

Basis of Design Report-Wastewater

Siena Estates

WASTEWATER BASIS OF DESIGN REPORT

**Northwest Corner of Palo Verde and Cattletrack Rd.
Maricopa County, Arizona**

5805 N Sundown Drive
Scottsdale 85250

City of Scottsdale Plan Check Number: 2-PP-2018

Quarter Section: 20-45

Prepared for Owner:
Adams Craig Acquisitions
7904 E Chaparral Rd
Ste A110-113
Scottsdale 85250

Prepared by:

**6K CONSULTING
L.L.C.**

4858 E Baseline Road, Suite 101
Mesa, AZ 85206
Phone: (480) 664-8592
Fax: (480) 275-5512



Expires 9/30/19

April 24, 2018

**2-PP-2018
06/08/18**

TABLE OF CONTENTS

| | | |
|------|----------------------------|---|
| I. | Introduction | 1 |
| II. | Design Documentation | 1 |
| III. | Existing Conditions | 1 |
| IV. | Proposed Conditions..... | 2 |
| V. | Computations..... | 2 |
| VI. | Design Documentation..... | 3 |
| VII. | Summary..... | 3 |

APPENDIX LIST

Appendix A: Preliminary Plat

VICINITY MAP AERIAL MAP



I. Introduction

Location & Description

The subject property is Lots 3, 4 and 5 of Schaffner Estates, a 12 lot subdivision recorded in MCR Book of Maps 75, Page 25. The project is in the northwest quarter of Section 14, Township 2 North, Range 4 East of the Gila and Salt River Base and Meridian. Currently, the property is approximately three acres with a few trees remaining after the three homes and associated structures were demolished and removed from the properties. The properties have been served by septic service in the past. The subject property is undergoing a major transformation and becoming a new 7 lot subdivision. A recent major home remodel at 7506 E Sundown Circle has required the engineering and construction of a new sewer line to that property. It has been engineered to provide a stub into Siena Estates. The Sundown Circle sewer line improvements (6702-17-1) will extend the sewer line from an existing manhole in Palo Verde Lane, north, up the west side of Sundown Road and then west along the south side of Sundown Circle to 7506 E Sundown Circle, which lies at the end of the cul-de-sac. There are existing 8" sewer lines in Palo Verde Drive and Cattletrack Road. The flow is east in Palo Verde and north in Cattletrack.

II. Design Documentation

Design Procedures:

The proposed sewer line will tie into the proposed, and soon to be existing 8" line, in Sundown Drive and extend it east into the cul-de-sac proposed for Siena Estates. The design consisted of determining the elevation of the manhole being connected to and then running back along the proposed sewer line to determine the elevations of the inverts and confirming that adequate depths are achieved to allow as many properties to tie into the sewer as are able to. The design slope used is between 0.006 ft/ft and 0.010 ft/ft, dropping 0.10' in each manhole and 0.20' in each manhole that makes a greater than 45-degree direction turn.

Software used in design analysis:

Microsoft Excel was used to provide the system design and some calculations. SewerCAD by Haestad Methods was used to compute the pipe velocities in the system.

III. Existing Conditions

Existing Zoning and land use:

The zoning is R1-18 PRD for the three existing parcels (approved in December 2017) existing project residential parcel. The three parcels are now vacant.

Existing topography and vegetation:

The topography is relatively flat and a few trees remain on the property. The grading and landscaping will be modified during the subdivision development. The landscaping will be enhanced and upgraded during construction of the subdivision and subsequent homes. The general slope is from northwest to southeast.

Utilities:

The parcels in Schaffner Estates have existing utilities connected to each parcel. The area has power by APS, water by EPCOR, phone by Century Link, and cable provider(s). The gas and water utilities are located in the right-of-way and/or PUE along

Sundown Drive and Sundown Circle. Other power and communication utilities are located in easements along the perimeter of the lots. All utilities except sewer currently are available to each lot. No certified sewer monitoring has been completed in conjunction with this project. The contributing area to the Palo Verde Sewer line is not too large and it is assumed that the City has capacity for these 7 lots to be drained into this line. The capacity for the single lot that constructed the sewer line was readily approved.

