



PRELIMINARY DRAINAGE REPORT 4-DR-2020

Whataburger Scottsdale Scottsdale, Arizona

Plan #	<u>4-DR-2020</u>
Case #	_____
Q-S #	_____
<input checked="" type="checkbox"/> Accepted	
<input type="checkbox"/> Correction	
Reviewed By	<u>GA</u>
Date	<u>05/12/2020</u>

Prepared For:

Whataburger
Matthew Bartholomew
300 Concord Plaza Dr.
San Antonio, TX 78216

Note: Accepted, with drainage stips
in "Stips-DR" document



PRELIMINARY DRAINAGE REPORT

4-DR-2020

7134 E. THOMAS ROAD
SCOTTSDALE ARIZONA 85251



MAY 2020

Prepared By:

Kimley»»Horn

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1.0 INTRODUCTION

1.1 PROJECT DESCRIPTION

Whataburger is proposing to construct a Whataburger Restaurant at 7134 E Thomas Road, Scottsdale AZ 85251. The project is anticipated to consist the one-story restaurant building with associated drive thru, parking, and infrastructure improvements.

1.2 SITE LOCATION

The proposed development encompasses approximately 1.43 net acres in a portion of the Northeast Quarter of Section 27, Township 2 North, Range 4 East of the Gila and Salt River Base and Meridian in Maricopa County, Arizona. The Site is bound the North and West by commercial development, APN 130-17-016C, APN 130-17-024C and APN 130-17-024L. It is bound to the by E North 71st Street and to the South by E Thomas Rd. See **Appendix A** for the Site Location Map, Legal Description, and Context Aerial Map.

The existing Site contains a 6,800 SF restaurant building with associated utility services. The existing building and parking field is to be demolished.

1.3 PURPOSE

This Preliminary Drainage Report is intended to satisfy City of Scottsdale requirements and demonstrate conformance to the drainage standards and guidelines of the City of Scottsdale and the Flood Control District of Maricopa County (FCDMC). This report provides a description of the current stormwater drainage patterns and systems 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. The Site will retain onsite a retention volume, which is the greater of the first flush volume or pre-vs-post 100-year, 2-hour volume plus the existing retention volume onsite.
2. Permanent drainage facilities will have a positive outfall and any detained stormwater will be disposed of within 36 hours.
3. Drainage facilities will be designed such that the 100-year post-development flows are collected and conveyed in such a manner to not cause damage to buildings and property or exceed pre-development flows.
4. Building finished floor elevations have been set a minimum of 14 inches above the Site outfall and 12 inches above the highest adjacent grade.

2.0 DESCRIPTION OF EXISTING DRAINAGE CONDITIONS AND CHARACTERISTICS

2.1 EXISTING ONSITE DRAINAGE CONDITIONS

The Site currently consists of an existing building and parking lot. The Site is bounded by developed property to the north and east, Thomas Road and existing single-family and commercial developments to the south, and 71st Street to the west. The Site slopes from the northwest to southeast at approximately 0.5%. Stormwater generated onsite currently flows to one existing drywell located within the parking field. The fact that there is a drywell onsite implies that under existing conditions, the drywell was used to drain water collected in the low spot of the parking area, which was utilized for onsite retention.

Refer to **Appendix B** for the Existing Conditions Exhibit.

2.2 EXISTING OFF-SITE DRAINAGE CONDITIONS

The parcel is affected by stormwater run-on from portions of 71st Street, west of the Site. The street as it exists today is not fully contained by curbs or gutters. In general, 71st Street slopes towards the site from approximately the centerline and drains to the south.

Stormwater generated within Thomas Road is collected in catch basins and conveyed beneath Thomas Road within the City storm drain system. Off-Site flows from Thomas Road and areas along Thomas Road do not affect the Site.

Refer to **Appendix B** for the Existing Conditions Exhibit.

2.3 EXISTING MASTER DRAINAGE REPORTS

There are no existing master drainage reports for this Site.

2.4 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 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood." Refer to **Appendix C** 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

3.2 PROPOSED SITE CONDITIONS

The development of the Whataburger increases landscape and open space areas and proposes less impervious areas such as pavement and buildings. For the infill project, as first flush mitigation is proposed to be provided through onsite basins, the stormwater retention volume required is based on the greater of the first flush volume OR the pre-vs-post conditions for the 100-year, 2-hour storm event PLUS any onsite retention volume utilized under existing conditions. Calculations for the capacity of the existing pavement area retention at the location of the drywell plus the pre-vs-post stormwater run-off, and the first flush storm event can be found in **Appendix D**. Based on these calculations, the first flush volume is the most conservative and will be the basis for the proposed retention onsite, except as noted below.

Retention will be provided within two stormwater surface retention basins – one within the southern area of the site's landscape adjacent to Thomas Road (Basin B), and one within the northern portion of the site's landscape (Basin A). Basin B's design provides a drainage pattern consistent with existing conditions and is therefore designed to retain the first flush volume. Basin A is located at the high end of the site and has therefore been designed to retain the 100-year, 2-hour storm event. Flows more than the proposed onsite retention capacity will leave the site to pre-development outfall locations. Public drainage easements will be dedicated over both basins to allow for city access. The property owner is responsible for maintaining the drainage easement, inspecting the drainage facilities after each storm event of greater than 0.5 inches, removing accumulated trash and debris from inlet and outlet structures, and inspecting all other elements of the drainage system.

The existing onsite drywell will remain in place and in use. Plans will call out for the drywell to be cleaned and inspected/retrofitted to verify it operates correctly. This retrofit makes the entire system far superior to the original design while maintaining the grading of the original site design.

Refer to **Appendix D** for Stormwater Retention Calculations.

Refer to **Appendix E** for the Drainage Delineation Map.

3.3 PROPOSED OFF-SITE CONDITIONS

71st Street ROW (30-feet) will be dedicated per a Final Plat. The proposed improvements to 71st Street include curb, gutter, and sidewalk on the east side for the length of the project, and a reconstructed driveway at the intersection of 71st Street and Thomas Road.

3.4 FUTURE CONDITIONS

Future developments to the Site are limited as the north, east, west, and south sides of the Site are fully developed with commercial properties.

3.5 STORMWATER STORAGE REQUIREMENTS

Per the proposed site plan, surface retention provides for onsite retention within two basins. First flush treatment of site generated stormwater is required prior to discharge from the site.

Basins are sized according to the City of Scottsdale 2018 Design Standards & Policies Manual (DS&PM):

$$V = C P A$$

Where: V = Required volume (cubic feet)

C = Runoff coefficient for the proposed development

P = Precipitation depth (0.5 inches for first flush and 2.16 inches for the 100-year, 2-hour event)

A = Contributing area (square feet)

Table 1 below summarizes the required and provided first flush and 100-yr, 2-hr storms volume for Basins A and B.

Table 1 Volume Required and Provided

Surface Retention Summary				
Retention Basin	Basin Depth	Required Volume	Volume Provided	Excess Volume
	ft	cf	cf	cf
A	3.0	2,971	3,044	73
B	3.0	1,261	1,738	477
Total		4,232	4,782	550

Drywell Summary				
Retention Basin	Volume	Percolation Rate	Drywells Required	Drain Time
	cf	cfs	ea	hr
A	2,971	0.1	1	9
B	1,261	0.1	1	4

Refer to **Appendix D** for the corresponding calculations.

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

In the existing condition, the site outfall is to Thomas Road, either out the driveway to Thomas Road or over to 71st Street and then ultimately to Thomas Road. 71st Street drains to the site and to Thomas Road. In the proposed condition, the drainage patterns remain consistent. Run-off not contained onsite will outfall to either Thomas Road via the driveway to Thomas Road or to 71st Street, which outfalls to Thomas Road at its intersection.

3.7 PROPOSED DRAINAGE STRUCTURES OR SPECIAL DRAINAGE FACILITIES

The existing drywell located towards the southeastern side of the site must be thoroughly cleaned and inspected or retrofitted, if necessary.

The proposed finished floor of the Whataburger restaurant is 1239.80, over one foot above the highest adjacent grade in East Thomas Street and the lowest adjacent grade in 71st Street.

Refer to **Appendix D** for a Cross Section of the 100-year flows within 71st Street.

Table 2 Proposed Building Finished Floor Elevation

Building	Highest Adjacent Grade	Lowest Adjacent Grade	Proposed FF Elevation	Existing Drywell Elevation	Site Outfall Elevation
Whataburger	1238.79	1238.76	1239.80	1238.04	1238.09

3.8 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.

3.9 PROJECT PHASING

This project will be constructed in a single phase.

4.0 SPECIAL CONDITIONS

4.1 404 DISCUSSION

There are no special conditions for this Site.

5.0 DATA ANALYSIS METHODS

5.1 HYDROLOGIC PROCEDURES, PARAMETER SELECTION, AND ASSUMPTIONS

Hydrologic calculations for the Site were performed using the rational equation in the FCDMC Drainage Design Manual Volume I, which is limited to drainage areas of up to 160 acres. Runoff coefficients identified with the City of Scottsdale Design Standards and Policies Manual were used for the Site based upon the amount of landscaping, pavement, and building area.

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 except for the landscape sub-basins, which will utilize a runoff coefficient of 0.83 per the DS&PM.

For analysis of the development, the Site was sub-divided into eight sub-basins consisting of pavement, landscaping, and building areas. **Appendix E** identifies the drainage sub-basins and concentration points.

5.2 HYDRAULIC PROCEDURES, METHODS, PARAMETER SELECTION, AND ASSUMPTIONS

The following criteria was used to size the proposed basins for onsite stormwater storage and conveyance:

- First flush volume may be computed with the following equation:

$$\text{Equation 1: } V = CPA$$

Where V is the required volume, C is the runoff coefficient for the disturbed area of the proposed development, P is the required precipitation depth of 0.5 inches or 2.16, and A is the disturbed area of the proposed development.

The software program FlowMaster, by Bentley Systems, was used for the hydraulic modeling. Refer to **Appendix D** for a detailed analysis of an irregular cross-section for 71st Street.

5.3 STORMWATER STORAGE CALCULATION METHODS AND ASSUMPTIONS

Retention will be provided within two stormwater surface retention basins – one within the southern area of the site's landscape adjacent to Thomas Road (Basin B), and one within the northern portion of the site's landscape (Basin A).

Basin B's design provides a drainage pattern consistent with existing conditions and is therefore designed to retain the first flush volume. Basin A is located at the high end of the site and has therefore been designed to retain the 100-year, 2-hour storm event.

Refer to **Section 3.5** of this report for the calculation method.

