

Drainage Reports

Abbreviated Water & Sewer Need Reports

Water Study

Wastewater Study

Stormwater Waiver Application

Case file Copy

Plan #	_____
Case #	<u>26-DR-2017#3</u>
Q-S #	_____
<input checked="" type="checkbox"/> Accepted	
<input type="checkbox"/> Corrections	
<u>DG</u> Reviewed By	<u>12/15/17</u> Date

City of Scottsdale
Attention: Stormwater Management Division
7447 E Indian School Rd
Scottsdale, AZ 85251

November 21, 2017

RE: Drainage Memo for Scottsdale Fashion Square Lux Wing- PAD C

To whom it may concern:

Introduction

The improvements for Scottsdale Fashion Square Lux Wing- PAD C include the development of a new 9,240 gross floor area commercial building with associated patios, trash/loading areas, landscape areas, and site improvements. The development of PAD C is a part of the larger Scottsdale Fashion Square Lux Wing Entry project, known to the City of Scottsdale as 26-DR-2017. Scottsdale Fashion Square Lux Wing- PAD C is located west of Goldwater Boulevard, north of the existing Scottsdale shopping center, west of the existing Dillard's, and south of the entry drive of Goldwater Boulevard that provides ingress/egress into the mall parking lot.

This document is to be used in place of a Final Drainage Report and in conjunction with the Master Drainage Report for Scottsdale Fashion Square Lux Wing, titled, *Final Drainage Report Scottsdale Fashion Square Luxury Wing Entry Site*, dated August 21, 2017 (**Appendix B**), which takes into account the complete buildout of the Lux Wing Entry, including PAD C, as shown in Figure 2 and Figure 4 of *Final Drainage Report Scottsdale Fashion Square Luxury Wing Entry Site*, dated August 21, 2017 (**Appendix B**). The purpose of this drainage statement is to confirm compliance to City of Scottsdale *Design Standards & Policies Manual January 2010*, for Storm Drainage Facilities associated with the Project.

Description of Existing Drainage Conditions and Characteristics

The existing site is a fully developed parking lot and landscape area that provides surface parking, ingress/egress to the malls parking structure, and landscape areas which also double as retention basins. Runoff from the limits of construction from PAD

C sheet flows in the surface parking lot to an existing onsite private storm system on the west and north, into an existing above ground retention basin to the east, and are bounded by an existing retail store (Dillard's) on the south.

No offsite drainage impacts the project limits.

Proposed Drainage Conditions

The proposed drainage will not affect the existing ultimate outfall and will not increase runoff in the existing gutters or storm system. The west and north side of the site will continue to sheet flow in the surface parking lot to an existing onsite private storm system. The east side will drain into a new landscape area before entering the onsite private storm system, and the south will remain connected to the existing retail store (Dillard's).

First Flush/ Redevelopment Stormwater Storage Policy

No additional retention is required for this site because this commercial development has already been taken into account with Scottsdale Fashion Square Lux Wing Entry as outlined in the *Final Drainage Report Scottsdale Fashion Square Luxury Wing Entry Site*, dated August 21, 2017 (**Appendix B**). It should also be noted that this project proposes no removal of retention proposed with Scottsdale Fashion Square Lux Wing Entry, better known as City of Scottsdale project 26-DR-2017. That being said, the "C" coefficient for the site is not being altered because the use and concept will remain the same as originally proposed in the Master Report.

Special Conditions

There are no special conditions for this project.

Data Analysis Methods

No analysis was necessary for this project because the land use and drainage patterns were not altered.

Conclusions

In conclusion, Olsson Associates has confirmed compliance to City of Scottsdale *Design Standards & Policies Manual* January 2010 for Storm Drainage Facilities. If you have any further questions, please do not hesitate to contact our office at 602-748-1000.

Warning and Disclaimer of Liability

See attached at the end of the written portion of this statement.

References

City of Scottsdale *Design Standards & Policies Manual* January 2010

Final Drainage Report Scottsdale Fashion Square Luxury Wing Entry Site, dated August 21, 2017

Sincerely,



EXPIRES 06/30/20

Andrea Page, P.E.
Senior Engineer

Appendices

- Appendix A.....Scottsdale Fashion Square Lux Wing- PAD B (applicable sheets only)
- Appendix B..... *Final Drainage Report Scottsdale Fashion Square Luxury Wing Entry Site, dated August 21, 2017*



WARNING & 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 man-made 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.

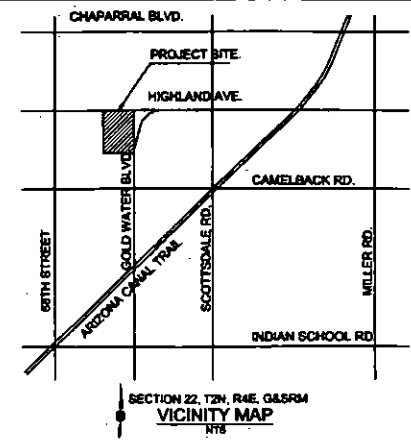
I have read and understand the above. If I am an agent for an owner I have made the owner aware of and explained this disclaimer.

26-DR-2017 #3
Plan Check No.

 11-22-17
Owner or Agent Date

APPENDIX A

PRELIMINARY OVERALL SITE PLAN FOR SCOTTSDALE FASHION SQUARE LUXURY WING ENTRY-PAD C SCOTTSDALE, ARIZONA 85251



OLSSON ASSOCIATES
TEL: 602.748.1000
FAX: 602.748.1001
7250 North 18th Street, Suite 210
Phoenix, AZ 85032-0202
www.olssonassociates.com



EXPIRES 06/30/20
OLSSON ASSOCIATES ASSUMES NO RESPONSIBILITY FOR EXISTING UTILITY LOCATIONS (HORIZONTAL OR VERTICAL). THE EXISTING UTILITIES SHOWN ON THIS DRAWING HAVE BEEN PLOTTED FROM THE BEST AVAILABLE INFORMATION. IT IS HOWEVER THE RESPONSIBILITY OF THE CONTRACTOR TO FIELD VERIFY THE LOCATION OF ALL UTILITIES PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION ACTIVITIES.

- SITE PLAN NOTES:**
1. SITE PLAN IS INTENDED TO BE USED FOR PLANNING PURPOSES ONLY AND IS NOT TO BE USED FOR CONSTRUCTION PURPOSES
 2. REFERENCE SITE PLANS SHEET C101 AND C102 FOR PROJECT SPECIFIC SITE PLAN

OWNER/DEVELOPER
MACERICH
1411 NORTH TATUM BLVD
PHOENIX, AZ 85028
PHONE: (602) 853-6539
FAX: (602) 853-1964
ATTN: ANDY GREENWOOD

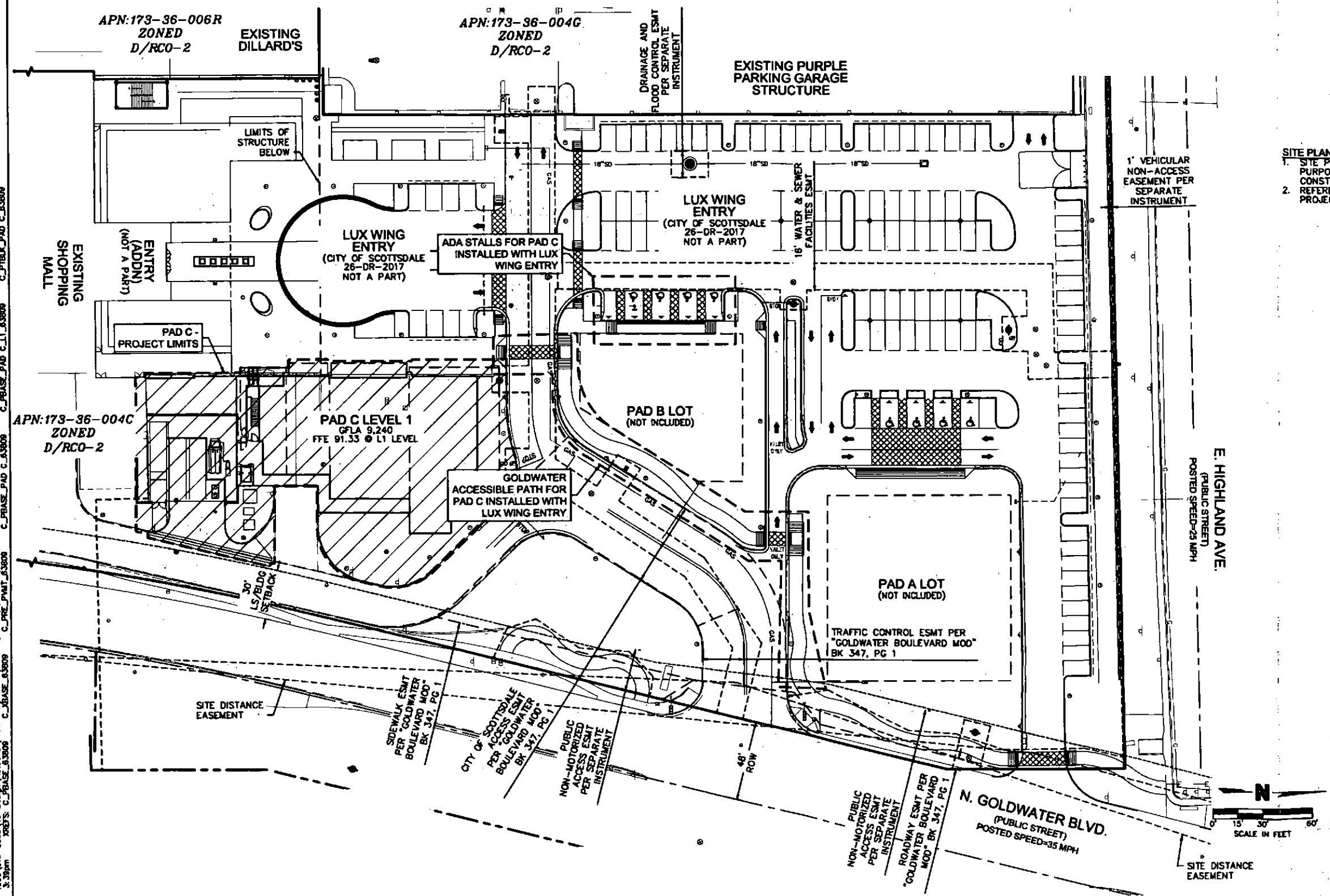
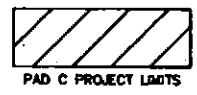
ENGINEER:
OLSSON ASSOCIATES
7250 NORTH 18TH STREET, SUITE 210
PHOENIX, ARIZONA 85020
PHONE: (602) 748-1000
FAX: (602) 748-1001
ATTN: CARDELL ANDREWS

PROJECT DATA:
PROJECT ADDRESS:
7014 EAST CAMELBACK ROAD
SCOTTSDALE, ARIZONA 85251

BENCH MARK: A CITY OF SCOTTSDALE BRASS CAP IN HAND HOLE AT THE INTERSECTION OF INDIAN SCHOOL RD. & 80TH ST., CITY OF SCOTTSDALE BENCHMARK #4271.

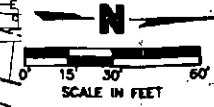
ELEVATION= 1274.52' (PER C.O.S. NAVD '88 DATUM)

SITE AREA= 352,570 SF OR 8.09 ACRES
CONSTRUCTION LIMITS: 210,880 OR 4.84 ACRES
APN: PARCEL 173-36-004E AND 173-36-004G
ZONING: D/RCO-2 PBD DO



E. HIGHLAND AVE.
(PUBLIC STREET)
POSTED SPEED=25 MPH

N. GOLDWATER BLVD.
(PUBLIC STREET)
POSTED SPEED=35 MPH



REV. NO.	DATE	DESCRIPTION	REVISIONS

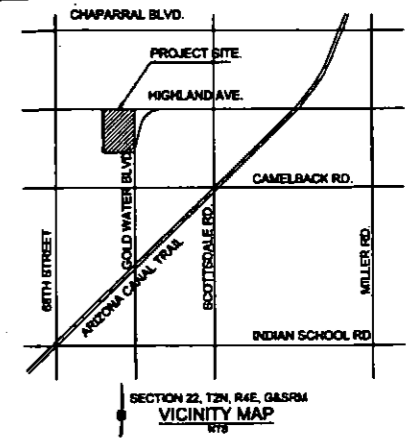
PRELIMINARY OVERALL SITE PLAN
SCOTTSDALE FASHION SQUARE
LUXURY WING ENTRY-PAD C
SCOTTSDALE, ARIZONA 85251

drawn by: TMM
designed by: RAY
checked by: JAC
QA: GAT
project no.: 173-36-004
date: 11.21.17

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USER: hml\hml
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C:\PTBLK_PAD C.dwg
C:\PTBLK_PAD C.dwg



PRELIMINARY OVERALL SITE PLAN FOR SCOTTSDALE FASHION SQUARE LUXURY WING ENTRY-PAD C SCOTTSDALE, ARIZONA 85251



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FAX: (602) 748-1001
www.olssonassociates.com



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OWNER/DEVELOPER
MACERICH
1411 NORTH TATUM BLVD
PHOENIX, AZ 85028
PHONE: (602) 953-8539
FAX: (602) 953-1964
ATTN: ANDY GREENWOOD

ENGINEER:
OLSSON ASSOCIATES
7250 NORTH 18TH STREET, SUITE 210
PHOENIX, ARIZONA 85020
PHONE: (602) 748-1000
FAX: (602) 748-1001
ATTN: CARDELL ANDREWS

PROJECT DATA:
PROJECT ADDRESS:
7014 EAST CAMELBACK ROAD
SCOTTSDALE, ARIZONA 85251

BENCH MARK: A CITY OF SCOTTSDALE BRASS CAP IN HAND HOLE AT THE INTERSECTION OF INDIAN SCHOOL RD. & 68TH ST., CITY OF SCOTTSDALE BENCHMARK #4271.

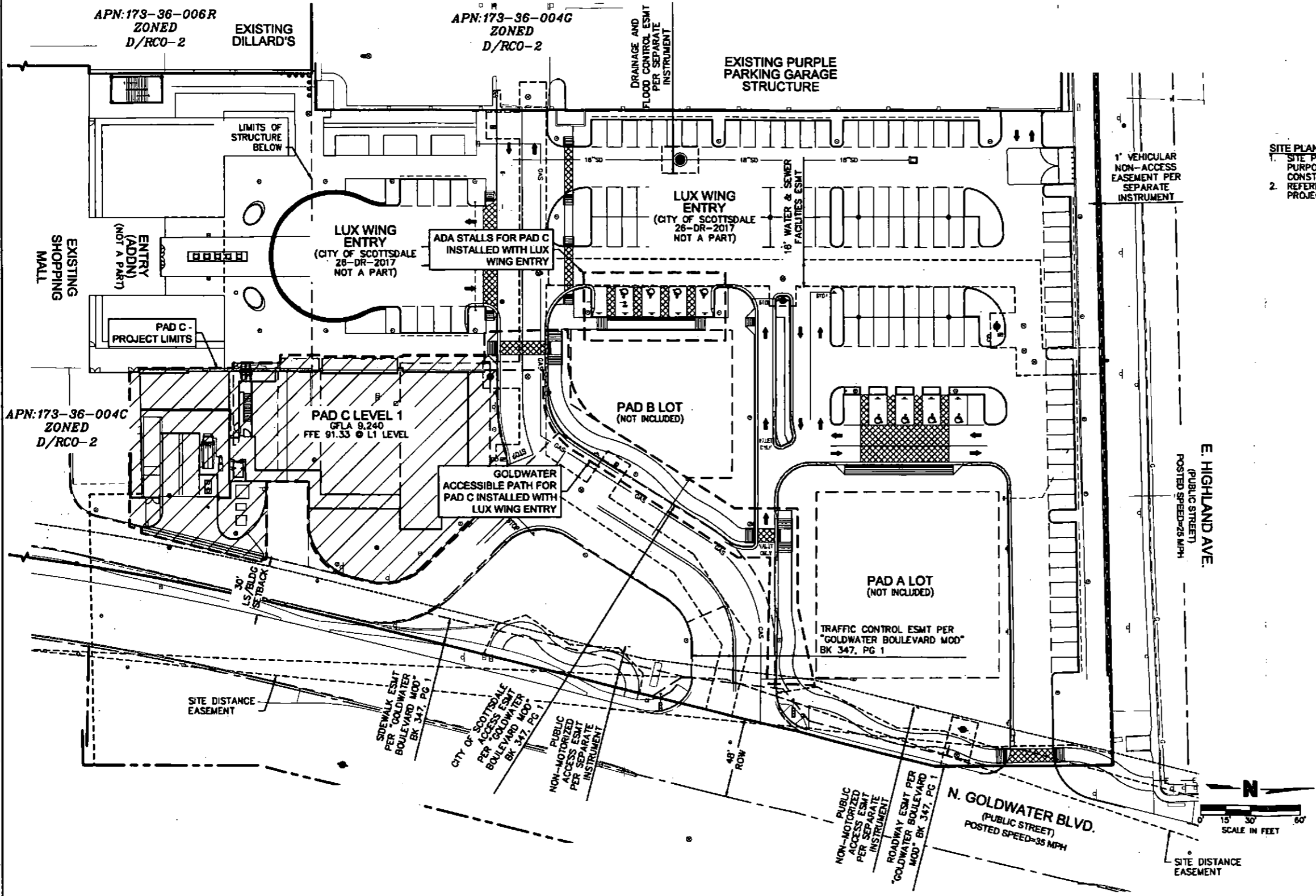
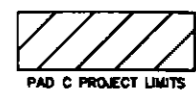
ELEVATION= 1274.52' (PER C.O.S. NAVD 88 DATUM)

