CITY OF SCOTTSDALE

Drainage Reports

Abbreviated Water and Sewer Needs

Water Study

Wastewater Study

Stormwater Waiver Application

PRELIMINARY DRAINAGE REPORT

Alexan Scottsdale
Scottsdale, Arizona

Plan # _____

Case # 21-ZN-2018

Q-S # _____

X Accepted

___ Corrections

DG 10/16/2018

Reviewed By Date

Prepared For:

Trammell Crow Residential
3889 Maple Avenue, Suite 200
Dallas, Texas 75219

Kimley»Horn

096253013
September 2018

21-ZN-2018
9/21/18

Alexan Scottsdale

PRELIMINARY DRAINAGE REPORT

SEPTEMBER 2018

Prepared By:

Kimley»Horn

21-ZN-2018
9/21/18

Kimley»Horn

Contents

Tables

Appendices

Kimley»Horn

1.0 INTRODUCTION

1.1 PROJECT DESCRIPTION

Trammell Crow Residential is proposing to construct a multi-family development at the northeast corner of Scottsdale Road and Palm Lane in Scottsdale, Arizona. The project is anticipated to consist of multiple four-story apartment buildings with associated parking and infrastructure improvements.

1.2 SITE LOCATION

The proposed development encompasses approximately 7.6 net acres in a portion of the Southwest Quarter of Section 35, Township 2 North, Range 4 East of the Gila and Salt River Base and Meridian in Maricopa County, Arizona. The proposed development consists of four previously developed parcels. Three of the parcels are commercial developments located adjacent to Scottsdale Road and zoned C-3. The fourth parcel is located east of the commercial parcels and consists of a single-family home and vacant land. This parcel is zoned R1-7. More specifically, the site is bounded on the west by Scottsdale Road and various commercial properties, on the south by Palm Lane and residential single-family homes, on the east by residential senior-living apartments, and on the north by an alley and residential single-family homes. The site slopes from the northwest to the southeast at approximately 0.5%. See Appendix A for the Site Location Map and Legal Descriptions. See Figure 1 in Appendix D for a Context Aerial Map.

1.3 PURPOSE

This Preliminary Drainage Report is intended to satisfy City of Scottsdale requirements. This report provides a description of the current stormwater drainage patterns and a description of the required and proposed drainage improvements.

1.4 OBJECTIVES

This report provides a drainage plan for the site that is intended to meet the drainage standards and guidelines of the City of Scottsdale and the Flood Control District of Maricopa County (FCDMC). In particular, this report will demonstrate the following:

1. Any existing off-site flows from the adjacent properties will handled and conveyed in a way consistent with the current drainage patterns.

2. The proposed site drainage patterns will remain consistent with the current drainage patterns.

3. Permanent drainage facilities will have a positive outfall and any detained stormwater will be disposed of within 36 hours via dual-chamber drywells.

4. Drainage facilities will be designed such that the 100-year post-development flows are collected and conveyed in such a manner so as to not cause damage to buildings and property.

5. Stormwater retention is provided for the difference between the pre-development and post-development stormwater volume.

6. Building finish floor elevations will be determined in accordance with City of Scottsdale and FEMA Flood Zone requirements.

2.0 DESCRIPTION OF EXISTING DRAINAGE CONDITIONS AND CHARACTERISTICS

2.1 EXISTING ON-SITE DRAINAGE CONDITIONS

The site currently consists of previously developed commercial and residential parcels. The three commercial parcels consist of asphalt pavement and existing buildings with limited landscaping. The residential parcel consists of a single-family home and bare land. The site is bounded on the west by Scottsdale Road and various commercial properties, on the south by Palm Lane and residential single-family homes, on the east by residential senior-living apartments, and on the north by an alley and residential single-family homes. The site slopes from the northwest to the southeast at approximately 0.5%.

Stormwater from the site currently flows to the southeast corner as sheet flow where it overtops the adjacent sidewalk and roll curb and flows east along Palm Lane toward 74th Street. No drainage features currently exist on the site. Site-generated stormwater ultimately reaches the City of Scottsdale storm drain system through a curb catch basin at the northwest corner of 74th Street and McDowell Road.

Refer to Figure 2 in Appendix D for the Existing Conditions Exhibit.

2.2 EXISTING OFF-SITE DRAINAGE CONDITIONS

The proposed site is impacted by off-site stormwater runoff generated by an existing commercial parcel located in the northwest corner of the site. Stormwater from this adjacent commercial parcel currently sheet flows from west to east and enters the proposed site along the shared property line. Ultimately, the off-site stormwater combines with the site-generated stormwater and continues to sheet flow to the southeast across the site.

Stormwater runoff from the adjacent portion of Scottsdale Road is collected in catch basins and conveyed to the south in the City storm drain system. Stormwater runoff from the adjacent portion of Palm Lane is conveyed east to 74th Street via curb and gutter where it eventually enters the City storm drain system. Off-site flows from the existing alley along the north property line flow east and do not affect the site.

Refer to Figure 2 in Appendix D for the Existing Conditions Exhibit.

2.3 FEMA FLOOD HAZARD AREAS

The site is located in Flood Zone “X” according to the Flood Insurance Rate Map 04013C2235L, dated October 16, 2013. Zone “X” is designated by FEMA as “areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than one foot or within drainage areas less than one square mile; and areas protected by levees from 1% annual chance flood.” Refer to Appendix B for the FEMA FIRMette map for the site.

3.0 PROPOSED DRAINAGE PLAN

3.1 GENERAL DESCRIPTION

In the analysis of the proposed drainage conditions the following items are considered:

- Area Types (concrete pavement, building, and desert landscaping)
- Magnitude of areas
- Slopes
- Storm Drain

3.2 PROPOSED SITE CONDITIONS

According to the City of Scottsdale's Design Standards & Policies Manual (DS&PM), sites that have been previously developed are required to detain/retain the difference between the pre-development and post-development stormwater run-off volume generated by the 100-year, 2-hour storm event. The City of Scottsdale defines "previously developed sites" as those "sites where the city has issued a permit for grading of the site or the site was graded or developed prior to 1987 regardless of issuance of a city permit." Historical aerial imagery shows that the parcels were developed and improved before 1969 and therefore qualify as "previously developed" according to the City's definition. The proposed site will be required to detain/retain the pre-development vs post-development (pre- vs post-) or first flush stormwater run-off volume, whichever is greater.

Stormwater generated on the proposed site will be conveyed via sheet flow to a system of catch basins and underground storm drains. Stormwater storage will be provided by 10-foot diameter CMP underground retention tanks near the south of the site. The underground retention tanks will drain in 36 hours or less via dual chamber drywells. The proposed storm drain system will be designed in such a way that stormwater in excess of the pre- vs. post- or first flush run-off volume will be conveyed through the system, bubble up through a catch basin near the existing ultimate site outfall, and exit the site into Palm Lane, consistent with the existing drainage pattern.

Refer to Figure 5 in Appendix D for the Preliminary Grading and Drainage Plan.