6.0 CONCLUSION

6.1 OVERALL PROJECT

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

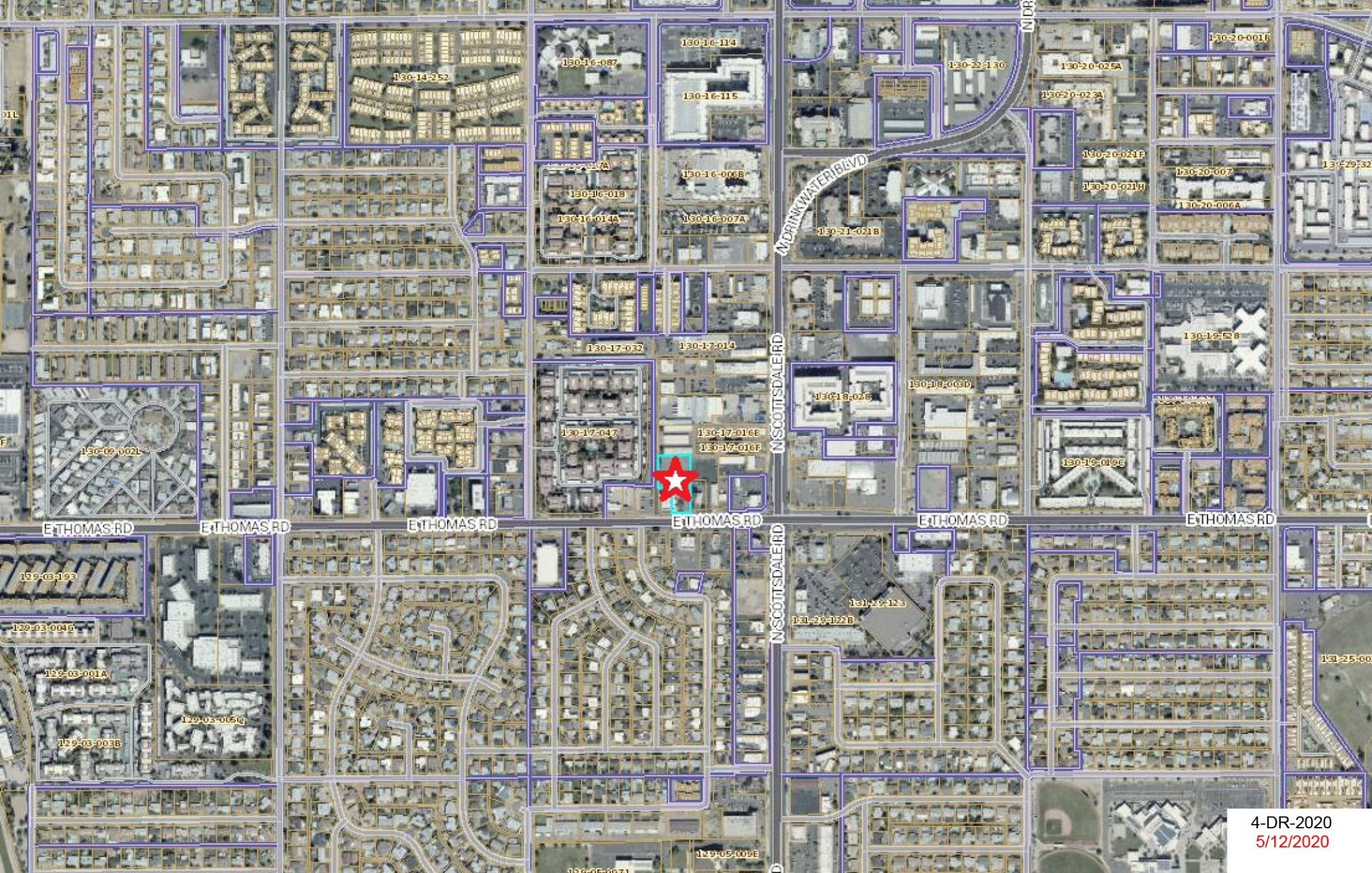
- Imperious area was decreased with the development of the Whataburger. The Pre-vs-Post run-off volume is negative.
- Treatment for the stormwater first flush will be provided by two stormwater quality basins, Basins A and Basins B. Basin A, to the north, will also cover the 100-year, 2-hour storm as it alters the sites historic flow pattern.
- The Site will have ultimate outfall per historic conditions into Thomas Road.
- Based on the current Flood Insurance Rate Map (FIRM), the Site is located in the Zone "X".
- The flows within 71st Street have been studied and the finished floor is protected from these flows.

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 0413C2235L*, 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, Legal Description, and Context Aerial Map



REV	DESCRIPTION	BY	DATE	APPR

K:\ENV_Civil\291394000 - Whataburger\CADD\Exhibits\Context Aerial Exhibit.dwg, Layout:EXHIBIT Sep 12, 2019 - 5:42pm pdj@erally
 THIS DOCUMENT, TOGETHER WITH THE CONCEPTS AND DESIGNS PRESENTED HEREIN, IS AN INSTRUMENT OF SERVICE, IS INTENDED ONLY FOR THE SPECIFIC PURPOSE AND CLIENT FOR WHICH IT WAS PREPARED, REUSE
 OF THIS DOCUMENT FOR ANY OTHER PROJECT OR PURPOSE WITHOUT THE WRITTEN PERMISSION OF KIMLEY-HORN AND ASSOCIATES, INC. IS STRICTLY PROHIBITED.



OWNER: CRLP
2929 PHOENIX
LLC APN:
130-17-047
ZONING: R-5

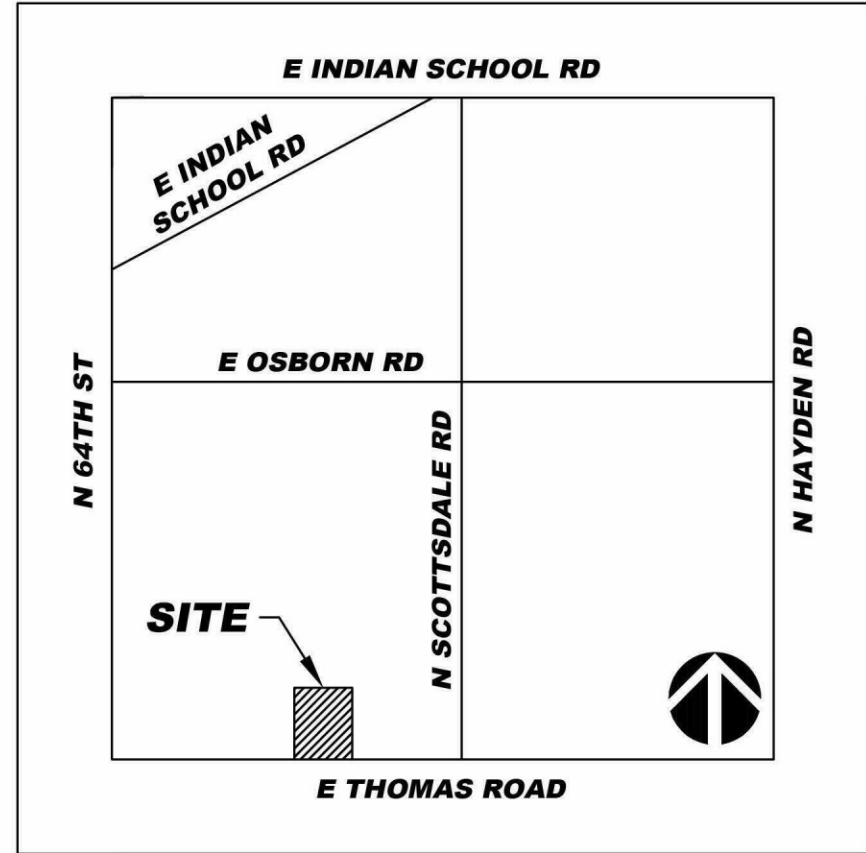
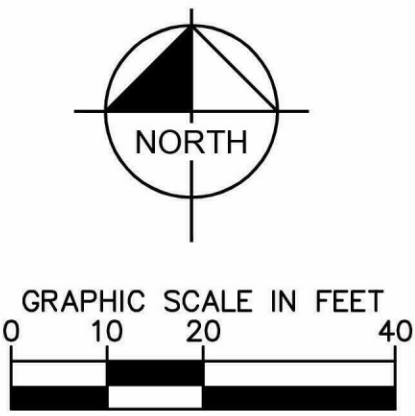
OWNER: NOLTE ARTHUR
SCARROLL MARY ELIZABETH TR
APN: 130-17-029
ZONING: C-3

OWNER: STORAGE EQUITIES
PS PARTNERS IV 70TH ST
APN: 130-17-016C
ZONING: C-4

OWNER: ALBRIGHT
DONITA R TR
APN: 130-17-016F
ZONING: C-3

OWNER: ATKINSON
WARD J/JOAN F TR
APN: 130-17-024C
ZONING: C-3

OWNER: KJF
PARTNERS 16SA LLC
APN: 130-17-024L
ZONING: C-3



VICINITY MAP
MARICOPA COUNTY
N.T.S.



WHATABURGER RESTAURANT
CONTEXT AERIAL PLAN
7134 E THOMAS ROAD
SCOTTSDALE, AZ 85251

PROJECT No.
291394000
SCALE (H): 1"=20'
SCALE (V): ---
DRAWN BY: PAR
DESIGN BY: PAR
CHECK BY: HDR
DATE: 09/12/2019

PRELIMINARY
FOR REVIEW ONLY
NOT FOR
CONSTRUCTION
Kimley-Horn
Kimley-Horn and Associates, Inc.

Kimley-Horn © 2019
1001 W Southern Ave, Suite 131
Mesa, Arizona 85210 (480) 207-2666



PREMIER TITLE AGENCY-UNINSURED
RECORDING REQUESTED BY

Premier Title Agency

Escrow Number: N/A – Courtesy Recording

WHEN RECORDED MAIL TO

Cedars Cross, LLC
3238 N. Scottsdale Road
Scottsdale, AZ 85251

Unofficial
20 Document

15
Ho:

A.P.N.: 130-17-021A, 130-17-022A

SPACE ABOVE THIS LINE FOR RECORDER'S USE

SPECIAL WARRANTY DEED

For the consideration of Ten Dollars, and other valuable considerations, I or we,

Gebran Venture Group, LLC, an Arizona limited liability company

Do/does hereby convey to

Cedars Cross, LLC, an Arizona limited liability company

The following real property situated in Maricopa County, Arizona


SEE EXHIBIT "A" ATTACHED HERETO AND MADE A PART HEREOF FOR LEGAL DESCRIPTION

SUBJECT TO: Current taxes and other assessments, reservations in patents and all easements, rights of way, encumbrances, liens, covenants, conditions, restrictions, obligations and liabilities as may appear of record.

And the Grantor hereby binds itself and its successors to warrant and defend the title against all acts of the Grantor herein, and no other, subject to the matters set forth.

Dated: November 3, 2017

Gebran Venture Group, LLC, an Arizona limited liability company

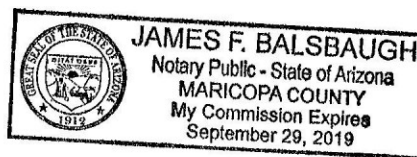
By: 

Gebran A. Gebran
Its: Member and Authorized Agent

State of Arizona)
)
County of Maricopa)

On this 3 day of November, 2017, before me personally appeared Gebran A. Gebran, as Member and Authorized Agent of Gebran Venture Group, LLC, an Arizona limited liability company, whose identity was proven to me on the basis of satisfactory evidence to be the person who he or she claims to be, and acknowledged that he or she signed the above/attached document.