SITE AREA: 352,570 SF OR 8.09 ACRES

CONSTRUCTION LIMITS: 210,880 OR 4.84 ACRES

APN: PARCEL 173-36-004E AND 173-36-004G

ZONING: D/RCO-2 PBD DO



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 C:\PBLK_PAD C_11_03208

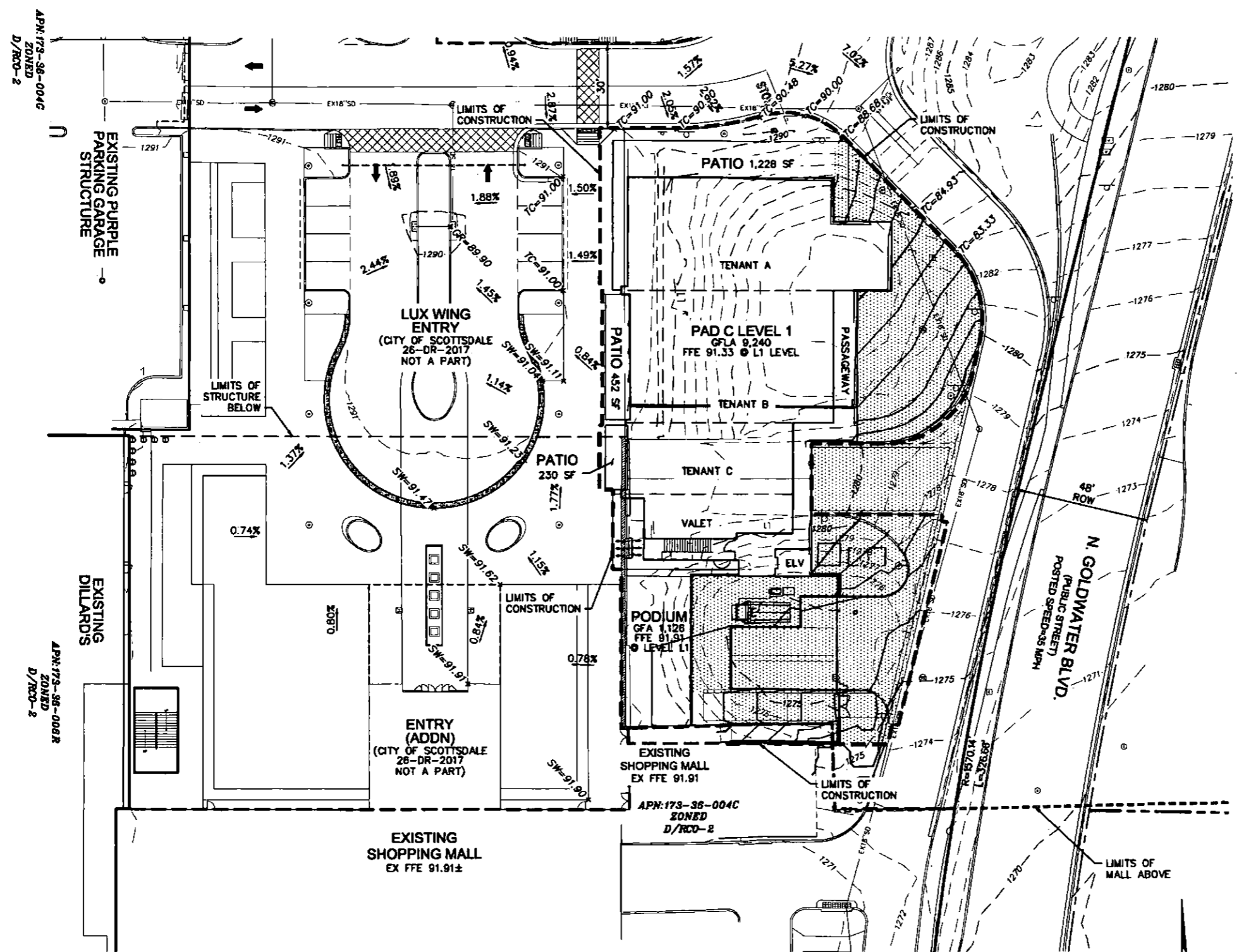
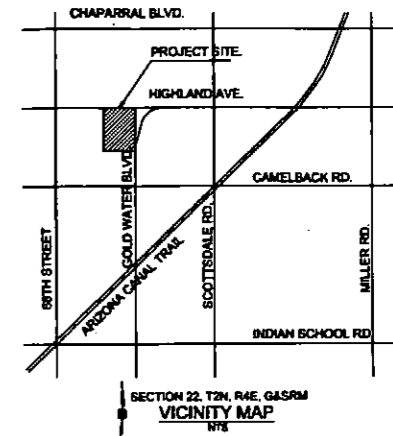


REV. NO.	DATE	DESCRIPTION	REVISIONS

PRELIMINARY OVERALL SITE PLAN
 SCOTTSDALE FASHION SQUARE
 LUXURY WING ENTRY-PAD C
 SCOTTSDALE, ARIZONA 85251

drawn by: TMY
 designed by: RY
 checked by: AP
 QA/QC by: CAL
 project no.: 016-3609
 date: 11.21.17

PRELIMINARY GRADING PLAN FOR SCOTTSDALE FASHION SQUARE LUXURY WING PAD C SCOTTSDALE, ARIZONA 85251



OWNER/DEVELOPER
MACERICH
1411 NORTH TATUM BLVD
PHOENIX, AZ 85028
PHONE: (602) 853-6539
FAX: (602) 853-1984
ATTN: ANDY GREENWOOD

ENGINEER:
OLSSON ASSOCIATES
7250 NORTH 16TH STREET, SUITE 210
PHOENIX, ARIZONA 85020
PHONE: (602) 748-1000
FAX: (602) 748-1001
ATTN: CARDELL ANDREWS

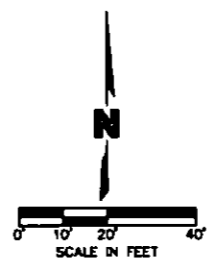
GRADING LEGEND

LINES TYPES	
EXISTING MAJOR CONTOUR	---1085---
EXISTING MINOR CONTOUR	---1086---
PROPOSED MAJOR CONTOUR	---1085---
PROPOSED MINOR CONTOUR	---1086---
GRADE BREAK, RIDGE LINE, OR VALLEY/FLOW LINE	---
SPOT GRADES	
MATCH EXISTING GRADE	ME=XX.XX
FINISHED GRADE GROUND	FG=XX.XX
FLOW LINE	FL=XX.XX
HIGH POINT	HP=XX.XX
LOW POINT	LP=XX.XX
GRADE BREAK	GB=XX.XX
TOP OF CURB	TC=XX.XX
TOP OF PAVEMENT	P=XX.XX
RIM ELEVATION	RIM=XX.XX
GRATE ELEVATION	GR=XX.XX
SIDEWALK GRADE	SW=XX.XX
FINISHED FLOOR ELEVATION	FTE=XX.XX
TOP RETAINING WALL	TRW=XX.XX
BOTTOM RETAINING WALL	BRW=XX.XX
TOP SCREEN WALL	TSW=XX.XX
BOTTOM SCREEN WALL	BSW=XX.XX
TOP SLAB	TS=XX.XX

- ENGINEER PRELIMINARY GRADING NOTES:**
- ALL POINTS ARE TO FINISH PAVING GRADE ELEVATION UNLESS OTHERWISE NOTED. PAVING POINTS ON FACE OF CURB ARE AT GUTTER ELEVATION UNLESS NOTED OTHERWISE.
 - ELEVATIONS HAVE BEEN SHORTENED FOR CLARITY, REMOVING THE THOUSAND AND HUNDRED UNIT VALUES. SEE BENCHMARK ON COVER SHEET (C001) FOR EXPANDED ELEVATION.
 - REFER TO RECOMMENDATIONS WITHIN THE GEOTECHNICAL EXPLORATION REPORT BY SPEEDIE AND ASSOCIATES, TITLED "SCOTTSDALE FASHION SQUARE LUXURY WING", DATED MARCH 30, 2017 PROJECT NUMBER 1704405A.

LEGEND
LEVEL P1 SEE SHEET C102 FOR INFORMATION.

LEVEL L1



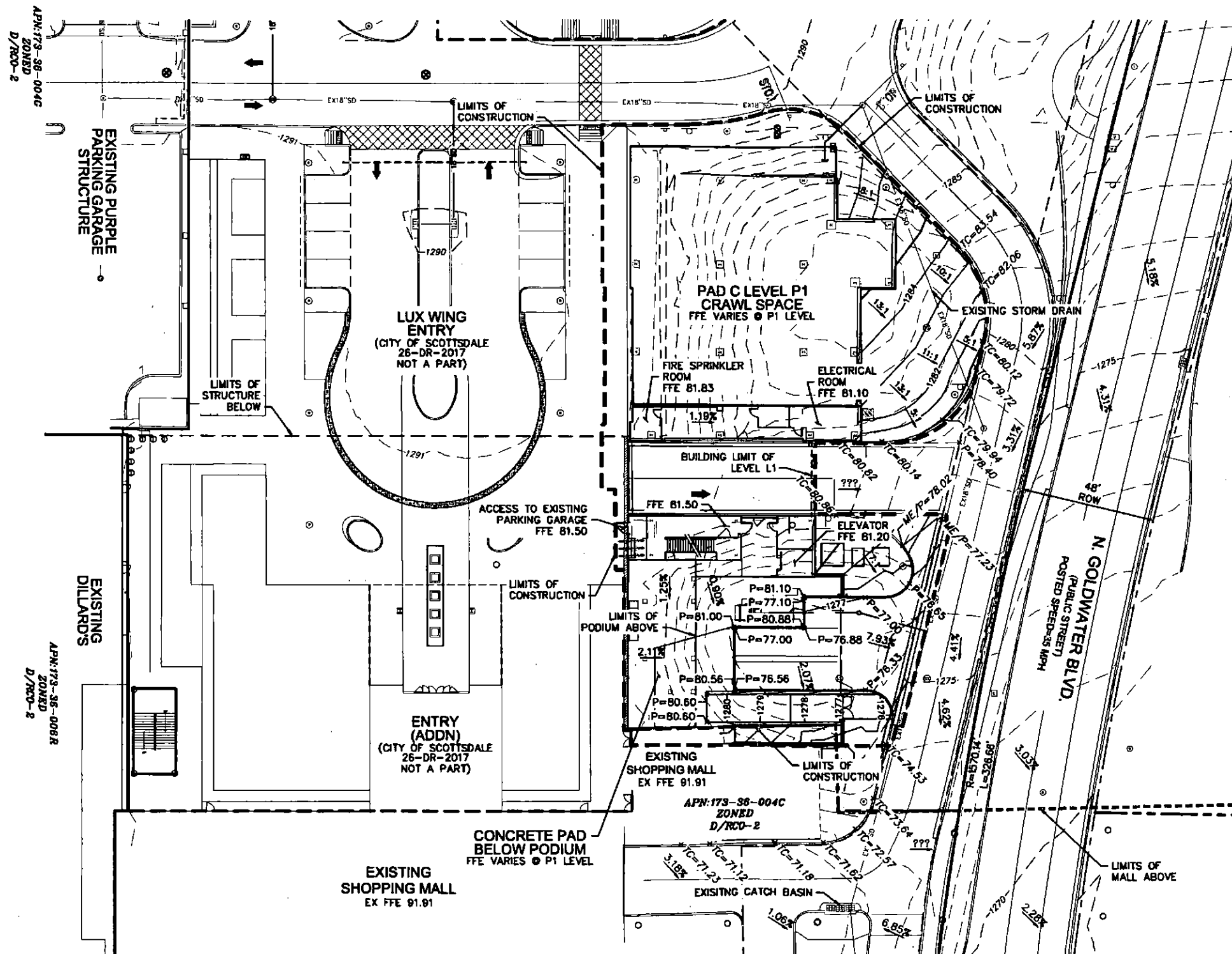
OLSSON ASSOCIATES
7250 North 16th Street, Suite 210
Phoenix, AZ 85020
TEL: (602) 748-1000
FAX: (602) 748-1001
www.olssonassociates.com



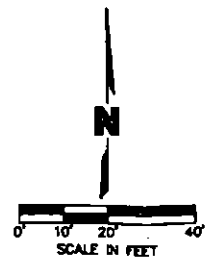
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REV. NO.	DATE	DESCRIPTION

PRELIMINARY GRADING SHEET (L1)
SCOTTSDALE FASHION SQUARE LUXURY WING ENTRY-PAD C
SCOTTSDALE, ARIZONA 85251



LEVEL P1



GRADING LEGEND	
LINES TYPES	
EXISTING MAJOR CONTOUR	---1085---
EXISTING MINOR CONTOUR	---1086---
PROPOSED MAJOR CONTOUR	---1085---
PROPOSED MINOR CONTOUR	---1086---
GRADE BREAK, RIDGE LINE, OR VALLEY/FLOW LINE	---
SPOT GRADES	
MATCH EXISTING GRADE	ME=XX.XX
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TOP OF CURB	TC=XX.XX
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RIM ELEVATION	RIM=XX.XX
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BOTTOM SCREEN WALL	BSW=XX.XX
TOP SLAB	TS=XX.XX

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 - REFER TO RECOMMENDATIONS WITHIN THE GEOTECHNICAL EXPLORATION REPORT BY SPEEDIE AND ASSOCIATES, TITLED "SCOTTSDALE FASHION SQUARE LUXURY WING", DATED MARCH 30, 2017 PROJECT NUMBER 170440SA.

APN:173-88-0046
ZONED
D/RCD-2

APN:173-88-0068
ZONED
D/RCD-2



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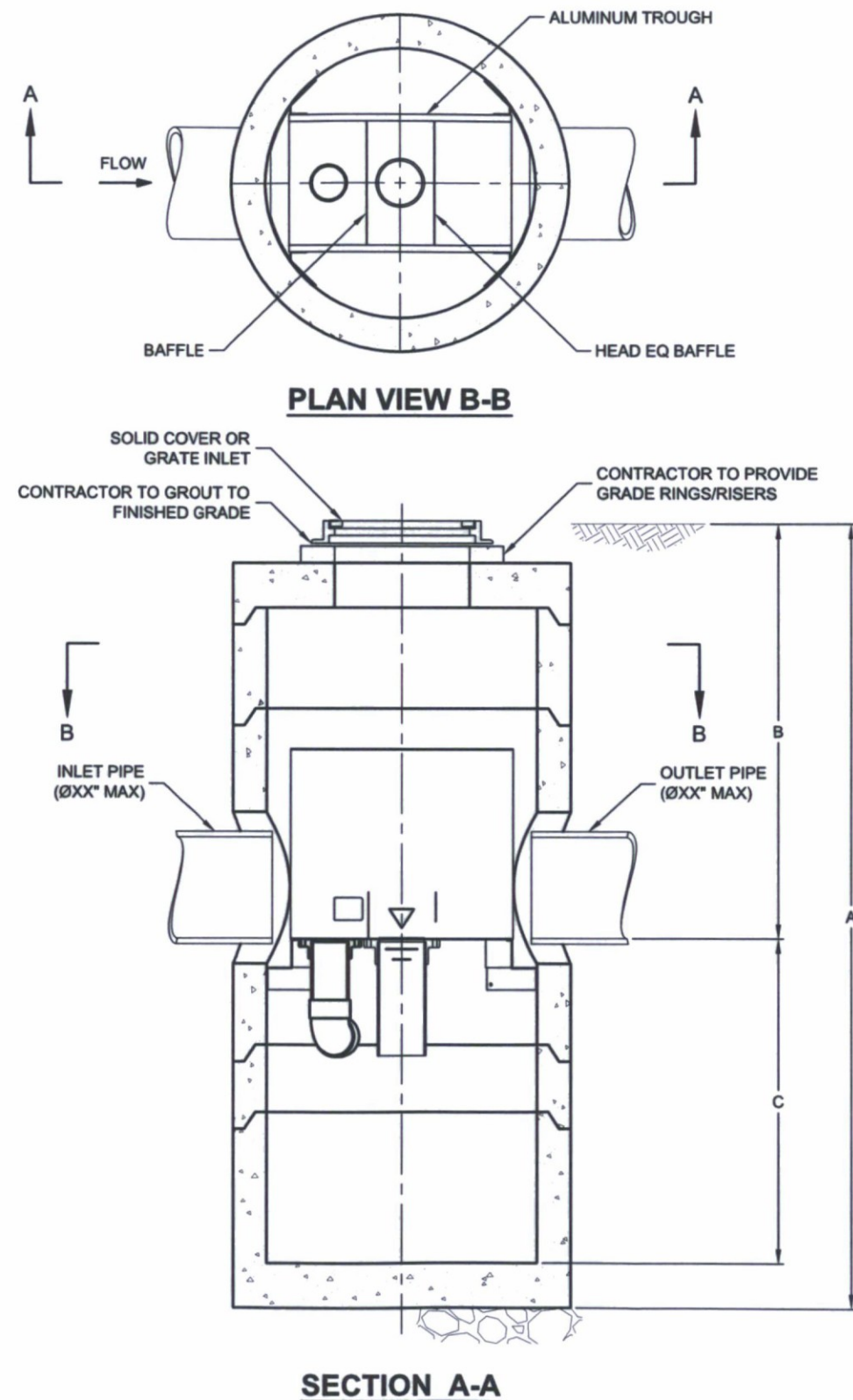
REVISION DESCRIPTION	DATE	REV. NO.