3.3 PROPOSED OFF-SITE CONDITIONS

As previously noted, the proposed site is impacted by off-site stormwater runoff generated by the commercial parcel located in the northwest corner of the site. A dedicated area catch basin and storm drain pipe will collect and convey any off-site flows south through the site toward Palm Lane. A bubble-up structure will be installed adjacent to the Palm Lane right-of-way where the off-site flows will exit the site, consistent with the existing drainage pattern. In the event that this parcel is developed in the future, it is anticipated that the parcel will be required to treat and retain/detain the site generated pre- vs. post- or first flush stormwater runoff, whichever is greater. A storm drain stub will be provided at the property line to facilitate future disposal of any detained stormwater.

To protect the on-site storm drain system and retention tanks of the proposed site, the storm drain line used to convey the off-site flows will be kept independent from the on-site storm drain system.

3.4 STORMWATER STORAGE REQUIREMENTS

As previously noted, the proposed development will be required to retain the greater of the pre- vs post- or first flush stormwater runoff volume. The proposed site's pre- vs post- volume required is greater than the first flush required. Refer to Table 1 for a comparison of the two scenarios.

Table 1 Pre vs Post Volume and First Flush Retention Comparison

Pre- vs Post			
Cpost-Cpre [ΔC]	**Precipitation Depth [P] (in)**	**Area [A] (sf)**	**Required Volume [(ΔC*P*A)/12] (ft3)**
0.855-0.594=0.261	2.14	326,906	15,203

First Flush			
Runoff Coefficient [C]	**Precipitation Depth [P] (in)**	**Area [A] (sf)**	**Required Volume [(C*P*A)/12] (ft3)**
1.0	0.5	326,906	13,621

Refer to Appendix C for the Hydrologic Calculations. Refer to Figure 3 and Figure 4 in Appendix D for the Pre-Development and Post-Development Area exhibits, respectively.

On-site storage will be provided in a 10-foot diameter CMP underground storage tank. The underground storage tank will be drained in 36 hours or less via dual-chamber drywells. Stormwater runoff in excess of the pre-vs-post storage volume will be collected by the on-site storm drain system and will overtop the rim of the lowest catch basin, located near the southeast corner of the site.

3.5 PRE- AND POST-DEVELOPMENT RUNOFF CHARACTERISTICS AT CONCENTRATION POINTS

The existing site consists of a combination of commercial use, residential use, and bare land. Current topography indicates the site drains from the northwest to the southwest. The concentration point for the existing runoff is at the southeast corner of the site, near Palm Lane.

The pre- vs post-development stormwater runoff will be retained in an underground retention tank. Stormwater runoff in excess of the pre- vs post- volume will overtop a proposed catch basin near the southeast corner of the site. Similar to the existing condition, the stormwater runoff concentration point for the proposed development will be located at the southeast corner of the site.

Refer to Figure 2 in Appendix D for the Existing Conditions Exhibit.

3.6 ADEQ AZPDES REQUIREMENTS

Prior to construction an executed Notice of Intent (NOI) shall be submitted to Arizona Department of Environmental Quality (ADEQ) in conformance with the Arizona Pollution Discharge Elimination System Permit (AZPDES) permit. The NOI and associated stormwater management best management practices will remain active on the site until construction is complete and a Notice of Termination is filed with ADEQ in conformance with AZPDES permit.

3.7 PROJECT PHASING

This project will be constructed in a single phase.

4.0 SPECIAL CONDITIONS

4.1 404 DISCUSSION

Do to the previous development of the project site, no 404 washes are anticipated.

5.0 DATA ANALYSIS METHODS

5.1 HYDROLOGIC PROCEDURES, PARAMETER SELECTION, AND ASSUMPTIONS

Hydrologic calculations for the site will be performed using the rational equation in the FCDMC Drainage Design Manual Volume I, which is limited to drainage areas of up to 160 acres. A weighted runoff coefficient was used for the site based upon the large amount of landscaping located adjacent to perimeters of the site.

For analysis of the development, the site will be sub-divided into sub-basins consisting of pavement, landscaping, and building areas.

5.2 HYDRAULIC PROCEDURES, METHODS, PARAMETER SELECTION, AND ASSUMPTIONS

All flows for proposed conditions will be determined using the rational method as outlined by the Drainage Design Manual by Maricopa County Flood Control District. Due to the small nature of the watersheds for the individual sub-basins, a minimum time of concentration of five minutes will be assumed. All drainage basins will assume a runoff coefficient of 0.95 with the exception of the landscape sub-basins, which will utilize a runoff coefficient of 0.45 per the DS&PM. The peak flows at the sub-basin concentration points will be calculated and provided with the Final Drainage Report.

The following criteria will be used to size the proposed pipes for on-site stormwater conveyance:

- A maximum allowable 100-year ponding depth of six inches above the catch basin grate.
- A minimum of 12 inches of freeboard between the 100-year ponding depth and the building finish floor elevation.
- The tailwater condition for the 100-year event will be assumed to be the hydraulic grade line at the pipe connection location.
- The 10-year tailwater condition will be assumed to be free outfall.

StormCAD analysis for the 10-year and 100-year events will be provided with the final drainage report.

Storm drain catch basins will be sized using Figure 3.29 from the FHWA HEC-12 dated 1984. A 50% clogging factor will be applied in the analysis. Catch basin analysis will be provided with the final drainage report.

5.3 STORMWATER STORAGE CALCULATION METHODS AND ASSUMPTIONS

As previously noted, the proposed site will be required to retain the pre- vs- post stormwater runoff volume. An underground 10-foot diameter retention tank will be used to store the site-generated stormwater. The

required pre- vs post- volume is calculated based on Section 4-1.201.C.1.b of the City of Scottsdale 2018 Design Standards & Policies Manual (DS&PM):

$$V = (\Delta C * P * A)/12$$

Where: V = Required first flush volume (cubic feet)

ΔC = Weighted runoff coefficient for the proposed development – weighted runoff coefficient for the existing development

P = Precipitation depth of 2.14 inches

A = Contributing area (square feet)

6.0 CONCLUSION

6.1 OVERALL PROJECT

Based on the results of this Preliminary Drainage Report, the following can be concluded:

- Off-site stormwater that impacts the proposed site from the adjacent commercial parcel to the northwest will be collected and conveyed to the ultimate outfall.
- An underground retention system will be provided to retain the pre- vs post- development 100-year, 2-hour storm event.
- Underground retention tanks will drain within 36 hours via dual-chamber drywells.
- An on-site storm drain system consisting of catch basins and pipes will be designed and detailed calculations will be provided with the Final Drainage Report.
- Based on the current Flood Insurance Rate Map (FIRM), the site is located in the Zone “X”.
- The building finish floor elevations will be designed to be at least fourteen inches above the ultimate site outfall elevation.

This report is intended to provide a level of assurance that the site will adhere to all appropriate reviewing agency guidelines with respect to drainage and flood protection.

