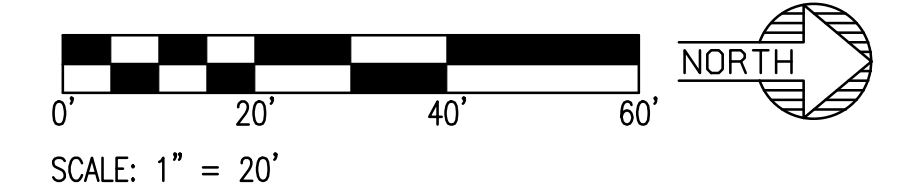
KIMSEY HOTEL & APARTMENT
 7110 E. INDIAN SCHOOL ROAD, 7117 E. 3RD AVENUE.
 SCOTTSDALE, AZ. 85251

EXISTING CONDITIONS DRAINAGE AREA MAP



DRAINAGE AREA KEY

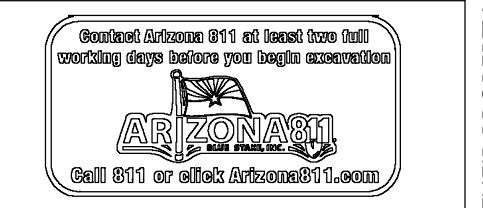
- LEGEND**
- █ DRAINAGE AREAS CONTRIBUTING TO 3RD AVE
 - █ DRAINAGE AREAS CONTRIBUTING TO INDIAN SCHOOL RD
 - ← FLOW ARROW



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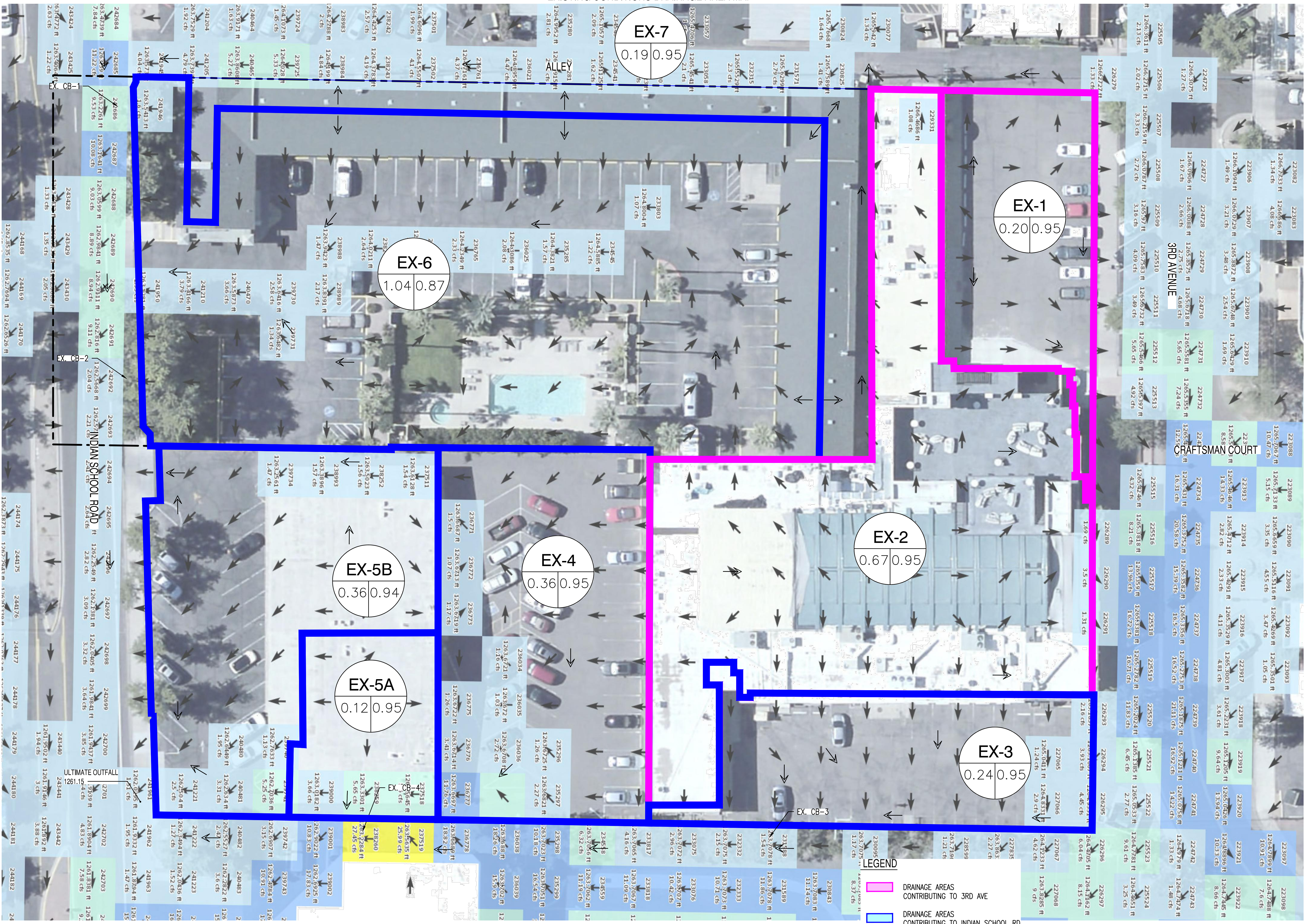


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DESIGNED: LP	DATE: 10/07/2021
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REVISION NO.:	DATE:
JOB NO.: 200504	
SHEET TITLE: EXISTING CONDITIONS DRAINAGE AREA MAP	
PAGE NO.:	SHEET NO.:
	EXHIBIT C

LOCATION: Z:\SHARED\PROJECTS\GENSLER\HOJO APARTMENTS SCOTTSDALE 200504\11 CAD (SEG)\11.3 CD\200504-CD-EX-DAM.DWG SAVED BY: LAPTOP02 DATE: 10/8/2021

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THE TRIANGLE 3RD AVENUE AND INDIAN SCHOOL ROAD EXISTING CONDITIONS DRAINAGE AREA MAP



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Overhead Aerials are not based from their recording date but are based from their recording date unless you specify otherwise.


PROJECT: KINSEY HOTEL & APARTMENT	LOCATION: 7110 E. INDIAN SCHOOL ROAD, 7117 E. 3RD AVENUE, SCOTTSDALE, AZ, 85251
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DESIGNED: _____	DATE: 10/07/2021
QC: _____	DATE: _____
FINAL DC: _____	DATE: _____
PROJ. MGR.: _____	DATE: 10/11/2021
ISSUED FOR: DRB	DATE: _____
REVISION NO.: _____	DATE: _____
JOB NO.: 200504	SHEET TITLE: FLO-2D MAP
PAGE NO.: OF 15	SHEET NO.: EXHIBIT F

KIMSEY HOTEL & APARTMENT
 7110 E. INDIAN SCHOOL ROAD, 7117 E. 3RD AVENUE.
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PROPOSED CONDITIONS ROOF AREA EXHIBIT

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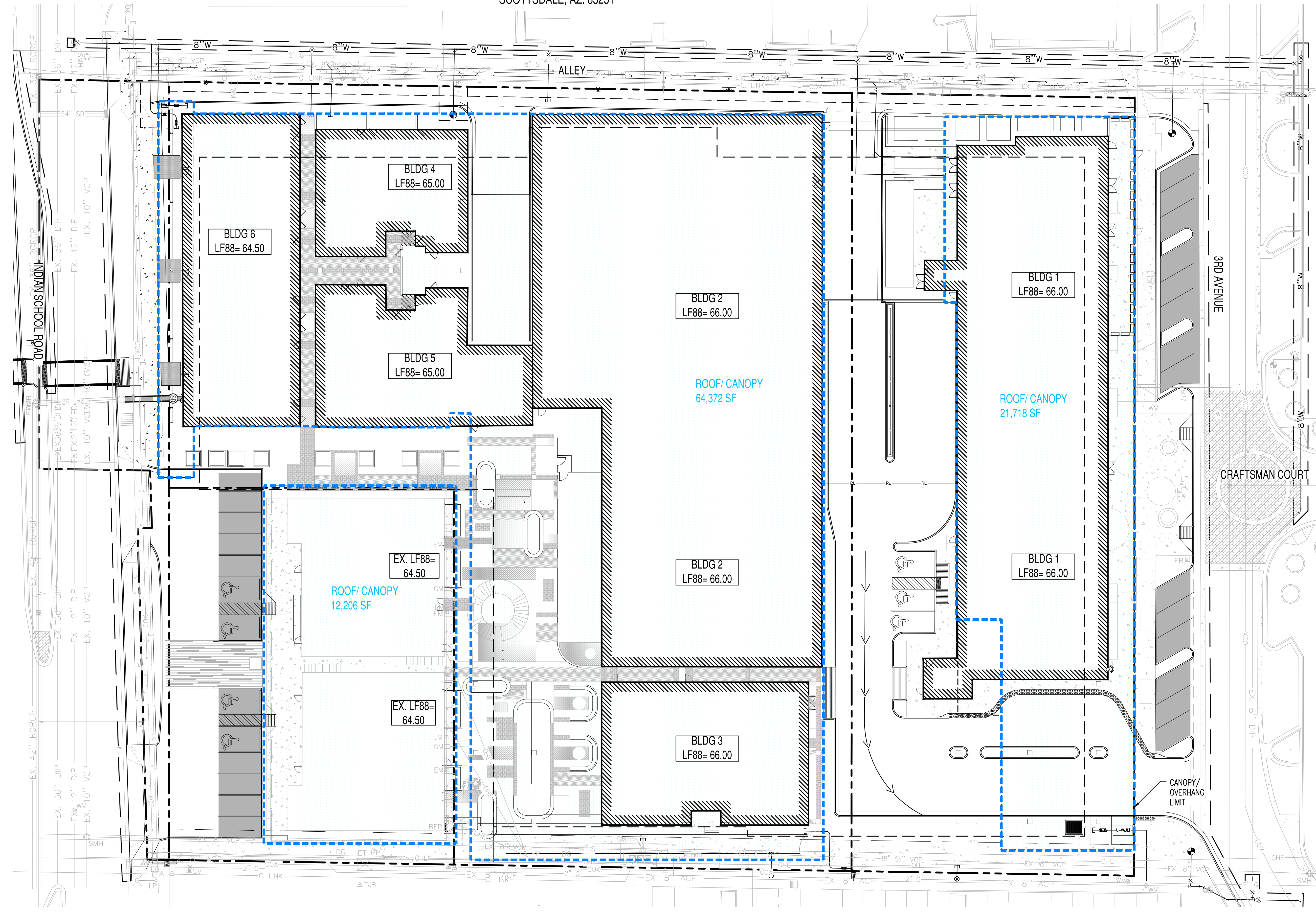


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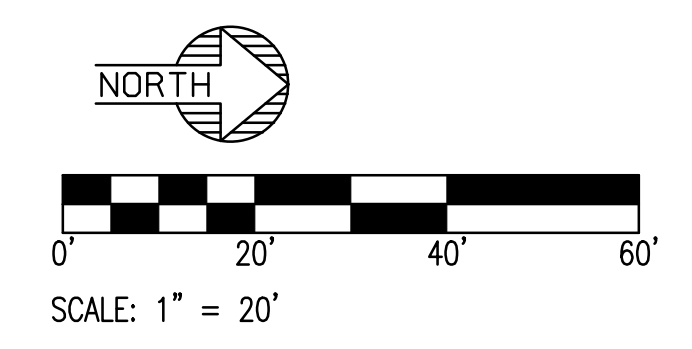


ARIZONA
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PROJECT: KIMSEY HOTEL & APARTMENT	LOCATION: 7110 E. INDIAN SCHOOL ROAD, 7117 E. 3RD AVENUE, SCOTTSDALE, AZ. 85251
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QC:	
FINAL QC:	
PROJ. MGR.: AF	10/11/2021
DATE:	10/11/2021
ISSUED FOR:	DRB
REVISION NO.:	DATE:
JOB NO.:	200504
SHEET TITLE:	PROPOSED CONDITIONS ROOF AREA EXHIBIT
PAGE NO.:	SHEET NO.:
	EXHIBIT E



- ON-SITE ROOF/ CANOPY AREA = 98,296 (2.26 AC)
- ON-SITE FIRST FLUSH AREA = 39,921 (0.92 AC)
- TOTAL DISTURBED AREA = 138,117 (3.18 AC)



LOCATION: Z:\SHARED\PROJECTS\GENSLER\HOJO APARTMENTS SCOTTSDALE 200504\11 CAD (SEC)\11.3 CD\S\200504-CD-EXHIBIT E.DWG SAVED BY: LAPTOP02 DATE: 10/8/2021

