DRAINAGE REPORTS

ABBREVEATED WATER & SEWER NEED REPORTS

WATER STUDY

WASTEWATER STUDY

STORMWATER WAIVER APPLICATION

ABBREVIATED WATER & SEWER NEED REPORT

Non-Residential Water & Wastewater Development Fees

When applying for a Development Review Board Hearing, the Developer submits one report for each Non-Residential Development to the assigned City Project Coordinator. Project Coordinator submits this report to Water Resources.

1. PROJECT INFORMATION:

Project Name: **Blue Sky Scottsdale**			Date: **November 21, 2011**
Project Address: **NE Corner of Scottsdale Road & Camelback Road**			City Pre-Application #: **396 - PA - 2010**
Target Date to Submit Final Plans (Construction Documents): **June 2012**		GPD/SF Bldg: **Varies/Use**	Building Size: **976,169** Square Feet
Type of Project: **Mixed Use Development; Residential and Cooling Towers**			Landscape Plants & Trees Area: **33,170** Square Feet
Number & Sizes of Domestic Water Meters: **3-4" Meters & 2-2" Meters**	No. & Sizes Landscape Meters: **1-2" Meter**		Landscape Turf Area: **1,435** Square Feet

2. NON-RESIDENTIAL DEVELOPMENT FEES:

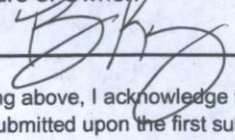
Effective January 5, 2009	WATER Dev. Fee	RESOURCE Dev. Fee	WASTEWATER Dev. Fee	TOTAL Dev. Fees
COST PER GALLON	$9.36	$2.41	$18.26	$30.03

3. FEE CALCULATION TABLE: (Multiply Cost per Gallon above **x** Gallons per Day below)

TYPE OF WATER DEMAND	**Gallons/Day** (GPY / 365)	WATER Dev. Fee	RESOURCE Dev. Fee	WASTEWATER Dev. Fee	TOTAL Dev. Fees
Domestic - TO SEWER	150,162	$1,405,516.32	$361,890.42	$2,741,958.12	$4,509,364.86
Domestic - NOT to Sewer	31,320	$293,155.20	$75,481.20	- None -	$368,636.40
Landscape - PLANTS & TREES	1,990	$18,626.40	$4,795.90	- None -	$23,422.30
Landscape - TURF	144	$1,347.84	$347.04	- None -	$1,694.88
Credit for pre-existing water meter					
SUB-TOTALS	**183,616**	**$1,718,645.76**	**$442,514.56**	**$2,741,958.12**	**$4,903,118.44**
ADMINISTRATION FEE	**2.04%**	**$35,060.37**	**$9,027.30**	**$55,935.95**	**$100,023.62**
TOTAL DEVELOPMENT FEES		$1,753,706.13	$451,541.86	$2,797,894.07	$5,003,142.06
WATER METER FEE (5/8"=$70, 3/4"=$95, 1"=$140, 1.5"=$270, 2"=$350, 3"=$1,905, 4"= $3,135)					**$10,455.00**
TOTAL FEES					**$5,013,597.06**

4. CONTACT INFORMATION & CITY APPROVAL:

Printed Name of Owner:	E-mail Address:	Phone #:	Cell Phone #:
Brian Kearney	bkearney@grayus.com	**(602) 954-0109**	**(602) 370-3252**
Printed Name of Preparer:	E-mail Address:	Phone #:	Cell Phone #:
Brian Kearney	bkearney@grayus.com	**(602) 954-0109**	**(602) 370-3252**

Signature of Owner: *	Date:	**CITY USE ONLY:** Water Resources Approval:	Date:
	11/21/11		

* By signing above, I acknowledge that I am aware that a Financial Obligation Agreement and complete Exhibit "C" Water & Sewer Need Report(s) must be submitted upon the first submittal of Construction Documents for Building Plan Review & Permits. I am aware that development fees and a 2.04% administration fee must be paid prior to obtaining a Building Permit. I am aware of the fees and penalties that will be enforced after three (3) years if the average annual water and/or wastewater demand exceeds the estimated demand by twenty percent (20%) or more. Water Resources does not attest to or validate the accuracy of the Owner's estimates or computations.

Water & Sewer Use Limit - Gallons per Month:	**5,584,987**		**Gallons per Year:**	**67,019,840**
gpd/sf - Domestic	0.186	gpd/sf Plants	0.060	gpd/sf Turf	0.100

62-DR-2011
1st: 11/23/2011

CALCULATION TABLES

Non-Residential Water and Wastewater Development Fees

TABLE #1: DOMESTIC WATER USE -- TO SEWER

TYPE OF USE	AVERAGE GALLONS PER DAY MINIMUM	(A) AVG.	HIGH	MEASURABLE UNIT	(B) ENTER # of UNITS	(A x B) = GAL./DAY
Air Services - Jet Hangars	0.05	0.07	0.08	Sq. Ft. of Bldg.		
Auto Dealer (no service)	1,120	1,400	1,680	Metered Account		
Auto Dealer (with service)	2,530	3,165	3,800	Metered Account		
Auto Service Station	900	1,000	1,100	First Bay		
Auto Service Station	450	500	550	Additional Bay		
Bank	0.03	0.05	0.06	Sq. Ft. of Bldg.		
Barber Shop	44	55	66	Seat		
Beauty Salon	216	270	324	Station		
Bowling Alley	70	75	80	Lane		
Car Wash (coin-op)	374	384	394	Bay		
Car Wash (full service)	10,000	14,600	19,200	Metered Account		
Child Care / Day Care Facility	0.15	0.17	0.19	Sq. Ft. of Bldg.		
Church	4	5	6	Seat		
Church (with kitchen)	6	7	8	Seat		
Dental Office	0.07	0.09	0.10	Sq. Ft. of Bldg.		
Department Store	0.20	0.30	0.40	Sq. Ft. of Bldg.		
Department Store	320	400	480	Toilet Room		
Drug Store	0.12	0.14	0.16	Sq. Ft. of Bldg.		
Dry Cleaner	0.36	0.45	0.54	Sq. Ft. of Bldg.		
Grocery Store	0.16	0.18	0.19	Sq. Ft. of Bldg.		
Hospital	200	250	300	Bed		
Hotel and Resort	96	120	144	Unit		
Industrial / Manufacturing	20	25	30	Employee		
Industrial / Mfg. (with cafeteria)	25	30	35	Employee		
Industrial / Mfg. (cafeteria & showers	35	40	45	Employee		
Laundry (coin-op)	147	184	221	Machine		
Laundry (commercial)	201	251	301	Machine		
Medical Lab	2,320	2,905	3,490	Metered Account		
Medical Office	0.07	0.09	0.10	Sq. Ft. of Bldg.		
Motel	80	100	120	Unit		
Motel (with kitchen)	90	110	130	Unit		
Movie Theater	3	4	5	Seat		
Nursery	2,950	3,690	4,430	Metered Account		
Office Building	0.07	0.09	0.10	Sq. Ft. of Bldg.		
Real Estate Office	0.03	0.05	0.06	Sq. Ft. of Bldg.		
Restaurant (with auto. dishwasher)	0.60	0.80	1.00	Sq. Ft. of Bldg.		
Restaurant (w/o auto. dishwasher)	0.20	0.25	0.30	Sq. Ft. of Bldg.		
Retail Shop	0.03	0.05	0.06	Sq. Ft. of Bldg.		
School	0.03	0.05	0.06	Sq. Ft. of Bldg.		
Senior Care Facility	90	100	110	Bed		
Shell Building (retail & restaurant)	0.16	0.18	0.19	Sq. Ft. of Bldg.		
Shopping Center	0.16	0.18	0.19	Sq. Ft. of Bldg.		

The City provides water demand data to assist developers with demand estimates. Regional and local studies provide minimum acceptable standards for demand estimates and development fees. Demand estimates will be approved by Water Resources staff if they meet or exceed the minimum standards provided above. Demand estimates may also be determined by metered water billing statements for similar projects. These tables serve only as informational guides. The Developer is responsible for the accuracy of the water and wastewater demand estimates.

CALCULATION TABLES

Non-Residential Water and Wastewater Development Fees

TABLE #2: DOMESTIC WATER USE -- NOT to SEWER

TYPE OF USE	(A) STANDARD	MEASURABLE UNIT	(B) ENTER # of UNITS	(A x B) = GAL./DAY
Car Washes	15%	Water Demand		
Pools & Fountains	0.144	Sq. Ft. of Pool		
Cooling Towers	0.006	Cu. Ft. of Area		
Cooling Towers	21.60	Ton of Cooler		
Evaporative Coolers	0.003	Cu. Ft. of Area		
Misting Systems	0.003	Cu. Ft. of Area		
Wash Down Areas	15%	Water Demand		

TABLE #3: LANDSCAPE WATER USE -- NOT to SEWER

TYPE OF USE	(A) STANDARD	MEASURABLE UNIT	(B) ENTER # of UNITS	(A x B) = GAL./DAY
Plants & Trees	0.06	Sq. Ft. of Plants		
Temporary Re-Vegetation - Native Plants & Trees	0.01	Sq. Ft. of Plants		
Turf Landscaping	0.10	Sq. Ft. of Turf		

TABLE #4: DOMESTIC WATER USE -- BASED ON SIZE OF WATER METER

SIZE OF WATER METER	Meter Fees	Average Gallons per YEAR	Average Gallons per MONTH	Average Gallons per DAY
5/8"	$ 70	114,610	9,551	314
3/4"	$ 95	107,675	8,973	295
1"	$ 140	266,450	22,204	730
1.5"	$ 270	566,115	47,176	1,551
2"	$ 350	1,243,920	103,660	3,408
3"	$ 1,905	2,872,915	239,410	7,871
4"	$ 3,135	8,544,650	712,054	23,410
6"	$ 5,510	12,689,225	1,057,435	34,765

The City provides water demand data to assist developers with demand estimates. Regional and local studies provide minimum acceptable standards for demand estimates and development fees. Demand estimates will be approved by Water Resources staff if they meet or exceed the minimum standards provided above. Demand estimates may also be determined by metered water billing statements for similar projects. These tables serve only as informational guides. The Developer is responsible for the accuracy of the water and wastewater demand estimates.

WATER BASIS OF DESIGN REPORT
FOR
BLUE SKY SCOTTSDALE

PREPARED FOR

GRAY DEVELOPMENT, LLC
4040 E CAMELBACK ROAD, SUITE 275
PHOENIX, AZ 85018
(602) 508-7141
CONTACT: BRIAN KEARNEY

PREPARED BY

ZACKARY POPE, P.E.
DAVID EVANS & ASSOCIATES, INC.
4600 E WASHINGTON STREET, SUITE 430
PHOENIX, AZ 85034
(602) 678-5151

Expires 03/31/14

1ST SUBMITTAL
OCTOBER 2011

DEA PROJECT NO. GRYD0000-0001

62-DR-2011
1st: 11/23/2011

TABLE OF CONTENTS

A. INTRODUCTION

This basis of design report was completed under a contract with the Gray Development, LLC. The proposed Blue Sky Scottsdale project consists of three buildings containing retail, residential, office, restaurant, hotel, and grocery components. An underground parking structure will also be provided. The buildings will be constructed in two phases. The parking structure, the North Building, and the Main Building will be constructed as part of Phase 1. The East Building will be constructed as part of Phase 2. However, all of the water improvements will be constructed during Phase 1.

1. Project Location

The proposed Blue Sky Scottsdale project is located near the northeast corner of the intersection of Scottsdale Road & Camelback Road within the city of Scottsdale, Arizona. The site is located within the northwest quarter of Section 23 of Township 2 North, Range 4 East of the Gila and Salt River Base and Meridian. The site is approximately 4.28 acres and irregularly shaped. It is generally bound by Scottsdale Road to the west, the Fashion Square road entrance alignment to the south, 72nd Way to the east, and Coolidge Street to the north. The area's street system in relationship to the location of the site is illustrated in Exhibit 1, the project's vicinity map.

2. Site Zoning

The zoning of the Blue Sky Scottsdale site is discussed in Section C.1 of this report.

3. General Plan

The Blue Sky project will provide strong support for the goals and policies of the City's General Plan. It will be consistent with the Downtown Plan and reflect its vision, goals, and policies. It will support the City's efforts to "boldly look to its metropolitan future" through the development of an urban oasis that brings to life the City's vision for:

- Mixed-use urban neighborhoods
- World class planning, architecture, and design
- Sustainability
- Connectivity and walkability
- Economic vitality, and
- Worldwide recognition as the premier destination in the United States

B. DESIGN DOCUMENTATION

1. Design Procedures

The analysis of the proposed water system was done in compliance with the City of Scottsdale Design Standards & Policies Manual.

The proposed water distribution system will serve the project in accordance with City of Scottsdale design standards and the ADEQ Engineering Bulletin 10.

The estimated Average Day Demand of the Blue Sky Scottsdale project was determined based on the following Average Day Demand values. All of the values below include both inside use and outside use demands.

- Residential Units = 185.3 gallons per person per day
- Hotel = 446.3 gallons per person per day per room
- Retail = 0.8 gallons per square foot per day
- Restaurant = 1.3 gallons per square foot per day
- Offices = 0.6 gallons per square foot per day
- Grocery = 0.7 gallons per square foot per day

Note that the Grocery Land Use is not specifically listed in Figure 6.1-2 of the Design Standards and Policy Manual. However, the demand of 0.7 gallons per square foot per day was utilized for the design of the Scottsdale Quarter project located near the intersection of Scottsdale Road & Greenway Hayden Loop.

The Maximum Day Demand was calculated using a factor of 2.0 times the Average Day Demand. The Peak Hour Demand was determined by multiplying the Average Day Demand by 3.5.

2. Software

Water demands were determined using a Microsoft Excel spreadsheet. DEA created a WaterCAD™ model of the proposed water system. WaterCAD is a water distribution system modeling software created by Haestad Methods. To run WaterCAD, a user inputs the water system map, waterline sizes, and demand locations. WaterCAD connects these elements as a system and uses mathematical equations to determine flow directions, flow magnitudes and pressures for the water system modeled.

C. EXISTING CONDITIONS

1. Zoning and Land Use

The site falls under the Downtown Regional Multiple Use Type 2 Land Use designation. The site is currently zoned Downtown Regional Commercial Office, Type 2, Planned Block Developmnet Downtown Overlay (D/RCO-2 PBD DO) with amended development standards.

2. Existing Topography, Vegetation, and Landform Features

Generally, the existing topography slopes in a southeasterly direction at approximately 0.40%, with approximately 3 feet of fall across the property. The site in its existing condition is generally an unimproved dirt lot. An entrance road bisects the site that provides access to the existing Safari Drive condominiums located to the east of the site. The entrance road also provides access to a commercial development located to the south of the site.

3. Existing Utilities

There is existing water infrastructure located within the adjacent streets as illustrated on the City of Scottsdale Quarter Section map provided in Appendix A. This infrastructure includes an existing 6-inch ACP and an existing 16-inch DIP waterline within Scottsdale Road. There is also an existing 8-inch DIP waterline within Coolidge Street. An 8-inch waterline is located within the northern portion of 72nd Way and connects to the waterline in Coolidge Street. A portion of this line in 72nd Way will be removed in order to construct the underground parking structure. The fire hydrant at the end of this line will be relocated to the intersection of Coolidge Street and 72nd Way.

4. Existing Master Plans or Design Reports

A *Water Basis of Design Report for Safari Drive* was prepared by DEA in 2006 for the Safari Drive condominiums. Phase 1 of Safari Drive has been constructed.

5. Certified Flow Testing

A fire flow test was performed for this project on fire hydrants adjacent to the project site. The results and location of the test are provided in Appendix B.

D. PROPOSED CONDITIONS

1. Site Plan

Exhibit 2 illustrates the proposed site improvements.

2. Proposed Connections

Exhibit 2 illustrates the proposed connections to the existing system. Along Scottsdale Road, two 2-inch service lines, one 4-inch service line, and one 6-inch fire hydrant line will connect to the existing 16-inch waterline within Scottsdale Road. Additionally, two 4-inch service lines, one 8-inch fire line, and one 6-inch fire hydrant line will connect to the existing 8-inch line within Coolidge Street. The service and fire line sizes are based on the requirements of the project's Mechanical Engineer and have been modeled in this report to assess their performance.

A portion of the existing public waterline within 72nd Way will be removed in order to construct the underground parking garage. A public abandonment will be required in order to remove a portion of this line.

Private water service lines will be installed under landscaping when necessary. Backflow prevention assemblies will be installed on private waterlines.

A new private fire hydrant will be installed within the development south of the Main Building. The addition of the new fire hydrant allows Fire Department access within 600' as measured along the accessible fire routes to the east side of the East Blue Sky Building and it can also serve Safari Phase II. The existing public fire hydrant in 72nd Way will be relocated to near the intersection of Coolidge Street & 72nd Way. The relocation of the fire hydrant within 72nd Way will also provide added protection to both Blue Sky and Safari Phase II.

3. Water Zone, Fire Flow, and System Pressures

The Blue Sky development lies within the City of Scottsdale Water Zone 1-A per the *2008 Integrated Water Master Plan* prepared by Carollo. This zone serves areas with ground elevations from 1250 feet to 1330 feet. The finished floor (FF) elevation of the first levels of the North and East buildings is 1280.8'. The FF elevation of the first level of the Main building is 1280.5'.

The static pressure within the 16-inch waterline in Scottsdale Road is approximately 96 psi based on the flow test performed by EJ Flow Test. The buildings will incorporate private booster pumps to supply water to the upper floors and will be designed to maintain a minimum residual pressure of 50 psi at the highest finished floor level under normal operating conditions. The building system will maintain a minimum pressure of 20 psi under fire flow conditions.

All buildings on site will be fully sprinkled and will be of construction Type IA based on the *International Building Code*. The garage will be fully sprinkled and will be of Type IB construction.

The *Design Standards and Policies Manual* dictates that the minimum fire flow for high rise structures is 2,500 gpm. Per the *2006 International Fire Code*, the fire flow calculation area of buildings constructed of Type IA or IB construction shall be the greater of the area of the three largest successive floors of the building or the largest floor area of the garage. Additionally, up to a 75% reduction may be taken when the building is supplied with an approved automatic sprinkler system. Based on this information and the table provided in Appendix C, the fire flow for the Blue Sky development will be 2,500 gpm with a residual pressure of 30 psi.

E. COMPUTATIONS

1. Computer Calculations

A hard copy of the demand calculations and the WaterCAD output for this report has been provided in Appendices D and E. The modeling in this Blue Sky basis of design report accounts for the future Safari Phase II development. As a factor of safety, a 20% increase in dwelling units for Phase 2 of the Safari Drive project.

2. Demand Summary

Table E.2.1 summarizes the water demands for the Blue Sky project. A detailed demand table that breaks down the values listed below is provided in Appendix D.

TABLE E.2.1 – WATER DEMAND SUMMARY

Phase	Average Day (gpm)	Max Day (gpm)	Peak Hour (gpm)
1	97	193	339
1 & 2 + Safari Phase II	223	447	782

3. Water Modeling Results

Average Day, Max Day, Max Day + FF, and Peak Hour demand scenarios were analyzed for Phase 1 and Phase 1 + Phase 2 + Safari Phase II. The water demand for the Safari Phase II development was modeled at the same location (J-9) that it was originally modeled in the *Water Basis of Design Report for Safari Drive*. This location conforms to the location of the single water service that was proposed for the Safari Phase II project.

The WaterCAD output for the most conservative scenarios (Max Day + FF and Peak Hour) for the proposed water system modeled can be found in Appendix E. This output includes system pressures, pipe velocities, demands, and headloss information for each of the two phases modeled.

All pressures in the model are at street level. The lowest pressure available in the system during the Peak Hour Scenario is 58 psi. Based on the City's criteria requiring 50 psi at the buildings' highest levels, any building requiring water above two stories will require a private booster pump system.

The available fire flow for each model was calculated at the street within the distribution lines. The models do not account for sprinkler demands within each building. Each building's individual sprinkler demands and the services that feed them must be assessed by the building's sprinkler system designer.

All backflow prevention assemblies were modeled by adding a WaterCAD General Purpose Valve and its corresponding headloss curve.

The following table summarizes the expected pressures during the Phase 1 scenario. The pressures range from 63 psi to 72 psi for all scenarios.

TABLE E.3.1 – PHASE 1 PRESSURE SUMMARY

Model Scenario		**Min**	**Max**	**Ave**
Average Day	Pressure (psi)	63	72	70
	Node	J-12, J-16, J-22	Multiple, See Output	-
Max Day	Pressure (psi)	62	72	70
	Node	J-12, J-16, J-22	Multiple, See Output	-
Peak Hour	Pressure (psi)	59	72	70
	Node	J-12, J-16, J-22	Multiple, See Output	-

All nodes pass the Max Day + Fire Flow scenario with all pressures greater than or equal to 30 psi.

The following table summarizes the expected pressures during the Phase 1 & 2 + Safari Phase II scenario. The pressures range from 58 psi to 72 psi for all scenarios.

TABLE E.3.2 – PHASE 1 & 2 + SAFARI PHASE II PRESSURE SUMMARY

Model Scenario		Min	Max	Ave
Average Day	Pressure (psi)	62	72	70
	Node	J-12, J-16, J-22	Multiple, See Output	-
Max Day	Pressure (psi)	58	72	69
	Node	J-12, J-16, J-22	Multiple, See Output	-
Peak Hour	Pressure (psi)	59	72	69
	Node	J-12, J-16, J-22	J-27	-

All nodes pass the Max Day + Fire Flow scenario with all pressures greater than or equal to 30 psi.

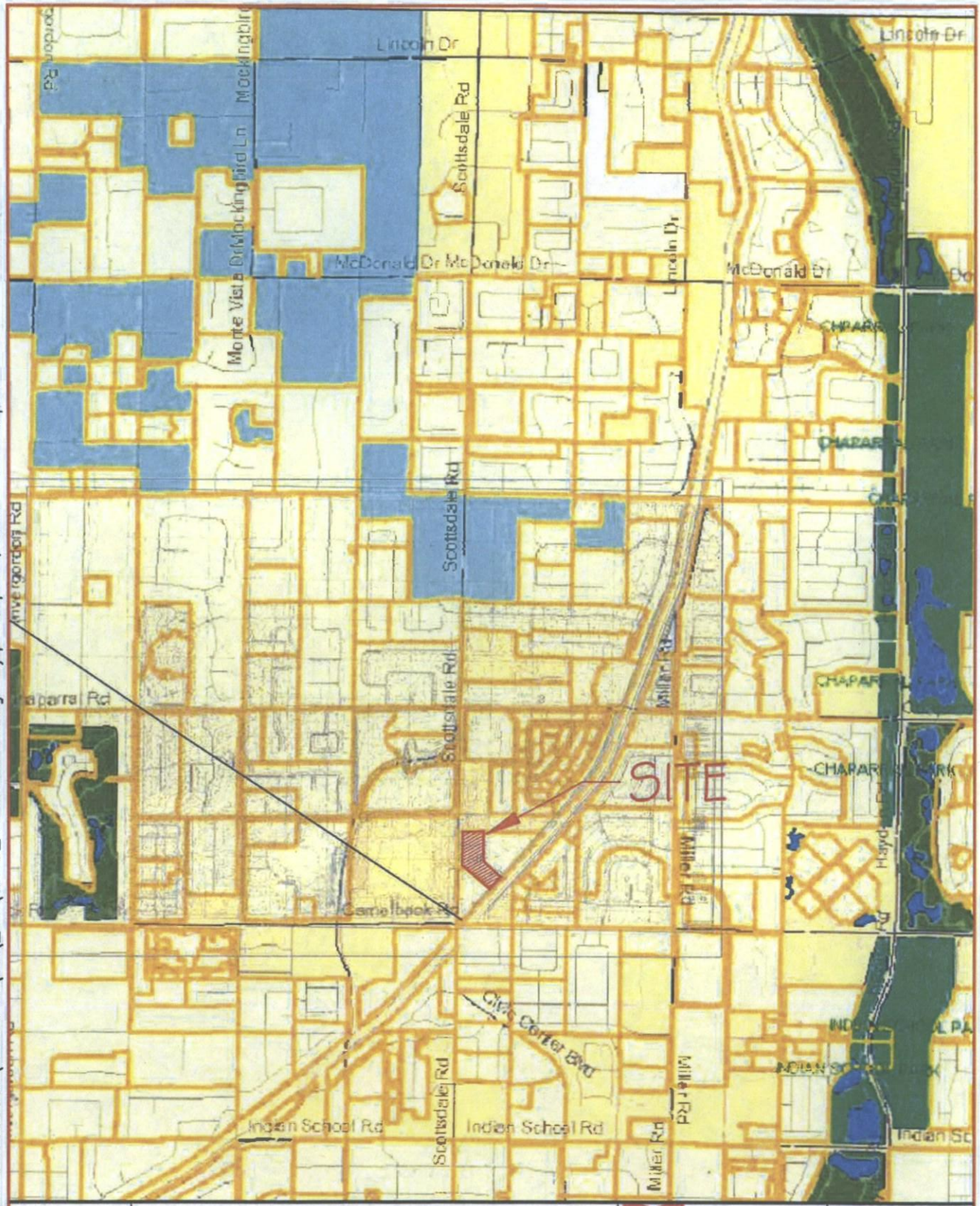
All non-fire flow headlosses are less than 10 ft/1000ft. Detailed modeling output has been provided in Appendix E. Based on the modeling results, the existing infrastructure and proposed water line improvements can support the project.

F. SUMMARY

The proposed Blue Sky water distribution system is illustrated on Exhibit 2. New water services, a new fire line, and a new hydrant will be installed as part of this project. An existing fire hydrant will be relocated, as well.

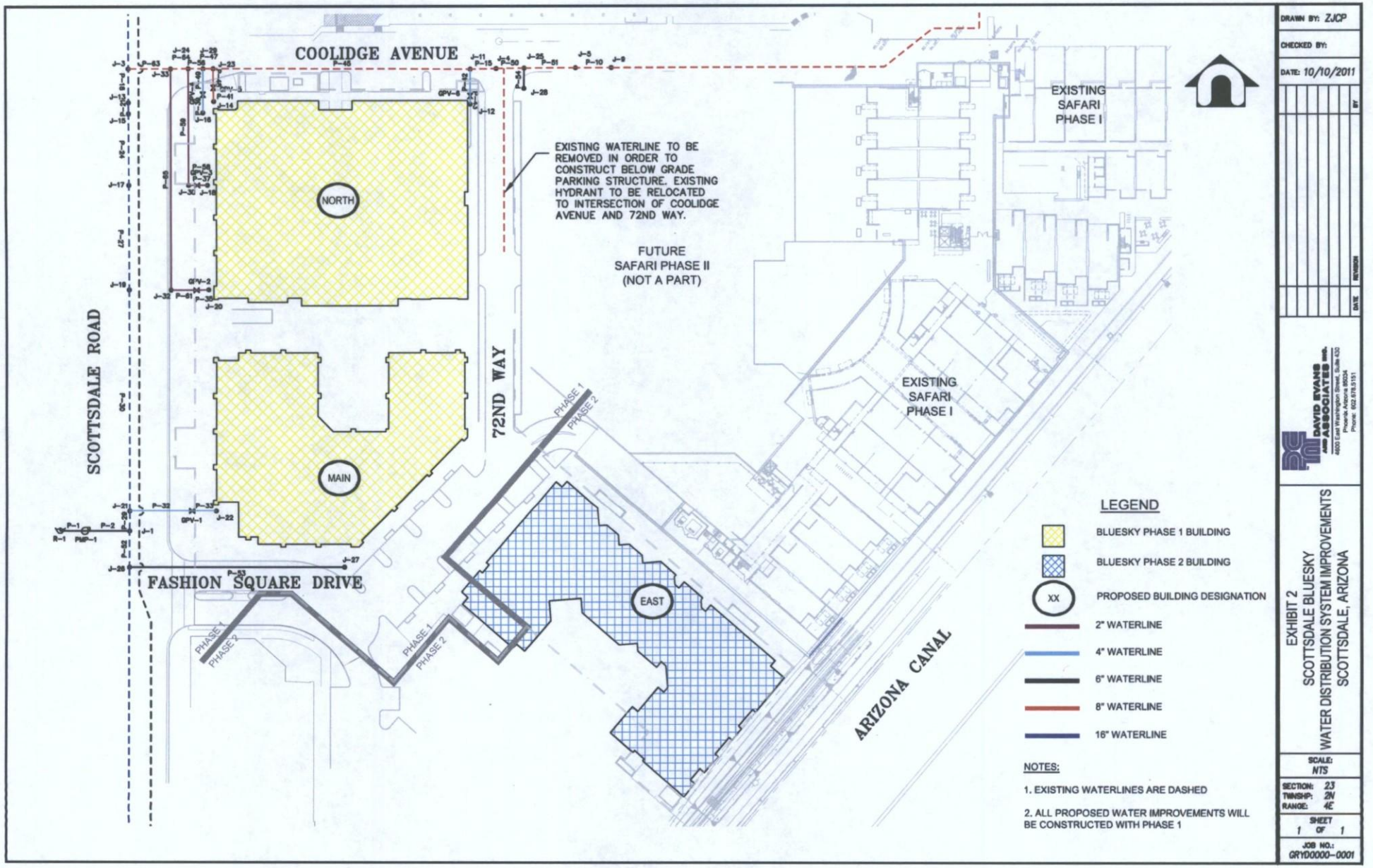
The proposed water improvements meet all City of Scottsdale pressure, velocity, and headloss requirements. It is recommended that the Blue Sky water distribution system improvements be designed as dictated in this report.

Although exact dates of construction are unknown at this time, it is currently anticipated that Phase 1 will begin construction in June 2012. Phase 1 is expected to be complete in April 2014. Phase 2 is anticipated to begin construction in January 2015. Phase 2 is expected to be complete in April 2016. This schedule is subject to change.



P:\G\GRYD00000001\0400CAD\EC_HY\GRYD_VICINITYMAP.dwg zjcp Sep 28, 2011 4:13:42pm

NOT TO SCALE	**SCOTTSDALE BLUESKY VICINITY MAP EXHIBIT 1**	DRAWN BY: DHPA
SHEET: 1 OF 1		CHECKED BY: RYG
JOB NO.: GRYD0001	DAVID EVANS AND ASSOCIATES INC. 2141 E. Highland Ave. Suite 200 Phoenix, AZ 85016 Phone: 602.678.5151	DATE: 08/11



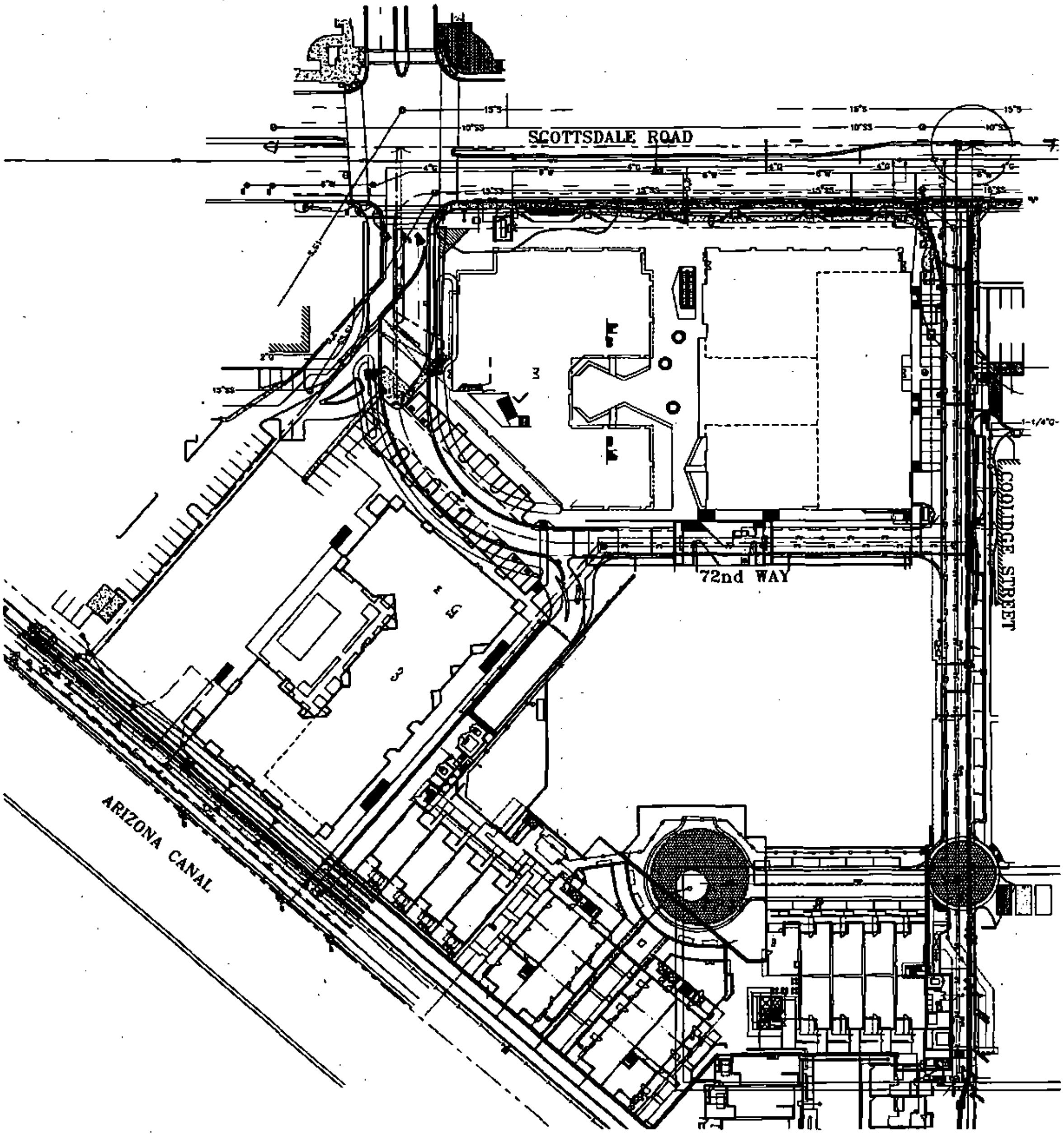
DRAWN BY: ZJCP
CHECKED BY:
DATE: 10/10/2011

BY	REVISION	DATE

DAVID EVANS and ASSOCIATES inc.
4600 East Washington Street, Suite 600
Phoenix, Arizona 85034
Phone: 602.678.3191

EXHIBIT 2
SCOTTSDALE BLUESKY
WATER DISTRIBUTION SYSTEM IMPROVEMENTS
SCOTTSDALE, ARIZONA

SCALE: NTS
SECTION: 23
TWNSHP: 2N
RANGE: 4E
SHEET 1 OF 1
JOB NO.: GRYD0000-0001



LEGEND

EXISTING UTILITIES

- EXISTING WATER
- SANITARY SEWER PIPE
- UNDERGROUND POWER LINE
- EXISTING OVERHEAD ELECTRIC
- GAS LINE
- EXISTING STORM DRAIN PIPE
- EXISTING SEWER MANHOLE
- EXISTING BOX CULVERT
- EXISTING FIRE HYDRANT

SHEET 1 OF 1	JOB NO:	SECTION 23 TOWNSHIP 2N RANGE 4E
SCALE: NTS		

MASTER UTILITY PLAN FOR
SCOTTSDALE BLUE SKY
GREY DEVELOPMENT
SCOTTSDALE, ARIZONA

DAVID EVANS AND ASSOCIATES INC.
4800 E. Washington Street, Suite 430
Phoenix, Arizona 85034
Phone: 602 678.5151

DESIGNED BY:	ZJCP
DRAWN BY:	ZJCP
CHECKED BY:	BHD
DATE:	8/2/2011

PROJECT MANAGER: ____________

DATE	REVISION	BY

A

APPENDIX A
CITY OF SCOTTSDALE WATER QUARTER SECTION MAP

19-45

18-44

18-46

17-45

GENERAL NOTES:

- THIS IS A COMPUTER GENERATED DRAWING. FOR ANY QUESTIONS PLEASE CONTACT THE CITY OF SCOTTSDALE GIS DEPARTMENT AT (480) 312-7782.
- THE SECTION LINE BEARING AND DISTANCES ARE BASED ON THE CITY OF SCOTTSDALE GPS SURVEY OF SEPTEMBER 1991. BEARINGS ARE BASED ON GRID AND DISTANCES ARE FACTORED TO GROUND. WHERE NO CORNER WAS FOUND THE DIMENSIONS ARE BASED ON CALCULATED VECTORS CORNERS AND ARE NOTED AS "CALCULATED" ON THE MAP.

LEGEND:

- Air Release Valve
- Non-potable Air Release Valve
- Blowoff
- Cap
- Cathodic Protection
- Fill Drain
- Fire Hydrant
- Non-GPS Point
- Pressure Reducing Valve
- Pump
- Reducer
- Sample Station
- Water Manhole
- Non-Potable Manhole
- Well
- Valve
- Non-potable Valve
- Vault
- Water Main
- Non-Potable Main
- Fire / Private Main
- Non-Scottsdale Main
- Not found per improvement plans (4)
- Not found per improvement plans and/or G.S. maps (5)
- Found in field no reference (6)
- Map Error Point (7)

VICINITY MAP

NORTH

SCALE: 1" = 100'

0 50 100 200

The map scale of 1" = 100' is based on a full size print of 30" x 36"

WATER

QUARTER SECTION MAP

18-45

NW 1/4 SEC. 23 T2N R4E

Water Approval
12/22/99

SCOTTSDALE GEOGRAPHIC INFORMATION SYSTEMS

3939 North Drinkwater Boulevard
Scottsdale, Arizona 85251

B

APPENDIX B
FIRE HYDRANT FLOW TEST RESULTS

E·J Flow Tests

FLOW TESTING SERVICES

FLOW TEST SUMMARY

EJ Flow Tests Project Name: Scottsdale Blue Sky
EJ Flow Tests Project No.: 11065
Project Address: Camelback Road and Scottsdale Road (northeast corner), Scottsdale, Arizona

Raw Test Data:
Date of Flow Test: August 15, 2011
Time of Flow Test: 7:30 AM
Data is current and reliable until: February 15, 2012

Static Pressure: 96 psi
(measured in pounds per square inch)

Residual Pressure: 85 psi
(measured in pounds per square inch)

Pitot Pressure: 24 psi (4-1/2 inch)
25 psi (2-1/2 inch)
(measured in pounds per square inch)

Fire Hydrant Orifice Diameter: One (4-1/2 inch)
(measured in inches) One (2-1/2 inch)

Coefficient of Discharge: .90 = smooth outlet each
Flowing GPM: 3,050
2,211 gpm + 839 gpm = 3,050 gpm
(measured in gallons per minute)
(.83 coefficient applied for pumper outlet per NFPA 291)
GPM @ 20 PSI: 8,661

Data with 24 PSI Safety Factor (minimum):

Scottsdale requires a maximum Static Pressure of 72 psi for safety factor data

Static Pressure: 72.0 psi
(measured in pounds per square inch)

Residual Pressure: 61.0 psi
(measured in pounds per square inch)

Distance between hydrants: Approx. 275-ft

Main size: 16-inch main-per Phil Cipolla

Flowing GPM: 3,050
GPM @ 20 PSI: 7,055

Conducted by/Witnessed by/City Forces Contacted:
Conducted by: Jaron Fletcher and Floyd Vaughan – EJ Flow Tests (602.999.7637)
Witnessed by: Phil Cipolla - City of Scottsdale Inspector (602.828.0847)

Flow Test Vicinity Map (no scale)

APPENDIX C
FIRE FLOW CALCULATION TABLE

SCOTTSDALE BLUESKY
FIRE FLOW REQUIREMENTS

October 10, 2011

Building			Area (sf)														Fire Flow			
			Level													Three Largest Consecutive Floors or Largest Garage Floor	Per 2006 IFC (gpm)	FF w/ 50% Sprinkler Reduction (gpm)	FF w/ 75% Sprinkler Reduction (gpm)	Required[1] (gpm)
ID	Type	Land Uses	1	2	3	4	5	6	7	8	9	10	11	12	13					
North	IA	Residential, Grocery	34,013	0	34,013	28,757	28,757	27,610	27,610	13,844	13,844	13,844	13,844	13,844	13,488	91,527	3,250	1,625	813	2,500
Main	IA	Residential, Retail, Office, Restaurant	25,373	10,585	24,343	24,343	22,916	22,916	22,916	21,696	21,696	21,696	21,696	20,124	14,224	71,602	3,000	1,500	750	2,500
East	IA	Residential, Hotel	25,388	23,785	25,576	25,576	25,576	25,576	25,576	20,390	20,390	20,390	20,390	20,390	19,259	76,728	3,000	1,500	750	2,500
Garage	IB	Garage (Below Ground)	137,166	136,166	137,080	136,770	-	-	-	-	-	-	-	-	-	137,166	4,000	2,000	1,000	2,500

Notes

[1] Per Section 6-1.501 of the City of Scottsdale Design Standards & Policy Manual (January 2010)

D

APPENDIX D
WATER DEMAND TABLE

SCOTTSDALE BLUESKY
WATER DEMANDS

October 10, 2011

Node	Building	Phase	Land Use and Description	Area Sq. Ft.	Dwellings Served	Average Daily Demand Per Unit (gpd)	Average Daily Demand (gpm)	Max. Day Factor	Maximum Daily Demand (gpm)	Peak Hour Factor	Peak Hour Demand (gpm)
J-9	Safari Phase II	-	Residential		130	446.3	40.2	2.0	80.3	3.5	140.6
J-12	East	2	1/3 Hotel	59,018	76	446.3	23.7	2.0	47.3	3.5	82.8
J-12	East	2	1/3 Residential	40,403	40	185.3	5.1	2.0	10.3	3.5	18.0
J-12	North	1	1/3 Residential	80,489	76	185.3	9.8	2.0	19.6	3.5	34.2
J-12	Main	1	1/3 Retail	8,458		0.8	4.7	2.0	9.4	3.5	16.4
J-12	Main	1	1/3 Office	3,156		0.6	1.3	2.0	2.6	3.5	4.6
J-12	Main	1	1/3 Residential	76,370	72	185.3	9.3	2.0	18.6	3.5	32.6
J-16	East	2	1/3 Hotel	59,018	76	446.3	23.7	2.0	47.3	3.5	82.8
J-16	East	2	1/3 Residential	40,403	40	185.3	5.1	2.0	10.3	3.5	18.0
J-16	North	1	1/3 Residential	80,489	76	185.3	9.8	2.0	19.6	3.5	34.2
J-16	Main	1	1/3 Retail	8,458		0.8	4.7	2.0	9.4	3.5	16.4
J-16	Main	1	1/3 Office	3,156		0.6	1.3	2.0	2.6	3.5	4.6
J-16	Main	1	1/3 Residential	76,370	72	185.3	9.3	2.0	18.6	3.5	32.6
J-18	North	1	Grocery	32,000		0.7	15.6	2.0	31.1	3.5	54.4
J-20	Main	1	Restaurant	10,574		0.8	5.9	2.0	11.7	3.5	20.6
J-22	East	2	1/3 Hotel	59,018	76	446.3	23.7	2.0	47.3	3.5	82.8
J-22	East	2	1/3 Residential	40,403	40	185.3	5.1	2.0	10.3	3.5	18.0
J-22	North	1	1/3 Residential	80,489	76	185.3	9.8	2.0	19.6	3.5	34.2
J-22	Main	1	1/3 Retail	8,458		0.8	4.7	2.0	9.4	3.5	16.4
J-22	Main	1	1/3 Office	3,156		0.6	1.3	2.0	2.6	3.5	4.6
J-22	Main	1	1/3 Residential	76,370	72	185.3	9.3	2.0	18.6	3.5	32.6
			PHASE 1 TOTALS				**97**		**193**		**339**
			ULTIMATE BUILDOUT (PHASE 1 & PHASE 2 + SAFARI PHASE II) TOTALS				**223**		**447**		**782**

Note: The original Residential dwelling unit (DU) count for the Safari Phase II project was 108 DUs per the *Safari Drive Water Design Report* prepared by DEA in May of 2006. An additional 22 DUs were added to this count as a factor of safety (a 20% increase) since the exact unit count for this development is currently unknown.

ε

APPENDIX E
WATER MODELING OUTPUT

PHASE 1

SCOTTSDALE BLUESKY
PHASE 1
PEAK HOUR
JUNCTION REPORT

October 10, 2011

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
J-1	1,280	0	1,446	71.8
J-3	1,280	0	1,446	71.8
J-4	1,279	0	1,446	72.1
J-5	1,279	0	1,446	72.1
J-9	1,279	0	1,446	72.1
J-11	1,279	0	1,446	72.1
J-12	1,281	88	1,418	59.4
J-13	1,280	0	1,446	71.8
J-14	1,281	0	1,446	71.3
J-15	1,280	0	1,446	71.8
J-16	1,281	88	1,418	59.4
J-17	1,280	0	1,446	71.8
J-18	1,281	54	1,424	62.0
J-19	1,280	0	1,446	71.8
J-20	1,281	21	1,431	64.9
J-21	1,280	0	1,446	71.8
J-22	1,281	88	1,418	59.4
J-23	1,281	0	1,446	71.3
J-24	1,281	0	1,446	71.3
J-25	1,279	0	1,446	72.1
J-26	1,280	0	1,446	71.8
J-27	1,279	0	1,446	72.2
J-28	1,279	0	1,446	72.1
J-29	1,281	0	1,446	71.3
J-30	1,280	0	1,439	68.8
J-32	1,281	0	1,444	70.4
J-33	1,280	0	1,446	71.7

SCOTTSDALE BLUESKY
PHASE 1
PEAK HOUR
PIPE REPORT

October 10, 2011

Label	Length (ft)	Start Node	Stop Node	Diameter (in)	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)
P-1	1	R-1	PMP-1	54	130	339	0.1	0.000
P-2	1	PMP-1	J-1	54	130	339	0.1	0.000
P-10	29	J-5	J-9	8	130	0	0.0	0.000
P-15	22	J-11	J-4	8	130	0	0.0	0.000
P-18	28	J-13	J-3	16	130	251	0.4	0.000
P-21	9	J-15	J-13	16	130	251	0.4	0.000
P-24	59	J-17	J-15	16	130	251	0.4	0.000
P-27	85	J-19	J-17	16	130	251	0.4	0.000
P-29	17	J-1	J-21	16	130	339	0.5	0.000
P-30	180	J-21	J-19	16	130	251	0.4	0.000
P-32	51	J-21	GPV-1	4	130	88	2.2	0.006
P-33	20	GPV-1	J-22	4	130	88	2.2	0.006
P-35	10	GPV-2	J-20	2	130	21	2.1	0.012
P-37	9	GPV-3	J-18	2	130	54	5.6	0.071
P-39	15	GPV-4	J-16	4	130	88	2.2	0.006
P-41	11	GPV-5	J-14	8	130	0	0.0	0.000
P-42	22	J-11	GPV-6	4	130	88	2.2	0.006
P-43	7	GPV-6	J-12	4	130	88	2.2	0.006
P-45	213	J-23	J-11	8	130	88	0.6	0.000
P-47	8	J-24	J-23	8	130	88	0.6	0.000
P-48	16	GPV-5	J-23	8	130	0	0.0	0.000
P-49	21	GPV-4	J-24	4	130	-88	2.2	0.006
P-50	23	J-4	J-25	8	130	0	0.0	0.000
P-51	42	J-25	J-5	8	130	0	0.0	0.000
P-52	30	J-1	J-26	16	130	0	0.0	0.000
P-53	178	J-26	J-27	6	130	0	0.0	0.000
P-54	17	J-25	J-28	6	130	0	0.0	0.000
P-56	12	J-29	J-24	8	130	176	1.1	0.001
P-58	7	J-30	GPV-3	2	130	54	5.6	0.071
P-59	95	J-29	J-30	2	130	54	5.6	0.071
P-61	21	J-32	GPV-2	2	130	21	2.1	0.012
P-63	35	J-3	J-33	8	130	251	1.6	0.001
P-64	15	J-33	J-29	8	130	230	1.5	0.001
P-65	181	J-32	J-33	2	130	-21	2.1	0.012

SCOTTSDALE BLUESKY
PHASE 1
PEAK HOUR
PUMP REPORT

October 10, 2011

Label	Elevation (ft)	Pump Definition	Status (Initial)	Hydraulic Grade (Suction) (ft)	Hydraulic Grade (Discharge) (ft)	Pump Head (ft)	Flow (Total) (gpm)
PMP-1	1280.0	8/15/2011	On	1,280.0	1,445.9	165.9	339

SCOTTSDALE BLUESKY
PHASE 1
PEAK HOUR
RESERVOIR REPORT

October 10, 2011

Label	Elevation (ft)	Hydraulic Grade (ft)	Flow (Out net) (gpm)
R-1	1280.0	1,280.0	339

SCOTTSDALE BLUESKY
PHASE 1
PEAK HOUR
VALVE REPORT

October 10, 2011

Label	Elevation (ft)	Diameter (in)	General Purpose Valve Headloss Curve	Flow (gpm)	Hydraulic Grade (From) (ft)	Hydraulic Grade (To) (ft)	Headloss (ft)
GPV-1	1,281	4	4" - Febco 880V	88	1445.6	1418.4	27.2
GPV-2	1,281	2	2" - Febco 850U	21	1443.4	1431.1	12.3
GPV-3	1,281	2	2" - Febco 850U	54	1438.5	1424.9	13.6
GPV-4	1,281	4	4" - Febco 880V	88	1445.7	1418.5	27.2
GPV-5	1,281	8	8" - Febco 880V	0	1445.8	1445.8	0.0
GPV-6	1,281	4	4" - Febco 880V	88	1445.6	1418.4	27.2

SCOTTSDALE BLUESKY
PHASE 1
MAX DAY + FF
FIRE FLOW REPORT

October 10, 2011

Label	Satisfies Fire Flow Constraints?	Fire Flow (Needed) (gpm)	Fire Flow (Available) (gpm)	Flow (Total Needed) (gpm)	Flow (Total Available) (gpm)	Pressure (Residual Lower Limit) (psi)	Pressure (Calculated Residual) (psi)	Pressure (System Lower Limit) (psi)	Pressure (Calculated System Lower Limit) (psi)	Junction w/ Minimum Pressure (System)
J-1	TRUE	2,500	5,000	2,500	5,000	30.0	42.5	30.0	32.3	J-22
J-3	TRUE	2,500	5,000	2,500	5,000	30.0	40.4	30.0	30.2	J-12
J-4	TRUE	2,500	3,063	2,500	3,063	30.0	39.2	30.0	30.0	J-12
J-5	TRUE	2,500	3,063	2,500	3,063	30.0	35.1	30.0	30.0	J-12
J-9	TRUE	2,500	3,063	2,500	3,063	30.0	33.3	30.0	30.0	J-12
J-11	TRUE	2,500	3,063	2,500	3,063	30.0	40.6	30.0	30.0	J-12
J-12	(N/A)	2,500	(N/A)	(N/A)	(N/A)	30.0	(N/A)	30.0	(N/A)	((N/A))
J-13	TRUE	2,500	5,000	2,500	5,000	30.0	40.5	30.0	30.4	J-12
J-14	TRUE	2,500	3,569	2,500	3,569	30.0	30.0	30.0	38.2	J-12
J-15	TRUE	2,500	5,000	2,500	5,000	30.0	40.6	30.0	30.4	J-12
J-16	(N/A)	2,500	(N/A)	(N/A)	(N/A)	30.0	(N/A)	30.0	(N/A)	((N/A))
J-17	TRUE	2,500	5,000	2,500	5,000	30.0	40.9	30.0	30.7	J-12
J-18	(N/A)	2,500	(N/A)	(N/A)	(N/A)	30.0	(N/A)	30.0	(N/A)	((N/A))
J-19	TRUE	2,500	5,000	2,500	5,000	30.0	41.4	30.0	31.2	J-12
J-20	(N/A)	2,500	(N/A)	(N/A)	(N/A)	30.0	(N/A)	30.0	(N/A)	((N/A))
J-21	TRUE	2,500	5,000	2,500	5,000	30.0	42.4	30.0	32.2	J-22
J-22	(N/A)	2,500	(N/A)	(N/A)	(N/A)	30.0	(N/A)	30.0	(N/A)	((N/A))
J-23	TRUE	2,500	4,223	2,500	4,223	30.0	39.7	30.0	30.0	J-12
J-24	TRUE	2,500	4,297	2,500	4,297	30.0	39.7	30.0	30.0	J-12
J-25	TRUE	2,500	3,063	2,500	3,063	30.0	37.8	30.0	30.0	J-12
J-26	(N/A)	2,500	(N/A)	(N/A)	(N/A)	30.0	(N/A)	30.0	(N/A)	((N/A))
J-27	TRUE	2,500	2,585	2,500	2,585	30.0	30.0	30.0	52.5	J-22
J-28	TRUE	2,500	3,063	2,500	3,063	30.0	33.5	30.0	30.0	J-12
J-29	TRUE	2,500	4,416	2,500	4,416	30.0	39.7	30.0	30.0	J-12
J-30	(N/A)	2,500	(N/A)	(N/A)	(N/A)	30.0	(N/A)	30.0	(N/A)	((N/A))
J-32	(N/A)	2,500	(N/A)	(N/A)	(N/A)	30.0	(N/A)	30.0	(N/A)	((N/A))
J-33	TRUE	2,500	4,571	2,500	4,571	30.0	40.2	30.0	30.0	J-12

