CITY OF SCOTTSDALE

Water Study

CAESARS REPUBLIC SCOTTSDALE
FINAL WATER BASIS OF DESIGN REPORT

COS CASE NO. 962-PA-2018

FINAL Basis of Design Report

- ☐ APPROVED
- ☑ APPROVED AS NOTED
- ☐ REVISE AND RESUBMIT

CITY OF SCOTTSDALE
SCOTTSDALE WATER
9379 E San Salvador Dr.
Scottsdale, AZ 85258

Disclaimer: If approved; the approval is granted under the condition that the final construction documents submitted for city review will match the information herein. Any subsequent changes in the water or sewer design that materially impact design criteria or standards will require re-analysis, re-submittal, and approval of a revised basis of design report prior to the plan review submission.; this approval is not a guarantee of construction document acceptance.
For questions or clarifications contact the Water Resources Planning and Engineering Department at 480-312-5685.

BY ldillon DATE 2/20/2020

1) Turbine meter is called out on utility plan. This should probably be a compound meter. The final meter sizing should be determined by calculating the design flow per IPC fixture analysis (including direct addition of constant flows like hose and/or pool fill). A 1.5 factor should then be applied to this flow rate and the table in DS&PM Ch 6 should be used to size the meter.

2) Direct coordination with the fire department is needed to determine location of any and all required fire hydrants.

Prepared For:
HCW
153 S Payne Stewart Drive
Branson, MO 65616

Registered Professional Engineer (Civil)
CERTIFICATE NO.
42633
ANDREA K.
PAGE
Date Signed 2/3/2020
ARIZONA, U.S.A.
Andrea K. Page

February 2020

Olsson Project No. 018-3159

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EXECUTIVE SUMMARY

This report presents details of future developments that are yet to be master planned with respect to water infrastructure. This information is provided for reference only.
This report is only intended to present and analyze the necessary water and sewer infrastructure for the hotel portion. This revised Basis of Design (BOD) report will be for the Caesar's Republic Scottsdale, a hotel development on Lot 2 of Scottsdale Fashion Square Amended (BK 1201, PG 8). The report will address the City comments dated July 18, 2019 & January 15, 2020, and will provide a summary of the water analysis for the proposed hotel.

In the future, the ultimate buildout for Lot 2 will consist of the Caesar's Republic Scottsdale, 2- four story 287,500 square foot office buildings, and 2-one story 10,000 square foot restaurants. At the time of the future buildout, a separate BOD report will be required when an application for a design review on the remaining portion of Lot 2 is presented to the City of Scottsdale.

During a recent meeting discussing the Water Basis of Design Report with the City's Water Resources Department on October15, 2019, City staff has acknowledged that modeling of the proposed water infrastructure for the Caesar's Republic Scottsdale would not be required due to the proximity of the existing test fire hydrant to the new meter and fire line.