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KIMSEY HOTEL & APARTMENT

7110 E. INDIAN SCHOOL ROAD, 7117 E. 3RD AVENUE.
SCOTTSDALE, AZ. 85251

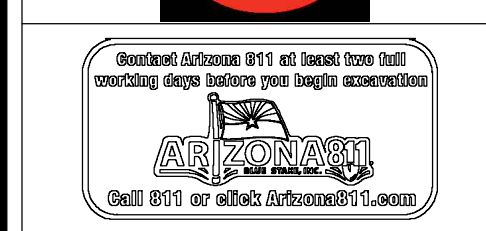
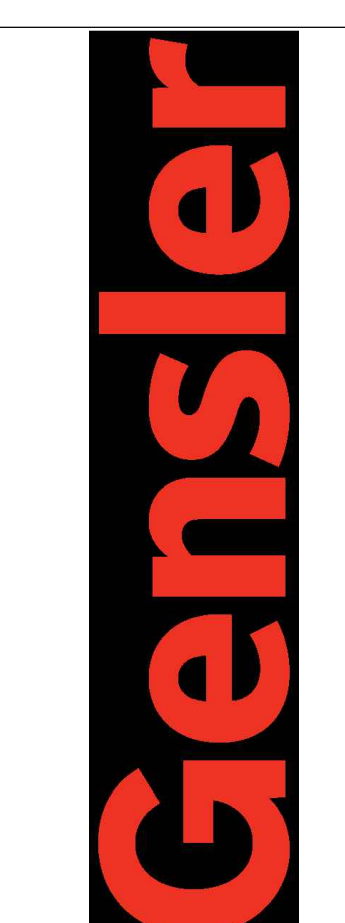
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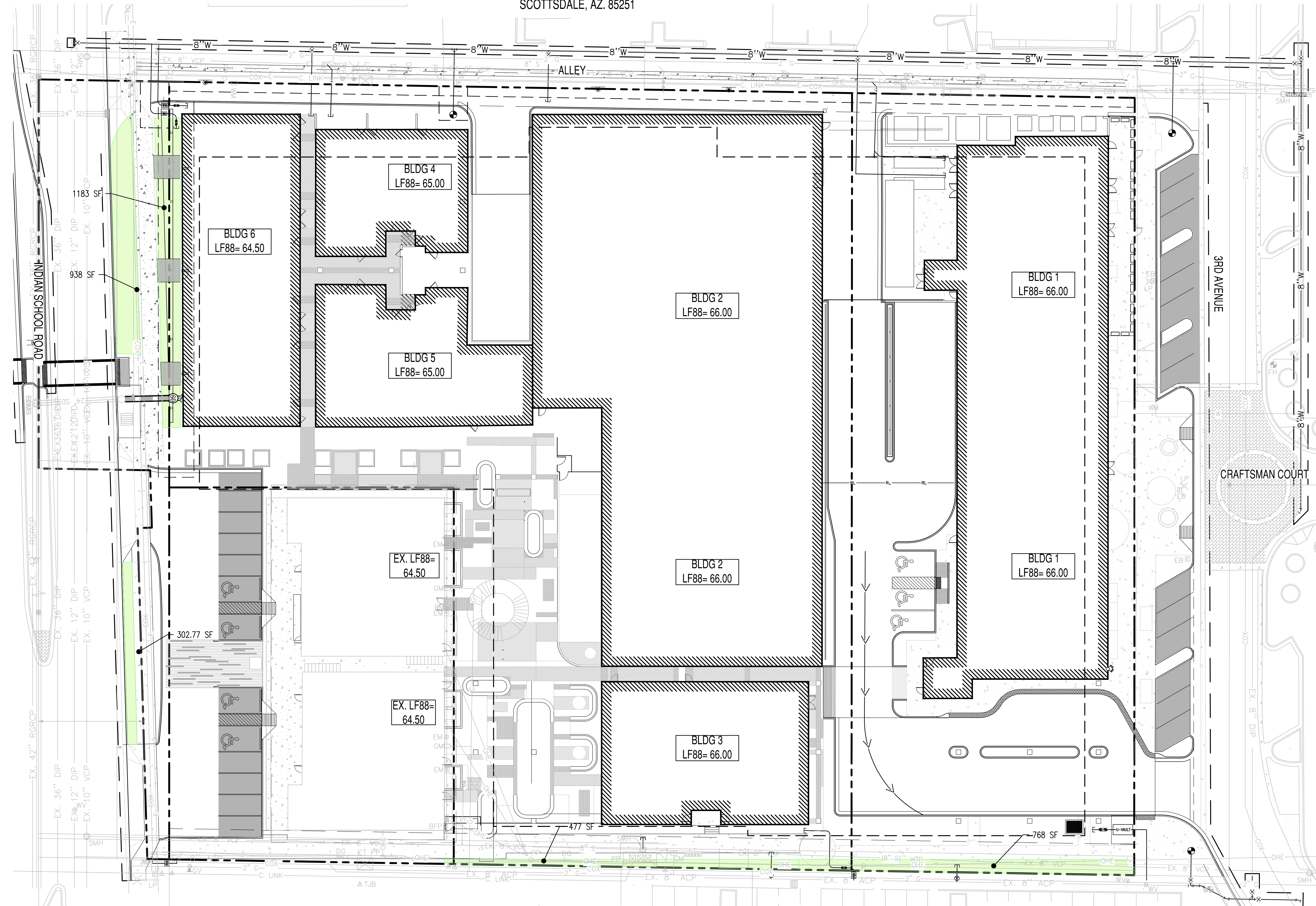
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DATE:
JOB NO.: 200504

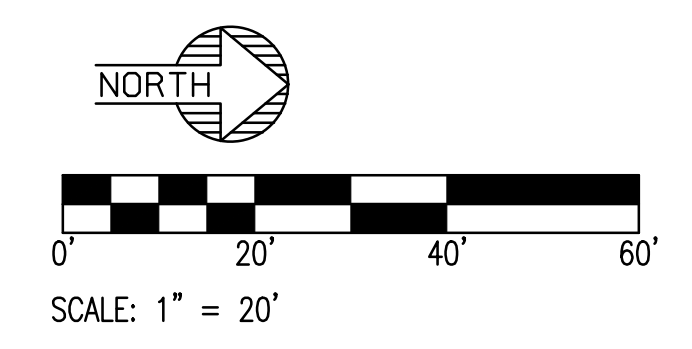
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PAGE NO.:
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	ON-SITE PERVIOUS =	0.07 AC	@ Cwt=0.45
	ON-SITE IMPERVIOUS =	3.11 AC	@ Cwt=0.95
	TOTAL Cwt	= 3.18 AC	@ Cwt=0.94



KIMSEY HOTEL & APARTMENT
 7110 E. INDIAN SCHOOL ROAD, 7117 E. 3RD AVENUE.
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PROPOSED CONDITIONS DRAINAGE AREA MAP

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QC		
FINAL QC		
PROJ. MGR.	AF	10/11/2021

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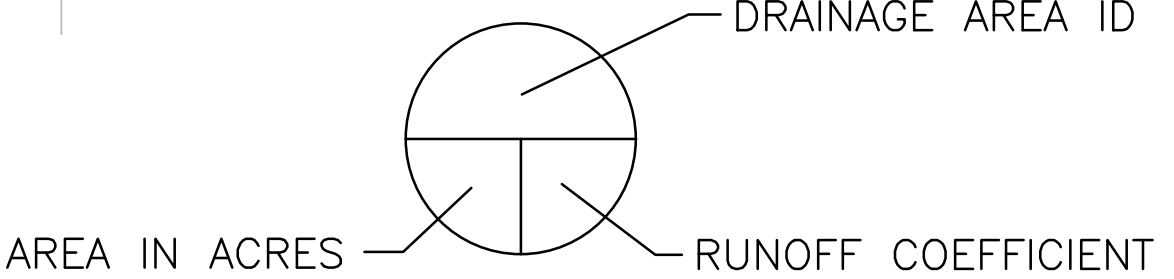
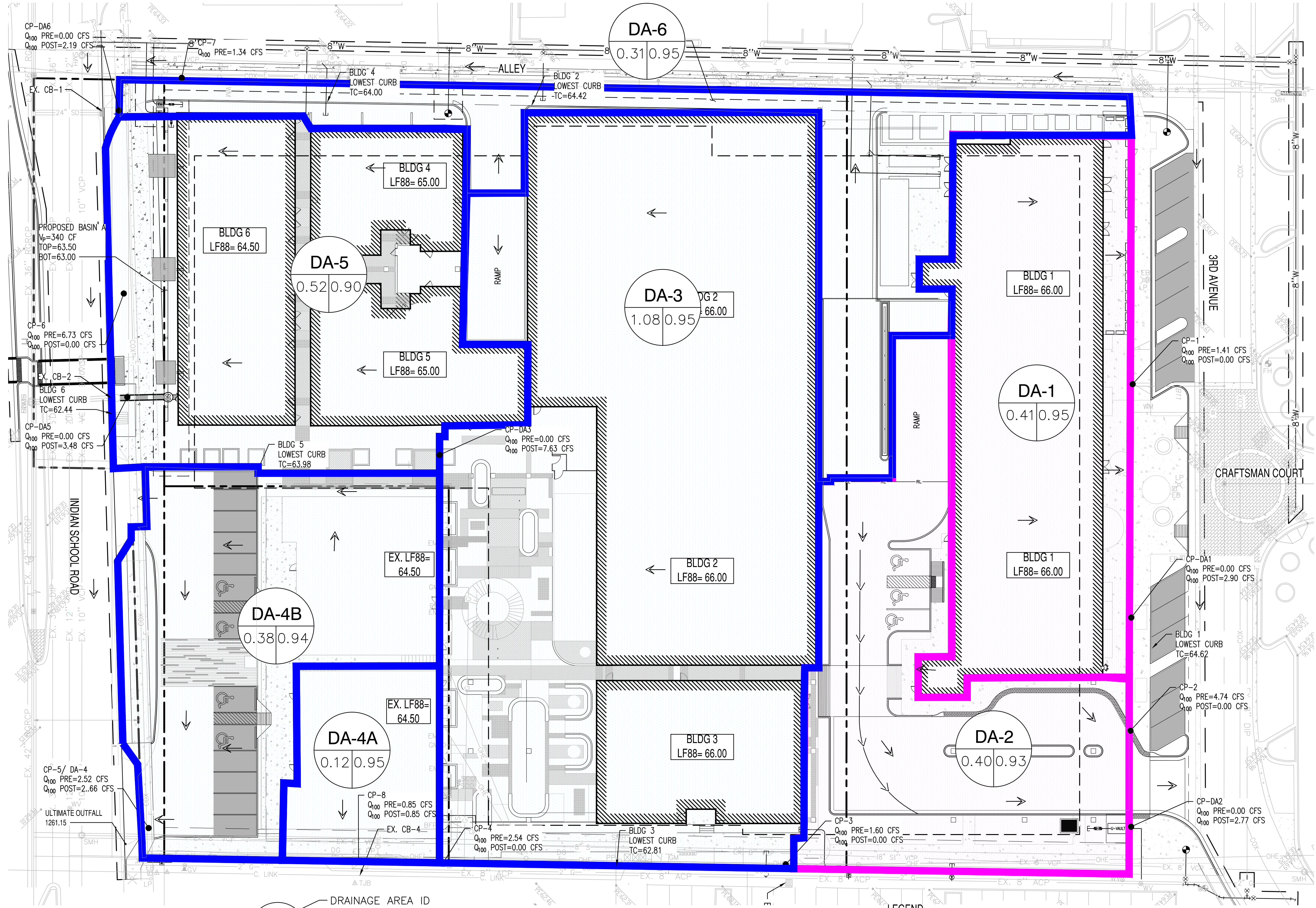
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SHEET TITLE: PROPOSED CONDITION DRAINAGE AREA MAP

PAGE NO.: SHEET NO.: EXHIBIT D

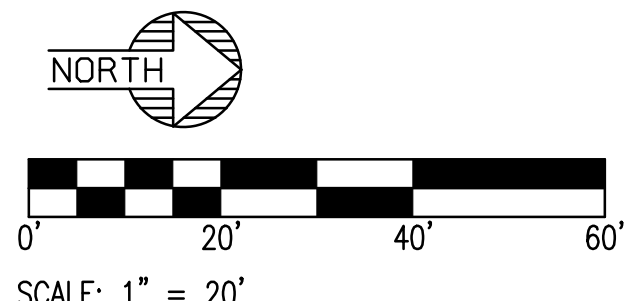
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DRAINAGE AREA KEY

- LEGEND**
- █ DRAINAGE AREAS CONTRIBUTING TO 3RD AVE
 - █ DRAINAGE AREAS CONTRIBUTING TO INDIAN SCHOOL RD
 - ← FLOW ARROW



36" at S=0.0063 ft/ft; d/D=1.0

Project Description	
Friction Method	Manning Formula
Solve For	Discharge

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.006 ft/ft
Normal Depth	36.0 in
Diameter	36.0 in

Results	
Discharge	52.94 cfs
Flow Area	7.1 ft ²
Wetted Perimeter	9.4 ft
Hydraulic Radius	9.0 in
Top Width	0.00 ft
Critical Depth	28.4 in
Percent Full	100.0 %
Critical Slope	0.007 ft/ft
Velocity	7.49 ft/s
Velocity Head	0.87 ft
Specific Energy	3.87 ft
Froude Number	(N/A)
Maximum Discharge	56.94 cfs
Discharge Full	52.94 cfs
Slope Full	0.006 ft/ft
Flow Type	Undefined

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Average End Depth Over Rise	0.0 %
Normal Depth Over Rise	100.0 %
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	36.0 in
Critical Depth	28.4 in
Channel Slope	0.006 ft/ft
Critical Slope	0.007 ft/ft