ULTIMATE BUILDOUT (PHASE 1 & PHASE 2 + SAFARI PHASE II)

SCOTTSDALE BLUESKY
ULTIMATE BUILDOUT (PHASES 1 AND 2 + SAFARI PHASE II)
PEAK HOUR
JUNCTION REPORT

October 10, 2011

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
J-1	1,280	0	1,444	71.1
J-3	1,280	0	1,444	71.0
J-4	1,279	0	1,443	71.1
J-5	1,279	0	1,443	71.1
J-9	1,279	141	1,443	71.0
J-11	1,279	0	1,443	71.1
J-12	1,281	189	1,417	58.7
J-13	1,280	0	1,444	71.0
J-14	1,281	0	1,444	70.4
J-15	1,280	0	1,444	71.0
J-16	1,281	189	1,417	58.8
J-17	1,280	0	1,444	71.0
J-18	1,281	54	1,422	61.1
J-19	1,280	0	1,444	71.1
J-20	1,281	21	1,429	64.1
J-21	1,280	0	1,444	71.1
J-22	1,281	189	1,417	58.6
J-23	1,281	0	1,444	70.4
J-24	1,281	0	1,444	70.4
J-25	1,279	0	1,443	71.1
J-26	1,280	0	1,444	71.1
J-27	1,279	0	1,444	71.5
J-28	1,279	0	1,443	71.1
J-29	1,281	0	1,444	70.5
J-30	1,280	0	1,437	67.9
J-32	1,281	0	1,442	69.6
J-33	1,280	0	1,444	70.9

SCOTTSDALE BLUESKY
ULTIMATE BUILDOUT (PHASES 1 AND 2 + SAFARI PHASE II)
PEAK HOUR
PIPE REPORT

October 10, 2011

Label	Length (ft)	Start Node	Stop Node	Diameter (in)	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)
P-1	1	R-1	PMP-1	54	130	782	0.1	0.000
P-2	1	PMP-1	J-1	54	130	782	0.1	0.000
P-10	29	J-5	J-9	8	130	141	0.9	0.000
P-15	22	J-11	J-4	8	130	141	0.9	0.000
P-18	28	J-13	J-3	16	130	593	1.0	0.000
P-21	9	J-15	J-13	16	130	593	1.0	0.000
P-24	59	J-17	J-15	16	130	593	1.0	0.000
P-27	85	J-19	J-17	16	130	593	1.0	0.000
P-29	17	J-1	J-21	16	130	782	1.3	0.000
P-30	180	J-21	J-19	16	130	593	1.0	0.000
P-32	51	J-21	GPV-1	4	130	189	4.8	0.024
P-33	20	GPV-1	J-22	4	130	189	4.8	0.024
P-35	10	GPV-2	J-20	2	130	21	2.1	0.012
P-37	9	GPV-3	J-18	2	130	54	5.6	0.071
P-39	15	GPV-4	J-16	4	130	189	4.8	0.024
P-41	11	GPV-5	J-14	8	130	0	0.0	0.000
P-42	22	J-11	GPV-6	4	130	189	4.8	0.024
P-43	7	GPV-6	J-12	4	130	189	4.8	0.024
P-45	213	J-23	J-11	8	130	329	2.1	0.002
P-47	8	J-24	J-23	8	130	329	2.1	0.002
P-48	16	GPV-5	J-23	8	130	0	0.0	0.000
P-49	21	GPV-4	J-24	4	130	-189	4.8	0.024
P-50	23	J-4	J-25	8	130	141	0.9	0.000
P-51	42	J-25	J-5	8	130	141	0.9	0.000
P-52	30	J-1	J-26	16	130	0	0.0	0.000
P-53	178	J-26	J-27	6	130	0	0.0	0.000
P-54	17	J-25	J-28	6	130	0	0.0	0.000
P-56	12	J-29	J-24	8	130	518	3.3	0.005
P-58	7	J-30	GPV-3	2	130	54	5.6	0.071
P-59	95	J-29	J-30	2	130	54	5.6	0.071
P-61	21	J-32	GPV-2	2	130	21	2.1	0.012
P-63	35	J-3	J-33	8	130	593	3.8	0.007
P-64	15	J-33	J-29	8	130	572	3.7	0.007
P-65	181	J-32	J-33	2	130	-21	2.1	0.012

SCOTTSDALE BLUESKY
ULTIMATE BUILDOUT (PHASES 1 AND 2 + SAFARI PHASE II)
PEAK HOUR
PUMP REPORT

October 10, 2011

Label	Elevation (ft)	Pump Definition	Status (Initial)	Hydraulic Grade (Suction) (ft)	Hydraulic Grade (Discharge) (ft)	Pump Head (ft)	Flow (Total) (gpm)
PMP-1	1280.0	8/15/2011	On	1,280.0	1,444.3	164.3	782

SCOTTSDALE BLUESKY
ULTIMATE BUILDOUT (PHASES 1 AND 2 + SAFARI PHASE II)
PEAK HOUR
RESERVOIR REPORT

October 10, 2011

Label	Elevation (ft)	Hydraulic Grade (ft)	Flow (Out net) (gpm)
R-1	1280.0	1280.0	782

SCOTTSDALE BLUESKY
ULTIMATE BUILDOUT (PHASES 1 AND 2 + SAFARI PHASE II)
PEAK HOUR
VALVE REPORT

October 10, 2011

Label	Elevation (ft)	Diameter (in)	General Purpose Valve Headloss Curve	Flow (gpm)	Hydraulic Grade (From) (ft)	Hydraulic Grade (To) (ft)	Headloss (ft)
GPV-1	1,281	4	4" - Febco 880V	189	1443.0	1417.0	26.0
GPV-2	1,281	2	2" - Febco 850U	21	1441.6	1429.3	12.3
GPV-3	1,281	2	2" - Febco 850U	54	1436.5	1422.9	13.6
GPV-4	1,281	4	4" - Febco 880V	189	1443.3	1417.3	26.0
GPV-5	1,281	8	8" - Febco 880V	0	1443.8	1443.7	0.0
GPV-6	1,281	4	4" - Febco 880V	189	1442.7	1416.7	26.0

SCOTTSDALE BLUESKY
ULTIMATE BUILDOUT (PHASES 1 AND 2 + SAFARI PHASE II)
MAX DAY + FF
FIRE FLOW REPORT

October 10, 2011

Label	Satisfies Fire Flow Constraints?	Fire Flow (Needed) (gpm)	Fire Flow (Available) (gpm)	Flow (Total Needed) (gpm)	Flow (Total Available) (gpm)	Pressure (Residual Lower Limit) (psi)	Pressure (Calculated Residual) (psi)	Pressure (System Lower Limit) (psi)	Pressure (Calculated System Lower Limit) (psi)	Junction w/ Minimum Pressure (System)
J-1	TRUE	2,500	4,643	2,500	4,643	30.0	43.6	30.0	30.0	J-22
J-3	TRUE	2,500	4,462	2,500	4,462	30.0	43.6	30.0	30.0	J-12
J-4	TRUE	2,500	2,692	2,500	2,692	30.0	42.7	30.0	30.0	J-12
J-5	TRUE	2,500	2,692	2,500	2,692	30.0	39.3	30.0	30.0	J-12
J-9	TRUE	2,500	2,692	2,580	2,772	30.0	37.8	30.0	30.0	J-12
J-11	TRUE	2,500	2,692	2,500	2,692	30.0	43.8	30.0	30.0	J-12
J-12	(N/A)	2,500	(N/A)	(N/A)	(N/A)	30.0	(N/A)	30.0	(N/A)	((N/A))
J-13	TRUE	2,500	4,474	2,500	4,474	30.0	43.6	30.0	30.0	J-12
J-14	TRUE	2,500	3,396	2,500	3,396	30.0	30.0	30.0	34.2	J-12
J-15	TRUE	2,500	4,479	2,500	4,479	30.0	43.6	30.0	30.0	J-12
J-16	(N/A)	2,500	(N/A)	(N/A)	(N/A)	30.0	(N/A)	30.0	(N/A)	((N/A))
J-17	TRUE	2,500	4,506	2,500	4,506	30.0	43.6	30.0	30.0	J-12
J-18	(N/A)	2,500	(N/A)	(N/A)	(N/A)	30.0	(N/A)	30.0	(N/A)	((N/A))
J-19	TRUE	2,500	4,546	2,500	4,546	30.0	43.6	30.0	30.0	J-12
J-20	(N/A)	2,500	(N/A)	(N/A)	(N/A)	30.0	(N/A)	30.0	(N/A)	((N/A))
J-21	TRUE	2,500	4,635	2,500	4,635	30.0	43.6	30.0	30.0	J-22
J-22	(N/A)	2,500	(N/A)	(N/A)	(N/A)	30.0	(N/A)	30.0	(N/A)	((N/A))
J-23	TRUE	2,500	3,736	2,500	3,736	30.0	43.1	30.0	30.0	J-12
J-24	TRUE	2,500	3,802	2,500	3,802	30.0	43.1	30.0	30.0	J-12
J-25	TRUE	2,500	2,692	2,500	2,692	30.0	41.5	30.0	30.0	J-12
J-26	(N/A)	2,500	(N/A)	(N/A)	(N/A)	30.0	(N/A)	30.0	(N/A)	((N/A))
J-27	TRUE	2,500	2,532	2,500	2,532	30.0	30.0	30.0	47.9	J-22
J-28	TRUE	2,500	2,692	2,500	2,692	30.0	38.2	30.0	30.0	J-12
J-29	TRUE	2,500	3,911	2,500	3,911	30.0	43.1	30.0	30.0	J-12
J-30	(N/A)	2,500	(N/A)	(N/A)	(N/A)	30.0	(N/A)	30.0	(N/A)	((N/A))
J-32	(N/A)	2,500	(N/A)	(N/A)	(N/A)	30.0	(N/A)	30.0	(N/A)	((N/A))
J-33	TRUE	2,500	4,053	2,500	4,053	30.0	43.5	30.0	30.0	J-12

WASTEWATER BASIS OF DESIGN REPORT
FOR
BLUE SKY SCOTTSDALE

PREPARED FOR

GRAY DEVELOPMENT, LLC
4040 E CAMELBACK ROAD, SUITE 275
PHOENIX, AZ 85018
(602) 508-7141
CONTACT: BRIAN KEARNEY

PREPARED BY

ZACKARY POPE, P.E.
DAVID EVANS & ASSOCIATES, INC.
4600 E WASHINGTON STREET, SUITE 430
PHOENIX, AZ 85034
(602) 678-5151

Expires 03/31/12

1ST SUBMITTAL
OCTOBER 2011

DEA PROJECT NO. GRYD0000-0001

62-DR-2011
1st: 11/23/2011

TABLE OF CONTENTS

EXHIBITS	TITLE
1	Vicinity Map
2	Wastewater Collection
3	Existing Utilities and Surface Improvements

APPENDICES	TITLE
A	City of Scottsdale Wastewater Quarter Section Map
B	Wastewater Generation Calculations
C	FlowMaster Modeling Calculations

A. INTRODUCTION

This basis of design report was completed under a contract with the Gray Development, LLC. The proposed Blue Sky Scottsdale project consists of three buildings containing retail, residential, office, restaurant, hotel, and grocery components. An underground parking structure will also be provided. The buildings will be constructed in two phases. The parking structure, the North Building, and the Main Building will be constructed as part of Phase 1. The East Building will be constructed as part of Phase 2. However, all of the wastewater improvements will be constructed during Phase 1.

1. Project Location

The proposed Blue Sky Scottsdale project is located near the northeast corner of the intersection of Scottsdale Road & Camelback Road within the city of Scottsdale, Arizona. The site is located within the northwest quarter of Section 23 of Township 2 North, Range 4 East of the Gila and Salt River Base and Meridian. The site is approximately 4.28 acres and irregularly shaped. It is generally bound by Scottsdale Road to the west, the Fashion Square road entrance alignment to the south, 72nd Way to the east, and Coolidge Street to the north. The area's street system in relationship to the location of the site is illustrated in Exhibit 1, the project's vicinity map.

2. Site Zoning

The zoning of the Blue Sky Scottsdale site is discussed in Section C.1 of this report.

3. General Plan

The Blue Sky project will provide strong support for the goals and policies of the City's General Plan. It will be consistent with the Downtown Plan and reflect its vision, goals, and policies. It will support the City's efforts to "boldly look to its metropolitan future" through the development of an urban oasis that brings to life the City's vision for:

- Mixed-use urban neighborhoods
- World class planning, architecture, and design
- Sustainability
- Connectivity and walkability
- Economic vitality, and
- Worldwide recognition as the premier destination in the United States

B. DESIGN DOCUMENTATION

1. Design Procedures

The analysis of the proposed wastewater collection system was done in compliance with the City of Scottsdale Design Standards & Policies Manual. The proposed wastewater collection system will serve the project in accordance with City of Scottsdale design standards and the ADEQ Engineering Bulletin 10.

The estimated Average Day Sewer Design Flows of the Blue Sky Scottsdale project were determined based on the following values.

- Residential Units = 140 gallons per DU per day (PF = 4.5)
- Hotel = 380 gallons per room per day (PF = 4.5)
- Retail = 0.5 gallons per square foot per day (PF = 3)
- Restaurant = 1.2 gallons per square foot per day (PF = 6)
- Offices = 0.3 gallons per square foot per day (PF = 3)
- Grocery = 0.19 gallons per square foot per day (PF = 4)

Note that the Grocery Land Use is not specifically listed in Figure 7.1-2 of the Design Standards and Policy Manual. However, the estimated wastewater generation of 0.19 gallons per square foot per day was utilized for the design of the Scottsdale Quarter project located near the intersection of Scottsdale Road & Greenway Hayden Loop. A peaking factor of 4.0 is utilized as a conservative measure.

2. Software

Wastewater generation was determined using a Microsoft Excel spreadsheet. DEA prepared FlowMaster™ calculations for the proposed wastewater collection system. FlowMaster is a pipe modeling software created by Bentley and Haestad Methods.

C. EXISTING CONDITIONS

1. Zoning and Land Use

The site falls under the Downtown Regional Multiple Use Type 2 Land Use designation. The site is currently zoned Downtown Regional Commercial Office, Type 2, Planned Block Developmnet Downtown Overlay (D/RCO-2 PBD DO) with amended development standards.

2. Existing Topography, Vegetation, and Landform Features

Generally, the existing topography slopes in a southeasterly direction at approximately 0.40%, with approximately 3 feet of fall across the property. The site in its existing condition is generally an unimproved dirt lot. An entrance road bisects the site that provides access to the existing

Safari Drive condominiums located to the east of the site. The entrance road also provides access to a commercial development located to the south of the site.

3. Existing Utilities

There is existing wastewater infrastructure located within the adjacent streets as illustrated on the City of Scottsdale Quarter Section map provided in Appendix A. This infrastructure includes an existing 8-inch line within Coolidge Street, an existing 15-inch line and an existing 10-inch line in Scottsdale Road, an existing 15-inch line that runs to the southeast from Scottsdale Road to just south of the project, and an existing private line within 72nd Way and bordering the southeast portion of the site.

The existing public line within 72nd Way currently conveys flow from Safari Phase I to the existing line in Coolidge Street.

Based on correspondence with the City of Scottsdale, there is adequate capacity offsite to convey the wastewater generated by the proposed improvements.

4. Existing Master Plans or Design Reports

A *Wastewater Basis of Design Report for Safari Drive* was prepared by DEA in 2006 for the Safari Drive condominiums. Phase 1 of Safari Drive has been constructed.

D. PROPOSED CONDITIONS

1. Site Plan

Exhibit 2 illustrates the proposed site improvements.

2. Proposed Connections

All of the proposed sewer lines will be private. Exhibit 2 illustrates the proposed connections to the existing system. The North and Main buildings will be served by a single line that conveys their flow to the existing 15-inch line in Scottsdale Road.

A portion of the existing public line in 72nd Way will be removed in order to construct the underground parking structure. A public abandonment will be required in order to remove this sewer. The flow from the existing 26 DUs in Safari Phase I that currently utilize this sewer will be rerouted to the south through the Blue Sky parking garage where it will ultimately tie into the existing manhole along the southern border of the Blue Sky property. A common property owner's association will be created in order to maintain the private sewer.

The East building will be served by the line that is to be re-routed through the garage.

3. Maintenance Responsibilities

The maintenance responsibilities of the Blue Sky Scottsdale development are that of any typical commercial development in the area. No onsite wastewater pumping stations are required for the project. A common property owner's association will be created in order to maintain the private sewer that runs through the Blue Sky parking garage.

E. COMPUTATIONS

1. Computer Calculations

The Blue Sky development's proposed wastewater collection system was analyzed for the Phase 1 and Ultimate Buildout scenarios. Phase 1 includes the rerouting of the sewer of the existing Safari Phase 1 development. Exhibit 2 illustrates the onsite wastewater collection system improvements required to serve the development. Note that all of the wastewater improvements will be constructed during Phase 1.

Table E.1.1 summarizes the wastewater flows for Blue Sky. It also summarizes the existing flow from Safari Phase 1 (26 DUs) that will be rerouted through the Blue Sky development. Detailed sanitary sewer calculations that break down the values listed below and the FlowMaster output for this report are provided in Appendices B and C, respectively. The peak flows are based on peaking factors as set forth in the City of Scottsdale Design Standards & Policies Manual.

TABLE E.1.1 – WASTEWATER GENERATION SUMMARY

Phase	ADWF (gpd)	Peak Flow (gpd)
Portion of Existing Safari Phase I	3,640	16,380
Blue Sky Phase 1	96,596	427,328
Blue Sky Ultimate Buildout	200,416	894,574

Appendix C contains the FlowMaster output for both Phase 1 and Ultimate Buildout.

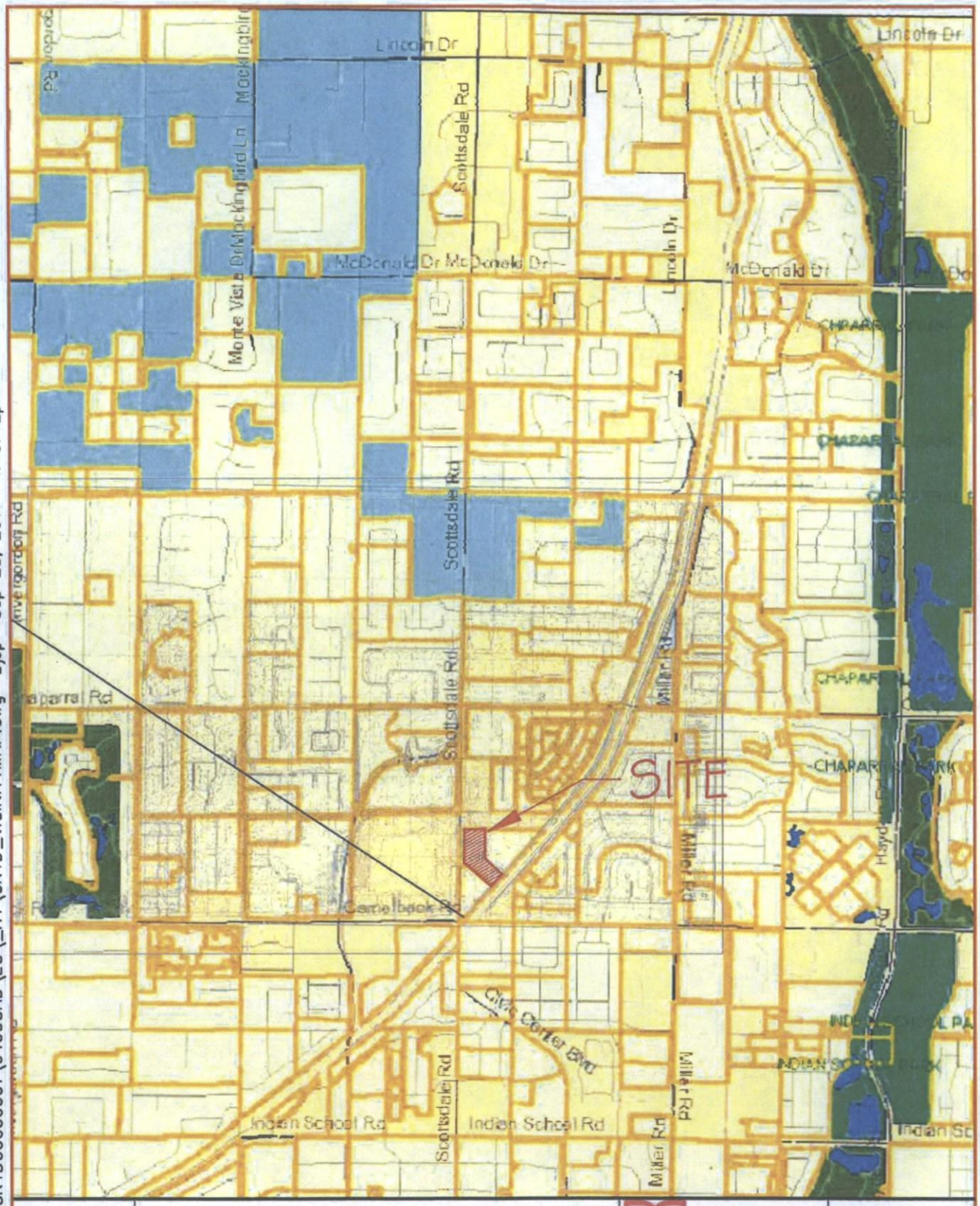
The downstream impacts to the existing wastewater system due to the proposed improvements were not analyzed.

F. SUMMARY

The construction of Blue Sky Scottsdale will require minor improvements to the City's existing sewer infrastructure as indicated in this report. This project will require the abandonment of

existing onsite sewer and the construction of new onsite sewer lines. The proposed wastewater collection system detailed in this report has been designed in accordance with all City of Scottsdale design standards and policies.

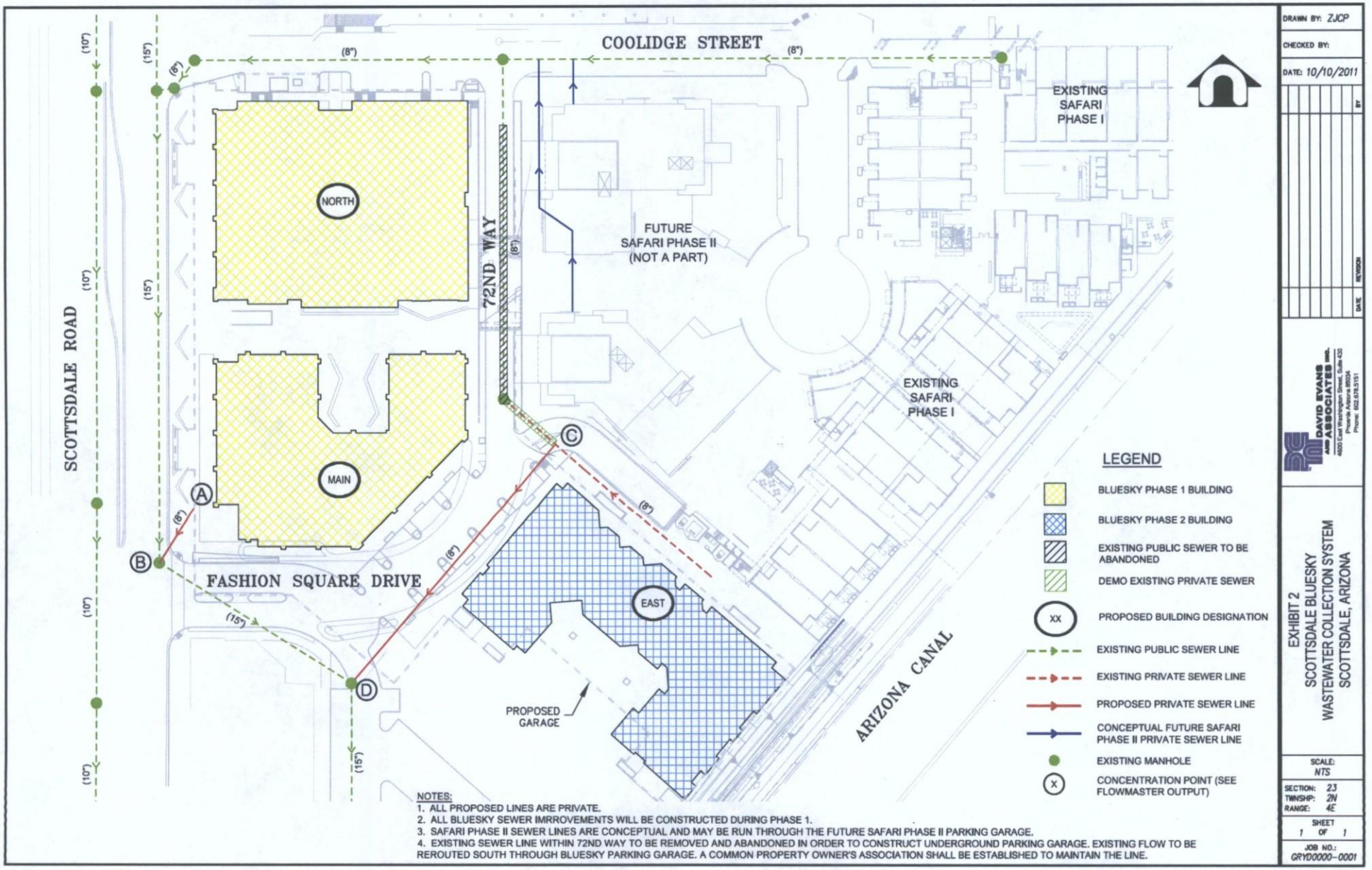
Although exact dates of construction are unknown at this time, it is currently anticipated that Phase 1 will begin construction in June 2012. Phase 1 is expected to be complete in April 2014. Phase 2 is anticipated to begin construction in January 2015. Phase 2 is expected to be complete in April 2016. This schedule is subject to change.



P:\G\GRYD00000001\0400CAD\EC_HY\GRYD_VICINITYMAP.dwg zjcp Sep 28, 2011 4:13:42pm

NOT TO SCALE	**SCOTTSDALE BLUESKY VICINITY MAP EXHIBIT 1**	DRAWN BY: DHPA
SHEET: 1 OF 1		CHECKED BY: RYG
JOB NO.: GRYD0001		DATE: 08/11

DAVID EVANS AND ASSOCIATES INC.
2141 E. Highland Ave. Suite 200
Phoenix, AZ 85016
Phone: 602.678.5151



NOTES:
1. ALL PROPOSED LINES ARE PRIVATE.
2. ALL BLUESKY SEWER IMRROVEMENTS WILL BE CONSTRUCTED DURING PHASE 1.
3. SAFARI PHASE II SEWER LINES ARE CONCEPTUAL AND MAY BE RUN THROUGH THE FUTURE SAFARI PHASE II PARKING GARAGE.
4. EXISTING SEWER LINE WITHIN 72ND WAY TO BE REMOVED AND ABANDONED IN ORDER TO CONSTRUCT UNDERGROUND PARKING GARAGE. EXISTING FLOW TO BE REROUTED SOUTH THROUGH BLUESKY PARKING GARAGE. A COMMON PROPERTY OWNER'S ASSOCIATION SHALL BE ESTABLISHED TO MAINTAIN THE LINE.

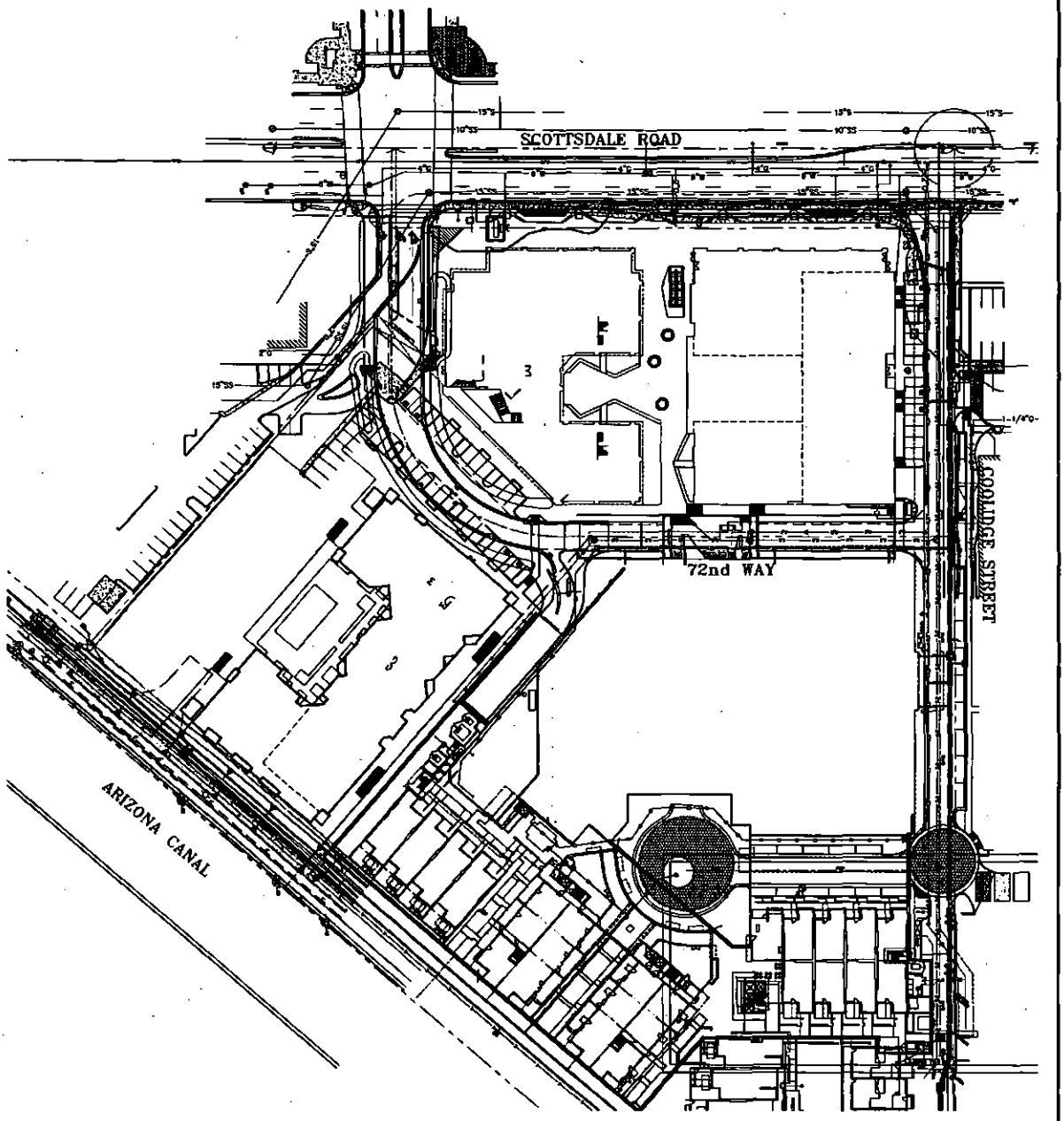
DRAWN BY: ZJCP
CHECKED BY:
DATE: 10/10/2011

DATE	REVISION	BY

DAVID EVANS AND ASSOCIATES INC.
4600 East Washington Street, Suite 433
Phoenix Arizona 85034
Phone: 602.678.5151

EXHIBIT 2
SCOTTSDALE BLUESKY
WASTEWATER COLLECTION SYSTEM
SCOTTSDALE, ARIZONA

SCALE: NTS
SECTION: 23
TWNSHP: 2N
RANGE: 4E
SHEET 1 OF 1
JOB NO.: GRYD0000-0001



LEGEND

EXISTING UTILITIES

EXISTING WATER
SANITARY SEWER PIPE
UNDERGROUND POWER LINE
EXISTING OVERHEAD ELECTRIC
GAS LINE
EXISTING STORM DRAIN PIPE
EXISTING SEWER MANHOLE
EXISTING BOX CULVERT
EXISTING FIRE HYDRANT

MASTER UTILITY PLAN FOR SCOTTSDALE BLUE SKY GREY DEVELOPMENT SCOTTSDALE, ARIZONA

DAVID EVANS AND ASSOCIATES INC.
1100 E. Washington Street, Suite 120
Phoenix, Arizona 85034
Phone: 602.978.5151

DESIGNED BY:	ZJCP
DRAWN BY:	ZJCP
CHECKED BY:	SHO
DATE:	8/2/2011

PROJECT MANAGER:

DATE	REVISION	BY

SCALE: 1"=

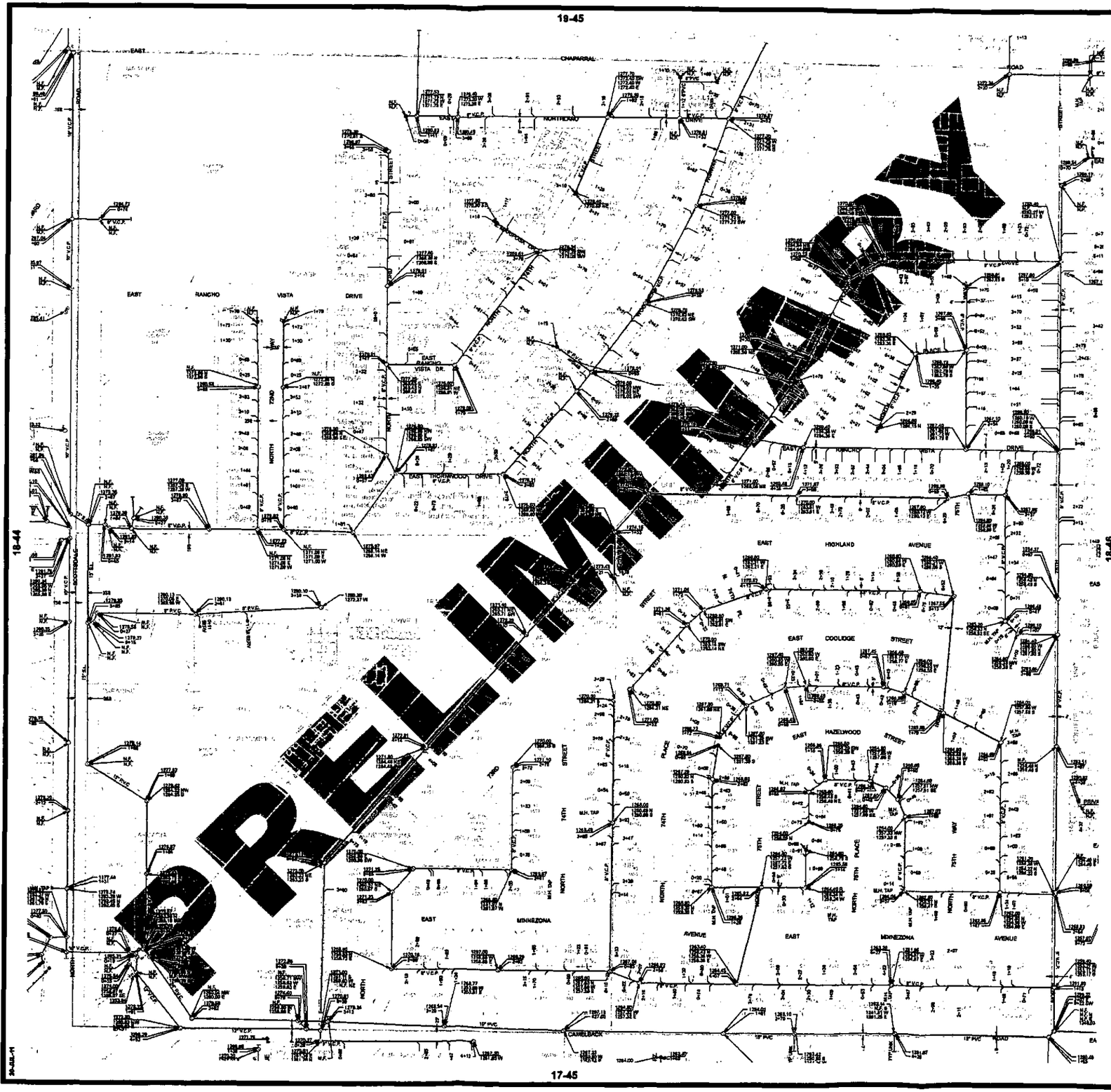
SECTION 22
TOWNSHIP 2N
RANGE 4E

DAVID EVANS JOB NO. 00000-00000-00001

SHEET 1 OF 1

APPENDIX A
CITY OF SCOTTSDALE WASTEWATER QUARTER SECTION MAP

19-45



GENERAL NOTES:

- THIS IS A COMPUTER GENERATED DRAWING. FOR ANY REVISIONS PLEASE CONTACT THE CITY OF SCOTTSDALE GIS DEPARTMENT AT (480) 312-7782.
- THE SECTION LINE BEARING AND DISTANCES ARE BASED ON THE CITY OF SCOTTSDALE GPS SURVEY OF SEPTEMBER, 1991. BEARINGS ARE BASED ON GRID AND DISTANCES ARE FLATTENED TO GROUND. WHERE NO CORNER WAS FOUND THE DIMENSIONS ARE GIVEN TO CALCULATED SECTION CORNERS AND ARE NOTED AS 'CALCULATED' ON THE MAP.

LEGEND:

- Cleanout
- Lift Station
- Manhole
- Non-GPS Point
- Plug
- Sewer Service Point
- Sewer Tap Point
- Sewer Valve
- Treatment Plant
- Sewer Main - Gravity
- Sewer Main - Force
- Sewer Main - Private
- Not found per improvement plans (4)
- Not found per improvement plans and/or C.O. maps (5)
- Found in field no reference (6)
- Map Error Point (7)

VICINITY MAP

NORTH

SCALE: 1" = 100'

0 50 100 200

The map scale of 1" = 100' is based on a full size print of 30" x 36"

SEWER

QUARTER SECTION MAP

18-45

NW 1/4 SEC. 23 T2N R4E

Sewer Approval

SCOTTSDALE GEOGRAPHIC INFORMATION SYSTEMS
3939 North Drinkwater Boulevard
Scottsdale, Arizona 85251

B

APPENDIX B
WASTEWATER GENERATION CALCULATIONS

SCOTTSDALE BLUESKY
WASTEWATER GENERATION SUMMARY

October 10, 2011

Building ID	Phase	Line Contribution	Land Use	Area (ft^2)	Seats	Dwelling Units (DU)	Persons / DU	Population / Equivalent Population	Unit Wastewater Flow (GPD)	Average Daily Flow (GPD)	Peak Factor	Peak Flow (GPD)	Cumulative Building Peak Flow (GPD)
Portion of Sarari Phase I	1	C-D	Residential			26	2.5	65	140	3,640	4.5	16,380	16,380
North	1	A-B	Grocery	32,000	-	-	-	61	0.19	6,080	4.0	24,320	
North	1	A-B	Residential	241,468	-	228	2.5	570	140	31,920	4.5	143,640	167,960
Main	1	A-B	Retail	25,373	-	-	-	127	0.50	12,687	3.0	38,060	
Main	1	A-B	Office	9,468	-	-	-	28	0.30	2,840	3.0	8,521	
Main	1	A-B	Restaurant	10,574	-	-	-	127	1.2	12,689	6.0	76,133	
Main	1	A-B	Residential	229,109	-	217	2.5	543	140	30,380	4.5	136,710	259,424
East	2	C-D	Hotel	177,053	-	229	-	870	380	87,020	4.5	391,590	
East	2	C-D	Residential	121,209	-	120	2.5	300	140	16,800	4.5	75,600	467,190
PHASE 1 TOTAL (BLUESKY ONLY)										**96,596**		**427,384**	**427,384**
TOTAL (BLUESKY ONLY)										**200,416**		**894,574**	**894,574**
LINE A-B										**96,596**		**427,384**	**427,384**
LINE C-D (PHASE 1)										**3,640**		**16,380**	**16,380**
LINE C-D (PHASE 1 + PHASE 2)										**107,460**		**483,570**	**483,570**

C

APPENDIX C
FLOWMASTER MODELING CALCULATIONS

Worksheet for Line A-B (Phase 1)

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.1110	ft/ft
Diameter	8	in
Discharge	427384	gal/day

Results

Normal Depth	0.18	ft
Flow Area	0.08	ft²
Wetted Perimeter	0.74	ft
Hydraulic Radius	0.11	ft
Top Width	0.59	ft
Critical Depth	0.38	ft
Percent Full	27.4	%
Critical Slope	0.00757	ft/ft
Velocity	8.50	ft/s
Velocity Head	1.12	ft
Specific Energy	1.31	ft
Froude Number	4.15	
Maximum Discharge	2798930.84	gal/day
Discharge Full	2601948.10	gal/day
Slope Full	0.00299	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	27.44	%
Downstream Velocity	Infinity	ft/s

Worksheet for Line A-B (Phase 1)

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.18	ft
Critical Depth	0.38	ft
Channel Slope	0.1110	ft/ft
Critical Slope	0.00757	ft/ft

Worksheet for Line C-D - Outside of Garage (Phase 1)

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.0052	ft/ft
Diameter	8	in
Discharge	16380	gal/day

Results

Normal Depth	0.9	in
Flow Area	0.02	ft²
Wetted Perimeter	0.47	ft
Hydraulic Radius	0.6	in
Top Width	0.43	ft
Critical Depth	0.07	ft
Percent Full	11.7	%
Critical Slope	0.00746	ft/ft
Velocity	1.11	ft/s
Velocity Head	0.02	ft
Specific Energy	0.10	ft
Froude Number	0.84	
Maximum Discharge	605804.30	gal/day
Discharge Full	563169.09	gal/day
Slope Full	0.00000	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.0	in
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.0	in
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	11.72	%
Downstream Velocity	Infinity	ft/s

Worksheet for Line C-D - Outside of Garage (Phase 1)

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.9	in
Critical Depth	0.07	ft
Channel Slope	0.0052	ft/ft
Critical Slope	0.00746	ft/ft

Worksheet for Line C-D - Through Garage (Phase 1)

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.0046	ft/ft
Diameter	8	in
Discharge	16380	gal/day

Results

Normal Depth	1.0	in
Flow Area	0.02	ft²
Wetted Perimeter	0.47	ft
Hydraulic Radius	0.6	in
Top Width	0.43	ft
Critical Depth	0.07	ft
Percent Full	12.0	%
Critical Slope	0.00746	ft/ft
Velocity	1.06	ft/s
Velocity Head	0.02	ft
Specific Energy	0.10	ft
Froude Number	0.80	
Maximum Discharge	569783.14	gal/day
Discharge Full	529683.03	gal/day
Slope Full	0.00000	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.0	in
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.0	in
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	12.04	%
Downstream Velocity	Infinity	ft/s

Worksheet for Line C-D - Through Garage (Phase 1)

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	1.0	in
Critical Depth	0.07	ft
Channel Slope	0.0046	ft/ft
Critical Slope	0.00746	ft/ft

Worksheet for Line A-B (Ultimate Buildout)

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.1110	ft/ft
Diameter	8	in
Discharge	427384	gal/day

Results

Normal Depth	2.2	in
Flow Area	0.08	ft²
Wetted Perimeter	0.74	ft
Hydraulic Radius	1.3	in
Top Width	0.59	ft
Critical Depth	0.38	ft
Percent Full	27.4	%
Critical Slope	0.00757	ft/ft
Velocity	8.50	ft/s
Velocity Head	1.12	ft
Specific Energy	1.31	ft
Froude Number	4.15	
Maximum Discharge	2798930.84	gal/day
Discharge Full	2601948.10	gal/day
Slope Full	0.00299	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.0	in
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.0	in
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	27.44	%
Downstream Velocity	Infinity	ft/s

Worksheet for Line A-B (Ultimate Buildout)

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	2.2	in
Critical Depth	0.38	ft
Channel Slope	0.1110	ft/ft
Critical Slope	0.00757	ft/ft

Worksheet for Line C-D - Outside of Garage (Ultimate Buildout)

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.0052	ft/ft
Diameter	8	in
Discharge	483870	gal/day

Results

Normal Depth	5.7	in
Flow Area	0.27	ft²
Wetted Perimeter	1.34	ft
Hydraulic Radius	2.4	in
Top Width	0.60	ft
Critical Depth	0.41	ft
Percent Full	71.4	%
Critical Slope	0.00795	ft/ft
Velocity	2.81	ft/s
Velocity Head	0.12	ft
Specific Energy	0.60	ft
Froude Number	0.74	
Maximum Discharge	605804.30	gal/day
Discharge Full	563169.09	gal/day
Slope Full	0.00384	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.0	in
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.0	in
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	71.38	%
Downstream Velocity	Infinity	ft/s

Worksheet for Line C-D - Outside of Garage (Ultimate Buildlout)

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	5.7	in
Critical Depth	0.41	ft
Channel Slope	0.0052	ft/ft
Critical Slope	0.00795	ft/ft

Worksheet for Line C-D - Through Garage (Ultimate Buildout)

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.0046	ft/ft
Diameter	8	in
Discharge	483870	gal/day

Results

Normal Depth	6.0	in
Flow Area	0.28	ft²
Wetted Perimeter	1.40	ft
Hydraulic Radius	2.4	in
Top Width	0.58	ft
Critical Depth	0.41	ft
Percent Full	75.1	%
Critical Slope	0.00795	ft/ft
Velocity	2.66	ft/s
Velocity Head	0.11	ft
Specific Energy	0.61	ft
Froude Number	0.67	
Maximum Discharge	569783.14	gal/day
Discharge Full	529683.03	gal/day
Slope Full	0.00384	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.0	in
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.0	in
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	75.12	%
Downstream Velocity	Infinity	ft/s

Worksheet for Line C-D - Through Garage (Ultimate Buildout)

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	6.0	in
Critical Depth	0.41	ft
Channel Slope	0.0046	ft/ft
Critical Slope	0.00795	ft/ft

Downtown Scottsdale Checklist
Urban Design & Architectural Guidelines

Review Date(s) _____ Project Name _____ Case # _____

This checklist summarizes the primary components found in the General section of the Downtown Urban and Architectural Design Guidelines – online at www.scottsdaleaz.gov/projects/downtown. The checklist is divided into two parts, - the first, applied at the pre-Application stage, is used to establish each component of the Guidelines as they may apply to a specific project. The second, to be applied during the review of submittals, is intended to help assess a project's response to specific design considerations and community design objectives. This checklist may not represent every potential design related concern or issue related to a project as other considerations from the neighborhood, staff or the Development Review Board may arise. This checklist is not a regulatory device, a replacement of the provisions in the actual Guidelines, nor is it a substitute for a thorough due diligence.

SECTION A: SITE DEVELOPMENT		Design Response		
A1. Relationship to Adjoining Development		Responsive	Partial	Unresponsive
Importance / Emphasis ☐ High ☐ Mod.	a. Builds upon existing predominant development character	✓		
	b. Coordination with adjacent site plans		✓	
A2. Activating the Street		Responsive	Partial	Unresponsive
Importance / Emphasis ☐ High ☐ Mod.	a. Buildings and landscaping define street frontage	✓		
	b. Front entrance provided	✓		
A3. Pedestrian Courtyards and Passages		Responsive	Partial	Unresponsive
Importance / Emphasis ☐ High ☐ Mod.	a. Incorporate exterior pedestrian spaces	✓		
	b. Building street entrance connects with parking			
A4. Parking Facilities		Responsive	Partial	Unresponsive
Importance / Emphasis ☐ High ☐ Mod.	a. Minimize parking frontage	✓		
	b. Interior of blocks utilized for parking	✓		
	c. Parking and street frontage connected	✓		
	d. Buffer sidewalks from parking	✓	✓	
	e. 15%+ parking lot landscaping (ordinance)	✓		
	f. Provide 3 ft. tall parking screening (ordinance)		N/A	
	g. Building and parking areas separated with landscape (base planting)			✓

Planning & Development Services Department
7447 E Indian School Road, Suite 100, Scottsdale, AZ 85251 • Phone: 480-312-2500 • Fax: 480-312-7088

Downtown Scottsdale Checklist
Urban Design & Architectural Guidelines

SECTION B: BUILDING FORM		Design Response		
B1. Reduction of Apparent Size and Bulk		Responsive	Partial	Unresponsive
Importance / Emphasis ☐ High ☐ Mod.	a. Building mass divided into smaller scale components			
	b. Horizontal and vertical changes in wall plane			
	c. Building divided horizontally into base, middle and top (or other method)			
B2. Covered Walkways		Responsive	Partial	Unresponsive
Importance / Emphasis ☐ High ☐ Mod.	a. Covered walkways provided on pedestrian frontages			
	b. Walkway design integral to building			
	c. Preferred configuration – 1 story, 16 ft. high, vertical supports			
	d. See specific Guidelines for specialty districts			
	e. Covered walkways may encroach into r.o.w. or setback area			

SECTION C: ARCHITECTURAL CHARACTER		Design Response		
C1. Proportion, Scale and Composition		Responsive	Partial	Unresponsive
Importance / Emphasis ☐ High ☐ Mod.	a. Composition emphasizes horizontal proportions			
	b. Composition of elevations organized according to defined hierarchy and rhythmic pattern			
	c. Avoids rigid monotonous patterning			
	d. More wall than window			
	e. Wall thickness and mass exaggerated			
	a. Ground level exhibits human scale			
C2. Building Materials		Responsive	Partial	Unresponsive
Importance / Emphasis ☐ High ☐ Mod.	a. Simple and rich material palette			
	b. Material appears honest in its use, placement and in its relationship to other materials			
	c. Material palette incorporates materials in predominant use			
	d. Glazing is transparent and non-reflective, dull or matte finished			
	e. Avoids repetitive horizontal banding, floor to ceiling window walls and volumes rendered primarily in glass			

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Improvement Plan Application Review

Resubmittal Checklist

This form plus redlines from the previous submittal(s) must accompany all resubmittals and be separated by discipline. Incomplete application resubmittals will not be accepted

Date: 1/18/2012		Review No.: ☐ 1st ☒ 2nd ☐ 3rd ☐ 4th or greater	
Plan Check/Project No.: 5016-11-1	Case No.:369-PA-2010	Project Location: 4605 N SCOTTSDALE RD	
Civil Plan Reviewer:	———	Email:	———
Planning Plan Reviewer:	———	Email:	———
Fire Plan Reviewer:	———	Email:	———

Stormwater Plan Reviewer: **J. Rumann** Email: **jrumann@scottsdaleaz.gov**

ALL ITEMS INDICATED SHALL BE INCLUDED WITHIN THE APPLICATION RESUBMITTAL PACKETS. EACH REVIEWER (CIVIL, PLANNING, AND FIRE) REQUIRES SEPARATE COMPLETE SET OF IMPROVEMENT PLANS. EACH IMPROVEMENT PLAN PACKET SHALL INCLUDE ALL REQUIRED PLANS INDICATED BY EACH REVIEWER. EASEMENTS AND REPORTS SHALL ONLY BE INCLUDED WITH THE REQUESTED REVIEWERS IMPROVEMENT PLAN PACKET. PACKETS THAT ARE INCOMPLETE WILL NOT BE ACCEPTED. (e.g. SUBMITTALS THAT HAVE SEPARATE PACKETS FOR LANDSCAPE PLANS, AND CIVIL PLANS WILL NOT BE ACCEPTED.)

Improvement Plan Mylars

☐	Submit Civil, Landscape, etc. mylars	☐	Submit Civil, etc. mylars

Mylars may only be submitted when requested

Planning Civil and Planning Landscape Review Resubmittal Requirements:

☐	Planning Review is complete; see other reviewer's comments and requirements.	☐	Title Insurance policy - dated within 30 days (Commercial, multi-family, and industrial only).
☐	Complete set of revised Improvement Plans. (Civil, Planning, Fire requirements)	☐	Original Legal and graphic description and dedication for Natural Area Open Space Easement
☐	Landscape and Irrigation Plans (Shall be included in all Improvement plan sets (Civil, Planning, and Fire))	☐	Original Lien holder consent form for the NAOS dedication
		☐	M.O.D. Plan (for reference only)
		☐	Final Plat Plan or Condominium Plat Plan (for reference only)
☐	3 copies of the revised N.A.O.S. Exhibit (N.A.O.S. lot information shall be provide on the plan if applicable).		
☐	Native plant plan (This is separate submittal approval, and permit.) The Native Plant Application shall be submitted prior to the ( ) submittal of the Improvement Application plans.		