7.0 REFERENCES

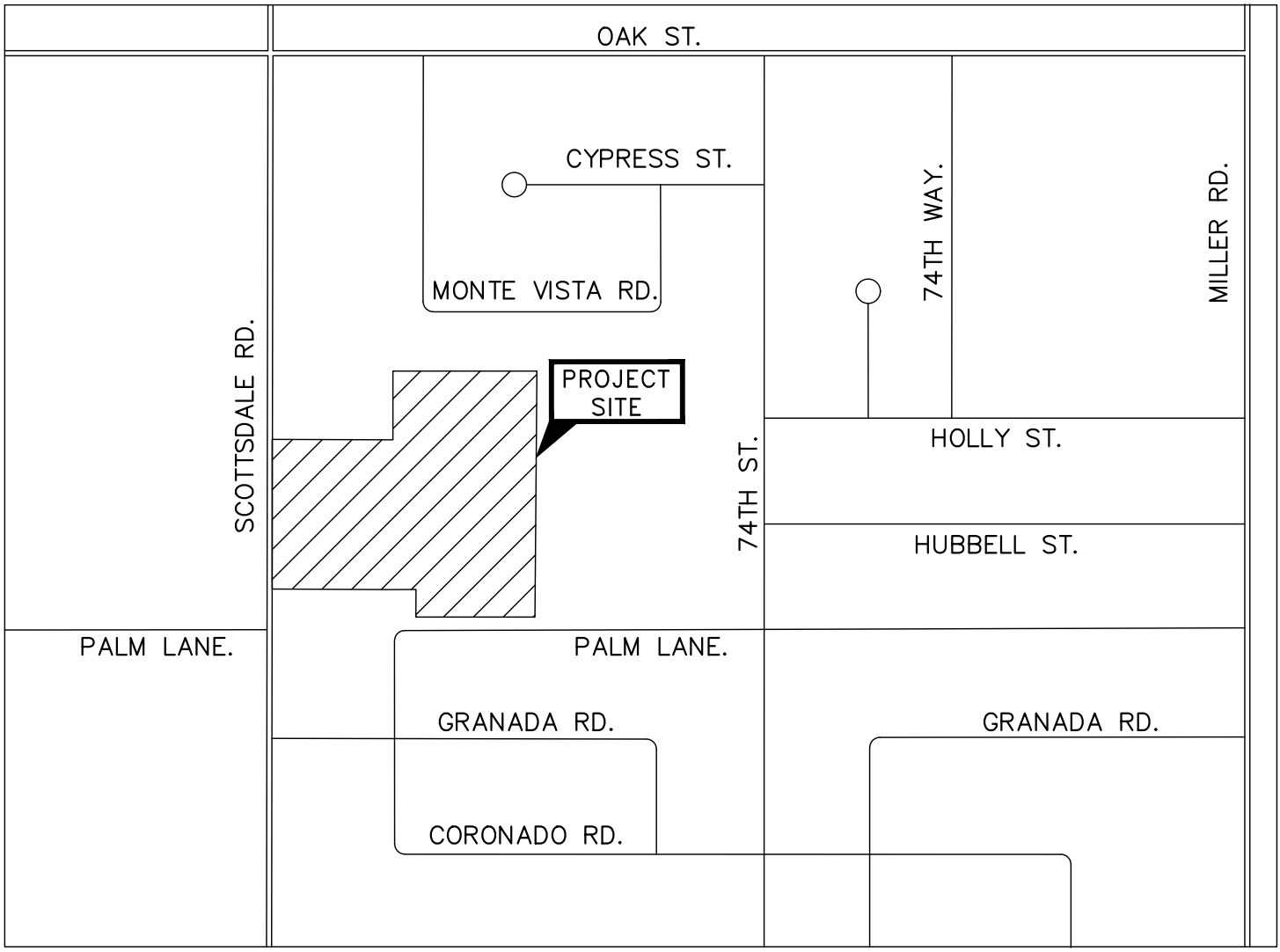
1. City of Scottsdale, *Design Standards and Policies Manual, Chapter 4: Grading and Drainage,* January 2018.

2. Federal Emergency Management Agency (FEMA), *Flood Insurance Rate Map (FIRM) of Maricopa County, Arizona and Incorporated Areas, Panel 1320 of 4425, Map Number 0413C1320L*, October 16, 2013.

3. Flood Control District of Maricopa County (FCDMC), *Drainage Design Manual for Maricopa County, Hydrology Volume, February*, 2008.

4. Flood Control District of Maricopa County (FCDMC), *Drainage Design Manual for Maricopa County, Hydraulics Volume,* January, 1996.

Appendix A – Site Location Map and Legal Descriptions



VICINITY MAP
N.T.S.

Kimley»Horn

21-ZN-2018
9/21/18

EXHIBIT "A'

PARCEL NO. 1:

THE WEST 355 FEET OF THE SOUTH 100 FEET OF THE NORTH 350 FEET OF THE SOUTH HALF OF THE NORTHWEST QUARTER OF THE SOUTHWEST QUARTER OF SECTION 35, TOWNSHIP 2 NORTH, RANGE 4 EAST OF THE GILA AND SALT RIVER BASE AND MERIDIAN, MARICOPA COUNTY, ARIZONA;

EXCEPT THE WEST 65 FEET THEREOF FOR ROADWAY;

ALSO EXCEPTING THEREFROM ALL COAL, OIL, GAS AND OTHER MINERAL DEPOSITS AS RESERVED IN THE PATENT RECORDED IN DOCKET 547, PAGE 362.

PARCEL NO. 2:

THE WEST 355 FEET OF THE SOUTH 150 FEET OF THE NORTH 500 FEET OF THE SOUTH HALF OF THE NORTHWEST QUARTER OF THE SOUTHWEST QUARTER OF SECTION 35, TOWNSHIP 2 NORTH, RANGE 4 EAST OF THE GILA AND SALT RIVER BASE AND MERIDIAN, MARICOPA COUNTY, ARIZONA;

EXCEPT THE WEST 65 FEET THEREOF FOR ROADWAY;

ALSO EXCEPTING THEREFROM ALL COAL, OIL, GAS AND OTHER MINERAL DEPOSITS AS RESERVED IN THE PATENT RECORDED IN DOCKET 547, PAGE 362.

PARCEL NO. 3:

THE WEST 355 FEET OF THE SOUTH 44.9 FEET OF THE NORTH 544.9 FEET OF THE SOUTH HALF OF THE NORTHWEST QUARTER OF THE SOUTHWEST QUARTER OF SECTION 35, TOWNSHIP 2 NORTH, RANGE 4 EAST OF THE GILA AND SALT RIVER BASE AND MERIDIAN, MARICOPA COUNTY, ARIZONA;

EXCEPT THE WEST 65 FEET THEREOF FOR ROADWAY;

ALSO EXCEPTING THEREFROM ALL COAL, OIL, GAS AND OTHER MINERAL DEPOSITS AS RESERVED IN THE PATENT RECORDED IN DOCKET 547, PAGE 362.