PRELIMINARY GRADING SHEET (P-1)
SCOTTSDALE FASHION SQUARE LUXURY WING ENTRY-PAD C
SCOTTSDALE, ARIZONA 85251

drawn by: JTW
designed by: JTW
checked by: AP
CAVOC by: CAR
project no.: 018-2008
date: 11.21.17



I:\STORMWATER\COMPOPS\26 VORTSENTRY HS\40 STANDARD DRAWINGS\DWG\HS-DTL.DWG 5/16/2014 4:31 PM



SECTION A-A

VortSentry

THIS PRODUCT MAY BE PROTECTED BY ONE OR MORE OF THE FOLLOWING U.S. PATENTS: 6,891,114; 7,296,682; RELATED FOREIGN PATENTS, OR OTHER PATENTS PENDING.

VORTSENTRY HS DESIGN NOTES

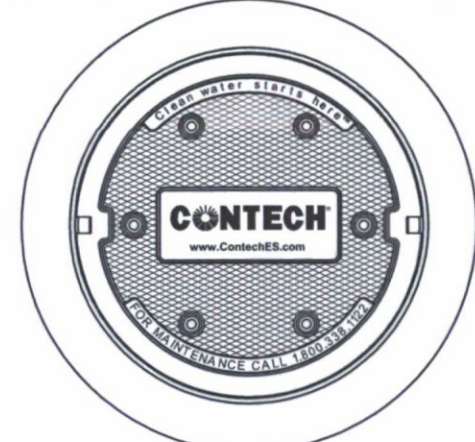
VSHS RATED TREATMENT CAPACITY IS SHOWN IN THE TABLE BELOW, OR PER LOCAL REGULATIONS. MAXIMUM HYDRAULIC INTERNAL BYPASS CAPACITY VARIES. CONTACT YOUR CONTECH REPRESENTATIVE FOR ADDITIONAL INFORMATION.

THE STANDARD SOLID COVER CONFIGURATION IS SHOWN. ALTERNATE CONFIGURATIONS ARE AVAILABLE AND ARE LISTED BELOW.

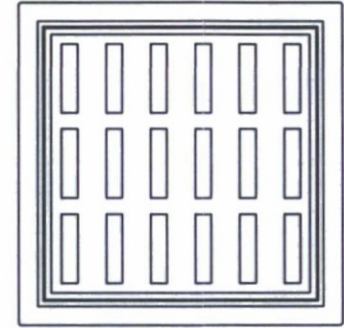
CONFIGURATION OPTION DESCRIPTION	
	GRATE INLET (NO INLET PIPE)
	GRATE INLET WITH INLET PIPE

VORTSENTRY HS GENERAL INFORMATION

Model	Manhole Diameter (ID)		Total Treatment Flow Rate		Typical Total Distance Rim to Outside Bottom A		Typical Distance Rim to Invert B		Typical Depth Below Invert (inside) C		Approximate Minimum Distance Rim to Invert		Maximum Pipe Diameter (ID)	
	FT	mm	CFS	L/S	FT	m	FT	m	FT	mm	FT	m	IN	mm
HS36	3	900	0.55	15.6	10.16	3.10	4.08	1.24	5.58	1702	3.00	0.91	18	450
HS48	4	1200	1.20	34.0	13.25	4.04	6.00	1.83	6.75	2057	4.00	1.22	24	600
HS60	5	1500	2.20	62.3	15.13	4.61	6.50	1.98	7.96	2426	4.82	1.47	30	750
HS72	6	1800	3.70	104.8	16.56	5.05	6.75	2.06	9.15	2788	5.59	1.70	36	900
HS84	7	2100	5.60	158.6	18.85	5.75	7.75	2.36	10.35	3156	5.00	1.52	42	1050
HS96	8	2400	8.10	229.4	20.87	6.36	8.50	2.59	11.54	3518	6.91	2.11	48	1200



FRAME AND COVER
(DIAMETER VARIES)
N.T.S.



FRAME AND GRATE
(24" SQUARE)
N.T.S.

SITE SPECIFIC DATA REQUIREMENTS			
STRUCTURE ID			
WATER QUALITY FLOW RATE (CFS)			
PEAK FLOW RATE (CFS)			
RETURN PERIOD OF PEAK FLOW (YRS)			
PIPE DATA:	I.E.	MATERIAL	DIAMETER
INLET PIPE 1			
OUTLET PIPE			
RIM ELEVATION			
ANTI-FLOTATION BALLAST	WIDTH	HEIGHT	
NOTES/SPECIAL REQUIREMENTS:			
* PER ENGINEER OF RECORD			

GENERAL NOTES

1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. DIMENSIONS MARKED WITH () ARE REFERENCE DIMENSIONS. ACTUAL DIMENSIONS MAY VARY.
3. FOR FABRICATION DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHT, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS LLC REPRESENTATIVE. www.ContechES.com
4. VORTSENTRY HS WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING.
5. STRUCTURE SHALL MEET AASHTO HS20 AND CASTINGS SHALL MEET AASHTO M306 LOAD RATING, ASSUMING GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION.

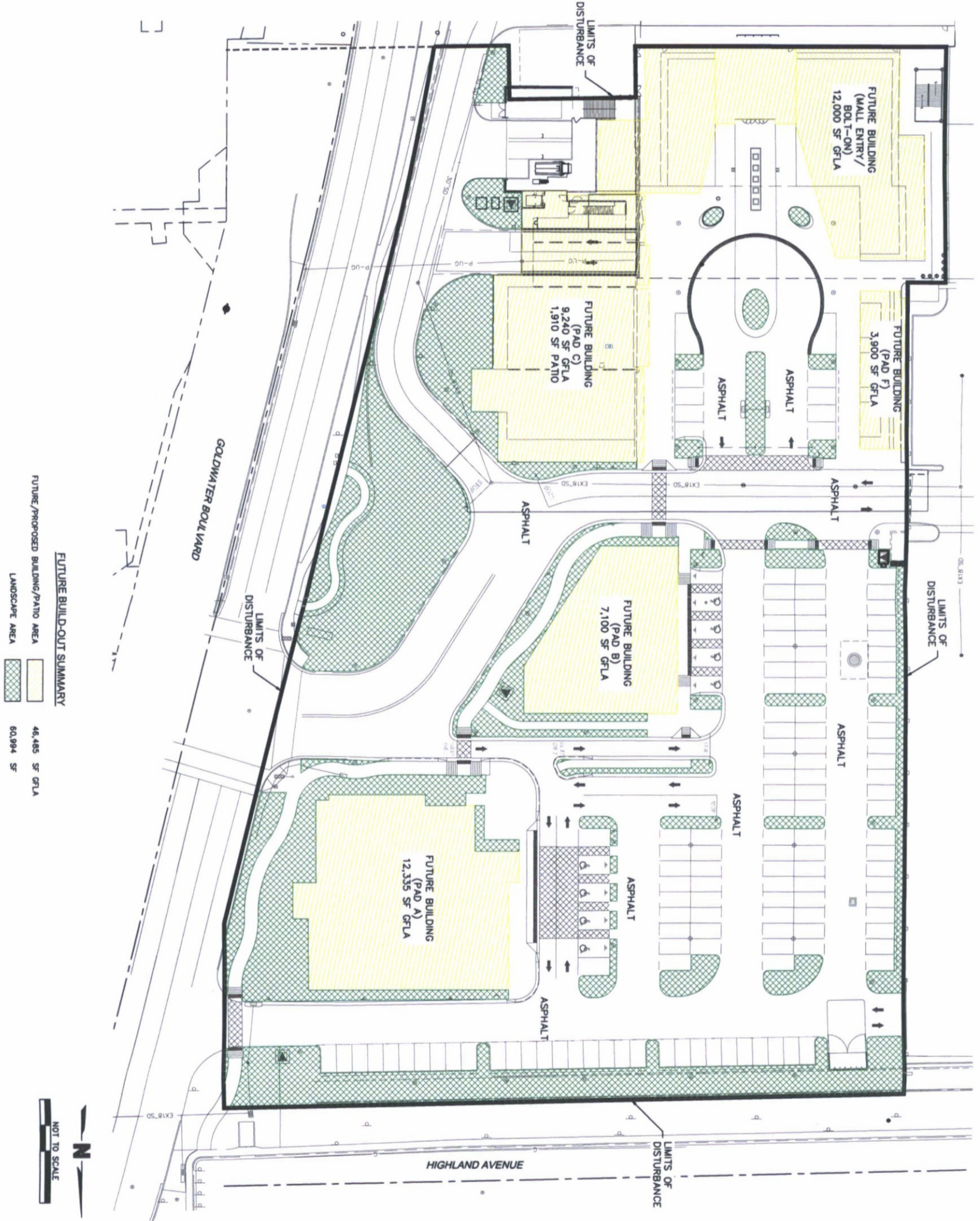
INSTALLATION NOTES

1. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
2. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE VORTSENTRY HS MANHOLE STRUCTURE (LIFTING CLUTCHES PROVIDED).
3. CONTRACTOR TO INSTALL JOINT SEALANT BETWEEN ALL STRUCTURE SECTIONS AND ASSEMBLE STRUCTURE.
4. CONTRACTOR TO PROVIDE, INSTALL, AND GROUT PIPES. MATCH PIPE INVERTS WITH ELEVATIONS SHOWN.
5. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO ASSURE UNIT IS WATER TIGHT, HOLDING WATER TO FLOWLINE INVERT MINIMUM. IT IS SUGGESTED THAT ALL JOINTS BELOW PIPE INVERTS ARE GROUTED.

CONTECH
ENGINEERED SOLUTIONS LLC

www.ContechES.com
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

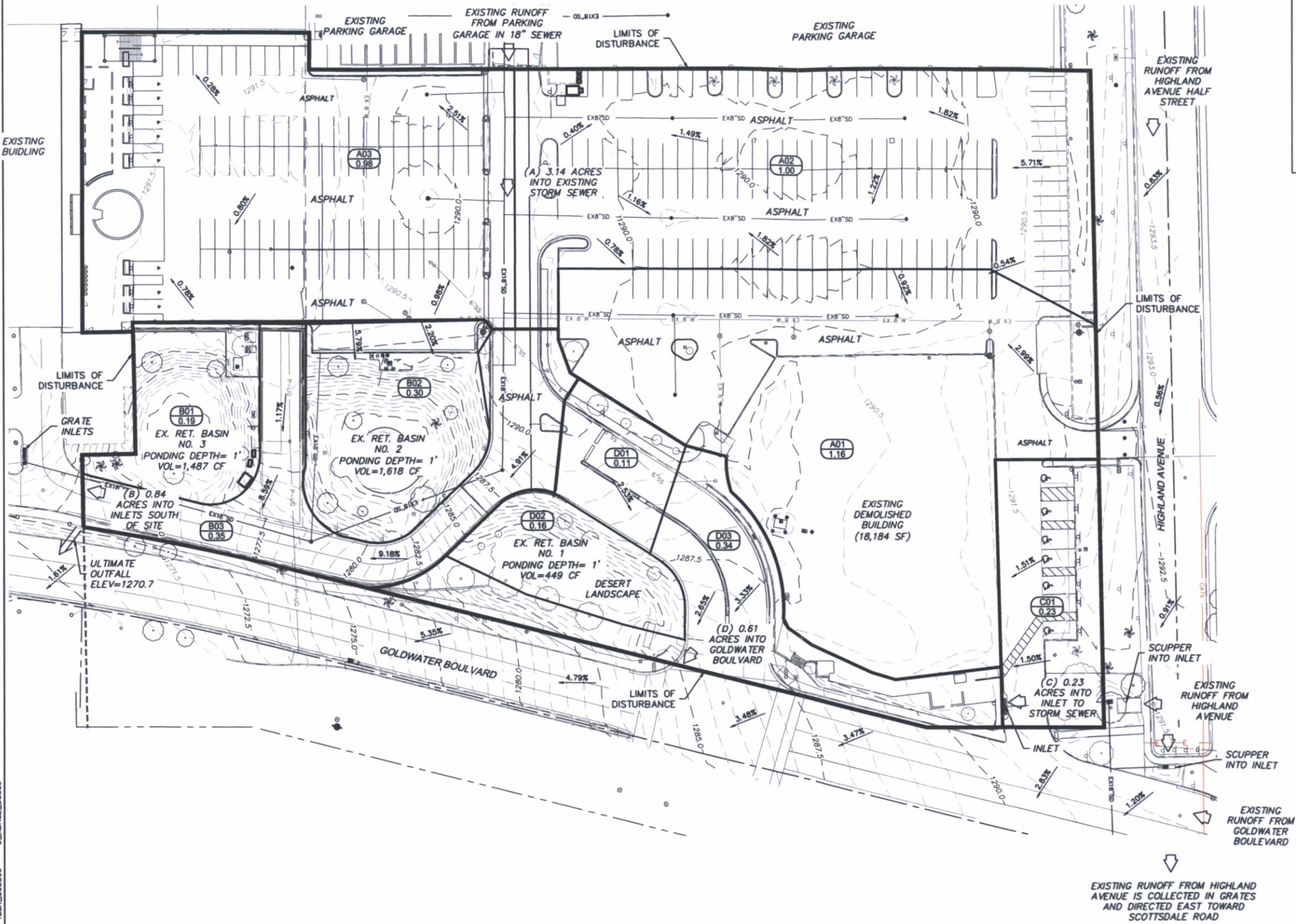
**VORTSENTRY HS
STANDARD DETAIL**



<p>FIGURE 2</p>	<p>FINAL BUILD-OUT EXHIBIT GROSS FLOOR LEASE AREA</p> <p>SCOTTSDALE FASHION SQUARE LUXURY WING ENTRY</p>	<p>2017</p>	<p>REVISIONS</p>	<p>CLIENT ASSOCIATE ASSURES NO RESPONSIBILITY FOR EXISTING UTILITY LOCATIONS HORIZONTAL OR VERTICAL. THE EXISTING UTILITY LOCATIONS SHOWN ON THIS DRAWING HAVE BEEN PLOTTED FROM THE BEST AVAILABLE INFORMATION. IT IS THE RESPONSIBILITY OF THE USER OF THIS DRAWING TO VERIFY THE LOCATION OF ALL UTILITIES PRIOR TO THE CONSTRUCTION ACTIVITIES.</p>
	<p>designed by: TMM checked by: SKZ prepared by: CML project no.: 016-3809 date: 10/30/2017</p>	<p>SCOTTSDALE, ARIZONA 85251</p>	<p>2017</p>	<p>REVISIONS</p>

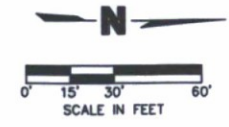


F:\2016\3501-4000\016-3009\40-Design\Reports\GNV\Master Drainage Report\Lux Wing Master Report\FIGURE 3_EX CONDITIONS.dwg USER: condres
 DATE: Nov 22, 2017 6:47am XREFS: C:\PTBLK_063809 C:\BASE_63609



DRAINAGE MAP LEGEND

DRAINAGE AREA ID	
DRAINAGE AREA (ACRES)	
SLOPE DIRECTION	
MINOR-SUB BASIN	
MAJOR-SUB BASIN	
ANALYSIS FOCUS POINT	
CONTOUR LINES TYPES	
EXISTING MAJOR CONTOUR	
EXISTING MINOR CONTOUR	