Improvement Plan Application Review

Resubmittal Checklist

☐	Other Required Information: THE RESUBMITTAL CHECKLIST IS TO BE COMPLETED BY ALL REVIEWERS. ONLY THE LAST REVIEWER TO COMPLETE HIS/HER REVIEW IS TO PRINT OUT THE RESUBMITTAL CHECKLIST AND RETURN IT WITH THE PLANS. OTHERWISE DO NOT PRINT IT OUT. DELETE THIS COMMENT BEFORE PRINTING

Fire Civil and Fire Landscape Review Resubmittal Requirements:

☐	Fire Review is complete; see other reviewer's comments and requirements.	☐	Final Plat Plan or Condominium Plat Plan (for reference only)
		☐	Alta Survey Plan (no older than one year - for reference only)
☐	Complete set of revised Improvement Plans. (Civil, Planning, Fire requirements)	☐	M.O.D. Plan (for reference only)
		☐	Fire Hydrant Flow Report (test results)
☐	Other Required Information: THE RESUBMITTAL CHECKLIST IS TO BE COMPLETED BY ALL REVIEWERS. ONLY THE LAST REVIEWER TO COMPLETE HIS/HER REVIEW IS TO PRINT OUT THE RESUBMITTAL CHECKLIST AND RETURN IT WITH THE PLANS. OTHERWISE DO NOT PRINT IT OUT. DELETE THIS COMMENT BEFORE PRINTING		

Civil Plan and Civil Landscape Plan Review Resubmittal Requirements

☐	Civil Review is complete; see other reviewer's comments and requirements.	☐	Title Insurance policy -dated within 30 days (Commercial, multi-family, and industrial only).
☐	Complete set of revised Improvement Plans. (Civil, Planning, Fire plan requirements)	☐	Original Lien holder consent form for each separate dedication
		☐	Original Legal and graphic description and dedication for:

☒	Grading and Drainage plan(s)	☐	Right-of-way
☐	Paving Plan(s)	☐	Drainage Easement
☐	Water Plan(s)	☐	Water Easement
☐	Sewer Plan(s)	☐	Sewer Easement
☐	Structural Plan(s)	☐	Multi-use Public Trail Easement
☐	Horizontal Control Plan	☐	Multi-use Public Path Easement
☐	Traffic Plan	☐	Multi-use Public Path and Trail Easement
☐	Structural / Wall Plans and Calculations	☐	Sight Distance Easement
☒	Revised Drainage Report & redline copy	☐	Public Access Easement
☐	Soils and Pavement Design Report	☐	Emergency and Service Vehicle Access Easement

☐	Water Basis of Design Report	☐	M.O.D. Plan (for reference only)
☐	Sewer Basis of Design Report	☐	Final Plat Plan or Condominium Plat Plan (for reference only)
☐	Flow test results	☐	Alta Survey Plan (no older than one year for reference only)
☐	Water and / or Sewer Service Agreement	☐	NOI form/permit
☐	County Health Approval	☐	401 permit Certificate of Approval
☐	404 permit Certificate of Approval	☐	404 C.O.S. Certification Form

Improvement Plan Application Review

Resubmittal Checklist

☒ Other Required Information: The attached drainage review comments need to be addThe following comments are based upon a second review of a preliminary drainage report by David Evan & Associates submitted to the City of Scottsdale (City) on 1/6/2012. This report is intended to explain the phased development of the site as opposed to defining improvements associated with obtaining a CLOMA (Plan Check number 4994-11). This review is also associated with case number 62-DR-2011:

1. As part of the offsite drainage the report needs to indicate what the depth and finished floor elevations are using COS datum.
2. The drainage watershed map needs to be provided on Exhibit A.
3. A reference for the regression equation used to calculate peak discharge is needed.
4. A reference needs to be corrected.
5. The storm drain hydraulic analysis needs to demonstrate that the system does not surcharge or explain the circumstances surrounding the condition.
6. Please address all red line comments provided in the preliminary report.
7. Provide documentation that other involve agencies have accepted the plan (e.g. FCDMC)

ressed.

Planning, Neighborhood and Transportation

7447 E Indian School Road, Suite 125, Scottsdale, AZ 85251 • Phone: 480-312-7080 • Fax: 480-312-7781

Case Drainage Review – Blue Sky

PROJECT NAME: **BLUE SKY**
LOCATION: **4605 N. SCOTTSDALE RD.**
PLAN NO: **5016-11**
DATE: **12-7-2011**

The following comments are based upon a second review of a preliminary drainage report by David Evan & Associates submitted to the City of Scottsdale (City) on 1/6/2012. This report is intended to explain the phased development of the site as opposed to defining improvements associated with obtaining a CLOMA (Plan Check number 4994-11). This review is also associated with case number 62-DR-2011:

1. As part of the offsite drainage the report needs to indicate what the depth and finished floor elevations are using COS datum.

2. The drainage watershed map needs to be provided on Exhibit A.

3. A reference for the regression equation used to calculate peak discharge is needed.

4. A reference needs to be corrected.

5. The storm drain hydraulic analysis needs to demonstrate that the system does not surcharge or explain the circumstances surrounding the condition.

6. Please address all red line comments provided in the preliminary report.

7. Provide documentation that other involve agencies have accepted the plan (e.g. FCDMC)

J.M. Rumann, P.E., CFM
Senior Stormwater Engineer
Stormwater Management Division
City of Scottsdale
Phone: 480-312-7072
jrumann@scottsdaleaz.gov

FINAL DRAINAGE REPORT

BLUE SKY SCOTTSDALE FILL PLAN

2nd 1/5/12

Plan # _____
Case # 62-DR-204
Q-S # _____
☒ Accepted
☐ Corrections
1-17-12
Reviewed By Date

January 2012
DEA PROJECT NO. GRYD00001

DAVID EVANS AND ASSOCIATES INC.

A994-11

FINAL DRAINAGE REPORT
FOR
BLUE SKY SCOTTSDALE
FILL PLAN

PREPARED FOR

GRAY DEVELOPMENT
1400 E. CAMELBACK ROAD, SUITE 275
PHOENIX, AZ 85018

PREPARED BY

PAUL PAL, P.E.
RAMZI GEORGES, PE, CFM
DAVID EVANS AND ASSOCIATES, INC.
4600 E WASHINGTON STREET, SUITE 430
PHOENIX, AZ 85034
(602) 678-5151

Exp: 3-31-2014

January 2012
DEA PROJECT NO. GRYD00001

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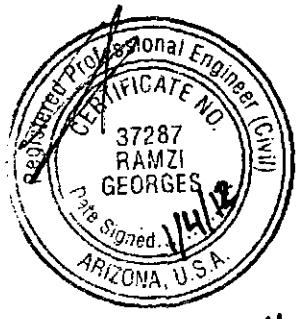


EXP: 3-31-2014

1.0 INTRODUCTION

This drainage report has been prepared under a contract with Gray Development, LLC, owner and developer of the Blue Sky Scottsdale project in Scottsdale. The purpose of this report is to provide hydraulic analysis, required by the City of Scottsdale, to support the Blue Sky Scottsdale Stockpile Plans. The plans are to raise the site above the base flood elevation. Preparation of this report has been done in accordance with the procedures detailed in the *City of Scottsdale Design Standards and* Policies Manual (Reference 1) along with the City of Scottsdale Supplement to MAG Uniform Standard Specifications For Public Works Construction (Reference 2) and Drainage Design Manuals for Maricopa County, Arizona, Volumes I & II (References 3 and 4).

The proposed Blue Sky Scottsdale project is located northeast of the intersection of Scottsdale Road and Camelback Road, within the City of Scottsdale, Maricopa County, Arizona. The site is located within Section 23, Township 2 North, Range 4 East of the Gila and Salt River Base and Meridian.

The site is bound by Coolidge Street to the North, Safari Drive condominium to the northeast, Arizona Canal to the east, Renaissance Center (commercial development) to the south and Scottsdale Road to the West. See Figure 1 Vicinity Map, in Appendix A. Access to the site will be provided from two entrances from Scottsdale Road along 72nd Place and Coolidge Street. The project is located within what is considered the Downtown Core Area of the City of Scottsdale General Plan (see waiver section in Appendix E).

The proposed Blue Sky Scottsdale project is approximately 3± acres. The portion of the site that is under the flood plain will be raised above the determined 100-year base flood elevation.

2.0 EXISTING DRAINAGE CONDITIONS

The initial offsite drainage conditions were analyzed in the previous phase of the project (Safari Drive) and have been referenced and updated based on the latest topographic information and available documents. The updated drainage information is used as the base of the design of the current phase (Blue Sky Scottsdale).

According to the topography in the area, the general lay of the land is in a southeasterly direction, towards the Arizona Canal. The runoff ponds against the canal before it is conveyed through an 8x6 box culvert or weirs over the Arizona Canal. There are three locations that offsite runoff can impact the site. The first location is along the west side of the Arizona Canal. The second location is along Scottsdale Road. The last location is from water backing up from the intersection of Scottsdale and Camelback Roads.

Offsite runoff that reaches the northeastern portion of the site is conveyed along the western boundary of the Arizona Canal in a southwesterly direction through an existing underground box

culvert that was constructed as part of the initial phase known as Safari Drive project. The Arizona Canal is supposed to be drained during major storm events, in addition to a 4-foot of freeboard that would allow the canal to accept additional storm runoff into its system.

The site is located in an area that drains into what is known as Reach 4 of the Flood Control District's side channel drainage system. There is a series of grated inlet structures that capture runoff along the western side of the canal and convey runoff into the underground box culvert mentioned above which outfalls into the storm drain system in Camelback Road. Some of the grate inlet structures are several feet in size and can capture large amount of the runoff that reaches the area.

Scottsdale Road is an improved street with curb and gutter and drains in a southerly direction, adjacent to the site, towards Camelback Road. The majority of the runoff along Scottsdale Road is conveyed within the street section of the road and a smaller portion is conveyed into the existing storm drain system along Scottsdale Road, that outfall into the main storm drain system in Camelback Road.

It is estimated that there is approximately 3,638 cfs that would reach the intersection of Camelback and Scottsdale Roads based on the Safari Drive Final Drainage Report (Reference 8). The majority of the runoff (3,563 cfs) will weir over the Arizona Canal bank into the canal itself, which is supposed to convey the runoff. Approximately 75 cfs of the runoff will spill over Camelback Road in a southerly direction.

The current published FEMA Flood Insurance Rate Map (FIRM) for this area is map number 04013C1695H (Effective date is September 30, 2005). Portions of the site are located within Zones A and X. Zone A is defined as the flood insurance rate zone that corresponds to the 100-year floodplains that are determined in the Flood Insurance Study by approximate methods. Because detailed hydraulic analyses are not performed for such areas, no Base Flood Elevations or depths are shown within this zone. Zone X is defined as "areas of 500-year flood; areas of 100-year flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from the 100-year flood." A copy of the FIRM panel is provided in Appendix B.

3.0 PROPOSED DRAINAGE CONCEPT

The proposed drainage concept is presented in three parts: onsite drainage, off-site drainage, and storage requirements. The hydrologic analysis is in section 4.0 and the hydraulic analysis is summarized in section 5.0. See Exhibit A, located in Appendix A, for an illustration of the proposed drainage concept.

3.1 On-site Drainage Conveyance

The northern portion of the site, will sheet flow into a several feet deep basin as shown on the grading plans in Exhibit A, in Appendix A. The basin will be excavated to provide dirt to raise the eastern portion of the site. The runoff generated in the northern portion of the site will dissipate into the ground. The ponding depth in this basin will be 0.35 feet. Refer to Exhibit F in Appendix A and retention calculations in Appendix D.

The runoff generated along the southern portion of the site will sheet flow southeast into a small ditch on the west side of Canal. The runoff from this ditch will be captured by grated inlet structures west of canal. Refer to grading plans in Appendix A for a graphical illustration of the proposed onsite drainage.

3.2 Off-site Drainage Conveyance

The hydrology for this report is based on the approved final drainage report completed by CVL in 1999. Since then there has been development that took place to the north and west of project site, which restricted the offsite flow from reaching the Arizona Canal. Offsite drainage conditions were studied in the initial phase of the project (Safari Drive) and they are modified during the design of the current phase (Blue Sky Scottsdale) based on the latest available drainage information. Although the original model is used, it is important to mention that Goldwater Boulevard acts as a buffer from offsite flow since it is a raised road in the north east directions and has a major depression that does not flood in the north south directions. As mentioned earlier, there are only three ways the site can be impacted by offsite runoff. The first area that runoff can impact the site is along the northeastern portion of the site, where runoff is being conveyed in a southwesterly direction along the west bank of the Arizona Canal. The second area offsite runoff that could potentially impact the site is from runoff flowing south along Scottsdale Road. The last potential impact to the site is from runoff reaching the intersection of Camelback Road and Scottsdale Road that weir over the Arizona Canal and backs up towards the site.

The first area of investigation was to quantify the offsite runoff along the northeastern portion of the site. Runoff that may impact the site is generated north of Chapparal Road. During field visits it was observed that an 8'x4' concrete box culvert underneath Chapparal Road, west of the Arizona Canal. Few feet upstream of the culvert, is a 20.5'x13' grate inlet structure. Runoff from the north captured by the grate inlet is conveyed in an easterly direction through an approximately what seemed to be a 96" pipe underneath the Arizona Canal. Any runoff that bypasses the grate inlet structure (which is not likely) will flow through the 8'x4' culvert, underneath Chaparral Road, in a southerly direction.

Based on the maximum capacity of 8'x4' box culvert, 277 cfs will flow in southerly direction, of which 200 cfs will spill into the Arizona Canal and the remaining 77 cfs will

continue in the southerly towards the Blue Sky Scottsdale project. This quantification was part of the approved Safari drive final drainage report. However these hydraulic calculations are not included in this report because runoff that reaches the site from the northeast is restricted by existing development to the north or captured by the 8'x6' box culvert inlet (north of Safari Drive). Additional runoff will spill over the Arizona Canal before reaching the BlueSky Scottsdale project. Picture 1 in Appendix A illustrates how the area north of the site, along the Arizona Canal, does not have hydraulic capacity to convey offsite flow.

The second area of investigation was runoff along Scottsdale Road. The final drainage report for Safari Drive (Reference 10) quantified 378 cfs in the vicinity of Scottsdale Road and Coolidge Road. Exhibit H, in Appendix A reflects the existing drainage conditions prior to the Safari Drive development. Scottsdale Road has a half street capacity, adjacent to the site, of approximately 160 cfs. The remainder of the 189 cfs (half the 378 cfs mentioned previously) used to weir into the Safari Drive site through Coolidge Street. To compensate for not allowing the 29 cfs from entering the site, two catch basins were installed along Coolidge Road as part of Safari Drive development that capture approximately 70 cfs from the street flow in Scottsdale Road. Refer to the StormCAD output in Appendix D that shows that the existing catch basins will capture approximately 70 cfs.

Exhibit E in Appendix A reflects the grading information at the intersection of Scottsdale Road and Coolidge Road after the development of the Safari Drive project. The grading allows for runoff to enter the catch basins along Coolidge Road, especially when it exceeds two inches of depth at the gutter. This matched and exceeded the existing grading conditions prior to development of the Safari Drive project.

The ponding depth of 1.2' along the gutter elevation was calculated in the Final drainage report of Safari Drive (Reference 10). Hence the finish floors of the proposed buildings within the Blue Sky Project adjacent to Scottsdale Road are kept 1.2' above the gutter elevation in the street.

Under existing conditions, a flow of 119 cfs resulting from half street runoff of 189cfs along Scottsdale Road with 70 cfs diversion into Coolidge Street mentioned above will reach the intersection of Scottsdale Road and Fashion Square Drive. At that intersection, 80 cfs will continue south along Scottsdale Road and 39 cfs will divert east into Fashion Square Drive. Since Fashion Square Drive (east of Scottsdale Road) will be raised as part of the Blue Sky Scottsdale project development, this will not allow the 39 cfs to continue towards the canal along its historic path. However, since Coolidge storm system captured 70 cfs, which is 41 cfs in additional flow that can compensate for raising Fashion Square Drive. This means that the development will not adversely impact the development to the south. It is important to mention that the area south of the site is already in the floodplain and below the calculated high water elevation for the canal.

The third area of investigation and the last area that could impact the site is the intersection of Scottsdale road and Camelback road. CVL's drainage report (Reference 8 with pertinent excerpts in Appendix F) has quantified approximately 3,638 cfs will reach the intersection of Scottsdale Road and Camelback Road. This runoff will weir into canal with 75 cfs of the runoff will spill over Camelback Road. Refer to Appendix C for summary of the estimated peak Flows. During the initial phase of Safari Drive project, this flow is used to calculate the high water adjacent to the Arizona Canal. The modeling did not take into account the 8'x6' box culvert and no hydraulic calculations for the Camelback Road between Goldwater Boulevard and Scottsdale Road was included.

Based on the same drainage report prepared by CVL (Reference 10), the box culvert will carry approximately 1,000 cfs. The capacity of the culvert has been verified with StormCAD software and the data information is included in Appendix D.

There is approximately 823 cfs that spills into Camelback Road, west of Goldwater Boulevard, refer to exhibit C in Appendix A. FlowMaster computer program (Reference 7) has been used to analyze the split flow at this intersection. The split flow analysis explanation is included in section 5.0 of this report. 184 cfs will flow north along Goldwater Boulevard, 245 cfs will flow south along Goldwater Boulevard and the remainder 393 cfs will continue east along Camelback Road. At the intersection of Marshall Way and Camelback Road; 125 cfs will flow south along Marshall Way and remainder 268 cfs will continue east along Camelback Road. There are three catch basins along the south side of Camelback Road that will capture the remainder of the flow of 268 cfs. These catch basins can capture 288 cfs. Hence, 823 cfs will be subtracted from the total flow that weirs over the canal. Refer to Appendix D for FlowMaster data sheets in Appendix D.

The drainage report prepared by Rick Engineering (Reference 11) dated 2007 for Scottsdale Fashion Square Phase 10 (pertinent excerpts are included in Appendix F), explains that no onsite or offsite flow will spill into the Scottsdale Road through the Fashion Square Mall. In addition, the grading of the area south of the mall drains to the south towards Camelback Road. Hence, the 543 cfs originally estimated by the final drainage report for Safari Drive that would spill into Scottsdale Road will be subtracted from the total flow that weirs over the canal.

Based on the above explanations, the 3,638 cfs runoff originally estimated is reduced by 2,436 cfs. The reduction is based on removing 70 cfs from Coolidge Street diversion, 823 cfs from Camelback Road diversions, 543 cfs from Fashion Square development and 1,000 cfs from the culvert system capacity diversion along the canal. The new flow used in the weir calculation is 1,202 cfs based on straight reduction for all the diversions which is a conservative approach and since a HEC-1 model has not been part of the scope of this study. Based on this reduced flow, the high-water along the Arizona Canal was calculated to be 1279.50. Refer to CulvertMaster (Reference 9) inputs/outputs in Appendix D. The canal overbank has been surveyed in order to model the weir for this report.

In addition as another check of the offsite runoff, the estimated contributing watershed is included in Exhibit J located in Appendix A. The total estimated area is 870 acres or 1.36 square miles. Based on this area and using regression equation y= 707.21 ln (x) +1,216, where y is the peak flow in cfs and x is the area in square miles, the peak flow is estimated at 1,433 cfs, which is close to 1,202 cfs that we have estimated.

The existing finish floors of the buildings in the Renaissance Center development, south of Blue Sky Scottsdale, vary from 1278.20 to 1278.60, which is approximately 1-foot lower than the existing elevations along the adjacent Arizona Canal. This property may probably flood before runoff weirs over the Arizona Canal. Refer to Exhibit D for a section of the proposed and existing finished grade elevations.

The portion of the Blue Sky Scottsdale project that is under the floodplain will be raised above the 100-year base flood elevation (1279.50) as depicted on the fill plans located in Appendix A. Based on the existing FEMA floodplain, a small portion of the flood plain is being replaced by the fill, approximately 5,690 CY. A portion of this volume will be compensated for in the existing box culvert that has excess storage volume of 670 CY.

The City of Scottsdale vertical datum elevation is 1277.619' based on the NAVD elevation. The proposed finish floor elevations and the future grade breaks at the garage entrances are set minimum 1 foot higher than the high water elevation which is 1279.50'. The fill elevation is 1280.00, which is 0.5 feet higher than the weir elevation. It is important to mention that raising the site above the floodplain was very challenging due to a steep transition from Scottsdale Road of almost 10 percent in one location.

Raising the site above the weir elevation should not impact the base flood elevation. The weir elevations along the canal are not altered. In addition two additional grate inlets structure 4'x4' will be added to increase the capacity of the grated inlets along the Canal. This will compensate for volume loss and accounts for the abandonment of an existing inlet structure along the east portion of the site. Refer to Exhibit C in Appendix A for illustration of the proposed structures and to Appendix D for hydraulic data sheets. The addition of the inlet structures will allow for less ponding behind the canal during smaller storm events that do not weir over the canal. There will additional inlet capacity of 203 cfs that will allow the area to drain faster in the storm drain system.

A CLOMR-F will be filed for this project with FEMA. A copy of the Conditional Letter of Map Revision (CLOMR-F) has been included in Appendix G. A community support letter is included in the same Appendix. The CLOMR-F is based on raising the site higher than base flood elevation. The future proposed structures and finish floors will be free from inundation during a 100-year design storm event.

Interim Conditions

In the interim, after the fill plan construction and prior to the project development, the big basin along the north side of the project will pond 0.35 feet. If the water does not percolate in 36 hours, dissipation measures will need to be addressed.

There is an existing berm along Scottsdale Road that will prevent the street runoff from spilling into the Blue Sky Project. The drainage conditions along Coolidge Road will not differ between existing and developed conditions. Fashion Square Entrance will be raised during the fill plan and runoff will not be allowed to spill to the east.

As mentioned earlier, there will be one grate inlet structure abandoned during the fill plan improvements along the Arizona Canal. Refer to the fill plans for details. The structure will be replaced and another grate inlet structure will be added to compensate for filling in the floodplain. Easements for these structures will be coordinated with the reviewer during final design of the project.

Grading Along the Canal Grate Inlet Structures

Based on the current grading that is shown along the Arizona Canal bank, no retaining walls are needed at the existing and proposed grate inlet structures since the existing canal bank is away from the drainage structures. The cross section of the canal embankment is shown on the attached Fill Plan in Appendix A.

3.3 Storage Requirements

The proposed Blue Sky Scottsdale project has retention waiver that has been approved by the City of Scottsdale. A copy of the waiver is included in Appendix E. Although the project has retention waiver, this project still provide some storage volume in the existing box culvert (18,000 cubic feet).

4.0 HYDROLOGIC ANALYSIS

No hydrologic analysis has been completed as a part of this drainage report. Offsite flow was based on prior approved Drainage report prepared by CVL (reference 8). One Rational calculation was completed to determine the peak flow for the curb opening along Fashion square. Refer to Exhibit F in Appendix A.

5.0 HYDRAULIC ANALYSIS

The hydraulic analyses of the proposed storm water management facilities is based on the City of Scottsdale's Supplement to MAG Uniform Standard Specifications for Public Works Construction and the Drainage Design Manuals for Maricopa County, Arizona, Volume II Hydraulics.

FlowMaster (Reference 7), a Bentley computer program, has been utilized to analyze the hydraulic capacity for the adjacent street sections to determine the 100-year high water surface elevations based on known offsite runoff along Scottsdale Road. The Flow Master cross sections were cut along Scottsdale Road just south of every intersection with Coolidge Street and Fashion Square Road (Scottsdale slopes in a southerly direction). The cross section south of every intersection was used for split flow analysis (equating the water surface elevation in both directions) because there is momentum with runoff along Scottsdale Road in a southerly direction. In addition, weir to the east will occur after the after runoff reaches the intersection itself and this would another reason for the south location of the cross sections used in the split flow analysis. If the sections were cut to the north of the intersection, it would not represent the field conditions. However the cross sections are include Appendix D but are not used in the analysis.

Camelback Road split flow analysis was based on the top of curb road capacity as shown in Exhibit C. FlowMaster analysis is based on Manning's equation. Refer to Appendix D for detailed input and output data sheets.

DEA modeled the weir along the Arizona Canal based on 1,202 cfs mentioned in section 3.2 using StormCAD software (Reference 9). The high water elevation along the Arizona Canal bank canal was determined to be 1279.50. Survey points were used in modeling the weir over the canal. A separate model was prepared to determine the flow along Scottsdale Road, south of Camelback Road which was determined to be 75 cfs.

StormCAD software (Reference 6) was used in determining the capacity of the culverts installed during the Safari Drive development along Coolidge Street and along the canal. Refer to Appendix D for detailed hydraulic input/output data sheets. The 100-year Hydraulic Grade Line (HGL) was kept below the 100 year weir elevation along the canal and below the 100 year ponding depth along Coolidge Street.

6.0 CONCLUSIONS

Based on the results of this study, it can be concluded that:

- The site will be filled according to the City of Scottsdale Design Standards and Policies Manual.
- The site has a retention waiver and it will directly discharge into the existing box culvert along the western side of the Arizona Canal.
- Coordination with the Flood Control District has been initiated.
- The ultimate outfall (Elevation 1279.20) is located at the southeast corner of the project site maintaining the historic outfall condition.
- Raising a portion of the site above the floodplain elevation will not adversely impact adjacent properties south of the site.
- Properties in the floodplain north of the site are at higher elevations then the project and are not impacted by the proposed development
- Refer to Appendix H for the Warning and Disclaimer Liability form.
- Refer to Appendix I for the Section 404 Certification form.

7.0 REFERENCES

1. City of Scottsdale Design Standards and Policies Manual, January 2010
2. City of Scottsdale *Supplement to MAG Uniform Standard Specifications for Public Works Construction, June 2010.*
3. *Drainage Design Manuals for Maricopa County, Arizona, Volume I, Hydrology*, February 2011.
4. *Drainage Design Manuals for Maricopa County, Arizona, Volume II, Hydraulics*, January 28, 1996.
5. City of Scottsdale Stormwater Master Plan and Management Program, KVL, 1994.
6. Bentley StormCAD V8i, Haestad Methods, Inc.
7. Bentley FlowMaster V8i, Haestad Methods, Inc.
8. *Drainage Report Scottsdale Riverwalk Center Hotel* prepared by CVL dated April 9, 1999. Revised March 28, 2001.
9. Bentley Culvert Master program V3.3, dated 2009.
10. Final Drainage Report for Safari Drive, prepared by David Evans and Associates, Oct 2006.
11. Preliminary Grading and Drainage Report by Rick Engineering Company dated 8-6-2012 for Scottsdale and Fashion Square.

APPENDIX A
FIGURES AND EXHIBITS

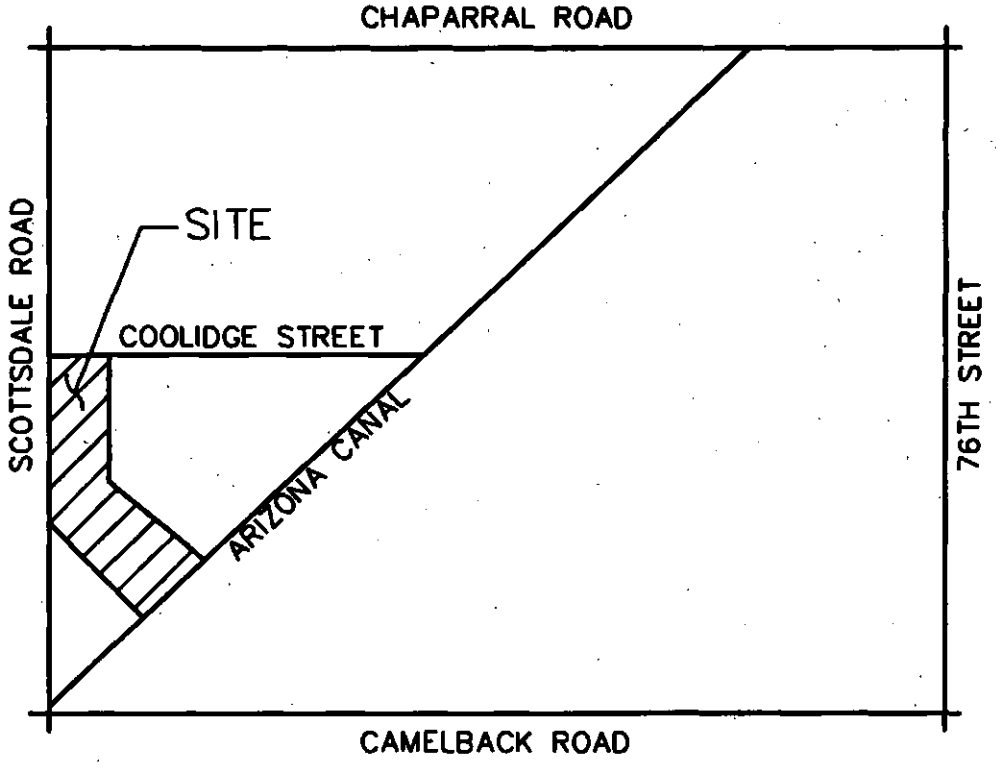
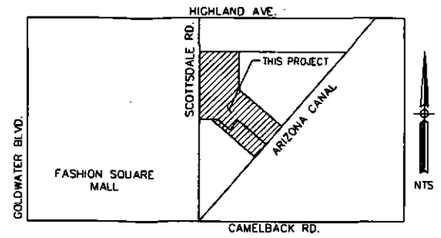


FIGURE 1 - VICINITY MAP

NTS

FILL IMPROVEMENT PLANS FOR BLUE SKY SCOTTSDALE

A PORTION OF TRACK 'A' OF PARADISE TRIANGLE AS RECORDED IN BOOK 46, PAGE 26, RECORDS OF MARICOPA COUNTY ARIZONA BEING A PORTION OF SECTION 23, TOWNSHIP 2 NORTH, RANGE 4 EAST OF THE GILA AND SALT RIVER MERIDIAN, MARICOPA COUNTY, ARIZONA



VICINITY MAP

SEC 23, T2N, R4E

SHEET INDEX

GENERAL NOTES FOR CONSTRUCTION

1. ALL CONSTRUCTION IN PUBLIC RIGHTS-OF-WAY OR IN EASEMENTS GRANTED FOR PUBLIC USE MUST CONFORM TO LATEST MARICOPA ASSOCIATION OF GOVERNMENTS (MAG) UNIFORM STANDARD SPECIFICATIONS AND UNIFORM STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION AS AMENDED BY THE LATEST VERSION OF THE CITY OF SCOTTSDALE (COS) SUPPLEMENTAL STANDARD SPECIFICATIONS AND SUPPLEMENTAL STANDARD DETAILS. IF THERE IS A CONFLICT, LATTER SHALL GOVERN.
2. THE ENGINEERING DESIGNS ON THESE PLANS ARE ONLY APPROVED BY THE CITY IN SCOPE AND NOT IN DETAIL. IF CONSTRUCTION QUANTITIES ARE SHOWN ON THESE PLANS, THEY ARE NOT VERIFIED BY THE CITY.
3. APPROVAL OF PLANS IS VALID FOR SIX (6) MONTHS. IN AN ENCROACHMENT PERMIT FOR THE CONSTRUCTION HAS NOT BEEN ISSUED WITHIN SIX MONTHS, THE PLANS SHALL BE RESUBMITTED TO THE CITY FOR RE-APPROVAL.
4. A PUBLIC WORKS INSPECTOR WILL INSPECT ALL WORKS WITHIN THE CITY OF SCOTTSDALE RIGHTS-OF-WAY AND IN EASEMENTS. NOTIFY INSPECTION SERVICES 24 HOURS PRIOR TO STARTING CONSTRUCTION (TELEPHONE 480-312-5750).
5. WHENEVER EXCAVATION IS TO BE DONE, CALL "BLUE STAKE CENTER," 602-263-1100, TWO WORKING DAYS BEFORE EXCAVATION IS TO BEGIN. THE CENTER WILL SEE THAT THE LOCATION OF THE UNDERGROUND UTILITY LINES IS IDENTIFIED FOR THE PROJECT. CALL "COLLECT" IF NECESSARY.
6. ENCROACHMENT PERMITS ARE REQUIRED FOR ALL WORK IN PUBLIC RIGHTS-OF-WAY AND EASEMENTS GRANTED FOR PUBLIC PURPOSES. AN ENCROACHMENT PERMIT WILL BE ISSUED BY THE CITY UPON RECEIPT OF PAYMENT OF A BASE FEE PLUS A FEE FOR INSPECTION SERVICES TO BE PROVIDED BY THE CITY. COPIES OF ALL PERMITS SHALL BE RETAINED ON-SITE AND SHALL BE AVAILABLE FOR INSPECTION AT ALL ITEMS. FAILURE TO PRODUCE THE REQUIRED PERMITS WILL RESULT IN IMMEDIATE WORK STOPPAGE UNTIL THE PROPER PERMIT DOCUMENTATION IS OBTAINED.
7. ALL EXCAVATION AND GRADING WHICH IS NOT IN PUBLIC RIGHT-OF-WAY OR NOT IN EASEMENTS GRANTED FOR PUBLIC USE MUST CONFORM TO CHAPTER 70, EXCAVATION AND GRADING, OF THE LATEST EDITION OF THE UNIFORM BUILDING CODE PREPARED BY THE INTERNATIONAL CONFERENCE OF BUILDING OFFICIALS. A PERMIT OF THIS GRADING MUST BE SECURED FROM THE CITY FOR A FEE ESTABLISHED BY THE UNIFORM BUILDING CODE.
8. ALL CONFINED SPACES ARE SUBJECT TO OSHA STANDARDS.

GRADING AND DRAINAGE NOTES

1. AN ON-SITE GRADING PERMIT IS REQUIRED.
2. A SEPARATE PERMIT IS NECESSARY FOR ANY OFF-SITE CONSTRUCTION.
3. THE CITY SHALL BE NOTIFIED 24 HOURS BEFORE ANY ON-SITE CONSTRUCTION BEGINS.
4. YOU ARE HEREBY ADVISED THAT NO PERSON SHALL USE ANY MECHANICAL EQUIPMENT FOR LAND LEVELING OR CLEARING, ROAD CONSTRUCTION, TRENCHING, EXCAVATING, DEMOLITION OR ENGAGED IN ANY EARTH MOVING ACTIVITY WITHOUT FIRST OBTAINING A PERMIT FROM AIR POLLUTION CONTROL, MARICOPA COUNTY DEPARTMENT OF HEALTH SERVICE'S 1001 N. CENTRAL AVE., SUITE 150 PHOENIX, AZ 85003. PHONE: (602) 506-6666 (THIS NOTICE IS ISSUED PURSUANT TO A.R.S. 36-779.07, NOTICE OF BUILDING AGENCIES.)
5. STAKING PAD AND/OR FINISHED FLOOR ELEVATIONS ARE THE RESPONSIBILITY OF THE DEVELOPER OR HIS ENGINEER. IN NON-CRITICAL AREAS, THE DEVELOPER'S ENGINEER SHALL SUBMIT CERTIFICATIONS OF CONSTRUCTED BUILDING PAD ELEVATIONS PRIOR TO THE CITY'S ACCEPTANCE OF PROJECT.
6. GRADING CONTRACTOR SHALL DESIGNATE THE LOCATION FOR WASTING SPOIL MATERIALS AND A LETTER FROM THE OWNER GIVING PERMISSION FOR SAID DISPOSAL PRIOR TO STARTING ON-SITE CONSTRUCTION.
7. GRADING AND DRAINAGE PLAN APPROVAL INCLUDES: CONSTRUCTION OF DRAINAGE PLAN INCLUDING, BUT NOT LIMITED TO, RETENTION AREAS AND/OR OTHER DRAINAGE FACILITIES, SURFACE GRADING, WALLS, CURBS, ASPHALT PAVEMENT, AND BUILDING FLOOR ELEVATIONS.
8. CONTRACTOR IS RESPONSIBLE FOR LOCATING AND CONFIRMING DEPTHS OF ALL THE EXISTING UTILITY LINES WITHIN PROPOSED RETENTION BASIN AREAS. IF THE BASIN CANNOT BE CONSTRUCTED PER PLAN BECAUSE OF CONFLICTS, THE CONTRACTOR SHOULD DISCUSS MODIFICATION OF BASIN CONFIGURATION WITH THE CITY INSPECTOR TO DETERMINE IF A PLAN REVISION OR A FIELD CHANGE IS REQUIRED.
9. AN APPROVED GRADING AND DRAINAGE PLAN SHALL BE ON THE JOB SITE AT ALL TIMES. DEVIATIONS FROM THE PLAN MUST BE PRECEDED BY AN APPROVED PLAN REVISION.
10. COMPACTION SHALL COMPLY WITH M.A.G. SECTION 601.(95% COMPACTION FOR CMP BACKFILL).
11. ALL RAMPS MUST MEET ADA ACCESSIBILITY GUIDELINES (ADAAG) STANDARDS; 2% MAX CROSS SLOPES AND 12:1 MAX LONGITUDINAL SLOPES.
12. SIGNS REQUIRE SEPARATE PERMIT AND APPROVAL.

FEMA TECHNICAL BULLETIN 10-01 - DESIGN REQUIREMENTS

1. THE GROUND SURFACE AROUND THE BUILDING AND WITHIN A DEFINED SETBACK DISTANCE FORM THE SPECIAL FLOOD HAZARD AREAS (SFHA) MUST BE AT OR ABOVE THE BASE FLOOD ELEVATION (BFE).
2. THE SETBACK IS THE DISTANCE FROM THE EDGE OF THE SFHA TO THE NEAREST WALL OF THE BASEMENT. THE MINIMUM ALLOWABLE SETBACK DISTANCE IS 20 FEET.
3. THE GROUND AROUND THE BUILDING MUST BE COMPACTED FILL; THE FILL MATERIAL, OR SOIL OF CLASSIFICATION AND DEGREE OF PERMEABILITY MUST EXTEND TO AT LEAST 5 FEET BELOW THE BOTTOM OF THE BASEMENT FLOOR SLAB.
4. THE FILL MATERIAL MUST BE COMPACTED TO AT LEAST 95 PERCENT OF STANDARD LABORATORY MAXIMUM DRY DENSITY (STANDARD PROCTOR), ACCORDING TO ASTM STANDARD D-698. FILLS SOILS MUST BE FINE-GRAINED SOILS OF LOW PERMEABILITY, SUCH AS THOSE CLASSIFIED AS CH, CL, SC OR ML ACCORDING TO ASTM D-2487, CLASSIFICATIONS OF SOILS FOR ENGINEERING PURPOSES. SEE TABLE 1804.2 IN THE 2000 INTERNATIONAL BUILDING CODE (IBC) FOR DESCRIPTIONS OF THESE SOILS TYPES.
5. THE FILL MATERIAL MUST BE HOMOGENEOUS AND ISOTROPIC; THAT IS THE SOIL MUST BE ALL OF ONE MATERIAL, AND THE ENGINEERING PROPERTIES MUST BE THE SAME IN ALL DIRECTIONS.
6. THE ELEVATION OF THE BASEMENT FLOOR SHOULD BE NO MORE THAN 5 FEET BELOW THE BFE.
7. THERE MUST BE GRANULAR DRAINAGE LATER BENEATH THE FLOOR SLAB AND A ½ HORSEPOWER SUMP PUMP WITH BACKUP POWER SUPPLY MUST BE PROVIDED TO REMOVE SEEPAGE FLOW. THE PUMP MUST BE RATED AT FOUR TIMES THE ESTIMATED SEEPAGE RATE AND MUST DISCHARGE ABOVE THE BFE AND AWAY FROM THE BUILDING. THIS ARRANGEMENT IS ESSENTIAL TO PREVENT FLOODING OF THE BASEMENT OR UPLIFT OF THE FLOOR UNDER THE EFFECT OF THE SEEPAGE PRESSURE.
8. THE DRAINAGE SYSTEM MUST BE EQUIPPED WITH A POSITIVE MEANS OF PREVENTING BACKFLOW.
9. MODEL BUILDING CODES ALSO ADDRESS FOUNDATION DRAINAGE (IRC SECTION R-405) AND FOUNDATION WALLS (IRC SECTION R-404). MODEL BUILDING CODES GENERALLY ALLOW FOUNDATION DRAINS TO DISCHARGE THROUGH EITHER MECHANICAL MEANS OR GRAVITY DRAINS. IN ADDITION THERE IS OFTEN AN EXCEPTION TO THE REQUIREMENT FOR DRAINAGE SYSTEM IN WELL-DRAINED SOILS. HOWEVER, IN OR NEAR FLOODPLAINS, WELL-DRAINED SOILS CAN, IN FACT, HELP CONVEY GROUNDWATER TOWARDS THE BUILDING FOUNDATION. THEREFORE, THIS EXCEPTION SHOULD NOT APPLY IN OR NEAR FLOODPLAINS.
10. IN SOME CASES IN OR NEAR FLOODPLAINS, EVEN WITH STANDARD DRAINAGE SYSTEMS, HYDROSTATIC PRESSURES FROM GROUNDWATER AGAINST THE BASEMENT CAN RESULT. WHEN A STANDARD DRAINAGE SYSTEM IS UNABLE TO ELIMINATE HYDROSTATIC PRESSURE ON THE FOUNDATION, MODEL BUILDING CODES, INCLUDING THE 2000 INTERNATIONAL RESIDENTIAL CODE (IRC SECTION R-404.1.3) REQUIRE THAT THE FOUNDATION BE DESIGNED IN ACCORDANCE WITH ACCEPTED ENGINEERING PRACTICES.

NATIVE PLANT PERMIT:

NO NATIVE PLANT WILL BE DISTURBED DURING THE CONSTRUCTION OF THIS PROJECT. THIS SITE IS IN A NON-ESL AND NON-NAOS AREA.

EARTHWORK QUANTITIES FOR ZONE 'A' AREA

OPTION NO. 1

RAW NUMBERS
CUT: 0 CY
FILL: 7,353 CY
NET: 7,353 CY

ADJUSTED REQUIRED FILL: 8,824 CY*
*WITH 20% COMPACTION FACTOR

OPTION NO. 2

RAW NUMBERS
CUT: 0 CY
FILL: 6,385 CY
NET: 6,385 CY

ADJUSTED REQUIRED FILL: 7,662 CY*
*WITH 20% COMPACTION FACTOR

EARTHWORK QUANTITIES

BORROW AREA
CUT: 9,211 CY
FILL: 0 CY
NET: 9,211 CY
*THE QUANTITIES SHOWN HEREON ARE AN ESTIMATE ONLY. CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING ALL QUANTITIES BEFORE BIDDING.

NO CONFLICT SIGNATURE BLOCK

UTILITY	UTILITY COMPANY	NAME OF COMPANY REPRESENTATIVE	TELEPHONE NUMBER	DATE SIGNED
ELECTRIC	APS	-	602-493-4433	-
TELEPHONE	QWEST	-	602-630-0496	-
NATURAL GAS	SOUTH WEST GAS	-	602-484-5344	-
CABLE TV	COX CABLE	-	623-328-3506	-
IRRIGATION	SRP WATER	-	602-236-2962	-
OTHER				

ENGINEER'S CERTIFICATION

I _____, AS THE ENGINEER OF RECORD FOR THIS DEVELOPMENT, HEREBY CERTIFY THAT ALL UTILITY COMPANIES LISTED ABOVE HAVE BEEN PROVIDED FINAL IMPROVEMENT PLANS FOR REVIEW, AND THAT ALL CONFLICTS HAVE BEEN RESOLVED. IN ADDITION, "NO CONFLICT" FORMS HAVE BEEN OBTAINED FROM EACH UTILITY COMPANY, AND ARE INCLUDED IN THIS SUBMITTAL. ALL PUBLIC AND PRIVATE UTILITY APPURTENANCES NECESSARY TO SERVE THIS SITE; INCLUDING, BUT NOT LIMITED TO, TRANSFORMERS, CABLE BOXES, AND UTILITY PEDESTALS; SHALL BE PLACED SUCH THAT THEY DO NOT NEGATIVELY IMPACT THE USE OF ANY DEDICATED EASEMENTS OR RIGHTS-OF-WAY INCLUDING, BUT NOT LIMITED TO, STORMWATER STORAGE BASINS, SIGHT DISTANCE EASEMENTS, AND NAOS OR OTHER OPEN SPACE EASEMENTS.

Signature _____ Date _____

THE ENGINEER OF RECORD ON THESE PLANS HAS RECEIVED A COPY OF THE APPROVED STIPULATIONS FOR THIS PROJECT AND HAS DESIGNED THESE PLANS IN CONFORMANCE WITH THE APPROVED STIPULATIONS.

CITY APPROVALS

CITY OF SCOTTSDALE

REVIEW AND RECOMMENDED APPROVAL BY:			
PAVING		TRAFFIC	
GRADING & DRAINAGE		PLANNING	
WATER & SEWER		FIRE	
RET. WALLS			

APPROVED BY:

_____
ENGINEERING COORDINATION MANAGER (OR DESIGNEE) DATE

ENGINEER'S FEMA CERTIFICATION

THE LOWEST FLOOR ELEVATION(S) AND/OR FLOODPROOFING ELEVATION(S) ON THIS PLANS COMPLY WITH THE CLOMR FOR THIS PROJECT.

COMMUNITY NUMBER	PANEL # PANEL DATE	SUFFIX	DATE OF FIRM (INDEX DATE)	FIRM ZONE	BASE FLOOD ELEV (IN AO ZONE, USE DEPTH)
045012	1695	H	09-30-2005	ZONE "A"	1278.5
				ZONE "X"	N/A

GEOTECHNICAL NOTE:

A GEOTECHINCAL REPORT HAS BEEN PREPARED FOR THIS PROJECT BY FOREE & VANN, INC., DATED AUGUST 9TH, 2011; PROJECT 21088. CONTRACTOR SHALL REFERENCE THIS REPORT AND COMPLY WITH ALL RECOMMNEDATIONS CONTAINED THEREIN AS PART OF THIS EARTHWORK MOVING AND COMPACTION EFFORT. MIN COMPACTION FOR FLOODPLAIN RELIEF IS 95% CONTRACTOR SHALL PROVIDE TESTING DURING COMPACTION EFFORTS AS REQUIRED TO MEET FEMA REQUIREMENTS.

SITE DATA

GROSS AREA = 186,526 SQ. FT., 4.282 ± ACRES

ENGINEER

DAVID EVANS & ASSOCIATES, INC.
4600 EAST WASHINGTON STREET STE 430
PHOENIX, ARIZONA 85034
PHONE: (602) 678-5151
CONTACT: RAMZI GEORGES, P.E.

DEVELOPER/OWNER

GREY DEVELOPMENT LLC
4040 EAST CAMELBACK ROAD, SUITE 275
PHOENIX, ARIZONA 85018
CONTACT: BRIAN KEARNEY
PHONE: (602) 954-0109

BENCHMARK

MARICOPA COUNTY ENGINEERING DEPARTMENT BRASS CAP IN A HANDHOLE FOUND AT THE INTERSECTION OF CAMELBACK ROAD AND SCOTTSDALE ROAD, CITY OF SCOTTSDALE GPS POINT 4223. NAVD 88 ELEVATION = 1277.619'
(CITY OF SCOTTSDALE VERTICAL DATUM)

BASIS OF BEARING

BEARINGS SHOWN HEREON ARE BETWEEN A MARICOPA COUNTY ENGINEERING DEPARTMENT BRASS CAP IN A HAND HOLE FOUND AT THE WEST QUARTER CORNER OF SECTION 23, TOWNSHIP 2 NORTH, RANGE 4 EAST, ALSO BEING THE INTERSECTION OF SCOTTSDALE ROAD AND CAMELBACK ROAD AND A MARICOPA COUNTY ENGINEERING DEPARTMENT BRASS CAP IN A HAND HOLE FOUND AT THE NORTHWEST CORNER OF SECTION 23, TOWNSHIP 2 NORTH, RANGE 4 EAST, ALSO BEING THE INTERSECTION OF SCOTTSDALE ROAD AND CHAPARRAL ROAD, BEARING N00°00'00"E, AS REFERENCED ON THE SAFARI DRIVE I PLAT OF CONDOMINIUM, BOOK 850, PAGE 14, RECORDS OF MARICOPA COUNTY, ARIZONA.

STANDARD ABBREVIATIONS

C	CONCRETE
CB	CATCH BASIN
CP	PAVEMENT
EX	EXISTING
FH	FIRE HYDRANT
FF	FINISHED FLOOR
FL	FLOWLINE
G	GUTTER ELEVATION
GB	GRADE BREAK(CHANGE OF SLOPE)
C.O.S	CITY OF SCOTTSDALE
NG	NATURAL GROUND
S	SEWER
SD	STORM DRAIN
RW	RIGHT OF WAY
TC	TOP OF CURB
WL	WATER LINE
VG	VALLEY GUTTER
⊕70.00	(ADD 1400')
@ PLUS EX	EX GRADE

LEGEND

NOTE: SYMBOLS SHOWN ON THIS MAP IDENTIFYING TOPOGRAPHIC FEATURES MAY NOT BE TO ACTUAL SCALE. SYMBOLS MAY BE ENLARGED FOR VISUAL PURPOSES.

- EXIST. TELEPHONE
- EXIST. ELECTRICAL
- EXIST. GAS
- RIGHT OF WAY
- CENTERLINE
- BOUNDARY/PROPERTY LINE
- EASEMENT DESIGNATION
- CHAIN LINK FENCE
- PROPOSED SEWER
- PROPOSED WATER
- PROPOSED STORM DRAIN
- EXISTING SEWER
- EXISTING WATER
- EXISTING STORM DRAIN
- EXISTING CONTOURS
- 1328 PROPOSED CONTOURS
- FEMA FLOODPLAIN LINE

PROFESSIONAL CERTIFICATION

SCOTTSDALE BLUESKY, NORTHEAST CORNER OF SCOTTSDALE ROAD AND CAMELBACK ROAD, SCOTTSDALE ARIZONA
PROJECT NAME AND ADDRESS

I, _____ CERTIFY THAT THE DESIGN FOR THE AFOREMENTIONED DEVELOPMENT IS REASONABLY SAFE FROM FLOODING IN ACCORDANCE WITH THE GUIDANCE PROVIDED WITHIN FEMA's TECHNICAL BULLETIN 10-01 RELATED TO ENSURING THAT STRUCTURES ARE REASONABLY SAFE FROM FLOODING AND IN ACCORDANCE WITH ACCEPTED PROFESSIONAL PRACTICES.