PARCEL NO. 4:

THE SOUTH HALF OF THE NORTHWEST QUARTER OF THE SOUTHWEST QUARTER OF SECTION 35, TOWNSHIP 2 NORTH, RANGE 4 EAST OF THE GILA AND SALT RIVER BASE AND MERIDIAN, MARICOPA COUNTY, ARIZONA;

EXCEPT THE SOUTH 100 FEET OF THE WEST 435.6 FEET;

AND EXCEPT THE EAST 579.49 FEET MORE OR LESS;

AND EXCEPT THE NORTH 544.9 FEET OF THE WEST 355 FEET;

AND EXCEPT THE SOUTH 30 FEET FOR ROADWAY;

AND EXCEPT THE WEST 1.00 FOOT OF THE EAST 25.00 FEET OF THE WEST 460.60 FEET OF THE

NORTH 70.00 FEET OF THE SOUTH 100.00 FEET OF THE SOUTH HALF OF THE NORTHWEST QUARTER OF THE SOUTHWEST QUARTER OF SECTION 35, TOWNSHIP 2 NORTH, RANGE 4 EAST OF THE GILA AND SALT RIVER BASE AND MERIDIAN, MARICOPA COUNTY, ARIZONA;

AND EXCEPT BEGINNING AT A POINT THAT LIES 435.60 FEET EAST OF THE WEST LINE AND 100 FEET NORTH OF THE SOUTH LINE OF THE NORTHWEST QUARTER OF THE SOUTHWEST QUARTER OF SECTION 35, TOWNSHIP 2 NORTH, RANGE 4 EAST OF THE GILA AND SALT RIVER BASE AND MERIDIAN, MARICOPA COUNTY, ARIZONA; THENCE SOUTH 89°35'24" WEST PARALLEL WITH AND 100.00 FEET NORTH OF SAID SOUTH LINE 60.60 FEET TO A POINT THAT LIES 375.00 FEET EAST OF SAID WEST LINE; THENCE NORTH PARALLEL WITH AND 375.00 FEET EAST OF SAID WEST LINE 0.64 FEET;
THENCE SOUTH 89°48'24" EAST 60.60 FEET TO THE POINT OF BEGINNING.

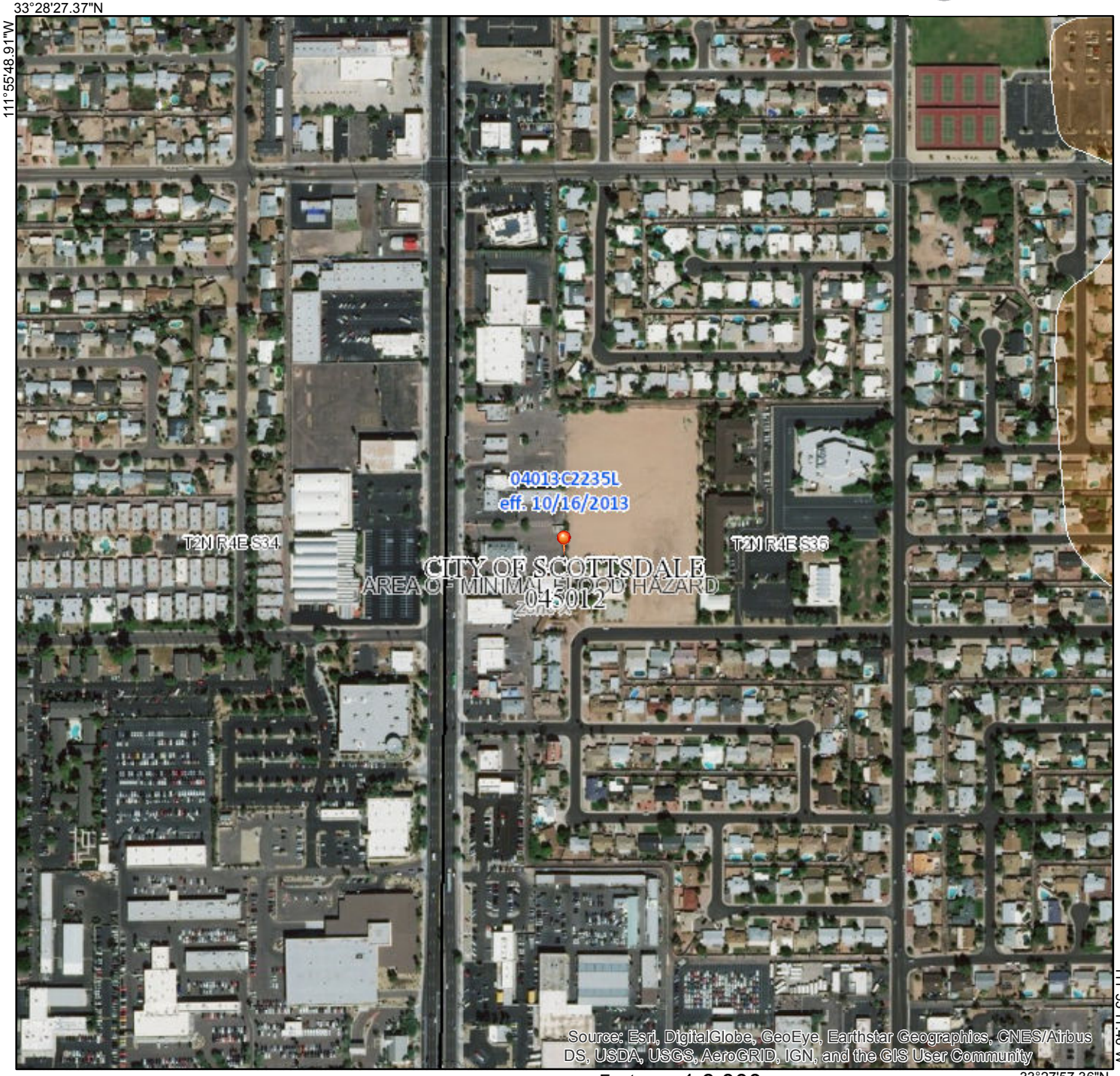
ALSO EXCEPT THE WEST 40 FEET OF THE SOUTH HALF OF THE NORTHWEST QUARTER OF THE SOUTHWEST QUARTER OF SECTION 35, TOWNSHIP 2 NORTH, RANGE 4 EAST OF THE GILA AND SALT RIVER BASE AND MERIDIAN, MARICOPA COUNTY, ARIZONA.

AND EXCEPTING THEREFROM ALL COAL, OIL, GAS AND OTHER MINERAL DEPOSITS AS RESERVED IN THE PATENT RECORDED IN DOCKET 547, PAGE 362.