48" at S=0.0063 ft/ft; d/D=1.0

Project Description	
Friction Method	Manning Formula
Solve For	Discharge

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.006 ft/ft
Normal Depth	48.0 in
Diameter	48.0 in

Results	
Discharge	114.01 cfs
Flow Area	12.6 ft ²
Wetted Perimeter	12.6 ft
Hydraulic Radius	12.0 in
Top Width	0.00 ft
Critical Depth	38.7 in
Percent Full	100.0 %
Critical Slope	0.007 ft/ft
Velocity	9.07 ft/s
Velocity Head	1.28 ft
Specific Energy	5.28 ft
Froude Number	(N/A)
Maximum Discharge	122.64 cfs
Discharge Full	114.01 cfs
Slope Full	0.006 ft/ft
Flow Type	Undefined

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

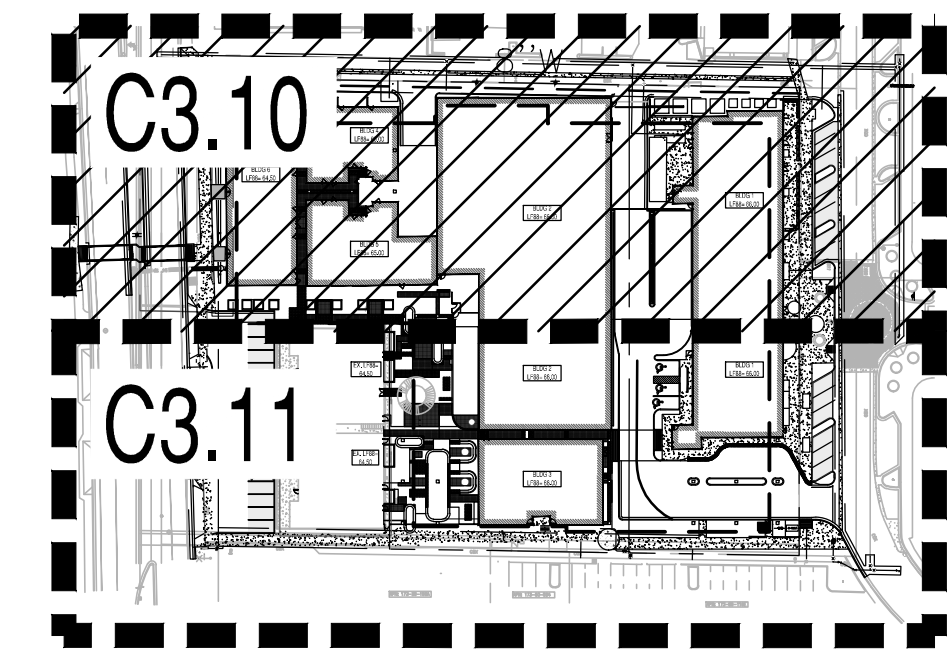
GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Average End Depth Over Rise	0.0 %
Normal Depth Over Rise	100.0 %
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	48.0 in
Critical Depth	38.7 in
Channel Slope	0.006 ft/ft
Critical Slope	0.007 ft/ft

APPENDIX III

Preliminary Grading and Drainage Plans

KIMSEY HOTEL & APARTMENTS GRADING & DRAINAGE PLAN

7110 E. INDIAN SCHOOL ROAD, 7117 E. 3RD AVENUE. SCOTTSDALE, AZ. 85251



KEY MAP
N.T.S. NORTH

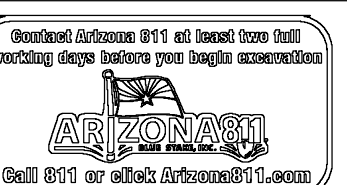
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PROJECT:
KIMSEY HOTEL &
APARTMENTS

LOCATION:
7110 E. INDIAN SCHOOL
ROAD, 7117 E. 3RD AVENUE,
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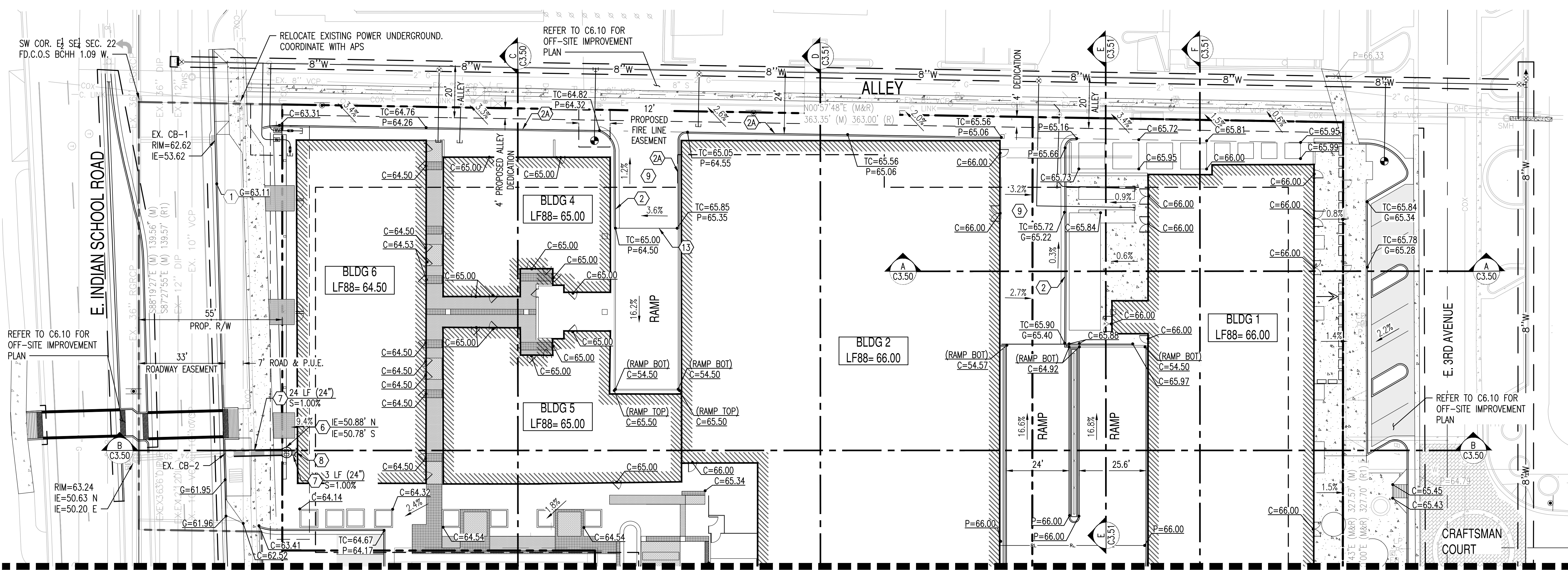
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JOB NO.: 200504
SHEET TITLE:

GRADING &
DRAINAGE PLAN

PAGE NO.: 4 OF 16
SHEET NO.: C3.10



MATCHLINE - REFER TO SHEET C3.11

EXISTING LEGEND:

--- XXXX ---	EX. MAJOR CONTOURS	EX. S	SEWER LINE	--- S ---	STORM DRAIN LINE	●	SIGN
--- XXXX ---	EX. MINOR CONTOURS	(S)	SEWER MANHOLE	--- CB ---	STORM CATCH BASIN	○	STREET LIGHT
TC:XX.XX GE:XX.XX	EX. SPOT ELEVATION	EX. W	WATER LINE	○	STORM MANHOLE	○	TREE
---	EASEMENT LINE AS NOTED	WV ⊗	WATER VALVE	---	GAS LINE	○	ROAD CENTERLINE
		+	FIRE HYDRANT	---	FENCE	---	

PROPOSED GRADING LEGEND:

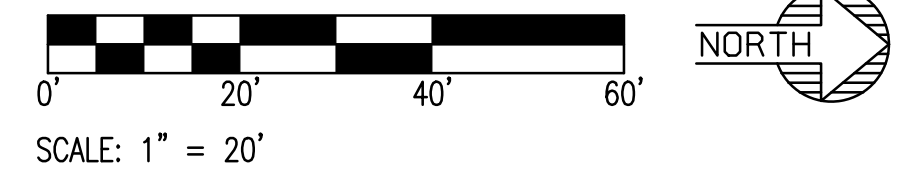
G=XX.XX	GUTTER ELEVATION, TC = G+0.5'	---	PROPERTY LINE	---	LOC	---	LIMIT OF ONSITE CONSTRUCTION
P=XX.XX	PAVEMENT ELEVATION	---	CURB AND GUTTER	---	XX	---	MAJOR CONTOUR
C=XX.XX	CONCRETE ELEVATION	---	VERTICAL CURB	---	XX	---	MINOR CONTOUR
		---	RL	---	---	---	FLOW ARROW
		---	UNDERGROUND GARAGE LIMITS			---	

GRADING CONSTRUCTION KEY NOTES

- 1 MATCH EXISTING GRADE; CONTRACTOR TO VERIFY IN FIELD ALL GRADES PRIOR TO CONSTRUCTION ACTIVITIES AND CONTACT ENGINEER IN CASE OF ANY DISCREPANCIES.
- 2 CONSTRUCT 6" CONCRETE CURB AND GUTTER PER MAG STD. DET. 220-1 TYPE "A".
- 2A CONSTRUCT 6" SINGLE CURB PER MAG STD. DET. 222 TYPE "b".
- 6 FURNISH AND INSTALL PRECAST MANHOLE WITH 48-INCH BASE PER MAG STD. DET. 520 AND 522 WITH CONCRETE COLLAR PER MAG STD. DET. 422; COVER PER C.O.S. STD. DET. 2520
- 7 FURNISH AND INSTALL HDPE DOUBLE WALL PIPE, CLASS 100; PIPE MATERIAL PER MAG SPECIFICATION 738. LENGTH, SIZE AND SLOPE PER PLAN.
- 8 ROOF DRAIN CONNECTION TO BUILDING. REFER TO PLUMBING PLANS FOR CONTINUATION.
- 13 CONSTRUCT PAVEMENT TRANSITION PER DET. 5/C3.20.

NOTE:

1. EXISTING MANHOLES RIMS AND INVERTS HAS BEEN SET BASED ON THE SURVEY RECEIVED FROM 3 ENGINEERS, LLC. DATED 02/13/20.
2. EXISTING MANHOLES RIMS AND INVERTS HAS BEEN SET BASED ON QUARTER SECTION MAP OS# 17-44. DATED 06/11/20.
3. SOIL NAILS SHALL NOT PROTRUDE INTO EASEMENTS OR RIGHT OF WAY WHERE THE UNDERGROUND GARAGE ABUTS ANY OF THESE AREAS.

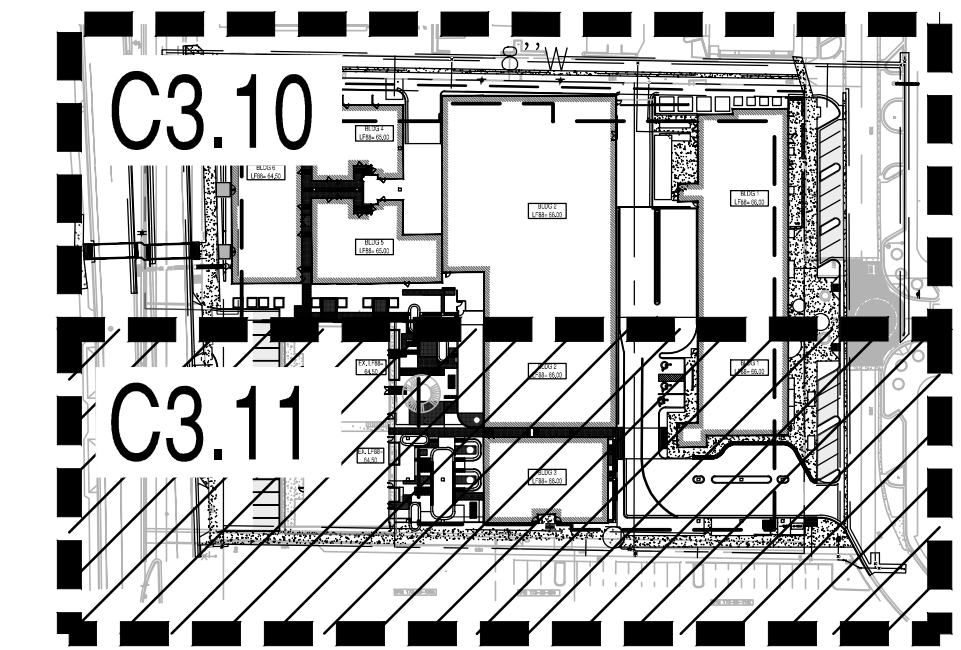


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KIMSEY HOTEL & APARTMENTS GRADING & DRAINAGE PLAN

7110 E. INDIAN SCHOOL ROAD, 7117 E. 3RD AVENUE. SCOTTSDALE, AZ. 85251



KEY MAP
N.T.S. NORTH

NOT FOR
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PROJECT:
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APARTMENTS
LOCATION:
7110 E. INDIAN SCHOOL
ROAD, 7117 E. 3RD AVENUE,
SCOTTSDALE, AZ. 85251