SIGNATURE _____ DATE _____

TITLE _____

TYPE OF LICENSE _____ LICENCE NUMBER _____

ADDRESS AND PHONE _____

LICENSE EXPIRATION DATE _____

EXHIBIT A

DESIGNED BY: DMPA	PROJECT MANAGER: RAMZI GEORGES				
DRAWN BY: DMPA					
CHECKED BY: RYG					
DATE: 1/2012	DATE	REVISION			BY

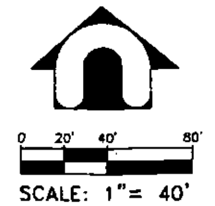
DAVID EVANS AND ASSOCIATES, INC.
4600 E. Washington Street, Suite 430
Phoenix, Arizona 85034
Phone: 602.678.5151

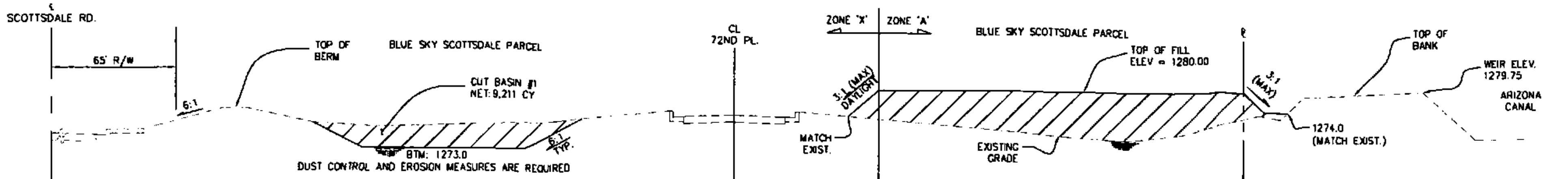
FILL IMPROVEMENT PLANS FOR BLUE SKY SCOTTSDALE
SCOTTSDALE, ARIZONA

SCALE: NTS
SECTION: 23
TOWNSHIP: 2N
RANGE: 4E
JOB NO.: GRYD0000-0001
SHEET SP1 OF 2

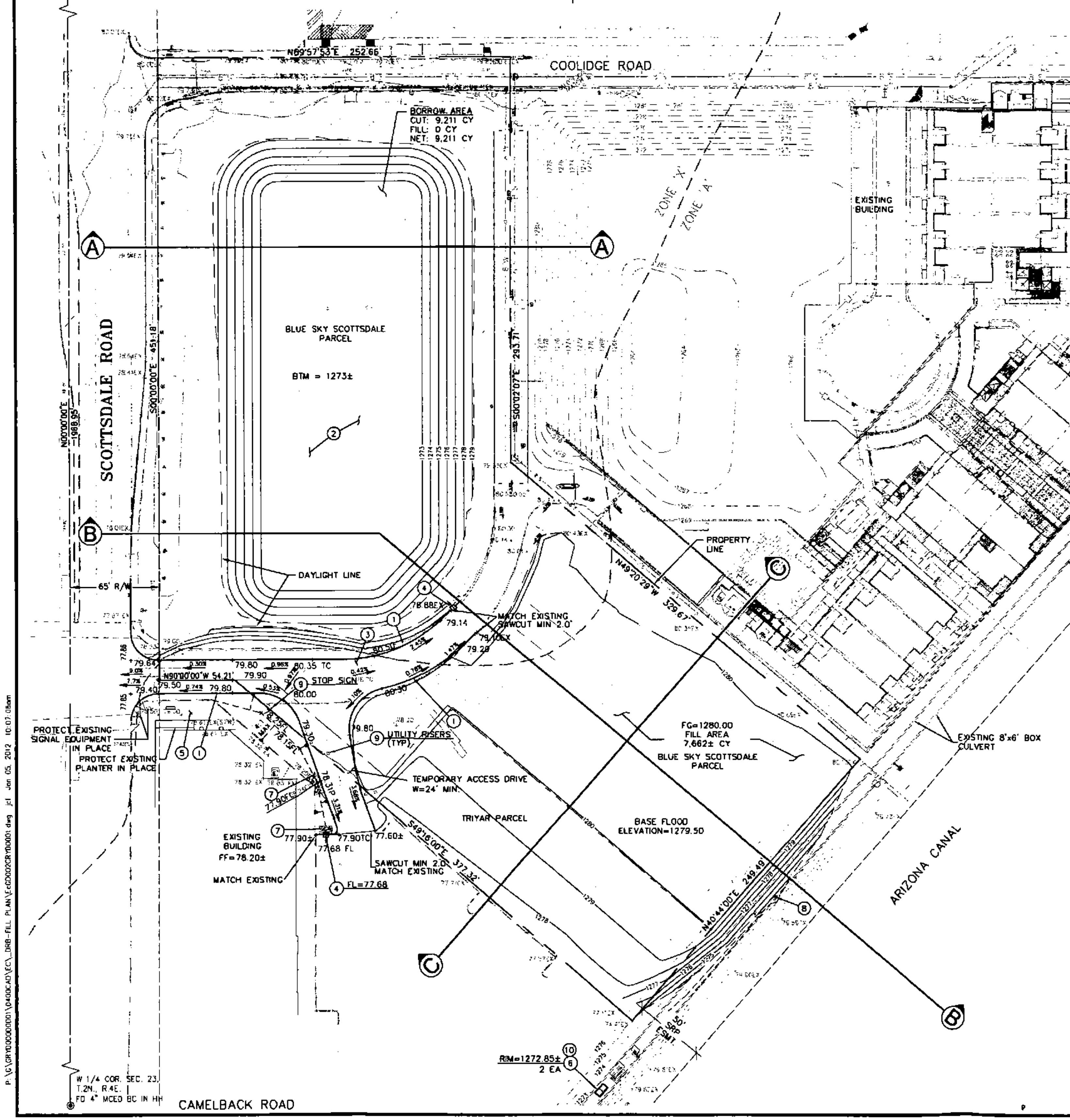
PLAN CHECK #: 4994-11 DRB CASE #: 62-DR-2011 CASE #: 2-II-2010 OS 18-45

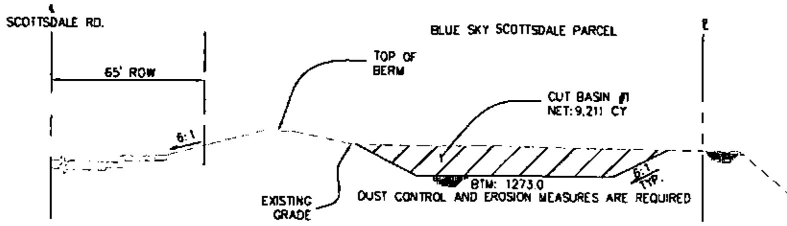
P:\GRYD0000001\DESIGN\CIVIL_DRB-FILL PLAN\FG0001GRYD0001.dwg jef Jan 05, 2012 10:07:32am



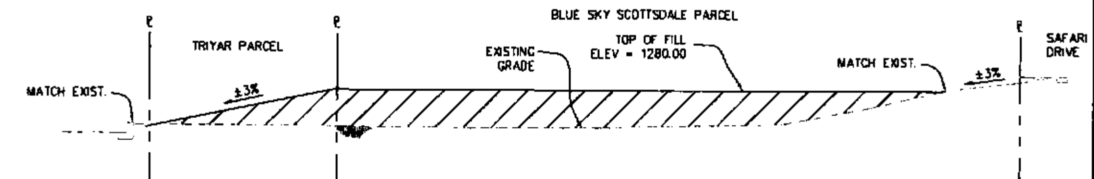


SECTION B-B
LOOKING NORTH AND NORTHEAST
NTS

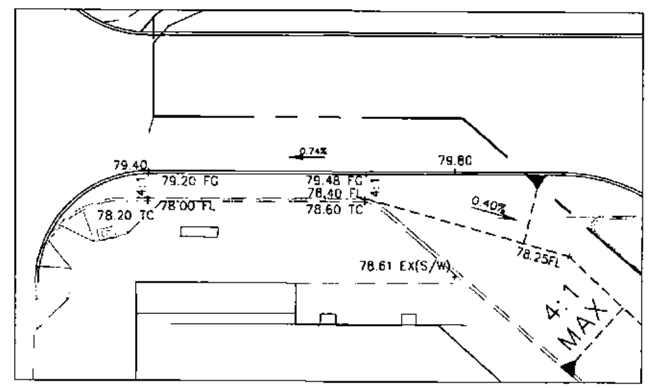




SECTION A-A
LOOKING NORTH
NTS

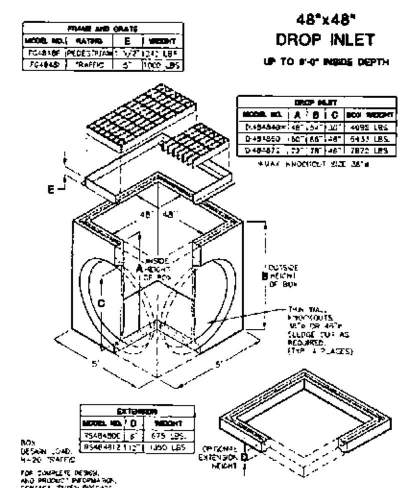


SECTION C-C
LOOKING NORTHWEST
NTS

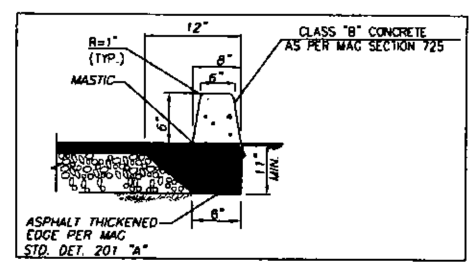


FASHION SQUARE DR. ENTRY DETAIL
SCALE 1"=15'

VOLUME DISPLACEMENT NOTE:
RAISING THE SITE ABOVE THE WEIR ELEVATION SHOULD NOT IMPACT THE BASE FLOOD ELEVATION. THE WEIR ELEVATIONS ALONG THE CANAL ARE NOT ALTERED. IN ADDITION TWO ADDITIONAL GRATE INLETS STRUCTURE 4'X4' WILL BE ADDED TO INCREASE THE CAPACITY OF THE GRATED INLETS ALONG THE CANAL. THIS WILL COMPENSATE FOR VOLUME LOSS AND ACCOUNTS FOR THE ABANDONMENT OF AN EXISTING INLET STRUCTURE ALONG THE EAST PORTION OF THE SITE. THE ADDITION OF THE INLET STRUCTURES WILL ALLOW FOR LESS PONDING BEHIND THE CANAL DURING SMALLER STORM EVENTS THAT DO NOT WEIR OVER THE CANAL.



4'x4' CATCH BASIN DETAIL
NTS



(1) EXTRUDED CURB WITH ASPHALT THICKENED EDGE N.T.S

CONSTRUCTION NOTES

1. CONSTRUCT 6" CONCRETE EXTRUDED CURB PER DETAIL PER DETAIL 1 ABOVE.
2. CONSTRUCT BORROW BASIN. DIMENSIONS PER PLAN WITH MAX SLOPE OF 6:1
3. CONSTRUCT TEMPORARY ASPHALT PAVEMENT 2" AC ON COMPACTED NATIVE SOIL.
4. CONSTRUCT DEPRESSED CURB OPENING. WIDTH = 2'
5. EXISTING SIDEWALK. PROTECT IN PLACE.
6. CONSTRUCT 4'x4' CATCH BASIN PER DETAIL ON THIS SHEET OR EQUIVALENT. WITHOUT THE SIDE OPENINGS FOR PIPE. OPENING IS ONLY NEEDED AT BOTTOM OF STRUCTURE.
7. INSTALL RIP RAP W/ FILTER FABRIC PER MAG STD SPECIFICATIONS. RIP RAP FINISH GRADE TO BE ON GRADE TO MATCH GRADING DESIGN.
8. ABANDON GRATED INLET STRUCTURE IN PREPARATION FOR FILL ABOVE IT PER MAG STD SPECIFICATIONS.
9. RELOCATE EXISTING FEATURE AS NOTED.
10. CONTRACTOR TO PROVIDE OPENING IN THE CULVERT TO ALLOW FOR DRAINAGE FROM STRUCTURE. STRUCTURAL INTEGRITY OF CULVERT TO BE MAINTAINED.

EXHIBIT A

REVISION	DATE	BY

PROJECT MANAGER: RAMZI GEORGES

DESIGNED BY: DHPA
DRAWN BY: DHPA
CHECKED BY: RYG
DATE: 1/2012

DAVID EVANS AND ASSOCIATES INC.
4600 E. Washington Street, Suite 430
Phoenix, Arizona 85034
Phone: 602.678.5151

FILL IMPROVEMENT PLANS WITH 3% TRANSITION BLUE SKY SCOTTSDALE SCOTTSDALE, ARIZONA

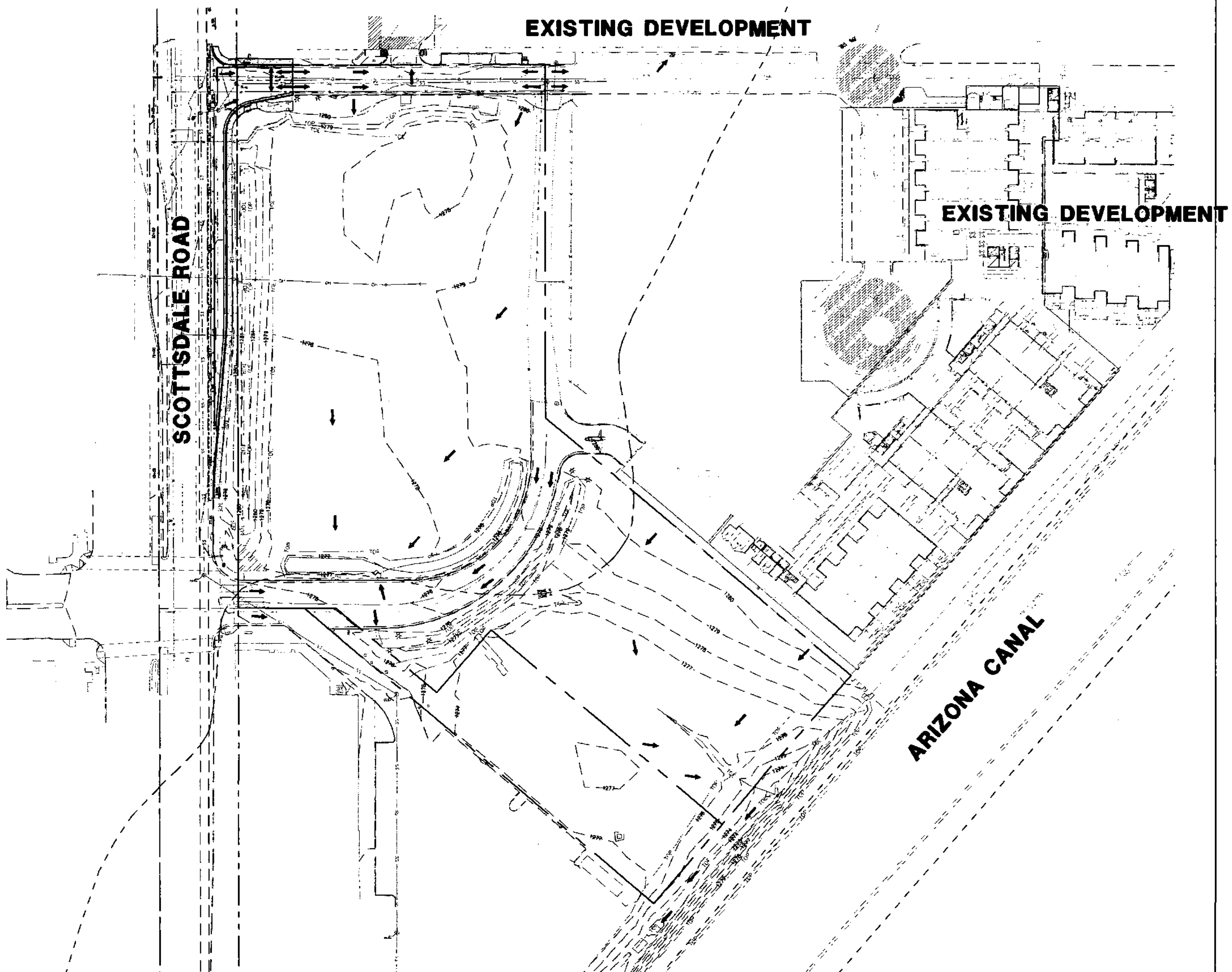
SCALE: 1" = 40'

SECTION: 23
TOWNSHIP: 2N
RANGE: 4E

JOB NO.: GRYD0000-0001

SHEET SP2 OF 2

PLAN CHECK #: 4994-11 DRB CASE #: 62-DR-2011 CASE #: 2-R-2010 QS: 18-45



LEGEND

(4D) 1.52 AC	DRAINAGE AREA BOUNDARY LINE
(BASIN 1) 2.22 AC	STORAGE BASIN
(CP1)	CONCENTRATION POINT
←	FLOW DIRECTION
— — — —	DRAINAGE AREA DESIGNATION

SCALE: 1"=40

0 20 40 80

CALL TWO WORKING DAYS BEFORE YOU DIG
263-1100
1-800-STAKE-IT
(OUTSIDE MARICOPA COUNTY)
BLUE STAKE CENTER

DATE	REVISION	BY

PROJECT MANAGER: RAMZI GEORGES

DESIGNED BY: DHPA
DRAWN BY: DHPA
CHECKED BY: RYC
DATE: 01/2012

DAVID EVANS AND ASSOCIATES INC.
4600 E. Washington Street, Suite 430
Phoenix, Arizona 85034
Phone: 602.678.5151

EXHIBIT B
EXISTING DRAINAGE MAP FOR SCOTTSDALE BLUE SKY
SCOTTSDALE, ARIZONA

SCALE:

SECTION: 23
TOWNSHIP: 2N
RANGE: 4E

JOB NO.: GRYD0000-0001

SHEET 1 OF 1

P:\G\GRYD00000001\0400CADD\EC_HY\GRYD-W-Gas-01-Exhibit B.dwg jcl Jan 04, 2012 1:07:58pm

NOT TO SCALE

LEGEND

- FLOW DIRECTION
- WEIR SECTION LINE
- Q_{100}=XXCFS — 100 YEAR FLOW
- SECTION X — FLOW MASTER X-SECTION AT THIS LOCATION
- EX. 8'x6' BOX CULVERT

GOLDWATER BLVD

HIGHLAND AVENUE

Q_{100}=378CFS

Q_{100}=189CFS(Half Street)

SECTION 13 | SECTION 11 | SECTION 10

Q_{100}=70CFS

ENTERS COOLIDGE STORM DRAIN SYSTEM

Q_{100}=119CFS

SECTION 7

SECTION 14 | SECTION 9 | SECTION 8

Q_{100}=80CFS

Q_{100}=1,000CFS ENTERS 8x6 CULVERT SYSTEM

EXISTING 8'x6' BOX CULVERT

1ST NEW 4X4 CATCH BASIN

2ND NEW 4X4 CATCH BASIN

EXISTING CATCH BASIN(TYP.)

WEIRS OVER CANAL
Q_{100}=1,202CFS

EXISTING CATCH BASIN(TYP.)

EX. GRATE STRUCTURE

REFER TO RUNOFF EXHIBIT UNDER APPENDIX C FOR THIS FLOW

REFER TO APPENDIX D FOR DETAILED CALCULATIONS FOR THESE CATCH BASINS

GOLDWATER BLVD

MARSHALL WAY

BODTSDALE ROAD

EAST CB
MIDDLE CB
WEST CB

Q_{100}=184 CFS

22%

SECTION 3 | SECTION 2

Q_{100}=823 CFS

Q_{100}=393 CFS

48%

SECTION 1

30%

Q_{100}=245 CFS

SECTION 4

32%

Q_{100}=125 CFS

68%

SECTION 5

Q_{100}=268 CFS

Q_{100}=0.0 CFS

SECTION 6

Q_{100}=75 CFS

Q_{100}=110 CFS | Q_{100}=88 CFS | Q_{100}=90 CFS

ENTERS CAMELBACKS STORM DRAIN SYSTEM

CAMELBACK ROAD

263-1100
1-800-STAKE-IT

DESIGNED BY: DHPA
DRAWN BY: DHPA
CHECKED BY: RYG
DATE: 01/2012

PROJECT MANAGER: RAMZI GEORGES

BY	REVISION	DATE

DAVID EVANS AND ASSOCIATES INC.
4600 E. Washington Street, Suite 430
Phoenix, Arizona 85034
Phone: 602.678.5151

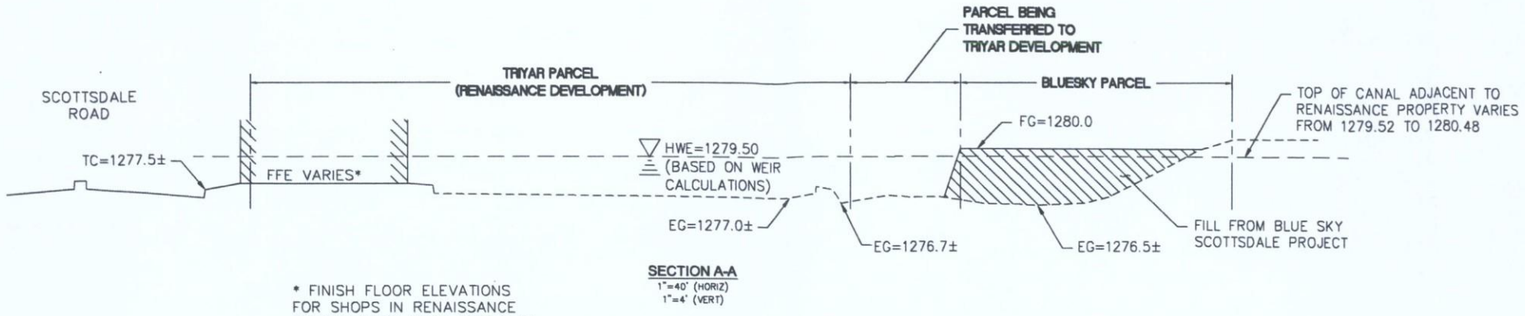
EXHIBIT C
OFFSITE DRAINAGE MAP
FOR
SCOTTSDALE BLUE SKY
SCOTTSDALE, ARIZONA

SCALE:

SECTION: 23
TOWNSHIP: 2N
RANGE: 4E

JOB NO.: GRYD0000-0001

SHEET 1 OF 1



SECTION A-A
1"=40' (HORIZ)
1"=4' (VERT)

* FINISH FLOOR ELEVATIONS FOR SHOPS IN RENAISSANCE CENTER VARY FROM 1278.6 TO 1277.9

NTS

CALL TWO WORKING DAYS BEFORE YOU DIG
263-1100
1-800-STAKE-IT
(OUTSIDE MARICOPA COUNTY)
BLUE STAKE CENTER

PROJECT MANAGER: RAMZI GEORGES

BY	REVISION	DATE

DESIGNED BY: DHPA
DRAWN BY: DHPA
CHECKED BY: RYG
DATE: 01/2012

DAVID EVANS AND ASSOCIATES INC.
4600 E. Washington Street, Suite 430
Phoenix, Arizona 85034
Phone: 602.678.5151

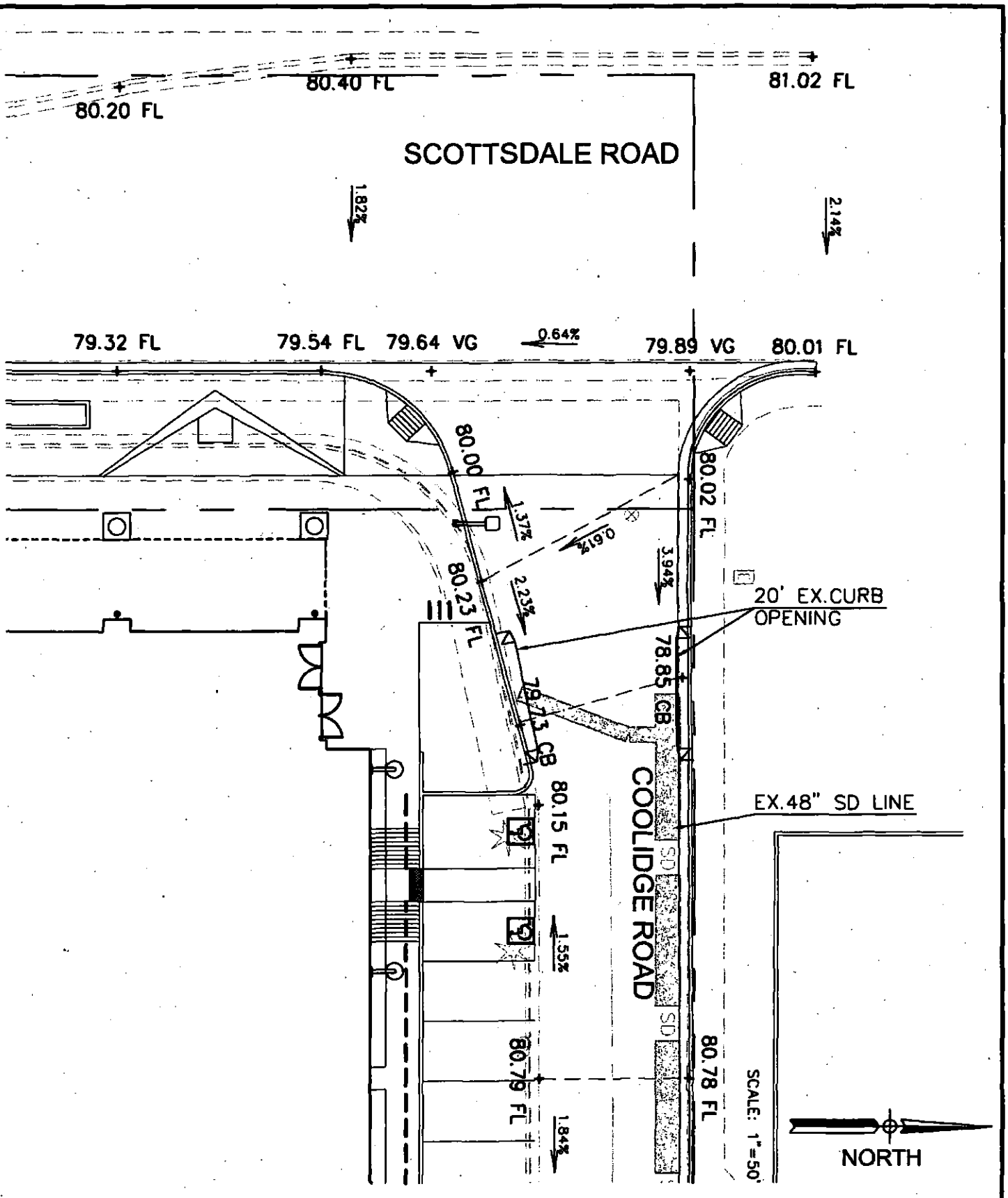
EXHIBIT D
FLOODPLAIN CROSS SECTION FOR SCOTTSDALE BLUE SKY SCOTTSDALE , ARIZONA

SCALE:

SECTION: 23
TOWNSHP: 2N
RANGE: 4E

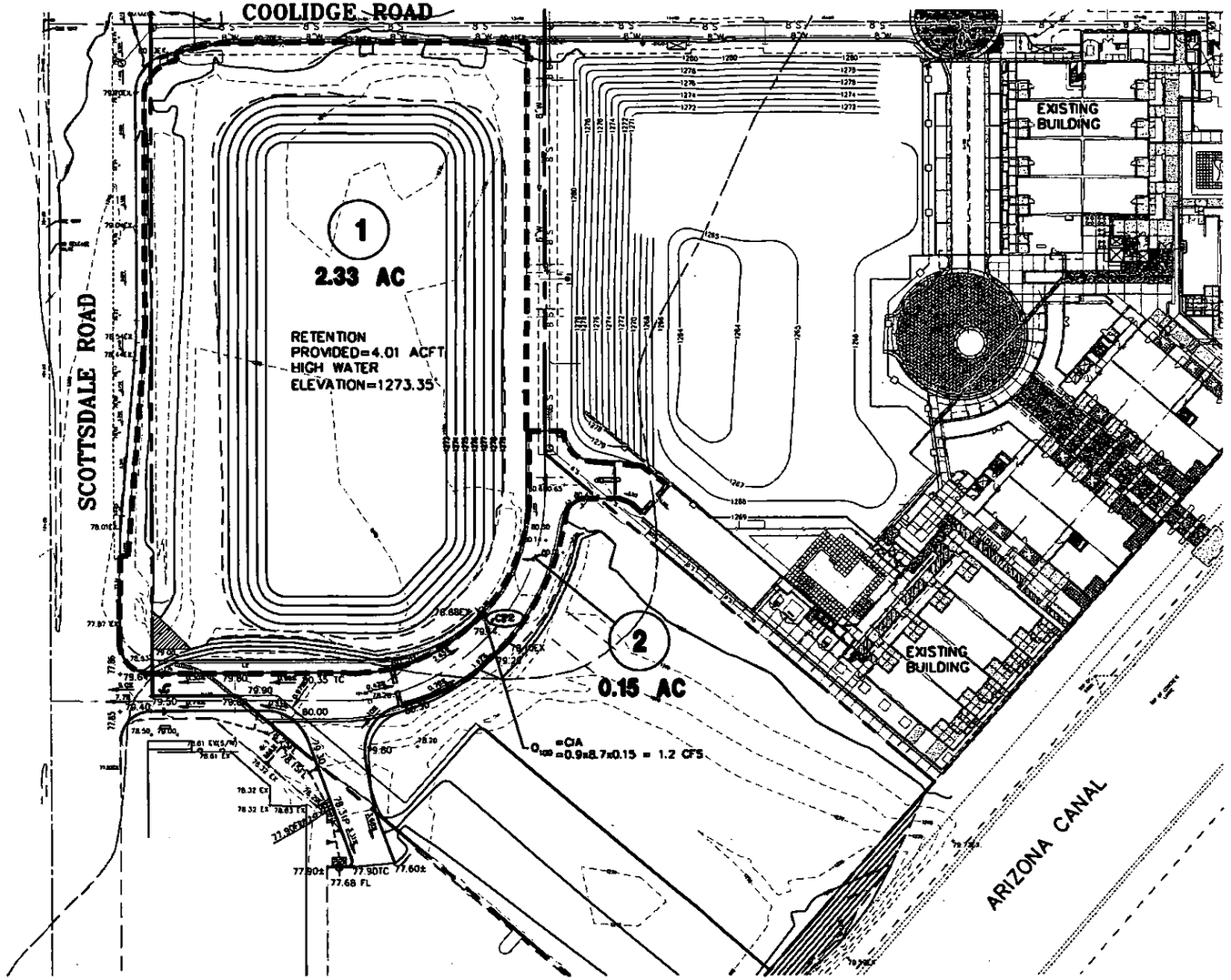
JOB NO.:
GRYD0000-0001

SHEET 1 OF 1



P:\G\GRYD00000001\0400CAD\EC_HY\COOLIDGE GRADES - Exhibit E.dwg dhpa Jan 05, 2012 6:32:44am

SCALE: 1"=20'	**EXHIBIT E** SCOTTSDALE & COOLIDGE ROAD EXISTING GRADES SCOTTSDALE, ARIZONA	DAVID EVANS AND ASSOCIATES INC. 4600 East Washington Street, Suite 430 Phoenix Arizona 85034 Phone: 602.678.5151	DRAWN BY: JCF
SHEET 1 OF 1			CHECKED BY:
JOB NO.: GRYD00000001			DATE: 10/11



0 20 40 80

SCALE: 1"=40

LEGEND

1 — 1.52 AC — DRAINAGE AREA BOUNDARY LINE

DRAINAGE AREA DESIGNATION

CP1 — CONCENTRATION POINT

DESIGNED BY: DMPA
DRAWN BY: DMPA
CHECKED BY: RWG
DATE: 10/2011

PROJECT MANAGER:
RANDI GEORGES

BY	REVISION	DATE

DAVID EVANS AND ASSOCIATES INC.
4600 E. Washington Street, Suite 300
Phoenix, Arizona 85034
Phone: 602.818.5151

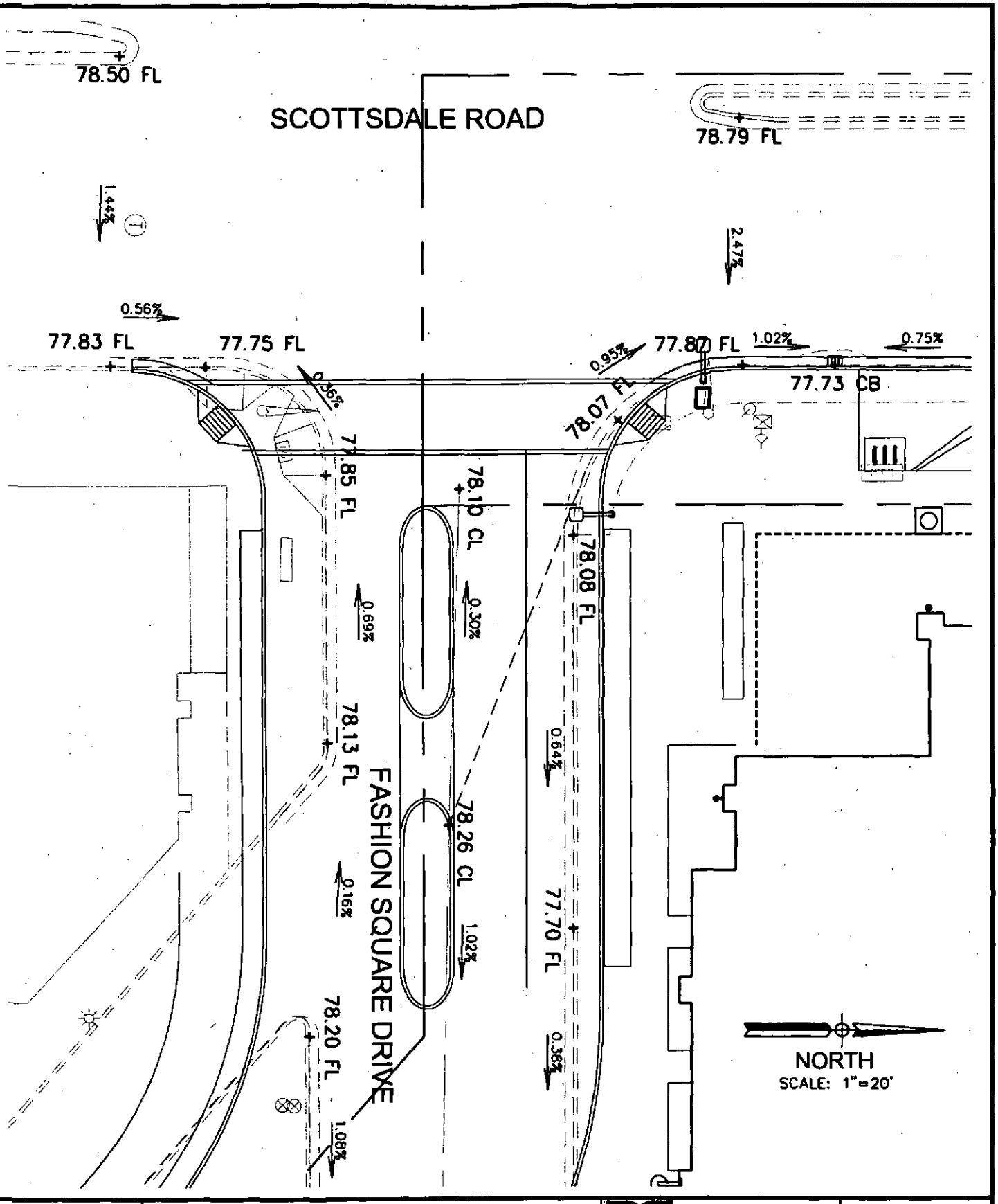
EXHIBIT F
RETENTION BASIN EXHIBIT
FOR
BLUE SKY SCOTTSDALE
SCOTTSDALE, ARIZONA

SCALE: 1"= 40'

SECTION: 23
TOWNSHIP: 2N
RANGE: 4E

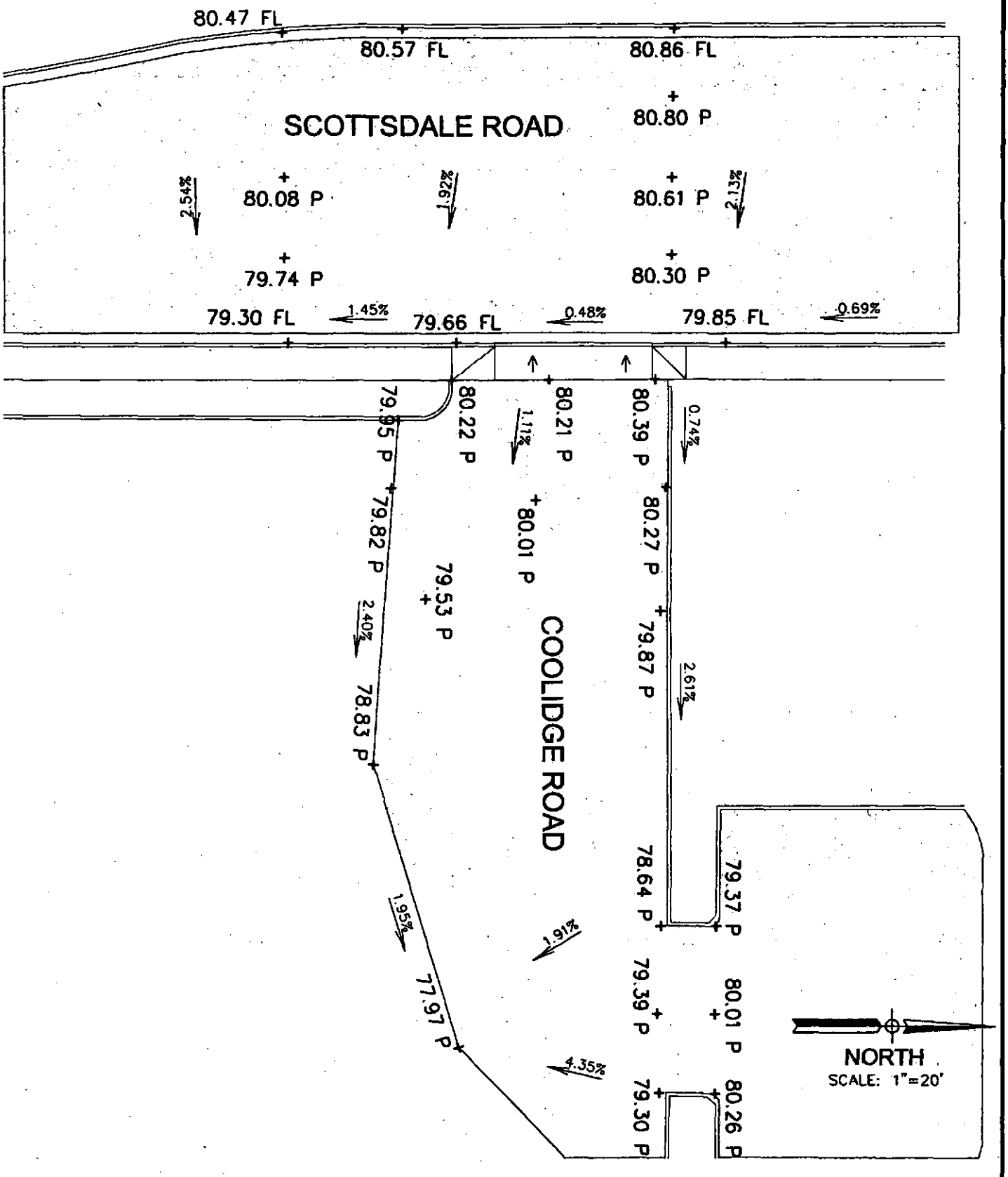
JOB NO.: GRYD0000-0001

SHEET 1 OF 1



P:\G\GRYD00000001\0400CAD\EC_HY\Exhibit G.dwg dhpa Jan 05, 2012 6:31:20am

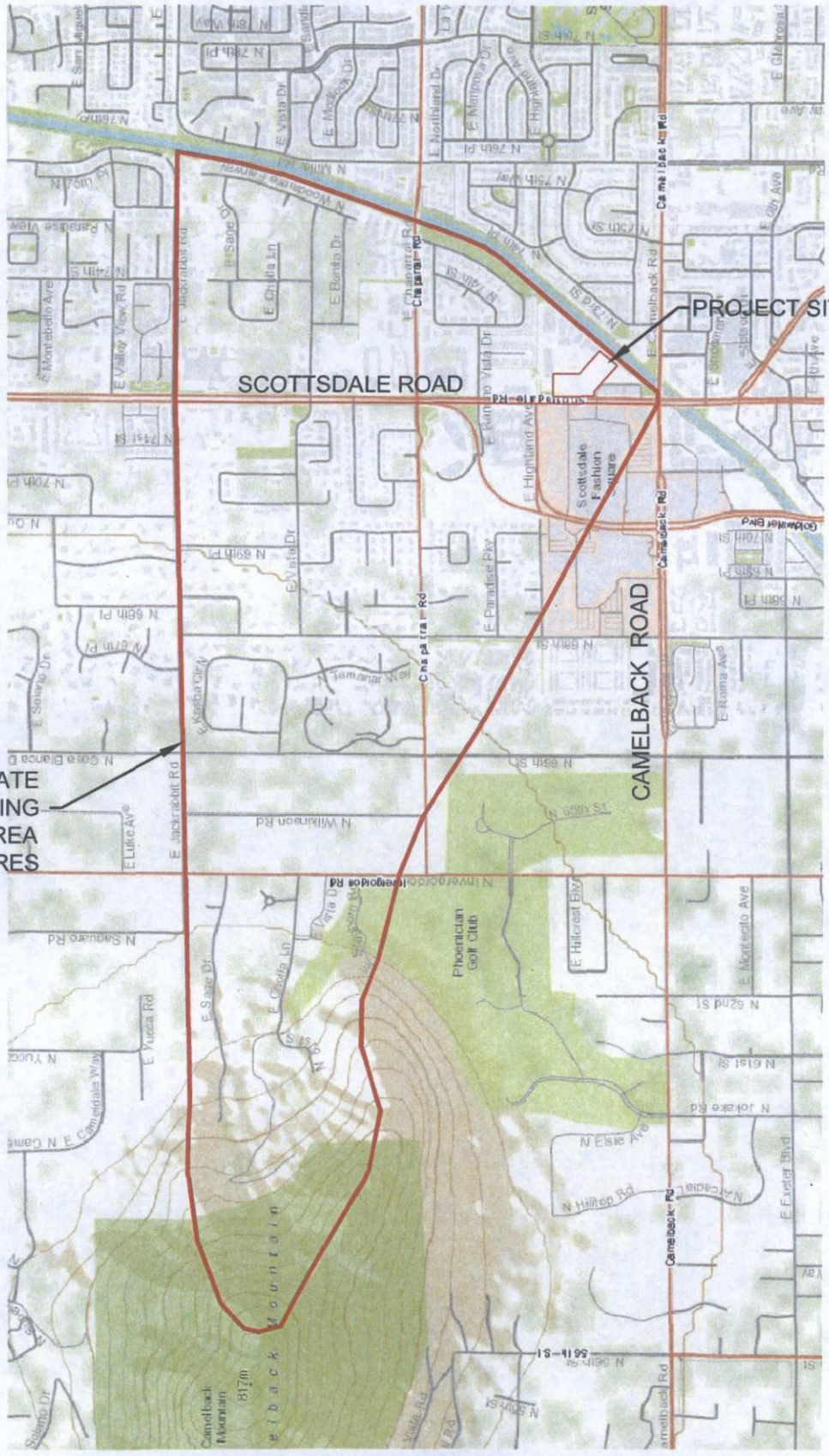
SCALE: 1"=20'	**EXHIBIT G** SCOTTSDALE & FASHION SQUARE DR. ROAD EXISTING GRADES SCOTTSDALE, ARIZONA	DAVID EVANS AND ASSOCIATES INC. 4600 East Washington Street, Suite 430 Phoenix Arizona 85034 Phone: 602.678.5151	DRAWN BY: JCF
SHEET 1 OF 1			CHECKED BY:
JOB NO.: GRYD00000001			DATE: 01/12



P:\G\GRYD00000001\0400CAD\EC_HY\Exhibit H.dwg jcf Jan 04, 2012 1:30:05pm

SCALE: 1"=20'	**EXHIBIT H** SCOTTSDALE & COOLIDGE ROAD GRADE ELEVATIONS (PRE-SAFARI DRIVE) SCOTTSDALE, ARIZONA	DAVID EVANS AND ASSOCIATES INC. 4600 East Washington Street, Suite 430 Phoenix Arizona 85034 Phone: 602.678.5151	DRAWN BY: JCF
SHEET 1 OF 1			CHECKED BY:
JOB NO.: GRYD00000001			DATE: 01/12

NORTH



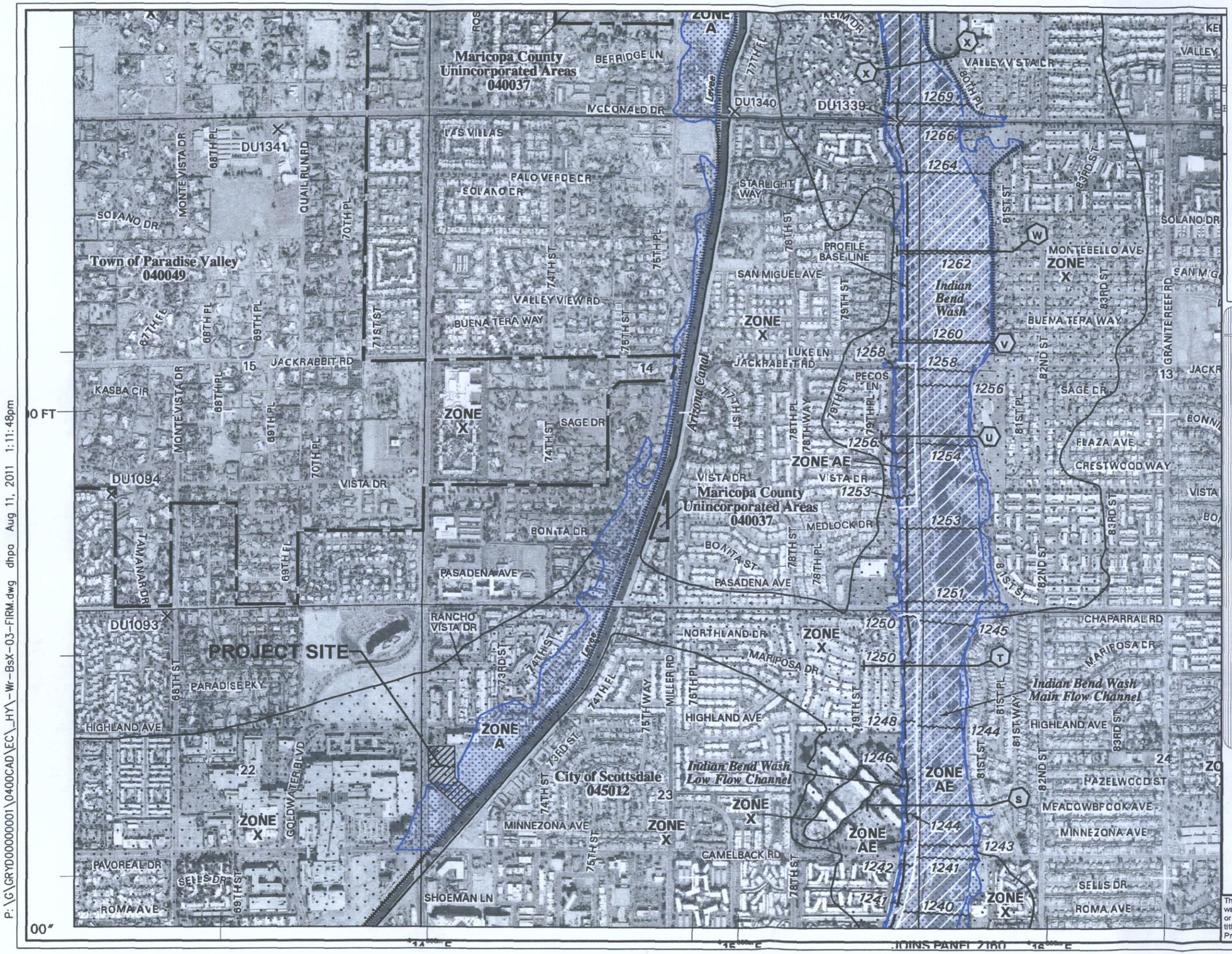
SCALE: NTS SHEET 1 OF 1 JOB NO.: GRYD00000001	**EXHIBIT I** CONTRIBUTING DRAINAGE AREA SCOTTSDALE BLUE SKY SCOTTSDALE, ARIZONA	DAVID EVANS AND ASSOCIATES INC. 4600 East Washington Street, Suite 430 Phoenix Arizona 85034 Phone: 602.678.5151
		DRAWN BY: JCF CHECKED BY: DATE: 1/12

P:\G\GRYD00000001\0400CAD\EC_HY\Exhibit 1.dwg jcf Jan 04, 2012 1:43:50pm


Existing 8'x6'
Box Culvert
No Conveyance Capacity
Along Canal Over Bank
Any Minimum Offsite Runoff
will Sheet Flow into the Canal

Picture 1

APPENDIX B
FLOOD INSURANCE RATE MAP


Maricopa County
Unincorporated Areas
040037
Town of Paradise Valley
040049
City of Scottsdale
045012
Maricopa County
Unincorporated Areas
040037
PROJECT SITE
ZONE A
ZONE X
ZONE AE
Arizona Canal
Indian Bend Wash
Low Flow Channel
Indian Bend Wash
Main Flow Channel
Levee
DU1340
DU1339
DU1341
DU1094
DU1093
1269
1266
1264
1262
1260
1258
1256
1254
1253
1251
1250
1248
1246
1244
1243
1242
1241
1240
1245
McDONALD DR
LAS VILLAS
PALO VERDE DR
SOLANO DR
STARLIGHT WAY
PROFILE BASE LINE
SAN MIGUEL AVE
VALLEY VIEW RD
BUENA TERA WAY
LUKE LN
JACKRABBIT RD
PECOS LN
SAGE DR
VISTA DR
MEDLOCK DR
BONITA ST
PASADENA AVE
RANCHO VISTA DR
NORTHLAND DR
MARIPOSA DR
HIGHLAND AVE
MINNEZONA AVE
CAMELBACK RD
SHOEMAN LN
PAVOREAL DR
SELLS DR
ROMA AVE
CHAPARRAL RD
MONTEBELLO AVE
VALLEY VISTA DR
CRESTWOOD WAY
PLAZA AVE
HAZELWOOD ST
MEADOWBROOK AVE
SAGE DR
BERRIDGE LN
KASBA CIR
PARADISE PKY
GOLDWATER BLVD
TAMANAR DR
MONTE VISTA DR
QUAIL RUN RD
77TH PL
68TH PL
69TH PL
70TH PL
71ST ST
73RD ST
74TH ST
75TH PL
75TH ST
76TH PL
78TH ST
78TH PL
78TH WAY
79TH ST
79TH PL
80TH PL
81ST ST
81ST PL
81ST WAY
82ND ST
83RD ST
68TH ST
69TH ST
73RD AVE
74TH AVE
74TH PL
75TH WAY
76TH ST
GRANITE REEF RD
SOLANO DR
JACKR
BONNI
VISTA
BO
SAN M G
13
14
15
22
23
24
ZO
0 500 1000 2000
SCALE: 1"=1000'
NFIP
PANEL 1695H
FIRM
FLOOD INSURANCE RATE MAP
MARICOPA COUNTY, ARIZONA
AND INCORPORATED AREAS
PANEL 1695 OF 4350
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)
CONTAINS:
COMMUNITY NUMBER PANEL SUFFIX
MARICOPA COUNTY 040037 1695 H
PARADISE VALLEY, TOWN OF 040049 1695 H
SCOTTSDALE, CITY OF 045012 1695 H
Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.
MAP NUMBER
04013C1695H
MAP REVISED
SEPTEMBER 30, 2005
Federal Emergency Management Agency
NATIONAL FLOOD INSURANCE PROGRAM
FIGURE 1
This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov
P:\G\GRYD0000001\0400CAD\EC_HY\-Wr-BsX-03-FIRM.dwg dhpa Aug 11, 2011 1:11:48pm

APPENDIX C
RUNOFF EXHIBIT BASED ON SAFARI DRIVE APPROVED DRAINAGE REPORT

130cfs
HIGHLAND AVE.
376cfs
SCOTTSDALE ROAD
SCOTTSDALE FASHION SQUARE
543cfs
Goes to zero
Goes to zero
CAMELBACK ROAD
EXISTING 144" CONCRETE PIPE
PROPOSED 7' x 6' BOX PIPE
Reduced to 1202 cfs
638cfs
ARIZONA CANAL
TOP OF BANK = 1278.80
TOP OF BANK = 1279.20
TOP OF BANK = 1279.05
TOP OF BANK = 1279.53
TOP OF BANK = 1279.29
KEY TO SYMBOLS
DIRECTION OF OFF-SITE FLOW (100-YEAR FLOW)
DIRECTION OF ON-SITE FLOW
CB** CATCH BASIN
STORM DRAIN
FLOODPLAIN
SCALE IN FEET
SCOTTSDALE RIVERWALK CENTRE HOTEL
DRAINAGE MAP
4550 NORTH 12TH STREET
PHOENIX, ARIZONA 85014
COE & VAN LOO
JOB NO. 980121-03
PLATE 1

APPENDIX D
HYDRAULIC CALCULATIONS AND DATA SHEETS

Street Section Calculations

Worksheet for Goldwater Blvd South of Camelback Road - Section 1

Results

Top Width		40.10	ft
Normal Depth		0.51	ft
Critical Depth		0.49	ft
Critical Slope		0.00640	ft/ft
Velocity		2.34	ft/s
Velocity Head		0.08	ft
Specific Energy		0.60	ft
Froude Number		0.89	
Flow Type	Subcritical		