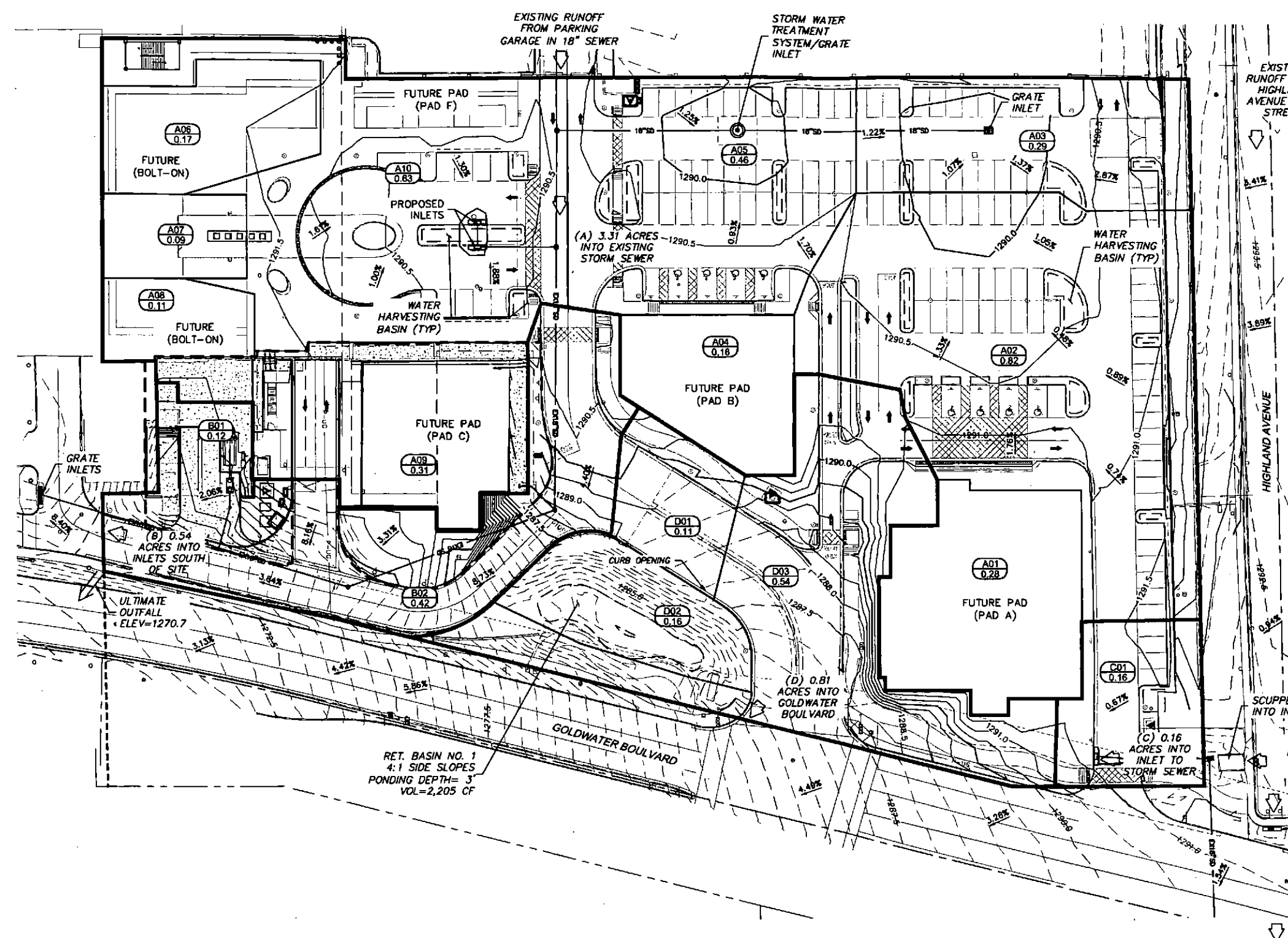
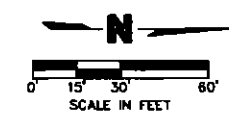
OLSSON ASSOCIATES
 7200 North 16th Street, Suite 210
 Phoenix, AZ 85020-0292
 TEL: 602.748.1000
 FAX: 602.748.1001
 www.olsonassociates.com

OLSSON ASSOCIATES ASSUMES NO RESPONSIBILITY FOR EXISTING UTILITY LOCATIONS (HORIZONTAL OR VERTICAL). THE EXISTING UTILITIES SHOWN ON THIS DRAWING HAVE BEEN PLOTTED FROM THE BEST AVAILABLE INFORMATION. IT IS HOWEVER THE RESPONSIBILITY OF THE CONTRACTOR TO FIELD VERIFY THE LOCATION OF ALL UTILITIES PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION ACTIVITIES.

REV. NO.	DATE	REVISIONS DESCRIPTION

EXISTING CONDITIONS DRAINAGE MAP		2017
SCOTTSDALE FASHION SQUARE LUXURY WING ENTRY		
SCOTTSDALE, ARIZONA 85251		
drawn by:	THW	
designed by:	BLZ	
checked by:	AP	
QA/QC by:	CAL	
project no.:	016-3809	
date:	10.30.2017	

FIGURE 3



DRAINAGE MAP LEGEND	
DRAINAGE AREA ID	B05 2.13
DRAINAGE AREA (ACRES)	
SLOPE DIRECTION	
MINOR-SUB BASIN	
MAJOR-SUB BASIN	
ANALYSIS FOCUS POINT	
RETENTION BASIN/WATER HARVESTING BASIN	
CONTOUR LINES TYPES	
EXISTING MAJOR CONTOUR	1085
EXISTING MINOR CONTOUR	1085
PROPOSED MAJOR CONTOUR	1085
PROPOSED MINOR CONTOUR	1085

NOTES:
 1. ALL WATER HARVESTING BASINS WILL BE DEPRESSED 6-INCHES MAX (PONDING DEPTH= 0.50' MAX), WITH 4:1 SIDE SLOPES. TOTAL VOLUME PROVIDED= 1,363 CF

REV. NO.	DATE	REVISIONS DESCRIPTION

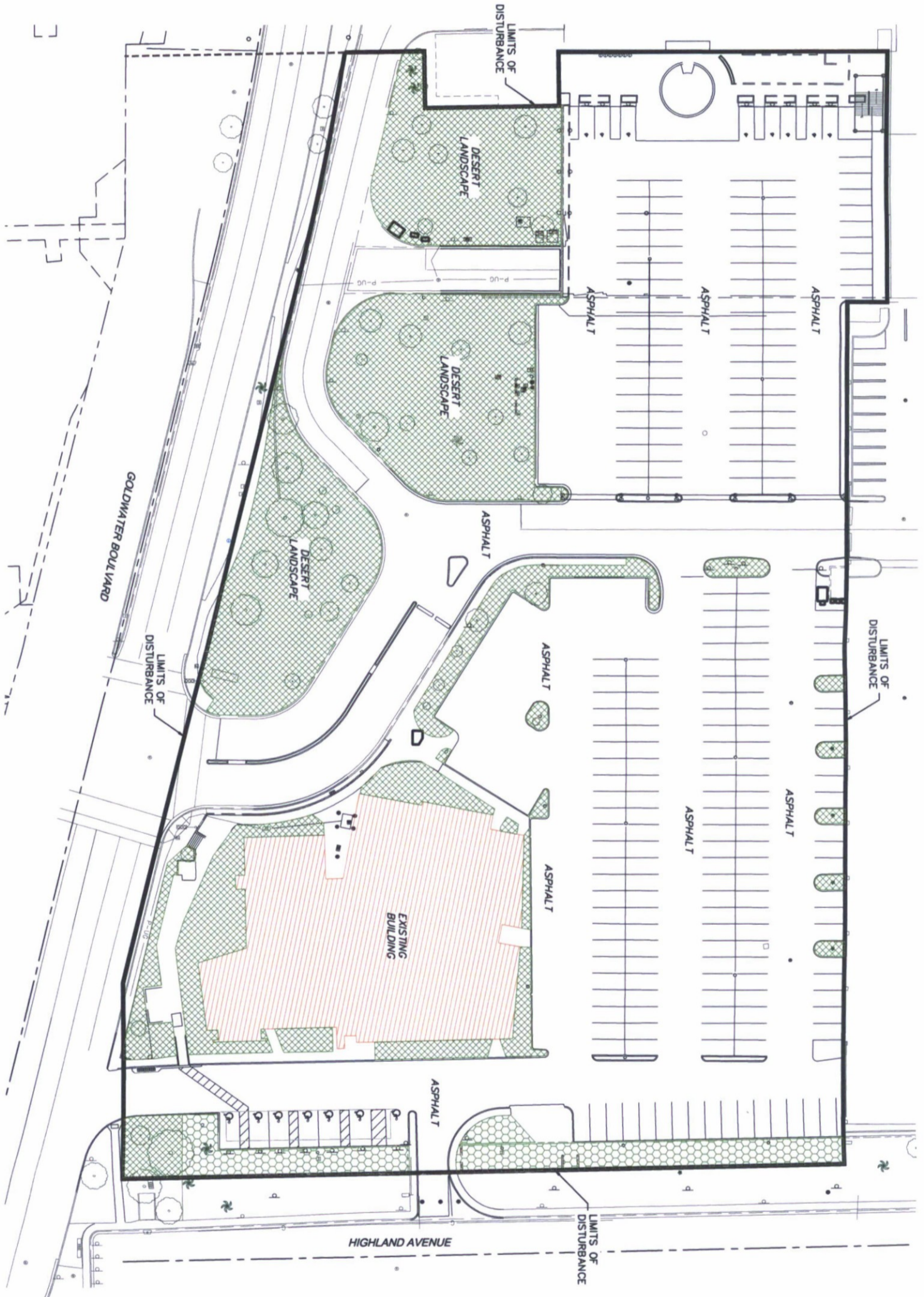
POST - DRAINAGE MAP FIGURE 4	2017
SCOTTSDALE FASHION SQUARE LUXURY WING ENTRY	
SCOTTSDALE, ARIZONA 85251	

drawn by: TSM
 designed by: B.L.Z.
 checked by: AP
 QA/QC by: CAD
 project no: 010-3009
 date: 10/20/2017

FIGURE 4

DWG: F:\2016_3501-4000\016-3609-Design\Reports\GNCV\Master Drainage Report\Lux Wing Master Report\Figure 4 - PROP CONDITIONS.dwg
 DATE: Nov 22, 2017 8:19am
 USER: condrens
 C:\PBASE\JOB\3509 C:\PBASE\JOB\3509 C:\PBASE\JOB\3509





RESULTS SUMMARY

BUILDING AREA - C=0.95	18,477 SF
DESERT LANDSCAPE AREA - C=0.83	39,968 SF
GRASSSED AREA - C=0.30	5,895 SF
SIDEWALK/PATIO/ASPHALT - C=0.95	145,564 SF
C WEIGHTED - C=0.91	209,704 SF



PRE 'C' AREA EXHIBIT
SCOTTSDALE FASHION SQUARE LUXURY WING ENTRY

SCOTTSDALE, ARIZONA 85251

2017

REVISIONS

REV. NO.	DATE	REVISIONS DESCRIPTION

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7250 North 16th Street, Suite 210 Phoenix, AZ 85020-5282 TEL 602.748.1000 FAX 602.748.1001 www.olssonassociates.com

FIGURE 5

APPENDIX B

FINAL DRAINAGE REPORT
SCOTTSDALE FASHION SQUARE LUXURY WING ENTRY SITE
7014 E. CAMELBACK ROAD, SCOTTSDALE, ARIZONA
COS CASE NO. 26-DR-2017

PREPARED FOR

Macerich

Phoenix, Arizona

PREPARED BY

Olsson Associates
7250 N. 16th Street, Suite 210
Phoenix, AZ 85020
602-748-1000



September 2017

Olsson Associates Project No. 016-3809





Appendix 4-1A DRAINAGE REPORT OUTLINE

Title Page: Project Name; Location; Type of Drainage Report (Preliminary, Master Plan, Final, etc.); and Engineer's Seal, Signature, and Date.
Table of Contents: Engineer's Seal, Signature, and Date.
1. Introduction <ul style="list-style-type: none">• Project Name, Location, Size, and Brief Description;• Type of Report (Preliminary, Master Plan, and Final, etc.); and• Purpose and Objectives.
2. Description of Existing Drainage Conditions and Characteristics <ul style="list-style-type: none">• On-site drainage:• Existing drainage network, patterns, and watershed and floodplain boundaries.• Off-site watershed:• Existing conditions and the drainage network entering and existing the project site.• Context relative to adjacent projects and improvements;• Flood Hazard Zones on the property, FIRM maps.• Site-specific photographs to support parameter selection.
3. Proposed Drainage Plan <ul style="list-style-type: none">• General description of proposed drainage system and components; including conveyance of off-site flows;• Future conditions; including development of adjacent properties;• Stormwater storage requirements:<ul style="list-style-type: none">- Volume required, volume provided, and basin locations.• Pre- and post- runoff characteristics at concentration points exiting the property;• Proposed drainage structures or special drainage facilities:<ul style="list-style-type: none">- Include design criteria and probable effect on the existing upstream and downstream drainage system.• Project Phasing:<ul style="list-style-type: none">- Improvements to be constructed with each phase, impact of phased construction, and required interim improvements. Development requirements must be met independently for each phase.
4. Special Conditions Project Stipulations, 401 and 404 Permits, AZPDES.
5. Data Analysis Methods <ul style="list-style-type: none">• Hydrologic procedures, parameter selection and assumptions.• Hydraulic procedures, methods, parameter selection and assumptions.• Stormwater storage calculation methods and assumptions.
6. Conclusions <ul style="list-style-type: none">• Overall Project• Project Phasing
7. Warning and Disclaimer of Liability <ul style="list-style-type: none">• Each drainage report must include a completed Warning and Disclaimer of Liability.
8. References



Appendix 4-1A DRAINAGE REPORT OUTLINE

Appendices - Hydrologic and Hydraulic Data and Calculations, and a signed Warning and Disclaimer of Liability

Electronic Input Files - HEC-1, HEC-HMS, and HEC-2 or HEC-RAS, on Compact Disk (CD), working copy of non-standard software. A PDF file of the drainage report must also be provided that includes all exhibits, plates, figures, etc.

Exhibits

- Vicinity Map
- Existing Conditions
- Topographic Map of Off-Site Watershed;
- Topographic Map of Existing On-site conditions with current 1-foot (minimum) contour mapping based on a current topographic survey.
- Current aerial photo, 800 scale or larger, showing site in context.
- Proposed On-site Drainage Plan
- Scale appropriate to type of drainage report and size of the project.



WARNING & 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.

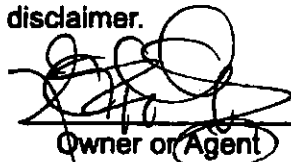
WARNING AND DISCLAIMER OF LIABILITY PURSUANT TO S.R.C §37-22

"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 man-made 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.

26-DR-2017
Plan Check No.


Owner or Agent

2/6/17
Date

Table of Contents

City of Scottsdale Drainage Report Outline— DS&PM Appendix 4-1A

City of Scottsdale Warning & Disclaimer of Liability— DS&PM Appendix 4-1C

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- Appendix B Drainage Map(s)
- Appendix C Drainage Calculations
- Appendix D Supplemental Information

List of Figures

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- Figure 2 Final Build-Out Exhibit
- Figure 3 Existing Conditions Drainage Map
- Figure 4 Drainage Map
- Figure 5 Pre 'C' Area Exhibit
- Figure 6 Post 'C' Area Exhibit



1.0 INTRODUCTION

1.1 Purpose of Report

The purpose of this final drainage report is to provide hydrologic and hydraulic documentation for the proposed Scottsdale Fashion Square Luxury Wing commercial site. More specifically, a design review of surface grading, and offsite flows that impact the site. The project will be designed and developed in accordance with the City of Scottsdale and Maricopa County’s current development standards and client requirements.

Per City of Scottsdale, Stormwater Management Division, Scottsdale Redevelopment Stormwater Storage Policy will apply to this site.

1.2 Site Description and Project Location

The proposed Scottsdale Fashion Square Luxury Wing Site (hereinafter referred to as the Project) consists of a commercial development with project zoning D/RCO-2 PBD covering approximately 4.81 acres. The Project is located within a portion of the Northeast Quarter of Section 22, Township 2 North, Range 4 East of the Gila and Salt River Meridian, Maricopa County, Arizona. More specifically, the project is located near the northwest corner of Camelback Road and Goldwater Boulevard in Scottsdale Fashion Square (see **Figure 1. Vicinity Map** below).



Figure 1: Vicinity Map

The site is currently developed as part of the greater Scottsdale Fashion Square Shopping Mall. Buildings, parking lot, and open space area will be redeveloped in multiple phases including restaurants, valet services and retail stores. This report accounts for the complete buildout of the 4.81-acre site, as provided in **Table 1** below (also refer to **Figure 6** in **Appendix B**). The Project is bounded by Highland Avenue to the north, Goldwater Boulevard to the east, Scottsdale Fashion Square Shopping Mall to the south and the mall's purple parking garage to the west. Site access to the public street system will be provided along Goldwater Boulevard.

Table 1. Final Buildout Gross Floor Area

Area ID	Use	Gross Building Floor Area (SF)	Building Cover (SF)
PAD A	Restaurant	12,335 SF	12,335 SF
PAD B	Restaurant	7,100 SF	7,100 SF
PAD C	Restaurant/Retail	9,240 SF	12,352 SF
PAD F	Restaurant	3,900 SF	3,900 SF
BOLT-ON	Shops- Mall addition	12,000 SF	14,131 SF

1.3 Topographic Conditions

The existing ground slopes from the northwest to the southeast at a 0.9 % slope. **Figure 3** in **Appendix B** presents the existing topographic conditions for the Project. Both Goldwater Boulevard and Highland Avenue have been fully improved with catch basin inlets for stormwater runoff.

1.4 FEMA Flood Insurance Rate Map

The project is entirely located within Zone "X" according to Flood Insurance Rate Map (FIRM) Panel 04013C1770L which is effective October 16, 2013 (REF 1). Zone X is defined as: "Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood." (Please refer to the **Figure 1A**, Flood Insurance Rate Map in **Appendix A**).

2.0 OFFSITE DRAINAGE

Offsite watershed conditions have been detailed within the existing Master Drainage Report from Collar, Williams & White Engineering, and will not be modified by this project.

Both Goldwater Boulevard and Highland Avenue are fully improved with catch basin inlets. Since these adjacent streets have been fully improved and the Project is not proposing to do street modifications, no analysis of street capacity or inlet capacity is presented with this report.

In the current condition, runoff from Highland Avenue is carried east in the gutter and then passes through a scupper into an existing storm system that crosses Goldwater Boulevard and eventually heads to Scottsdale Road.

Goldwater Boulevard runoff drains south and collects runoff in inlets south of the project site, which then drains south via storm sewer to Camelback Road.