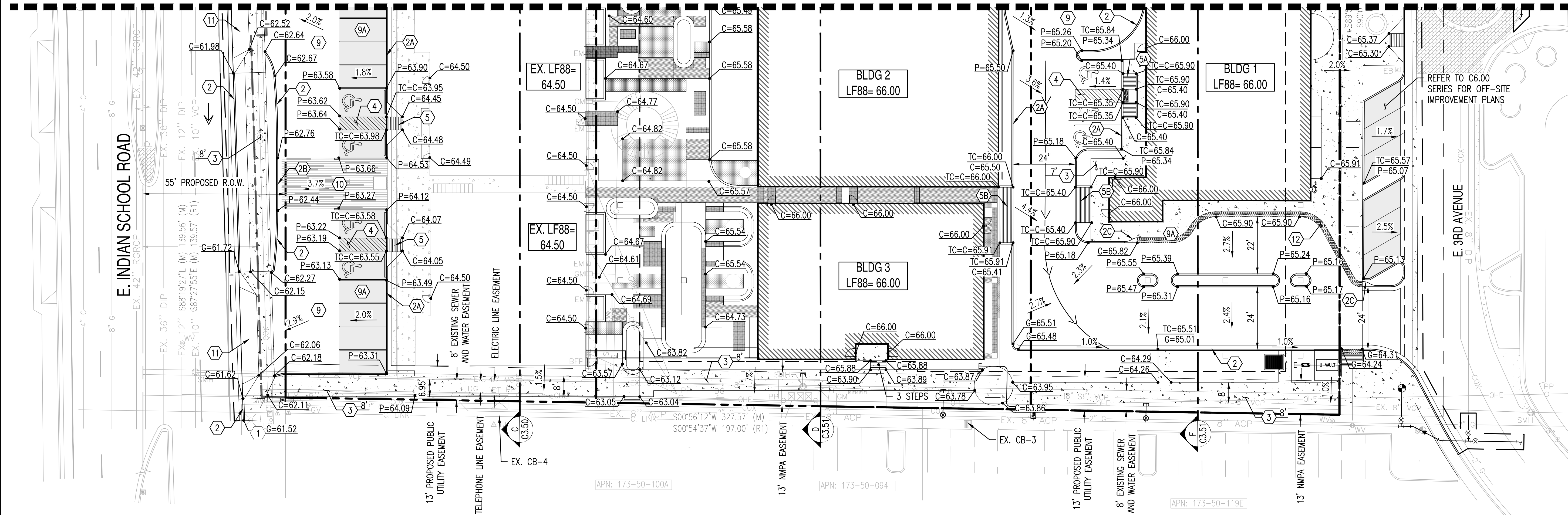
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JOB NO.: 200504
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**GRADING &
DRAINAGE PLAN**

PAGE NO.: 5 OF 16
SHEET NO.: C3.11

MATCHLINE - REFER TO SHEET C3.10



EXISTING LEGEND:

--- XXXX ---	EX. MAJOR CONTOURS	EX. S	SEWER LINE	--- ---	STORM DRAIN LINE	---	SIGN
--- XXXX ---	EX. MINOR CONTOURS	⊙	SEWER MANHOLE	CB	STORM CATCH BASIN	---	STREET LIGHT
TC:XX.XX GE:XX.XX	EX. SPOT ELEVATION	EX. W	WATER LINE	⊙	STORM MANHOLE	---	TREE
---	EASEMENT LINE AS NOTED	WV	WATER VALVE	---	GAS LINE	---	ROAD CENTERLINE
		+	FIRE HYDRANT	---	FENCE	---	

PROPOSED GRADING LEGEND:

G=XX.XX	GUTTER ELEVATION, TC = G+0.5'	---	PROPERTY LINE	---	LOC	---	LIMIT OF ONSITE CONSTRUCTION	---	STORM PIPE	
P=XX.XX	PAVEMENT ELEVATION	---	CURB AND GUTTER	XX	---	XX	MAJOR CONTOUR	---	⊙	STORM MANHOLE
C=XX.XX	CONCRETE ELEVATION	---	VERTICAL CURB	XX	---	XX	MINOR CONTOUR	---	---	CONCRETE PAVEMENT
		---	RL	---	---	---	FLOW ARROW	---	---	HEAVY DUTY PAVEMENT
		---	UNDERGROUND GARAGE	---	---	---		---	---	LIGHT DUTY PAVEMENT

GRADING CONSTRUCTION KEY NOTES

- 1 MATCH EXISTING GRADE; CONTRACTOR TO VERIFY IN FIELD ALL GRADES PRIOR TO CONSTRUCTION ACTIVITIES AND CONTACT ENGINEER IN CASE OF ANY DISCREPANCIES.
- 2 CONSTRUCT 6" CONCRETE CURB AND GUTTER PER MAG STD. DET. 220-1 TYPE "A".
- 2A CONSTRUCT 6" SINGLE CURB PER MAG STD. DET. 222 TYPE "B".
- 2B CONSTRUCT FLUSH CURB PER DET. 6/C3.20.
- 2C 5' TRANSITION PAVEMENT UP TO CURB FROM 6" REVEAL TO 0" REVEAL.
- 3 CONSTRUCT CONCRETE SIDEWALK PER MAG STD. DET. 230. WIDTH PER PLAN.
- 4 CONSTRUCT PAVEMENT WITH 2% MAXIMUM SLOPE IN ANY DIRECTION AT ACCESSIBLE PARKING STALLS AND 2% MAXIMUM CROSS SLOPE AT ADA ACCESSIBLE ROUTE.
- 5 CONSTRUCT ADA RAMP PER DET. 1/C3.20.
- 5A CONSTRUCT ADA RAMP PER DET. 2/C3.20.
- 5B CONSTRUCT ADA RAMP PER DET. 3/C3.20.
- 9 CONSTRUCT HEAVY DUTY ASPHALT PAVEMENT PER DET. 4/C3.20.
- 9A CONSTRUCT LIGHT DUTY ASPHALT PAVEMENT PER DET. 4/C3.20.
- 10 CONSTRUCT STAMPED CONCRETE. REFER TO LANDSCAPE PLANS.
- 11 CONSTRUCT MODIFIED DRIVEWAY ENTRANCE PER C.O.S. STD. DET. 2256 CL-1. WIDTH PER PLAN.
- 12 INSTALL 24" TRUNCATED DOME/DETECTABLE WARNING (NO RAMP) PER C.O.S. STD. DET. 2231.

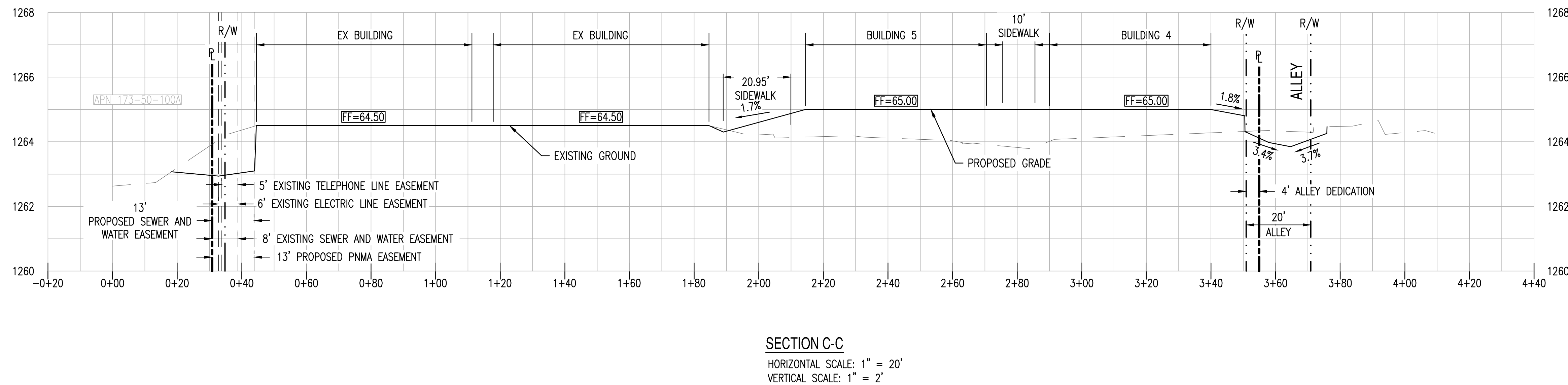
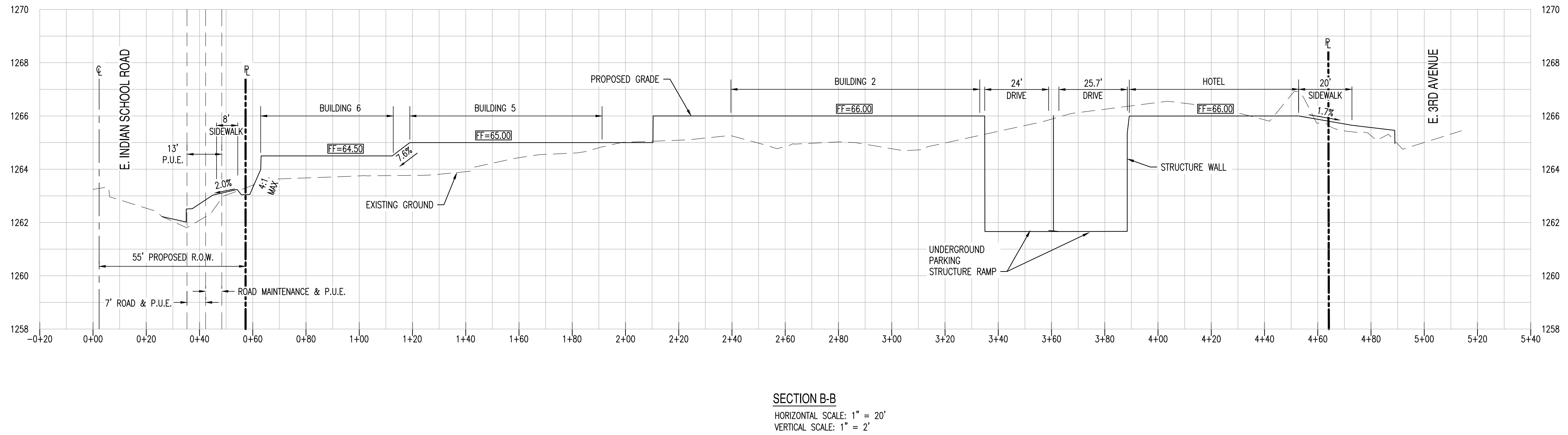
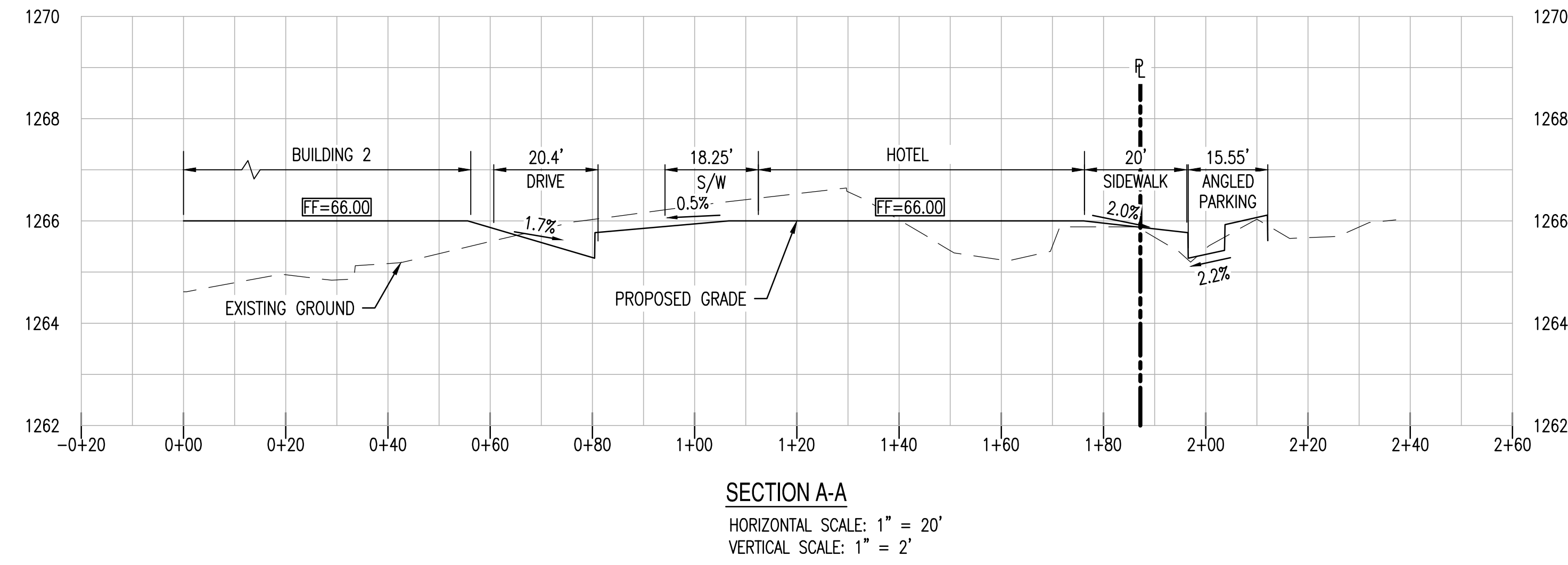
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3. SOIL NAILS SHALL NOT PROTRUDE INTO EASEMENTS OR RIGHT OF WAY WHERE THE UNDERGROUND GARAGE ABUTS ANY OF THESE AREAS.