GVF Input Data

Downstream Depth	0	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.51	ft
Critical Depth	0.49	ft
Channel Slope	0.00500	ft/ft
Critical Slope	0.00640	ft/ft

Worksheet for Goldwater Blvd South of Camelback Road - Section 1

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.00500	ft/ft
Discharge	20.00	ft³/s

Section Definitions

Station (ft)	Elevation (ft)
0+00	0.50
0+01	0.00
0+55	1.09
0+56	1.59
0+62	1.59
0+63	1.09
1+06	0.25
1+07	0.75

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 0.50)	(1+07, 0.75)	0.016

Options

Current Roughness Weighted Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Method	Horton's Method

Results

Normal Depth	0.51	ft
Elevation Range	0.00 to 1.59 ft	
Flow Area	8.56	ft²
Wetted Perimeter	40.43	ft
Hydraulic Radius	0.21	ft

Cross Section for Goldwater Blvd South of Camelback Road - Section 1

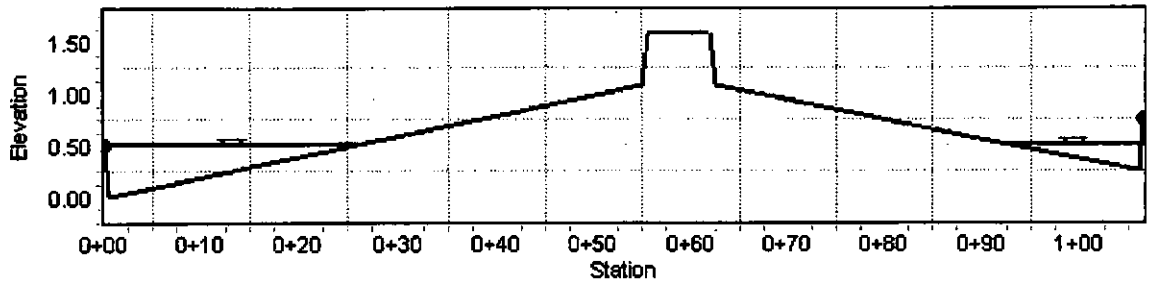
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.00500	ft/ft
Normal Depth	0.51	ft
Discharge	20.00	ft³/s

Cross Section Image



Worksheet for Camelback Road east of Goldwater Blvd - Section 2

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.00500	ft/ft
Discharge	32.00	ft³/s

Section Definitions

Station (ft)	Elevation (ft)
0+00	0.50
0+01	0.00
0+47	0.85
0+48	1.35
0+55	1.35
0+56	0.85
0+92	0.00
0+93	0.50

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 0.50)	(0+93, 0.50)	0.016

Options

Current Roughness Weighted Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Method	Horton's Method

Results

Normal Depth	0.5	ft
Elevation Range	0.00 to 1.35 ft	
Flow Area	12.38	ft²
Wetted Perimeter	50.10	ft
Hydraulic Radius	0.25	ft

Worksheet for Camelback Road east of Goldwater Blvd - Section 2

Results

Top Width		49.68	ft
Normal Depth		0.5	ft
Critical Depth		0.48	ft
Critical Slope		0.00607	ft/ft
Velocity		2.58	ft/s
Velocity Head		0.10	ft
Specific Energy		0.60	ft
Froude Number		0.91	
Flow Type	Subcritical		

GVF Input Data

Downstream Depth	0	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.5	ft
Critical Depth	0.48	ft
Channel Slope	0.00500	ft/ft
Critical Slope	0.00607	ft/ft

Cross Section for Camelback Road east of Goldwater Blvd - Section 2

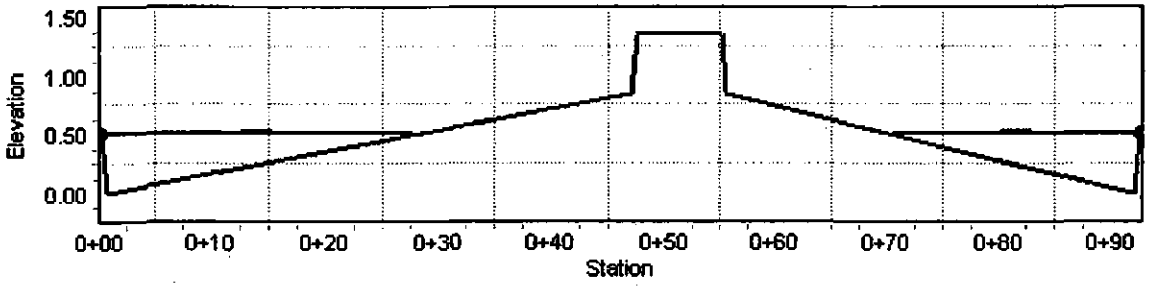
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.00500	ft/ft
Normal Depth	0.5	ft
Discharge	32.00	ft³/s

Cross Section Image



Worksheet for Goldwater Blvd North of Camelback Road- Section 3

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.00500	ft/ft
Discharge	15.00	ft³/s

Section Definitions

Station (ft)	Elevation (ft)
0+00	0.50
0+01	0.00
0+65	1.27
0+66	1.77
0+73	1.77
0+73	1.27
0+96	0.83
0+97	1.33

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 0.50)	(0+97, 1.33)	0.016

Options

Current Roughness Weighted Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Method	Horton's Method

Results

Normal Depth	0.48	ft
Elevation Range	0.00 to 1.77 ft	
Flow Area	5.95	ft²
Wetted Perimeter	25.03	ft
Hydraulic Radius	0.24	ft

Worksheet for Goldwater Blvd North of Camelback Road- Section 3

Results

Top Width		24.83	ft
Normal Depth		0.48	ft
Critical Depth		0.46	ft
Critical Slope		0.00615	ft/ft
Velocity		2.52	ft/s
Velocity Head		0.10	ft
Specific Energy		0.58	ft
Froude Number		0.91	
Flow Type	Subcritical		

GVF Input Data

Downstream Depth	0	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.48	ft
Critical Depth	0.46	ft
Channel Slope	0.00500	ft/ft
Critical Slope	0.00615	ft/ft

Cross Section for Goldwater Blvd North of Camelback Road- Section 3

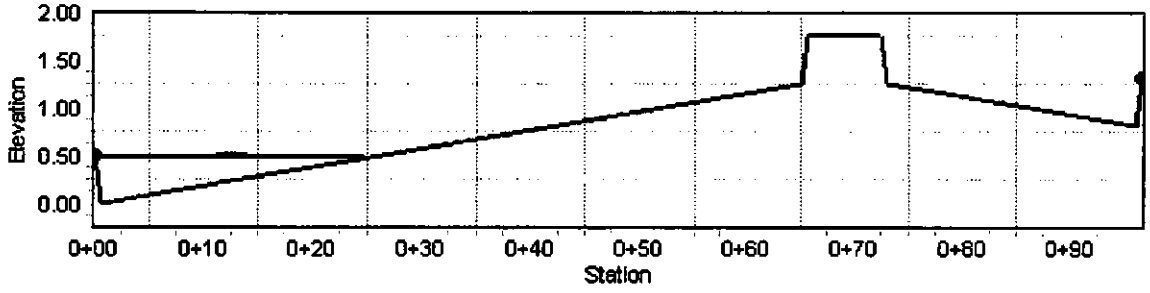
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.00500	ft/ft
Normal Depth	0.48	ft
Discharge	15.00	ft^3/s

Cross Section Image



Worksheet for Marshall Way South of Camelback Road - Section 4

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.00300	ft/ft
Discharge	28.00	ft³/s

Section Definitions

Station (ft)	Elevation (ft)
0+00	80.00
0+01	79.58
0+22	79.74
0+43	79.43
0+44	79.93

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 80.00)	(0+44, 79.93)	0.016

Options

Current Roughness Weighted Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Method	Horton's Method

Results

Normal Depth	0.49	ft
Elevation Range	79.43 to 80.00 ft	
Flow Area	12.61	ft²
Wetted Perimeter	43.71	ft
Hydraulic Radius	0.29	ft
Top Width	43.38	ft
Normal Depth	0.49	ft
Critical Depth	0.43	ft

Worksheet for Marshall Way South of Camelback Road - Section 4

Results

Critical Slope		0.00610	ft/ft
Velocity		2.22	ft/s
Velocity Head		0.08	ft
Specific Energy		0.56	ft
Froude Number		0.73	
Flow Type	Subcritical		

GVF Input Data

Downstream Depth	0	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.49	ft
Critical Depth	0.43	ft
Channel Slope	0.00300	ft/ft
Critical Slope	0.00610	ft/ft

Cross Section for Marshall Way South of Camelback Road - Section 4

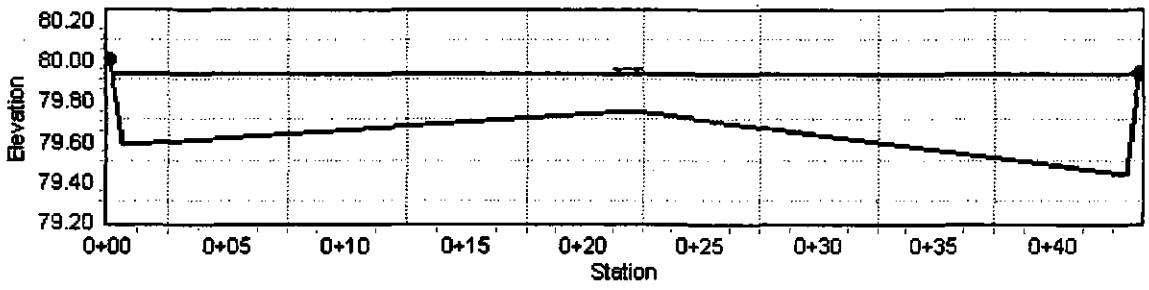
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.00300	ft/ft
Normal Depth	0.49	ft
Discharge	28.00	ft³/s

Cross Section Image



Worksheet for Camelback Road east of Marshall Way - Section 5

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.00500	ft/ft
Discharge	60.00	ft³/s

Section Definitions

Station (ft)	Elevation (ft)
0+00	0.50
0+01	0.00
0+52	0.54
0+53	1.04
0+59	1.04
0+60	0.54
0+96	0.00
0+97	0.50

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 0.50)	(0+97, 0.50)	0.016

Options

Current Roughness Weighted Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Method	Horton's Method

Results

Normal Depth		0.52	ft
Elevation Range	0.00 to 1.04 ft		
Flow Area		22.47	ft²
Wetted Perimeter		86.52	ft
Hydraulic Radius		0.26	ft

Worksheet for Camelback Road east of Marshall Way - Section 5

Results

Top Width	86.06	ft
Normal Depth	0.52	ft
Critical Depth	0.51	ft
Critical Slope	0.00594	ft/ft
Velocity	2.67	ft/s
Velocity Head	0.11	ft
Specific Energy	0.63	ft
Froude Number	0.92	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.52	ft
Critical Depth	0.51	ft
Channel Slope	0.00500	ft/ft
Critical Slope	0.00594	ft/ft

Cross Section for Camelback Road east of Marshall Way - Section 5

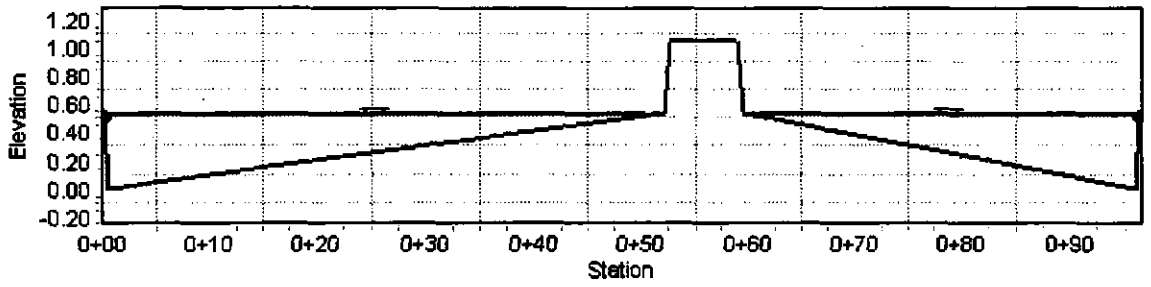
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.00500	ft/ft
Normal Depth	0.52	ft
Discharge	60.00	ft³/s

Cross Section Image



Capacity of Half-Scottsdale Road - SECTION 7

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.00750	ft/ft
Discharge	160.00	ft³/s

Section Definitions

Station (ft)	Elevation (ft)
0+00	79.34
0+01	78.84
0+02	78.79
0+24	78.34
0+36	77.92
0+38	77.85
0+38	78.38
0+43	78.47
0+55	79.03

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 79.34)	(0+55, 79.03)	0.016

Options

Current Roughness Weighted Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Method	Horton's Method

Results

Normal Depth	1.18	ft
Elevation Range	77.85 to 79.34 ft	
Flow Area	29.81	ft²
Wetted Perimeter	54.68	ft

Capacity of Half-Scottsdale Road - SECTION 7

Results

Hydraulic Radius	0.55	ft
Top Width	54.34	ft
Normal Depth	1.18	ft
Critical Depth	1.28	ft
Critical Slope	0.00437	ft/ft
Velocity	5.37	ft/s
Velocity Head	0.45	ft
Specific Energy	1.63	ft
Froude Number	1.28	
Flow Type	Supercritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	1.18	ft
Critical Depth	1.28	ft
Channel Slope	0.00750	ft/ft
Critical Slope	0.00437	ft/ft

Capacity of Half-Scottsdale Road - SECTION 7

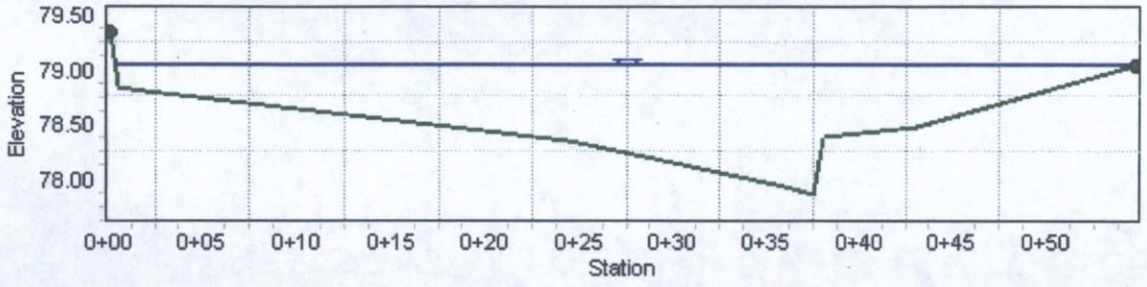
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.00750	ft/ft
Normal Depth	1.18	ft
Discharge	160.00	ft³/s

Cross Section Image



Scottsdale Road Capacity=160 cfs

70 cfs spills into Coolidge Street and captured by 2-20' curb inlets installed as a part of Safari Drive project.

Half St. Scottsdale Rd South of Fashion Sq Dr-Section 8

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.00800	ft/ft
Discharge	80.00	ft³/s

Section Definitions

Station (ft)	Elevation (ft)
0+00	78.65
0+18	78.35
0+19	77.72
0+64	78.40
0+65	78.90

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 78.65)	(0+65, 78.90)	0.016

Options

Current Roughness Weighted Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Method	Horton's Method

Results

Normal Depth	0.75	ft
Elevation Range	77.72 to 78.90 ft	
Flow Area	19.10	ft²
Wetted Perimeter	53.37	ft
Hydraulic Radius	0.36	ft
Top Width	53.04	ft
Normal Depth	0.75	ft
Critical Depth	0.81	ft

Half St. Scottsdale Rd South of Fashion Sq Dr-Section 8

Results

Critical Slope		0.00513	ft/ft
Velocity		4.19	ft/s
Velocity Head		0.27	ft
Specific Energy		1.02	ft
Froude Number		1.23	
Flow Type	Supercritical		

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.75	ft
Critical Depth	0.81	ft
Channel Slope	0.00800	ft/ft
Critical Slope	0.00513	ft/ft

Half St. Scottsdale Rd South of Fashion Sq Dr-Section 8

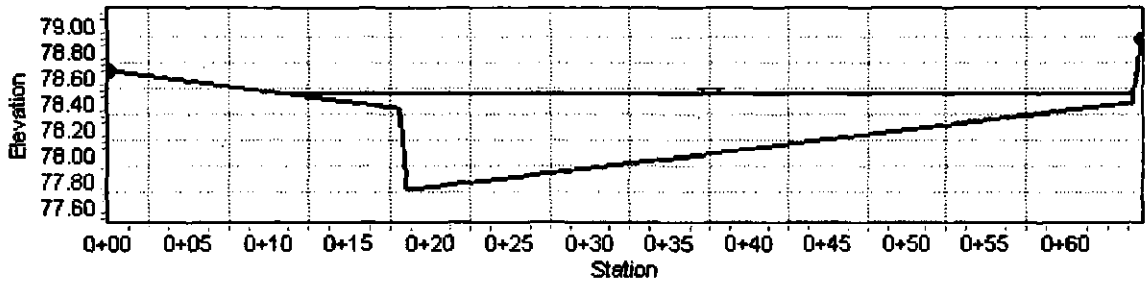
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.00800	ft/ft
Normal Depth	0.75	ft
Discharge	80.00	ft³/s

Cross Section Image



Worksheet for Fashion Square Drive - Section 9

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.00350	ft/ft
Discharge	39.00	ft³/s

Section Definitions

Station (ft)	Elevation (ft)
0+00	78.50
0+02	78.08
0+02	78.11
0+19	78.15
0+23	78.15
0+39	77.89
0+40	78.39
0+54	78.65

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 78.50)	(0+54, 78.65)	0.016

Options

Current Roughness Weighted Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Method	Horton's Method

Results

Normal Depth	0.57	ft
Elevation Range	77.89 to 78.65 ft	
Flow Area	14.67	ft²
Wetted Perimeter	43.58	ft
Hydraulic Radius	0.34	ft

Worksheet for Fashion Square Drive - Section 9

Results

Top Width		43.34	ft
Normal Depth		0.57	ft
Critical Depth		0.52	ft
Critical Slope		0.00556	ft/ft
Velocity		2.66	ft/s
Velocity Head		0.11	ft
Specific Energy		0.68	ft
Froude Number		0.81	
Flow Type	Subcritical		

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.57	ft
Critical Depth	0.52	ft
Channel Slope	0.00350	ft/ft
Critical Slope	0.00556	ft/ft

Cross Section for Fashion Square Drive - Section 9

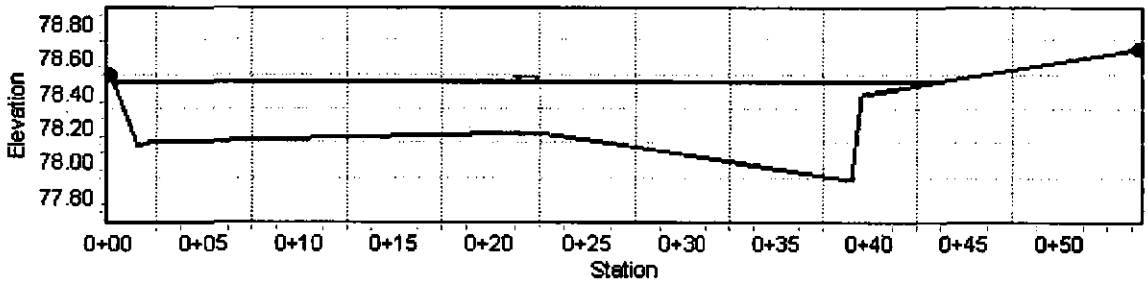
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.00350	ft/ft
Normal Depth	0.57	ft
Discharge	39.00	ft³/s

Cross Section Image



Worksheet for Scottsdale Road South of Coolidge Road-Section 10

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.00900	ft/ft
Discharge	119.00	ft³/s

Section Definitions

Station (ft)	Elevation (ft)
0+00	80.48
0+06	80.22
0+06	79.61
0+47	80.59
0+48	81.09

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 80.48)	(0+48, 81.09)	0.016

Options

Current Roughness Weighted Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Method	Horton's Method

Results

Normal Depth	0.99	ft
Elevation Range	79.61 to 81.09 ft	
Flow Area	22.32	ft²
Wetted Perimeter	47.45	ft
Hydraulic Radius	0.47	ft
Top Width	47.01	ft
Normal Depth	0.99	ft
Critical Depth	1.10	ft

Worksheet for Scottsdale Road South of Coolidge Road-Section 10

Results

Critical Slope		0.00454	ft/ft
Velocity		5.33	ft/s
Velocity Head		0.44	ft
Specific Energy		1.43	ft
Froude Number		1.36	
Flow Type	Supercritical		

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.99	ft
Critical Depth	1.10	ft
Channel Slope	0.00900	ft/ft
Critical Slope	0.00454	ft/ft

Cross Section for Scottsdale Road South of Coolidge Road-Section 10

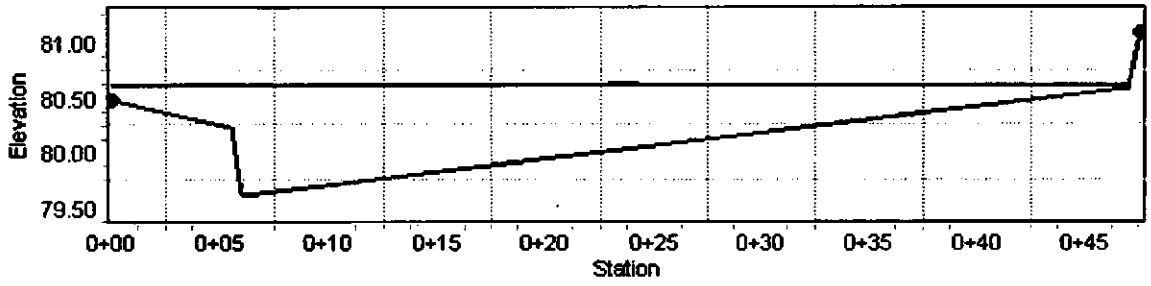
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.00900	ft/ft
Normal Depth	0.99	ft
Discharge	119.00	ft³/s

Cross Section Image



Coolidge St. before Safari Dr. Development-Section 11

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.00600	ft/ft
Discharge	29.00	ft³/s

Section Definitions

Station (ft)	Elevation (ft)
0+00	80.76
0+11	80.39
0+27	80.21
0+41	80.22
0+42	80.48

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 80.76)	(0+42, 80.48)	0.016

Options

Current Roughness Weighted Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Method	Horton's Method

Results

Normal Depth	0.35	ft
Elevation Range	80.21 to 80.76 ft	
Flow Area	9.66	ft²
Wetted Perimeter	35.82	ft
Hydraulic Radius	0.27	ft
Top Width	35.67	ft
Normal Depth	0.35	ft
Critical Depth	0.36	ft

Coolidge St. before Safari Dr. Development-Section 11

Results

Critical Slope		0.00578	ft/ft
Velocity		3.00	ft/s
Velocity Head		0.14	ft
Specific Energy		0.49	ft
Froude Number		1.02	
Flow Type	Supercritical		

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.35	ft
Critical Depth	0.36	ft
Channel Slope	0.00600	ft/ft
Critical Slope	0.00578	ft/ft

Coolidge St. before Safari Dr. Development-Section 11

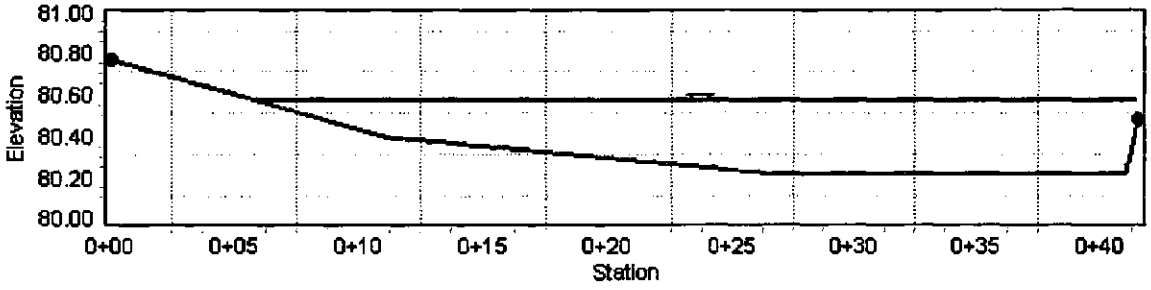
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.00600	ft/ft
Normal Depth	0.35	ft
Discharge	29.00	ft³/s

Cross Section Image



Scottsdale Rd North of Coolidge Rd-Section 13

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.00900	ft/ft
Discharge	70.00	ft³/s

Section Definitions

INCLUDED BUT NOT USED AS PART OF THE ANALYSIS DUE TO EXPLANATION IN THE REPORT

Station (ft)	Elevation (ft)
0+00	81.51
0+01	81.00
0+47	80.00
0+48	80.52
0+53	80.64

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 81.51)	(0+53, 80.64)	0.016

Options

Current Roughness Weighted Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Method	Horton's Method

Results

Normal Depth	0.78	ft
Elevation Range	80.00 to 81.51 ft	
Flow Area	15.57	ft²
Wetted Perimeter	42.71	ft
Hydraulic Radius	0.36	ft
Top Width	42.34	ft
Normal Depth	0.78	ft
Critical Depth	0.86	ft

Scottsdale Rd North of Coolidge Rd-Section 13

Results

Critical Slope		0.00507	ft/ft
Velocity		4.50	ft/s
Velocity Head		0.31	ft
Specific Energy		1.10	ft
Froude Number		1.31	
Flow Type	Supercritical		

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.78	ft
Critical Depth	0.86	ft
Channel Slope	0.00900	ft/ft
Critical Slope	0.00507	ft/ft

Scottsdale Rd North of Coolidge Rd-Section 13

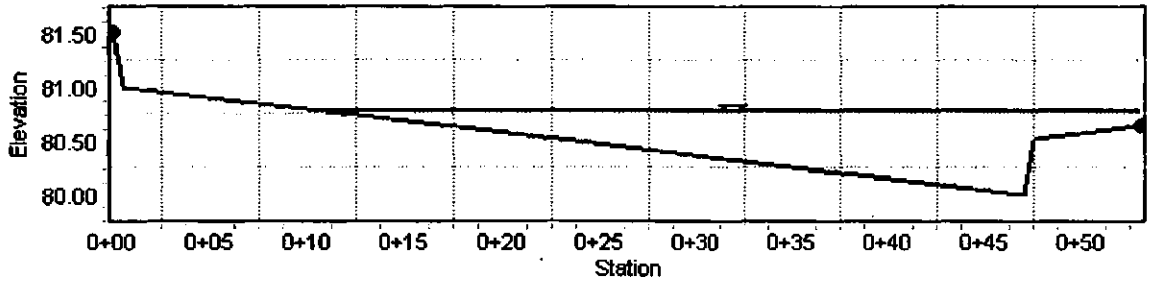
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.00900	ft/ft
Normal Depth	0.78	ft
Discharge	70.00	ft³/s

Cross Section Image



Half St. Scottsdale Rd North of Fashion Sq Dr-Section 14

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.00800	ft/ft
Discharge	52.00	ft³/s
Section Definitions		

INCLUDED BUT NOT USED AS PART OF THE ANALYSIS DUE TO EXPLANATION IN THE REPORT

Station (ft)	Elevation (ft)
0+00	79.22
0+01	78.79
0+38	77.87
0+39	78.28
0+44	78.48

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 79.22)	(0+44, 78.48)	0.016

Options

Current Roughness Weighted Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Method	Horton's Method

Results

Normal Depth	0.74	ft
Elevation Range	77.87 to 79.22 ft	
Flow Area	12.66	ft²
Wetted Perimeter	36.42	ft
Hydraulic Radius	0.35	ft
Top Width	36.13	ft
Normal Depth	0.74	ft
Critical Depth	0.80	ft

Half St. Scottsdale Rd North of Fashion Sq Dr-Section 14

Results

Critical Slope		0.00519	ft/ft
Velocity		4.11	ft/s
Velocity Head		0.26	ft
Specific Energy		1.00	ft
Froude Number		1.22	
Flow Type	Supercritical		

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.74	ft
Critical Depth	0.80	ft
Channel Slope	0.00800	ft/ft
Critical Slope	0.00519	ft/ft

Half St. Scottsdale Rd North of Fashion Sq Dr-Section 14

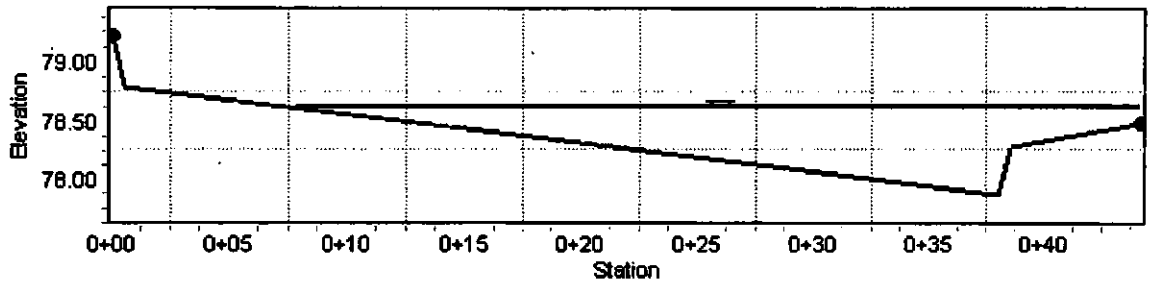
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.00800	ft/ft
Normal Depth	0.74	ft
Discharge	52.00	ft³/s

Cross Section Image



Culvert Analysis Report
Arizona Canal OverBank

AZ Canal Weir Analysis, Refer to Exhibit C located under Appendix A

Component:Weir

Hydraulic Component(s): Roadway			
Discharge	1,202.00 cfs	Allowable HW Elevation	79.50 ft
Roadway Width	12.00 ft	Overtopping Coefficient	2.99 US
Low Point	77.52 ft	Headwater Elevation	79.50 ft
Discharge Coefficient (Cr)	2.99	Submergence Factor (Kt)	1.00
Tailwater Elevation	0.00 ft		

Sta (ft)	Elev. (ft)
-200.00	79.00
0.00	79.56
30.00	79.59
56.00	79.38
109.00	79.64
190.00	79.68
245.00	79.72
303.00	79.74
386.00	79.95
517.00	79.58
661.00	79.47
693.00	79.45
735.00	79.69
802.00	79.46
831.00	79.43
856.00	79.39
955.00	79.21
1,030.00	79.34
1,097.00	79.42
1,146.00	79.29
1,196.00	79.25
1,304.00	79.69
1,330.00	80.36
1,364.00	79.69
1,388.00	78.56
1,467.00	79.08
1,494.00	78.53
1,532.00	79.17
1,532.50	79.59
1,536.00	79.66
1,536.50	79.22
1,561.00	79.03
1,561.50	79.53
1,615.50	78.95
1,616.00	78.43
1,658.00	78.32
1,710.00	77.52
1,710.50	77.96
1,735.00	77.72
1,751.00	77.61
1,752.00	80.18
1,752.50	79.67
1,773.50	79.74
1,794.50	79.58
1,795.00	80.00

The Weir elevations are based on the survey points taken in the field

Culvert Analysis Report
Arizona Canal OverBank

Sta (ft)	Elev. (ft)
1,862.50	79.46

Section 6 (Refer to Exhibit C)

Culvert Analysis Report
Arizona Canal OverBank

Analysis Component			
Storm Event	Design	Discharge	75.00 cfs

Peak Discharge Method: User-Specified			
Design Discharge	75.00 cfs	Check Discharge	75.00 cfs

Tailwater properties: Irregular Channel

Tailwater conditions for Design Storm.			
Discharge	75.00 cfs	Actual Depth	0.00 ft
Velocity	0.00 ft/s		

Name	Description	Discharge	HW Elev.	Velocity
Weir	Roadway	75.00 cfs	78.50 ft	N/A

Culvert Analysis Report
Arizona Canal OverBank

Analysis Component			
Storm Event	Design	Discharge	75.00 cfs

Peak Discharge Method: User-Specified			
Design Discharge	75.00 cfs	Check Discharge	75.00 cfs

Tailwater properties: Irregular Channel

Tailwater conditions for Design Storm.			
Discharge	75.00 cfs	Actual Depth	0.00 ft
Velocity	0.00 ft/s		

Name	Description	Discharge	HW Elev.	Velocity
Weir	Roadway	75.00 cfs	78.50 ft	N/A

Culvert Analysis Report
Arizona Canal OverBank

Component:Weir

Hydraulic Component(s): Roadway					
Discharge	75.00	cfs	Allowable HW Elevation	78.50	ft
Roadway Width	12.00	ft	Overtopping Coefficient	2.99	US
Low Point	77.52	ft	Headwater Elevation	78.50	ft
Discharge Coefficient (Cr)	2.99		Submergence Factor (Kt)	1.00	
Tailwater Elevation	0.00	ft			

Sta (ft)	Elev. (ft)
1,615.50	1,278.95
1,616.00	78.43
1,658.00	78.32
1,710.00	77.52
1,710.50	77.96

Retention Volume Calculations for Excavated Basin
Existing 8'x6' Box Culvert Capacity StormCAD Model
Existing Strom Drain system on Coolidge StormCAD Model

(Refer to Exhibit F for Drainage Area)

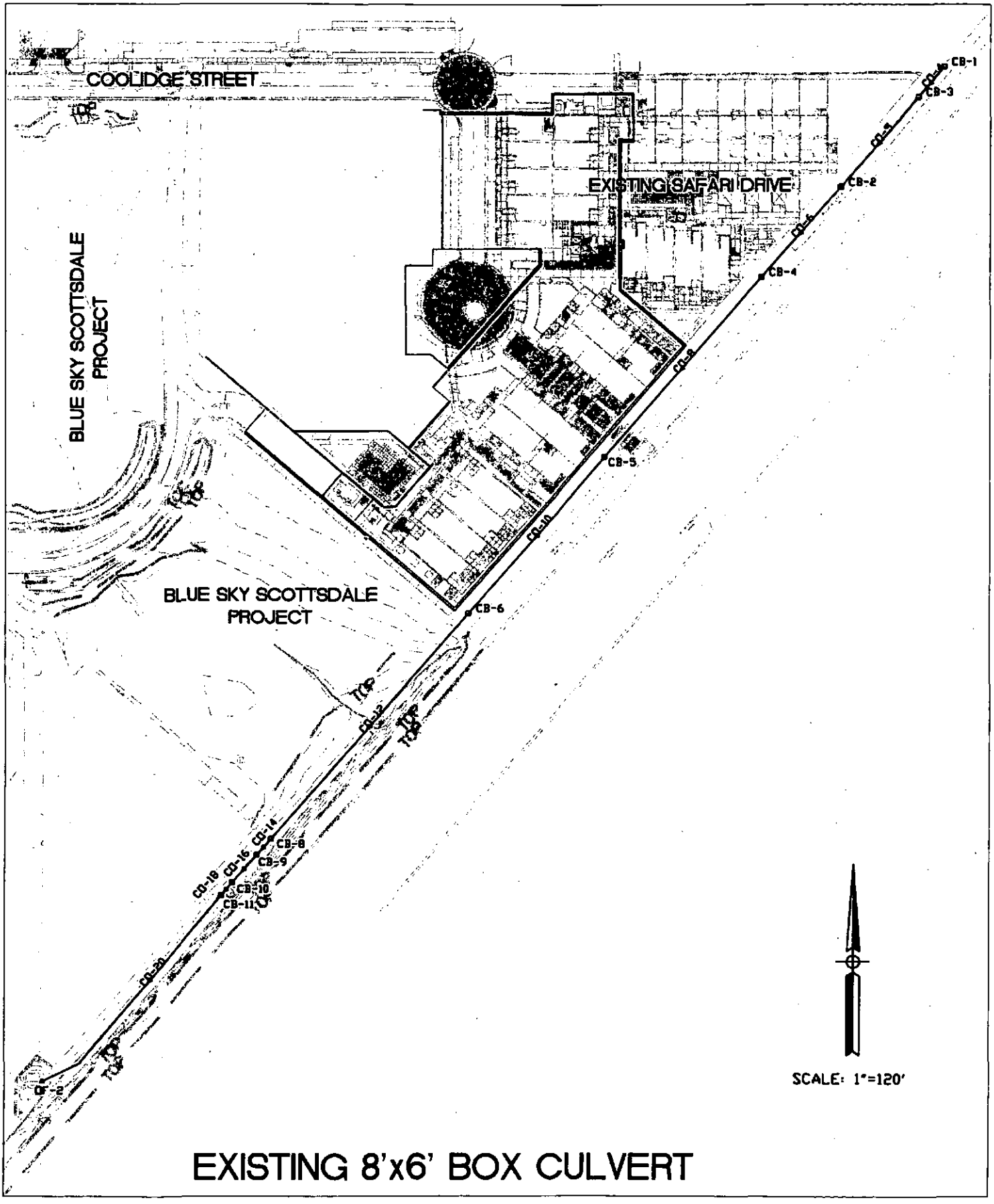
Contributing Drainage Areas: 1
Retention Basin(s):

VOLUME REQUIRED CALCULATIONS

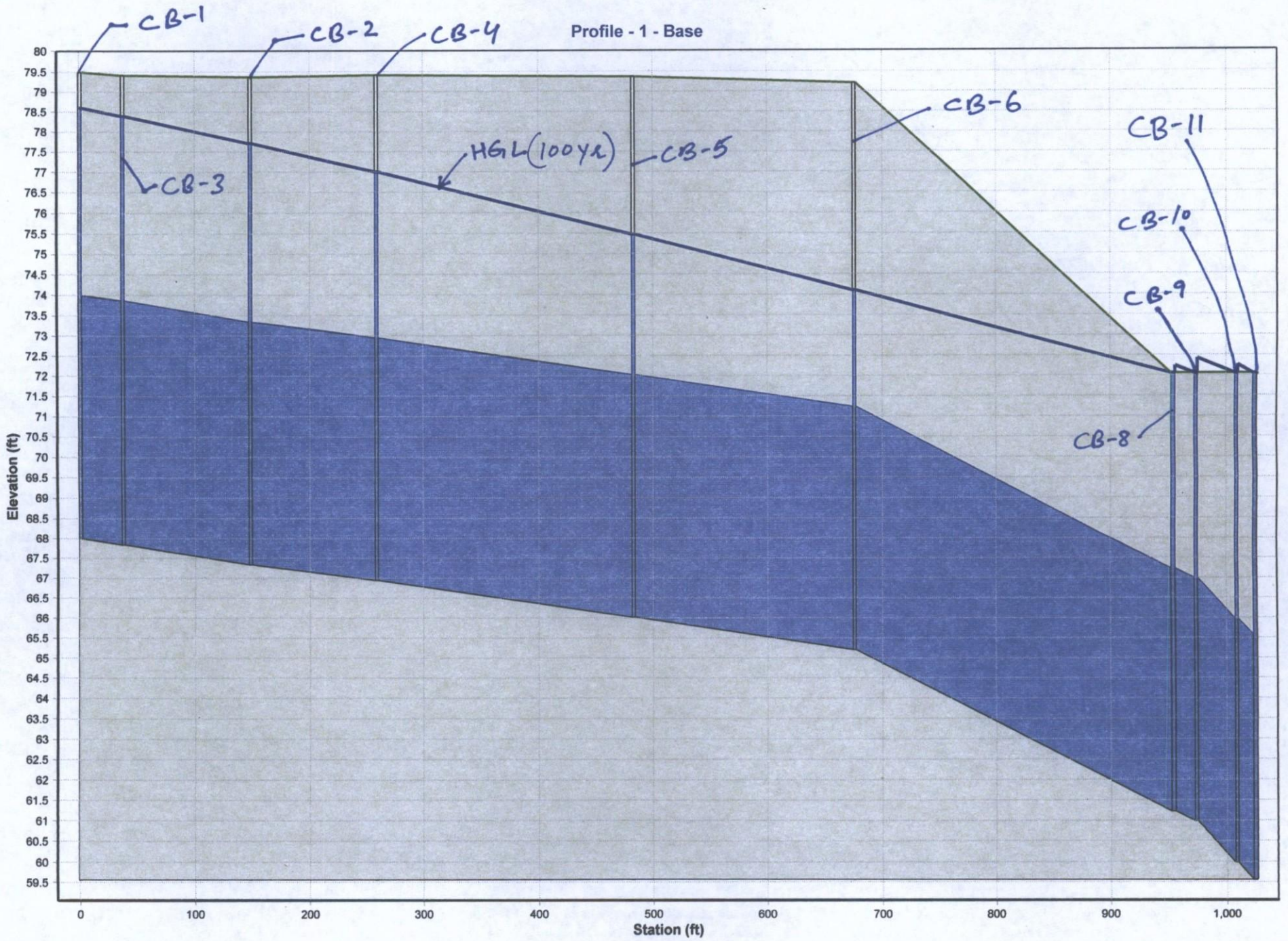
	Area		'C' Coefficient	Precipitation	Retention Required	
Type	**(ft)**	**(Ac)**	**C**	**(Inches)**	**(ft^3)**	**(Ac-ft)**
Landscaped	108,246	2.48	0.50	2.20	9,923	0.23
Total	108,246	2.48			**9,923**	**0.23**

RETENTION BASIN CALCULATIONS

Elevation	Delta Depth	urface Area		Volume Provided			
	(ft)	**(ft^2)**		**(ft^3)**	**Σ (ft^3)**	**(Ac-ft)**	**Σ (Ac-ft)**
1277.0	1.0	54,300		51,528	174,608	1.18	4.01
1276.0	1.0	48,805		46,133	123,080	1.06	2.83
1275.0	1.0	43,511		40,951	76,947	0.94	1.77
1274.0	1.0	38,444		35,996	35,996	0.83	0.83
1273.0		33,602			*174,608*		*4.01*
			Provided		174,608		4.01
			Required		9,923		0.23
Basin HWE	*Basin Depth*		*Balance*		**164,685**		**3.78**
1273.28	0.28						



EXISTING 8'x6' BOX CULVERT


Profile - 1 - Base
CB-1
CB-2
CB-4
CB-6
CB-11
CB-10
CB-9
CB-8
CB-5
CB-3
HGL(100yr)
Elevation (ft)
Station (ft)
80
79.5
79
78.5
78
77.5
77
76.5
76
75.5
75
74.5
74
73.5
73
72.5
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63.5
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62.5
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61.5
61
60.5
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59.5
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100
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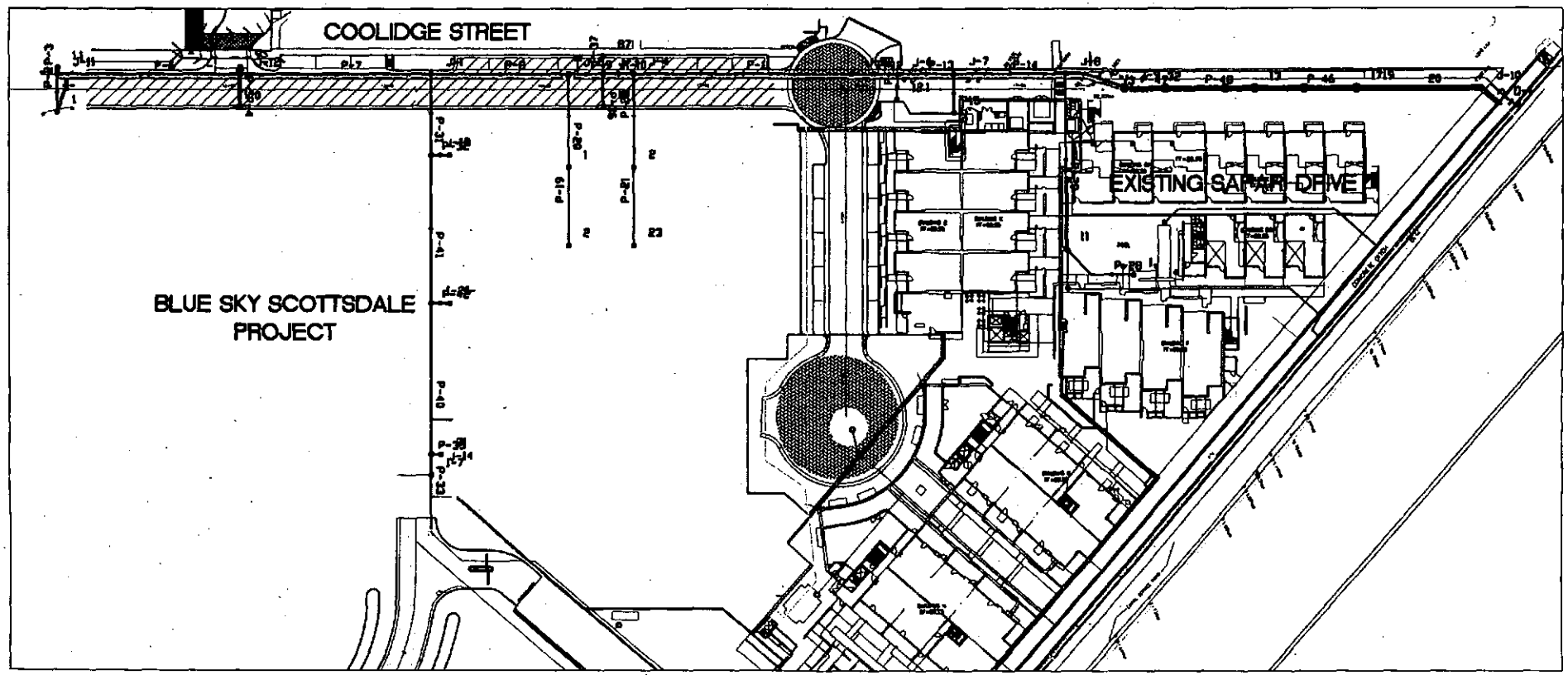
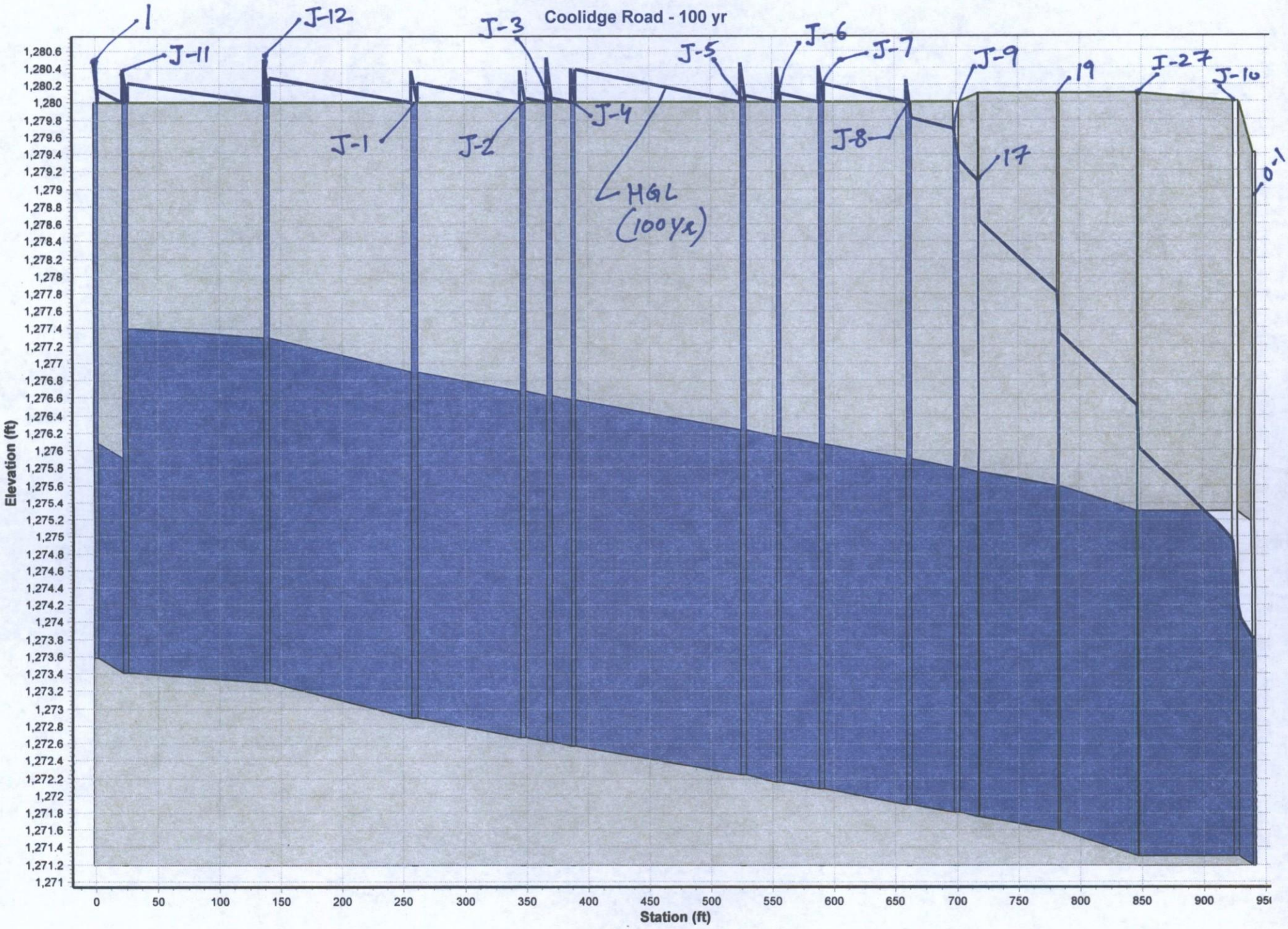
400
500
600
700
800
900
1,000

FlexTable: Conduit Table (8'x6' Box Culvert.stc)

Label	Start Node	Invert (Upstream) (ft)	Stop Node	Invert (Downstream) (ft)	Manning's n	Flow (ft³/s)	Length (Unified) (ft)	Slope (Calculated) (ft/ft)	Elevation Ground (Start) (ft)	Elevation Ground (Stop) (ft)	Hydraulic Grade Line (In) (ft)	Hydraulic Grade Line (Out) (ft)	Velocity (Average) (ft/s)	System Fixed Flow (ft³/s)
CO-4	CB-1	68.00	CB-3	67.85	0.013	600.00	37.0	0.004	79.50	79.40	78.59	78.37	12.50	600.00
CO-5	CB-3	67.85	CB-2	67.35	0.013	615.00	111.0	0.005	79.40	79.35	78.37	77.69	12.81	615.00
CO-6	CB-2	67.35	CB-4	66.94	0.013	630.00	111.0	0.004	79.35	79.40	77.69	76.98	13.13	630.00
CO-8	CB-4	66.94	CB-5	66.02	0.013	645.00	224.0	0.004	79.40	79.35	76.98	75.47	13.44	645.00
CO-10	CB-5	66.02	CB-6	65.23	0.013	660.00	193.0	0.004	79.35	79.20	75.47	74.11	13.75	660.00
CO-12	CB-6	65.23	CB-8	61.24	0.013	675.00	278.0	0.014	79.20	72.06	74.11	72.06	14.06	675.00
CO-14	CB-8	61.24	CB-9	61.00	0.013	733.00	20.0	0.012	72.06	72.06	72.23	72.06	15.27	733.00
CO-16	CB-9	61.00	CB-10	59.99	0.013	792.00	35.0	0.029	72.06	72.05	72.41	72.05	16.50	792.00
CO-18	CB-10	59.99	CB-11	59.58	0.013	896.00	16.0	0.026	72.05	72.05	72.25	72.05	18.67	896.00
CO-20	CB-11	59.58	OF-2	53.00	0.013	1,000.00	242.0	0.027	72.05	72.50	78.92	75.00	20.83	1,000.00


COOLIDGE STREET
EXISTING SAFARI DRIVE
BLUE SKY SCOTTSDALE
PROJECT

SCALE: 1"=100'


Coolidge Road - 100 yr
1
J-12
J-3
J-11
J-5
J-6
J-7
J-9
19
I-27
J-10
J-1
J-2
J-4
J-8
17
HGL
(100yr)
O-1
Elevation (ft)
Station (ft)
1,280.6
1,280.4
1,280.2
1,280
1,279.8
1,279.6
1,279.4
1,279.2
1,279
1,278.8
1,278.6
1,278.4
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1,278
1,277.8
1,277.6
1,277.4
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1,273.2
1,273
1,272.8
1,272.6
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1,271.8
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0
50
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250
300
350
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450
500
550
600
650
700
750
800
850
900

Title: FlexTable: Conduit Table (Coolidge Storm Drain.stc)