Appendix B – FEMA Flood Insurance Rate Map (FIRM)

National Flood Hazard Layer FIRMette

FEMA



Feet

0 250 500 1,000 1,500 2,000

1:6,000

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth
- Regulatory Floodway *Zone AE, AO, AH, VE, AR*

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- 513 Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The base map shown complies with FEMA's base map accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 6/25/2018 at 6:49:14 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: base map imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

21-ZN-2018
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Appendix C – Hydrologic/Hydraulic Calculations

Pre-Development, Weighted C			
Land Use	**Area [A]**		**Runoff Coefficient [C_{pre}]**
	sf	**ac**	
Pavement	74,509	1.710	0.95
Building	19,716	0.453	0.95
Landscaping	232,681	5.342	0.45
TOTAL	**326,906**	**7.505**	**0.594**

Post-Development, Weighted C			
Land Use	**Area [A]**		**Runoff Coefficient [C_{post}]**
	sf	**ac**	
Pavement	155,593	3.572	0.95
Building	109,130	2.505	0.95
Landscaping	62,183	1.428	0.45
TOTAL	**326,906**	**7.505**	**0.855**

Pre vs Post Development Retention Summary							
C_{post}-C_{pre} [ΔC]	**Precipitation Depth [P]**	**Area [A]**		**Required Storage (V_{REQ} = ΔCPA/12)**		**Provided Storage**	**Surplus**
	in	**sf**	**ac**	**cf**	**ac-ft**	**cf**	**cf**
0.261	2.14	326,906	7.505	15,203	0.349	15,237	34

Underground Retention Summary					
Retention Basin	**Required Volume**	**Diameter**	**Required Length**	**Provided Length**	**Provided Storage**
	cf	**ft**	**lf**	**lf CMP**	**cf**
UG Tank	15,203	10	194	194	15,237

Drywell Summary				
Retention Basin	**Volume**	**Percolation Rate**	**Drywells Required**	**Drain Time**
	cf	**cfs**	**ea**	**hr**
UG Tank	15,203	0.10	2	22

Appendix D – Figures

APN 129-06-081H
SCOTTSDALE PROPERTY INVESTMENTS LLC
ZONING C-3

APN 129-06-081J
PLAZA VIA VERA CRUZ LLC
ZONING C-3

APN 131-19-001K
W H D HOLDINGS CO LLC
ZONING C-3

APN 131-19-001L
KT ONE LLC
ZONING C-3

APN 131-19-XXX
SINGLE FAMILY RESIDENTIAL
ZONING R1-7

MONTE VISTA ROAD

APN 131-19-XXX
SINGLE FAMILY RESIDENTIAL
ZONING R1-7

APN 131-19-XXX
SINGLE FAMILY RESIDENTIAL
ZONING R1-7

APN 129-06-081U
EJG INVESTMENTS LLC
ZONING PUD

APN 131-19-002E
SAMUEL F LEW JR
ZONING C-3

BUILDING C

APN 131-19-002Q
ARIZONA RETIREMENT HOME OF SCOTTSDALE II
ZONING R-5

APN 131-19-002B
CHURCH OF JESUS CHRIST LDS CORP PRESBIS
ZONING R1-7

APN 129-06-081V
EJG INVESTMENTS LLC
ZONING PUD

SCOTTSDALE ROAD

APN 129-06-081T
FULL QUIVER ADM LLC
ZONING C-3

BUILDING A

APN 131-19-002R
ARIZONA RETIREMENT HOME OF SCOTTSDALE
ZONING R-5

BUILDING D

APN 129-06-081S
ROCK CHURCH ASSEMBLY OF GOD
ZONING C-3

BUILDING B

APN 131-19-002S
CORNERSTONE CHRISTIAN FELLOWSHIP
ZONING R-5

APN 131-19-002
CORNERSTONE CHRISTIAN FELLOWSHIP
ZONING R1-7

APN 131-19-003F
CLAYTON AMBORN LLC
ZONING C-3

APN 131-19-003L/K
GERALD/MELINDA GRUBER TR
ZONING R-3

PALM LANE

APN 131-18-088G
CLAYTON AMBORN LLC
ZONING C-3

APN 129-33-024
TURLEY HOLDINGS LLC
ZONING C-3

APN 131-18-088E
LEONARD/MARISSA MICELI
ZONING C-3

APN 131-18-XXX
SINGLE FAMILY RESIDENTIAL
ZONING R-5

APN 131-18-XXX
SINGLE FAMILY RESIDENTIAL
ZONING R-5

APN 131-18-XXX
SINGLE FAMILY RESIDENTIAL
ZONING R1-7

APN 131-18-XXX
SINGLE FAMILY RESIDENTIAL
ZONING R1-7

APN 129-33-026
BLA & LA LLC
ZONING C-3

GRANADA ROAD

SITE LIMITS

NORTH

GRAPHIC SCALE IN FEET
0 60 120 240

CONTEXT AERIAL EXHIBIT

Kimley»Horn

21-ZN-2018
9/21/18

K:\PHX_Civil\096253016 - TCR Scottsdale & Palm\CADD\Exhibits\Context Aerial Map.dwg Sep 17, 2018 Garrett.Frame
XREFS: x253016bm x253016ad x253016ut x253016vt

EXISTING COMMERCIAL PARCEL

EX. ALLEY

EX. BERM

OFFSITE FLOW CONCENTRATION POINT

ULTIMATE OUTFALL
ELEV: 27.4±

SCOTTSDALE ROAD

PALM LANE

NORTH

GRAPHIC SCALE IN FEET
0 40 80 160

EXISTING CONDITIONS EXHIBIT

Kimley»Horn

21-ZN-2018
9/21/18

K:\PHX_Civil\096253016 - TCR Scottsdale & Palm\CADD\Exhibits\Existing Conditions Map.dwg Sep 13, 2018 Tobin.Kopp
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SCOTTSDALE ROAD

EX. BLDG.

EX. BLDG.

EX. BLDG.

EX. BLDG.

EX. BLDG.

EX. HOUSE

PALM LANE

LEGEND

PAVEMENT AREA

BUILDING AREA

LANDSCAPE AREA

WEIGHTED "C" VALUE (EXISTING)		
LAND USE	AREA (SF)	RUNOFF COEFFICIENT (C)
PAVEMENT	74,509	0.95
BUILDING	19,716	0.95
LANDSCAPE	232,681	0.45
WEIGHTED 'Cw'=		0.594