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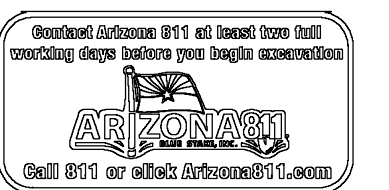
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PROJECT: KINSEY HOTEL & APARTMENTS
 LOCATION: 7110 E. INDIAN SCHOOL ROAD, 7117 E. 3RD AVENUE, SCOTTSDALE, AZ, 85251

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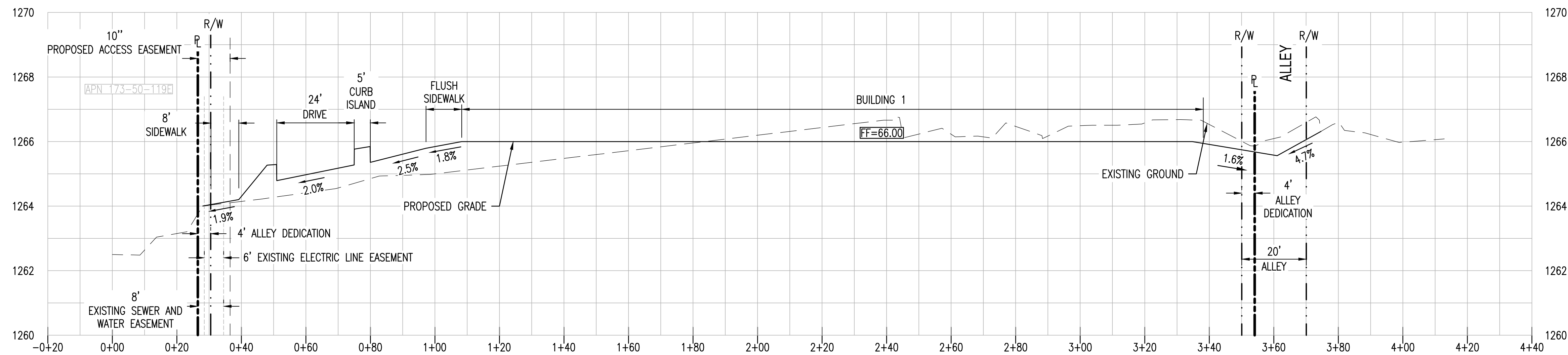
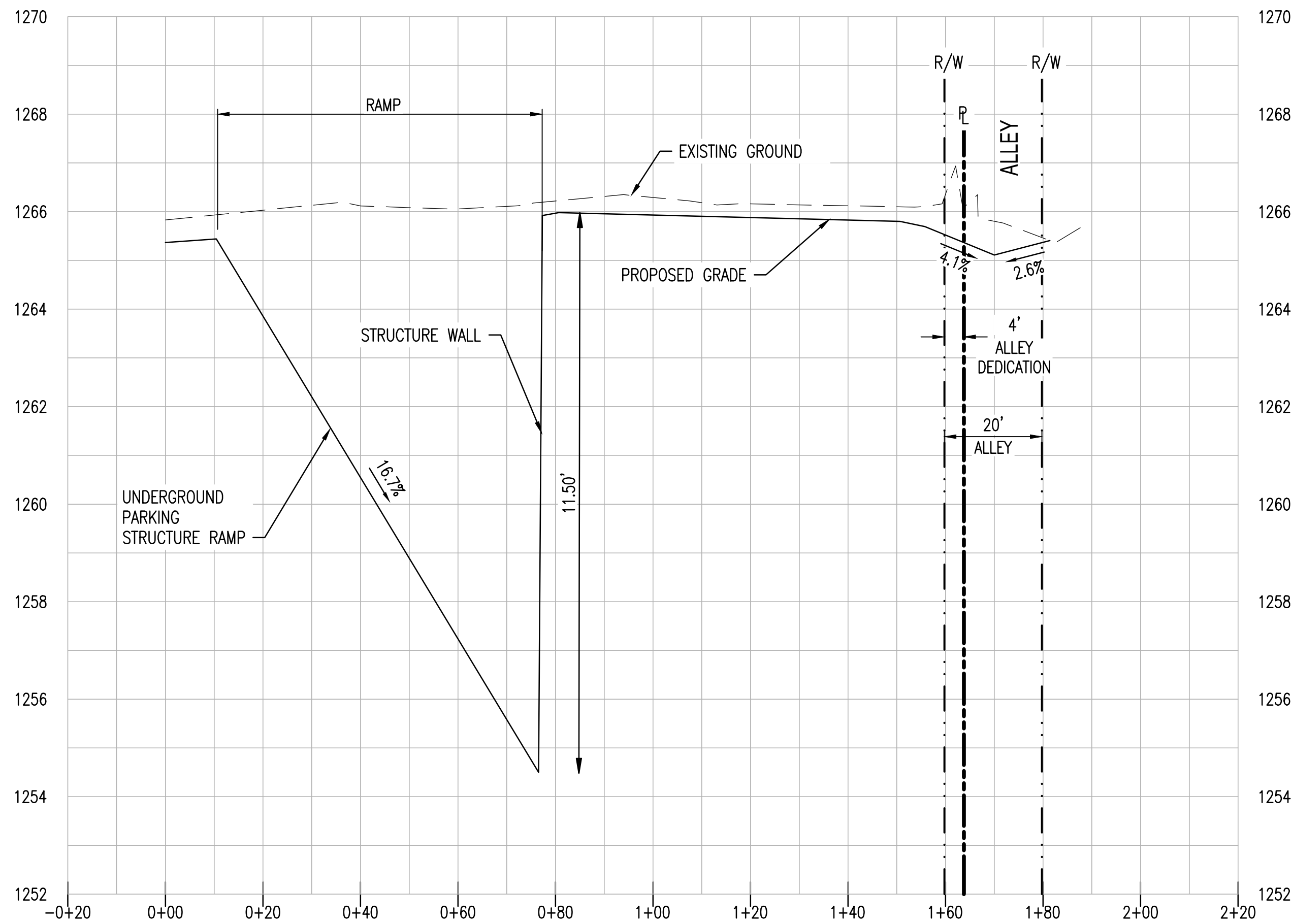
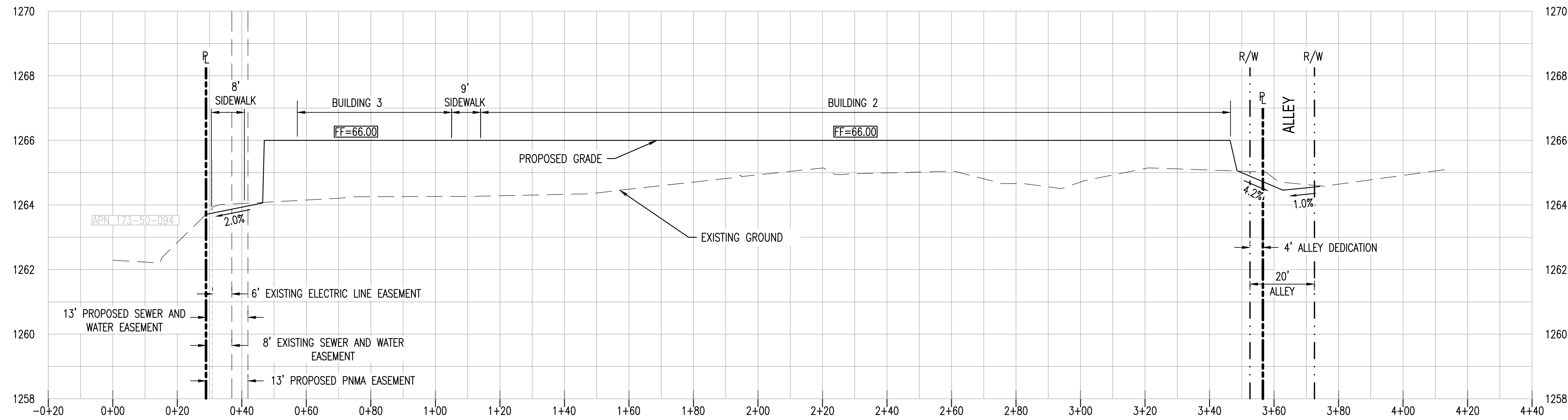
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SUSTAINABILITY ENGINEERING GROUP