Based on the existing Master Drainage Report (REF 6) from Collar, Williams & White Engineering, date May 10, 1988 (**Appendix D**), the runoff collected from the site discharges into an existing 84-inch storm drain pipe in Camelback Road and an existing 42-inch storm drain pipe located in Scottsdale Road. These two pipes connect to a 144-inch storm drain pipe which ultimately drains to Indian Bend Wash (See **Existing Conditions Drainage Map** in **Appendix B** for more details).

The Project site outfall will be at the southeast corner of the site onto Goldwater Boulevard as it has been historically directed.

Offsite drainage does not affect this project.

3.0 ONSITE DRAINAGE

The existing developed site has a storm sewer system that collects runoff and discharges into various storm water systems along Goldwater Boulevard. In reviewing the existing as-builts for *Camelview Plaza North Parking Lot*, approved by City of Scottsdale in 1990, there are three landscape areas in the southeast corner of the site, west of Goldwater Boulevard, that were originally designed as retention basins, capturing rainfall that sheet drains and falls directly on the said areas. Since no volumes were provide on the plan set, volumes were reproduced utilizing the field survey. The existing basin volumes reproduced utilizing the field survey are provided below, as well as on **Figure 3**.

Existing Retention Basin Volumes

EX. Basin ID (Per Figure 3)	Ponding Depth (FT)	Volume (CF)
Basin No. 1	1	1,487
Basin No. 2	1	1,618
Basin No. 3	1	449
Total		3,554

Meeting the requirements of the Redevelopment Stormwater Storage Policy, the basin closest to Goldwater Boulevard has been retained, while the water harvesting areas in the landscape areas throughout the site will also be provided to help retain the retention volume. See the Post Drainage Map, **Figure 4**.

Proposed Retention Volumes

Basin ID (Per Figure 4)	Ponding Depth (FT)	Volume (CF)
Basin No. 1	1	2,205
Water Harvesting Areas	0.50	1,363
Total		3,568

Land use areas for the site were determined for the existing and proposed conditions (see **Figure 5** and **Figure 6** in **Appendix B**) and used to find a weighted C coefficient for both conditions. The assumptions are summarized in **Table 1** below and calculated weighted values are shown in **Appendix C**.

Table 1. Land Use 'C' Coefficient Assumptions

Land Use	Building Area	Paved Area	Desert Landscape Area	Grassed Area
C=	0.95	0.95	0.83	0.30

The results show that the project will have no overall change in land use with the pre and post 'C' coefficient both equaling 0.91. This means that a pre-vs-post comparison will show no net change.

The City of Scottsdale requires that a redeveloped site retain the pre-vs-post difference, or its own first flush volume (first half inch of rainfall), before directing runoff to the offsite roads and storm systems. To meet this requirement City of Phoenix and Maricopa County Rational Rainfall Method for “First Flush” Flowrate ($Q_{FF} = CIA$, where $C = 1.0$ and $P_{FF} = 0.5$), was used to size a hydrodynamic separator that will be installed and maintained to treat a portion of the site runoff before exiting or entering the storm drain system. The hydrodynamic separator selected for the flow rate calculated will be a Contech Vortsentry HS96, which is designed to treat up to 8.10 cfs of runoff before discharging into the existing storm sewer. The system will be located on site to treat sub-basins A01, A02, A03, A04 and A05 for a total of 2.01 acres. See below for the actual flowrate calculations.

Maricopa County Rational Rainfall Method for “First Flush” Flowrate

$P_{FF} = 0.5$ inches

$Q_{FF} = CIA$, where $C = 1.0$ and

$I = (0.5 \text{ in/hr} \times 60 \text{ min/hr}) / T_c$, assume $T_c = 15 \text{ min}$

$Q_{FF} = 0.91 \times (0.5 \text{ in/hr} \times 60 \text{ min/hr}) / 15 \times 2.01 = 3.82 \text{ CFS}$

Analysis was done to ensure that site modifications will not alter existing drainage patterns in a negative way. Sub-areas are shown in **Figures 3 and 4** in **Appendix B** showing a site breakdown of drainage patterns for both the pre and post conditions (see **Table 2. Analysis Focus Points Summary** for results).

Table 2. Analysis Focus Points Summary

Area ID	Outlet Point	Existing Area (Acres)	Proposed Area (Acres)	Difference (Acres)
A	Existing 18” storm sewer	3.14	3.30	+0.17
B	Existing grate inlets south of site	0.84	0.54	-0.30
C	Existing storm sewer crossing Goldwater	0.23	0.16	-0.07
D	Goldwater Boulevard street gutter	0.61	0.81	+0.20

The table shows that inlets for areas A and D will take on a small additional volume in the post condition. Based on our calculations, the additional volumes present no issue.

3.1 Design Standards

Onsite drainage will be designed and constructed to conform to the City of Scottsdale *Design*

Standards & Policies Manual, Chapter 4 (REF 2) and the Flood Control District of Maricopa County's Drainage Design Manual for Maricopa County, Arizona, Volume 1, Hydrology and Volume II, Hydraulics (Ref 4 & 5).

3.2 Finished Floor Elevations

The proposed finish floor elevation for all phases of the project will be much greater than 14" above the site outfall. The ultimate outfall for the site is at a 1270.70 while the minimum finished floor elevation will be set at 1291.00.

3.3 Storm System Maintenance

Ongoing maintenance of the designed drainage systems is required to preserve their design integrity. Poor maintenance can prevent the system from performing to its intended design purpose and can result in reduced performance. Maintenance is the responsibility of the property owner for facilities on private property. A regular maintenance program is required to ensure drainage systems perform to the level of protection or service as presented in this report and the project's plans and specifications.

4.0 CONCLUSIONS

The following conclusions have been reached as a result of this drainage investigation, in support of the proposed Scottsdale Fashion Square Luxury Wing Project:

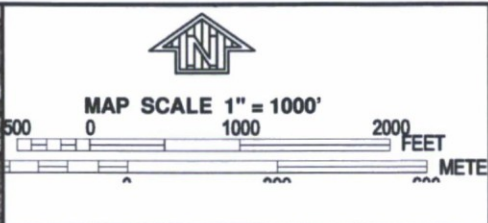
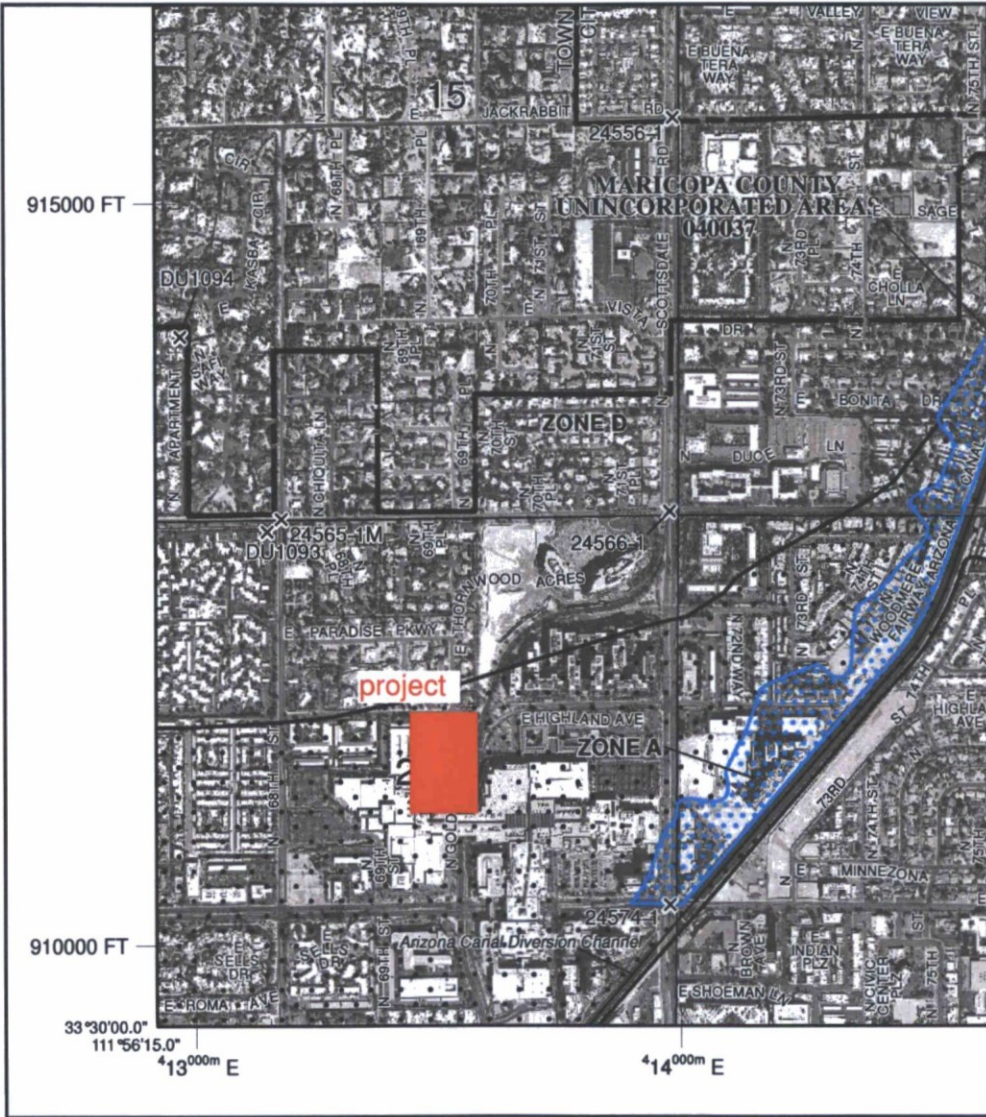
- This drainage report was prepared in accordance with the recommendations and design parameters from the City of Scottsdale *Design Standards & Policies Manual, Chapter 4* (REF 2), and *MCFCD Drainage Design Manuals, Volume I and II* (REF 4&5).
- The proposed Drainage plan maintains the existing drainage patterns and flows. The proposed drainage will continue to drain to the existing storm system as outlined in the *Master Drainage Plan for Scottsdale Fashion Square* approved August 18, 1986, revised May 10, 1988, by Collar, Williams & White Engineering (Appendix D).
- Per our discussion with the City of Scottsdale Stormwater Management Division, this project is required to meet City of Scottsdale Redevelopment Stormwater Storage Policy.
- The project is entirely located within Zone "X" according to FIRM Panel 04013C1770L. Zone X is defined as: "Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood."

5.0 REFERENCES

1. Flood Insurance Rate Map, Maricopa County, Arizona, Map Number 04013C1770L, Federal Emergency Management Agency, Washington DC, October 16, 2013.
2. City of Scottsdale Design Standards & Policies Manual, Chapter 4, City of Scottsdale, AZ, January 2010.
3. MAG Uniform Standard Details for Public Works Construction, Maricopa Association of Governments, Phoenix, AZ, 2015 Revision.
4. Drainage Design Manual for Maricopa County, Arizona – Hydrology, 4th Edition, Flood Control District of Maricopa County, Phoenix, AZ, August 15, 2013.
5. Drainage Design Manual for Maricopa County, Arizona – Hydraulics, 3rd Edition, Flood Control District of Maricopa County, Phoenix, AZ, August 15, 2013.
6. Master Drainage Plan for Scottsdale Fashion Square, Collar, Williams & White Engineering, May 10, 1988.
7. Maricopa County (2016, June 1). Standard 6.4.1 First Flush. Drainage Policies and Standards for Maricopa County, Arizona
8. City of Phoenix (2011, April). 6.8.3 First Flush. Stormwater Policies and Standards



APPENDIX A FEMA FIRM MAP



NATIONAL FLOOD INSURANCE PROGRAM

PANEL 1770L

FIRM
FLOOD INSURANCE RATE MAP
MARICOPA COUNTY,
ARIZONA
AND INCORPORATED AREAS

PANEL 1770 OF 4425
 (SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
MARICOPA COUNTY	040037	1770	L
PARADISE VALLEY TOWN OF	040049	1770	L
SCOTTSDALE, CITY OF	045012	1770	L

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
04013C1770L
MAP REVISED
OCTOBER 16, 2013

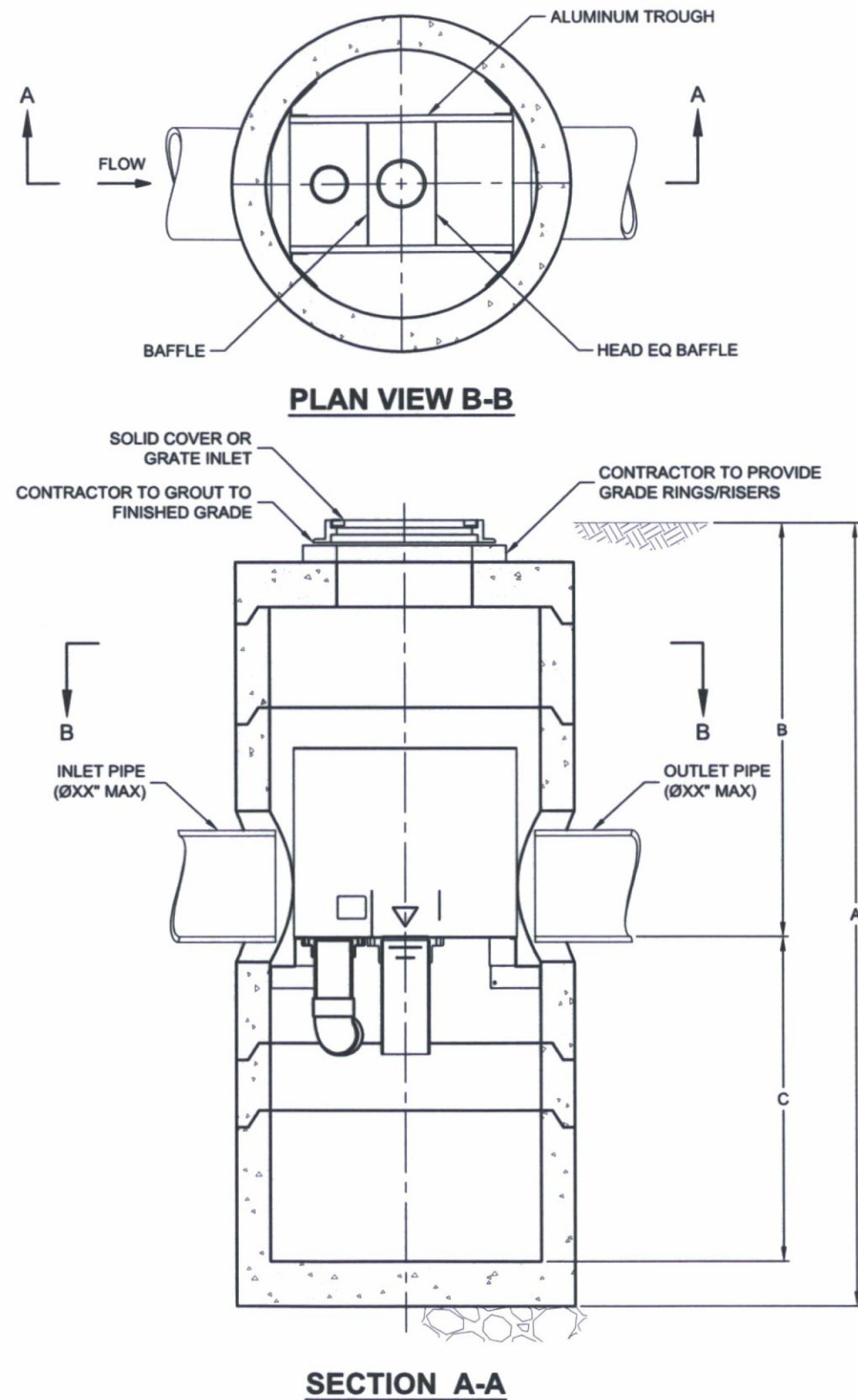
Federal Emergency Management Agency

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



**APPENDIX B
DRAINAGE MAP(S)**

I:\STORMWATER\COMMP\36 VORTSENTRY HS\40 STANDARD DRAWINGS\DWG\SHS-DTL.DWG 5/16/2014 4:31 PM



SECTION A-A

VortSentry

THIS PRODUCT MAY BE PROTECTED BY ONE OR MORE OF THE FOLLOWING U.S. PATENTS: 6,891,114; 7,296,682; RELATED FOREIGN PATENTS, OR OTHER PATENTS PENDING.

VORTSENTRY HS DESIGN NOTES

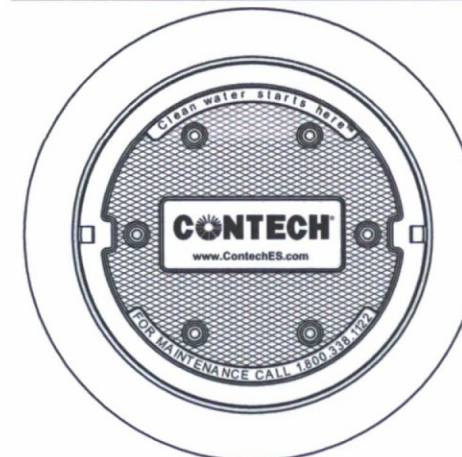
VSHS RATED TREATMENT CAPACITY IS SHOWN IN THE TABLE BELOW, OR PER LOCAL REGULATIONS. MAXIMUM HYDRAULIC INTERNAL BYPASS CAPACITY VARIES. CONTACT YOUR CONTECH REPRESENTATIVE FOR ADDITIONAL INFORMATION.