James F. Balsbaugh
Notary Public



Unofficial Document

EXHIBIT "A"
LEGAL DESCRIPTION

The West 201.5 feet of Lot 4, Block 32, SECURITY ACRES AMENDED, according to the plat of record in the Office of the County Recorder of Maricopa County, Arizona recorded in Book 8 of Maps, Page 59;

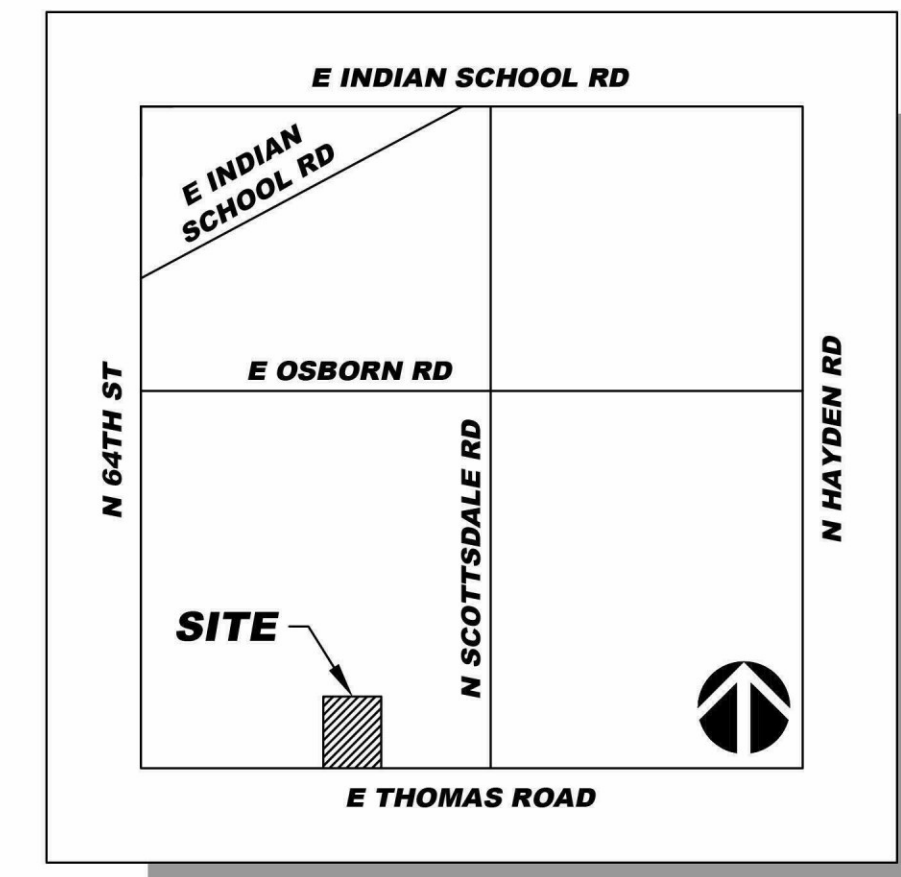
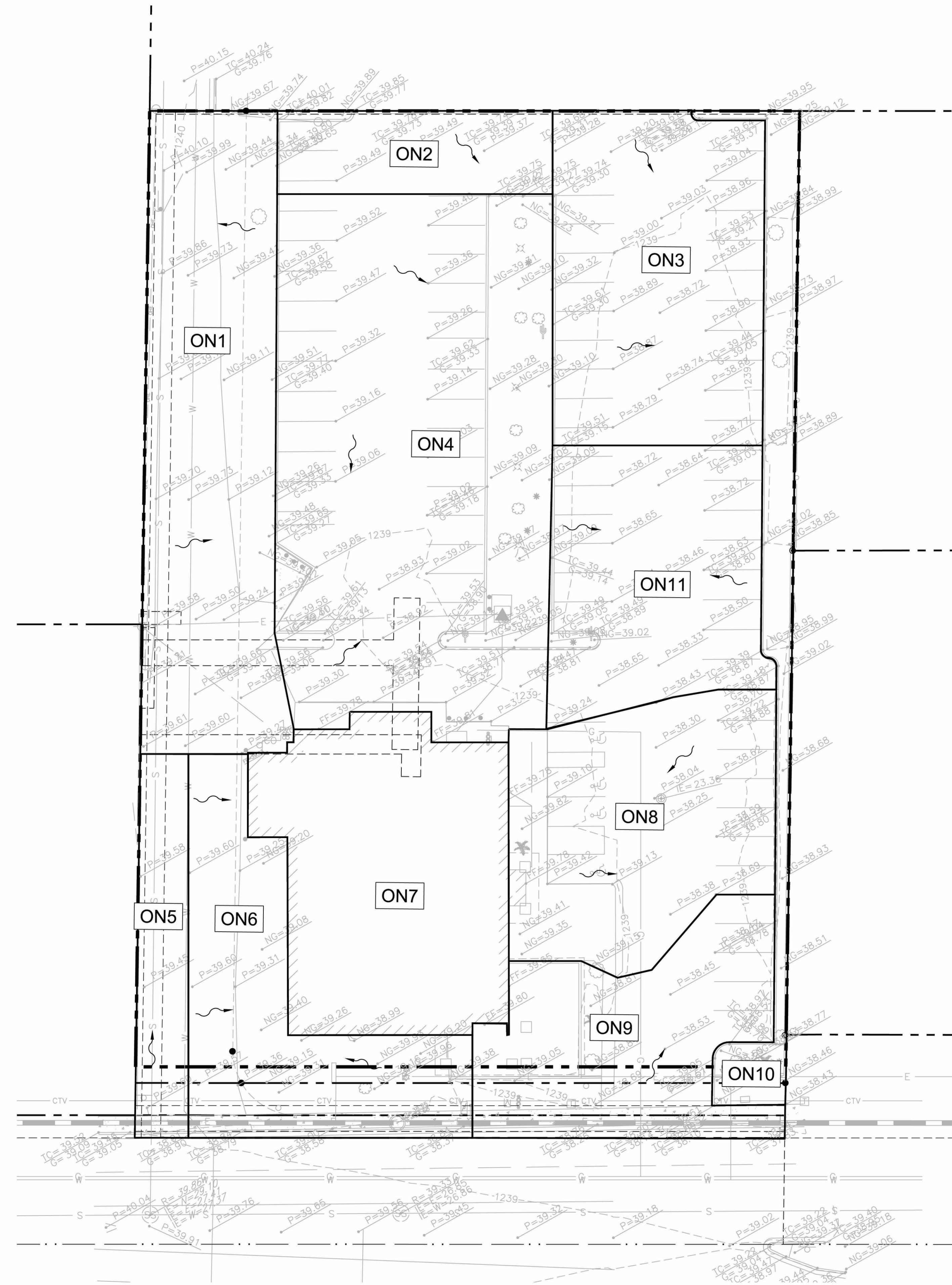
Except the North 10 feet of the South 17 feet thereof.

Unofficial Document

Appendix B – Existing Conditions Exhibits

REV	DESCRIPTION	BY	DATE	APPR

K:\NAV_Civil\291394000 - Whataburger - Scottsdale\CAD\Exhibits\Existing Conditions Map.dwg, Layout:EXHIBIT Mar 17, 2020 - 4:29pm Polge-Reilly
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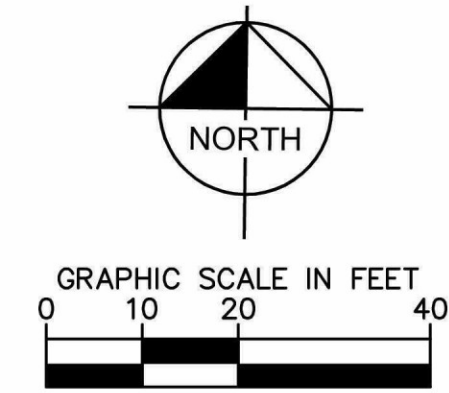
VICINITY MAP
 MARICOPA COUNTY
 N.T.S.

Kimley»Horn
 © 2020
 1001 W Southern Ave, Suite 131
 Mesa, Arizona 85210 (480) 207-2666



WHATABURGER RESTAURANT
 EXISTING CONDITIONS MAP
 7134 E THOMAS ROAD
 SCOTTSDALE, AZ 85251

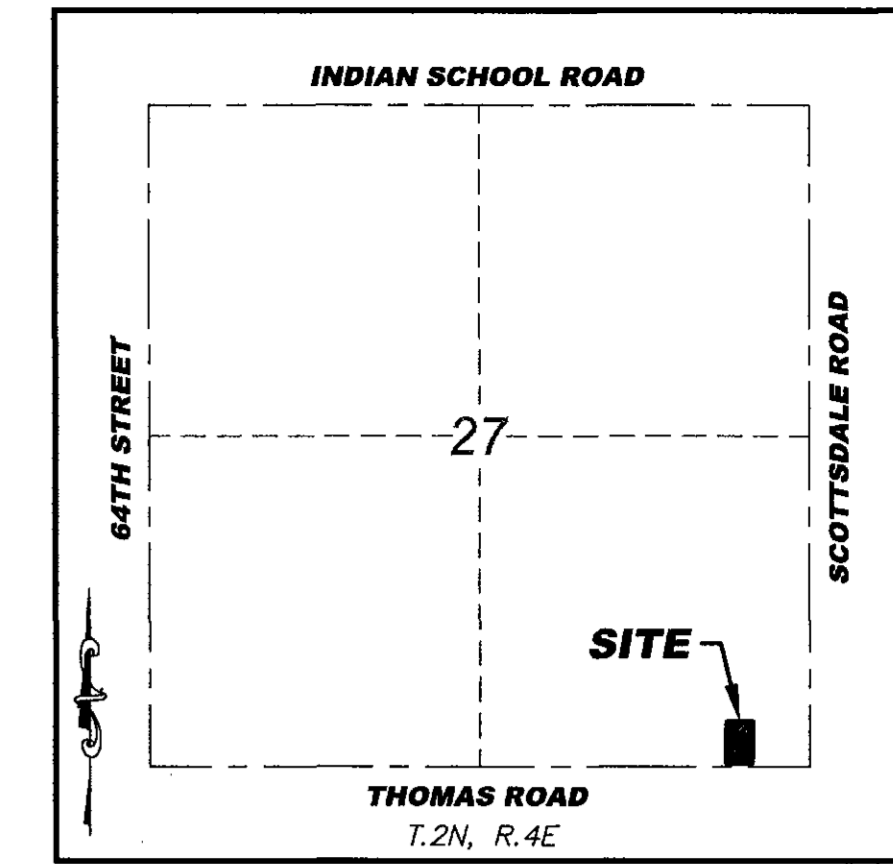
PROJECT No.
 291394000
 SCALE (H): 1"=20'
 SCALE (V): ---
 DRAWN BY: PAR
 DESIGN BY: PAR
 CHECK BY: HDR
 DATE: 03/24/2020



Existing Conditions Map.dwg
 ECM
 01 OF 01 SHEETS

ALTA / NSPS LAND TITLE SURVEY WHATABURGER - 71ST ST. & THOMAS RD.

A PORTION OF THE SOUTHEAST QUARTER OF SECTION 27, TOWNSHIP 2 NORTH, RANGE 4 EAST
OF THE GILA AND SALT RIVER BASE AND MERIDIAN, MARICOPA COUNTY, ARIZONA.



VICINITY MAP
N.T.S.

AREA

NORTH PROPERTY CONTAINS 60,736 SQUARE FEET OR 1.394 ACRES, MORE OR LESS. SOUTH PROPERTY CONTAINS 1,411 SQUARE FEET OR 0.032 ACRES, MORE OR LESS. TOTAL PROPERTY CONTAINS 62,136 SQUARE FEET OR 1.426 ACRES, MORE OR LESS.

ADDRESS

7134 E. THOMAS ROAD
SCOTTSDALE, ARIZONA 85251

PARKING

REGULAR 74
HANDICAP 4

BASIS OF BEARING

THE SOUTH LINE OF THE SOUTHEAST QUARTER OF SECTION 27, AS MEASURED BETWEEN FOUND MONUMENTS.
SAID LINE BEARS SOUTH 89 DEGREES 19 MINUTES 57 SECONDS WEST.

ZONING

ZONE: C-3
ZONING INFORMATION OBTAINED FROM MARICOPA COUNTY ASSESSORS WEBSITE.