NORTH

GRAPHIC SCALE IN FEET
0 40 80 160

PRE-DEV AREA EXHIBIT

Kimley»Horn

21-ZN-2018
9/21/18

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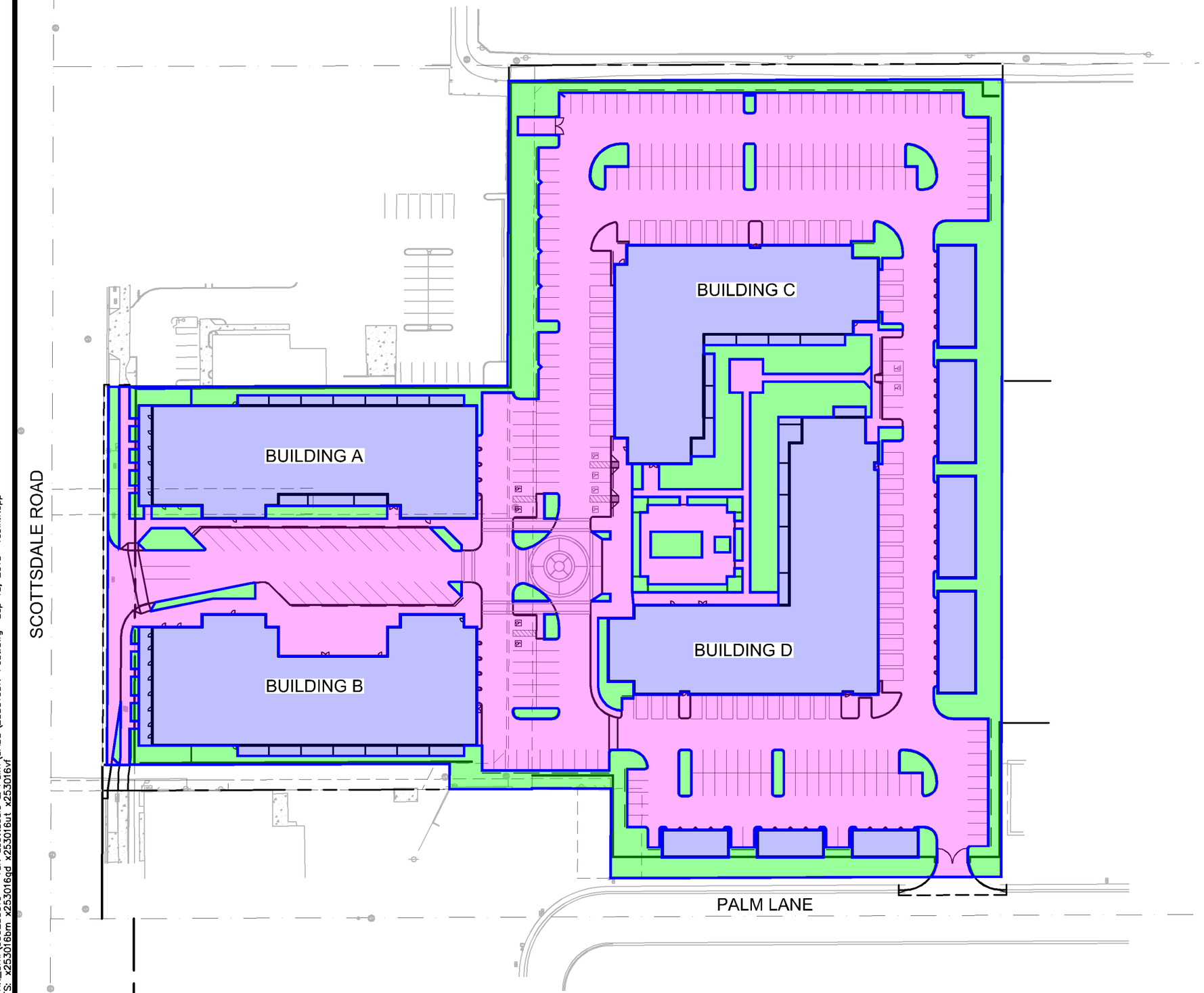

LEGEND

PAVEMENT AREA

BUILDING AREA

LANDSCAPE AREA

WEIGHTED "C" VALUE (PROPOSED)		
LAND USE	AREA (SF)	RUNOFF COEFFICIENT (C)
PAVEMENT	155,593	0.95
BUILDING	109,130	0.95
LANDSCAPE	62,183	0.45
WEIGHTED 'Cw'=		0.855

NORTH

GRAPHIC SCALE IN FEET

0 40 80 160

POST-DEV AREA EXHIBIT

Kimley»Horn

21-ZN-2018

9/21/18

K:\PHX_Civil\096253016 - TCR Scottsdale & Palm\CADD\253016DR-Post.dwg Sep 13, 2018 Tabin.Kopp
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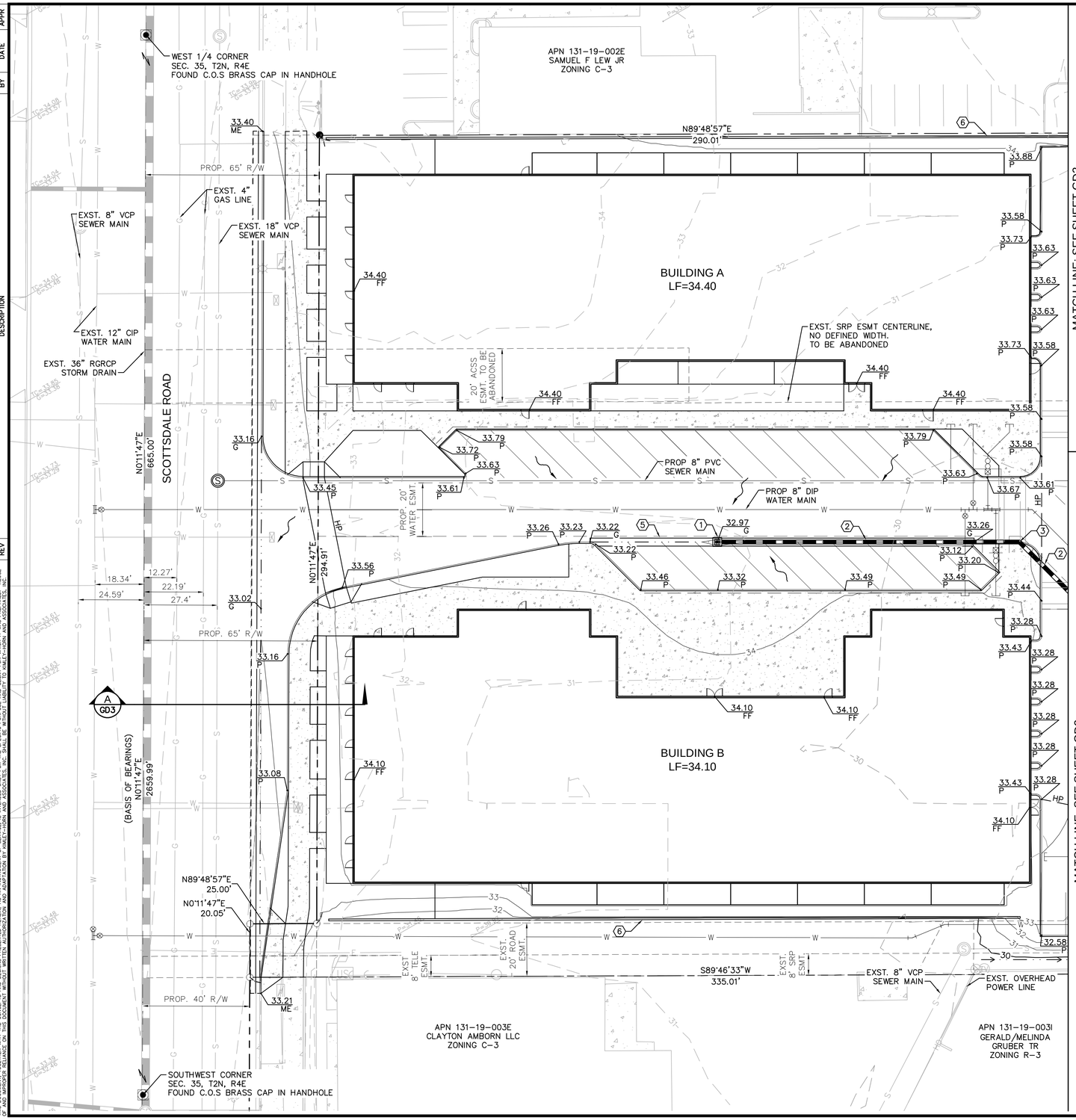