I. INTRODUCTION

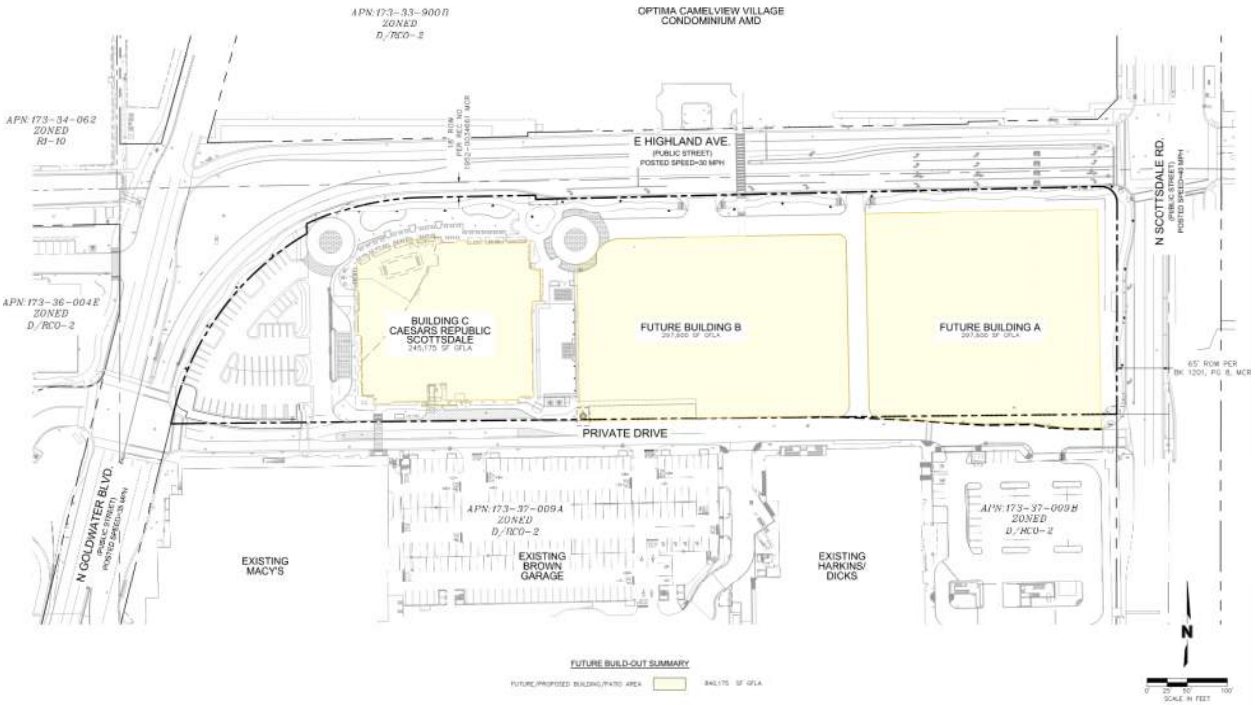
A. Project

The purpose of this Final Sewer Basis of Design is to support the proposed construction of the Caesars Republic Scottsdale within the Scottsdale Fashion Square- Lot 2 (Figure 1). The master planned site will be developed in multiple Phases, with the ultimate buildout of Lot 2 including Caesars Republic Scottsdale, two office buildings (Building A and B), and two restaurants (Figure 2). Separate BOD reports will be required as part of the development review board (DRB) package when the two office buildings (Building A and B), and two restaurants are submitted to the City of Scottsdale. As mentioned above, this Final Sewer Basis of Design Report is to support the Caesars Republic Scottsdale.

Lot-2 encompasses approximately 6.94 acres and is situated within the northeast quarter of Section 22, Township 2 North, Range 4 East of the Gila and Salt River Meridian, Maricopa County, Arizona, is zoned D/DRU-2 PBD DO; 25-ZN2015 & 1-II-2016, and covers approximately 7.04 acres after right-of-way dedications. More specifically The Project site is identified as Maricopa County assessor parcel number 173-37-010, and lies south of Highland Avenue, west Scottsdale Boulevard, north of the Fashion Square Mall, and east of Goldwater Boulevard.

Scottsdale Fashion Square- Lot 2, Per BK 1201, PG 8

Figure 1 – Location/Parcel Map



Building A- Caesars Republic Scottsdale
Building B- Future Office and Retail
Building C- Future Office and Retail

Figure 2 – Final Buildout Exhibit

B. Contact Info

<u>Owner/Developer</u>
Macerich
11411 N Tatum Boulevard
Phoenix, AZ 85028
Phone: (602) 953-6548
Contact: Justin Long

<u>Developer</u>
HCW Hotels, LLC
2398 E Camelback Road, Suite 690
Phoenix, AZ 85016
Phone: (602) 469-1226
Contact: Rick Huffman

<u>Civil Engineer</u>
Olsson
7250 N. 16th Street, Suite210
Phoenix, AZ 85020
Phone: (602) 748-1000
Contact: Cardell Andrews

C. Existing Site Conditions

The site has been cleared of buildings and is currently undeveloped. The site previously was developed for several years and included a Days Inn Hotel, Desert Stages Theater, and Coco's Restaurant (see Figure 3). By the year 2014, all of the buildings onsite, with the exception of the Desert Stages Theater, were demolished. As of November of 2019, demolition of the Desert Stages Theater began (Figure 4). All perimeter public streets are fully improved, and contain both water and sewer utilities. The City of Scottsdale Sewer Quarter Section Map, is located in Appendix A.