*PER 2016 ALTA MINIMUM STANDARD DETAIL REQUIREMENTS: CURRENT ZONING CLASSIFICATION, BUILDING SETBACK REQUIREMENTS AND HEIGHT AND FLOOR SPACE AREA RESTRICTIONS ARE TO BE PROVIDED TO THE SURVEYOR BY THE INSURER. THE CLASSIFICATION, REQUIREMENTS AND RESTRICTIONS HAVE NOT BEEN PROVIDED AT THE TIME OF THIS SURVEY. THE ZONING CLASSIFICATIONS SHOWN ARE FOR REFERENCE.

FLOOD ZONE

ACCORDING TO THE FLOOD INSURANCE RATE MAP #04013C2235 L, DATED OCTOBER 16, 2013, THIS PROPERTY IS LOCATED IN FLOOD ZONE "X". 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.

CERTIFICATION

TO: WHATABURGER RESTAURANTS LLC, A TEXAS LIMITED LIABILITY COMPANY
CEDARS CROSS, LLC, AN ARIZONA LIMITED LIABILITY COMPANY
CITY OF SCOTTSDALE
CHICAGO TITLE INSURANCE COMPANY

THIS IS TO CERTIFY THAT THIS MAP AND THE SURVEY ON WHICH IT IS BASED WERE MADE IN ACCORDANCE WITH THE 2016 MINIMUM STANDARD DETAIL REQUIREMENTS FOR ALTA/NSPS LAND TITLE SURVEYS, JOINTLY ESTABLISHED AND ADOPTED BY ALTA AND NSPS, AND INCLUDES ITEMS 1, 2, 3, 4, 6(a), 7(a), 8, 9, 10(a), 11, 13, 14, 16 AND 17 OF TABLE A THEREOF.

FIELD WORK WAS COMPLETED DECEMBER 20, 2019

/s/
1/8/2020
 ERIC L. SOSTROM
 22425 N. 16TH STREET, SUITE 1
 PHOENIX, ARIZONA 85024
 PHONE: 480-922-0780
 TONY@SIGSURVEYAZ.COM

NOTES

THIS SURVEY IS BASED ON COMMITMENT FOR TITLE INSURANCE ISSUED BY CHICAGO TITLE INSURANCE COMPANY NO. 1931283A-001-IMP-MB2, DATED DECEMBER 10, 2019 AT 7:30 A.M.

THE SURVEYOR'S SCOPE-OF-SERVICES IS LIMITED TO PROVIDING SERVICES IN A MANNER CONSISTENT WITH THE DEGREE OF CARE AND SKILL ORDINARILY EXERCISED BY MEMBERS OF THE SAME PROFESSION CURRENTLY PRACTICING UNDER SIMILAR CONDITIONS. SCHEDULE "B" ITEM DOCUMENTS MAY CONTAIN ENCUMBRANCES WHICH AFFECT THE SUBJECT PROPERTY WHICH THE SURVEYOR IS NOT QUALIFIED TO INTERPRET AND/OR ARE NOT WITHIN THE SURVEYOR'S SCOPE-OF-SERVICES (SEE CERTIFICATION). IT IS RECOMMENDED THAT INTERESTED AND AFFECTED PARTIES OBTAIN COUNSEL FOR INTERPRETATION OF ALL SCHEDULE "B" DOCUMENTS REFERENCED IN THE TITLE REPORT.

THE SURVEYOR HAS RELIED SOLELY ON INFORMATION SUPPLIED TO THE SURVEYOR FROM EITHER THE CLIENT OR THE TITLE COMPANY AND HAS MADE NO INVESTIGATION OR INDEPENDENT SEARCH FOR EASEMENTS OF RECORD, ENCUMBRANCES, RESTRICTIVE COVENANTS, OWNERSHIP TITLE EVIDENCE, OR ANY OTHER MATTERS THAT MAY AFFECT THE SUBJECT PROPERTY.

PURSUANT TO TABLE "A" ITEM 6, THE SURVEYOR HAS SHOWN THE ZONING CLASSIFICATION AS SET FORTH BY THE LOCAL AGENCY OF JURISDICTION AND OR IDENTIFIED IN A ZONING REPORT OR LETTER AS PROVIDED TO THE SURVEYOR BY THE CLIENT OR CLIENT'S REPRESENTATIVE AS NOTED ON THIS SURVEY.

PURSUANT TO TABLE "A" ITEM 7, THE BUILDING LINES AND DIMENSIONS SHOWN DEPICT THE EXTERIOR BUILDING FOOTPRINT AT GROUND OR NEAR GROUND LEVEL BASED ON FIELD MEASUREMENTS. THIS INFORMATION IS INTENDED TO DEPICT THE GENERAL CONFIGURATION OF THE BUILDING AT GROUND LEVEL AND MAY OR MAY NOT BE THE BUILDING FOUNDATION. THE BUILDING AREA SHOWN IS BASED ON THE EXTERIOR BUILDING FOOTPRINT AND IS NOT INTENDED TO REFLECT THE INTERIOR OR LEASE AREA.

PURSUANT TO TABLE A, ITEM 11, UNDERGROUND UTILITY INFORMATION SHOWN IS FROM PLANS AND/OR FIELD MARKINGS OF UTILITIES. IN ADDITION, MAPS AND MARKINGS FROM JURISDICTIONS, 811 OR OTHER SIMILAR UTILITY LOCATING COMPANIES MAY BE INCORRECT OR INCOMPLETE. HOWEVER, WITHOUT EXCAVATION, THE EXACT LOCATION OF UNDERGROUND FEATURES CANNOT BE ACCURATELY DEPICTED. WHERE ADDITIONAL OR MORE DETAILED INFORMATION IS REQUIRED, THE CLIENT IS ADVISED THAT EXCAVATION AND/OR A PRIVATE UTILITY LOCATING COMPANY MAY BE NECESSARY.

PURSUANT TO TABLE "A" ITEM 16, THE SURVEYOR DID NOT OBSERVE RECENT EARTH MOVING WORK, BUILDING CONSTRUCTION, OR BUILDING ADDITIONS OBSERVED IN THE PROCESS OF CONDUCTING THE FIELDWORK.

PURSUANT TO TABLE "A" ITEM 17, THE SURVEYOR HAS NOT BEEN INFORMED OF ANY CHANGES IN THE PROPOSED RIGHTS OF WAY. ADDITIONALLY, ANY CHANGES IN RIGHTS OF WAY, WHICH HAVE ALREADY OCCURRED, SHOULD BE VERIFIED BY ADDITIONAL TITLE SEARCH. THE SURVEYOR HAS NOT OBSERVED ANY RECENT STREET OR SIDEWALK CONSTRUCTION IN THE PROCESS OF CONDUCTING THE FIELDWORK.

SIGNIFICANT OBSERVATION

A EASEMENTS LIE WITHIN THE BUILDING

REFERENCE DOCUMENTS

PLAT FOR SECURITY ACRES AMENDED, ACCORDING TO BOOK 8 OF MAPS, PAGE 59, M.C.R.

SCHEDULE 'B' ITEMS

1. PROPERTY TAXES, A LIEN NOT YET DUE AND PAYABLE, INCLUDING ANY PERSONAL PROPERTY TAXES AND ANY ASSESSMENTS COLLECTED WITH TAXES, FOR THE SECOND INSTALLMENT OF 2019 TAXES.
2. ANY OUTSTANDING LIABILITIES AND OBLIGATIONS, INCLUDING UNPAID ASSESSMENTS, IMPOSED UPON SAID LAND BY REASON OF: (A) INCLUSION THEREOF WITHIN THE BOUNDARIES OF THE SALT RIVER PROJECT AGRICULTURAL IMPROVEMENT AND POWER DISTRICT; (B) MEMBERSHIP OF THE OWNER THEREOF IN THE SALT RIVER VALLEY WATER USERS' ASSOCIATION, AN ARIZONA CORPORATION AND (C) THE TERMS OF ANY WATER RIGHT APPLICATION MADE UNDER THE RECLAMATION LAWS OF THE UNITED STATES FOR THE PURPOSES OF OBTAINING WATER RIGHTS FOR SAID LAND.
3. WATER RIGHTS, CLAIMS OR TITLE TO WATER, WHETHER OR NOT DISCLOSED BY THE PUBLIC RECORDS.
4. RESERVATIONS CONTAINED IN THE PATENT FROM: THE UNITED STATES OF AMERICA, TO: SAMUEL A. MURPHY RECORDING, DATE: NOVEMBER 24, 1890 RECORDING NO: BOOK 25 OF DEEDS, PAGE 409, WHICH AMONG OTHER THINGS RECITES AS FOLLOWS: SUBJECT TO ANY VESTED AND ACCRUED WATER RIGHTS FOR MINING, AGRICULTURAL, MANUFACTURING, OR OTHER PURPOSES AND RIGHTS TO DITCHES AND RESERVOIRS USED IN CONNECTION WITH SUCH WATER RIGHTS, AS MAY BE RECOGNIZED AND ACKNOWLEDGED BY LOCAL CUSTOMS, LAWS AND DECISIONS OF THE COURTS; AND ALSO SUBJECT TO THE RIGHT OF THE PROPRIETOR OF A VEIN OR LODE TO EXTRACT AND REMOVE HIS ORE THEREFROM SHOULD THE SAME BE FOUND TO PENETRATE OR INTERSECT THE PREMISES HEREBY GRANTED, AS PROVIDED BY LAW. **"BLANKET IN NATURE"**
5. EASEMENTS, COVENANTS, CONDITIONS AND RESTRICTIONS AS SET FORTH ON THE PLAT RECORDED IN BOOK 8 OF MAPS, PAGE 59. **"AS SHOWN"**
6. EASEMENT(S) FOR THE PURPOSE(S) SHOWN BELOW AND RIGHTS INCIDENTAL THERETO AS SET FORTH IN A DOCUMENT: PURPOSE: ELECTRIC LINES AND APPURTENANT FACILITIES RECORDING NO: BOOK 337 OF DEEDS, PAGE 236. **"BLANKET IN NATURE"**
7. EASEMENT(S) FOR THE PURPOSE(S) SHOWN BELOW AND RIGHTS INCIDENTAL THERETO AS SET FORTH IN A DOCUMENT: PURPOSE: ELECTRIC LINES AND POLES, RECORDING NO: DOCKET 1082, PAGE 384. **"AS SHOWN"**
8. EASEMENT(S) FOR THE PURPOSE(S) SHOWN BELOW AND RIGHTS INCIDENTAL THERETO AS SET FORTH IN A DOCUMENT: PURPOSE: ELECTRIC LINES AND POLES, RECORDING NO: DOCKET 1969, PAGE 125. **"APPROXIMATELY SHOWN - DOCUMENT IS PARTIALLY UNREADABLE"**
9. EASEMENT(S) FOR THE PURPOSE(S) SHOWN BELOW AND RIGHTS INCIDENTAL THERETO AS SET FORTH IN A DOCUMENT: PURPOSE: ROAD OR HIGHWAY, RECORDING NO: DOCKET 4549, PAGE 232. **"AS SHOWN"**
10. EASEMENT(S) FOR THE PURPOSE(S) SHOWN BELOW AND RIGHTS INCIDENTAL THERETO AS SET FORTH IN A DOCUMENT: PURPOSE: ROAD OR HIGHWAY, RECORDING NO: DOCKET 4549, PAGE 233. **"AS SHOWN"**
11. EASEMENT(S) FOR THE PURPOSE(S) SHOWN BELOW AND RIGHTS INCIDENTAL THERETO AS SET FORTH IN A DOCUMENT: PURPOSE: TELEPHONE AND TELEGRAPH LINES AND FIXTURES, RECORDING NO: DOCKET 4945, PAGE 522. **"AS SHOWN"**
12. EASEMENT(S) FOR THE PURPOSE(S) SHOWN BELOW AND RIGHTS INCIDENTAL THERETO AS SET FORTH IN A DOCUMENT: PURPOSE: PUBLIC UTILITIES, RECORDING NO: DOCKET 7442, PAGE 73. **"AS SHOWN"**
13. EASEMENT(S) FOR THE PURPOSE(S) SHOWN BELOW AND RIGHTS INCIDENTAL THERETO AS SET FORTH IN A DOCUMENT: PURPOSE: PUBLIC HIGHWAY, RECORDING NO: DOCKET 10222, PAGE 194. **"AS SHOWN"**
14. EASEMENT(S) FOR THE PURPOSE(S) SHOWN BELOW AND RIGHTS INCIDENTAL THERETO AS SET FORTH IN A DOCUMENT: PURPOSE: PUBLIC HIGHWAY, RECORDING NO: DOCKET 10262, PAGE 1416. **"AS SHOWN"**
15. EASEMENT(S) FOR THE PURPOSE(S) SHOWN BELOW AND RIGHTS INCIDENTAL THERETO AS SET FORTH IN A DOCUMENT: PURPOSE: CONSTRUCT IMPROVEMENTS, RECORDING NO: DOCKET 10343, PAGE 624. **"BLANKET IN NATURE"**
16. EASEMENT(S) FOR THE PURPOSE(S) SHOWN BELOW AND RIGHTS INCIDENTAL THERETO AS SET FORTH IN A DOCUMENT: PURPOSE: UNDERGROUND ELECTRIC WIRES AND APPURTENANT FACILITIES, RECORDING NO: DOCKET 10416, PAGE 42. **"AS SHOWN"**
17. EASEMENT(S) FOR THE PURPOSE(S) SHOWN BELOW AND RIGHTS INCIDENTAL THERETO AS SET FORTH IN A DOCUMENT: PURPOSE: ELECTRIC LINES AND APPURTENANT FACILITIES, RECORDING NO: 92-0693182. **"AS SHOWN"**
18. MATTERS CONTAINED IN THAT CERTAIN DOCUMENT ENTITLED: INDEMNITY AGREEMENT, DATED: NOT SHOWN, RECORDING DATE: APRIL 21, 1997, RECORDING NO: 97-0260342. REFERENCE IS HEREBY MADE TO SAID DOCUMENT FOR FULL PARTICULARS. **"NO PROPERTY DESCRIBED IN THE DOCUMENT"**
19. MATTERS SHOWN ON RECORD OF SURVEY: RECORDING NO.: BOOK 1334 OF MAPS, PAGE 37. **"CONTAINS NO ADDITIONAL INFORMATION"**
20. MATTERS WHICH MAY BE DISCLOSED BY AN INSPECTION AND/OR BY A CORRECT ALTA/NSPS LAND TITLE SURVEY OF SAID LAND THAT IS SATISFACTORY TO THE COMPANY, AND/OR BY INQUIRY OF THE PARTIES IN POSSESSION THEREOF.
21. ANY RIGHTS OF THE PARTIES IN POSSESSION OF A PORTION OF, OR ALL OF, SAID LAND, WHICH RIGHTS ARE NOT DISCLOSED BY THE PUBLIC RECORDS.