SEG



Gensler



PROJECT: KINSEY HOTEL & APARTMENTS

LOCATION: 7110 E. INDIAN SCHOOL ROAD, 7117 E. 3RD AVENUE, SCOTTSDALE, AZ, 85251

DRAWN: LP 10/07/2021
 DESIGNED: LP 10/07/2021
 QC: SC 10/11/2021
 FINAL QC: SC 10/11/2021
 PROJ. MGR: AF 10/11/2021

DATE: 10/11/2021

ISSUED FOR: OWNER REVIEW

REVISION NO.	DATE

JOB NO.: 200504

SHEET TITLE: CROSS SECTIONS

PAGE NO.: 8 OF 16
 SHEET NO.: C3.51

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APPENDIX IV

Site Visit Photos

EAST BOUNDARY SITE PHOTOS 8/27/2020



NORTHEAST BOUNDARY OF PARCEL 173-50-119E



PARCEL 173-50-119E EXISTING INLET STRUCTURE, EX. CB-3



EAST BOUNDARY BETWEEN PARCELS 173-50-108A AND 173-50-094 LOOKING NORTH



EAST BOUNDARY BETWEEN PARCELS 173-50-108A AND 173-50-094 LOOKING SOUTH



SOUTHEAST BOUNDARY BETWEEN PARCELS
173-50-108A AND 173-50-100A LOOKING NORTH



SOUTHEAST BOUNDARY BETWEEN THE TRIANGLE
BUILDING AND PARCEL 173-50-100A LOOKING NORTH



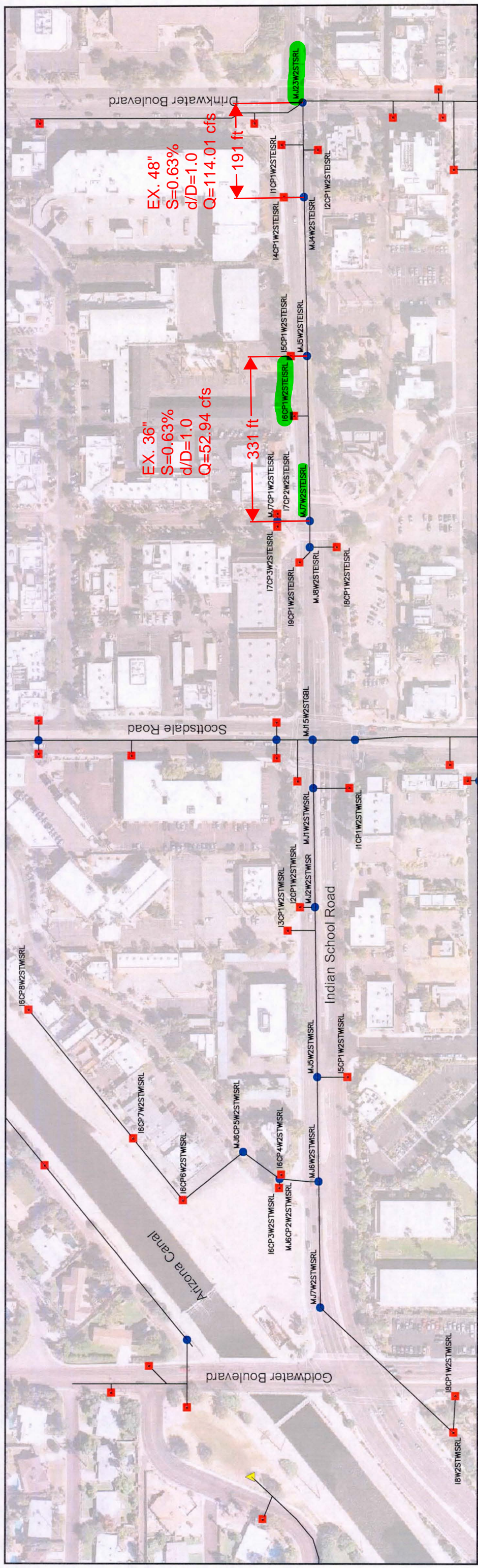
SOUTHWEST CORNER OF PARCEL 173-50-100A



EXISTING INLET, EX. CB-4, IN PARCEL 173-50-100A

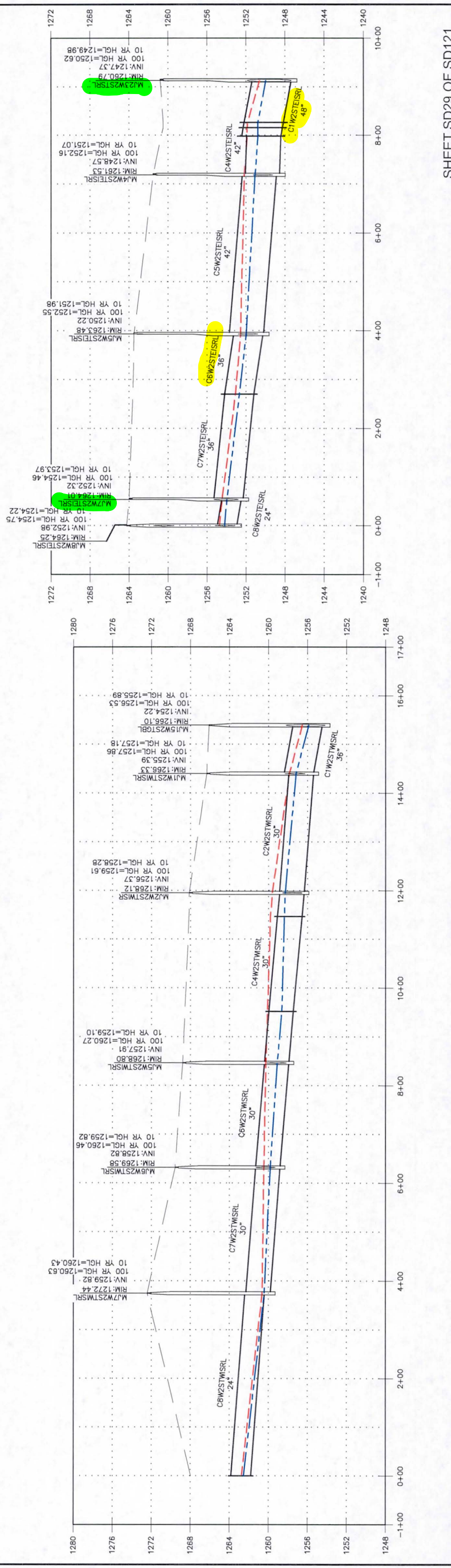
APPENDIX V

Lower Indian Bend Wash ADMP Excerpt



EX. 36"
S=0.63%
d/D=1.0
Q=52.94 cfs

EX. 48"
S=0.63%
d/D=1.0
Q=114.01 cfs



**LOWER INDIAN BEND WASH ADMS/P
STUDY AREA-SOUTH**

SHEET SD29 OF SD121

Legend (Plan)

- Inlet & SWMM Identifier
- Manhole & SWMM Identifier
- Outlet & SWMM Identifier
- Storm Drain Pipes

Legend (Profile)

- Ground Elevation
- Hydraulic Grade Line (100yr. 6-hr)
- Hydraulic Grade Line (10yr. 6-hr)

Gavan & Barker
Civil Engineers & Architects, Inc.
3333 North Central Avenue, Suite 1338
Phoenix, AZ 85012 Phone: 602.955.0001

TYLIM INTERNATIONAL
engineers, planners, scientists

Flood Control District

SWMM Outfall:
W2STBOUTFALL
(West 2nd Street S.D. Outfall)

Prepared	By	Date
Checked	AJA	12/18/2017
	MITG	12/18/2017

Inlet Summary Table

SWM M Name	Connector Pipe	Curb High / Soffit High Inflow (cfs)	FLO-2D/SWMM Model							
			100-yr, 24-hr		100-yr, 6-hr		10-yr, 24-hr		10-yr, 6-hr	
			Inflow (cfs)	Pipe Max (cfs)	Inflow (cfs)	Pipe Max (cfs)	Inflow (cfs)	Pipe Max (cfs)	Inflow (cfs)	Pipe Max (cfs)
I32CPW2ST	C32CPW2ST	14.4	0.5	0.5	0.5	0.3	0.3	0.4	0.4	
I32CP2W2ST	C32CP2W2ST	14.4	0.9	0.9	10	0.6	0.6	0.7	0.7	
I2CPW2STSR	C2CPW2STSR	7.2	4.9	4.9	54	3.4	3.4	4.0	4.0	
I1CPW2STSR	C1CPW2STSR	7.2	15	14	30	0.5	0.5	0.6	0.6	
I4CPW2STSR	C4CPW2STSR	7.2	56	56	64	2.5	2.5	3.5	3.5	
I6CPW2STSR	C6CPW2STSR	4.8	15	15	17	10	10	12	12	
I7CPW2STSR	C7CPW2STSR	9.6	7.3	7.3	8.6	4.0	4.0	5.1	5.0	
I8CPW2STSR	C8CPW2STSR	4.8	0.7	0.7	0.8	10	0.4	0.5	0.5	
I9CPW2STSR	C9CPW2STSR	4.8	0.9	0.9	18	0.6	0.6	0.7	0.7	
I5CP2W2STSR	C5CP2W2STSR	9.6	6.7	6.7	8.1	3.8	3.8	4.7	4.7	
I5CP3W2STSR	C5CP3W2STSR	14.4	44.8	44.7	156	11.4	11.4	12.7	12.7	
I2ICP1W2STSR	C2ICP1W2STSR	12.0	4.7	4.6	59	5.8	2.7	3.3	3.3	
I20CP1W2STSR	C20CP1W2STSR	12.0	2.7	2.7	4.0	4.0	15	18	18	
I8CPW2STSR	C8CPW2STSR	12.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
I7CPW2STSR	C7CPW2STSR	4.8	1.1	1.1	13	0.6	0.6	0.7	0.7	
I6CPW2STSR	C6CPW2STSR	4.8	1.9	1.9	2.2	0.9	0.9	1.1	1.1	
I5CPW2STSR	C5CPW2STSR	4.8	4.0	4.0	4.2	2.9	2.9	3.3	3.3	
I4CPW2STSR	C4CPW2STSR	4.8	2.0	2.0	3.0	0.3	0.3	0.4	0.4	
I3CPW2STSR	C3CPW2STSR	7.2	3.3	3.2	3.8	16	15	2.0	2.0	
I10CP2W2STSR	C10CP2W2STSR	12.0	13.8	13.8	150	6.7	6.7	9.2	9.2	
I10CP3W2STSR	C10CP3W2STSR	12.0	12	12	3.2	3.1	0.5	0.6	0.6	
I2CP1W2STSR	C2CP1W2STSR	12.0	16	15	2.1	2.0	0.7	0.9	0.9	
I8CP2W2STSR	C8CP2W2STSR	14.4	8.4	8.3	9.9	9.8	5.3	6.2	6.2	
I8CPW2STSR	C8CPW2STSR	8.7	1.1	9.4	14	11.2	0.5	5.7	6.8	
I20CPW2ST	C20CPW2ST	32.2	1.1	1.1	2.0	2.3	0.3	0.5	0.5	
I2ICP1W2ST	C2ICP1W2ST	32.2	9.7	9.7	14.5	3.5	3.5	5.3	5.3	
I20CP2W2ST	C20CP2W2ST	32.2	0.8	0.8	16	0.3	0.3	0.4	0.4	
I1W2STBAL	C1W2STBAL	32.2	119	29.0	15.8	34.7	5.5	7.3	23.4	
I24CP2W2ST	C24CP2W2ST	2.6	16	16	2.0	2.0	10	12	12	
I24CP4W2ST	C24CP4W2ST	2.6	19	19	2.3	2.2	1.1	1.4	1.4	
I33CPW2ST	C33CPW2ST	20.0	15	15	19	0.9	0.9	1.1	1.1	
I34CPW2ST	C34CPW2ST	20.0	13	12	16	0.7	0.7	0.9	0.9	
I35CPW2ST	C35CPW2ST	20.0	18	18	2.3	2.3	10	12	12	
I37CPW2ST	C37CPW2ST	32.2	8.9	8.9	10.4	5.8	5.8	7.0	7.0	
I37CP2W2ST	C37CP2W2ST	32.2	3.0	3.0	3.6	18	18	2.2	2.2	
I36CPW2ST	C36CPW2ST	20.0	8.7	8.7	10.6	4.7	4.7	6.1	6.1	
I43CPW2ST	C43CPW2ST	32.2	110	110	13.2	13.1	5.5	6.7	6.7	
I47CPW2ST	C47CPW2ST	32.2	58	58	6.7	6.7	3.7	4.5	4.5	
I46CPW2ST	C46CPW2ST	17.4	16	16	2.0	2.0	0.8	1.1	1.1	
I2CPW2ST69STL	C2CPW2ST69STL	2.6	0.9	0.9	10	0.5	0.5	0.6	0.6	
I1CPW2ST69STL	C1CPW2ST69STL	2.6	3.1	3.1	3.2	1.7	1.7	2.0	2.0	
I9CPW2STBAL	C9CPW2STBAL	2.6	18	3.9	3.2	6.2	19	3.7	4.0	
I9CP2W2STBAL	C9CP2W2STBAL	2.6	19	2.0	3.1	3.0	2.0	2.0	2.1	
I7CPW2STBAL	C7CPW2STBAL	2.6	2.0	1.9	2.6	2.5	4.3	1.9	2.1	
I4CPW2STBAL	C4CPW2STBAL	3.6	5.5	5.4	5.9	5.4	5.3	5.4	5.3	

INLET SUMMARY TABLE NOTES:

- The curb high/soffit high inflow discharge were calculated according to the procedures outlined in the District's Hydraulics Manual.
- The inflow discharge is the peak hydrograph discharge taken from the SWMMQIN.OUT file.
- The pipe Max Discharge is the peak hydrograph discharge taken from the 'Link Results' in the SWMM.RTP file.

Inlet Summary Table

SWM M Name	Connector Pipe	Curb High / Soffit High Inflow (cfs)	FLO-2D/SWMM Model							
			100-yr, 24-hr		100-yr, 6-hr		10-yr, 24-hr		10-yr, 6-hr	
			Inflow (cfs)	Pipe Max (cfs)	Inflow (cfs)	Pipe Max (cfs)	Inflow (cfs)	Pipe Max (cfs)	Inflow (cfs)	Pipe Max (cfs)
I2CPW2STSR	C2CPW2STSR	17.4	7.9	7.9	10.5	10.6	3.1	3.1	4.5	4.5
I1CPW2STSR	C1CPW2STSR	20.0	10.1	10.0	13.1	13.0	3.5	3.6	5.6	5.6
I26CPW2STSR	C26CPW2STSR	4.8	5.8	5.7	7.6	7.5	3.6	3.6	4.4	4.4
I5CPW2STSR	C5CPW2STSR	13.9	7.2	7.2	7.8	7.8	5.1	5.1	6.1	6.0
I4CPW2STSR	C4CPW2STSR	20.0	14.9	14.9	17.0	17.0	10.7	10.7	12.2	12.1
I6CPW2STSR	C6CPW2STSR	3.4	3.9	3.9	4.3	4.3	2.7	2.7	3.2	3.2
I9CPW2STSR	C9CPW2STSR	17.4	7.1	7.1	8.2	8.2	5.0	5.0	5.9	5.8
I8CPW2STSR	C8CPW2STSR	3.1	2.3	2.3	2.7	2.7	1.6	1.6	1.9	1.9
I7CP2W2STSR	C7CP2W2STSR	5.2	8.5	8.5	8.9	8.8	5.5	5.5	6.2	6.2
I7CP3W2STSR	C7CP3W2STSR	13.1	10.9	10.8	12.7	12.7	7.4	7.3	8.9	8.9
I2CPW2STSR	C2CPW2STSR	7.8	7.2	7.1	8.4	8.4	4.7	4.7	5.5	5.5
I3CPW2STSR	C3CPW2STSR	5.4	9.2	9.1	10.6	10.6	5.6	5.6	7.0	6.9
I1CPW2STSR	C1CPW2STSR	4.8	3.9	3.9	4.6	4.6	2.5	2.5	2.9	2.9
I16CPW2STGBL	C16CPW2STGBL	17.4	3.9	3.9	4.4	4.4	2.6	2.6	3.1	3.1
I8W2STWISRL	C8W2STWISRL	5.0	3.6	4.6	4.3	5.4	2.2	2.8	2.7	3.4
I5CPW2STWISRL	C5CPW2STWISRL	4.8	4.0	4.0	4.3	4.3	3.1	3.1	3.4	3.4
I8CPW2STWISRL	C8CPW2STWISRL	3.1	10	10	12	12	0.7	0.7	0.8	0.8
I6CP5W2STWISRL	C6CP5W2STWISRL	5.0	13	4.1	16	4.8	0.7	2.3	0.8	2.8
I6CP7W2STWISRL	C6CP7W2STWISRL	5.0	2.0	2.8	2.4	3.3	12	16	15	2.0
I6CP3W2STWISRL	C6CP3W2STWISRL	2.6	17	1.7	2.0	2.0	1.3	1.3	1.5	1.5
I6CP4W2STWISRL	C6CP4W2STWISRL	2.6	17	1.7	2.0	2.0	1.3	1.3	1.5	1.5
I6CP8W2STWISRL	C6CP8W2STWISRL	5.0	0.7	0.7	0.9	0.9	0.4	0.4	0.5	0.5
I5CPW2ST69STL	C5CPW2ST69STL	5.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I5CPW2ST	C5CPW2ST	7.2	6.1	6.0	7.4	7.1	3.5	3.4	4.3	4.3
I2CPW2STGBL	C2CPW2STGBL	5.2	12	4.7	16	5.9	0.6	2.5	0.8	3.1
I2CP2W2STGBL	C2CP2W2STGBL	5.2	3.5	3.5	4.4	4.4	1.8	2.3	2.3	2.3
I3CPW2STGBL	C3CPW2STGBL	17.4	7.3	7.3	9.1	9.1	3.6	3.6	4.7	4.6
I4CP3W2STGBL	C4CP3W2STGBL	7.8	7.6	7.5	8.1	8.0	5.1	5.1	5.9	5.9
I4CP2W2STGBL	C4CP2W2STGBL	5.2	15	15	18	18	0.8	0.8	1.0	1.0
I6CPW2STGBL	C6CPW2STGBL	3.6	18	18	2.1	2.1	1.3	1.3	1.5	1.5
I7CP3W2STGBL	C7CP3W2STGBL	11.3	4.3	4.3	5.0	5.0	2.8	2.8	3.3	3.3
I7CP2W2STGBL	C7CP2W2STGBL	5.2	3.8	3.8	4.3	4.3	2.7	2.7	3.1	3.1
I8CPW2STGBL	C8CPW2STGBL	5.2	0.5	0.5	0.6	0.6	0.3	0.3	0.4	0.4
I9CPW2STGBL	C9CPW2STGBL	17.4	3.7	3.6	5.6	5.5	0.9	0.9	1.4	1.3
I10CP3W2STGBL	C10CP3W2STGBL	17.4	5.8	5.8	6.9	6.9	3.4	3.4	4.1	4.1
I10CP2W2STGBL	C10CP2W2STGBL	7.8	4.1	4.1	4.7	4.7	2.7	2.7	3.2	3.2
I11CPW2STGBL	C11CPW2STGBL	17.4	8.4	8.3	10.2	10.1	4.3	4.3	5.7	5.7
I17CP2W2STGBL	C17CP2W2STGBL	17.4	3.8	3.8	4.8	4.7	2.2	2.2	2.8	2.8
I17CPW2STGBL	C17CPW2STGBL	17.4	3.1	3.1	3.8	3.8	1.9	1.9	2.4	2.4
I16CPW2STGBL	C16CPW2STGBL	17.4	3.5	3.5	4.7	4.7	1.5	1.5	2.0	2.0
I2ICP3W2STGBL	C2ICP3W2STGBL	4.8	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1
I2ICP1W2STGBL	C2ICP1W2STGBL	5.0	0.2	0.2	0.3	0.3	0.1	0.1	0.2	0.2
I2IC2W2STGBL	C2IC2W2STGBL	4.8	0.0	0.2	0.0	0.3	0.0	0.1	0.0	0.2
I16CPW2STGBL	C16CPW2STGBL	7.0	2.5	2.5	3.0	3.0	1.5	1.5	1.9	1.9