IV. Proposed Conditions

Proposed Connections:

Siena Estates will connect all seven lots into the sewer system, connecting at the stub provided in Sundown Drive. No other services are proposed to be installed along the line at this time. Please refer to the vicinity map on page ii of this report. A stub is provided that will extend into this proposed subdivision as it develops. Interestingly, Siena Estates is being developed by the owner of Lot 9. Care has been taken to design the sewer line such that the depths into the proposed subdivision are maximized and sufficient to provide service capability to the lots with 4' of depth to top of pipe at the front of each lot. Refer to a copy of the proposed pre-plat for Siena Estates located in Appendix B.

The proposed sewer lines are designed to be within the targeted range of slopes desired in the City such that full flowing velocities will be in the 2.5 to 10 fps range. The proposed line will tie-in to the existing manhole and provide the minimum required drop (0.2') into the manhole. There are no drop manholes designed in the proposed system.

Maintenance:

The sewer line extension will be granted to the City after the completion of the improvements. The city will provide maintenance on all manholes and lines added to the system. The sewer line will require occasional flushing due to low capacity flows

V. Computations

To estimate the potential average and maximum daily flows in the proposed sewer line. The sewer line upstream of the shown stub to Siena Estates will only serve one to three large lot homes and the flow will be small. According to DSPM-2018, Section 7-1.403, the flow is expected to be 100 gpcpd with a peaking factor of 4. The assumption is 2.5 persons per dwelling unit. Therefore, the average day demands for the upstream half of the line extension will be $2.5 \times 4 \times 100 = 1,000$ gpd and for the connection point into the Palo Verde sewer is line is $11 \times 2.5 \times 100 = 2,750$ gpd at full build out of Siena Estates. The max flow in the upper half is $4 \times 1,000$ gpd = 4,000 gpd and peak for the total extension is $2,750$ gpd $\times 4 = 11,000$ gpd. Refer to the calculations and sewer system design in Appendix A.

VI. Design Documentation

The minimum size sewer line in the City of Scottsdale is 8", therefore, this is the size that will be used for this extension and PVC SDR35 Pipe material will be installed. The sewer service lines will be 4" PVC. The manholes will be 5' diameter manholes because they are near to or greater than 10' deep. These conditions are the main conditions that constrain this project. The design is in accordance with City of Scottsdale DSPM-2018, MAG specs and details, COS supplement to MAG specs and details. Refer to the plans located in Appendix B.

VII. Summary

The sewer line extension will provide the needed access for the project.

- City of Scottsdale design standards have been met.
 - All internal sewer pipes are 8" and are gravity-fed.
 - Minimum slopes for 8" pipes are 0.60%.
 - The proposed system will connect into existing sewer located in Palo Verde Lane at the intersection of Sundown Drive
 - The sewer line extension will produce a cumulative average daily flow of 2,750 gpd of wastewater.
-

Appendix A

Siena Estates Pre-Plat

SIENA ESTATES by ADAMS CRAIG ACQUISITIONS

REPLAT OF LOTS 3-5 OF SCHAFFNER ESTATES

PALO VERDE LANE AND CATTLETRACK ROAD SCOTTSDALE, AZ 85250

APN's 173-04-016, 173-04-017, 173-04-018

DRAINAGE NARRATIVE:

THE EXISTING PARCELS AND HOMES DRAIN GENERALLY TO THE SOUTHEAST. THE LOTS WILL DRAIN TO THE CUL-DE-SAC TO BE COLLECTED AND DIRECTED, BY STORM DRAIN, TO A PROPOSED SHALLOW BASIN WHICH WILL DRAIN INTO EXISTING CATCH BASINS IN CATTLE TRACK THAT DIRECT WATER TO THE EXISTING RETENTION BASIN LOCATED EAST OF CATTLETRACK AND SOUTH OF McDONALD DRIVE. PORTIONS OF LOTS 4-7 WILL DRAIN TO CATTLETRACK AND TO PALO VERDE TO BE RETAINED IN SMALL DETENTION BASINS DESIGNED TO ASSIST IN PROVIDING ADDITIONAL RUNOFF GENERATED BY THE DEVELOPMENT.