THE STANDARD SOLID COVER CONFIGURATION IS SHOWN. ALTERNATE CONFIGURATIONS ARE AVAILABLE AND ARE LISTED BELOW.

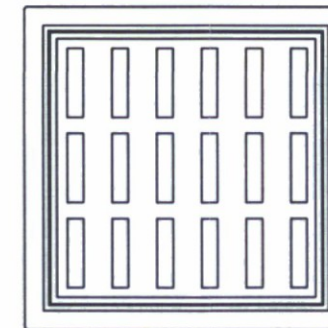
CONFIGURATION OPTION DESCRIPTION	
	GRATE INLET (NO INLET PIPE)
	GRATE INLET WITH INLET PIPE

VORTSENTRY HS GENERAL INFORMATION

Model	Manhole Diameter (ID)		Total Treatment Flow Rate		Typical Total Distance Rim to Outside Bottom A		Typical Distance Rim to Invert B		Typical Depth Below Invert (inside) C		Approximate Minimum Distance Rim to Invert		Maximum Pipe Diameter (ID)	
	FT	mm	CFS	L/S	FT	m	FT	m	FT	mm	FT	m	IN	mm
HS36	3	900	0.55	15.6	10.16	3.10	4.08	1.24	5.58	1702	3.00	0.91	18	450
HS48	4	1200	1.20	34.0	13.25	4.04	6.00	1.83	6.75	2057	4.00	1.22	24	600
HS60	5	1500	2.20	62.3	15.13	4.61	6.50	1.98	7.96	2426	4.82	1.47	30	750
HS72	6	1800	3.70	104.8	16.56	5.05	6.75	2.06	9.15	2788	5.59	1.70	36	900
HS84	7	2100	5.60	158.6	18.85	5.75	7.75	2.36	10.35	3156	5.00	1.52	42	1050
HS96	8	2400	8.10	229.4	20.87	6.36	8.50	2.59	11.54	3518	6.91	2.11	48	1200



FRAME AND COVER
(DIAMETER VARIES)
N.T.S.



FRAME AND GRATE
(24" SQUARE)
N.T.S.

GENERAL NOTES

1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. DIMENSIONS MARKED WITH () ARE REFERENCE DIMENSIONS. ACTUAL DIMENSIONS MAY VARY.
3. FOR FABRICATION DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHT, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS LLC REPRESENTATIVE. www.ContechES.com
4. VORTSENTRY HS WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING.
5. STRUCTURE SHALL MEET AASHTO HS20 AND CASTINGS SHALL MEET AASHTO M306 LOAD RATING, ASSUMING GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION.

INSTALLATION NOTES

1. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
2. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE VORTSENTRY HS MANHOLE STRUCTURE (LIFTING CLUTCHES PROVIDED).
3. CONTRACTOR TO INSTALL JOINT SEALANT BETWEEN ALL STRUCTURE SECTIONS AND ASSEMBLE STRUCTURE.
4. CONTRACTOR TO PROVIDE, INSTALL, AND GROUT PIPES. MATCH PIPE INVERTS WITH ELEVATIONS SHOWN.
5. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO ASSURE UNIT IS WATER TIGHT, HOLDING WATER TO FLOWLINE INVERT MINIMUM. IT IS SUGGESTED THAT ALL JOINTS BELOW PIPE INVERTS ARE GROUTED.

SITE SPECIFIC DATA REQUIREMENTS

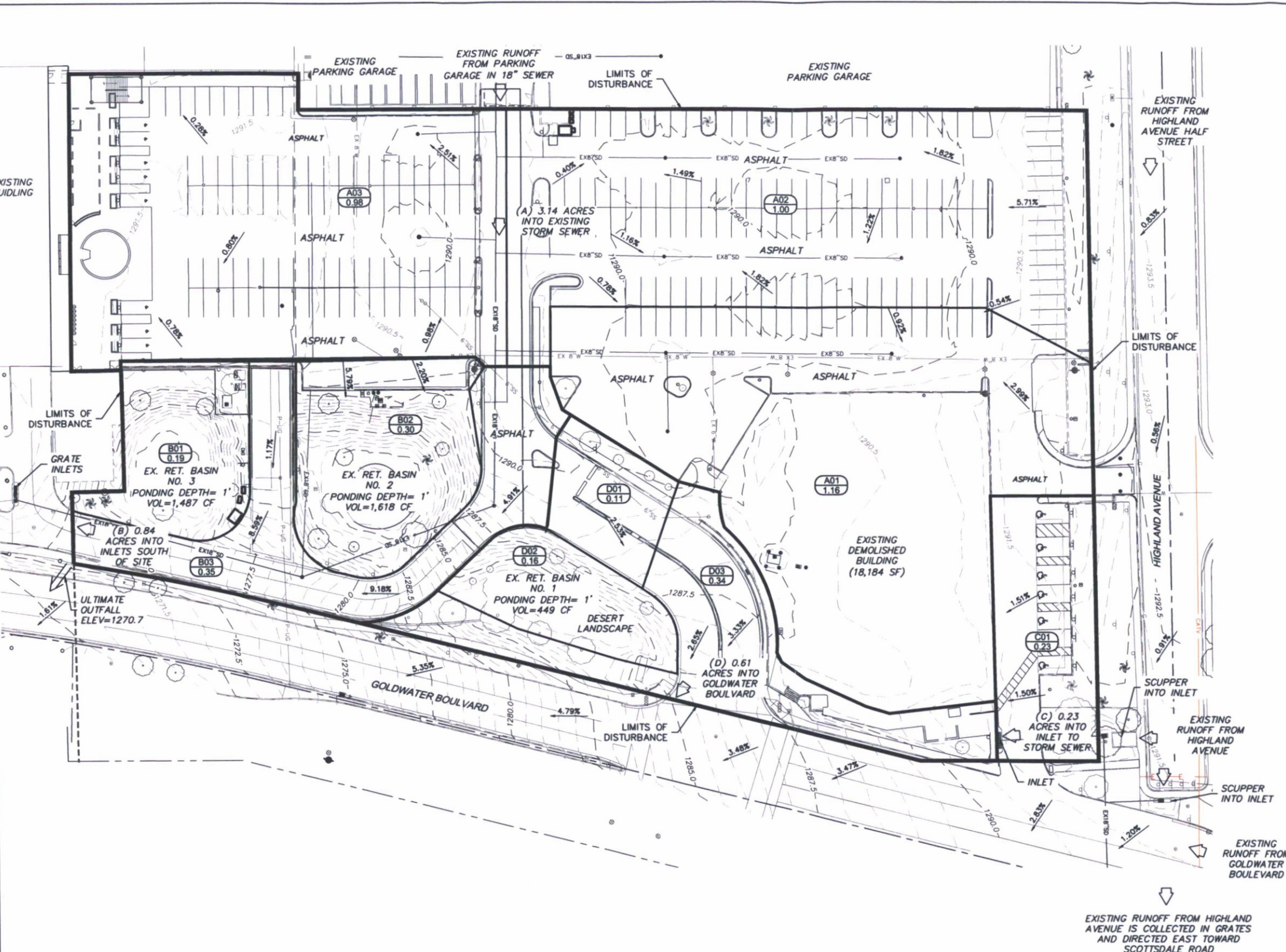
STRUCTURE ID				
WATER QUALITY FLOW RATE (CFS)				*
PEAK FLOW RATE (CFS)				*
RETURN PERIOD OF PEAK FLOW (YRS)				*
PIPE DATA:	I.E.	MATERIAL	DIAMETER	
INLET PIPE 1	*	*	*	
OUTLET PIPE	*	*	*	
RIM ELEVATION				*
ANTI-FLOTATION BALLAST	WIDTH	HEIGHT		
	*	*		
NOTES/SPECIAL REQUIREMENTS:				
* PER ENGINEER OF RECORD				

CONTECH
ENGINEERED SOLUTIONS LLC

www.ContechES.com
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

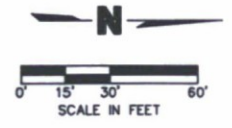
**VORTSENTRY HS
STANDARD DETAIL**

DWG: F:\2016\3501-4000\016-3809\40-Design\Reports\Water Drainage Report\Lux Wing Master Report\FIGURE 3_EX CONDITIONS.dwg
 DATE: Nov 22, 2017 8:47am
 USER: condrens
 PROJECT: C:\P\B\K_063009 C:\BASE_53009



DRAINAGE MAP LEGEND

DRAINAGE AREA ID	
DRAINAGE AREA (ACRES)	
SLOPE DIRECTION	
MINOR-SUB BASIN	
MAJOR-SUB BASIN	
ANALYSIS FOCUS POINT	
CONTOUR LINES TYPES	
EXISTING MAJOR CONTOUR	
EXISTING MINOR CONTOUR	



OLSSON ASSOCIATES
 7250 North 18th Street, Suite 210
 Phoenix, AZ 85020-5202
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 FAX: 602.748.1001
 www.olsonassociates.com

OLSSON ASSOCIATES ASSUMES NO RESPONSIBILITY FOR EXISTING UTILITY LOCATIONS (HORIZONTAL OR VERTICAL). THE EXISTING UTILITIES SHOWN ON THIS DRAWING HAVE BEEN PLOTTED FROM THE BEST AVAILABLE INFORMATION. IT IS HOWEVER THE RESPONSIBILITY OF THE CONTRACTOR TO FIELD VERIFY THE LOCATION OF ALL UTILITIES PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION ACTIVITIES.

REV. NO.	DATE	REVISIONS DESCRIPTION

EXISTING CONDITIONS DRAINAGE MAP
 SCOTTSDALE FASHION SQUARE LUXURY WING ENTRY
 SCOTTSDALE, ARIZONA 85251

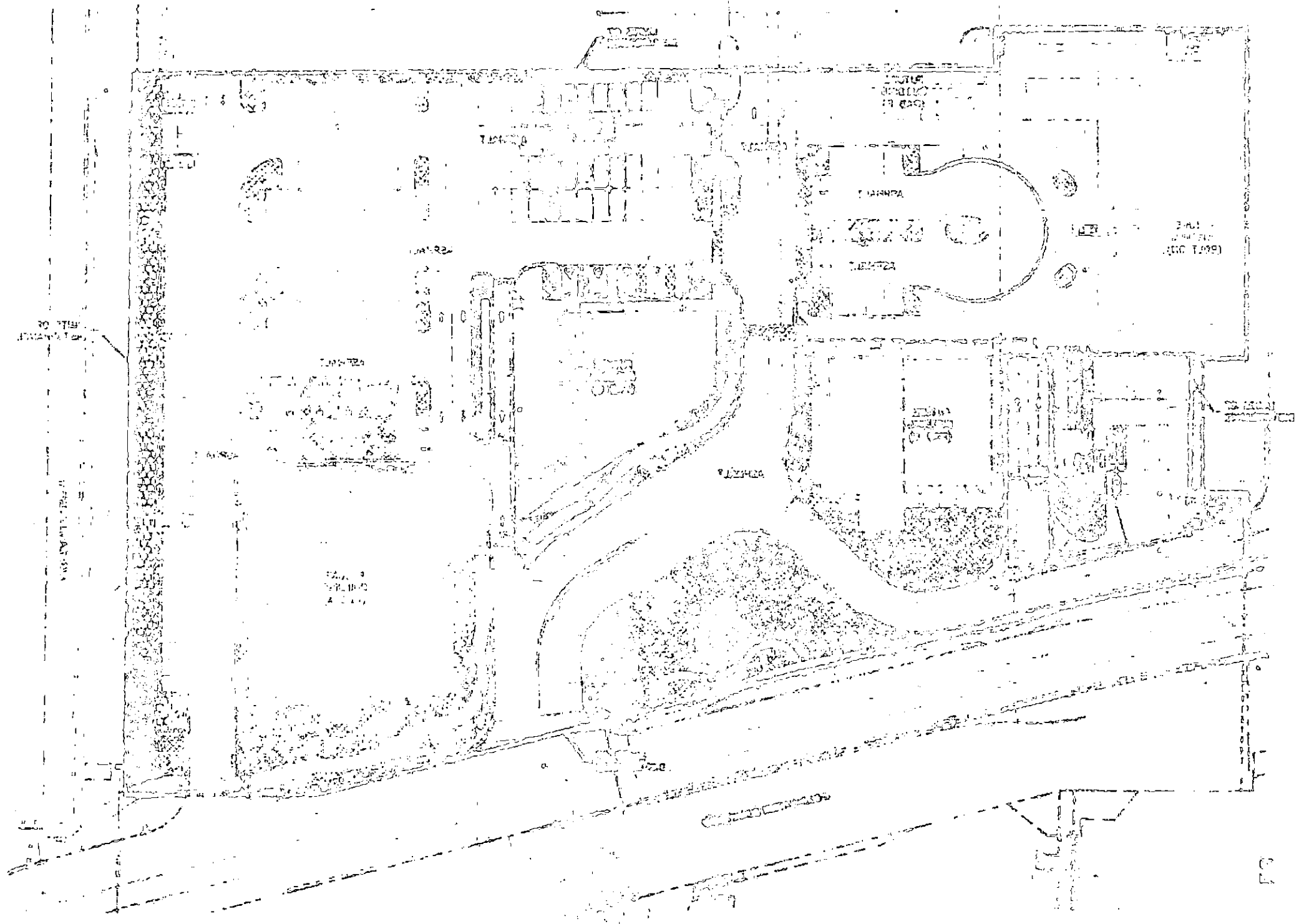
drawn by:	TRW
designed by:	SJZ
checked by:	AP
QA/QC by:	CAH
project no.:	016-3809
date:	10.30.2017

FIGURE 3



MOBILIO

RETAIL STORE



- 1.50m - 1.50m
- 2.00m - 2.00m
- 3.00m - 3.00m
- 4.00m - 4.00m
- 5.00m - 5.00m

ITEM	DESCRIPTION	QTY	UNIT PRICE	TOTAL PRICE
1	SOFA	1	1500	1500
2	TABLE	1	2000	2000
3	CHAIR	4	500	2000
4	SHELVING	2	1000	2000
5	STAND	1	800	800
6	STAND	1	800	800
7	STAND	1	800	800
8	STAND	1	800	800
9	STAND	1	800	800
10	STAND	1	800	800
11	STAND	1	800	800
12	STAND	1	800	800
13	STAND	1	800	800
14	STAND	1	800	800
15	STAND	1	800	800
16	STAND	1	800	800
17	STAND	1	800	800
18	STAND	1	800	800
19	STAND	1	800	800
20	STAND	1	800	800
21	STAND	1	800	800
22	STAND	1	800	800
23	STAND	1	800	800
24	STAND	1	800	800
25	STAND	1	800	800
26	STAND	1	800	800
27	STAND	1	800	800
28	STAND	1	800	800
29	STAND	1	800	800
30	STAND	1	800	800
31	STAND	1	800	800
32	STAND	1	800	800
33	STAND	1	800	800
34	STAND	1	800	800
35	STAND	1	800	800
36	STAND	1	800	800
37	STAND	1	800	800
38	STAND	1	800	800
39	STAND	1	800	800
40	STAND	1	800	800
41	STAND	1	800	800
42	STAND	1	800	800
43	STAND	1	800	800
44	STAND	1	800	800
45	STAND	1	800	800
46	STAND	1	800	800
47	STAND	1	800	800
48	STAND	1	800	800
49	STAND	1	800	800
50	STAND	1	800	800



APPENDIX C DRAINAGE CALCULATIONS



NOAA Atlas 14, Volume 1, Version 5
 Location name: Scottsdale, Arizona, USA*
 Latitude: 33.5043°, Longitude: -111.9314°
 Elevation: 1290.29 ft**
 * source: ESRI Maps
 ** source: USGS



POINT PRECIPITATION FREQUENCY ESTIMATES

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

NOAA, National Weather Service, Silver Spring, Maryland

[PF tabular](#) | [PF graphical](#) | [Maps & aerials](#)