LEGAL DESCRIPTION

THE LAND REFERRED TO HEREIN BELOW IS SITUATED IN THE COUNTY OF MARICOPA, STATE OF ARIZONA, AND IS DESCRIBED AS FOLLOWS:

THE WEST 201.5 FEET OF LOT 4, BLOCK 32, SECURITY ACRES AMENDED, ACCORDING TO BOOK 8 OF MAPS, PAGE 59, RECORDS OF MARICOPA COUNTY, ARIZONA;

EXCEPT THE NORTH 10 FEET OF THE SOUTH 17 FEET THEREOF.

22425 N. 16th ST., SUITE 1
PHOENIX, ARIZONA 85024
PHONE (480) 922-0780
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WWW.SIGSURVEYAZ.COM

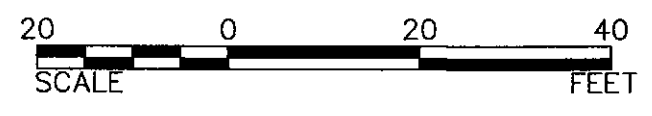
SIG
SURVEY INNOVATION
GROUP, INC.
Land Surveying Services

**ALTA / NSPS LAND TITLE SURVEY
WHATABURGER - 71ST ST. & THOMAS RD.
SCOTTSDALE, ARIZONA**



REVISIONS:

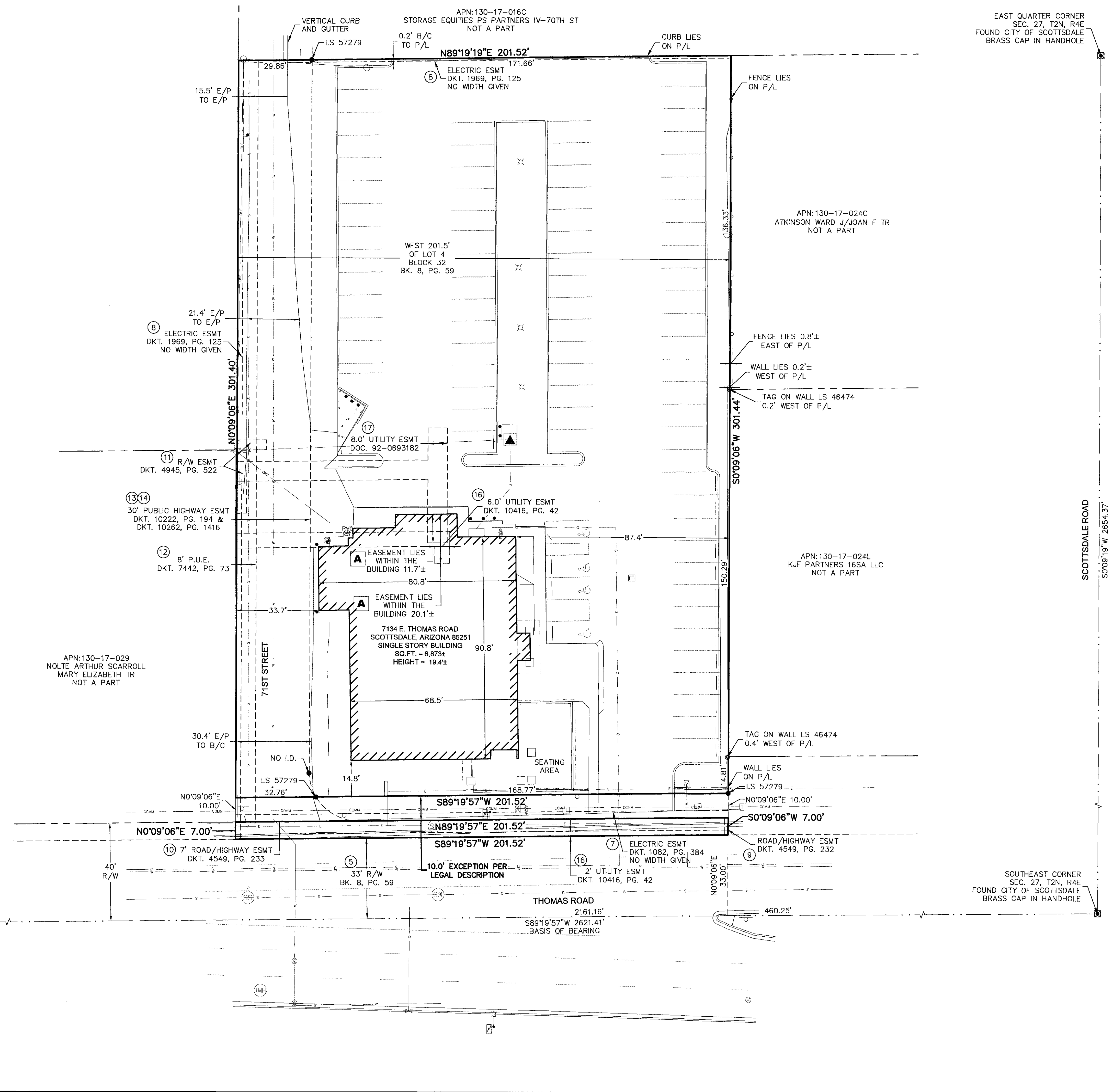
DRAWING NAME:	ALTA
JOB NO.	P5243
DRAWN:	TS
CHECKED:	ELS
DATE:	01/08/2020
SCALE:	N.T.S.
SHEET:	1 OF 2



LEGEND

- FOUND BRASS CAP IN HANDHOLE
- FOUND BRASS CAP FLUSH
- FOUND 'PK' NAIL
- FOUND 1/2" REBAR
- SET 1/2" REBAR W/CP LS #60370
- BARREL CACTUS
- BOLLARD
- CATCH BASIN
- ⊗ WATER CHECK VALVE
- ⊗ SEWER CLEANOUT
- SHRUB
- DOWN GUY
- ⊠ ELECTRIC JUNCTION BOX
- ⊠ ELECTRIC TRANSFORMER
- ⊠ STORM DRAIN MANHOLE
- ⊠ SEWER MANHOLE
- ⊠ TELEPHONE MANHOLE
- ⊠ WATER METER
- ⊠ WATER VALVE
- ⊠ FIRE DEPARTMENT CONNECTION
- ⊠ GAS VALVE
- ⊠ LIGHT POLE
- ⊠ LIGHT POLE W/MAST
- ⊠ PALM TREE
- ⊠ PVC STUB
- ⊠ SAGUARO
- ⊠ SIGN
- ⊠ TREE
- ⊠ TELEPHONE RISER
- ⊠ UTILITY POLE
- ⊠ YUCCA
- ⊠ ESMT EASEMENT
- DKT./PG. DOCKET NO./PAGE
- P.U.E. PUBLIC UTILITY EASEMENT
- BK./PG. BOOK/PAGE
- DOC. DOCUMENT NUMBER
- B/C BACK OF CURB
- E/P EDGE OF PAVEMENT
- P/L PROPERTY LINE
- R/W RIGHT OF WAY

- BOUNDARY LINE
- - - SECTION LINE
- - - EASEMENT LINE
- - - ADJACENT BOUNDARY LINE
- - - WATER LINE
- - - SEWER LINE
- - - GAS BLUE STAKE LINE
- - - UNDERGROUND ELECTRIC LINE
- - - OVERHEAD ELECTRIC LINE
- - - COX COMMUNICATION LINE



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WHATABURGER - 71ST ST. & THOMAS RD.
SCOTTSDALE, ARIZONA



REVISIONS:

DRAWING NAME:
ALTA

JOB NO. P5243

DRAWN: TS

CHECKED: ELS

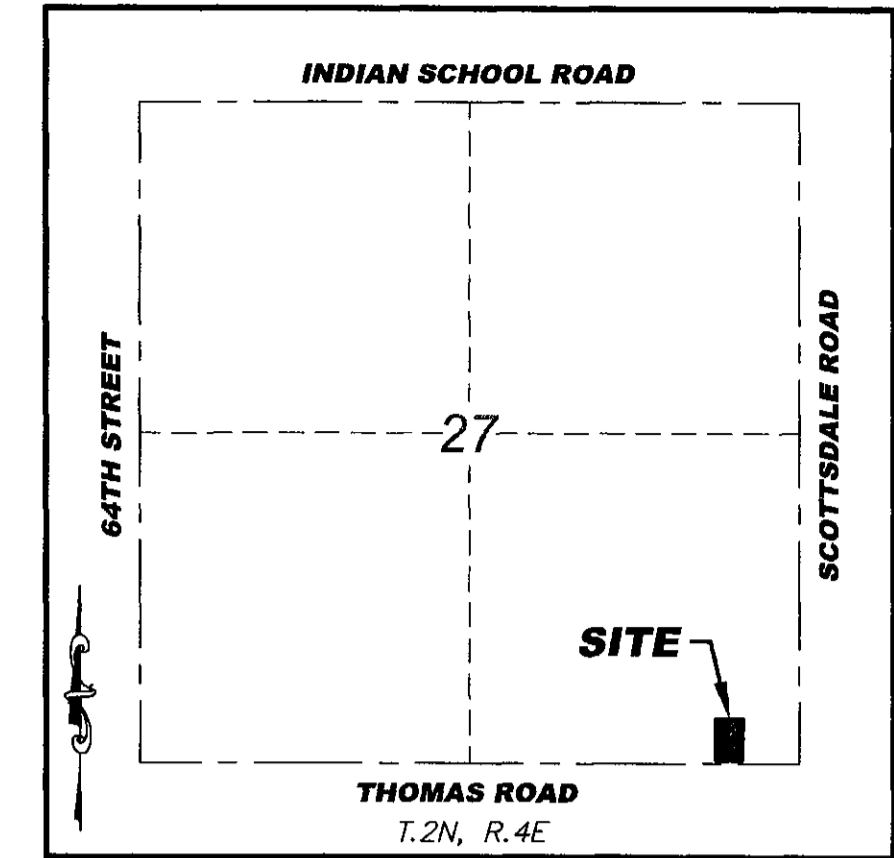
DATE: 01/08/2020

SCALE: 1"=20'

SHEET: 2 OF 2

TOPOGRAPHIC SURVEY WHATABURGER - 71ST ST. & THOMAS RD.

A PORTION OF THE SOUTHEAST QUARTER OF SECTION 27, TOWNSHIP 2 NORTH, RANGE 4 EAST
OF THE GILA AND SALT RIVER BASE AND MERIDIAN, MARICOPA COUNTY, ARIZONA.



VICINITY MAP
N.T.S.

ADDRESS

7134 E. THOMAS ROAD
SCOTTSDALE, ARIZONA 85251

NOTES

ANY UNDERGROUND UTILITIES SHOWN HAVE BEEN LOCATED FROM FIELD SURVEY INFORMATION AND REQUESTED UTILITY DRAWINGS. THE SURVEYOR MAKES NO GUARANTEES THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED ALTHOUGH HE DOES CERTIFY THAT THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM INFORMATION AVAILABLE. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES. NOT ALL UTILITY COMPANIES CONTACTED HAVE PROVIDED FACILITY MAPS FOR THEIR UNDERGROUND UTILITIES AND NOT ALL COMPANIES MARKED THEIR FACILITIES BEFORE THE FIELD SURVEY WAS COMPLETED.

THE BOUNDARY AND EASEMENT INFORMATION SHOWN HEREIN IS FOR REFERENCE ONLY. THIS INFORMATION WAS CALCULATED USING THE RECORDED PLAT OR DEED AS DESCRIBED IN THE LEGAL DESCRIPTION AND DOES NOT REPRESENT A FIELD BOUNDARY SURVEY.

THE SURVEYOR HAS RELIED SOLELY ON INFORMATION SUPPLIED TO THE SURVEYOR FROM EITHER THE CLIENT OR THE TITLE COMPANY AND HAS MADE NO INVESTIGATION OR INDEPENDENT SEARCH FOR EASEMENTS OF RECORD, ENCUMBRANCES, RESTRICTIVE COVENANTS, OWNERSHIP TITLE EVIDENCE, OR ANY OTHER MATTERS THAT MAY AFFECT THE SUBJECT PROPERTY.

ON-SITE PLANT INFORMATION SHOWN HEREON IS FOR REFERENCE ONLY. SURVEYOR ASSUMES NO LIABILITY FOR THE EVALUATION, SALVAGE ABILITY, REMOVAL AND/OR RELOCATION OF ON-SITE PLANT MATERIALS. CONTACT A LANDSCAPE PROFESSIONAL FOR MORE INFORMATION.

LEGAL DESCRIPTION

THE LAND REFERRED TO HEREIN BELOW IS SITUATED IN THE COUNTY OF MARICOPA, STATE OF ARIZONA, AND IS DESCRIBED AS FOLLOWS:

THE WEST 201.5 FEET OF LOT 4, BLOCK 32, SECURITY ACRES AMENDED, ACCORDING TO BOOK 8 OF MAPS, PAGE 59, RECORDS OF MARICOPA COUNTY, ARIZONA;

EXCEPT THE NORTH 10 FEET OF THE SOUTH 17 FEET THEREOF.

AREA

NORTH PROPERTY CONTAINS 60,736 SQUARE FEET OR 1.394 ACRES, MORE OR LESS.
SOUTH PROPERTY CONTAINS 1,411 SQUARE FEET OR 0.032 ACRES, MORE OR LESS.
TOTAL PROPERTY CONTAINS 62,136 SQUARE FEET OR 1.426 ACRES, MORE OR LESS.

BENCHMARK

EAST QUARTER CORNER OF SECTION 27, T2N, R4E.
FOUND CITY OF SCOTTSDALE BRASS CAP IN HANDHOLE AT THE INTERSECTION OF SCOTTSDALE ROAD AND OSBORN ROAD.

MCDOT DATA
NAVD 88 DATUM
ELEVATION = 1246.67'

BASIS OF BEARING

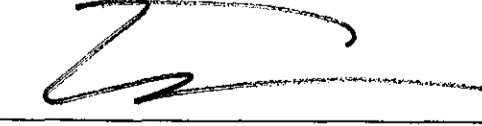
THE SOUTH LINE OF THE SOUTHEAST QUARTER OF SECTION 27, AS MEASURED BETWEEN FOUND MONUMENTS.
SAID LINE BEARS SOUTH 89 DEGREES 19 MINUTES 57 SECONDS WEST.

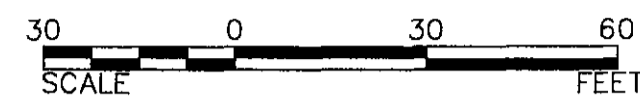
FLOOD ZONE

ACCORDING TO THE FLOOD INSURANCE RATE MAP #04013C2235 L, DATED OCTOBER 16, 2013, THIS PROPERTY IS LOCATED IN FLOOD ZONE "X".
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.

CERTIFICATION

THIS IS TO CERTIFY THAT THIS MAP CORRECTLY REPRESENTS A SURVEY MADE UNDER MY SUPERVISION DURING THE MONTH OF DECEMBER, 2019, AND THAT THE SURVEY IS CORRECT AND ACCURATE TO THE BEST OF MY KNOWLEDGE.

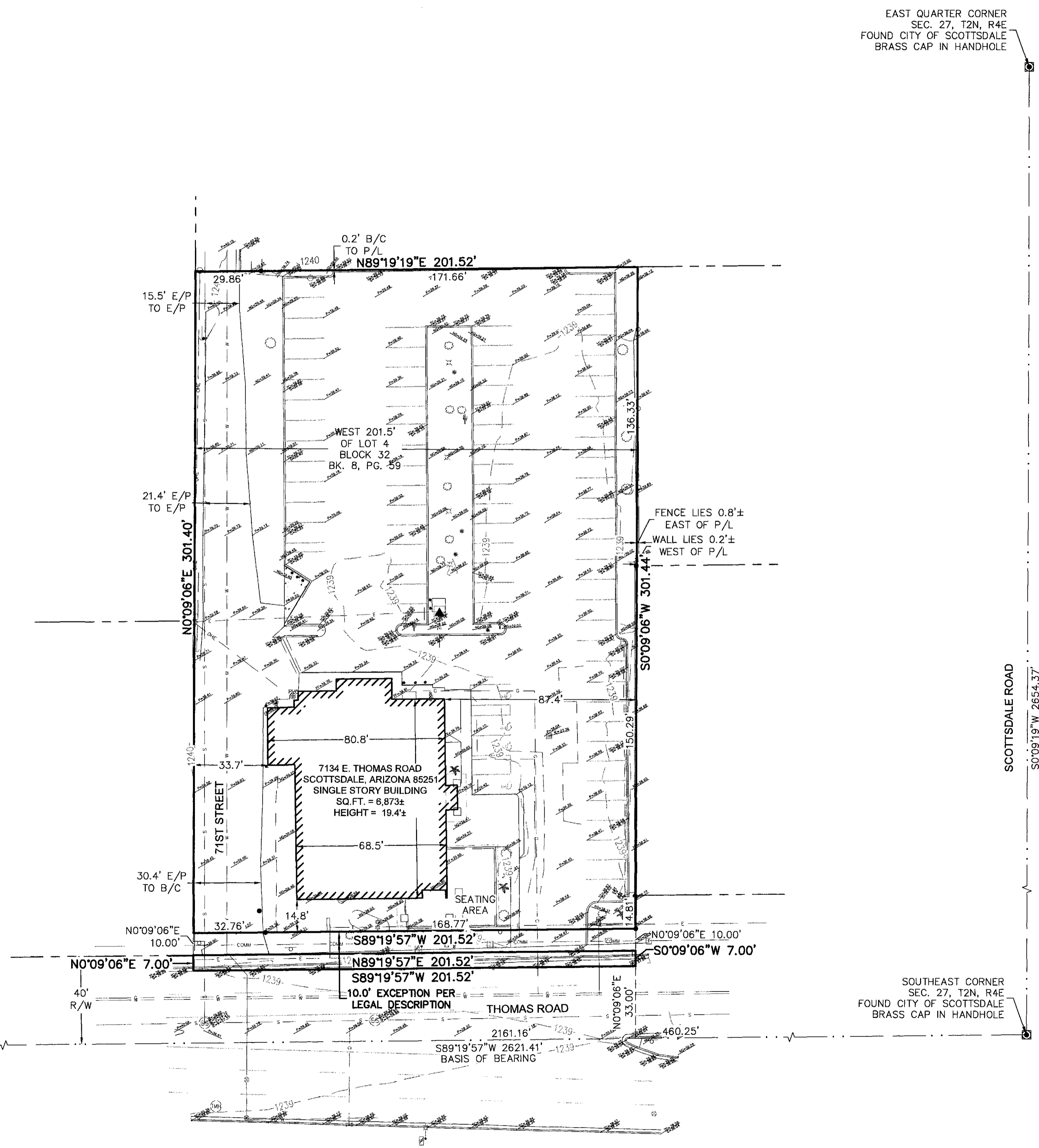

 ERIC L. SOSTROM DATE 1/8/2020



LEGEND

- FOUND BRASS CAP IN HANDHOLE
- FOUND BRASS CAP FLUSH
- FOUND 'PK' NAIL
- FOUND 1/2" REBAR
- SET 1/2" REBAR W/CP LS #60370
- BARREL CACTUS
- BOLLARD
- CATCH BASIN
- WATER CHECK VALVE
- SEWER CLEANOUT
- SHRUB
- DOWN GUY
- ELECTRIC JUNCTION BOX
- ELECTRIC TRANSFORMER
- STORM DRAIN MANHOLE
- SEWER MANHOLE
- TELEPHONE MANHOLE
- WATER METER
- WATER VALVE
- FIRE DEPARTMENT CONNECTION
- GAS VALVE
- LIGHT POLE
- LIGHT POLE W/MAST
- PALM TREE
- PVC STUB
- SAGUARO
- SIGN
- TREE
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- WATER LINE
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- UNDERGROUND ELECTRIC LINE
- OVERHEAD ELECTRIC LINE
- COX COMMUNICATION LINE
- MAJOR CONTOURS
- MINOR CONTOURS