GRADING AND DRAINAGE CONSTRUCTION NOTES

1. CATCH BASIN PER MAG STD DET 537.
2. HDPE STORM DRAIN PIPE.
3. HDPE STORM DRAIN BEND.
4. HDPE STORM DRAIN TEE.
5. 3' WIDE CONCRETE VALLEY GUTTER.
6. PROPOSED 3' MAX RETAINING WALL.
9. 10' DIAMETER CMP UNDERGROUND RETENTION TANKS.
10. MAXWELL PLUS OR APPROVED EQUAL DUAL-CHAMBER DRYWELL.
11. RETENTION TANK ACCESS RISER WITH GRATED COVER.
12. RETENTION TANK ACCESS RISER WITH SOLID COVER.
13. STUB AND PLUG STORM DRAIN, POTENTIAL FUTURE CONNECTION.
14. CATCH BASIN PER MAG STD DET 534.
16. 48" STORM DRAIN MANHOLE.

DEVELOPER/OWNER

TRAMMELL CROW RESIDENTIAL
3889 MAPLE AVENUE, SUITE 200
DALLAS, TEXAS 75219
PH: (214) 922-8457
CONTACT: KARL HIRSCHEY

CIVIL ENGINEER

KIMLEY-HORN AND ASSOCIATES, INC.
7740 N. 16TH STREET, SUITE 300
PHOENIX, ARIZONA 85020
TEL. NO. (602) 944-5500
CONTACT: STEVE HANEY, PE

LAND SURVEYOR

SURVEY INNOVATION GROUP, INC
22425 N. 16TH STREET, SUITE 1
PHOENIX, ARIZONA 85024
PH: (480) 922-0780
CONTACT: JARED HANSMANN, RLS

ARCHITECT

DAVIS
74 E RIO SALADO PARKWAY, SUITE 200
TEMPE, ARIZONA 85281
PH: (480) 638-1176
CONTACT: ADAM VALENTE

FLOOD INFORMATION

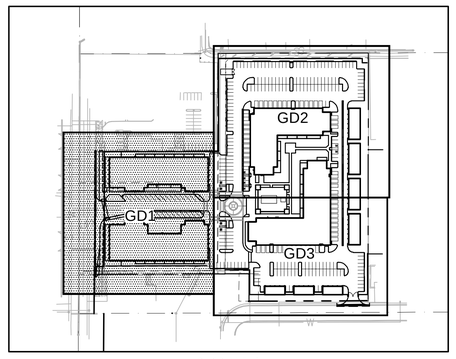
THE FLOOD ZONE DESIGNATION FOR THIS AREA IS ZONE X. MAP NUMBER 04013C2235L, REVISED OCTOBER 16, 2013.

BENCHMARK

PER SURVEY INNOVATION GROUP, THE BENCHMARK IS A FOUND 3" CITY OF SCOTTSDALE BRASS CAP IN HANDHOLE AT THE INTERSECTION OF SCOTTSDALE ROAD AND OAK STREET. ELEVATION = 1263.01 (NAVD'88)

BASIS OF BEARINGS

PER SURVEY INNOVATION GROUP, THE BASIS OF BEARING IS THE WEST LINE OF THE SOUTHWEST QUARTER OF SECTION 35. SAID LINE BEARS N00°11'47"W.



KEY MAP
N.T.S.

NOTES:

1. ADD 1200' TO ALL ELEVATIONS.
2. ADD 0.5' TO PAVEMENT (P) ELEVATIONS TO OBTAIN TOP OF CURB ELEVATIONS, UNLESS OTHERWISE NOTED.
3. ALL SPOT ELEVATIONS ARE FINISHED GRADE PAVEMENT (P), GUTTER/GRATE (G), OR SIDEWALK (SW) ELEVATIONS UNLESS OTHERWISE NOTED.
4. REFER TO SHEET GD2 FOR LEGEND.

GRAPHIC SCALE IN FEET
0 10 20 40

NORTH

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ARIZONA811
Call 811 or click Arizona811.com

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Phoenix, Arizona 85020 (602) 944-5500

NEC SCOTTSDALE ROAD AND PALM LANE

PRELIMINARY GRADING AND DRAINAGE PLAN

SCOTTSDALE, ARIZONA

PROJECT No.	096253016
SCALE (H):	1"=20'
SCALE (V):	NONE
DRAWN BY:	BAM
DESIGN BY:	CGF
CHECK BY:	SEH
DATE:	9/17/2018

PRELIMINARY
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NOT FOR CONSTRUCTION
Kimley»Horn
ENGINEER G. FRAME
PE NO. 64329 DATE 09/18

253016Pre-GD.dwg

GD1
1 OF 3 SHEETS

APPR | DATE | BY | DESCRIPTION | REV

21-ZN-2018
9/21/18

EXST. 8" VCP SEWER MAIN

EXST. OVERHEAD POWER LINE

EXST. 2" GAS LINE

N89°48'57"E 384.80'

N89°48'57"E 1319.30'

EXST. 12' ROAD ESMT.

6.37'

3.65'

ESXT. 20' ROAD ESMT. TO BE ABANDONED

N0°11'47"E 250.01'

EXST. 18.5 SRP ESMT.

6.06'

EXST. 8" VCP SEWER MAIN

OFFSITE FLOW CONCENTRATION POINT

PROP. 8" DIP WATER MAIN

PROP. 20' WATER ESMT.

PROP. 6" PVC SEWER SERVICE

MATCH LINE: SEE SHEET GD1

BUILDING C
LF=32.55

BUILDING D
LF=33.05

BUILDING E
LF=31.83

BUILDING F
LF=32.23

BUILDING G
LF=32.18

PROP. 20' WATER ESMT.