PF tabular

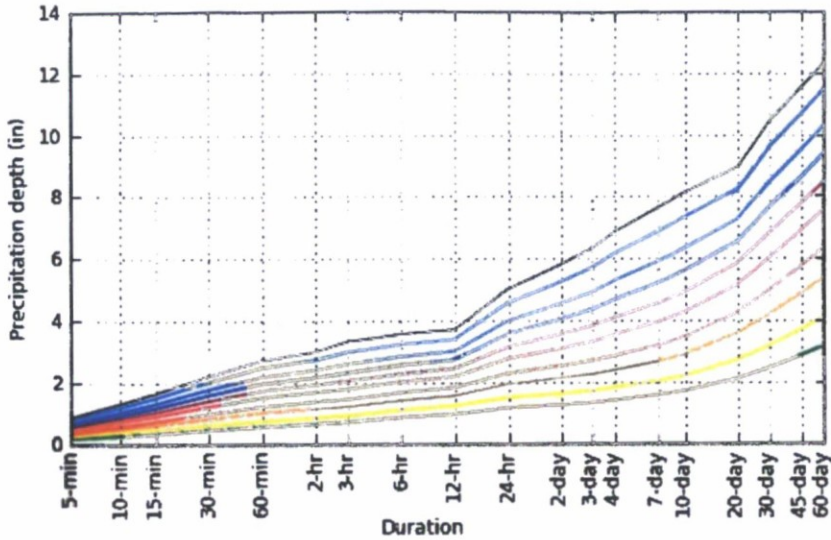
PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)¹										
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.184 (0.155-0.225)	0.241 (0.203-0.294)	0.328 (0.273-0.398)	0.394 (0.327-0.476)	0.484 (0.395-0.582)	0.553 (0.446-0.662)	0.623 (0.493-0.744)	0.696 (0.541-0.829)	0.792 (0.600-0.946)	0.866 (0.642-1.04)
10-min	0.281 (0.235-0.342)	0.367 (0.309-0.448)	0.498 (0.416-0.605)	0.599 (0.498-0.725)	0.736 (0.601-0.885)	0.841 (0.678-1.01)	0.949 (0.751-1.13)	1.06 (0.823-1.26)	1.21 (0.913-1.44)	1.32 (0.978-1.58)
15-min	0.348 (0.292-0.424)	0.455 (0.383-0.555)	0.618 (0.516-0.751)	0.743 (0.617-0.898)	0.912 (0.745-1.10)	1.04 (0.841-1.25)	1.18 (0.930-1.40)	1.31 (1.02-1.57)	1.49 (1.13-1.78)	1.63 (1.21-1.95)
30-min	0.468 (0.393-0.572)	0.612 (0.516-0.747)	0.832 (0.695-1.01)	1.00 (0.831-1.21)	1.23 (1.00-1.48)	1.41 (1.13-1.68)	1.58 (1.25-1.89)	1.77 (1.37-2.11)	2.01 (1.52-2.40)	2.20 (1.63-2.63)
60-min	0.579 (0.486-0.707)	0.757 (0.638-0.925)	1.03 (0.860-1.25)	1.24 (1.03-1.50)	1.52 (1.24-1.83)	1.74 (1.40-2.08)	1.96 (1.55-2.34)	2.19 (1.70-2.61)	2.49 (1.89-2.97)	2.72 (2.02-3.26)
2-hr	0.673 (0.572-0.803)	0.871 (0.741-1.04)	1.17 (0.988-1.39)	1.39 (1.17-1.65)	1.70 (1.41-2.00)	1.93 (1.58-2.28)	2.18 (1.75-2.56)	2.42 (1.91-2.85)	2.75 (2.12-3.24)	3.01 (2.27-3.56)
3-hr	0.734 (0.622-0.885)	0.941 (0.801-1.14)	1.24 (1.05-1.49)	1.47 (1.23-1.76)	1.80 (1.48-2.14)	2.06 (1.68-2.44)	2.33 (1.86-2.77)	2.62 (2.06-3.10)	3.01 (2.29-3.57)	3.33 (2.47-3.95)
6-hr	0.884 (0.764-1.04)	1.12 (0.970-1.32)	1.44 (1.24-1.69)	1.69 (1.44-1.97)	2.03 (1.71-2.36)	2.30 (1.91-2.66)	2.58 (2.11-2.99)	2.86 (2.30-3.32)	3.25 (2.55-3.78)	3.56 (2.72-4.15)
12-hr	0.988 (0.863-1.15)	1.25 (1.09-1.45)	1.58 (1.37-1.83)	1.84 (1.59-2.13)	2.20 (1.87-2.53)	2.47 (2.08-2.84)	2.75 (2.28-3.16)	3.03 (2.48-3.49)	3.41 (2.73-3.95)	3.70 (2.91-4.32)
24-hr	1.18 (1.05-1.34)	1.50 (1.33-1.71)	1.94 (1.72-2.21)	2.30 (2.03-2.61)	2.78 (2.44-3.16)	3.17 (2.76-3.58)	3.57 (3.09-4.04)	3.99 (3.42-4.51)	4.56 (3.87-5.16)	5.02 (4.21-5.69)
2-day	1.28 (1.13-1.45)	1.63 (1.45-1.85)	2.14 (1.90-2.42)	2.55 (2.25-2.88)	3.12 (2.74-3.52)	3.57 (3.12-4.04)	4.05 (3.52-4.58)	4.55 (3.92-5.15)	5.25 (4.47-5.95)	5.81 (4.90-6.61)
3-day	1.35 (1.20-1.53)	1.73 (1.53-1.96)	2.28 (2.01-2.57)	2.72 (2.39-3.07)	3.34 (2.93-3.77)	3.83 (3.34-4.33)	4.36 (3.78-4.93)	4.92 (4.22-5.56)	5.70 (4.84-6.45)	6.34 (5.32-7.19)
4-day	1.43 (1.26-1.62)	1.83 (1.62-2.07)	2.41 (2.13-2.72)	2.88 (2.54-3.26)	3.55 (3.11-4.01)	4.09 (3.56-4.62)	4.67 (4.04-5.27)	5.29 (4.53-5.97)	6.16 (5.20-6.94)	6.86 (5.74-7.76)
7-day	1.59 (1.41-1.81)	2.03 (1.80-2.31)	2.69 (2.37-3.05)	3.22 (2.83-3.64)	3.97 (3.46-4.49)	4.57 (3.97-5.16)	5.21 (4.49-5.89)	5.90 (5.04-6.67)	6.86 (5.79-7.76)	7.64 (6.39-8.66)
10-day	1.72 (1.53-1.95)	2.21 (1.95-2.50)	2.91 (2.57-3.29)	3.49 (3.07-3.93)	4.28 (3.75-4.82)	4.93 (4.28-5.53)	5.61 (4.84-6.30)	6.32 (5.42-7.12)	7.33 (6.21-8.25)	8.14 (6.82-9.18)
20-day	2.12 (1.89-2.39)	2.73 (2.42-3.07)	3.61 (3.20-4.05)	4.27 (3.78-4.79)	5.16 (4.55-5.79)	5.85 (5.14-6.56)	6.55 (5.72-7.35)	7.26 (6.31-8.16)	8.22 (7.08-9.26)	8.96 (7.66-10.1)
30-day	2.48 (2.19-2.79)	3.19 (2.83-3.59)	4.21 (3.72-4.73)	4.98 (4.40-5.59)	6.02 (5.29-6.75)	6.82 (5.96-7.64)	7.64 (6.65-8.55)	8.47 (7.34-9.48)	9.59 (8.25-10.8)	10.5 (8.93-11.8)
45-day	2.87 (2.55-3.22)	3.69 (3.29-4.15)	4.87 (4.33-5.47)	5.74 (5.09-6.44)	6.89 (6.09-7.72)	7.75 (6.83-8.70)	8.63 (7.57-9.68)	9.50 (8.30-10.7)	10.7 (9.25-12.0)	11.5 (9.94-13.0)
60-day	3.17 (2.83-3.55)	4.09 (3.66-4.58)	5.39 (4.80-6.02)	6.33 (5.63-7.06)	7.55 (6.70-8.44)	8.46 (7.48-9.46)	9.37 (8.25-10.5)	10.3 (9.00-11.5)	11.4 (9.97-12.8)	12.3 (10.7-13.9)

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

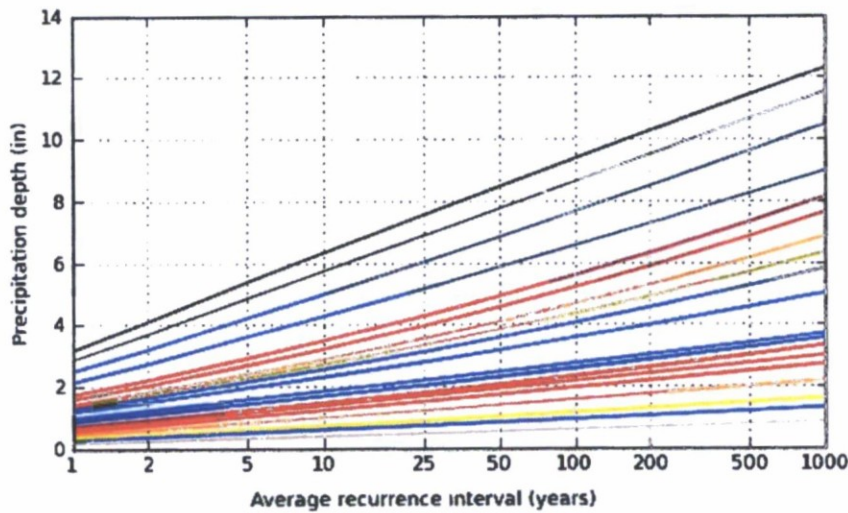
[Back to Top](#)

PF graphical

PDS-based depth-duration-frequency (DDF) curves
 Latitude: 33.5043°. Longitude: -111.9314°



Average recurrence interval (years)
1
2
5
10
25
50
100
200
500
1000



Duration
5-min
10-min
15-min
30-min
60-min
2-hr
3-hr
6-hr
12-hr
24-hr
2-day
3-day
4-day
7-day
10-day
20-day
30-day
45-day
60-day

Maps & aerials

Small scale terrain

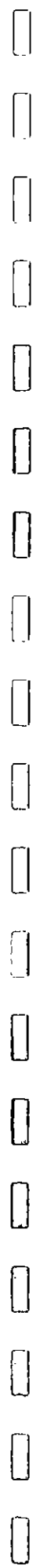


Large scale terrain



Large scale map







NOAA Atlas 14, Volume 1, Version 5
 Location name: Scottsdale, Arizona, USA*
 Latitude: 33.5043°, Longitude: -111.9314°
 Elevation: 1290.29 ft**
 * source: ESRI Maps
 ** source: USGS



POINT PRECIPITATION FREQUENCY ESTIMATES

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

NOAA, National Weather Service, Silver Spring, Maryland

[PF tabular](#) | [PF graphical](#) | [Maps & aerials](#)

PF tabular

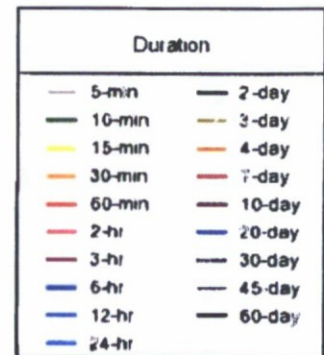
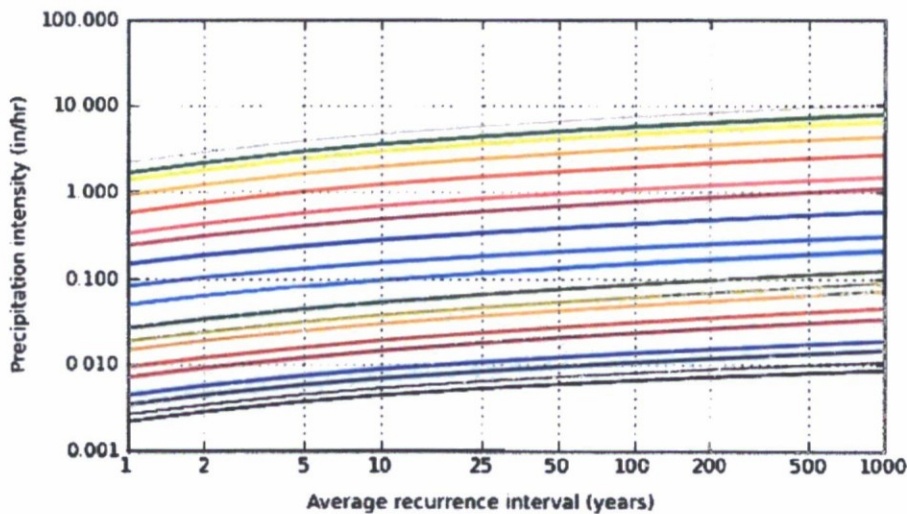
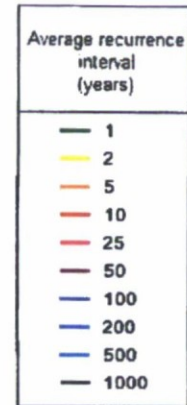
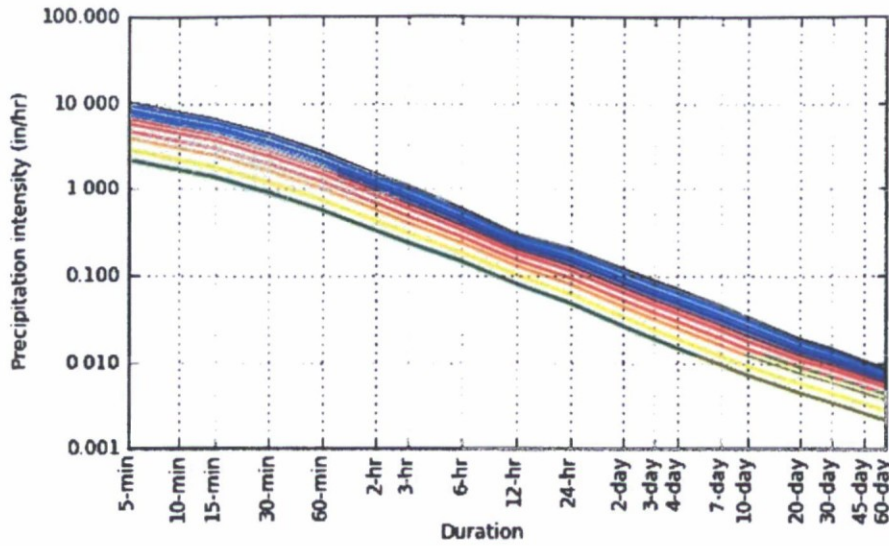
PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches/hour) ¹										
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	2.21 (1.86-2.70)	2.89 (2.44-3.53)	3.94 (3.28-4.78)	4.73 (3.92-5.71)	5.81 (4.74-6.98)	6.64 (5.35-7.94)	7.48 (5.92-8.93)	8.35 (6.49-9.95)	9.50 (7.20-11.4)	10.4 (7.70-12.4)
10-min	1.69 (1.41-2.05)	2.20 (1.85-2.69)	2.99 (2.50-3.63)	3.59 (2.99-4.35)	4.42 (3.61-5.31)	5.05 (4.07-6.04)	5.69 (4.51-6.80)	6.35 (4.94-7.57)	7.23 (5.48-8.63)	7.90 (5.87-9.46)
15-min	1.39 (1.17-1.70)	1.82 (1.53-2.22)	2.47 (2.06-3.00)	2.97 (2.47-3.59)	3.65 (2.98-4.39)	4.17 (3.36-4.99)	4.70 (3.72-5.62)	5.25 (4.08-6.26)	5.98 (4.53-7.14)	6.53 (4.85-7.81)
30-min	0.936 (0.786-1.14)	1.22 (1.03-1.49)	1.66 (1.39-2.02)	2.00 (1.66-2.42)	2.46 (2.01-2.96)	2.81 (2.26-3.36)	3.17 (2.51-3.78)	3.53 (2.75-4.21)	4.02 (3.05-4.81)	4.40 (3.26-5.26)
60-min	0.579 (0.486-0.707)	0.757 (0.638-0.925)	1.03 (0.860-1.25)	1.24 (1.03-1.50)	1.52 (1.24-1.83)	1.74 (1.40-2.08)	1.96 (1.55-2.34)	2.19 (1.70-2.61)	2.49 (1.89-2.97)	2.72 (2.02-3.26)
2-hr	0.336 (0.286-0.402)	0.436 (0.370-0.522)	0.582 (0.494-0.694)	0.694 (0.582-0.826)	0.848 (0.704-1.00)	0.966 (0.790-1.14)	1.09 (0.876-1.28)	1.21 (0.957-1.42)	1.38 (1.06-1.62)	1.50 (1.14-1.78)
3-hr	0.244 (0.207-0.295)	0.313 (0.267-0.380)	0.412 (0.348-0.496)	0.490 (0.410-0.587)	0.599 (0.494-0.713)	0.685 (0.558-0.814)	0.776 (0.620-0.921)	0.871 (0.684-1.03)	1.00 (0.763-1.19)	1.11 (0.823-1.32)
6-hr	0.148 (0.128-0.174)	0.187 (0.162-0.220)	0.240 (0.207-0.281)	0.282 (0.241-0.329)	0.339 (0.286-0.394)	0.384 (0.319-0.445)	0.431 (0.352-0.498)	0.478 (0.384-0.555)	0.543 (0.425-0.631)	0.595 (0.455-0.693)
12-hr	0.082 (0.072-0.095)	0.104 (0.090-0.121)	0.131 (0.114-0.152)	0.163 (0.132-0.177)	0.182 (0.156-0.210)	0.205 (0.173-0.236)	0.228 (0.189-0.263)	0.251 (0.206-0.290)	0.283 (0.226-0.328)	0.307 (0.241-0.359)
24-hr	0.049 (0.044-0.056)	0.063 (0.055-0.071)	0.081 (0.072-0.092)	0.096 (0.084-0.109)	0.116 (0.102-0.131)	0.132 (0.115-0.149)	0.149 (0.129-0.168)	0.166 (0.142-0.188)	0.190 (0.161-0.215)	0.209 (0.175-0.237)
2-day	0.027 (0.024-0.030)	0.034 (0.030-0.039)	0.045 (0.040-0.050)	0.053 (0.047-0.060)	0.065 (0.057-0.073)	0.074 (0.065-0.084)	0.084 (0.073-0.095)	0.095 (0.082-0.107)	0.109 (0.093-0.124)	0.121 (0.102-0.138)
3-day	0.019 (0.017-0.021)	0.024 (0.021-0.027)	0.032 (0.028-0.036)	0.038 (0.033-0.043)	0.046 (0.041-0.052)	0.053 (0.046-0.060)	0.061 (0.052-0.068)	0.068 (0.059-0.077)	0.079 (0.067-0.090)	0.088 (0.074-0.100)
4-day	0.015 (0.013-0.017)	0.019 (0.017-0.022)	0.025 (0.022-0.028)	0.030 (0.026-0.034)	0.037 (0.032-0.042)	0.043 (0.037-0.048)	0.049 (0.042-0.055)	0.055 (0.047-0.062)	0.064 (0.054-0.072)	0.071 (0.060-0.081)
7-day	0.009 (0.008-0.011)	0.012 (0.011-0.014)	0.016 (0.014-0.018)	0.019 (0.017-0.022)	0.024 (0.021-0.027)	0.027 (0.024-0.031)	0.031 (0.027-0.035)	0.035 (0.030-0.040)	0.041 (0.034-0.046)	0.045 (0.038-0.052)
10-day	0.007 (0.006-0.008)	0.009 (0.008-0.010)	0.012 (0.011-0.014)	0.015 (0.013-0.016)	0.018 (0.016-0.020)	0.021 (0.018-0.023)	0.023 (0.020-0.026)	0.026 (0.023-0.030)	0.031 (0.026-0.034)	0.034 (0.028-0.038)
20-day	0.004 (0.004-0.005)	0.006 (0.005-0.006)	0.008 (0.007-0.008)	0.009 (0.008-0.010)	0.011 (0.009-0.012)	0.012 (0.011-0.014)	0.014 (0.012-0.015)	0.015 (0.013-0.017)	0.017 (0.015-0.019)	0.019 (0.016-0.021)
30-day	0.003 (0.003-0.004)	0.004 (0.004-0.005)	0.006 (0.005-0.007)	0.007 (0.006-0.008)	0.008 (0.007-0.009)	0.009 (0.008-0.011)	0.011 (0.009-0.012)	0.012 (0.010-0.013)	0.013 (0.011-0.015)	0.015 (0.012-0.016)
45-day	0.003 (0.002-0.003)	0.003 (0.003-0.004)	0.005 (0.004-0.005)	0.005 (0.005-0.006)	0.006 (0.006-0.007)	0.007 (0.006-0.008)	0.008 (0.007-0.009)	0.009 (0.008-0.010)	0.010 (0.009-0.011)	0.011 (0.009-0.012)
60-day	0.002 (0.002-0.002)	0.003 (0.003-0.003)	0.004 (0.003-0.004)	0.004 (0.004-0.005)	0.005 (0.005-0.006)	0.006 (0.005-0.007)	0.007 (0.006-0.007)	0.007 (0.006-0.008)	0.008 (0.007-0.009)	0.009 (0.007-0.010)