Label	Start Node	Invert (Upstream) (ft)	Stop Node	Invert (Downstream) (ft)	Manning's n	Diameter (in)	Flow (ft³/s)	Length (Unified) (ft)	Slope (Calculated) (ft/ft)	Elevation Ground (Start) (ft)	Elevation Ground (Stop) (ft)	Hydraulic Grade Line (In) (ft)	Hydraulic Grade Line (Out) (ft)	Velocity (Average) (ft/s)	System Fixed Flow (ft³/s)
P-17	J-10	1,271.31	O-1	1,271.19	0.012	48.0	89.00	15.0	0.008	1,280.00	1,279.41	1,274.17	1,273.82	11.75	89.00
20	I-27	1,271.31	J-10	1,271.31	0.024	48.0	89.00	79.0	0.000	1,280.10	1,280.00	1,276.04	1,274.97	7.08	89.00
P-46	19	1,271.60	I-27	1,271.31	0.024	48.0	89.00	64.0	0.005	1,280.10	1,280.10	1,277.34	1,276.50	7.08	89.00
P-4	3	1,273.65	J-12	1,273.30	0.012	18.0	5.00	21.0	0.017	1,280.06	1,280.00	1,280.04	1,280.00	2.83	5.00
P-5	2	1,273.23	J-12	1,273.30	0.012	18.0	1.00	3.0	-0.023	1,279.99	1,280.00	1,280.00	1,280.00	0.57	1.00
P-7	J-12	1,273.30	J-1	1,272.90	0.012	48.0	76.00	121.0	0.003	1,280.00	1,280.00	1,280.29	1,280.00	6.05	76.00
P-8	J-1	1,272.90	J-2	1,272.68	0.012	48.0	80.00	88.0	0.003	1,280.00	1,280.00	1,280.23	1,280.00	6.37	80.00
P-9	J-2	1,272.68	J-3	1,272.63	0.012	48.0	80.00	22.0	0.002	1,280.00	1,280.00	1,280.06	1,280.00	6.37	80.00
P-10	J-3	1,272.63	J-4	1,272.58	0.012	48.0	82.00	19.0	0.003	1,280.00	1,280.00	1,280.05	1,280.00	6.53	82.00
P-11	J-4	1,272.58	J-5	1,272.24	0.012	48.0	82.00	138.0	0.002	1,280.00	1,280.00	1,280.38	1,280.00	6.53	82.00
P-12	J-5	1,272.24	J-6	1,272.16	0.012	48.0	82.00	29.0	0.003	1,280.00	1,280.00	1,280.08	1,280.00	6.53	82.00
P-13	J-6	1,272.16	J-7	1,272.08	0.012	48.0	83.00	35.0	0.002	1,280.00	1,280.00	1,280.10	1,280.00	6.60	83.00
P-14	J-7	1,272.08	J-8	1,271.90	0.012	48.0	85.00	71.0	0.003	1,280.00	1,280.00	1,280.21	1,280.00	6.76	85.00
P-15	J-8	1,271.90	J-9	1,271.81	0.012	48.0	87.00	39.0	0.002	1,280.00	1,280.00	1,279.82	1,279.70	6.92	87.00
P-19	8	1,273.20	7	1,272.96	0.012	18.0	0.00	49.0	0.005	1,280.55	1,280.55	1,280.00	1,280.00	0.00	0.00
P-20	7	1,272.96	J-2	1,272.68	0.012	18.0	0.00	58.0	0.005	1,280.55	1,280.00	1,280.00	1,280.00	0.00	0.00
P-21	10	1,273.82	9	1,273.58	0.012	18.0	0.00	49.0	0.005	1,280.55	1,280.55	1,280.00	1,280.00	0.00	0.00
P-22	9	1,273.58	J-4	1,272.58	0.012	18.0	0.00	59.0	0.017	1,280.55	1,280.00	1,280.00	1,280.00	0.00	0.00
P-28	23	1,273.94	22	1,273.69	0.012	18.0	1.00	50.0	0.005	1,280.45	1,280.45	1,280.06	1,280.06	0.57	1.00
P-29	22	1,273.69	J-8	1,273.15	0.012	18.0	2.00	109.0	0.005	1,280.45	1,280.00	1,280.03	1,280.00	1.13	2.00
P-2	1	1,273.59	J-11	1,273.41	0.012	30.0	35.00	24.0	0.007	1,280.00	1,280.00	1,280.15	1,280.00	7.13	35.00
P-3	1.1	1,273.53	J-11	1,273.41	0.012	30.0	35.00	3.0	0.040	1,280.00	1,280.00	1,280.02	1,280.00	7.13	35.00
P-6	J-11	1,273.41	J-12	1,273.30	0.012	48.0	70.00	114.0	0.001	1,280.00	1,280.00	1,280.23	1,280.00	5.57	70.00
P-31	J-13	1,273.24	J-1	1,272.90	0.012	18.0	4.00	51.0	0.007	1,280.00	1,280.00	1,280.06	1,280.00	2.26	4.00
P-32	6	1,273.30	J-13	1,273.24	0.012	18.0	3.00	12.0	0.005	1,280.00	1,280.00	1,280.01	1,280.00	1.70	3.00
P-36	12	1,273.27	J-3	1,273.17	0.012	18.0	1.00	21.0	0.005	1,279.41	1,280.00	1,280.00	1,280.00	0.57	1.00
P-37	13	1,273.22	J-3	1,273.17	0.012	18.0	1.00	11.0	0.005	1,279.70	1,280.00	1,280.00	1,280.00	0.57	1.00
P-38	12.1	1,274.36	J-6	1,274.27	0.012	18.0	1.00	16.0	0.006	1,279.78	1,280.00	1,280.00	1,280.00	0.57	1.00
P-39	15	1,274.57	J-7	1,274.45	0.012	18.0	2.00	25.0	0.005	1,280.13	1,280.00	1,280.01	1,280.00	1.13	2.00
P-33	I-7	1,274.20	J-14	1,274.18	0.012	18.0	0.00	13.0	0.002	1,279.01	1,280.00	1,280.00	1,280.00	0.00	0.00
P-35	31	1,274.27	J-14	1,274.18	0.012	18.0	0.00	6.0	0.015	1,279.80	1,280.00	1,280.00	1,280.00	0.00	0.00
P-40	J-14	1,274.18	I-26	1,273.70	0.012	18.0	0.00	94.0	0.005	1,280.00	1,280.00	1,280.00	1,280.00	0.00	0.00
P-41	I-26	1,273.70	J-13	1,273.24	0.012	18.0	1.00	92.0	0.005	1,280.00	1,280.00	1,280.01	1,280.00	0.57	1.00
P-42	11	1,273.76	I-26	1,273.70	0.012	18.0	1.00	12.0	0.005	1,280.25	1,280.00	1,280.00	1,280.00	0.57	1.00
P-47	J-9	1,271.81	17	1,271.76	0.024	48.0	87.00	18.0	0.003	1,280.00	1,280.10	1,279.32	1,279.10	6.92	87.00
P-48	17	1,271.76	19	1,271.60	0.024	48.0	88.00	65.0	0.002	1,280.10	1,280.10	1,278.64	1,277.81	7.00	88.00

Grated Inlet Structures Hydraulic Capacity Calculations

Capacity of a catch basin in a Sag operating as an Orifice

$Q = C\,A\,(2gd)^{0.50}$

C = 0.67 Orifice Coefficient, g=32.2 ft/s^2

Capacity of Existing Catch basin along the Canal that will beremoved and replaced with 2-4'x4' catch basins

Concentration Point	1st New Catch Basin along Canal	
High Water at Weir=	79.5	
Rim of Catch Basin=	73	
Head on Rim=	6.5	
Total Area of Grate=	3	
50% of Open area of the inlet	1.5	sq. ft.
Depth of water ponding on the inlet	6.5	ft.
Capacity of the inlet =	21	cfs

Refer to Exhibit A, Fill Plans for the Location of this Catch Basin

Capacity of a catch basin in a Sag operating as an Orifice

$Q = C\ A\ (2gd)^{\wedge}0.50$

C = 0.67 Orifice Coefficient, g=32.2 ft/s^2

Capacity of New 2-4'x4' Catch basins that will be added to along the Canal to to replace existing catch basin and to compensate for filling in the flood plain.

Based on HWE of 79.50'

Concentration Point	**1st New Catch Basin along Canal to replace existing catch basin**	
High Water at Weir=	79.5	
Rim of Catch Basin=	72.85	
Head on Rim=	6.65	
Total Area of Grate=	16	
50% of Open area of the inlet	8	sq. ft.
Depth of water ponding on the inlet	6.65	ft.
Capacity of the inlet =	111	cfs

Concentration Point	**2nd New Catch Basin along Canal to compensate for filling in the flood plain**	
High Water at Weir=	79.5	
Rim of Catch Basin=	72.57	
Head on Rim=	6.93	
Total Area of Grate=	16	
50% of Open area of the inlet	8	sq. ft.
Depth of water ponding on the inlet	6.93	ft.
Capacity of the inlet =	113	cfs

Refer to Exhibit A, Fill Plans for the Location of these Catch Basins

Capacity of a catch basin in a Sag operating as an Orifice

$Q = C\ A\ (2gd)^{0.50}$

C = 0.67 Orifice Coefficient, g=32.2 ft/s^2

Refer to Exhibit C for the location of below Catch Basins along Camelback Road

Based on HWE of 79.50'

Concentration Point	**East Catch Basin**		
High Water at Weir=	79.5		
Rim of Catch Basin=	76.6		
Head on Rim=	2.9		
Total Area of Grate=	19.68		
50% of Open area of the inlet		9.84	sq. ft.
Depth of water ponding on the inlet		2.9	ft.
Capacity of the inlet =		90	cfs

Concentration Point	**Middle Catch Basin**		
High Water at Weir=	79.5		
Rim of Catch Basin=	76.73		
Head on Rim=	2.77		
Total Area of Grate=	19.68		
50% of Open area of the inlet		9.84	sq. ft.
Depth of water ponding on the inlet		2.77	ft.
Capacity of the inlet =		88	cfs

Concentration Point	**West Catch Basin**		
High Water at Weir=	79.5		
Rim of Catch Basin=	75.15		
Head on Rim=	4.35		
Total Area of Grate=	19.68		
50% of Open area of the inlet		9.84	sq. ft.
Depth of water ponding on the inlet		4.35	ft.
Capacity of the inlet =		110	cfs

APPENDIX E
CORRESPONDENCE, WAIVERS AND SUPPORTING DOCUMENTS

Request for Stormwater Storage Waiver

City of Scottsdale Case Numbers:

__ - PA - ____ ____ - ZN - ____ ____ - UP - ____ 45 - DR - 2005 ____ - PP - ____ PC# 2013-08-2

The applicant/developer must complete and submit this form to the city for processing and obtain approval of waiver request ***before submitting improvement plans***. Denial of the waiver may require the developer to submit a revised site plan to the Development Review Board. (Related) Ref # 2013-08 (Safari-Ph-3)

Date 07-20-2011 **Project Name** Scottsdale BlueSky

Project Location 4601 N SCOTTSDALE RD , SCOTTSDALE, AZ 85251

Applicant Contact Ramzi Georges **Company Name** David Evans and Associates, Inc.

Phone 602-474-9223 Fax 602-678-5155 E-mail ryg@deainc.com

Address 4600 E Washington Street, Phoenix, AZ Suite #430

Waiver Criteria

A project must meet at least one of four 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 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.

☑ 1. The development is adjacent to a watercourse or channel that an engineering analysis shows is designed and constructed to handle the additional runoff.

☐ 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). A conflict with ESLO is limited to:

- Property located in the hillside landform as defined in the city Zoning Ordinance.
- Property where more than thirty-five (35) percent is covered by required natural area open space as defined in the city Zoning Ordinance.

☑ 4. The project is located within the Downtown Area as delineated by the Figure 1 below.

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

Engineer _____ Date 8/3/11

Planning, Neighborhood & Transportation Division

7447 E Indian School Road, Suite 105, Scottsdale, AZ 85251 • Phone: 480-312-7000 • Fax: 480-312-7088

Request for Stormwater Storage Waiver

City of Scottsdale Case Numbers:

___ - PA - ___ ____ - ZN - ____ ____ - UP - ____ ____ - DR - ___ ____ - PP - ____ PC#_____

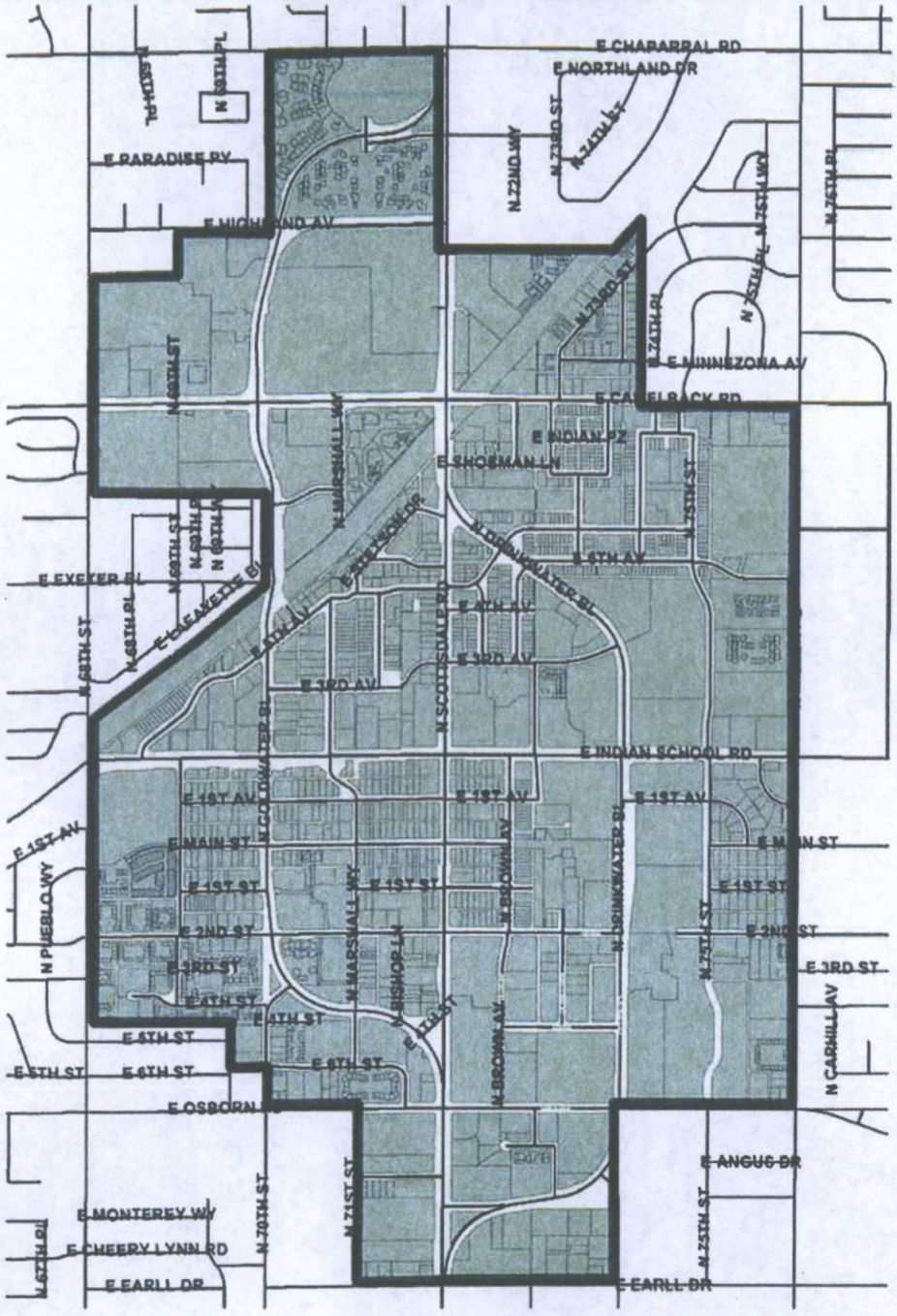


Figure 1. Designated Area for Downtown Stormwater Storage Waivers

Planning, Neighborhood & Transportation Division

7447 E Indian School Road, Suite 105, Scottsdale, AZ 85251 • Phone: 480-312-7000 • Fax: 480-312-7088

Request for Stormwater Storage Waiver

City of Scottsdale Case Numbers:

___ - PA - ___ ___ - ZN - ___ ___ - UP - ___ 45 - DR - 2005 ___ - PP - ___ PC# 2013-88-2

CITY STAFF TO COMPLETE THIS PAGE

Project Name Scottsdale Bluesky

Check Appropriate Boxes:

☐ Meets waiver criteria (specify): ☐1 ☐2 ☐3 ☑4

☑ Recommend approve waiver.

☐ Recommend deny waiver:
- ☐ None of waiver criteria met.
- ☐ Downstream conditions prohibit waiver of any storage.
- ☐ Other:

Explain: _____

☐ Return waiver request:
- ☐ Insufficient data provided.
- ☐ Other: _____

Explain: _____

Recommended Conditions of Waiver:

☑ All storage requirements waived.
☐ Pre development conditions must be maintained.
☐ Other:

Explain: _____

☑ **Waiver approved per above conditions.**

☐ **Waiver denied.**

C. Ashley-Couch
Floodplain Administrator or Designee

8/16/11
Date

Planning, Neighborhood & Transportation Division
7447 E Indian School Road, Suite 105, Scottsdale, AZ 85251 • Phone: 480-312-7000 • Fax: 480-312-7088

Request for Stormwater Storage Waiver

City of Scottsdale Case Numbers:

___ - PA - ___ ___ - ZN - ___ ___ - UP - ___ 45 - DR - 2005 ___ - PP - ___ PC# 2013-08-2

In-Lieu Fee and In-Kind Contributions

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 the waived storage volume, 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 $3.22 per cubic foot of stormwater storage waived. This unit cost will be updated annually, but the city reserves the right to revise the unit cost at any time.

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 Scottsdale BlueSky

The waived stormwater storage volume is calculated as follows:

V = CRA; where
V = stormwater storage volume required, in cubic feet,
C = weighted average runoff coefficient over disturbed area,
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,

$V_w = V - V_p$; where
V_w = volume waived,
V = volume required, and
V_p = volume provided

C = 0.86
A = 163,000 SF
V = 25,653
V_p = 0
V_w = 25,653

☐ An in-lieu fee will be paid, based on the following calculations and supporting documentation:
in-lieu fee ($) = V_w (cu. ft.) x $3.22 per cubic foot = _____

☒ An in-kind contribution will be made, as follows:

As previously approved for the overall project, an 8' x 6' box culvert was installed along the SRP canal (See attached plans) in lieu of an in-kind fee.

Approved by: C. Ashley Couch 8/16/11

Floodplain Administrator or Designee — Date

Planning, Neighborhood and Transportation Division
7447 E Indian School Road, Suite 105, Scottsdale, AZ 85251 • Phone: 480-312-7000 • Fax: 480-312-7088

SAFARI DRIVE PHASES 1 & 2
IMPROVEMENT PLANS
SCOTTSDALE, ARIZONA

GENERAL NOTES FOR CONSTRUCTION

1. ALL CONSTRUCTION IN PUBLIC RIGHTS-OF-WAY OR IN EASEMENTS GRANTED FOR PUBLIC USE MUST CONFORM TO LATEST MARICOPA ASSOCIATION OF GOVERNMENTS (MAG) UNIFORM STANDARD SPECIFICATIONS AND UNIFORM STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION AS AMENDED BY THE LATEST VERSION OF THE CITY OF SCOTTSDALE (COS) SUPPLEMENTAL STANDARD SPECIFICATIONS AND SUPPLEMENTAL STANDARD DETAILS. IF THERE IS A CONFLICT, LATTER SHALL GOVERN.
2. THE ENGINEERING DESIGNS ON THESE PLANS ARE ONLY APPROVED BY THE CITY IN SCOPE AND NOT IN DETAIL. IF CONSTRUCTION QUANTITIES ARE SHOWN ON THESE PLANS, THEY ARE NOT VERIFIED BY THE CITY.
3. APPROVAL OF PLANS IS VALID FOR SIX (6) MONTHS. IF AN ENCROACHMENT PERMIT FOR THE CONSTRUCTION HAS NOT BEEN ISSUED WITHIN SIX MONTHS, THE PLANS SHALL BE RESUBMITTED TO THE CITY FOR RE-APPROVAL.
4. A PUBLIC WORKS INSPECTOR WILL INSPECT ALL WORKS WITHIN THE CITY OF SCOTTSDALE RIGHTS-OF-WAY AND IN EASEMENTS. NOTIFY INSPECTION SERVICES 24 HOURS PRIOR TO STARTING CONSTRUCTION (TELEPHONE 480-312-5750).
5. WHENEVER EXCAVATION IS TO BE DONE, CALL "BLUE STAKE CENTER," 602-263-1100, TWO WORKING DAYS BEFORE EXCAVATION IS TO BEGIN. THE CENTER WILL SEE THAT THE LOCATION OF THE UNDERGROUND UTILITY LINES IS IDENTIFIED FOR THE PROJECT. CALL "COLLECT" IF NECESSARY.
6. ENCROACHMENT PERMITS ARE REQUIRED FOR ALL WORK IN PUBLIC RIGHTS-OF-WAY AND EASEMENTS GRANTED FOR PUBLIC PURPOSES. AN ENCROACHMENT PERMIT WILL BE ISSUED BY THE CITY UPON RECEIPT OF PAYMENT OF A BASE FEE PLUS A FEE FOR INSPECTION SERVICES TO BE PROVIDED BY THE CITY. COPIES OF ALL PERMITS SHALL BE RETAINED ON-SITE AND SHALL BE AVAILABLE FOR INSPECTION AT ALL TIMES. FAILURE TO PRODUCE THE REQUIRED PERMITS WILL RESULT IN IMMEDIATE WORK STOPPAGE UNTIL THE PROPER PERMIT DOCUMENTATION IS OBTAINED.
7. ALL EXCAVATION AND GRADING WHICH IS NOT IN PUBLIC RIGHT-OF-WAY OR NOT IN EASEMENTS GRANTED FOR PUBLIC USE MUST CONFORM TO CHAPTER 70, EXCAVATION AND GRADING, OF THE LATEST EDITION OF THE UNIFORM BUILDING CODE PREPARED BY THE INTERNATIONAL CONFERENCE OF BUILDING OFFICIALS. A PERMIT OF THIS GRADING MUST BE SECURED FROM THE CITY FOR A FEE ESTABLISHED BY THE UNIFORM BUILDING CODE.

LEGEND

NOTE: SYMBOLS SHOWN ON THIS MAP OCCUPYING TOPOGRAPHIC FEATURES MAY NOT BE TO ACTUAL SCALE. SYMBOLS MAY BE ENLARGED FOR VISUAL PURPOSES.

- FIRE HYDRANT
- WATER VALVE
- SEWER CLEANOUT
- SEWER MANHOLE
- CATCH BASIN
- POWER POLE
- LIGHT POST
- DRY WELL
- EXIST. TELEPHONE
- EXIST. ELECTRICAL
- EXIST. GAS
- RIGHT OF WAY
- CENTERLINE
- BOUNDARY/PROPERTY LINE
- EASEMENT DESIGNATION
- CHAIN LINK FENCE
- EXIST STORM DRAIN
- 12"SD — PROPOSED STORM DRAIN
- S — EXISTING SEWER
- 8"S — PROPOSED SEWER LATERAL
- W — EXISTING WATER
- 3"W — PROPOSED WATER LINE
- PROPOSED SLOPE

STANDARD ABBREVIATIONS

C	CONCRETE
CB	CATCH BASIN
P	PAVEMENT
EX	EXISTING
FH	FIRE HYDRANT
FF	FINISHED FLOOR
FL	FLOWLINE
G	GUTTER ELEVATION
GB	
COS	CITY OF SCOTTSDALE
NG	NATURAL GROUND
S	SEWER
SD	STORM DRAIN
RW	RIGHT OF WAY
TC	TOP OF CURB
pvmt	PAVEMENT
VG	VALLEY GUTTER
@70.00	PROPOSED GRADE
@70.00 EX	EX GRADE

PRIVATE ENGINEER'S NOTES TO CONTRACTOR

THE EXISTENCE AND LOCATION OF ANY UNDERGROUND UTILITY PIPES, CONDUITS OR STRUCTURES SHOWN ON THESE PLANS WERE OBTAINED BY A SEARCH OF THE AVAILABLE RECORDS. TO THE BEST OF OUR KNOWLEDGE THERE ARE NO EXISTING UTILITIES EXCEPT AS SHOWN ON THESE PLANS. THE CONTRACTOR IS REQUIRED TO TAKE DUE PRECAUTIONARY MEASURES TO PROTECT AND CORRECTLY LOCATE THE UTILITY LINES SHOWN ON THESE DRAWINGS. THE CONTRACTOR SHALL FIELD VERIFY THE HORIZONTAL AND VERTICAL LOCATION OF ALL POINTS OF CONNECTION AND UTILITY CROSSINGS (PROPOSED & EXISTING). THE CONTRACTOR FURTHER ASSUMES ALL LIABILITY AND RESPONSIBILITY FOR THE UTILITY PIPES, WATER PIPES, SEWER PIPES, CONDUITS AND STRUCTURES SHOWN OR NOT SHOWN ON THESE DRAWINGS.

* Requested letter follow ups with out response
e Except as noted

NO CONFLICT SIGNATURE BLOCK

UTILITY	UTILITY COMPANY	NAME OF COMPANY REPRESENTATIVE	TELEPHONE NUMBER	DATE SIGNED
ELECTRIC	APS	RYAN JAGELS	602-493-4456	6/14/06
TELEPHONE	QWEST	IAN HOLMES	602-630-0496	7/19/06
NATURAL GAS	SOUTH WEST GAS	CHRIS FAHRENDORF	602-484-5338	6/20/06
CABLE TV	COX CABLE	WALTER COOMBS	623-328-3520	6/07/06
IRRIGATION	SRP WATER	JIM DUNCAN	602-236-5090	
ELECTRIC	SRP ELECTRIC	ALLEN TUCEK	602-236-4809	6/08/06

ENGINEER'S CERTIFICATION

I Matthew Allen, AS THE ENGINEER OF RECORD FOR THIS DEVELOPMENT, HEREBY CERTIFY THAT ALL UTILITY COMPANIES LISTED ABOVE HAVE BEEN PROVIDED FINAL IMPROVEMENT PLANS FOR REVIEW AND THAT ALL CONFLICTS HAVE BEEN RESOLVED. IN ADDITION, "NO CONFLICT" FORMS HAVE BEEN OBTAINED FROM EACH UTILITY COMPANY AND ARE INCLUDED IN THIS SUBMITTAL. ALL PUBLIC AND PRIVATE UTILITY APPURTENANCES NECESSARY TO SERVE THIS SITE, INCLUDING, BUT NOT LIMITED TO, TRANSFORMERS, CABLE BOXES, AND UTILITY PEDESTALS, SHALL BE PLACED SUCH THAT THEY DO NOT NEGATIVELY IMPACT THE USE OF ANY DEDICATED EASEMENTS OR RIGHTS-OF-WAY INCLUDING, BUT NOT LIMITED TO, STORMWATER STORAGE BASINS, SIGHT DISTANCE EASEMENTS, AND MAGS OR OTHER OPEN SPACE EASEMENTS.

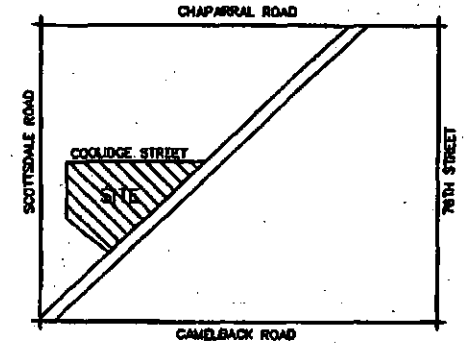
Matthew Allen — 11/16/06
Signature — Date

GENERAL WATER NOTES

1. DEVELOPER IS RESPONSIBLE FOR MAKING PROPER APPLICATION AND PAYING THE PREVAILING FEES PRIOR TO CONSTRUCTION OF ALL SERVICES.
2. BUTTERFLY VALVES ARE NOT ALLOWED IN LINES 12 INCH AND SMALLER.
3. GATE VALVES SHALL BE RESILIENT SEATED, SOLID WEDGE GATE, FULLY ENCAPSULATED AND OPEN LEFT.
4. TAPPING VALVES SHALL BE FLANGE BY MECHANICAL JOINT TO ALLOW TAPPING BY CONTRACTOR.
5. TAPS TO EXISTING CITY OWNED MAINS SHALL BE DONE BY A CITY APPROVED CONTRACTOR. NO TAP SHALL BE MADE UNTIL THE CITY INSPECTOR HAS APPROVED THE INSTALLATION OF THE TAPPING SLEEVE, THRUST BLOCK AND VALVE PLACEMENT. NO TAP TO CITY OWNED MAIN SHALL BE MADE WITHOUT A CITY UTILITIES DEPARTMENT REPRESENTATIVE PRESENT.
6. CONSTRUCTION SURVEY STAKES SHALL BE IN PLACE AND CUT SHEETS SHALL BE PROVIDED TO THE CITY CONSTRUCTION ENGINEERING INSPECTOR PRIOR TO STARTING CONSTRUCTION.
7. CONFLICTS WITH EXISTING UTILITIES DISCOVERED DURING CONSTRUCTION SHALL BE CALLED TO THE ATTENTION OF THE CITY AND RESOLVED PRIOR TO PROCEEDING.
8. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR/DEVELOPER TO HAVE THE SERVICE LINE VISIBLE AND ACCESSIBLE WHEN REQUESTING THE INSTALLATION OF A WATER METER OR A PRE-FINAL INSPECTION AND AS-BUILT SERVICES.
9. ONLY CITY FORCES ARE AUTHORIZED TO OPEN AND CLOSE EXISTING CITY OWNED WATER VALVES.
10. THE CITY OF SCOTTSDALE SHALL BE RESPONSIBLE FOR REPLACEMENT OF STANDARD CONCRETE AND ASPHALT ONLY.
11. ALL WATER LINES SHALL BE STAKED PRIOR TO TRENCHING AT A MAXIMUM STAKING INTERVAL OF 50 FEET, EXCEPT WHEN THE CITY ENGINEER APPROVES THE USE OF LASER.
12. LOCATION OF ALL WATER VALVES MUST BE REFERENCED AT ALL TIMES DURING CONSTRUCTION AND MADE AVAILABLE TO THE UTILITIES DEPARTMENT.
13. ALL MATERIALS WHICH MAY COME IN CONTACT WITH DRINKING WATER SHALL CONFORM TO THE NATIONAL SANITATION FOUNDATION STANDARDS 60 AND 61.
14. BLOCKS SHALL BE INSTALLED AT ALL VALVES.
15. COMPACTION SHALL COMPLY WITH M.A.G. SEC. 601 & COS SUPPLEMENTS
16. IT SHALL BE THE WATER CONTRACTOR'S RESPONSIBILITY TO SET WATER VALVES LID AND COVER TO FINISH GRADE AFTER PAVING IN ACCORDANCE WITH MAG STD 391.
17. THE CONTRACTOR SHALL OBTAIN ALL NECESSARY STANDARDS AND REVIEW THE PLANS IN DETAIL WITH THE CITY PRIOR TO START OF CONSTRUCTION.
18. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL WORK AND SHALL MAINTAIN ALL FACILITIES COMPLETED AND UNCOMPLETED UNTIL ACCEPTED BY THE CITY.
19. ALL WATER VALVE BOXES SHALL BE PER CITY OF SCOTTSDALE(COS) DETAIL 391
20. ALL CONSTRUCTION TO CONFORM TO M.A.G. SPECIFICATIONS AND DETAILS, CITY OF SCOTTSDALE SUPPLEMENT TO M.A.G. SPECIFICATIONS AND DETAILS, UNLESS MODIFIED ON THE PLANS.
21. SIX (6) FOOT MINIMUM HORIZONTAL SEPARATION FROM ANY UNDERGROUND UTILITY SHALL BE PROVIDED FOR SEWER MAINS, SEWER SERVICES, WATER MAINS, AND WATER SERVICES. THE MINIMUM HORIZONTAL SEPARATION IS MEASURED FROM OUTSIDE OF SEWER MAIN, SEWER SERVICE, WATER MAIN, OR WATER SERVICE TO OUTSIDE OF UNDERGROUND UTILITY.
22. TWO (2) FOOT MINIMUM VERTICAL SEPARATION FROM ANY DRY UNDERGROUND UTILITY CROSSING SHALL BE PROVIDED FOR SEWER MAINS, SEWER SERVICES, WATER MAIN, OR WATER SERVICE TO OUTSIDE OF UNDERGROUND UTILITY. UNLESS OTHERWISE APPROVED BY WATER RESOURCES.
23. TWO (2) FOOT MINIMUM VERTICAL SEPARATION SHALL BE PROVIDED BETWEEN ANY SEWER MAIN OR STORM DRAIN CROSSING A WATER MAIN. THE MINIMUM VERTICAL SEPARATION IS MEASURED FROM OUTSIDE OF WATER MAIN TO OUTSIDE OF SEWER MAIN OR STORM DRAIN MAIN. SEE M.A.G. STANDARD DETAIL 404 FOR ADDITIONAL INFORMATION AND/OR PROVISIONS FOR CLEARANCE.
24. EXCEPTIONS OR DEVIATIONS FROM THE ABOVE MINIMUM CLEARANCES MUST BE APPROVED AND SHOWN ON THE APPROVED WATER AND SEWER PLANS. WHEN UTILITY CONFLICTS ARE FOUND DURING CONSTRUCTION, ALL CHANGES AND REVISIONS MUST BE PRECEDED BY AN APPROVED PLAN REVISION.
25. ANY AND ALL MORE STRINGENT REQUIREMENTS REQUIRED BY FEDERAL, STATE, COUNTY, OR LOCAL CODES OR ORDINANCES TAKE PRECEDENCE.
26. NEITHER WATER SERVICE METER BOX OR ANY PORTION OF A WATER SERVICE SHALL BE INSTALLED UNDER AN EXISTING OR PROPOSED DRIVEWAY OR SIDEWALK RAMP.

ENGINEER'S FEMA CERTIFICATION

THE LOWEST FLOOR ELEVATION(S) AND/OR FLOODPROOFING ELEVATION(S) ON THIS PLANS COMPLY WITH THE CLOMR FOR THIS PROJECT.



VICINITY MAP

GRADING AND DRAINAGE NOTES

1. AN ON-SITE GRADING PERMIT IS REQUIRED
2. A SEPARATE PERMIT IS NECESSARY FOR ANY OFF-SITE CONSTRUCTION.
3. THE CITY SHALL BE NOTIFIED 24 HOURS BEFORE ANY ON-SITE CONSTRUCTION BEGINS.
4. YOU ARE HEREBY ADVISED THAT NO PERSON SHALL USE ANY MECHANICAL EQUIPMENT FOR LAND LEVELING OR CLEARING, ROAD CONSTRUCTION, TRENCHING, EXCAVATING, DEMOLITION OR ENGAGED IN ANY EARTH MOVING ACTIVITY WITHOUT FIRST OBTAINING A PERMIT FROM AIR POLLUTION CONTROL: MARICOPA COUNTY DEPARTMENT OF HEALTH SERVICE'S 1001 N. CENTRAL AVE., SUITE 150 PHOENIX, AZ 85003. PHONE: (602) 506-6666 (THIS NOTICE IS ISSUED PURSUANT TO A.R.S. 36-779.07, NOTICE OF BUILDING AGENCIES.)
5. STAKING PAD AND/OR FINISHED FLOOR ELEVATIONS ARE THE RESPONSIBILITY OF THE DEVELOPER OR HIS ENGINEER. IN NON-CRITICAL AREAS, THE DEVELOPER'S ENGINEER SHALL SUBMIT CERTIFICATIONS OF CONSTRUCTED BUILDING PAD ELEVATIONS PRIOR TO THE CITY'S ACCEPTANCE OF PROJECT.
6. GRADING CONTRACTOR SHALL DESIGNATE THE LOCATION FOR WASTING SPOIL MATERIALS AND A LETTER FROM THE OWNER GIVING PERMISSION FOR SAID DISPOSAL PRIOR TO STARTING ON-SITE CONSTRUCTION.
7. GRADING AND DRAINAGE PLAN APPROVAL INCLUDES: CONSTRUCTION OF DRAINAGE PLAN INCLUDING, BUT NOT LIMITED TO, RETENTION AREAS AND/OR OTHER DRAINAGE FACILITIES, SURFACE GRADING, WALLS, CURBS, ASPHALT PAVEMENT, AND BUILDING FLOOR ELEVATIONS.
8. CONTRACTOR IS RESPONSIBLE FOR LOCATING AND CONFIRMING DEPTHS OF ALL THE EXISTING UTILITY LINES WITHIN PROPOSED RETENTION BASIN AREAS. IF THE BASIN CANNOT BE CONSTRUCTED PER PLAN BECAUSE OF CONFLICTS, THE CONTRACTOR SHOULD DISCUSS MODIFICATION OF BASIN CONFIGURATION WITH THE CITY INSPECTOR TO DETERMINE IF A PLAN REVISION OR A FIELD CHANGE IS REQUIRED.
9. AN APPROVED GRADING AND DRAINAGE PLAN SHALL BE ON THE JOB SITE AT ALL TIMES. DEVIATIONS FROM THE PLAN MUST BE PRECEDED BY AN APPROVED PLAN REVISION.
10. COMPACTION SHALL COMPLY WITH M.A.G. SECTION 901.
11. ALL RAMPS MUST MEET ADA ACCESSIBILITY GUIDELINES (ADAAG) STANDARDS: 2% MAX CROSS SLOPES AND 12:1 MAX LONGITUDINAL SLOPES.

GENERAL SEWER NOTES

1. ALL SEWER LINES SHALL BE PRESSURE TESTED AND MANDREL TESTED PER MAG SPECIFICATIONS. UPON COMPLETION OF TESTING AND FLUSHING, ALL SEWER LINES SHALL BE VIDEO INSPECTED FOLLOWING BACK FILLING AND THE VIDEOTAPE PROVIDED TO THE CITY ENGINEER.
2. MANHOLE TAPS SHALL BE MADE BY CORE DRILLING AND USING A LINK SEAL STYLE MECHANICAL SEAL. BOTH ENDS OF SEAL SHALL BE GROUTED FLUSH WITH NON-SHRINK GROUT.
3. ALL MANHOLE BASE CONCRETE SHALL BE VIBRATED TO ELIMINATE VOIDS.
4. ALL MANHOLES SHALL BE VACUUM PRESSURE TESTED.
5. ALL SEWER LINES 15" IN DIAMETER OR SMALLER SHALL BE SDR35 PVC, UNLESS OTHERWISE NOTED ON THE PLANS.
6. ALL SEWER PIPING SHALL BE INSTALLED USING A LASER AND TARGET. THE GRADES INDICATED BY THE LASER SHALL BE VERIFIED USING THE SURVEYOR'S STAKEOUT.
7. ALL MANHOLE SECTIONS SHALL BE SEALED WITH BOTH MASTIC (RAMNEK OR EQUIVALENT) AND GROUT PLACED INSIDE EACH MANHOLE SECTION KEY. THE INSIDE JOINTS SHALL BE GROUT FINISHED.
8. UNLESS OTHERWISE APPROVED IN WRITING BY THE ENGINEER OR HIS/HER REPRESENTATIVE, PIPE SHALL BE LAID UPGRADE FROM THE POINT OF CONNECTION ON THE EXISTING PIPELINE OR FROM A DESIGNATED STARTING POINT. PIPE SHALL BE INSTALLED WITH THE BELL END FORWARD OR UPGRADE, UNLESS APPROVED OTHERWISE. WHEN PIPE LAYING IS NOT IN PROGRESS, THE FORWARD END OF THE PIPE SHALL BE KEPT CLOSED WITH AN APPROVED TEMPORARY PLUG.
9. ALL SEWER LINES SHALL BE FLUSHED AND DISINFECTED WITH 50 MG/L CHLORINE SOLUTION TO CITY INSPECTOR'S SATISFACTION PRIOR TO BEING ABANDONED AND CAPPED.
10. CONTRACTOR SHALL PLUG EXISTING ABANDONED SEWER WHERE DAMAGED OR CUT.
11. THE INSTALLATION OF ALL DUCTILE IRON SEWER PIPE SHALL INCLUDE THE APPLICATION OF GREEN POLYWRAP.

ARCHITECT

MILLER HULL ARCHITECT & PLANNING
71 COLUMBIA - SIXTH FLOOR
SEATTLE, WA-98104
PHONE: (206) 682-6633
CONTACT: MIKE JOBES

OWNER/DEVELOPER

RW K SQUARE DEVELOPMENT, LLC
ADD: HARTFORD DR.
SCOTTSDALE, AZ 85255
PHONE: (480) 893-0940
CONTACT: MIKE TAYLOR

ENGINEER

DAVID EVANS & ASSOCIATES, INC.
2141 EAST HIGHLAND AVENUE, STE 200
PHOENIX, ARIZONA 85016
PHONE: (602) 678-5151
CONTACT: BOYCE O'BRIEN

LANDSCAPE ARCHITECT

FLOOR & ASSOCIATES
1425 NORTH FIRST STREET
SECOND FLOOR
PHOENIX, ARIZONA-85004
PHONE: (602)462-1425
CONTACT: KRISTINA FLOOR, ASLA

BASIS OF BEARING

THE WEST LINE OF THE NORTHWEST QUARTER OF SECTION 23, TOWNSHIP 2 NORTH, RANGE 4 EAST AS SHOWN ON PARADISE TRIANGLE, A SUBDIVISION RECORDED IN BOOK 46 OF MAPS, PAGE 28, MARICOPA COUNTY RECORDS, SAID LINE BEING NORTH.

LEGAL DESCRIPTION

PARCEL NO. 1

THAT PART OF TRACT A, PARADISE TRIANGLE, ACCORDING TO BOOK 46 OF MAPS, PAGE 28, RECORDS OF MARICOPA COUNTY, ARIZONA, AND THAT PART OF THE NORTHWEST QUARTER OF SECTION 23, TOWNSHIP 2 NORTH, RANGE 4 EAST OF THE GILA AND SALT RIVER BASE AND MERIDIAN, MARICOPA COUNTY, ARIZONA, DESCRIBED AS FOLLOWS:

COMMENCING AT THE WEST QUARTER CORNER OF SAID SECTION 23;
THENCE NORTH 00° 00' 00" EAST, ALONG THE WEST LINE OF THE NORTHWEST QUARTER OF SAID SECTION 23, 688.12 FEET;
THENCE NORTH 90° 00' 00" EAST, 65.00 FEET TO A POINT ON A LINE WHICH IS PARALLEL WITH AND 65.00 FEET EASTERLY, AS MEASURED AT RIGHT ANGLES FROM THE WEST LINE OF THE NORTHWEST QUARTER OF SAID SECTION 23, SAID POINT BEING THE POINT OF BEGINNING;
THENCE NORTH 00° 00' 00" EAST, ALONG SAID PARALLEL LINE, 454.18 FEET;
THENCE NORTH 88° 57' 53" EAST, 252.68 FEET;
THENCE SOUTH 00° 02' 07" EAST, 253.50 FEET;
THENCE SOUTH 49° 15' 13" EAST, 328.75 FEET;
THENCE SOUTH 40° 42' 36" WEST, 240.27 FEET;
THENCE NORTH 49° 15' 13" WEST, 377.41 FEET;
THENCE SOUTH 90° 00' 00" WEST, 94.18 FEET TO THE POINT OF BEGINNING.

PARCEL NO. 2

UNINTERRUPTIBLE, RECIPROCAL, NON-EXCLUSIVE EASEMENT AGREEMENT FOR VEHICULAR AND PEDESTRIAN INGRESS AND EGRESS AS SET FORTH IN DOCUMENT RECORDED IN RECORDING NO. 2003-165400.

SHEET INDEX

CITY OF SCOTTSDALE REVIEW AND RECOMMENDED APPROVAL BY:			
PAVING	Approved 11/16/06	TRAFFIC	Approved 11/16/06
GRADING & DRAINAGE	Approved 11/16/06	PLANNING	Approved 11-30-06
WATER & SEWER	Approved 11/16/06	FIRE	Approved 11-27-06
RET. WALLS	Approved 11/16/06		

APPROVED BY: Douglas D Mercier — 11/23/06
ENGINEERING COORDINATION MANAGER (COS) — SIGNED — DATE

APPROVED BY FLOOD CONTROL DISTRICT OF MARICOPA COUNTY
PERMIT GRANTED — 4/DB/07
DATE

APPROVED BY MARICOPA COUNTY ENVIRONMENTAL SERVICES DEPARTMENT
T.E. Cluff 083340 — 8/2/06
DATE

AS-BUILT CERTIFICATION

FOR CANAL TRENCH ONLY

I CERTIFY THAT THE "RECORD DRAWINGS" AS SHOWN WAS MADE UNDER THE SURVEYOR'S SUPERVISION OR AS NOTED, AND ARE CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

NAME Robert N. Hermon — DATE 3-2-10

REGISTRATION NO. 5277

ROBERT N. HERMON
Registered Land Surveyor/Engineer
BRADY-ALLERICH & ASSOCIATES, INC.
1000 East Guadalupe Road
Tempe, Arizona 85283
(480) 839-4000

CANAL BANK COVERS SHEETS C19 - C22

AS-BUILTS

AS-BUILT

Expires 06 30 2011

DAVID EVANS AND ASSOCIATES INC.
2141 East Highland Ave.
Suite 200
Phoenix Arizona 85016
Phone: 602.678.5151

IN COOPERATION WITH:

MILLER HULL
ARCHITECTURE AND PLANNING
71 COLUMBIA - SIXTH FLOOR
SEATTLE, WA 98104
206.682.6633
206.622.6822 fax

LANDSCAPE
Floor & Associates
1425 North First Street
Second Floor
Phoenix, AZ 85004

MEP ENGINEER
Flack & Kurtz
1417 Fourth Avenue, Suite 400
Seattle, WA 98101-2360

SAFARI DRIVE
SCOTTSDALE ARIZONA

VANGUARD CITY HOMES

PHASE 1 & 2 IMPROVEMENT PLANS

COVER SHEET

DATE	08-01-2006
DESIGNED	DMA
DRAWN	RHD/MSA
CHECKED	MHJL-0001

SHEET C1 OF 22

10-02-12

PLAN CHECK #4012-2002 ORB CASE #6-ZN-2005 ZONING CASE #6-ZN-1982#5 & 6-AZ-1982#5

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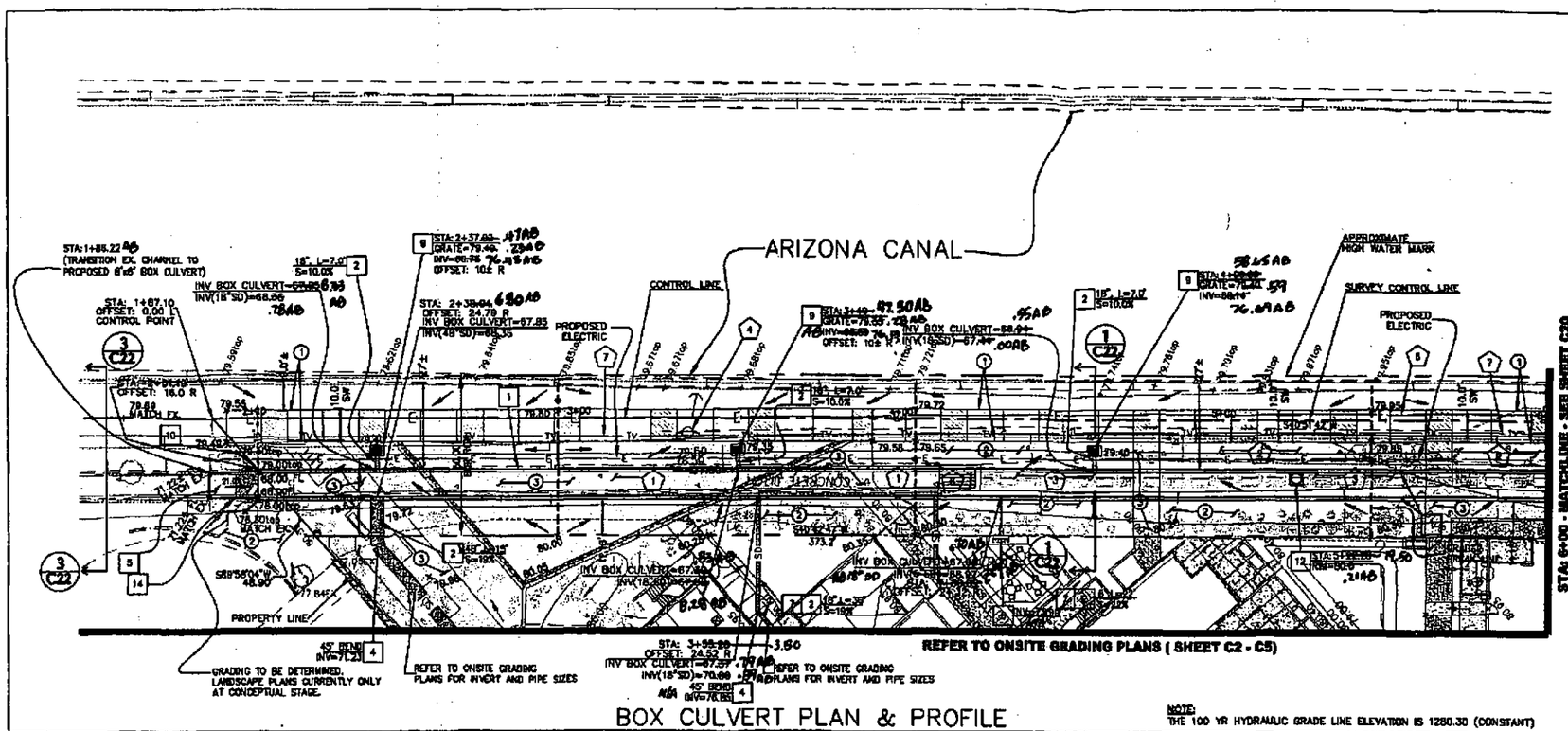
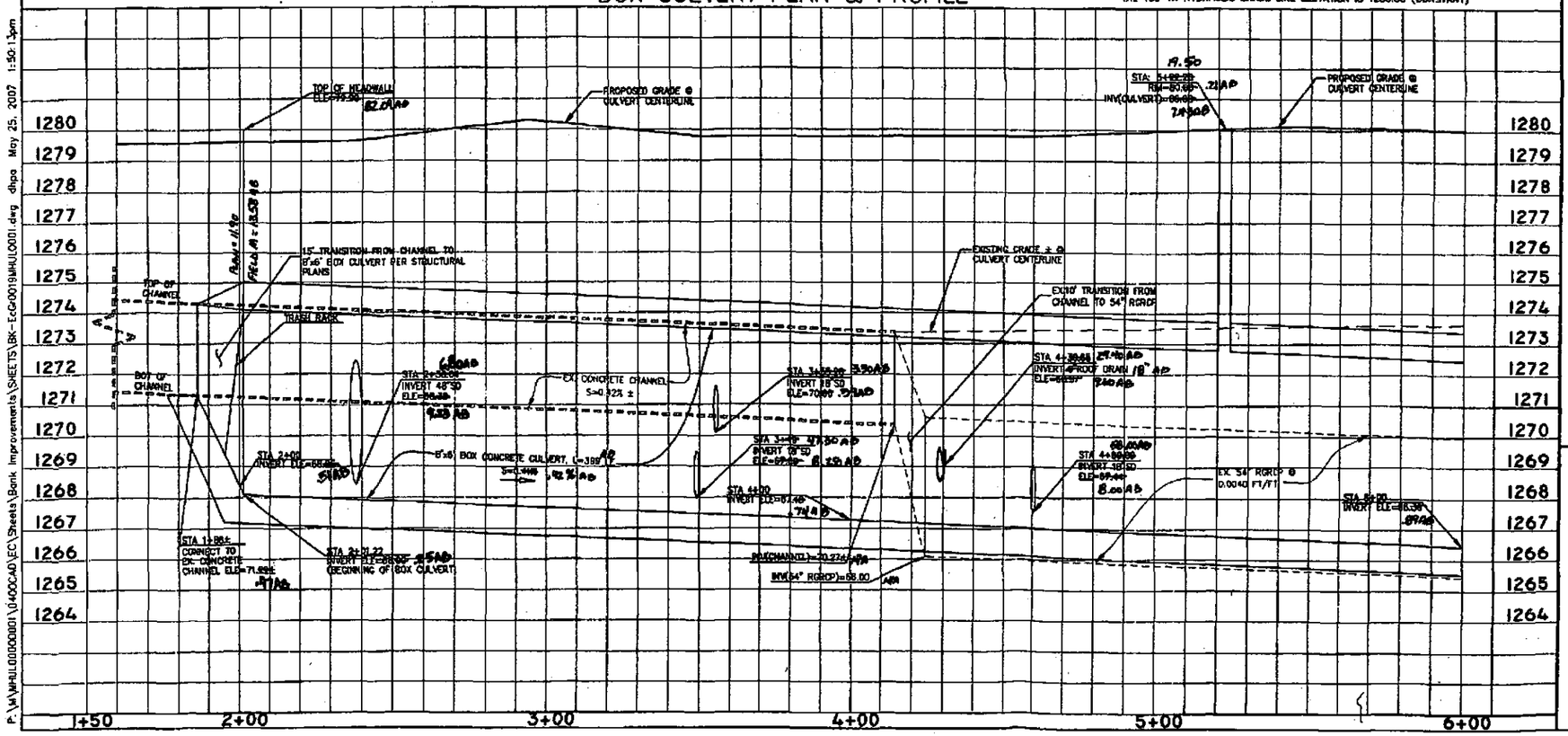


BOX CULVERT PLAN & PROFILE

NOTE:
THE 100 YR HYDRAULIC GRADE LINE ELEVATION IS 1280.30 (CONSTANT)



CONSTRUCTION NOTES

1. INSTALL 10' WIDE D.G. PATH PER LANDSCAPE PLANS, 5%± MAX. CROSS SLOPE AND 20:1 MAX LONGITUDINAL SLOPE.
2. REFER TO LANDSCAPE PLANS FOR DETAILS.
3. REFER TO THE LANDSCAPE PLANS FOR SURFACE TREATMENT (SECTION, COLOR, TEXTURE AND MATERIALS).
4. CONTRACTOR TO PROVIDE 12" MIN. VERTICAL SEPARATION BETWEEN STORM DRAIN, AND SEWER OR WATER PIPES CROSSING. IF LESS THAN 12" AND/OR SEWER CROSSING ON TOP ENCASE PER M.A.G. STD. DET. 404.
5. PROVIDE 4:1 SLOPE TO MATCH EX.