PROP. 8" PVC SEWER MAIN

APN 131-19-002Q
ARIZONA RETIREMENT HOME OF SCOTTSDALE II
ZONING R-5

APN 131-19-002R
ARIZONA RETIREMENT HOME OF SCOTTSDALE

S0°05'09"W 634.47'

MATCH LINE: SEE SHEET GD3

GRADING AND DRAINAGE CONSTRUCTION NOTES

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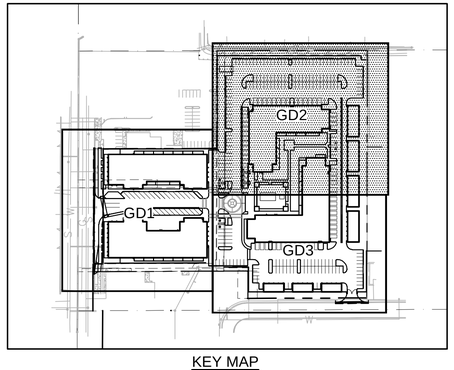
3. HDPE STORM DRAIN BEND.
5. 3' WIDE CONCRETE VALLEY GUTTER.
6. PROPOSED 3' MAX RETAINING WALL.
13. STUB AND PLUG STORM DRAIN, POTENTIAL FUTURE CONNECTION.
14. CATCH BASIN PER MAG STD DET 534.

LEGEND

- PROPERTY LINE
- RIGHT OF WAY LINE
- STREET CENTERLINE
- EASEMENT LINE
- S — EXISTING SANITARY SEWER MAIN
- W — EXISTING PUBLIC WATER MAIN
- W — PROPOSED WATER MAIN
- S — PROPOSED SEWER MAIN
- PROPOSED STORM DRAIN
- HP — HIGH POINT
- 12 — PROPOSED CONTOUR
- 12 — EXISTING CONTOURS
- 10.00 P — PROPOSED PAVEMENT SPOT ELEVATION
- 10.00 P — EXISTING SPOT ELEVATION
- EXISTING SANITARY SEWER MANHOLE
- EXISTING FIRE HYDRANT
- PROPOSED FIRE HYDRANT
- PROPOSED CATCH BASIN



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GRAPHIC SCALE IN FEET
0 10 20 40

NORTH

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NEC SCOTTSDALE ROAD AND PALM LANE

PRELIMINARY GRADING AND DRAINAGE PLAN

SCOTTSDALE, ARIZONA

PROJECT No. 096253016

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SCALE (V): NONE
DRAWN BY: BAM
DESIGN BY: CGF
CHECK BY: SEH
DATE: 9/17/2018

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ENGINEER G. FRAME
PE NO. 64329 DATE 09/18

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GD2
2 OF 3 SHEETS

APPR | DATE | BY | DESCRIPTION | REV

21-ZN-2018
9/21/18

MATCH LINE: SEE SHEET GD2

MATCH LINE: SEE SHEET GD1

BUILDING D
LF=33.05

BUILDING H
LF=31.88

APN 131-19-002R
ARIZONA
RETIREMENT HOME
OF SCOTTSDALE

APN 131-19-002S
CORNERSTONE
CHRISTIAN
FELLOWSHIP

APN 131-19-003I
GERALD/MELINDA
GRUBER TR
ZONING R-3

EXST. 18.5 SRP ESMT. TO BE ABANDONED

EXST. 20' ROAD ESMT. TO BE ABANDONED

PROP. 20' WATER ESMT.

BASIN UG-1
HW= --
BTM= --
Vreq= 15,203 CF
Vprov= 15,237 CF

194 LF

GARAGE 1
LF=29.83

GARAGE 2
LF=29.20

GARAGE 3
LF=28.58

S89°37'09"E
60.60'

S89°46'33"W
335.01'

N01°14'47"E
70.00'

S89°46'33"W
304.42'

N89°46'33"E
1320.59'

30' R/W

PALM LANE

D
GD3

GRADING AND DRAINAGE CONSTRUCTION NOTES

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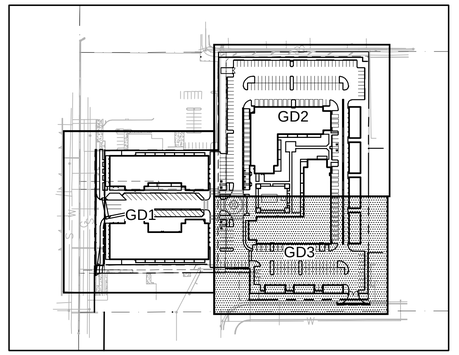
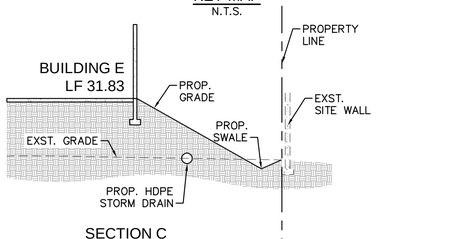
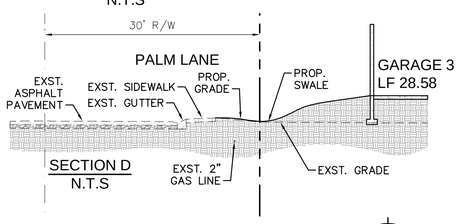
11. RETENTION TANK ACCESS RISER WITH GRATED COVER.
12. RETENTION TANK ACCESS RISER WITH SOLID COVER.
14. CATCH BASIN PER MAG STD DET 534.
15. CATCH BASIN PER MAG STD DET 537 TO BE USED AS BUBBLE-UP STRUCTURE TO CONVEY OFF-SITE FLOWS.
16. 48" STORM DRAIN MANHOLE.



KEY MAP
N.T.S.



SECTION C
N.T.S



SECTION D
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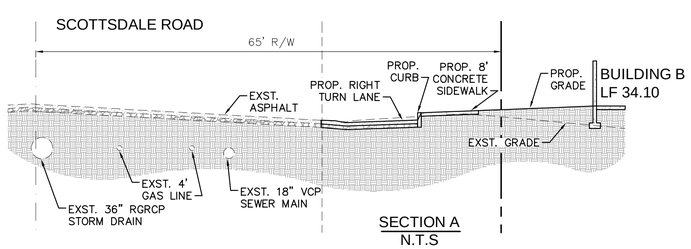
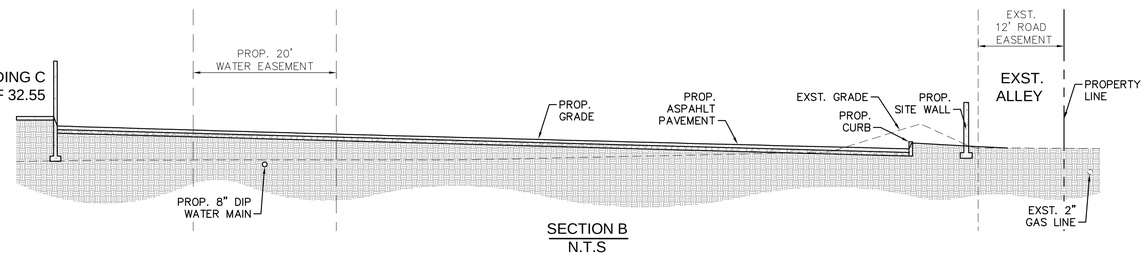


SECTION A
N.T.S



SECTION B
N.T.S

NORTH

GRAPHIC SCALE IN FEET
0 10 20 40

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GD3
3 OF 3 SHEETS

21-ZN-2018
9/21/18

APPR | DATE | BY | DESCRIPTION | REV

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