ENGINEER'S NOTES:

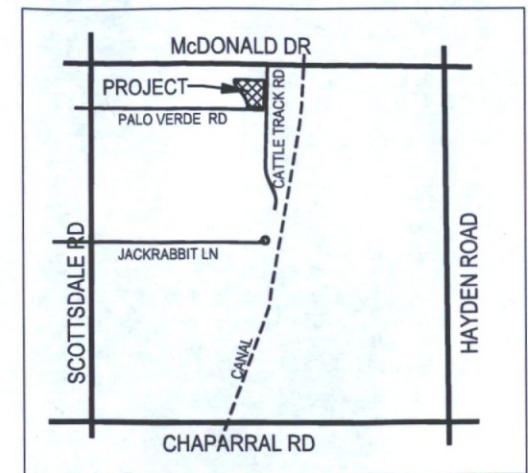
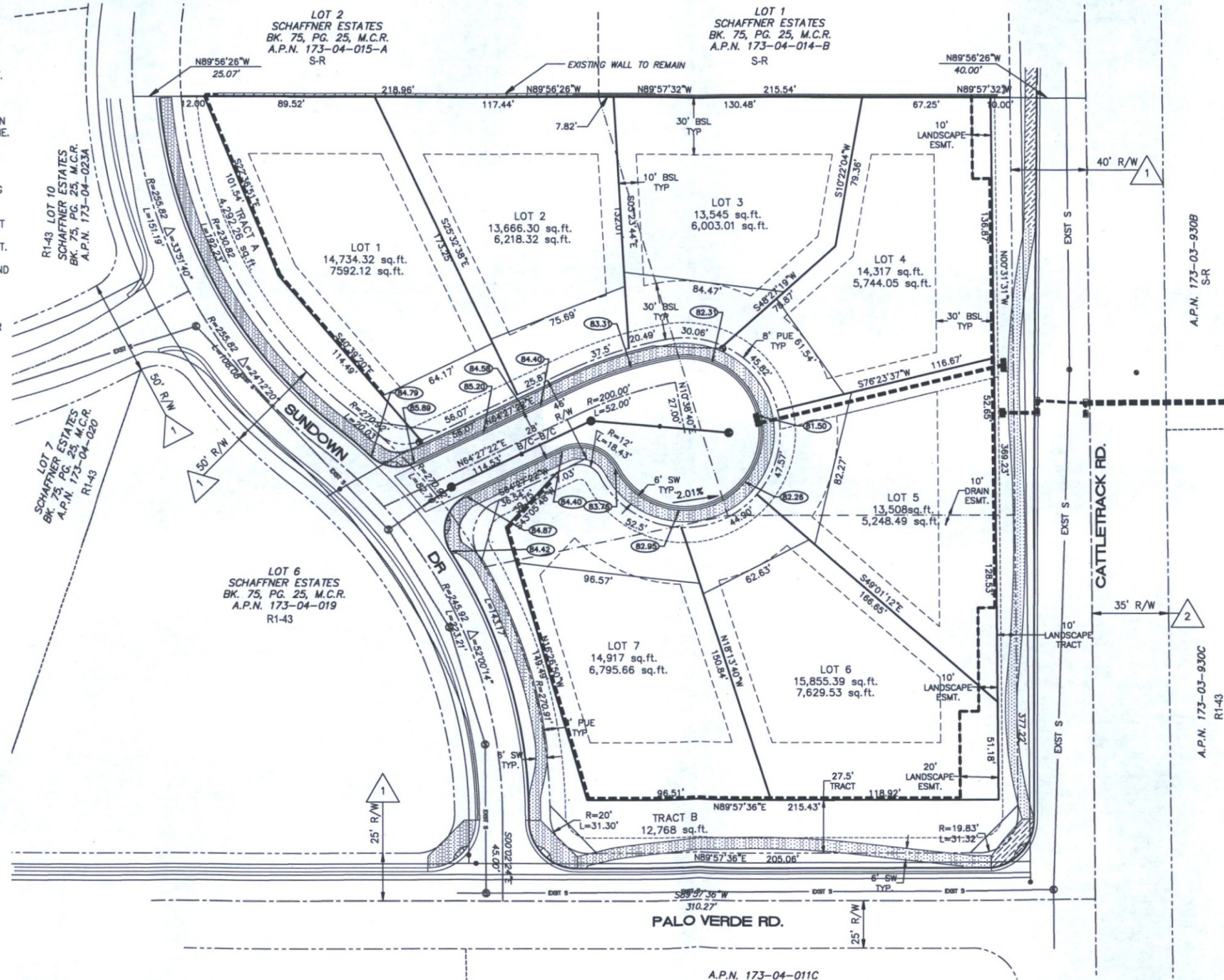
1. THE POWER, GAS AND WATER UTILITIES ARE ALREADY LOCATED IN THE EXISTING STREETS. THE EXISTING EASEMENTS AND UTILITIES LOCATED WITHIN THE LOTS WILL BE ABANDONED AND REMOVED. NEW FACILITY LINES WILL BE EXTENDED INTO THE PROPOSED CUL-DE-SAC AND SERVICES PROVIDED TO EACH LOT.
2. THE EXISTING SEPTIC SYSTEMS WILL BE ABANDONED AND REMOVED. THE PROPOSED LOTS WILL BE CONNECTED TO A CITY SEWER LINE THAT HAS BEEN ENGINEERED AND WILL BE CONSTRUCTED IN SUNDOWN DRIVE AND SUNDOWN CIRCLE FROM PALO VERDE LANE.
3. THERE ARE NO APPARENT NATURAL WATERCOURSES WITHIN CLOSE PROXIMITY TO THE PROPERTY.
4. THE SIDEWALK WILL BE EXTENDED ALONG PALO VERDE.
5. CURB, GUTTER AND SIDEWALK WILL BE ADDED ALONG THE EAST SIDE OF SUNDOWN DRIVE.
6. THE PAVEMENT IN SUNDOWN WILL BE REMOVED BY MILLING AND REPLACED WITH NEW ASPHALT PAVEMENT AND RIBBON CURB ALONG THE WEST SIDE OF THE STREET DURING THE CONSTRUCTION OF THIS PROJECT.
7. THE EXISTING DRIVEWAY LOCATIONS ALONG CATTLETRACK AND PALO VERDE WILL BE REMOVED AND REPLACED WITH CURB AND GUTTER TO MATCH THE EXISTING. THIS IS SHOWN IN THE PRE-PLAT.
8. THE NEW STREET IS TO BE CONSTRUCTED PER SUBURBAN LOCAL RESIDENTIAL SECTION.
9. EACH LOT WILL BE REQUIRED TO HAVE PARKING FOR AT LEAST FOUR (4) VEHICLES. TWO COVERED (GARAGE) AND TWO ON THE DRIVEWAY.
10. ALL STRUCTURES SHALL BE LIMITED TO 1-STORY. NO STRUCTURE SHALL BE ALLOWED TO PROVIDE A 2-STORY DESIGN.