SHEET SD30 OF SD121

SWMM Outfall:

W2ST18WOUTFALL
(West 2nd Street S.D. Outfall)

Prepared	AJA	Date	12/18/2017
Checked	MIG		12/18/2017

LOWER INDIAN BEND WASH ADMS/P
STUDY AREA-SOUTH

Gavan & Barker
INC.
engineers | planners | scientists



Inlet Summary Table

SWM M Name		FLO-2D/SWMM Model											
Inlet	Connector/Pipe	Curb High / Soffit High Inflow		100-yr, 24-hr		100-yr, 6-hr		10-yr, 24-hr		10-yr, 6-hr		10-yr, 6-hr	
		(cfs)		Inflow (cfs)	Pipe Max (cfs)	Inflow (cfs)	Pipe Max (cfs)	Inflow (cfs)	Pipe Max (cfs)	Inflow (cfs)	Pipe Max (cfs)	Inflow (cfs)	Pipe Max (cfs)
I18CP2W2STGBL	C19CP2W2STGBL	7.0		4.3	4.3	4.9	4.9	2.8	2.7	3.3	3.3	3.3	3.3
I20CP7W2STGBL	C20CP7W2STGBL	5.0		0.7	0.7	0.8	0.8	0.4	0.4	0.5	0.5	0.5	0.5
I20CP10W2STGBL	C20CP10W2STGBL	7.0		0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2
I20CP9W2STGBL	C20CP9W2STGBL	7.0		5.9	5.9	6.9	6.9	3.8	3.8	4.6	4.6	4.6	4.6
I20CP4W2STGBL	C20CP4W2STGBL	7.0		5.2	5.2	5.8	5.8	3.6	3.6	4.2	4.2	4.2	4.2
I20CP5W2STGBL	C20CP5W2STGBL	7.0		2.0	2.0	2.5	2.4	1.2	1.2	1.4	1.4	1.4	1.4
I20CP2W2STGBL	C20CP2W2STGBL	5.0		1.3	1.3	1.5	1.5	0.7	0.7	0.8	0.8	0.8	0.8
I8CP2W2STBAL	C8CP2W2STBAL	3.1		1.0	1.0	1.1	1.1	0.7	0.7	1.0	1.1	1.1	1.1
I29CP1W2STSR	C29CP1W2STSR	11.3		11.3	11.2	12.4	12.4	8.6	8.5	9.6	9.6	9.6	9.6
I7CP1W2ST	C7CP1W2ST	3.4		1.5	1.5	1.7	1.6	1.1	1.1	1.2	1.2	1.2	1.2
I9CP1W2ST	C9CP1W2ST	3.4		2.7	2.7	2.9	2.9	2.1	2.1	2.3	2.3	2.3	2.3
I6ACP1W2ST	C6ACP1W2ST	5.2		10.2	10.2	10.8	10.9	8.3	8.3	8.6	8.6	8.6	8.6
I5CP1W2STCCL	C5CP1W2STCCL	10.8		0.6	0.6	0.7	0.7	0.4	0.4	0.4	0.4	0.4	0.4
I8CP1W2STCCL	C8CP1W2STCCL	2.5		2.3	2.3	2.8	2.8	1.3	1.3	1.6	1.6	1.6	1.6
I4CP3W2STCCL	C4CP3W2STCCL	2.5		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
I4CP2W2STCCL	C4CP2W2STCCL	2.5		0.4	0.4	0.5	0.5	0.2	0.2	0.3	0.3	0.3	0.3
I1CP1W2STCCL	C1CP1W2STCCL	2.5		0.7	0.7	0.9	0.9	0.4	0.4	0.5	0.5	0.5	0.5
I1CP2W2STCCL	C1CP2W2STCCL	2.5		0.5	0.5	0.5	0.5	0.3	0.3	0.4	0.4	0.4	0.4
I1CP3W2STCCL	C1CP3W2STCCL	2.5		1.6	1.6	1.9	1.9	0.9	0.9	1.2	1.2	1.2	1.2
I1CP4W2STCCL	C1CP4W2STCCL	2.5		0.9	0.9	1.0	1.0	0.5	0.5	0.6	0.6	0.6	0.6
I10CP1W2STCCL	C10CP1W2STCCL	2.5		1.4	1.4	1.7	1.7	0.9	0.9	1.1	1.1	1.1	1.1
I6CP1W2STCCL	C6CP1W2STCCL	10.8		0.4	0.4	0.5	0.5	0.2	0.2	0.3	0.3	0.3	0.3
I7CP1W2STCCL	C7CP1W2STCCL	2.5		1.6	1.6	2.0	2.0	0.8	0.8	1.1	1.1	1.1	1.1
I2CP2W2STBAL	C2CP2W2STBAL	4.4		3.0	3.0	3.3	3.3	2.4	2.3	2.6	2.6	2.6	2.6
I2CP1W2STBAL	C2CP1W2STBAL	2.6		1.8	1.8	2.1	2.1	1.1	1.1	1.4	1.4	1.4	1.4
I37ACP2W2ST	C37ACP2W2ST	2.6		3.3	3.3	3.7	3.7	2.6	2.6	2.9	2.9	2.9	2.9
I10ACP1W2ST	C10ACP1W2ST	3.5		3.0	3.0	3.3	3.3	2.4	2.4	2.6	2.6	2.6	2.6
I10ACP2W2ST	C10ACP2W2ST	3.6		1.8	1.8	2.0	2.0	1.1	1.1	1.4	1.4	1.4	1.4
I3CP5W2STDBL	C3CP5W2STDBL	17.0		11.1	11.0	11.7	11.7	5.9	5.9	7.3	7.3	7.3	7.3
I3CP4W2STDBL	C3CP4W2STDBL	11.0		8.5	8.5	17.9	17.9	14.0	14.0	19.0	19.0	19.0	19.0
I3CP6W2STDBL	C3CP6W2STDBL	17.0		14.7	14.2	14.8	14.0	10.3	10.2	12.6	12.6	12.6	12.6
I3CP2W2STDBL	C3CP2W2STDBL	17.0		9.2	9.1	10.0	9.7	4.7	4.7	5.9	5.9	5.9	5.9
I3CP1W2STDBL	C3CP1W2STDBL	20.4		2.4	19.4	6.1	22.4	10	10.0	13	13	13	13
I3CP3W2STDBL	C3CP3W2STDBL	17.0		8.5	8.5	9.3	9.9	4.5	4.5	5.5	5.5	5.5	5.5
I2BCP1W2ST	C12BCP1W2ST	4.7		0.3	0.3	0.4	0.4	0.2	0.2	0.2	0.2	0.2	0.2
I11BCP2W2ST	C11BCP2W2ST	31.4		4.3	4.3	5.0	4.9	2.9	2.9	3.4	3.4	3.4	3.4
I11BCP1W2ST	C11BCP1W2ST	19.5		2.4	6.7	3.0	7.8	1.4	4.3	1.7	5.1	5.1	5.1
I11ACP1W2ST	C11ACP1W2ST	3.6		0.5	0.5	0.6	0.6	0.3	0.3	0.3	0.3	0.3	0.3
I2BCP2W2ST	C12BCP2W2ST	3.5		0.9	0.9	1.0	1.2	0.6	0.6	0.7	0.7	0.7	0.7
I11BCP4W2ST	C11BCP4W2ST	7.6		8.8	8.8	10.3	10.1	5.2	5.2	6.3	6.3	6.3	6.3
I11BCP5W2ST	C11BCP5W2ST	7.8		5.5	5.5	6.8	6.6	2.8	2.8	3.6	3.6	3.6	3.6
I19BCP2W2ST	C19BCP2W2ST	3.5		2.5	2.5	2.9	2.9	1.6	1.6	1.9	1.9	1.9	1.9
I19BCP1W2ST	C19BCP1W2ST	3.2		1.9	4.3	2.4	5.3	1.2	2.8	1.4	3.2	3.2	3.2
I19ACP1W2ST	C19ACP1W2ST	3.4		1.3	1.3	1.7	1.6	0.8	0.8	1.0	1.0	1.0	1.0

INLET SUMMARY TABLE NOTES:

1. The curb high/soffit high inflow discharge were calculated according to the procedures outlined in the District's Hydraulics Manual.
2. The inflow discharge is the peak hydrograph discharge taken from the SWMMQIN.OUT file.
3. The pipe Max Discharge is the peak hydrograph discharge taken from the 'Link Results' in the SWMM.RTP file.

SHEET SD31 OF SD121

SWMM Outfall:		W2ST1BWOITFALL (West 2nd Street S.D. Outfall)
Prepared	By	AJA
Checked	Date	12/18/2017
		MIG

LOWER INDIAN BEND WASH ADMS/P
STUDY AREA-SOUTH



Conduit Name	Normal Depth Capacity (cfs)	FLO-2D/SWMM Model Discharge			
		10-yr, 24-hr (cfs)	10-yr, 6-hr (cfs)	10-yr, 6-hr (cfs)	
C1W2ST	246.4	485.0	550.2	272.7	334.0
C2W2ST	337.3	484.5	549.8	274.2	334.2
C3W2ST	329.8	482.8	549.8	274.1	335.0
C4W2ST	344.7	484.4	549.9	272.4	331.1
C5W2ST	270.9	484.4	549.7	271.6	330.1
C6AW2ST	277.9	480.7	545.2	270.2	328.2
C6W2ST	272.4	470.3	534.2	263.4	320.3
C7W2ST	235.5	470.3	534.2	278.9	319.9
C8W2ST	254.7	468.9	533.0	270.1	322.5
C9W2ST	204.0	468.9	533.0	271.5	325.6
C10AW2ST	229.5	466.4	530.2	271.6	326.3
C10W2ST	288.4	462.3	525.6	271.4	335.3
C14W2ST	240.9	462.2	525.8	263.9	321.4
C18W2ST	283.6	462.1	525.6	269.4	320.1
C2AW2ST	274.9	449.6	52.3	258.7	322.8
C2BW2ST	288.4	449.5	52.0	259.2	319.3
C2CW2ST	282.7	449.2	511.8	258.6	316.4
C3W2ST	204.0	449.2	52.0	263.4	319.0
C4W2ST	228.7	448.9	511.8	265.5	319.2
C15AW2ST	268.7	449.0	511.6	260.5	313.6
C16W2ST	245.8	402.9	449.7	243.2	284.9
C17W2ST	257.1	402.8	449.6	245.6	284.2
C17W2ST	987.1	402.8	449.7	253.3	284.3
C18W2ST	866.0	394.9	442.9	248.7	282.9
C19AW2ST	976.5	394.8	442.9	246.7	297.6
C19BW2ST	941.6	393.8	441.7	245.4	301.5
C19CW2ST	938.8	389.9	437.0	242.8	296.4
C20W2ST	948.6	387.2	437.0	236.4	295.8
C21W2ST	946.1	389.8	433.3	235.3	291.6
C22W2ST	644.9	342.3	386.7	203.9	260.7
C23W2ST	353.3	345.3	386.4	217.8	291.2
C24W2ST	494.4	351.9	386.6	205.6	255.5
C25W2ST	486.3	345.0	383.0	206.3	253.9
C26W2ST	508.6	345.4	385.0	208.8	254.0
C27W2ST	510.7	345.8	388.5	207.4	252.7
C28W2ST	512.4	347.4	390.9	206.0	251.5
C29W2ST	1516.1	349.7	391.6	206.4	251.2
C30W2ST	275.1	176.9	166.5	105.3	128.2
C31W2ST	266.9	177.0	166.7	105.5	128.3
C32W2ST	276.6	176.9	166.9	105.6	128.3
C33W2ST	273.5	176.3	165.9	105.3	127.9
C34W2ST	133.9	175.1	164.8	104.7	127.3
C35W2ST	272.8	174.1	164.2	104.2	126.9
C36W2ST	423.5	172.6	163.6	103.6	125.9
C37AW2ST	413.9	164.4	165.2	99.3	119.9