STORM DRAINAGE NOTES

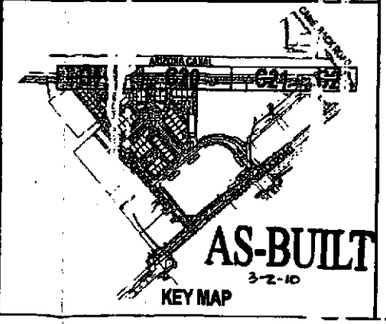
1. INSTALL 8'x6' BOX CULVERT PER ADOT STD DET#[illegible].10, TABLE 1 OR APPROVED PRE-CAST BOX CULVERT. ALL PRE-CAST TO CONCRETE CONNECTIONS TO BE MADE WITH DOWELS AS DESCRIBED ON SHEET S4.
2. INSTALL HDPE PIPE BY ADS TYPE N12 OR EQUAL, SIZE AND LENGTH PER PLAN. INSTALL PER COS SUPPLEMENTAL SPECIFICATION SECTION 803.
3. INSTALL 18" BYPASS DRAIN OR DRAIN BASIN. (PEDESTRIAN RATED GRATE). SIZE PER PLAN.
4. INSTALL ADS N12 TEE OR BEND. SIZE, INVERT AND ANGLE PER PLAN.
5. CONSTRUCT CHANNEL TRANSITION PER STRUCTURAL PLANS.
6. REFER TO PULLWEING PLAN FOR CONTINUATION.
7. PROPOSED ROOF DRAIN PIPE. INVERTS PER PLAN.
8. NOT USED.
9. INSTALL CATCH BASIN PER MAG STD DET 535 TYPE ".
10. INSTALL HEADWALL PER MAG STD DET # 501-3 AND MODIFIED PER PLANS.
11. REMOVE WALL OF THE EXISTING JUNCTION BOX AND CONNECT NEW BOX CULVERT PER STRUCTURAL PLANS BY OTHERS. CONTRACTOR TO VERIFY ELEVATION OF EX. INVERT PRIOR TO TRENCHING. NOTIFY ENGINEER OF ANY DISCREPANCY.
12. INSTALL 4' STORM DRAIN MANHOLE PER STRUCTURAL DETAIL.
13. CONSTRUCT NEW CATCH BASIN WITH 41"x60" GRATE PER STRUCTURAL DRAWING
14. INSTALL TRASH RACK PER DETAILS ON SHEET C22.

REMOVAL NOTES

1. REMOVE AND DISPOSE OF EXISTING CONCRETE CHANNEL PER MAG SPECIFICATIONS.
2. REMOVE AND DISPOSE OF EXISTING CONCRETE PER MAG SPECIFICATIONS.
3. REMOVE AND DISPOSE OF EXISTING STORM DRAIN PER MAG SPECIFICATIONS.
4. EXISTING POWER POLE TO BE REMOVED BY OTHERS.
5. EXISTING POWER LINE TO BE RELOCATED UNDERGROUND BY OTHERS.
6. REMOVE AND DISPOSE OF EXISTING CATCH BASIN PER MAG SPECIFICATIONS. SAVE EX. 41"x60" GRATE FOR REUSE ON STRUCTURES AT STATIONS 12+42, 12+27 OR 12+12. FURNISH (1) EACH NEW 41"x60" GRATE.
7. EXISTING TV CABLE TO BE RELOCATED PER PLANS BY OTHERS. COORDINATE WITH CABLE COMPANY.
8. REMOVE EXISTING TRASH RACK.
9. REMOVE EXISTING STRUCTURE PER STRUCTURAL PLANS. SAVE EXISTING GRATE TO RE-USE ON NEW STRUCTURE.

N/A NOT ACCESSIBLE AT TIME OF AB

0 10' 20' 40'
SCALE: 1"=20' H
1"=2' V



AS-BUILT
3-2-10

DAVID EVANS AND ASSOCIATES INC.
2141 East Highland Ave.
Suite 200
Phoenix Arizona 85016
Phone: 602.678.5151

IN COOPERATION WITH:

MILLER HULL
ARCHITECTURE AND PLANNING
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SEATTLE, WA 98104
206.682.8828
206.682.5992 fax

LANDSCAPE
Floor & Associates
1425 North First Street
Second Floor
Phoenix, AZ 85004

MEP ENGINEER
Flack & Kurtz
1417 Fourth Avenue, Suite 400
Seattle, WA 98101-2260

SAFARI DRIVE
SCOTTSDALE ARIZONA
VANGUARD CITYHOMES

PHASE 1 & 2 IMPROVEMENT PLANS

BANK IMPROVEMENT PLANS

DATE	05-17-2007
DRAWN	DHPA
DESIGNER	DHPA
CHECKED	RHO/MSA
DEA PROJ. #	MHUL-0001

SHEET C19 OF 22
10-02-12

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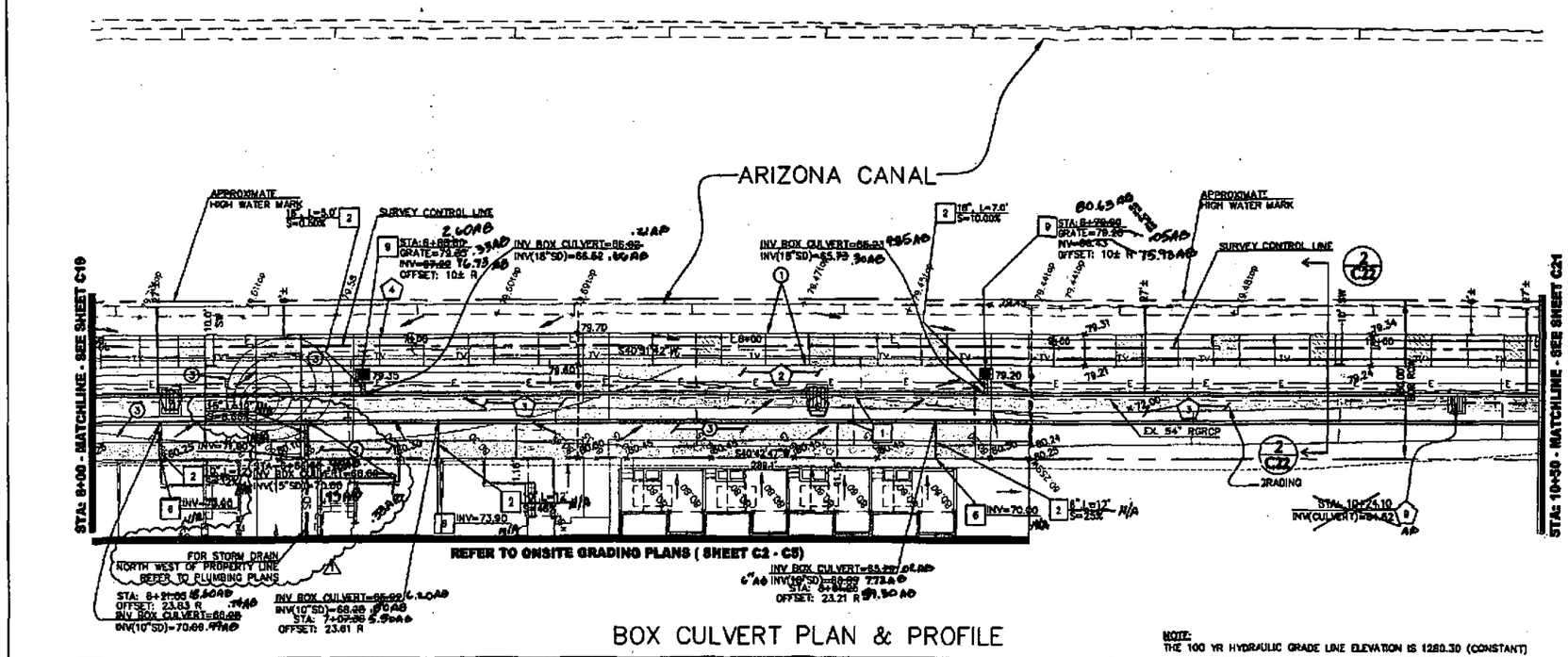
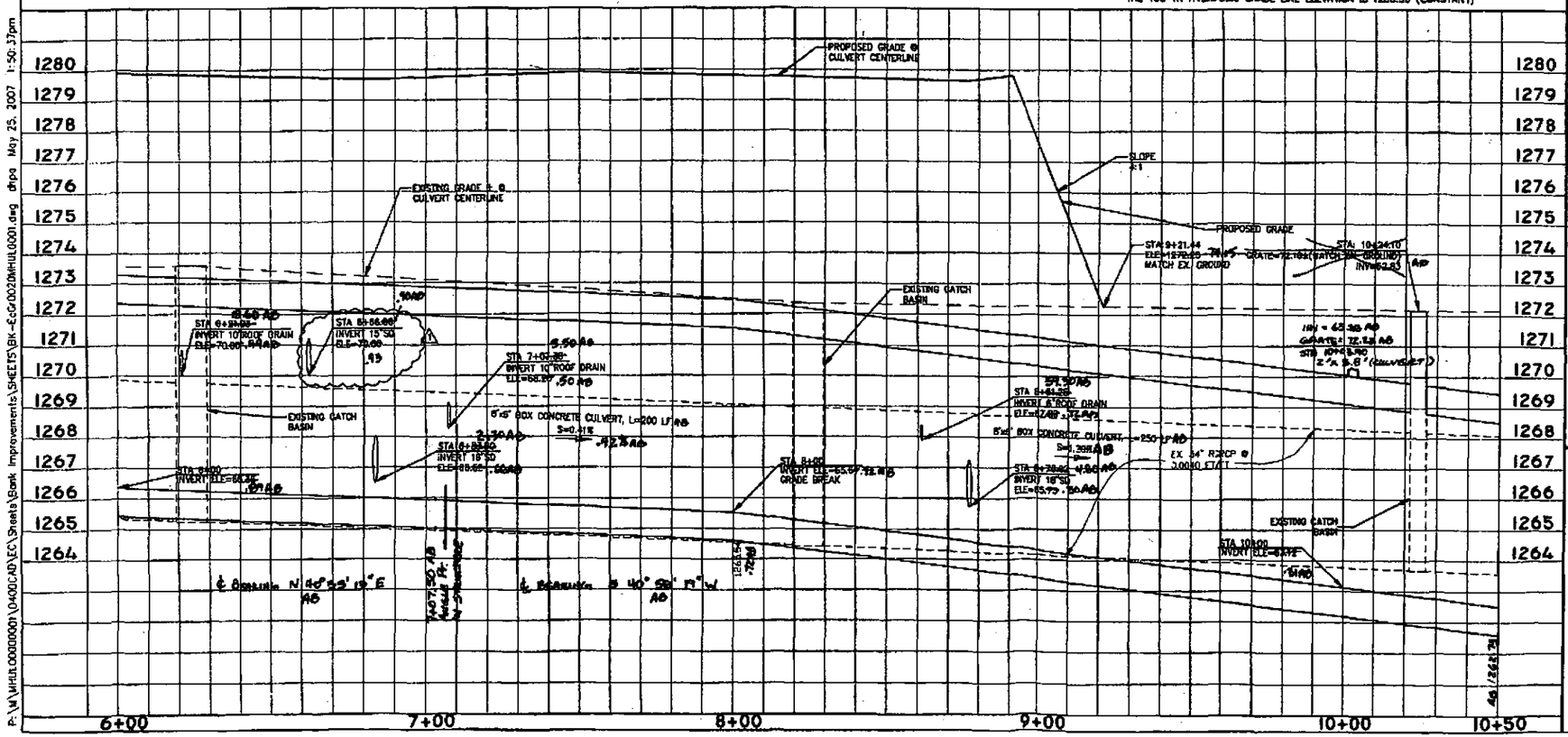


BOX CULVERT PLAN & PROFILE

NOTE:
THE 100 YR HYDRAULIC GRADE LINE ELEVATION IS 1280.30 (CONSTANT)



CONSTRUCTION NOTES

1. INSTALL 10' WIDE D.G. PATH PER LANDSCAPE PLANS, 50:1 MAX. CROSS SLOPE AND 20:1 MAX. LONGITUDINAL SLOPE.
2. REFER TO LANDSCAPE PLANS FOR DETAILS.
3. REFER TO THE LANDSCAPE PLANS FOR SURFACE TREATMENT (SECTION, COLOR, TEXTURE AND MATERIALS).
4. CONTRACTOR TO PROVIDE 12" MIN. VERTICAL SEPARATION BETWEEN STORM DRAIN, AND SEWER OR WATER PIPES CROSSING. IF LESS THAN 12" AND/OR SEWER CROSSING ON TOP ENCASE PER M.A.G. STD. DET. 404.
5. PROVIDE 4:1 SLOPE TO MATCH EX.

STORM DRAINAGE NOTES

1. INSTALL 8'x8' BOX CULVERT PER ADOT STD DET#[illegible].10, TABLE 1 OR APPROVED PRE-CAST BOX CULVERT. ALL PRE-CAST TO CONCRETE CONNECTIONS TO BE MADE WITH DOWELS AS DESCRIBED ON SHEET S4.
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3. INSTALL 18" INLINE DRAIN OR DRAIN BASIN. (PEDESTRIAN RATED GRATE).SIZE PER PLAN.
4. INSTALL ADS TYPE N12 TEE OR BEND. SIZE, INVERT AND ANGLE PER PLAN.
5. CONSTRUCT CHANNEL TRANSITION PER STRUCTURAL PLANS.
6. REFER TO PLUMBING PLAN FOR CONTINUATION.
7. PROPOSED ROOF DRAIN PIPE. INVERTS PER PLAN.
8. NOT USED.
9. INSTALL CATCH BASIN PER MAG STD DET 535 TYPE "F".
10. INSTALL HEAD WALL PER MAG STD DET # 601-3 AND ADDITIED PER PLANS.
11. REMOVE WALL OF THE EXISTING JUNCTION BOX AND CONNECT NEW BOX CULVERT PER STRUCTURAL PLANS BY OTHERS. CONTRACTOR TO VERIFY ELEVATION OF EX. INVERT PRIOR TO TRENCHING. NOTIFY ENGINEER OF ANY DISCREPANCY.
12. INSTALL 4' STORM DRAIN MANHOLE PER STRUCTURAL DETAIL.
13. CONSTRUCT NEW CATCH BASIN WITH 41"x80" GRATE PER STRUCTURAL DRAWING
14. INSTALL TRASH RACK PER DETAILS ON SHEET C22.

REMOVAL NOTES

1. REMOVE AND DISPOSE OF EXISTING CONCRETE CHANNEL PER MAG SPECIFICATIONS.
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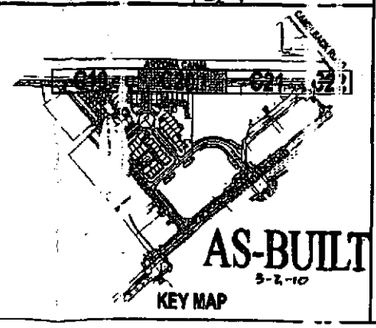
N/A NOT ACCESSIBLE AT TIME OF AB

SCALE: 1"=20' H
1"=2' V



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1417 Fourth Avenue, Suite 400
Seattle, WA 98101-2260

SAFARI DRIVE
SCOTTSDALE ARIZONA
VANGUARD CITYHOMES

NO.	DESCRIPTION	DATE
1	RESPONSE TO 1ST SUB	05-17-07

PHASE 1 & 2 IMPROVEMENT PLANS

BANK IMPROVEMENT PLANS

DATE	05-17-2007
DRAWN	DHPA
DESIGNER	DHPA
CHECKED	BHO/MSA
DEA PROJ. #	MHUL-0001

SHEET C20 OF 22
10-02-12

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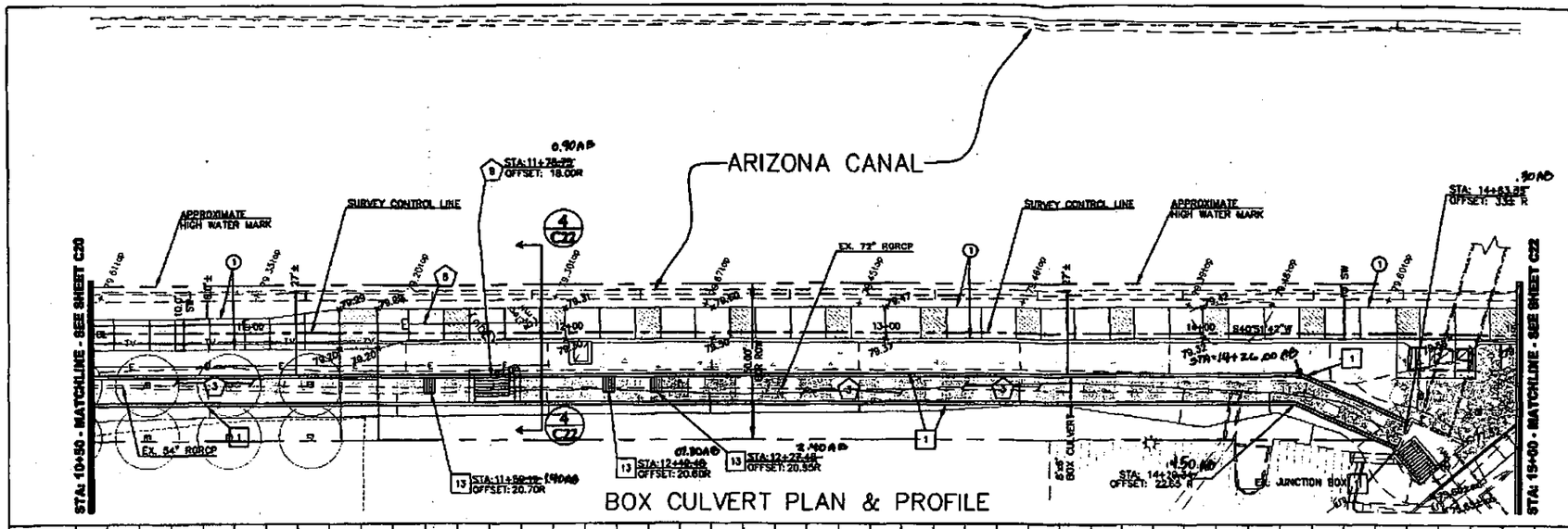
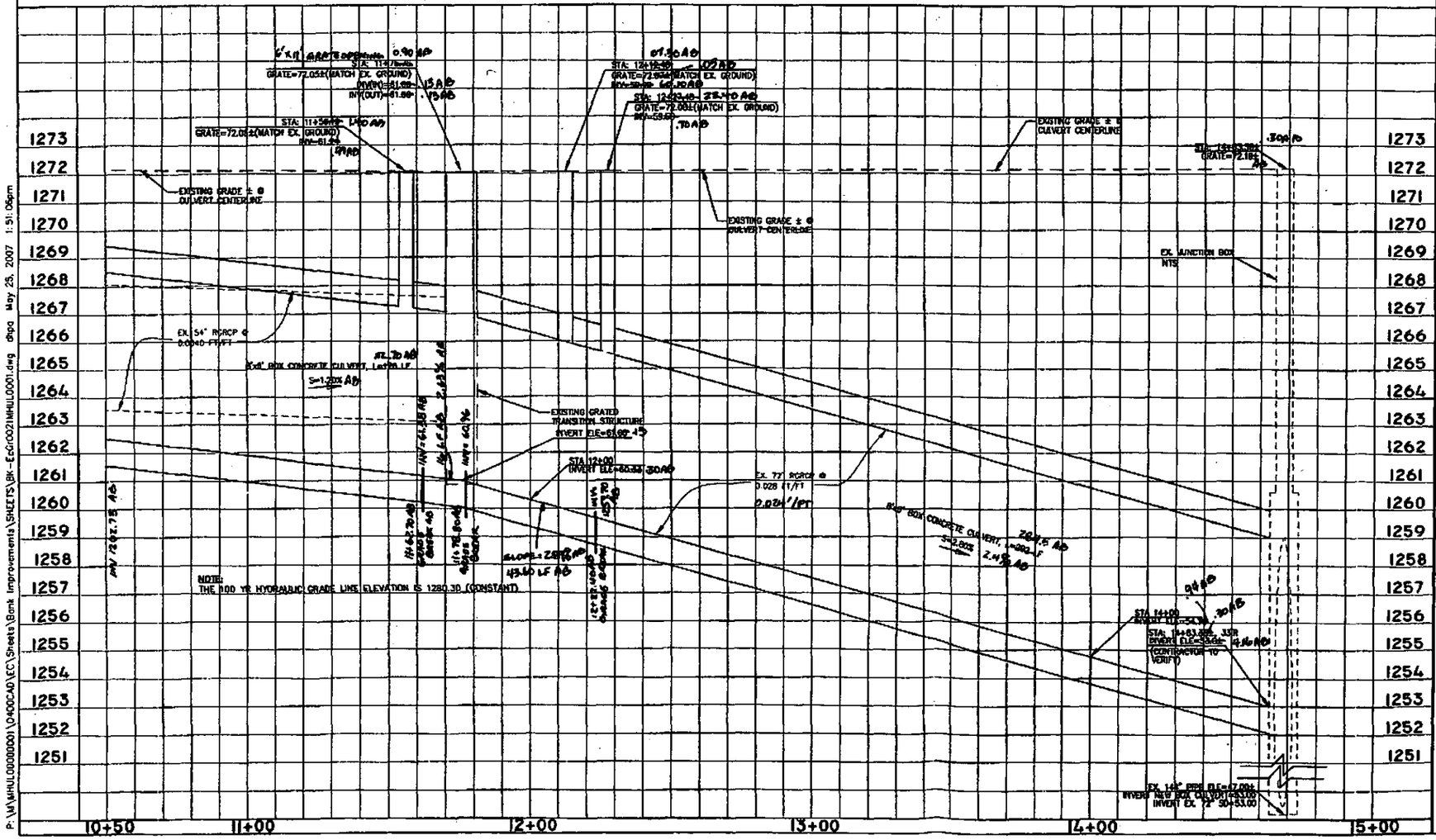


BOX CULVERT PLAN & PROFILE



CONSTRUCTION NOTES

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5. PROVIDE 4:1 SLOPE TO MATCH EX.

STORM DRAINAGE NOTES

1. INSTALL 8'x5' BOX CULVERT PER ADOT STD DET#C-02.10, TABLE 1 OR APPROVED PRE-CAST BOX CULVERT. ALL PRE-CAST TO CONCRETE CONNECTIONS TO BE MADE WITH DOWELS AS DESCRIBED ON SHEET S4.
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8. NOT USED.
9. INSTALL CATCH BASIN PER MAG STD DET 535 TYPE "F".
10. INSTALL HEADWALL PER MAG STD DET # 501-3 AND MODIFIED PER PLANS.
11. REMOVE WALL OF THE EXISTING JUNCTION BOX AND CONNECT NEW BOX CULVERT PER STRUCTURAL PLANS BY OTHERS. CONTRACTOR TO VERIFY ELEVATION OF EX. INVERT PRIOR TO TRENCHING. NOTIFY ENGINEER OF ANY DISCREPANCY.
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13. CONSTRUCT NEW CATCH BASIN WITH 41"x80" GRATE PER STRUCTURAL DRAWING
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REMOVAL NOTES

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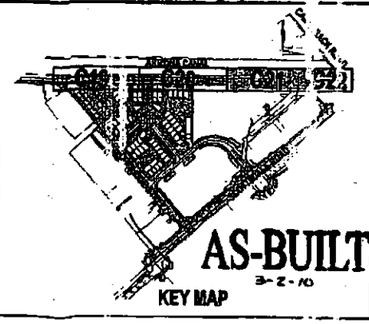
SCALE: 1"=20' H
1"=2' V



AS-BUILT
3-2-10

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SAFARI DRIVE
SCOTTSDALE ARIZONA

VANGUARD
CITYHOME

JAMES MICHAEL ALLEN 24363 REGISTERED PROFESSIONAL ENGINEER

PHASE 1 & 2 IMPROVEMENT PLANS

BANK IMPROVEMENT PLANS

DATE	05-17-2007
DRAWN	DHPA
DESIGNER	DHPA
CHECKED	RHO/MSA
DEA PROJ. #	MHUL-0001

SHEET C21 OF 22
10-02-12

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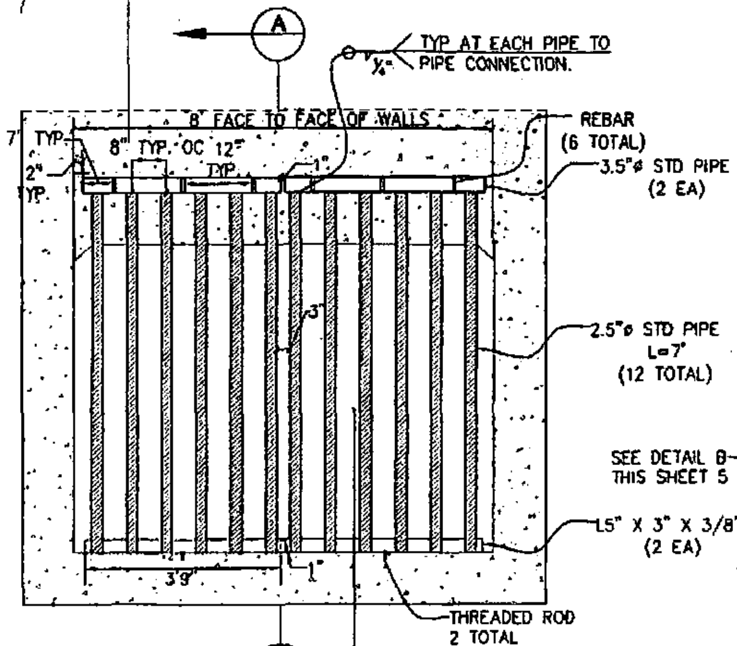
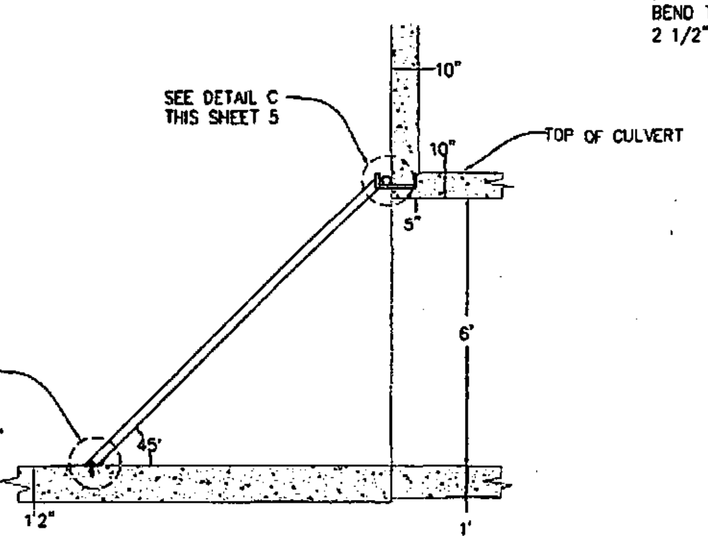
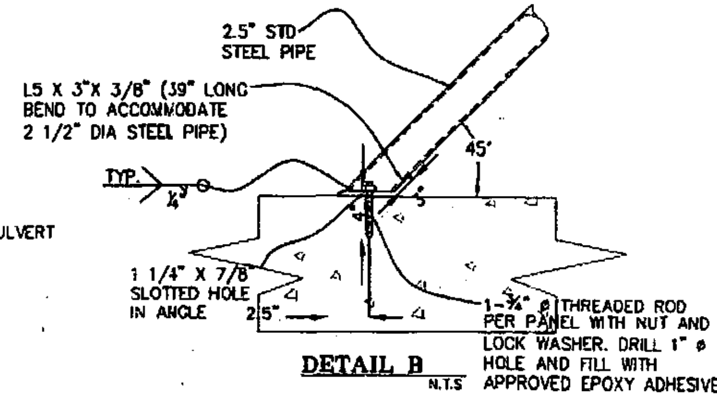


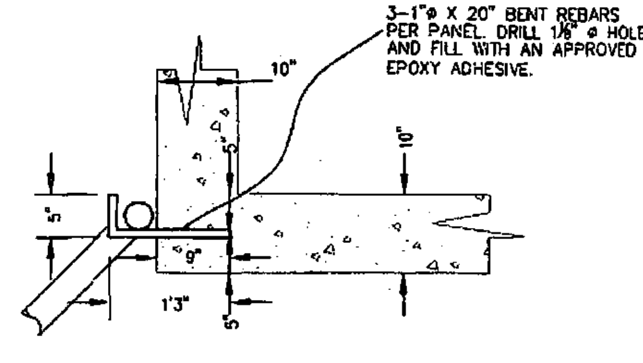
FRONT VIEW
N.T.S



SECTION A-A
N.T.S



DETAIL B
N.T.S



DETAIL C
N.T.S

TRASH RACK DETAIL NOTES

1. CONTRACTOR SHALL PROVIDE ENGINEER A COMPLETE SET OF SHOP DRAWINGS PRIOR TO FABRICATION.
2. CONTRACTOR TO FIELD VERIFY ALL CULVERT, CHANNEL AND WALL DIMENSIONS BEFORE FABRICATION OF GRATE.
3. ALL ANGLES AND RODS SHALL CONFORM TO ASTM A36.
4. ALL PIPES SHALL CONFORM TO ASTM 53 GRADE B, TYPE E OR S.
5. ALL WELDING SHALL CONFORM TO THE REQUIREMENTS OF ANSI/AWS D1.1: 1998 STRUCTURAL WELDING CODE.
6. REBARS SHALL CONFORM TO ASTM SPECIFICATION A615 AND FURNISH AS GRADE 60.
7. ALL STRUCTURAL STEEL SHALL BE GALVANIZED.
8. REFER TO SHEETS S1 TO S6 FOR STRUCTURAL DETAILS OF BOX CULVERT.

CONSTRUCTION NOTES

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5. PROVIDE 4:1 SLOPE TO MATCH EX.

STORM DRAINAGE NOTES

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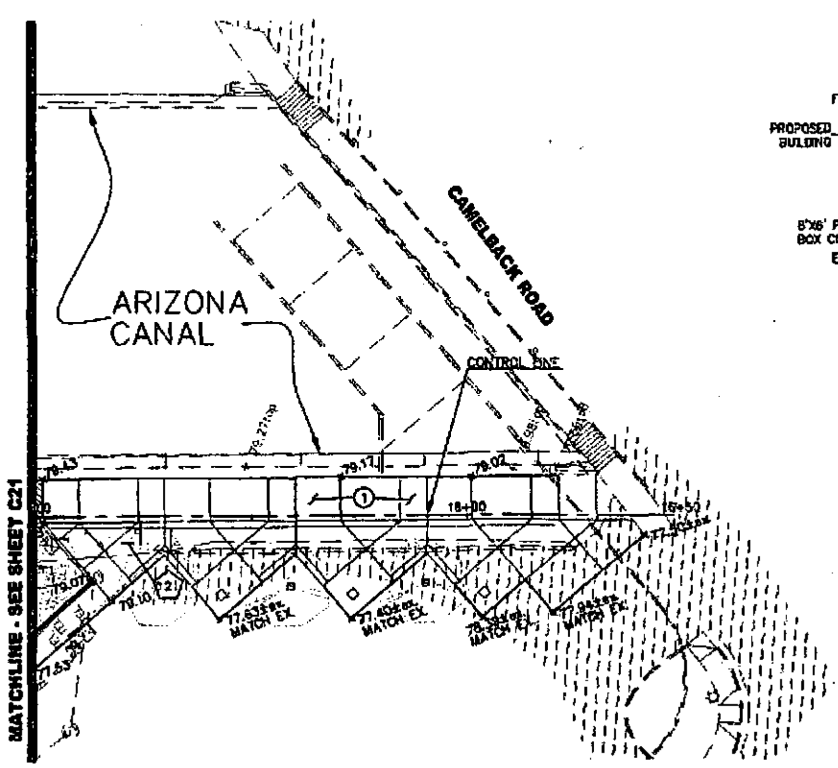
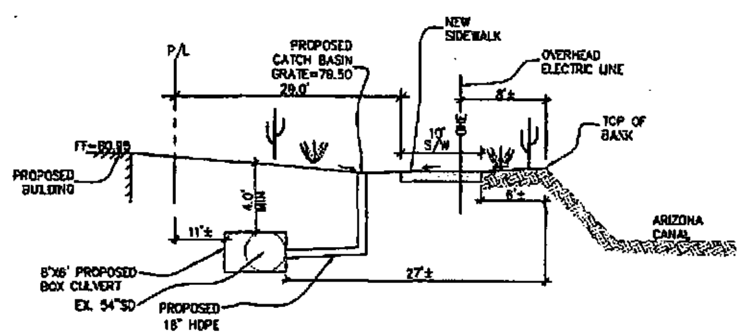
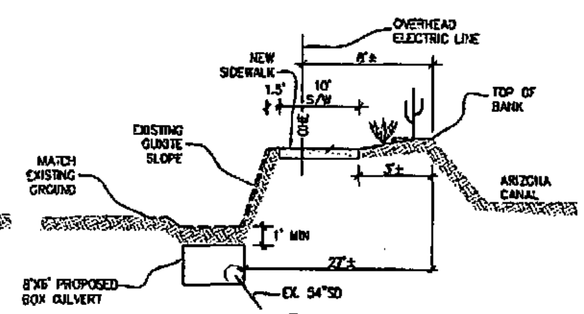


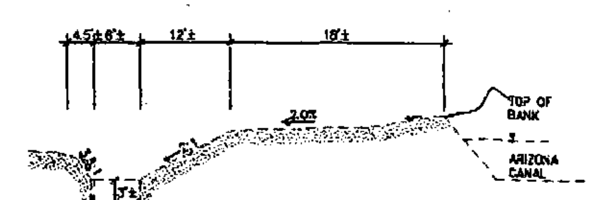
3 BOX CULVERT DETAIL



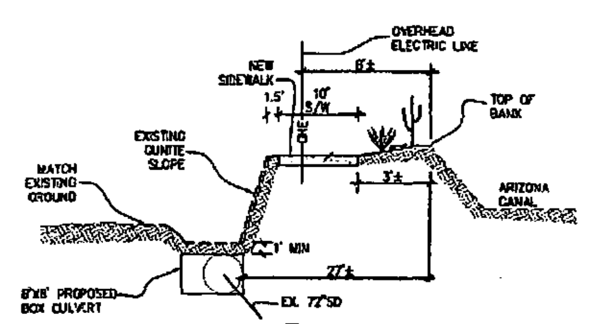
1 SECTION (C19) N.T.S



2 SECTION (C20) N.T.S

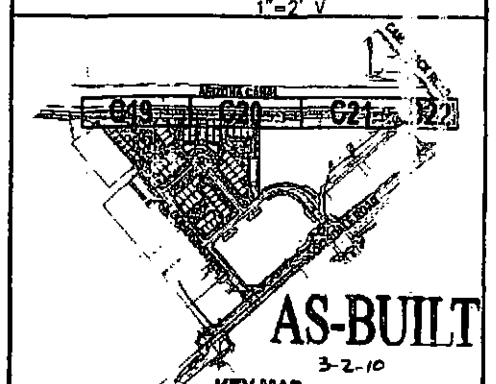


3 SECTION (C19) N.T.S



4 SECTION (C21) N.T.S

SCALE: 1"=20' H
1"=2' V



AS-BUILT
3-2-10

KEY MAP

DAVID EVANS AND ASSOCIATES INC.
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SAFARI DRIVE
SCOTTSDALE ARIZONA
VANGUARD CITYHOME

PHASE 1 & 2 IMPROVEMENT PLANS

BANK IMPROVEMENT PLANS

DATE	
DRAWN	05-17-2007
DESIGNER	DHPA
CHECKED	BHO/MSA
DEA PROJ. #	MHUL-0001

SHEET C22 OF 22
10-02-12

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3502-05

City of Scottsdale Case Numbers

____PA____ 45 DR 2005

____ZN____ ____PP____

____UP____

Before the submittal of improvement plans the developer must obtain approval of this waiver request. Denial may require a revised site plan be submitted to the DR Board.

REQUEST FOR STORMWATER STORAGE WAIVER FORM (Page 1 of 3)

(To be completed by the applicant and submitted to the city for processing) (4/7/00)

Waiver Criteria

A waiver is an intentional relinquishment of a claim or right. Before the city can waive some or all of the required stormwater storage at least one of the following city ordinance criteria (in bold) must be met. Check the criteria below that applies to this project and provide the engineering analyses that demonstrate that the effect of this waiver will not increase the potential for flooding on any property.

☐ **1. The runoff has been included in a storage facility at another location.** The developer must demonstrate that runoff from this site will be safely conveyed to the other location through an adequately designed conveyance facility.

☐ **2. Application is for a building permit to construct a single-family residential structure.**

☒ **3. Development is adjacent to a watercourse or channel that has been designed and constructed to handle the additional runoff flow without increasing the potential for flood damage to any other downstream property.** The developer must demonstrate that the watercourse has the extra capacity needed to convey the additional runoff.

☐ **4. The development is for a parcel under one-half acre in an area where it can be demonstrated by engineering analysis that no significant increase in the potential for flood damage will be created by the development.**

☐ **5. There is a possible conflict with the requirements of the city's Environmentally Sensitive Lands Ordinance** (city staff must make the final determination of this).

I, Jonathan R Taylor (DEVELOPER OR ENGINEER) 5/31/05 (DATE) certify that:

The Riverwalk Square (PROJECT or DEVELOPMENT NAME) meets one of the criteria checked above.

Project Location North of the north east corner of Scottsdale & Camelback Rd.

Applicant Phone (480) 346-3200

Applicant Mailing Address
7272 E. Indian School Rd. Suite 420
Scottsdale AZ 85251

I, _____ (PROJECT COORDINATION STAFF) _____ (DATE) believe that the above is correct and the project (does) / (does not) meet one or more of the waiver criteria.

REQUEST FOR STORMWATER STORAGE WAIVER FORM (PAGE 3 of 3)

(This page to be completed by city staff) (4/7/00)

Project Name _____

CHECK APPROPRIATE BOXES

☒ Waiver criteria met (specify) ☐ 1 ☐ 2 ☒ 3 ☐ 4 ☐ 5

☐ Waiver approval recommended

☐ Waiver recommended for denial

- ☐ None of the waiver criteria met
- ☐ Downstream conditions prohibit the waiver of any storage
- ☐ Other _____

Explain _____

☐ Waiver request returned

- ☐ Insufficient data provided
- ☐ Other _____

Explain _____

Recommended Conditions of Waiver

- ☒ All storage requirements waived
- ☐ Pre development conditions must be maintained
- ☒ Other See in kind contribution

Explain _____

Above Recommended by _____ _____
DRAINAGE PLANNER DATE

WAIVER ✓ **APPROVED, OR** _____ **DENIED, per above conditions**

By _____ 7/1/05
FLOODPLAIN ADMINISTRATOR DATE

By _____ 7/1/05
DEVELOPMENT QUALITY/COMPLIANCE DIRECTOR DATE

TRI-CORE ENGINEERING

Transportation Flood Control Water / Wastewater Land Development Planning GIS Services Construction Administration Surveying

Job No 5140.0001 Sheet 1 of 1

Project Riverwalk Square

Subject Storm Drain Retention 100 Yr-2hr

Designed By Durrell Date 5-12-05 Checked By _____ Date _____

Standard formula from COS chap 2.2 sec 2.2.4

$V_r = \left(\frac{P}{12}\right) A C$

P = 2.82 inches

A = 4.86 acres

C = .87 from figure 2.2-17

Note: Although the site has good infiltration soils, Because of the high density, a 0.87 value for "C" was selected.

$V_r = \left(\frac{2.82}{12}\right)(4.86)(0.87)$

$V_r = 0.9936$ Acre-ft or **43,282 Ft³**

RIVERWALK SQUARE STORAGE W[redacted]ER EXHIBIT

By I David Lopez Ivich, P E

Tri-core Engineering, 7272 E Indian School Rd Suite 420

Scottsdale, AZ Tel 480-346-3200

Table 1 Cost Estimate of Improvements

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL COST
New 84" HDPE	976	L F	$120 00	$117,120 00
Extention of existing 84 pipe	228	L F	$120 00	$27,480 00
Downstream Junction Box (connects 2-84 pipes to 72" pipe)	1	EA	$3,500 00	$3,500 00
Upstream Junction Box and Trash Rack (connects 2-84" pipes to Channel)	1	EA	$5,000 00	$5,000 00
Storm water pollutant remover	4	EA	$700 00	$2 800 00
Removal of existing catch basin grates	2	EA	$500 00	$1,000 00
Removal of existing junction box and trash rack	1	EA	$1 500 00	$1,500 00
			Total	$158,400 00

Table 2 Cost Estimate of Retention

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL COST
Retention Required 1 acre/ft (Using storm dram chambers system)	43 282	C F	$3 50	$151,487 00
			Total	$151,500 00

DAVID EVANS
AND ASSOCIATES INC.

August 4, 2011

Joe Rumann
7447 E. Indian School Road, Suite 125
6263 Scottsdale Road, Suite 330
Scottsdale, AZ 85251

SUBJECT: Retention Waiver Application Cover Letter for DR Submittal #2013-08 (Safari – Ph 3)

Dear Mr. Rumann:

This letter is in support of the retention waiver application for the development of the Scottsdale BlueSky project. The site is located within the City of Scottsdale core downtown area near the northeast corner of the intersection of Scottsdale Road and Camelback Road. There will be no adverse impacts on adjacent properties due to the development of the Scottsdale BlueSky project site. The site is located in two flood zones. The southern portion of the site is located in flood Zone A and the northern portion of the site is located in flood Zone X.

The project is comprised of approximately three acres within Section 23, Township 2 North, Range 4 East of the Gila and Salt River Base and Meridian. The Scottsdale BlueSky project will be a mixed use development consists of multi-family residential apartments, grocery store, Restaurant, Retail, Club/fitness house, and office. There will be 4-levels of below grade parking that will provide approximately 1,511 parking spaces.

Site grading and drainage is designed to elevate finish floor elevations above the base flood elevation, maintaining at least minimum required freeboard during the design 100-year storm event.

Offsite runoff that reaches the northeastern portion of the site is conveyed along western boundary of the Arizona Canal in a southwesterly direction through an existing underground box culvert that was constructed as part of the initial phase of the project.

Scottsdale Road is an improved street with curb and gutter that drains in a southerly direction adjacent to the site. The majority of the runoff along Scottsdale Road is conveyed within the street section of the road and a smaller portion is conveyed into the existing storm drain system along Scottsdale Road that outfalls into the main storm drain in Camelback Road. There is also a small amount of runoff diverted from Scottsdale Road into Coolidge Street and is then conveyed in an easterly direction into the culvert mentioned above.

The existing runoff conditions were carefully studied in the initial phase of the project (Safari Drive) and they will be maintained during the design of the current phase (Blue Sky). The existing drainage conditions will be used as guidelines in the development and design of the Blue Sky project.

In addition, the box culvert installed during the initial/previous phase of the project has been constructed in-lieu of onsite retention. Based on the above information and the attached retention waiver application, we respectfully request that you consider the previously approved culvert, built as part of the initial phase of the project, to be utilized in-lieu of onsite retention for the project.

Should you have any questions, please contact me at (602) 474-9223.

Sincerely,

DAVID EVANS AND ASSOCIATES, INC.

Ramzi Georges, P.E., CFM
Senior Project Manager

APPENDIX F
REPORTS BY OTHERS

FINAL DRAINAGE REPORT

SAFARI DRIVE

OCTOBER 2006
DEA PROJECT NO. MHUL0000-0001

TABLE OF CONTENTS

1.0 INTRODUCTION

This final drainage report has been prepared under a contract from Riverwalk Square, LLC for the Safari Drive project in Scottsdale. The purpose of this report is to provide hydrologic and hydraulic analyses, required by the City of Scottsdale, to support the Safari Drive improvement plans. Preparation of this report has been done in accordance with the procedures detailed in the *City of Scottsdale Design Standards and Policies Manual* (Reference #1) along with the City of Scottsdale *Supplement to MAG Uniform Standard Specifications For Public Works Construction* (Reference #2) and *Drainage Design Manuals for Maricopa County, Arizona, Volumes I & II* (References #3 and #4).

The proposed Safari Drive project is located northeast of the intersection of Scottsdale Road and Camelback Road, within the City of Scottsdale, Maricopa County, Arizona. The site is located within Section 23, Township 2 North, Range 4 East of the Gila and Salt River Base and Meridian.

The project site is bound by a commercial development to the north (Highland Park), undeveloped parcel to the west (east of Scottsdale Road), a commercial development to the south and the Arizona Canal to the east. Access to the site will be provided via two entrances from Scottsdale Road along 72nd Place and Coolidge Street. The project is located within what is considered the Downtown Area of the City's General Plan.

The proposed Safari Drive project site is approximately 5 acres (for Phase 1 and 2). The project is going to be developed in phases. Onsite improvements include the demolition of existing structures, site grading, and construction of the new Safari Drive buildings with associated hardscape and landscaped areas. Offsite improvements include asphalt pavement for portions of the adjacent street sections and a proposed turning lane along Scottsdale Road.

2.0 EXISTING DRAINAGE CONDITIONS

As mentioned in the section above, the site is located east of Scottsdale Road, west of the Arizona Canal and south of Coolidge Street. Through researching several drainage reports, aerial photos and as built information, it was determined that the site was occupied with a resort known as the Safari Hotel and Resort, See Appendix F. The resort site was demolished in 1998 and it was regarded. Aerial photos and field visits show that there are no washes impacting the site.

Offsite runoff that may impact the site is conveyed along western boundary of the Arizona Canal in a southwesterly direction. According to the topography in the area, the general lay of

the land is in a southeasterly direction, towards to the Arizona Canal, where runoff ponds against the canal before it is conveyed through storm drain systems or weirs over the canal. The Arizona Canal is supposed to be drained during major storm events, in addition to a 4-foot of freeboard that would allow the canal to accept additional storm runoff into its system.

The site is located in an area that drains into what is known as Reach 4 of the Flood Control District's side channel drainage system. This storm drain system runs along Camelback Road and outfalls into the Indian Bend Wash and it was installed in the 1980's through coordination with the City of Scottsdale, Flood Control District and the US Army Corps of Engineers. The system was designed to convey the 25 year storm event. There is a series of grated inlet structures (equivalent to two MAG 535 structures) that capture runoff along the western side of the canal and convey runoff into an underground 54 inch storm drain pipe that changes into a 72 inch pipe which outfalls into the storm drain system in Camelback Road. These area drains and the underground storm drain system traverse the eastern boundary of the Safari Drive site. There is also a large grate inlet structure, northeast of Camelback Road and Scottsdale Road intersection, along the western side of the Canal between the two commercial developments south of the safari site that captures runoff that ponds west of the Arizona Canal.

Scottsdale Road is an improved street with curb and gutter that drains in a southerly direction, adjacent to the site, towards Camelback Road. The majority of the runoff along Scottsdale Road is conveyed within the street section of the road and a smaller portion is conveyed into the existing storm drain system, along Scottsdale Road, that outfalls into the main storm drain in Camelback Road.

It is estimated that there is approximately 3,638 cfs that would reach the intersection of Camelback and Scottsdale Road (based on CVL report, Reference 8). The majority of the runoff will weir over the Arizona Canal bank into the canal itself, whish is supposed to convey the runoff. Some of the runoff may spill over Camelback Road in a southerly direction as well.

The current published FEMA Flood Insurance Rate Map (FIRM) for this area is map number 04013C1695H (Effective date is September 30, 2005). Portions of the site were located within zones A and X. Zone A is defined as the flood insurance rate zone that corresponds to the 100-year floodplains that are determined in the Flood Insurance Study by approximate methods. Because detailed hydraulic analyses are not performed for such areas, no Base Flood Elevations or depths are shown within this zone. Zone X is defined as "areas of 500-year flood; areas of 100-year flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from the 100-year flood." A copy of the FIRM panel is provided in Appendix B.

A CLOMR has been filed for Safari Drive project by different firm than DEA, before DEA was contracted to finish the design improvement documents for the project. A copy of the Conditional Letter of Map Revision (CLOMR) Response from FEMA is included in Appendix E of this drainage report. The CLOMR was based on fill and that the proposed finish floor elevations are higher than Arizona Canal bank. The proposed structures should be free from inundation during a 100-yeat storm event. A Letter of Map Revision (LOMR) will be submitted after the project is build and all the design documents have been approved.

3.0 PROPOSED DRAINAGE CONCEPT

The proposed drainage concept is presented in three parts: onsite drainage, off-site drainage, and storage requirements. The hydrologic analysis is summarized in section 4.0 and the hydraulic analysis is summarized in section 5.0. See Exhibit A, located in the back pocket, for an illustration of the proposed drainage concept.

3.1 On-site Drainage Conveyance

The Safari Drive site runoff is mostly generated on the roof, the hardscape and landscape areas surrounding the buildings and the courtyard areas. The runoff generated on the roof is conveyed into roof drains that direct the runoff onsite storm drain system or directly into the 54 inch pipe west of the Arizona Canal. Refer to Exhibit A for a graphical illustration of the proposed onsite drainage.

3.2 Off-site Drainage Conveyance

DEA designers have conducted field visits, reviewed aerial maps and available topography to determine the hydraulic/hydrological conditions of the contributing watershed north of the Safari Drive project site. Runoff that may impact the site could enter the site from the northeastern portion of the site, with runoff being conveyed in a southwesterly direction along the west bank of the Arizona Canal. The second area of offsite runoff that could potentially impact the site is runoff flowing south along Scottsdale Road. In addition to that, runoff concentrating at the intersection of Camelback Road and Scottsdale Road weirs over the Arizona Canal could back into the site if the weir high water elevation over the canal bank is higher than the proposed finished grade elevations onsite.

The first area of investigation was to quantify the offsite runoff along the northeastern portion of the site. Runoff that may impact the site is generated north of Chapparal Road. During field visits it was observed that an 8'x4' concrete box culvert exists underneath Chapparal Road, west of the Arizona Canal. Few feet upstream of the culvert, is a 20.5'x13' grate inlet structure. Runoff from the north captured by the grate inlet is conveyed in an easterly direction through an

approximately what seemed to be a 96" pipe underneath the Arizona Canal. Any runoff that by pass the grate inlet structure (which is not likely) will flow through the 8'x4' culvert, underneath Chaparral Road, in a southerly direction. However, field observations have shown that there are sidewalks extending from hotel buildings, west of the Arizona Canal and south of Chapparal Road, to the Arizona Canal bank. These sidewalks create berms/dam situation along the west side of the canal with 2 -18 inch bleed off pipes underneath these sidewalks. This occurs in 3 different locations upstream of the site.