LEGEND

- 85.38 TOP OF CURB
- GRADE BREAK
- EXISTING SPOT ELEVATION
- EXISTING CONTOUR
- BUILDING SETBACK LINE (BSL)
- EXISTING CONCRETE (TO REMAIN)
- PROPOSED CONCRETE
- PROPOSED CONTOUR
- EXISTING LOT LINE
- PROPOSED LOT LINE
- EXISTING WALL (TO REMOVE)
- EXISTING WALL (TO REMAIN)
- PROPOSED WALL
- STORM DRAIN
- RIGHT-OF-WAY AS DEFINED BY SCHAFFNER ESTATES PLAT MCR BOOK 75, PAGE 25
- RIGHT-OF-WAY AS DEFINED BY McDONALD PROFESSIONAL CENTER PLAT MCR BOOK 895, PAGE 34

LEGAL DESCRIPTION:

THAT PART OF SECTION 14, TOWNSHIP 2 NORTH, RANGE 4 EAST OF THE GILA AND SALT RIVER MERIDIAN, MARICOPA COUNTY, ARIZONA, DESCRIBED AS FOLLOWS:
PARCELS 3, 4 AND 5 OF SCHAFFNER ESTATES RECORDED IN MCR BOOK OF MAPS 75, PAGE 25.