Conduit Name	Normal Depth Capacity (cfs)	FLO-2D/SWMM Model Discharge			
		10-yr, 24-hr (cfs)	10-yr, 6-hr (cfs)	10-yr, 6-hr (cfs)	
C37BW2ST	485.6	160.5	189.3	96.5	116.9
C38W2ST	322.2	149.6	175.5	89.5	108.5
C39W2ST	52.8	148.7	174.5	88.9	108.0
C40W2ST	627.2	148.3	174.1	88.7	107.8
C41W2ST	201.6	21.4	25.1	11.8	14.4
C42W2ST	96.8	21.5	25.2	11.8	14.4
C43W2ST	59.5	21.5	25.2	11.8	14.5
C44W2ST	77.0	10.8	12.4	6.5	8.0
C45W2ST	79.4	10.9	12.6	6.6	8.1
C1W2STGBL	635.7	127.1	149.3	77.1	93.8
C2W2STGBL	108.3	127.0	149.2	77.1	93.7
C3W2STGBL	109.4	123.0	144.0	75.1	91.2
C4W2STGBL	108.8	115.9	135.4	71.6	86.7
C5W2STGBL	109.0	107.0	125.9	65.7	79.8
C6W2STGBL	87.9	101.0	118.8	62.5	75.6
C7W2STGBL	108.0	99.3	116.8	61.3	74.1
C8W2STGBL	110.6	91.6	108.1	56.0	67.9
C9W2STGBL	111.5	91.6	107.8	55.8	67.3
C10W2STGBL	111.0	88.4	103.1	54.5	65.7
C11W2STGBL	112.5	78.7	91.9	48.9	58.9
C12W2STGBL	111.5	70.5	82.2	44.4	53.0
C13W2STGBL	111.1	70.7	82.5	44.5	53.0
C14W2STGBL	111.1	70.8	82.7	44.6	53.1
C15W2STGBL	172.5	70.9	82.8	44.7	53.3
C16W2STGBL	262.7	36.5	43.3	22.2	26.7
C17W2STGBL	262.2	32.6	39.0	19.6	23.7
C18W2STGBL	61.9	25.7	30.5	15.4	18.6
C19W2STGBL	61.9	22.3	26.0	14.2	16.8
C20W2STGBL	36.5	15.6	18.2	10.0	11.8
C21W2STGBL	7.8	0.4	0.5	0.3	0.3
C1W2STSR	2055.1	173.8	195.6	105.0	122.7
C2W2STSR	1790.3	172.7	205.7	104.4	122.2
C3W2STSR	1925.0	168.3	193.4	100.9	118.3
C4W2STSR	164.5	168.3	197.4	100.8	118.2
C5W2STSR	164.1	163.4	191.2	99.0	116.6
C6W2STSR	163.6	142.2	168.0	84.5	97.5
C7W2STSR	100.9	140.9	166.6	84.3	96.5
C8W2STSR	163.9	134.0	168.3	81.5	92.2
C9W2STSR	167.5	133.2	157.5	85.1	93.4
C10W2STSR	164.0	132.1	155.4	85.1	97.1
C11W2STSR	164.1	116.8	137.2	76.8	90.0
C12W2STSR	98.3	116.8	137.1	76.6	90.3
C13W2STSR	139.6	115.5	135.5	76.0	90.8
C14W2STSR	76.2	112.5	131.9	74.5	90.1
C15W2STSR	139.4	110.7	129.2	74.0	91.2

Conduit Name	Normal Depth Capacity (cfs)	FLO-2D/SWMM Model Discharge			
		10-yr, 24-hr (cfs)	10-yr, 6-hr (cfs)	10-yr, 24-hr (cfs)	10-yr, 6-hr (cfs)
C16W2STSR	187	106.7	124.8	69.2	89.1
C17W2STSR	189.7	104.9	122.5	65.5	87.2
C18W2STSR	139.3	103.9	121.3	65.9	84.4
C19W2STSR	186.9	95.4	111.1	59.9	75.1
C20W2STSR	87.9	95.3	110.9	63.8	72.2
C21W2STSR	139.5	92.8	107.3	55.5	71.1
C22W2STSR	135.8	88.2	102.1	54.9	70.4
C23W2STSR	62.2	89.1	102.2	60.9	67.2
C24W2STSR	98.3	21.1	20.5	15.7	18.1
C25W2STSR	110.8	23.4	19.3	14.5	16.4
C26W2STSR	85.8	19.5	19.7	10.5	18.0
C27W2STSR	85.5	11.4	11.9	9.0	11.2
C28W2STSR	595.5	11.2	12.3	8.4	9.5
C29W2STSR	101.7	11.2	12.3	8.5	9.5
C30W2STSR	96.4	0.0	0.0	0.0	0.0
C1W2STWISRL	62.5	34.8	39.6	23.0	27.1
C2W2STWISRL	25.7	31.1	35.1	20.4	24.2
C3W2STWISRL	27.7	24.5	27.5	15.9	18.8
C4W2STWISRL	27.6	16.1	18.4	10.5	12.1
C5W2STWISRL	26.5	15.7	18.4	10.5	12.2
C6W2STWISRL	26.7	12.1	13.8	7.6	9.0
C7W2STWISRL	25.6	4.6	5.4	2.8	3.3
C8W2STWISRL	13.9	4.6	5.4	2.8	3.4
C1W2STEISRL	139.1	71.5	83.4	44.3	53.4
C2W2STEISRL	101.6	61.4	69.7	40.2	48.0
C3W2STEISRL	128.5	53.7	59.4	37.1	43.8
C4W2STEISRL	39.2	53.3	59.7	37.3	43.6
C5W2STEISRL	64.0	39.2	43.3	26.6	31.2
C6W2STEISRL	57.7	32.4	36.3	21.6	25.5
C7W2STEISRL	48.0	28.5	32.1	19.1	22.6
C8W2STEISRL	20.9	9.4	10.8	6.6	7.7

Pipe Discharge Summary Table

Pipe Discharge Summary Table

Pipe Discharge Summary Table

PIPE DISCHARGE SUMMARY TABLE NOTES:

- The normal depth capacity discharges were obtained from the SWMM.RPT file.
- The pipe discharge is the peak hydrograph discharge taken from the 'Link Results' in the SWMM.RTP file.

SWMM Outfall:		W2ST18WOUTFALL (West 2nd Street S.D. Outfall)
Prepared	By	AJA
Checked	By	MIG
	Date	12/18/2017



APPENDIX VI

Stormwater Storage Waiver

Request for Stormwater Storage Waiver



City of Scottsdale Plan/Case Numbers:

10-ZN-2020 _____ - DR - _____ - PP - _____ PC# _____

Requests for stormwater storage waivers are reviewed as part of case submittals for the associated project. This form should be included in the preliminary drainage report with the applicant's portion completed. The preliminary drainage report shall include supporting documentation and analysis as needed to support the requested waiver.

Date 10-16-2020 Project Name The Triangle
Project Location 3rd Avenue and Indian School Road, Scottsdale AZ
Applicant Contact Ali Fakh Company Name SEG
Phone 480-588-7226 E-mail ali@azseg.com
Address 8280 E. Gelding Dr. Suite 101, Scottsdale, AZ 85260

Waiver Criteria

A project must meet at least one of three criteria listed below for the city to consider waiving some or all required stormwater storage. **However, regardless of the criteria, a waiver will only be granted if the applicant can demonstrate that the effect of a waiver will not increase the potential for flooding on any property.** Check the applicable box and provide a signed and sealed engineering report and supporting engineering analysis that demonstrate the project meets the criteria and that the effect of a waiver will not increase the potential for flooding on any property.

If the runoff for the project has been included in a storage facility at another location, the applicant must demonstrate that the stormwater storage facility was specifically designed to accommodate runoff from the subject property and that the runoff will be conveyed to this location through an adequately designed conveyance facility.

It should be noted that reductions in stormwater storage relating to

- 1. The development is adjacent to a conveyance facility that an engineering analysis shows is designed and constructed to handle the additional runoff from the site as a result of development.
- 2. The development is on a parcel less than one-half acre in size.
- 3. Stormwater storage requirements conflict with requirements of the Environmentally Sensitive Lands Ordinance (ESLO).

For a full storage waiver, a conflict with ESLO is limited to:

- Property located in the hillside landform as defined in the city Zoning Ordinance
- Property in the upper desert landform that has a land slope steeper than 5% as defined in the city Zoning Ordinance
- Property within the ESL zoning overlay district where the only viable location for a stormwater storage basin requires blasting

This full waiver only applies to those portions of property meeting one of these three requirements.

100-year/2-hour storage is allowed, but not required for redevelopment projects and development within the ESL zoning overlay. Rather, these projects must store enough stormwater to attenuate post-development flows to predevelopment levels, considering the 10- and 100-year storm events (S.R.C. Sections 37-50 and 37-51).

By signing below, I certify that the stated project meets the waiver criteria selected above as demonstrated by the attached documentation.

Stormwater Management Department

7447 E Indian School Road, Suite 125, Scottsdale, AZ 85251 • Phone: 480-312-2500

Request for Stormwater Storage Waiver



City of Scottsdale Plan/Case Numbers:

10-ZN-2020 _____ - DR - _____ - PP - _____ PC# _____

CITY STAFF TO COMPLETE THIS PAGE

Project Name The Triangle

Check Appropriate Boxes:

Meets waiver criteria (specify): 1 2 3

Recommended Conditions of Waiver:

- All storage requirements waived.
 Post-development peak discharge rates do not exceed pre-development conditions.
 Other:

Explain: _____

Waiver approved per above conditions.

C. Ashley Couch
Floodplain Administrator or Designee

11/FEB/2022
Date

Stormwater Management Department

7447 E Indian School Road, Suite 125, Scottsdale, AZ 85251 • Phone: 480-312-2500

Request for Stormwater Storage Waiver



10-ZN-2020 _____ - DR - _____ - PP - _____ PC# _____

In-Lieu Fee and In-Kind Contributions

In-lieu fees are only applicable to projects where post-development peak discharge rates exceed pre-development levels, based on the 10- and 100-year storm events. If the city grants a waiver, the developer is required to calculate and contribute an in-lieu fee based on what it would cost the city to provide a storage basin, sized as described below, including costs such as land acquisition, construction, landscaping, design, construction management, and maintenance over a 75-year design life. The fee for this cost is \$3.00 per cubic foot of stormwater storage for a virtual storage basin designed to mitigate the increase in runoff associated with the 100-year/2-hour storm event. The applicant may submit site-specific in-lieu fee calculations subject to the Floodplain Administrator's approval.

The Floodplain Administrator considers in-kind contributions on a case-by-case basis. An in-kind contribution can serve as part of or instead of the calculated in-lieu fee. In-kind contributions must be stormwater-related and must constitute a public benefit. In-lieu fees and in-kind contributions are subject to the approval of the Floodplain Administrator or designee.

Project Name The Triangle

The waived stormwater storage volume is calculated using a simplified approach as follows:

V = ΔCRA; where

- V = stormwater storage volume required, in cubic feet,
- ΔC = increase in weighted average runoff coefficient over disturbed area ($C_{post} - C_{pre}$),
- R = 100-year/2-hour precipitation depth, in feet (DSPM, Appendix 4-1D, page 11), and
- A = area of disturbed ground, in square feet

Furthermore, $R = \frac{2.16}{_____}$
 $\Delta C = \frac{0.02}{_____}$
 $A = \frac{3.18}{_____}$
 $V = \frac{499}{_____}$
 $V_p = \frac{0}{_____}$
 $V_w = \frac{499}{_____}$

- An in-lieu fee will be paid, based on the following calculations and supporting documentation:
In-lieu fee (\$) = V_w (cu. ft.) x \$3.00 per cubic foot = \$1,497
- An in-kind contribution will be made, as follows:

- No in-lieu fee is required. Reason:

Approved by: C. Ashley Couch 11/FEB/2022
Floodplain Administrator or Designee Date

Stormwater Management Department

7447 E Indian School Road, Suite 125, Scottsdale, AZ 85251 • Phone: 480-312-2500