Each of the 18 inch pipes is estimated to convey a flow amount that is less than what the full 8'x4' concrete box culvert can convey. The runoff that ponds upstream of the sidewalks in excess of the 18 inch pipe conveyance capacity would weir into the Arizona Canal (to the west) and over the sidewalk in a southerly direction. The sidewalks and the canal banks seemed to have the same elevations and it is assumed that 50 percent split will occur at each of the sidewalk locations.

Hydraulic analysis has been conducted for the 8'x4' culvert at Chaparral Road in order to determine the maximum capacity of the culvert and it was found to be 277 cfs. The 277 cfs representing the maximum capacity of the culvert is used at the downstream three sidewalk locations to determine the split flows in each direction. The result was that 200 cfs will spill into the Arizona Canal and the remaining 77 cfs will continue in the southerly towards the Safari Drive project. Refer to Appendix D for detailed split flow analysis data sheets.

In addition to the flow calculated above, the existing 54-inch/72 inch storm drain system east of the site will receive runoff from the development north of site. The majority of the runoff generated in the subdivision and the commercial development upstream of the site is bounded by Chapparal Road to the north, Scottsdale Road to the west, the Arizona Canal to the east and the Safari Drive project northern boundary to the south. The runoff outfalls to the channel northeast of the corner of the Safari project site. The Rational method was used to determine the flow and 140 cfs was estimated to be the peak flow that combines with the 77 cfs mentioned above. Thus, the total flow that enters at the northeastern portion of the site is 217 cfs (within the concrete channel, west of the Arizona Canal).

A FlowMaster (Reference 7) was used to determine the high water elevation, using the 217 cfs. An earthen channel, west of the canal and above the 54 inch pipe, was modeled to check the high water elevation in the channel using the 217 cfs. The modeling did not take into account the 54 inch pipe and the high water elevation at the upstream portion of the site was found to be 77.2 which is 3.7 feet lower than the proposed finish floor elevations onsite.

Several drainage reports have quantified the runoff flowing south along Scottsdale Road. Based on the Final Drainage Report prepared by CVL (Reference #8), the flow along

Scottsdale Road is in the vicinity of the project 378 cfs. This flow is approximately consistent with flow quantified DMJM (Reference 9). FlowMaster program was used to determine if the street flow depth can be contained in the street without spilling into the Safari Drive project. The calculations have shown that ponding above the gutter elevation of 1.2 feet. Hence, the entrances and future frontage along Scottsdale Road are and will be elevated to 1.2 feet from the gutter elevation, thus creating a berm minimizing the possibility of the street runoff from entering the site.

The contributing drainage areas to Scottsdale Road extend all the way to the mountains west of Invergordon Road. The majority of the runoff from the mountains will flow in a southeasterly direction towards Scottsdale Road and Camelback Road. Gold Water Boulevard acts as a ridge line because of its elevated topography in some locations, deep dip locations in others and the existing development as well. Any runoff from the mountains that reaches Camelback Road from the north will flow in an easterly direction along Camelback Road, while breaching south into the north-south streets such as 66th Street, 68th Street, Goldwater Boulevard and Scottsdale Road. The CVL report, mentioned earlier, has quantified that approximately 3,638 cfs will reach Scottsdale Road and Camelback Road intersection, where it will then spill into Arizona Canal. From several conversations with different agencies, it is believed that the Arizona Canal is maintained in such a way that it is capable of conveying the additional 3,638 cfs without breaching in a southeasterly direction. Although, the 3,638 cfs seems overly conservative and is questionable because of the hydraulic conditions of Camelback Road (mentioned above), DEA modeled the weir along the Arizona Canal based on that flow. The high water ponding elevation along the Arizona Canal bank canal was determined to be 1280.30, which is 0.65 feet below the lowest proposed finish floor elevation of 1280.95. This indicates that the proposed buildings will not be flooded during the 100-year design storm event.

As mentioned earlier, the Arizona Canal causes ponding along the west side of its bank. An older drainage report that was produced by the Corps of engineers has accounted for inlets west of the canal to reduce or bleedoff the amount ponding that was occurring west of the Arizona Canal. Hence, the Safari project provided a passage for the runoff from Scottsdale Road (approximately 70 cfs) into the inlets along the west side of the canal or the existing 54 inch, west of the canal. This is partially accomplished by adding two 20 foot catch basins on both side of Coolidge Street, east of Scottsdale Road. The two catch basins convey captured runoff into a 48 inch diameter pipe flowing in the easterly direction towards the Arizona Canal that connects into the 54 inch storm drain pipe. The remainder of the flow along Scottsdale Road will continue along its historic path towards Camelback Road and ponds along the west side of the Arizona Canal and enters the inlets that were designed by the Army Corps of engineers or the revised inlets with equal or greater capacity.

3.3 Storage Requirements

Historically, the proposed Safari site used to be a commercial resort with many buildings and associated parking, landscape and hardscape areas. The resort was known as the Safari Hotel and Resort and it did not seem to have onsite retention.

The proposed Safari project has retention waiver that is included in Appendix E. Portions of the site drain through roof drains directly into the existing 54 inch west of the Arizona Canal (which will be replaced with a proposed 8x6 concrete culvert). Also, portions of the site that are surrounding the onsite buildings, along the eastern portion of the site, sheet flow into the landscape area, west of the Arizona Canal. Portions of the site that drain into catch basins onsite will be retained in underground conveyance pipes located at the northeastern portion of the site and along Coolidge Street.

City of Scottsdale requires that runoff generated during a 100-year, 2-hour storm event within the project site to be stored onsite. The required storage volume for the project site is estimated as follows:

$$V_R = C_{wt} * (P / 12) * A$$

Where: V_R = Calculated volume in acre-ft or ft^3
C_{wt} = Weighted Runoff coefficient
P = Rainfall depth in inches (2.82 inches)
A = Drainage area in acres

The proposed site plan allocates some open space for storage. Basins have maximum 4 to 1 side slopes. The volume required is calculated based on a weighted "C" coefficient and 2.82 inches of rainfall. See Exhibit A in back pocket of this report for proposed storage layout.

Summary of Storage Requirements
Table 3.2

Basin Label	Estimated Volume Required ft^3	Estimated Volume Provided ft^3	Excess/Shortage ft^3
Basin 1	1,533	802	-731, overflow to Storage Pipe
Basin 2	456	554	98,
Pipe Storage	32,190	32,229	39

The underground CMP storage pipes will bleedoff in 36 hrs through conveyance pipes into the drainage system west of the Arizona Canal.

Refer to Appendix D that shows detailed volume calculations for the site fill placement. Based on these calculations, the proposed improvements for the site (including the offsite box culvert) have excess capacity of approximately 18 thousand cubic feet. Hence, the site development has provided more than the compensatory volume for the fill that has been placed onsite to keep the finish floors from flooding during a 100-year storm event.

4.0 HYDROLOGIC ANALYSIS

The hydrologic analysis for this report has been prepared using City of Scottsdale's *Supplement to MAG Uniform Standard Specifications for Public Works Construction* and the *Drainage Design Manuals for Maricopa County, Arizona, Volume I Hydrology*. Peak flows were computed using the Rational Method. The project site was divided into several drainage areas, to determine peak flows at catch basins and inlet structures. These drainage areas are illustrated in Exhibit A, along with the location of their respective concentration points.

The following establishes the Rational Method equation and the basic input data required:

$$Q = C_{wt} * I * A$$

Where: Q = Peak discharge in cubic feet per second
C_{wt} = Weighted runoff coefficient
I = Rainfall intensity in inches per hour
A = Drainage area in acres

A summary for the peak flows for the 10-year (Q_{10}) and 100-year (Q_{100}) storm events for the developed onsite drainage conditions are shown on the next page in Table 4.1. Appendix D contains detailed calculation sheets that establish the input data and estimated peak flow values for the developed conditions.

Summary of Peak Flows
Table 4.1

Area Label	Q_{100} (cfs)	Q_{100} (cfs)
1	0	0
2	0	1
3	0	1
4	0	0
5	1	3
6.1	1	2
6	1	1
7	0	0
8	0	0
9	0	0
10	0	0
11	1	1
12.1	0	1
12	1	2
13	1	1
14	3	6
15	1	2
16	0	0
17	0	1
18	0	0
19	0	1
20	1	1
21	1	1
22	0	1
23	0	1
24	0	1
25	0	1
26	0	1
27	1	1
28	0	1
29	0	1
30	1	1
31	1	2
32	0	1
33	1	1

- "0" value stands for Peak flow of less than 0.5 cfs.

5.0 HYDRAULIC ANALYSIS

The hydraulic analyses of the proposed storm water management facilities are based on the City of Scottsdale's *Supplement to MAG Uniform Standard Specifications for Public Works Construction* and the *Drainage Design Manuals for Maricopa County, Arizona, Volume II Hydraulics*.

StormCAD (Reference #6), a Haestad computer program, has been utilized to analyze the curb inlets and the drainage pipes. The hydraulic grade line was kept below the ponding depth that is caused by the inlet capacities at different locations onsite. Refer to Appendix D for detailed input and output data sheets.

FlowMaster (Reference #7), a Haestad computer program, has been utilized to analyze the hydraulic capacity for the adjacent street section and channels to determine the 100-year high water surface elevations based on the determined offsite runoff. FlowMaster analysis is based on Manning's equation. Refer to Appendix D for detailed input and output data sheets.

Scottsdale Road has a half street capacity adjacent to the site of approximately 160 cfs. The remainder of the 189 cfs (half the 378 cfs mentioned previously) will weir into the Safari Drive site. To compensate for not allowing the 29 cfs from entering the site, two catch basins are proposed along Coolidge Road that captures approximately 70 cfs from the street flow in Scottsdale Road.

The 8'x6' culvert was designed for runoff generated during a 100-year storm event using the Rational method. The tailwater condition was used as the weir elevation during the 100-year 24 hour storm event. For a lesser storm, the worst case scenario was used by assuming that the tailwater is at the ground elevation. However, the storm drain can be assumed to be designed for the 25-24 hour storm event because it is the capacity of the downstream receiving system (although the culvert has excess hydraulic capacity)..

The existing inlets capacity along the western portion of the Arizona Canal will be replaced with new inlets. The new inlets have capacity equal or greater than the existing inlet capacity. Refer to Appendix D for hydraulic calculations of the proposed inlets.

6.0 CONCLUSIONS

Based on the results of this study, it can be concluded that:

- The site is developed according to the City of Scottsdale Design Standards and Policies Manual.
- The proposed buildings will should be free from inundation during a 100-year storm event.
- Although the site retains the majority of the runoff generated onsite, the site has a retention waiver and portion of the site will direct discharge into the conveyance system along the western side of the Arizona Canal.
- The ultimate outfall is located at the southeast corner of the project site maintaining the historic outfall condition.

7.0 REFERENCES

1. City of Scottsdale Design Standards and Policies Manual, December 1999
2. City of Scottsdale *Supplement to MAG Uniform Standard Specifications for Public Works Construction, October 2003.*
3. *Drainage Design Manuals for Maricopa County, Arizona, Volume I, Hydrology*, April 2002.
4. *Drainage Design Manuals for Maricopa County, Arizona, Volume II, Hydraulics*, April 2002.
5. City of Scottsdale Stormwater Master Plan and Management Program, KVL, 1994.
6. StormCAD Version 5.06.007, Haestad Methods, Inc. 2005.
7. FlowMaster Version 7.0005, Haestad Methods, Inc. 2005.
8. *Drainage Report Scottsdale Riverwalk Center Hotel* prepared by CVL dated April 9, 1999. Revised March 28, 2001.
9. *Master Drainage Report Scottsdale Portales* prepared by DMJM dated April 13, 1999.
10. Drainage Report For Safari Drive prepared by Pentacor dated 2-7-06.
11. CulvertMaster a Bently program V3.1, dated 2006.

Appendix D

404 Certificate

Section 404 Certification

Before the City issues development permits for a project, the developer's Engineer or the property owner must certify that it complies with, or is exempt from, Section 404 of the Clean Water Act of the United States. Section 404, administered by the U.S. Army Corps of Engineers (COE), regulates the discharge of dredged or fill material into a wetland, lake, (including dry lakes), river, stream (including intermittent streams, ephemeral washes, and arroyos), or other waters of the United States.

Prior to submittal of Improvement plans to Project Review the form below must be completed (and submitted with the improvement plans) as evidence of compliance

Owner's Name: VANGUARD City Homes Phone No. 480-993-0472

Project Name/Description: SAFARI DRIVE Case No. 45 DR 2005

Project Location/Address: NW OF INTERSECTIONS OF CAMELBACK ROAD & SCOTTSDALE ROAD

A registered Engineer or the property Owner must check the applicable condition and certify by signing below that:

1. **Section 404 <u>does</u> apply to the project because there will be a discharge of dredged or fill material to waters of the U.S., and:**

   ☐ A Section 404 Permit has already been obtained for this project.

   -or-

   ☐ This project qualifies for a "Nationwide Permit," and this project will meet all terms and conditions of the applicable nationwide permit.

2. **Section 404 <u>does not</u> apply to the project because:**

   ☑ No watercourses or other waters of the U.S. exist on the property.

   ☐ No jurisdictional waters of the U.S. exist on the property. Attached is a copy of the COE's Jurisdictional Determination.

   ☐ Watercourses or other waters of the U.S. do exist on the property, but the project will not involve the discharge of dredged or fill material into any of these waters.

I certify that the above statement is true.

Engineer's Signature and Seal, or Owner's Signature — Date: 5-09-05

Project Manager

Title Company

DRAINAGE REPORT
SCOTTSDALE RIVERWALK
CENTRE HOTEL
SCOTTSDALE, ARIZONA

April 9, 1999
1st Revision: March 28, 2001

Coe & Van Loo Consultants, Inc.
4550 North 12th Street
Phoenix, Arizona 85014

CVL Project No. 98-0121-01

DRAINAGE REPORT
SCOTTSDALE RIVERWALK
CENTRE HOTEL
SCOTTSDALE, ARIZONA

April 9, 1999
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DRAINAGE REPORT
SCOTTSDALE RIVERWALK
CENTRE HOTEL
SCOTTSDALE, ARIZONA

April 9, 1999
1st Revision: March 28, 2001

Prepared for:

Ganos Associates Architects
1940 E. Camelback Road, Suite #202
Phoenix, AZ 85016

Prepared by:

Coe & Van Loo Consultants, Inc.
4550 North 12th Street
Phoenix, AZ 85014
(602) 264-6831

CVL Project No. 98-0121-01

Drainage Report
for
Scottsdale Riverwalk Centre Hotel
Scottsdale, Arizona

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FIGURES

APPENDICES

PLATE

3.0 MANAGEMENT OF OFF-SITE STORMWATER RUNOFF

The general direction of drainage flow in the area of this site is from northwest to southeast, with an outfall to the Indian Bend Wash. The *City of Scottsdale Storm Water Master Plan and Management Program* (Reference 1), identifies drainage area boundaries and estimated runoff rates throughout the developed areas of Scottsdale. This report was used as a basis for estimation of off-site discharges within the vicinity of the site.

Drainage north of Chaparral Road collects behind the Arizona Canal embankment and is intercepted by a large grate structure which outlets to a storm drainage system within Chaparral Road. According to the Storm Water Master Plan, Chaparral Road represents a northern boundary for drainage that approaches the site. It was considered that this assumption was correct in developing the off-site discharges that approach this site.

A fully-developed area north of Highland Avenue and east of Scottsdale Road drains toward the Arizona Canal, and from there southwest within a drainage channel along the Arizona Canal. An existing office building and a two-level parking structure lie immediately north of the site. This office-building site provides some on-site retention within landscaped areas and on the parking surfaces. Drainage of retention areas is through the use of drywells. If the capacity of the site's retention is exceeded, drainage would be directed to the east with an outfall to the drainage channel that parallels the Arizona Canal. Off-site drainage from the north will not enter the Scottsdale Riverwalk Centre.

Runoff from the areas north of the property and west of Scottsdale Road flows south within Scottsdale Road, either within the street cross-section, or within an existing 42-inch storm drain system. These areas are currently under construction and it is anticipated that with future drainage improvements in place, the runoff reaching Scottsdale Road will be reduced. This storm drain interconnects with a 144-inch storm drain pipe structure which outfalls to the Indian Bend Wash along Camelback Road. According to the Storm Water Master Plans, under existing conditions during a 100-year, 6-hour storm event, approximately 3,638 cfs approaches the intersection of Scottsdale Road and Camelback Road. The box culvert outfall has capacity for approximately 1,000 cfs. Planned future drainage improvements include an additional storm drainage outfall along Camelback Road.

1200 says the report for

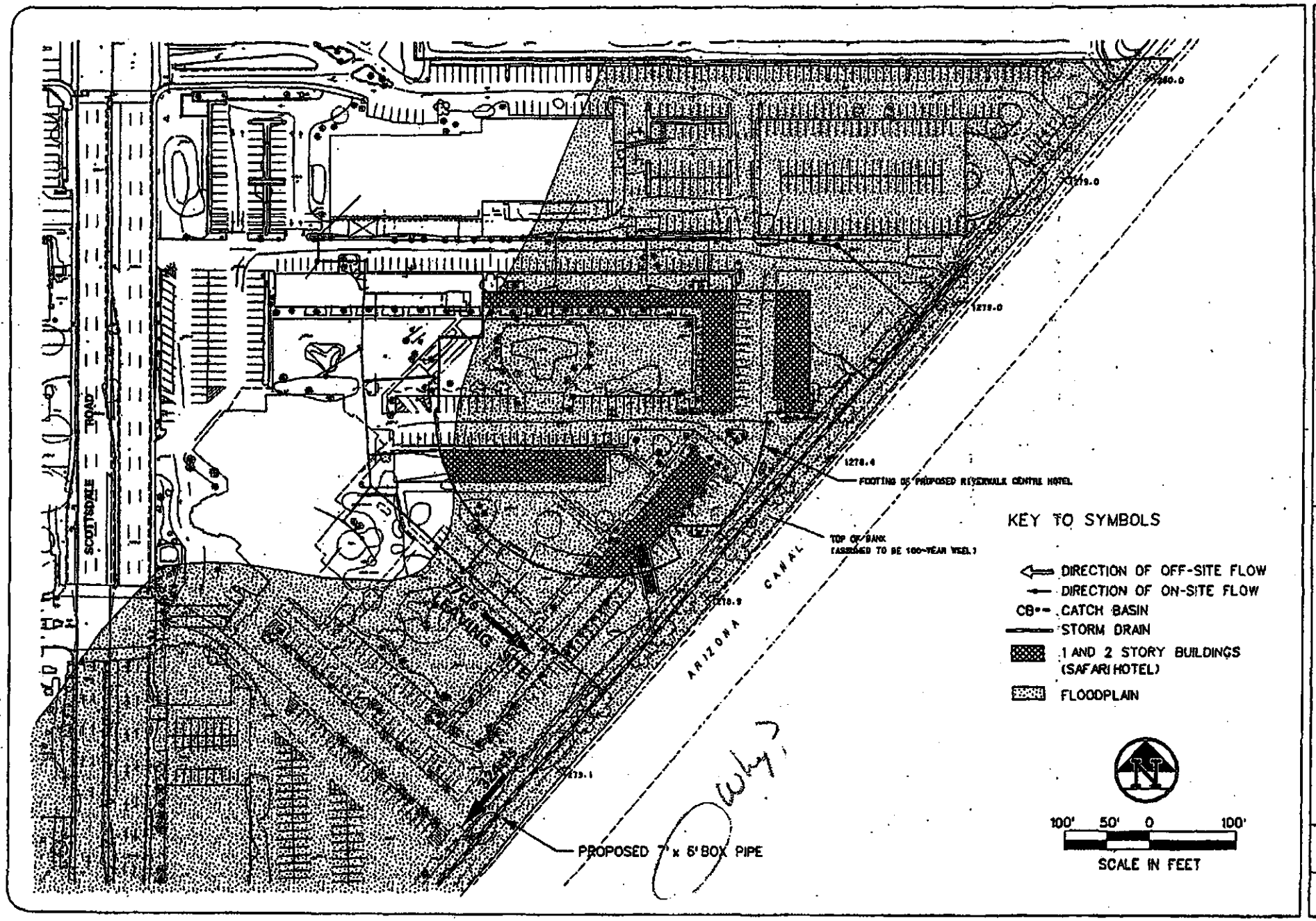
SCOTTSDALE RIVERWALK CENTRE HOTEL

DRAINAGE MAP

4550 NORTH 12TH STREET
PHOENIX, ARIZONA 85014

JOB NO.
980121-03

PLATE 1



SCOTTSDALE RIVERWALK CENTRE

DRAINAGE MAP

JOB
980121

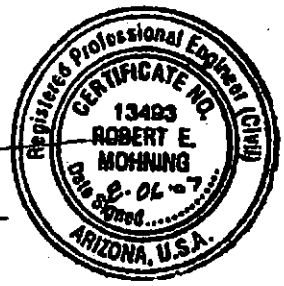
FIGUR

SCOTTSDALE FASHION SQUARE
PHASE 10

PRELIMINARY GRADING AND DRAINAGE REPORT

PREPARED FOR:

WESTCOR
1411 North Tatum Boulevard
Phoenix, Arizona 85028
(602) 953-6379



Robert E. Mohning, P.E., R.L.S.

August 7, 2007

RICK ENGINEERING COMPANY
6150 North 16TH Street
Phoenix, Arizona 85016-1705

JOB NUMBER 3750

TABLE OF CONTENTS

1.0 INTRODUCTION

Scottsdale Fashion Square is located at the northwest corner of Scottsdale Road and Camelback Road. This preliminary drainage report addresses drainage for redevelopment of the easterly portion of Scottsdale Fashion Square bounded on the east by Scottsdale Road, on the south by Camelback Road, on the west by Goldwater Boulevard, and on the north by Highland Avenue, see vicinity map Appendix A

The total net area of this area within the four street rights of way is 35.33 acres. The purpose of this report is to discuss the existing and proposed onsite and offsite drainage for the redevelopment. The redevelopment will remove the former Robinson's-May store and adjoining parking structure, and add two new anchors, new retail and restaurant spaces, and underground parking.

2.0 EXISTING DRAINAGE CONDITIONS AND CHARACTERISTICS

The Scottsdale Fashion Square site is fully developed with the retail mall, restaurants, a Days Inn Motel, office, and parking structures, see aerial photograph, Map Pocket 1.

Onsite drainage flows are generally from northwest to southeast. Onsite flows are intercepted by onsite catch basins or perimeter catch basins and are discharged into an existing 84 inch storm drain in Camelback Road and an existing 42 inch storm drain in Scottsdale Road. These two storm drain pipes connect to a 144 inch storm drain which drains east to the Indian Bend Wash.

All but a small portion of the site lies within Flood Zone "X" (textured) according to map number 04013C1695H of the FEMA Flood Information Map, dated September 30, 2005. A small area at the southeast corner of the site is within Flood Zone "A" because of the ponding of offsite flows against The Arizona Canal. An office building is located in this area and its finish floor is above the depth of the ponding.

Offsite drainage is from northwest to southeast toward the Arizona Canal. The site is higher than the elevation of the ponding at The Arizona Canal as described above.

3.0 PROPOSED DRAINAGE PLAN

The drainage patterns of the redevelopment will be consistent with the existing drainage. No retention will be provided per the approved Master Drainage Plan for Scottsdale Fashion Square, Appendix C, and the site's location within the City of Scottsdale Downtown Infrastructure Master Plan Volume 3 Drainage Study. This study was prepared in December 1986 by Boyle Engineering Corporation and concludes that no detention/retention be provided for the downtown study area. The proposed redevelopment will not alter the amount of impervious area nor the volume or direction of storm water flows. See Preliminary Grading and Drainage Plan in Map Pocket 2.

4.0 SPECIAL CONDITIONS

There are no special site conditions or need for a 404 permit. A Storm Water Pollution Prevention Plan will be prepared

MASTER DRAINAGE PLAN
FOR
SCOTTSDALE FASHION SQUARE

C.W.W. No. 831114-21

Prepared for:
THE WESTCOR COMPANY II, LIMITED PARTNERSHIP
11411 North Tatum Boulevard
Phoenix, Arizona 85028

Prepared by:
COLLAR, WILLIAMS & WHITE ENGINEERING
2702 North 44th Street, Suite 205-B
Phoenix, Arizona 85008

April, 1986
Approved by City of Scottsdale, August 18, 1986
Revised May 10, 1988

COLLAR, WILLIAMS & WHITE ENGINEERING

Drainage System

Scottsdale Fashion Square is an existing 35.0 acre shopping center located at the northwest corner of Camelback Road and Scottsdale Road in the City of Scottsdale, Arizona.

New development will occur on this site in multiple phases. These phases will include the demolition of some existing buildings, renovations to existing buildings, new office and commercial building construction, construction of new underground and elevated parking levels, and construction of a new "retail bridge" to connect Scottsdale Fashion Square to Camelview Plaza to the west. In addition, the proposed "West Couplet Roadway" alignment will be along the westerly boundary of the project.

Existing on-site surface drainage flows are, in general, from the northwest towards the south and east. All existing drainage flows are intercepted by existing on-site catch basins and discharged into an existing 84 inch diameter storm drain in Camelback Road and an existing 42 inch diameter storm drain in Scottsdale Road. These two storm drains connect at the intersection of Camelback and Scottsdale Roads and empty into an existing 144 inch diameter storm drain which conveys the water under the Arizona Canal and to the East towards Indian Bend Wash.

Existing building roof drainage is presently routed via vertical roof drain leader lines to either existing on-site underground storm drainage systems or is discharged at existing grade and directed through existing curbing to the adjacent asphalt paved surfaces, where it sheet flows to existing storm drain inlets bordering the site.

As a part of the remodeling/renovating of existing buildings, additional floors will be added to the buildings. As additional floors are constructed, the existing vertical roof drain leader lines will be extended to the new roof levels. Future roof drainage from all new and renovated buildings will be connected

to on-site underground storm drainage systems, and all ongrade discharges will be eliminated.

There are no existing on-site storm water retention/detention facilities presently provided, and the new site development and modifications will not necessitate new on-site storm water retention/detention facilities (See attached letter from the City of Scottsdale dated December 8, 1987). Since the site is essentially impervious at this time, and will remain so after the redevelopment, no additional drainage flows will be generated.

A field survey made by Collar, Williams & White Engineering, of the top of the existing west bank of the Arizona Canal, indicates the elevations along the top of the existing west bank presently vary from 1378.0 feet to 1375.4 feet between the canal crossing at Highland Avenue and 500 feet south of the intersection of Scottsdale and Camelback Roads. With one foot of freeboard required above the maximum top of existing canal bank elevations, all new first floor building elevations have been established at no less than 1379.0. All existing building elevations are above this elevation. Both Camelback Road and Scottsdale Road are lower than elevation 1379.0.

New site development and modifications have incorporated adequate design measures to assure that no overflow of the Arizona Canal from a 100 year flood event will inundate any existing or proposed on-site building.

In addition, the new development has made adequate provisions to prevent any storm water from a 100 year event, which would flood the intersection of Camelback Raod and Scottsdale Road from entering any underground basement or lower parking level.

This assurance has been achieved by denying direct driveway access from Scottsdale Road or Camelback Road to the new underground parking levels, and by construction of walls around the office building at the southeast corner of the site to prevent flooding of the basement area.

APPENDIX G
CLOMR-F

CLOMR-F

SCOTTSDALE BLUESKY

NOVEMBER 2011
DEA PROJECT NO. GRYD00001

CLOMR-F APPLICATION
FOR
SCOTTSDALE BLUESKY

PREPARED FOR

GRAY DEVELOPMENT
1400 E. CAMELBACK ROAD, SUITE 275
PHOENIX, AZ 85018

PREPARED BY

Paul Pal, P.E
Ramzi Georges, P.E, CFM
DAVID EVANS AND ASSOCIATES, INC.
4600 E WASHINGTON STREET, SUITE 430
PHOENIX, AZ 85034
(602) 678-5151

November 2011
DEA PROJECT NO. GRYD00001

TABLE OF CONTENTS

LIST OF EXHIBITS

LIST OF APPENDICS

1.0 INTRODUCTION

This Conditional Letter of Map Revision based on Fill (CLOMR-F) has been prepared under a contract with Gray Development, LLC, owner and developer of the Blue Sky Scottsdale project.

The Blue Sky Scottsdale project is comprised of 3± acres within Section 23, Township 2 North, Range 4 East of the Gila and Salt River Base and Meridian. The current improvements include fill material to remove the site from the flood plain. The future Blue Sky Scottsdale project will be a mixed use development consist of 749 multi-family residential apartments with 91,000SF of commercial space, the commercial space will consists of 30,000SF grocery store, 15,000SF Restaurant, 13,000SF Retail, 28,000SF Club/fitness house, and 5,000SF office. There will be 4-levels of below grade parking that will provide approximately 1,511 parking spaces.

The area surrounding the site varies in use. The site is bounded by Coolidge Street to the North, Safari Drive condominium to the northeast, Arizona Canal to the east, Renaissance Center (commercial development) to the south and Scottsdale Road to the West. See Exhibit 1 Vicinity Map, in Appendix A. Access to the site will be provided via two entrances from Scottsdale Road along 72nd Place and Coolidge Street.

Site grading is designed to elevate the site above the base flood elevation, during the local 100-year storm event. This will allow for the site to be removed from the flood plain.

2.0 FIRM PANEL

Based on the effective FEMA Flood Insurance Rate Map at the time of design (FIRM Map Number 04013C1695H, Map Revised September 30, 2005, see Appendix D, Exhibits 2 and 3), the site is located in flood hazard Zone "A" and Zone "X". Zone A is defined as the flood insurance rate zone that corresponds to the 100-year floodplains that are determined in the Flood Insurance Study by approximate methods. Because detailed hydraulic analyses are not performed for such areas, no Base Flood Elevations or depths are shown within this zone. Zone X is defined as "areas of 500-year flood; areas of 100-year flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from the 100-year flood."

3.0 FEMA FORMS

The following documentation is enclosed as part of the CLOMR-F application:

a) **FEMA Payment** – FEMA Form 81-107 provides documentation of payment from Gray Development (see Appendix A). A check in the amount of $800 is made out to the National Flood Insurance Program (NFIP) and enclosed for the Scottsdale BlueSky CLOMR-F application.

b) **FEMA CLOMR-F Application** – The FEMA MT-1 application is comprised of three forms (see Appendix B). The three forms include:

i) Property Information Form (MT-1 Form 1)
- Documents the type of application and specific property information.

ii) Elevation Form (MT-1 Form 2)
- Lists pad and top of curb elevations for lots of concern.

iii) Community Acknowledgment Form (MT-1 Form 3)
- Provides documentation of local community consent.

4.0 EXHIBITS

1. **Vicinity Map** – This exhibit shows the site and area surrounding this project.
2. **FIRM Panel** – FEMA Flood Insurance Rate Map encompassing the project site.
3. **Firmette** – Focused exhibit addressing the locale of interest. The Firmette is a portion of the above mentioned FIRM panel and indicates the BlueSky project boundaries.
4. **FEMA TB10-01** – FEMA guidelines for ensuring that structures on fill in or near special flood hazard areas are reasonably safe from flooding (provided for reference).

5.0 PRELIMINARY DRAINAGE REPORT

The purpose of the preliminary drainage report is to provide hydraulic analysis, in support of the improvement plans raising the site above the floodplain as required by the City of Scottsdale. It is enclosed here in support of the CLOMR-F application and has been prepared in accordance with procedures detailed in the City of Scottsdale Design Standards and Policies Manual along with the City of Scottsdale Supplement to MAG Uniform Standard Specifications For Public Works Construction and Drainage Design Manuals for Maricopa County, Arizona, Volumes II See the Preliminary Drainage Report Table of Contents for a detailed list of contents and listed references.

APPENDIX A: FEMA FORM 81-107

FEDERAL EMERGENCY MANAGEMENT AGENCY

PAYMENT INFORMATION FORM

Community Name: City of Scottsdale, Arizona

Project Identifier: BlueSky Scottsdale

THIS FORM MUST BE MAILED, ALONG WITH THE APPROPRIATE FEE, TO THE ADDRESS BELOW OR FAXED TO THE FAX NUMBER BELOW.

Type of Request:

☒ MT-1 application
☐ MT-2 application

LOMC Clearinghouse
7390 Coca Cola Drive
Suite 204
Hanover, MD 21076
Attn.: LOMA Manager

☐ EDR application

FEMA Project Library
847 South Pickett St.
Alexandria, VA 22304
FAX (703) 212-4090

Request No.: _____ (if known)

Amount: _____

☐ INITIAL FEE* ☐ FINAL FEE ☐ FEE BALANCE** ☐ MASTER CARD ☐ VISA ☒ CHECK ☐ MONEY ORDER

*Note: Check only for EDR and/or Alluvial Fan requests (as appropriate).

**Note: Check only if submitting a corrected fee for an ongoing request.

COMPLETE THIS SECTION *ONLY* IF PAYING BY CREDIT CARD

CARD NUMBER

				–					–					–				
1	2	3	4		5	6	7	8		9	10	11	12		13	14	15	16

EXP. DATE

		–	
Month			Year

_____ _____

Date Signature

NAME *(AS IT APPEARS ON CARD)*: _____
(please print or type)

ADDRESS: _____
(for your credit card receipt-please print or type) _____

DAYTIME PHONE: _____

APPENDIX B: FEMA FORM MT-1

DEPARTMENT OF HOMELAND SECURITY - FEDERAL EMERGENCY MANAGEMENT AGENCY

ELEVATION FORM

O.M.B. NO. 1660-0015
Expires February 28, 2014

PAPERWORK BURDEN DISCLOSURE NOTICE

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This form must be completed for requests and must be completed and signed by a registered professional engineer or licensed land surveyor. **A DHS - FEMA National Flood Insurance Program (NFIP) Elevation Certificate may be submitted in lieu of this form for single structure requests.**

For requests to remove a structure on natural grade OR on engineered fill from the Special Flood Hazard Area (SFHA), submit the lowest adjacent grade (the lowest ground touching the structure), ***including an attached deck or garage***. For requests to remove an entire parcel of land from the SFHA, provide the lowest lot elevation; or, if the request involves an area described by metes and bounds, provide the lowest elevation within the metes and bounds description. All measurements are to be rounded to nearest tenth of a foot. In order to process your request, all information on this form must be completed ***in its entirety***. **Incomplete submissions will result in processing delays.**

1. NFIP Community Number: 045012 Property Name or Address: 4601 N SCOTTSDALE RD, SCOTTSDALE, AZ- 85251

2. Are the elevations listed below based on ☐ ***existing*** or ☒ ***proposed*** conditions? (Check one)

3. For the existing or proposed structures listed below, what are the types of construction? (check all that apply)
   ☐ crawl space ☐ slab on grade ☐ basement/enclosure ☐ other (explain)

4. Has DHS - FEMA identified this area as subject to land subsidence or uplift? (see instructions) ☐ Yes ☒ No
   If yes, what is the date of the current re-leveling? / (month/year)

5. What is the elevation datum? ☐ NGVD 29 ☒ NAVD 88 ☐ Other (explain)
   If any of the elevations listed below were computed using a datum different than the datum used for the effective Flood Insurance Rate Map (FIRM) (e.g., NGVD 29 or NAVD 88), what was the conversion factor?

   Local Elevation +/- ft. = FIRM Datum

6. Please provide the Latitude and Longitude of the most upstream edge of the ***structure*** (in decimal degrees to the nearest fifth decimal place):
   Indicate Datum: ☒ WGS84 ☐ NAD83 ☐ NAD27 Lat. 33 . 504996 Long. 111 . 925655
   Please provide the Latitude and Longitude of the most upstream edge of the ***property*** (in decimal degrees to the nearest fifth decimal place):
   Indicate Datum: ☒ WGS84 ☐ NAD83 ☐ NAD27 Lat. 33 . 505384 Long. 111 . 925053

Address	Lot Number	Block Number	Lowest Lot Elevation*	Lowest Adjacent Grade To Structure	Base Flood Elevation	BFE Source
4601 N SCOTTSDALE RD, SCOTTSDALE	Commercial	n/a	72.35	n/a	79.50	Survey Information

This certification is to be signed and sealed by a licensed land surveyor, registered professional engineer, or architect authorized by law to certify elevation information. All documents submitted in support of this request are correct to the best of my knowledge. I understand that any false statement may be punishable by fine or imprisonment under Title 18 of the United States Code, Section 1001.

Certifier's Name: Ramzi Georges, P.E, CFM	License No.: 37287	Expiration Date: March 31, 2014
Company Name: David Evans & Associates	Telephone No.: 602-474-9223	
Email: ryg@deainc.com	Fax No.	
Signature:	Date:	

* For requests involving a portion of property, include the lowest ground elevation within the metes and bounds description.
Please note: If the Lowest Adjacent Grade to Structure is the only elevation provided, a determination will be issued for the structure only.

Seal (optional)

Continued from Page 1.

Address	Lot Number	Block Number	Lowest Lot Elevation*	Lowest Adjacent Grade To Structure	Base Flood Elevation	BFE Source

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Certifier's Name:	License No.:	Expiration Date:
Company Name:	Telephone No.:	
Email:	Fax No.	
Signature:	Date:	

Seal (optional)

* For requests involving a portion of property, include the lowest ground elevation within the metes and bounds description.
Please note: If the Lowest Adjacent Grade to Structure is the only elevation provided, a determination will be issued for the structure only.

DEPARTMENT OF HOMELAND SECURITY - FEDERAL EMERGENCY MANAGEMENT AGENCY

PROPERTY INFORMATION FORM

O.M.B. NO. 1660-0015
Expires February 28, 2014

PAPERWORK BURDEN DISCLOSURE NOTICE

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This form may be completed by the property owner, property owner's agent, licensed land surveyor, or registered professional engineer to support a request for a Letter of Map Amendment (LOMA), Conditional Letter of Map Amendment (CLOMA), Letter of Map Revision Based on Fill (LOMR-F), or Conditional Letter of Map Revision Based on Fill (CLOMR-F) for existing or proposed, single or multiple lots/structures. In order to process your request, all information on this form must be completed ***in its entirety***, unless stated as optional. **Incomplete submissions will result in processing delays.** Please check the item below that describes your request:

☐ LOMA	A letter from DHS-FEMA stating that an existing structure or parcel of land that has not been elevated by fill (natural grade) would not be inundated by the base flood.
☐ CLOMA	A letter from DHS-FEMA stating that a proposed structure that is not to be elevated by fill (natural grade) would not be inundated by the base flood if built as proposed.
☐ LOMR-F	A letter from DHS-FEMA stating that an **existing** structure or parcel of land that has been **elevated by fill** would not be inundated by the base flood.
☒ CLOMR-F	A letter from DHS-FEMA stating that a parcel of land or **proposed** structure that will be **elevated by fill** would not be inundated by the base flood if fill is placed on the parcel as proposed or the structure is built as proposed.

Fill is defined as material from any source (including the subject property) placed that raises the ground to or above the Base Flood Elevation (BFE). The common construction practice of removing unsuitable existing material (topsoil) and backfilling with select structural material is not considered the placement of fill if the practice does not alter the existing (natural grade) elevation, which is at or above the BFE. **Fill that is placed before the date of the first National Flood Insurance Program (NFIP) map showing the area in a Special Flood Hazard Area (SFHA) is considered natural grade.**

Has fill been placed on your property to raise ground that was previously below the BFE? ☐ Yes ☒ No If yes, when was fill placed? / month/year

Will fill be placed on your property to raise ground that is below the BFE? ☒ Yes* ☐ No If yes, when will fill be placed? 01/2012 month/year

* If yes, Endangered Species Act (ESA) compliance must be documented to FEMA prior to issuance of the CLOMR-F determination (please refer page 4 to the MT-1 instructions).

1. Street Address of the Property (if request is for multiple structures or units, please attach additional sheet referencing each address and enter street names below):
   4601 N SCOTTSDALE RD, SCOTTSDALE, AZ- 85251

2. Legal description of Property (Lot, Block, Subdivision or abbreviated description from the Deed):
   A PORTION OF TRACK 'A' OF PARADISE TRIANGLE AS RECORDED IN BOOK 46, PAGE 26, RECORDS OF MARICOPA COUNTY ARIZONA BEING A PORTION OF SECTION 23, TOWNSHIP 2 NORTH, RANGE 4 EAST OF THE GILA AND SALT RIVER

3. Are you requesting that a flood zone determination be completed for (check one):
   - ☐ Structures on the property? What are the dates of construction? 07/2012 (MM/YYYY)
   - ☐ A portion of land within the bounds of the property? (A certified metes and bounds description and map of the area to be removed, certified by a licensed land surveyor or registered professional engineer, are **required**. For the preferred format of metes and bounds descriptions, please refer to the MT-1 Form 1 Instructions.)
   - ☒ The entire legally recorded property?

4. Is this request for a (check one):
   - ☐ Single structure
   - ☒ Single lot
   - ☐ Multiple structures (How many structures are involved in your request? List the number: 3)
   - ☐ Multiple lots (How many lots are involved in your request? List the number:)

In addition to this form (MT-1 Form 1), please complete the checklist below. **ALL** requests must include one copy of the following:

- ☒ Copy of the effective FIRM panel on which the structure and/or property location has been accurately plotted (property inadvertently located in the NFIP regulatory floodway will require Section B of MT-1 Form 3)
- ☐ Copy of the Subdivision Plat Map for the property **(with recordation data and stamp of the Recorder's Office)**

OR

- ☒ Copy of the Property Deed **(with recordation data and stamp of the Recorder's Office)**, ***accompanied by*** a tax assessor's map or other certified map showing the surveyed location of the property relative to local streets and watercourses. The map should include at least one street intersection that is shown on the FIRM panel.
- ☒ Form 2 – Elevation Form. If the request is to remove the structure, and an Elevation Certificate has already been completed for this property, it may be submitted in lieu of Form 2. If the request is to remove the entire legally recorded property, or a portion thereof, the lowest lot elevation must be provided on Form 2.
- ☒ Please include a map scale and North arrow on all maps submitted.

For LOMR-Fs and CLOMR-Fs, the following must be submitted in addition to the items listed above:

- ☒ Form 3 – Community Acknowledgment Form

For CLOMR-Fs, the following must be submitted in addition to the items listed above:

- ☐ Documented ESA compliance, which may include a copy of an Incidental Take Permit, an Incidental Take Statement, a "not likely to adversely affect" determination from the National Marine Fisheries Service (NMFS) or the U.S. Fish and Wildlife Service (USFWS), or an official letter from NMFS or USFWS concurring that the project has "No Effect" on proposed or listed species or designated critical habitat. Please refer to the MT-1 instructions for additional information.

Please do *not* submit original documents. Please retain a copy of all submitted documents for your records.

DHS-FEMA encourages the submission of all required data in a digital format (e.g. scanned documents and images on Compact Disc [CD]). Digital submissions help to further DHS-FEMA's Digital Vision and also may facilitate the processing of your request.

Incomplete submissions will result in processing delays. For additional information regarding this form, including where to obtain the supporting documents listed above, please refer to the MT-1 Form Instructions located at http://www.fema.gov/plan/prevent/fhm/dl_mt-1.shtm.

DEPARTMENT OF HOMELAND SECURITY - FEDERAL EMERGENCY MANAGEMENT AGENCY

ELEVATION FORM

O.M.B. NO. 1660-0015
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   ☐ crawl space ☐ slab on grade ☐ basement/enclosure ☐ other (explain)

4. Has DHS - FEMA identified this area as subject to land subsidence or uplift? (see instructions) ☐ Yes ☒ No
   If yes, what is the date of the current re-leveling? / (month/year)

5. What is the elevation datum? ☐ NGVD 29 ☒ NAVD 88 ☐ Other (explain)
   If any of the elevations listed below were computed using a datum different than the datum used for the effective Flood Insurance Rate Map (FIRM) (e.g., NGVD 29 or NAVD 88), what was the conversion factor?

   Local Elevation +/- ft. = FIRM Datum

6. Please provide the Latitude and Longitude of the most upstream edge of the ***structure*** (in decimal degrees to the nearest fifth decimal place):
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Certifier's Name: Ramzi Georges, P.E, CFM	License No.: 37287	Expiration Date: March 31, 2014
Company Name: David Evans & Associates	Telephone No.: 602-474-9223	
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Seal (optional)

Continued from Page 1.

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Certifier's Name:	License No.:	Expiration Date:
Company Name:	Telephone No.:	
Email:	Fax No.	
Signature:	Date:	

Seal (optional)

* For requests involving a portion of property, include the lowest ground elevation within the metes and bounds description.
Please note: If the Lowest Adjacent Grade to Structure is the only elevation provided, a determination will be issued for the structure only.

DEPARTMENT OF HOMELAND SECURITY - FEDERAL EMERGENCY MANAGEMENT AGENCY

COMMUNITY ACKNOWLEDGMENT FORM

O.M.B. NO. 1660-0015
Expires February 28, 2014

PAPERWORK BURDEN DISCLOSURE NOTICE

Public reporting burden for this data collection is estimated to average 1.38 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing and submitting the form. This collection is required to obtain or retain benefits. You are not required to respond to this collection of information unless a valid OMB control number is displayed on this form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden to: Information Collections Management, Department of Homeland Security, Federal Emergency Management Agency, 1800 South Bell Street, Arlington, VA 20598-3005, Paperwork Reduction Project (1660-0015). **NOTE: Do not send your completed form to this address.**

This form must be completed for requests involving the existing or proposed placement of fill (complete Section A) ***OR*** to provide acknowledgment of this request to remove a property from the SFHA which was previously located within the regulatory floodway (complete Section B).

This form must be completed and signed by the official responsible for floodplain management in the community. **The six digit NFIP community number and the subject property address must appear in the spaces provided below. Incomplete submissions will result in processing delays.** Please refer to the MT-1 instructions for additional information about this form.

Community Number: _ **Property Name or Address:** 4601 N SCOTTSDALE RD, SCOTTSDALE 85251

A. REQUESTS INVOLVING THE PLACEMENT OF FILL

As the community official responsible for floodplain management, I hereby acknowledge that we have received and reviewed this Letter of Map Revision Based on Fill (LOMR-F) or Conditional LOMR-F request. Based upon the community's review, we find the completed or proposed project meets or is designed to meet all of the community floodplain management requirements, including the requirement that no fill be placed in the regulatory floodway, and that all necessary Federal, State, and local permits have been, or in the case of a Conditional LOMR-F, will be obtained. For Conditional LOMR-F requests, the applicant has or will document Endangered Species Act (ESA) compliance to FEMA prior to issuance of the Conditional LOMR-F determination. For LOMR-F requests, I acknowledge that compliance with Sections 9 and 10 of the ESA has been achieved independently of FEMA's process. Section 9 of the ESA prohibits anyone from "taking" or harming an endangered species. If an action might harm an endangered species, a permit is required from U.S. Fish and Wildlife Service or National Marine Fisheries Service under Section 10 of the ESA. For actions authorized, funded, or being carried out by Federal or State agencies, documentation from the agency showing its compliance with Section 7(a)(2) of the ESA will be submitted. In addition, we have determined that the land and any existing or proposed structures to be removed from the SFHA are or will be reasonably safe from flooding as defined in 44CFR 65.2(c), and that we have available upon request by DHS-FEMA, all analyses and documentation used to make this determination. For LOMR-F requests, we understand that this request is being forwarded to DHS-FEMA for a possible map revision.

Community Comments:

Community Official's Name and Title: (*Please Print or Type*)		Telephone No.:
C. Ashley Couch, PE, CFM, Stormwater Manager and Floodplain Administrator		480-312-4317
Community Name: City of Scottsdale, Arizona	Community Official's Signature: (required) C. Ashley Couch	Date: 1/12/2012

B. PROPERTY LOCATED WITHIN THE REGULATORY FLOODWAY

As the community official responsible for floodplain management, I hereby acknowledge that we have received and reviewed this request for a LOMA. We understand that this request is being forwarded to DHS-FEMA to determine if this property has been inadvertently included in the regulatory floodway. We acknowledge that no fill on this property has been or will be placed within the designated regulatory floodway. We find that the completed or proposed project meets or is designed to meet all of the community floodplain management requirements.

Community Comments: N/A

Community Official's Name and Title: (*Please Print or Type*)		Telephone No.:
Community Name:	Community Official's Signature (required):	Date:

APPENDIX H
WARNING AND DISCLAIMER LIABILITY FORM

Appendix 4-C

Warning and Disclaimer of Liability

The Drainage and Floodplain Regulations and Ordinances of the City of Scottsdale are intended to "minimize the occurrence of losses, hazards and conditions adversely affecting the public health, safety and general welfare which might result from flooding caused by the surface runoff of rainfall" (Scottsdale Revised Code §37-16).

As defined in S.R.C. §37-17, a flood plain or "*Special flood hazard* area means an area having flood and/or flood related erosion hazards as shown on a FHBM or FIRM as zone A, AO, A1-30, AE, A99, AH, or E, and those areas identified as such by the floodplain administrator, delineated in accordance with subsection 37-18(b) and adopted by the floodplain board." It is possible that a property could be inundated by greater frequency flood events or by a flood greater in magnitude than a 100-year flood. Additionally, much of the Scottsdale area is a dynamic flood area; that is, the floodplains may shift from one location to another, over time, due to natural processes.

WARNING AND DISCLAIMER OF LIABILITY PURSUANT TO S.R.C §37-22
"The degree of flood protection provided by the requirements in this article 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 manmade or natural causes. This article (Chapter 37, Article II) shall not create liability on the part of the city, any officer or employee thereof, or the federal government for any flood damages that result from reliance on this article or any administrative decision lawfully made thereunder."

Compliance with Drainage and Floodplain Regulations and Ordinances does not insure complete protection from flooding. The Floodplain Regulations and Ordinances meet established local and federal standards for floodplain management, but neither this review nor the Regulations and Ordinances take into account such flood related problems as natural erosion, streambed meander or man-made obstructions and diversions, all of which may have an adverse affect 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. If I am an agent for an owner I have made the owner aware of and explained this disclaimer.

Plan Check No. _____

Owner or Agent _____

Date 11/21/11

APPENDIX I
404 CERTIFICATION

CITY OF SCOTTSDALE

Section 404 Certification

Before the City issues development permits for a project, the developer's Engineer or the property owner must certify that it complies with, or is exempt from, Section 404 of the Clean Water Act of the United States. Section 404, administered by the U.S. Army Corps of Engineers (COE), regulates the discharge of dredged or fill material into a wetland, lake, (including dry lakes), river, stream (including intermittent streams, ephemeral washes, and arroyos), or other waters of the United States.

Prior to submittal of Improvement plans to Project Review the form below must be completed (and submitted with the improvement plans) as evidence of compliance

Certification of Section 404 Permit Status

Owner's Name: Gray Development Phone No. 602-508-7141

Project Name/Description: Blue sky Scottsdale Case No. 396-PA-2010

Project Location/Address: Southeast Corner of Coolidge Rd & Scottsdale Rd

A registered Engineer or the property Owner must check the applicable condition and certify by signing below that:

1. **Section 404 does apply to the project because there will be a discharge of dredged or fill material to waters of the U.S., and:**

   ☐ A Section 404 Permit has already been obtained for this project.

   -or-

   ☐ This project qualifies for a "Nationwide Permit," and this project will meet all terms and conditions of the applicable nationwide permit.

2. **Section 404 does not apply to the project because:**

   ☒ No watercourses or other waters of the U.S. exist on the property.

   ☐ No jurisdictional waters of the U.S. exist on the property. Attached is a copy of the COE's Jurisdictional Determination.

   ☐ Watercourses or other waters of the U.S. do exist on the property, but the project will not involve the discharge of dredged or fill material into any of these waters.

I certify that the above statement is true.

Registered Professional Engineer (Civil) CERTIFICATE NO. 37287 RAMZI GEORGES Date Signed 11/21/11 ARIZONA, U.S.A.

Engineer's Signature and Seal, or Owner's Signature Date 11/21/11

Title Company

Exp: 3-31-2014

Planning & Development Services Department

7447 E Indian School Road, Suite 100, Scottsdale, AZ 85251 • Phone: 480-312-2500 • Fax: 480-312-7088