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

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PF graphical

PDS-based intensity-duration-frequency (IDF) curves
 Latitude: 33.5043°, Longitude: -111.9314°



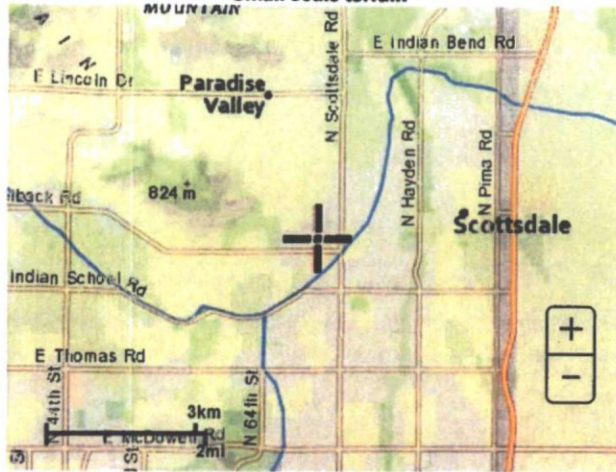
NOAA Atlas 14, Volume 1, Version 5

Created (GMT): Mon Feb 13 21 17 43 2017

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Maps & aerals

Small scale terrain



Large scale terrain



Large scale map



Large scale aerial



[Back to Top](#)

[US Department of Commerce](#)
[National Oceanic and Atmospheric Administration](#)
[National Weather Service](#)
[National Water Center](#)
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

[Disclaimer](#)

Scottsdale Fashion Square - Luxury Wing Entry
Preliminary Drainage Calcs

Oct-17

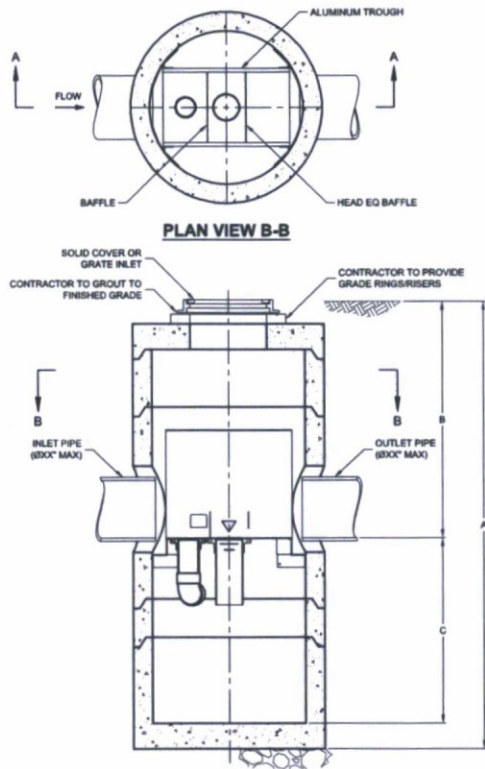
BY: SJV

Pre vs Post - "C" Coefficient Calculations

Area Condition	Total Area (sf)	Total Area (ac)	Building (C=.95) (sf)	Paved (C=.95) (sf)	Desert Landscape (C=0.83) (sf)	Grassed (C=0.30) (sf)	Weighted C
Pre	209,704	4.81	18,477	145,564	39,968	5,695	0.91
Post	209,704	4.81	50,448	122,780	28,875	7,601	0.91
						Difference	0.00



APPENDIX D
SUPPLEMENTAL INFORMATION



SECTION A-A

VortSentry
THIS PRODUCT AND ALL RELATED PRODUCTS ARE THE PROPERTY OF CONTECH ENGINEERED SOLUTIONS LLC. ALL RIGHTS RESERVED. © 2014 CONTECH ENGINEERED SOLUTIONS LLC. ALL RIGHTS RESERVED.

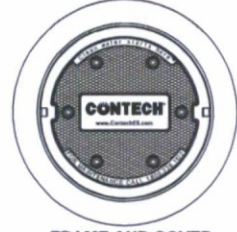
VORTSENTRY HS DESIGN NOTES

VSHS RATED TREATMENT CAPACITY IS SHOWN IN THE TABLE BELOW, OR PER LOCAL REGULATIONS. MAXIMUM HYDRAULIC INTERNAL BYPASS CAPACITY VARIES. CONTACT YOUR CONTECH REPRESENTATIVE FOR ADDITIONAL INFORMATION.
 THE STANDARD SOLID COVER CONFIGURATION IS SHOWN. ALTERNATE CONFIGURATIONS ARE AVAILABLE AND ARE LISTED BELOW.

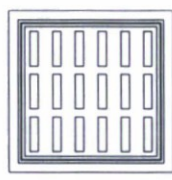
CONFIGURATION OPTION DESCRIPTION
GRATE INLET (NO INLET PIPE)
GRATE INLET WITH INLET PIPE

VORTSENTRY HS GENERAL INFORMATION

Model	Manhole Diameter (ID)		Total Treatment Flow Rate		Typical Total Distance Rim to Outside Bottom		Typical Distance Rim to Invert B		Typical Depth Below Invert (inside) C		Approximate Minimum Distance Rim to Invert		Maximum Pipe Diameter (ID)	
	FT	mm	CFS	LS	FT	m	FT	m	FT	mm	FT	m	IN	mm
HS36	3	900	0.55	15.6	10.16	3.10	4.08	1.24	5.58	1702	3.00	0.91	18	450
HS48	4	1200	1.20	34.0	13.25	4.04	8.00	1.83	8.75	2657	4.00	1.22	24	600
HS60	5	1500	2.20	62.3	15.13	4.61	8.50	1.98	7.96	2426	4.82	1.47	30	750
HS72	6	1800	3.70	104.8	16.86	5.05	8.75	2.06	9.15	2788	5.89	1.70	36	900
HS84	7	2100	5.80	158.8	18.85	5.75	7.75	2.38	10.35	3156	5.00	1.52	42	1050
HS96	8	2400	8.10	229.4	20.87	6.38	8.50	2.59	11.54	3516	6.91	2.11	48	1200



FRAME AND COVER
 (DIAMETER VARIES)
 N.T.S.



FRAME AND GRATE
 (24" SQUARE)
 N.T.S.

SITE SPECIFIC DATA REQUIREMENTS			
STRUCTURE ID			*
WATER QUALITY FLOW RATE (CFS)			*
PEAK FLOW RATE (CFS)			*
RETURN PERIOD OF PEAK FLOW (YRS)			*
PIPE DATA:	I.E.	MATERIAL	DIAMETER
INLET PIPE 1	*	*	*
OUTLET PIPE	*	*	*
RIM ELEVATION			*
ANTI-FLOTATION BALLAST		WIDTH	HEIGHT
		*	*
NOTES/SPECIAL REQUIREMENTS:			
* PER ENGINEER OF RECORD			

GENERAL NOTES

- CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
- DIMENSIONS MARKED WITH () ARE REFERENCE DIMENSIONS. ACTUAL DIMENSIONS MAY VARY.
- FOR FABRICATION DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHT, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS LLC REPRESENTATIVE. www.ContechES.com
- VORTSENTRY HS WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING.
- STRUCTURE SHALL MEET AASHTO HS20 AND CASTINGS SHALL MEET AASHTO M306 LOAD RATING, ASSUMING GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION.

INSTALLATION NOTES

- ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
- CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE VORTSENTRY HS MANHOLE STRUCTURE (LIFTING CLUTCHES PROVIDED).
- CONTRACTOR TO INSTALL JOINT SEALANT BETWEEN ALL STRUCTURE SECTIONS AND ASSEMBLE STRUCTURE.
- CONTRACTOR TO PROVIDE, INSTALL, AND GROUT PIPES. MATCH PIPE INVERTS WITH ELEVATIONS SHOWN.
- CONTRACTOR TO TAKE APPROPRIATE MEASURES TO ASSURE UNIT IS WATER TIGHT, HOLDING WATER TO FLOWLINE INVERT MINIMUM. IT IS SUGGESTED THAT ALL JOINTS BELOW PIPE INVERTS ARE GROUTED.

CONTECH
 ENGINEERED SOLUTIONS LLC
www.ContechES.com
 8025 Centra Plaza Dr., Suite 400, West Chester, OH 45389
 800-338-1122 613-645-7900 613-645-7983 FAX

VORTSENTRY HS
STANDARD DETAIL

V:\STANDARD\COMPOSITE\VORTSENTRY HS\STD\DRAWINGS\DWG\HS-STD-DWG 8/16/2014 4:51 PM

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	1
2.0	EXISTING DRAINAGE CONDITIONS AND CHARACTERISTICS	1
3.0	PROVIDED DRAINAGE PLAN	1
4.0	SPECIAL CONDITIONS	1
5.0	CONCLUSIONS.....	2

APPENDIX A VICINITY MAP

APPENDIX B FEMA FLOOD INSURANCE RATE MAP

APPENDIX C MASTER DRAINAGE PLAN FOR SCOTTSDALE FASHION SQUARE

MAP POCKET 1 AERIAL PHOTOGRAPH OF AREA AND SITE

MAP POCKET 2 PRELIMINARY GRADING AND DRAINAGE PLAN

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

5.0 CONCLUSIONS

The proposed redevelopment will not alter the existing storm water drainage and is drainage study consistent with the City of Scottsdale Downtown Infrastructure Master Plan Volume 3.



County Parcels



APPENDIX B

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:

<u>COMMUNITY</u>	<u>NUMBER</u>	<u>PANEL</u>	<u>SUFFIX</u>
MARICOPA COUNTY	040037	1095	H
PARADISE VALLEY, TOWN OF	040040	1095	H
SCOTTSDALE, CITY OF	048012	1095	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.



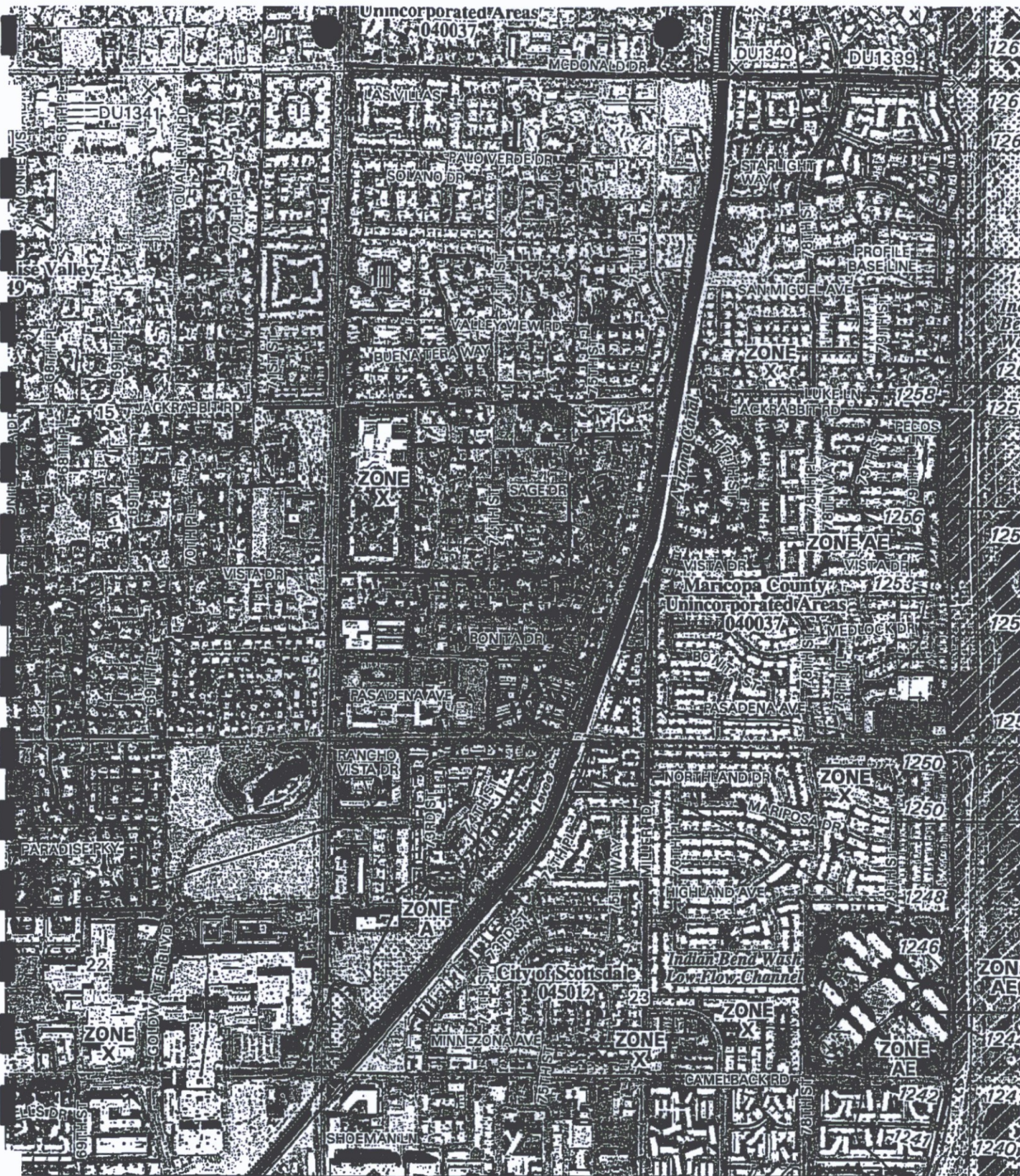
MAP NUMBER

04013C1695H

MAP REVISED

SEPTEMBER 30, 2005

Federal Emergency Management Agency



14 000m E

15 000m E

JOINS PAN

APPENDIX C

**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

**RECEIVED
MASTER PLANNING**

MAY 10 1988

BY FIRST REVIEW

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 on-grade 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 Road 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.



December 8, 1987


Mr. William R. Kendall
Collar, Williams and White Engineering
2702 North 44th Street, Suite 100A
Phoenix, Arizona 85008

Dear Mr. Kendall:

This letter is to notify you that the City of Scottsdale will not require Scottsdale Fashion Square redevelopment (104-Z-85 and 59-Z-87) to provide any new onsite retention or detention facilities.

It is our understanding that the existing onsite catch basin and storm drain network which conveys stormwater runoff to the underground storm sewers in Camelback and Scottsdale Roads, will remain intact. These guidelines conform to the master drainage report for Scottsdale Fashion Square, approved by the City on August 18, 1986.

Sincerely,


John Faramelli
Project Review Director

cc: John Smetana, Project Review Manager
Dick Crew, Planning and Zoning Manager
Randy Grant, Project Review Manager

JF:sw

RECEIVED

DEC 15 1987

C.W.W. B.L.