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**TOPOGRAPHIC SURVEY
WHATABURGER - 71ST ST. & THOMAS RD.
SCOTTSDALE, ARIZONA**



REVISIONS:	
▲	
▲	
▲	
DRAWING NAME: ALTA	
JOB NO. P5243	
DRAWN: TS	
CHECKED: ELS	
DATE: 01/08/2020	
SCALE: 1"=30'	
SHEET: 1 OF 1	

Appendix C – FEMA Flood Insurance Rate Map (FIRM)

National Flood Hazard Layer FIRMette



33°29'5.06"N



Legend

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

- | | | |
|------------------------------------|--|--|
| SPECIAL FLOOD HAZARD AREAS | | Without Base Flood Elevation (BFE)
<i>Zone A, V, A99</i> |
| | | With BFE or Depth <i>Zone AE, AO, AH, VE, AR</i> |
| | | Regulatory Floodway |
| 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 <i>Zone X</i> |
| | | Future Conditions 1% Annual Chance Flood Hazard <i>Zone X</i> |
| | | Area with Reduced Flood Risk due to Levee. See Notes. <i>Zone X</i> |
| | | Area with Flood Risk due to Levee <i>Zone D</i> |
| OTHER AREAS | | Area of Minimal Flood Hazard <i>Zone X</i> |
| | | Effective LOMRs |
| GENERAL STRUCTURES | | Area of Undetermined Flood Hazard <i>Zone D</i> |
| | | Channel, Culvert, or Storm Sewer |
| | | Levee, Dike, or Floodwall |
| OTHER FEATURES | | Cross Sections with 1% Annual Chance Water Surface Elevation |
| | | Coastal Transect |
| | | Base Flood Elevation Line (BFE) |
| | | Limit of Study |
| | | Jurisdiction Boundary |
| | | Coastal Transect Baseline |
| MAP PANELS | | Profile Baseline |
| | | Hydrographic Feature |
| | | Digital Data Available |
| | | No Digital Data Available |
| | | Unmapped |



The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

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

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on **9/12/2019 at 9:27:13 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: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective. Unmapped and unmodernized areas can be used for regulatory purposes.

4-DR-2020
5/12/2020

0 250 500 1,000 1,500 2,000 Feet 1:6,000

33°28'35.05"N

111°55'21.67"W

Appendix D – Hydrologic/Hydraulic Calculations

Peak Flow Calculations Using The Rational Method

Project:
 Proj #:
 Date:
 Prep by:
 Check by:

Base Sheet Prepared By GA, Version 2

Source of Rainfall Data --->NOAA Atlas 14

Rainfall Depth-Duration-Frequency (D-D-F), (inch)					
Storm Frequency	Time				
	5 min	10 min	15 min	30 min	60 min
10-Yr	0.39	0.59	0.74	0.99	1.23
100-Yr	0.62	0.94	1.17	1.57	1.95
Derived Rainfall Intensity-Duration-Frequency (I-D-F), (in/hr)					
10-Yr	4.68	3.56	2.95	1.98	1.23
100-Yr	7.43	5.65	4.68	3.14	1.95

Attach source and supporting data for rainfall depths

AF for Cw per Cw _{10-Yr}		
Freq.	Typical	Applic.
2-Yr	1.00	1.00
5-Yr	1.00	1.00
10-Yr	1.00	1.00
25-Yr	1.10	1.00
50-Yr	1.20	1.00
100-Yr	1.25	1.00

AF=Frequency Adjustment Factor

Drainage J-----						Tc,calc method: 1=Papadakis and Kazan, 2=Avg Veloc. n						10-Yr				100-Yr					
						1	Tc,calc=11.4*L^0.5*Kb^0.52*S^-0.31*i^-0.38					Cw for each frequency is adjusted as a function of the 100-year value per the table above									
Concent. Point #	Total Area (ac)	Base Cw (2-10 yr)	Flow Path, L (ft)	Approx High pt (ft)	Approx Low pt (ft)	Average Slope ft/ft	K _b Class A-->D	m	b	K _b	Initial/lot Tc (min)	Minim allowed Tc,tot = Cw AF=1.00	Tc,calc (min)	Tc,tot (min)	i (in/hr)	Q 10-Yr (cfs)	Minim allowed Tc,tot = Cw AF=1.00	Tc,calc (min)	Tc,tot (min)	i (in/hr)	Q 100-Yr (cfs)
ON-1	0.266	0.95	105	1240.3	1236.7	0.0343	A	-0.00625	0.04	0.0436	5	0.95	2.1	7.1	4.23	1.07	0.95	1.8	6.8	7.07	1.79
ON-2	0.045	0.83	45	1239.9	1239.7	0.0038	A	-0.00625	0.04	0.0484	5	0.83	2.9	7.9	4.23	0.16	0.83	2.4	7.4	6.72	0.25
ON-3	0.220	0.83	194	1237.8	1234.8	0.0155	A	-0.00625	0.04	0.0441	5	0.83	3.7	8.7	4.01	0.73	0.83	3.1	8.1	6.36	1.16
ON-4A	0.039	0.95	106	1238.9	1238.4	0.0047	A	-0.00625	0.04	0.0488	5	0.95	4.1	9.1	3.79	0.14	0.95	3.5	8.5	6.36	0.24
ON-4B	0.044	0.95	106.0	1238.9	1238.4	0.0050	A	-0.00625	0.04	0.0485	5	0.95	4.1	9.1	3.79	0.16	0.95	3.4	8.4	6.36	0.27
ON-5	0.421	0.95	122	1240.0	1238.4	0.0131	A	-0.00625	0.04	0.0423	5	0.95	3.0	8.0	4.01	1.60	0.95	2.5	7.5	6.72	2.69
ON-6	0.041	0.83	58	1238.9	1238.8	0.0017	A	-0.00625	0.04	0.0487	5	0.83	4.2	9.2	3.79	0.13	0.83	3.5	8.5	6.36	0.22
ON-7	0.108	0.83	22	1236.3	1233.3	0.1364	A	-0.00625	0.04	0.0460	5	0.83	0.6	5.6	4.68	0.42	0.83	0.5	5.5	7.43	0.67

Curb Opening Calculations					
Drainage Area	Q ₁₀ (cfs)	Q ₁₀₀ (cfs)	Curb Opening Length Req'd Q ₁₀	Curb Opening Length Req'd Q ₁₀₀	Curb Cut Length Used
Basin A - ON4A+ON1+ON2		2.3	0.00	2.1	2.5
Basin B - ON4B+ON5+ON6		3.13	0.00	3.0	3
			0.00	0.0	

C = 3
 H = 0.5 ft
 $Q = CLH^{1.5}$

Pre-Development Conditions

Existing Basin - Pavement						
Elevation [ft]	Surface Storage Area [ft]	Surface Storage Area [ac]	Average Area [ac]			
-	-	-				0.0000
			0.0005	0.1000	0.0001	
0.10	46.00	0.001				0.0001
			0.0020	0.1000	0.0002	
0.20	125.00	0.003				0.0002
			0.0037	0.1000	0.0004	
0.30	278.00	0.006				0.0004
			0.0083	0.1000	0.0008	
0.40	598.00	0.014				0.0011

47 CF

Proposed Conditions Retention Summary

Drainage Area	Land Use	Area [A]		Runoff Coefficient [C]	Precipitation Depth [P] =0.5 1st flush & 2.16 100-yr, 2-hr	Required Storage (V _{REQ} = CPA/12)		Retention Basin
		sf	ac			cf	ac-ft	
ON 1	Pavement	11,595	0.266	0.95	2.16	1,983	0.046	A
ON 2	Landscaping	1,948	0.045	0.83	0.50	67	0.002	B
ON 3	Landscaping	9,565	0.220	0.83	0.50	331	0.008	B
ON 4A	Building	1,687	0.039	0.95	2.16	288	0.007	A
ON 4B	Building	1,896	0.044	0.95	0.50	75	0.002	B
ON 5	Pavement	18,323	0.421	0.95	0.50	725	0.017	B
ON 6	Landscaping	1,806	0.041	0.83	0.50	62	0.001	B
ON 7	Landscaping	4,686	0.108	0.83	2.16	700	0.016	A
TOTAL	-	51,506	1.182	-	-	4,232	0.097	-

*NOTE: REFER TO APPENDIX E FOR DRAINAGE MAP AND DRAINAGE AREA INFORMATION

North Basin (sized for 100-yr, 2 hr)	Land Use	Runoff Coefficient	Drainage Area (ft ²)	Required Volume (ft ³)	Provided Volume (ft ³)	Surplus (ft ³)
A	Landscaping	0.83	4,686	700		
	Building	0.95	1,687	288		
	Pavement	0.95	11,595	1,983		
			17,968	2,971	3,044	73

South Basin (sized for first flush)	Land Use	Runoff Coefficient	Drainage Area (ft ²)	Required Volume (ft ³)	Provided Volume (ft ³)	Surplus (ft ³)
B	Landscaping	0.83	13,319	461		
	Building	0.95	1,896	75		
	Pavement	0.95	18,323	725		
			33,538	1,261	1,738	477

Surface Retention Summary

Retention Basin	Basin Depth	Required Volume	Volume Provided	Excess Volume
	ft	cf	cf	cf
A	3.0	2,971	3,044	73
B	3.0	1,261	1,738	477
Total		4,232	4,782	550

Drywell Summary

Retention Basin	Volume	Percolation Rate	Drywells Required	Drain Time
	cf	cfs	ea	hr
A	2,971	0.1	1	9
B	1,261	0.1	1	4

Cross Section for Irregular Section - 71st Street Outfall

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth
Input Data	
Channel Slope	0.002 ft/ft
Discharge	0.95 cfs

Section Definitions

Station (ft)	Elevation (ft)
0+00.0	1,239.69
0+00.5	1,239.69
0+00.5	1,239.20
0+24.5	1,238.76
0+24.5	1,239.26
0+25.0	1,239.26

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00.0, 1,239.69)	(0+25.0, 1,239.26)	0.016

Options

Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results

Normal Depth	2.4 in
Elevation Range	1,238.8 to 1,239.7 ft
Flow Area	1.1 ft ²
Wetted Perimeter	11.1 ft
Hydraulic Radius	1.2 in
Top Width	10.89 ft
Normal Depth	2.4 in
Critical Depth	1.8 in
Critical Slope	0.009 ft/ft
Velocity	0.88 ft/s
Velocity Head	0.01 ft
Specific Energy	0.21 ft
Froude Number	0.493
Flow Type	Subcritical

Cross Section for Irregular Section - 71st Street Outfall

GVF Input Data

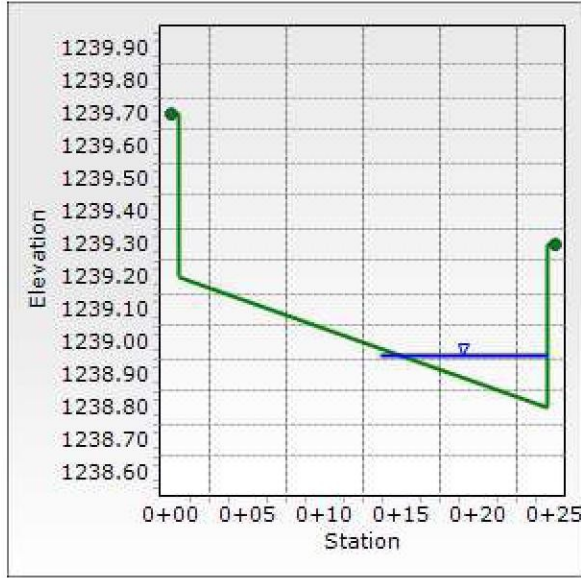
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data

Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	0.00 ft/s
Upstream Velocity	0.00 ft/s
Normal Depth	2.4 in
Critical Depth	1.8 in
Channel Slope	0.002 ft/ft
Critical Slope	0.009 ft/ft

Cross Section for Irregular Section - 71st Street Outfall

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth
Input Data	
Channel Slope	0.002 ft/ft
Normal Depth	2.4 in
Discharge	0.95 cfs



Cross Section for Irregular Section - 71st Street to Center of Proposed Whataburger

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	0.018 ft/ft
Discharge	0.95 cfs

Section Definitions

Station (ft)		Elevation (ft)	
	0+00.0		1,240.20
	0+00.5		1,240.20
	0+00.5		1,239.70
	0+24.5		1,239.21
	0+24.5		1,239.71
	0+25.0		1,239.71
	0+38.0		1,239.96

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient	
(0+00.0, 1,240.20)	(0+38.0, 1,239.96)	0.013	

Options	
Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

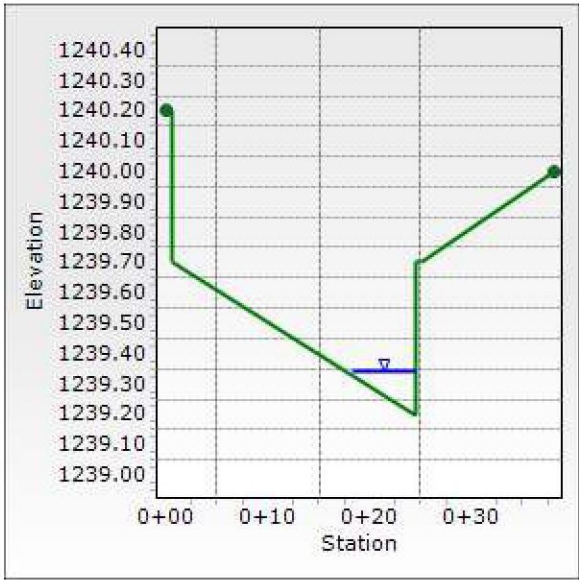
Results	
Normal Depth	1.5 in
Elevation Range	1,239.2 to 1,240.2 ft
Flow Area	0.4 ft ²
Wetted Perimeter	6.3 ft
Hydraulic Radius	0.7 in
Top Width	6.18 ft
Normal Depth	1.5 in
Critical Depth	1.9 in
Critical Slope	0.006 ft/ft
Velocity	2.42 ft/s
Velocity Head	0.09 ft
Specific Energy	0.22 ft
Froude Number	1.691

Cross Section for Irregular Section - 71st Street to Center of Proposed Whataburger

Results	
Flow Type	Supercritical
GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0
GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	1.5 in
Critical Depth	1.9 in
Channel Slope	0.018 ft/ft
Critical Slope	0.006 ft/ft

Cross Section for Irregular Section - 71st Street to Center of Proposed Whataburger

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth
Input Data	
Channel Slope	0.018 ft/ft
Normal Depth	1.5 in
Discharge	0.95 cfs



Appendix E – Drainage Exhibit

REV	DESCRIPTION	BY	DATE	APPR

K:\EAV_Civil\291394000 - Whataburger - Scottsdale\CADD\Exhibits\Drainage Exhibit - May 2020.dwg, Layout:Layout1 - May 11, 2020 - 8:17pm ForgeReilly
 XREFS: x291394000b x291394000m x291394000v
 THIS DRAWING IS THE PROPERTY OF KIMLEY-HORN AND ASSOCIATES, INC. AND SHALL BE USED ONLY FOR THE PROJECT AND SITE SPECIFICALLY IDENTIFIED HEREIN. NO PART OF THIS DRAWING IS TO BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, WITHOUT THE WRITTEN AUTHORIZATION AND PERMISSION OF KIMLEY-HORN AND ASSOCIATES, INC.

APN:130-17-029
 NOLTE ARTHUR SCARROLL
 MARY ELIZABETH TR
 NOT A PART

BASIN A
 HW= 1236.25
 BTM= 1233.25
 Vreq= 2,971 CF
 Vprov= 3,044 CF

APN:130-17-016C
 STORAGE EQUITIES PS PARTNERS IV-70TH ST
 NOT A PART

APN:130-17-024C
 ATKINSON WARD J/JOAN F TR
 NOT A PART

APN:130-17-024L
 KJF PARTNERS 16SA LLC
 NOT A PART

BASIN B
 HW= 1237.75
 BTM= 1234.75
 Vreq= 1,261 CF
 Vprov= 1,738 CF

ULTIMATE SITE OUTFALL
 ELEV: 1238.09

LEGEND

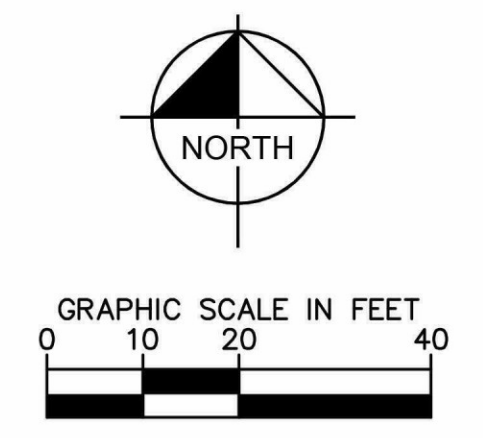
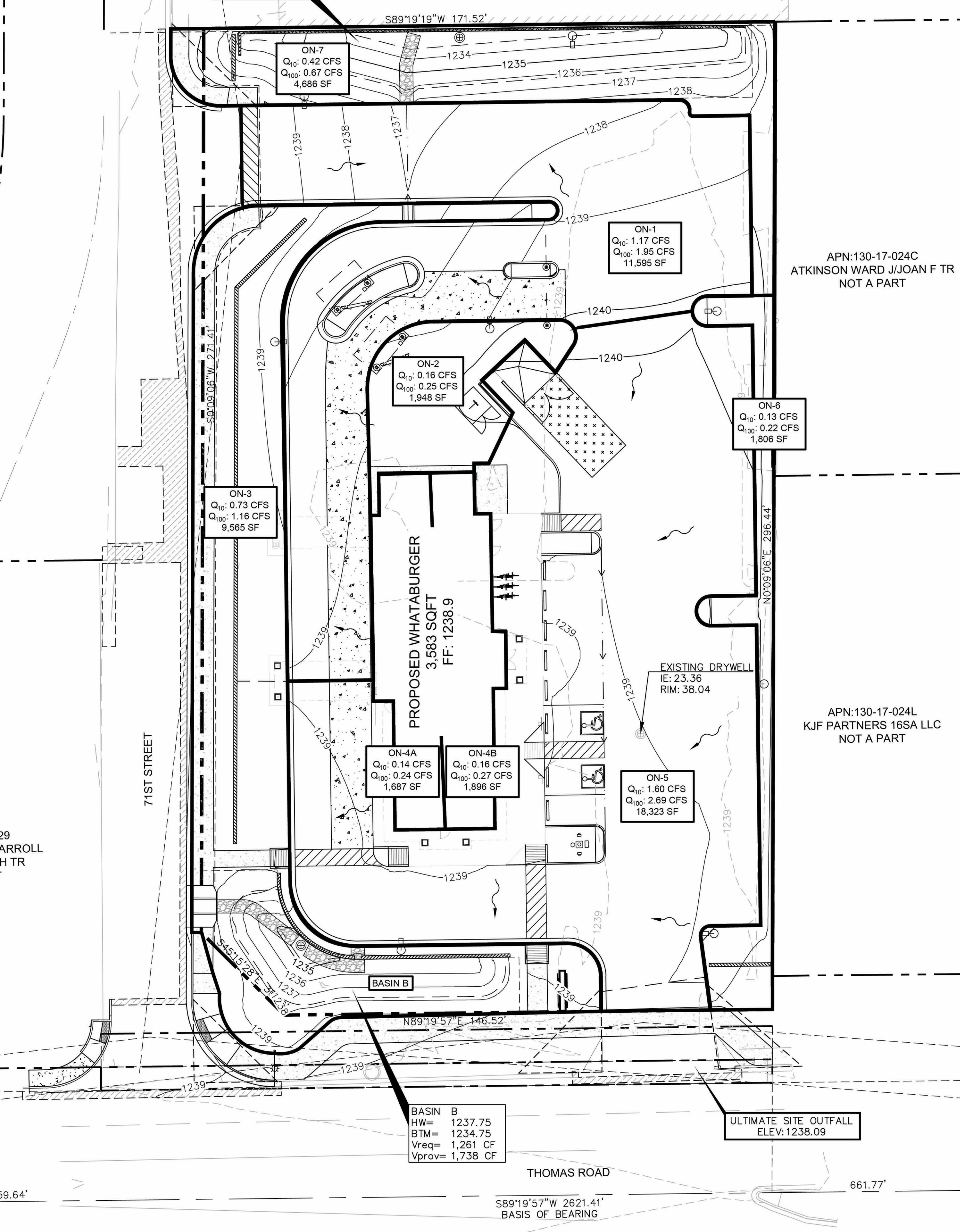
- PROPERTY LINE
- - - RIGHT OF WAY LINE
- STREET CENTERLINE
- - - EASEMENT LINE
- W
12
--- EXISTING PUBLIC WATER MAIN
- PROPOSED CONTOUR
- EXISTING CONTOURS
- 7.10
P
--- PROPOSED PAVEMENT SPOT ELEVATION
- 10.00
P
--- EXISTING SPOT ELEVATION
- S
--- EXISTING SANITARY SEWER MANHOLE
- HP
--- EXISTING DRYWELL
- HP
--- HIGH POINT
- FLOWLINE
- EXISTING STORM DRAIN

BENCHMARK

EAST QUARTER CORNER OF SECTION 27, T2N, R4E. FOUND CITY OF SCOTTSDALE BRASS CAP IN HANDHOLE AT THE INTERSECTION OF SCOTTSDALE ROAD AND OSBORN ROAD.

BASIS OF BEARINGS

PER SURVEY INNOVATION GROUP, THE BASIS OF BEARING IS THE SOUTH LINE OF THE SOUTHEAST QUARTER OF SECTION 27, AS MEASURED BETWEEN FOUND MONUMENTS. SAID LINE BEARS SOUTH 89 DEGREES 19 MINUTES 57 SECONDS WEST.



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WHATABURGER RESTAURANT
 DRAINAGE EXHIBIT
 7134 E THOMAS ROAD
 SCOTTSDALE, AZ 85251

PROJECT No.
 SCALE (H): 1"=20'
 SCALE (V): ---
 DRAWN BY: PAR
 DESIGN BY: DH
 CHECK BY: HDR
 DATE: 05/11/2020

PRELIMINARY
 FOR REVIEW ONLY
 NOT FOR
 CONSTRUCTION
Kimley»Horn
 Kimley-Horn and Associates, Inc.

Drainage Exhibit - May 2020.dwg
 01 OF 01 SHEETS