VICINITY MAP

PROJECT DATA

EXISTING ZONING: R1-18 PRD
EXISTING GP: SUBURBAN
GROSS AREA: 3.80 AC
DENSITY: 1.84 DU/AC
EX. PARCEL AREA: 2.99 AC
PROP. ROW AREA: 0.29 AC
NET AREA: 2.70 AC
TRACT AREA: 0.39 AC
OPEN SPACE: 17,057 SF
NET OPEN SPACE %: 14.5%

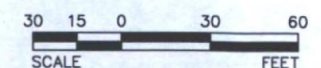
NOTE:
- GROSS AREA IS CALCULATED AS THE AREA TO THE CL OF THE ADJACENT STREETS (ZONING BOUNDARY).
- EX. PARCEL AREA IS THE AREA OF LOTS 3-5 OF SCHAFFNER ESTATES.

BUILDER:

ADAMS CRAIG ACQUISITIONS
7904 E. CHAPARRAL RD.
SUITE A110-113
SCOTTSDALE, ARIZONA 85250
PHONE: (480) 634-5015

ENGINEER:

6K CONSULTING, L.L.C.
4858 EAST BASELINE ROAD
SUITE 101
MESA, ARIZONA 85206
PHONE: (480) 664-8592



SIENA ESTATES
PALO VERDE LANE AND CATTLETRACK ROAD
SCOTTSDALE, AZ 85250

PRELIMINARY PLAT

| | |
|-----------------|-----------------------------|
| PROJ. No.: 3639 | 6K CONSULTING L.L.C. |
| DATE: MAY 2018 | |
| SCALE: 1"=30' | |
| DESIGNED: 6K | DRAWN: 6K |
| REV. | APPROVED: CHB |
| | DRAWING NO. 1 |
| | SHT. 1 OF 1 |

SIENA ESTATES by ADAMS CRAIG ACQUISITIONS
REPLAT OF LOTS 3-5 OF SCHAFFNER ESTATES
PALO VERDE LANE AND CATTLETRACK ROAD SCOTTSDALE, AZ 85250
APN's 173-04-016, 173-04-017, 173-04-018

DRAINAGE NARRATIVE:

THE EXISTING PARCELS AND HOMES DRAIN GENERALLY TO THE SOUTHEAST. THE LOTS WILL DRAIN TO THE CUL-DE-SAC TO BE COLLECTED AND DIRECTED, BY STORM DRAIN, TO A PROPOSED SHALLOW BASIN WHICH WILL DRAIN INTO EXISTING CATCH BASINS IN CATTLE TRACK THAT DIRECT WATER TO THE EXISTING RETENTION BASIN LOCATED EAST OF CATTLETRACK AND SOUTH OF McDONALD DRIVE. PORTIONS OF LOTS 4-7 WILL DRAIN TO CATTLETRACK AND TO PALO VERDE TO BE RETAINED IN SMALL DETENTION BASINS DESIGNED TO ASSIST IN PROVIDING ADDITIONAL RUNOFF GENERATED BY THE DEVELOPMENT.

ENGINEER'S NOTES:

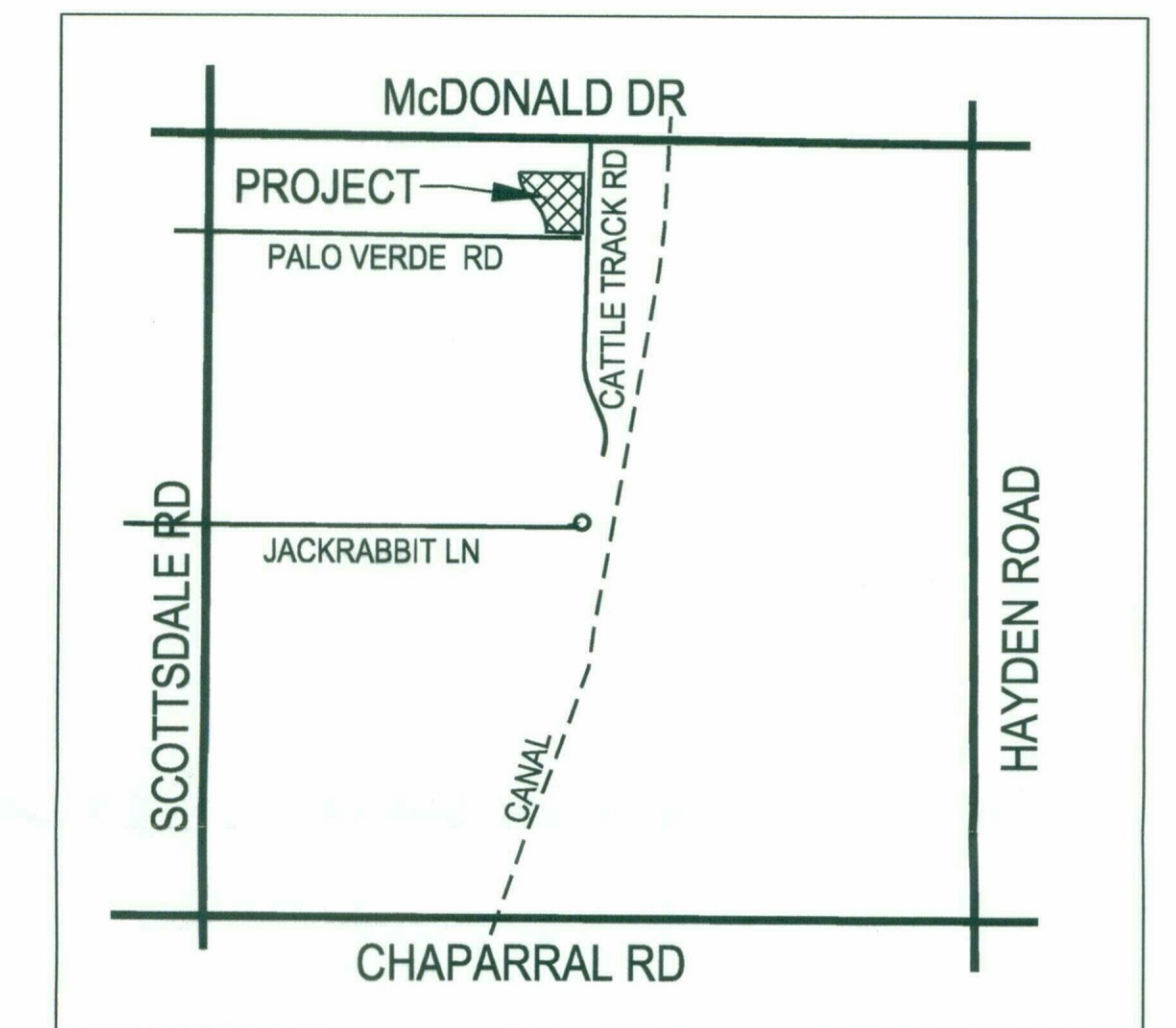
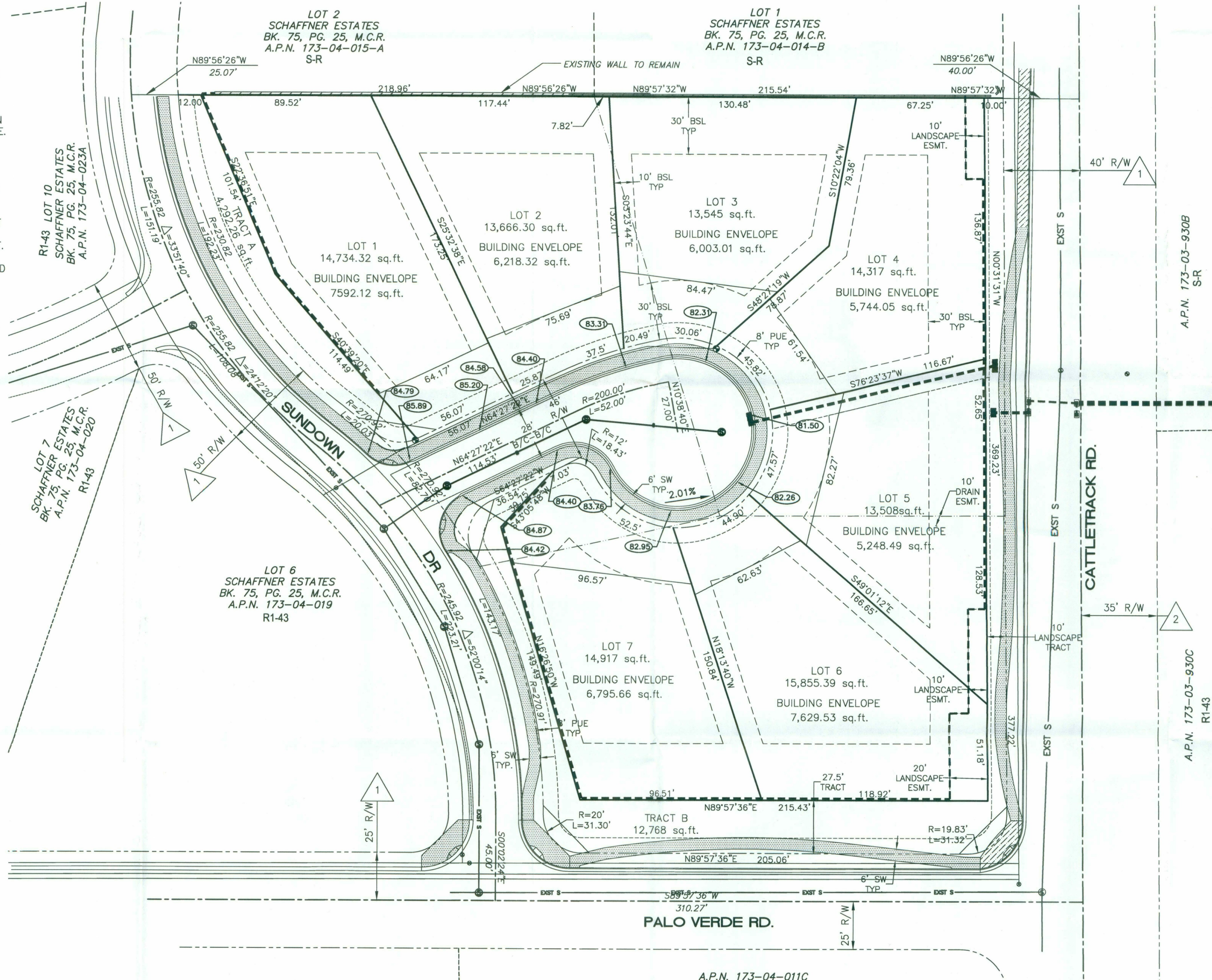
1. THE POWER, GAS AND WATER UTILITIES ARE ALREADY LOCATED IN THE EXISTING STREETS. THE EXISTING EASEMENTS AND UTILITIES LOCATED WITHIN THE LOTS WILL BE ABANDONED AND REMOVED. NEW FACILITY LINES WILL BE EXTENDED INTO THE PROPOSED CUL-DE-SAC AND SERVICES PROVIDED TO EACH LOT.
2. THE EXISTING SEPTIC SYSTEMS WILL BE ABANDONED AND REMOVED. THE PROPOSED LOTS WILL BE CONNECTED TO A CITY SEWER LINE THAT HAS BEEN ENGINEERED AND WILL BE CONSTRUCTED IN SUNDOWN DRIVE AND SUNDOWN CIRCLE FROM PALO VERDE LANE.
3. THERE ARE NO APPARENT NATURAL WATERCOURSES WITHIN CLOSE PROXIMITY TO THE PROPERTY.
4. THE SIDEWALK WILL BE EXTENDED ALONG PALO VERDE.
5. CURB, GUTTER AND SIDEWALK WILL BE ADDED ALONG THE EAST SIDE OF SUNDOWN DRIVE.
6. THE PAVEMENT IN SUNDOWN WILL BE REMOVED BY MILLING AND REPLACED WITH NEW ASPHALT PAVEMENT AND RIBBON CURB ALONG THE WEST SIDE OF THE STREET DURING THE CONSTRUCTION OF THIS PROJECT.
7. THE EXISTING DRIVEWAY LOCATIONS ALONG CATTLETRACK AND PALO VERDE WILL BE REMOVED AND REPLACED WITH CURB AND GUTTER TO MATCH THE EXISTING. THIS IS SHOWN IN THE PRE-PLAT.
8. THE NEW STREET IS TO BE CONSTRUCTED PER SUBURBAN LOCAL RESIDENTIAL SECTION.
9. EACH LOT WILL BE REQUIRED TO HAVE PARKING FOR AT LEAST FOUR (4) VEHICLES. TWO COVERED (GARAGE) AND TWO ON THE DRIVEWAY.
10. ALL STRUCTURES SHALL BE LIMITED TO 1-STORY. NO STRUCTURE SHALL BE ALLOWED TO PROVIDE A 2-STORY DESIGN.

LEGEND

- 85.38 TOP OF CURB
 - 1284.50 GRADE BREAK
 - 1284.50 EXISTING SPOT ELEVATION
 - 1284 EXISTING CONTOUR
 - BUILDING SETBACK LINE (BSL)
 - EXISTING CONCRETE (TO REMAIN)
 - PROPOSED CONCRETE
 - 1280 PROPOSED CONTOUR
 - EXISTING LOT LINE
 - PROPOSED LOT LINE
 - EXISTING WALL (TO REMOVE)
 - EXISTING WALL (TO REMAIN)
 - PROPOSED WALL
 - STORM DRAIN
- 1 RIGHT-OF-WAY AS DEFINED BY SCHAFFNER ESTATES PLAT MCR BOOK 75, PAGE 25
- 2 RIGHT-OF-WAY AS DEFINED BY McDONALD PROFESSIONAL CENTER PLAT MCR BOOK 895, PAGE 34

LEGAL DESCRIPTION:

THAT PART OF SECTION 14, TOWNSHIP 2 NORTH, RANGE 4 EAST OF THE GILA AND SALT RIVER MERIDIAN, MARICOPA COUNTY, ARIZONA, DESCRIBED AS FOLLOWS:
PARCELS 3, 4 AND 5 OF SCHAFFNER ESTATES RECORDED IN MCR BOOK OF MAPS 75, PAGE 25.



VICINITY MAP

PROJECT DATA

EXISTING ZONING: R1-18 PRD
EXISTING GP: SUBURBAN
GROSS AREA: 3.80 AC
DENSITY: 1.84 DU/AC
EX. PARCEL AREA: 2.99 AC
PROP. ROW AREA: 0.29 AC
NET AREA: 2.70 AC
TRACT AREA: 0.39 AC
OPEN SPACE: 17,057 SF
NET OPEN SPACE %: 14.5%

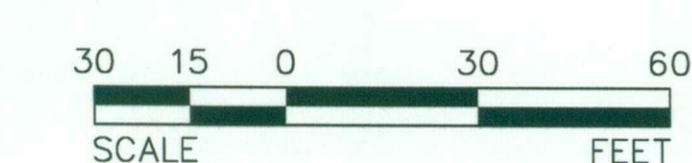
NOTE:
- GROSS AREA IS CALCULATED AS THE AREA TO THE CL OF THE ADJACENT STREETS (ZONING BOUNDARY).
- EX. PARCEL AREA IS THE AREA OF LOTS 3-5 OF SCHAFFNER ESTATES.

BUILDER:

ADAMS CRAIG ACQUISITIONS
7904 E. CHAPARRAL RD.
SUITE A110-113
SCOTTSDALE, ARIZONA 85250
PHONE: (480) 634-5015

ENGINEER:

6K CONSULTING, L.L.C.
4858 EAST BASELINE ROAD
SUITE 101
MESA, ARIZONA 85206
PHONE: (480) 664-8592



| | | |
|--|-----------------------------|-------------|
| SIENA ESTATES PALO VERDE LANE AND CATTLETRACK ROAD SCOTTSDALE, AZ 85250 | | |
| PRELIMINARY PLAT | | |
| PROJ. No.: 3639 | 6K CONSULTING L.L.C. | |
| DATE: MAY 2018 | | |
| SCALE: 1"=30' | DESIGNED: 6K | DRAWN: 6K |
| REV. | APPROVED: CHB | |
| | | DRAWING NO. |
| | | 1 |
| | | SHT. 1 OF 1 |