Figure 3 – Existing Site Conditions (Year 2013)

Figure 4 – Existing Site Conditions (Year 2019)

D. Proposed Conditions

Lot 2 will be developed in multiple Phases, including buildings, onsite/offsite site improvements, and when completely buildout will total an additional 840,175 SF Gross Floor Lease Area that will be a part of the greater Scottsdale Fashion Square mall (see Table 1). This report addresses the development of the Caesars Republic Scottsdale, located along the western portion of Lot 2 encompassing approximately 1.78 acres. The Caesars Republic Scottsdale will discharge sanitary sewer flows to an existing 12-inch main within Goldwater Boulevard.

Table 1— Final Buildout Breakout

Building	Use	Gross Floor Lease Area (SF)	Rooms
Future Building A1	Office	287,500	N/A
Future Building A2	Restaurant	10,000	N/A
Future Building A3	Restaurant	10,000	N/A
Future Building B	Office	287,500	N/A
Building C- Caesars Republic Scottsdale	Resort Hotel (w/ Amenities)	245,175	266
Total Buildout	**Varies**	**840,175**	**266**

The ultimate development will be served by the existing 8-inch APC waterline onsite, as well as some existing water services along Highland Avenue and Scottsdale Road. The water design will be in accordance with City of Scottsdale – 2018 Design Standards & Policies Manual.

Per City of Scottsdale – 2018 Design Standards & Policies Manual, a minimum of 2,500 gpm for high rise structures (buildings over 75-feet) to account for potential firefighting activities. This fire flow must be available concurrent with maximum day demand conditions, while maintaining a minimum residual pressure of 30 psi at the source.

Table 2— Code Summary

Building	Gross Floor Lease Area (SF)	Construction Type	Building Height (FT)	Fire Sprinkled
Building C- Caesars Republic Scottsdale	245,175	IB	150	Yes

Utilizing the buildings code summary (Table 2) and Appendix B; Table B105.1(2) of the International Fire Code (IFC), the minimum fire flow at 30 psi is Caesars Republic Scottsdale is 2,625 pgm.

E. Fire Flow Tests

Two hydrant flow tests were performed by Arizona Flow Testing, LLC, on November 8, 2018 @ 7:30 a.m (Appendix B). The flow test map shows where the Fire Hydrant Flow Test was taken.

In summary, Fire Flow Test #1 (Private Drive) demonstrated the following:

Static Pressure =	72 psi
Residual Pressure =	58 psi with 1,954 gpm
Minimum Residual Pressure =	30 psi with 3,535 gpm

In addition, Fire Flow Test 2 (Highland Avenue) demonstrated the following:

Static Pressure =	72 psi
Residual Pressure =	56 psi with 1,917 gpm
Minimum Residual Pressure =	20 psi with 3,228 gpm

II. Demand Calculations

A. Design Criteria

Design criteria for the water system is based on City of Scottsdale—2018 Design Standards & Policies Manual. Utilizing these standards for the design criteria, the following design requirements will be followed:

- All new waterlines 6-inches through 12-inches shall be Class 350 ductile iron pipe.
- Fire line services 4 inches and larger shall be constructed of DIP, class 350. Fire line services 3 inches and smaller shall be constructed of type K, softcopper.
- Design flows shall be based on the Average Day Water Demands, Figure 6-1.2 Average Day Water Demands
- Maximum Day Demand scenario – 2 times the Average Day Demand
- Maximum Day Demand + Fire Flow
- Peak Hour Demand – 3.5 times the Average Day Demand.
- Minimum Fire flow of 2,500 gpm for high rise structures to account for potential firefighting activities
- Minimum Pressure: 30 psi @ max day + fire flow.
- Pipeline calculations verifying that head loss per 1,000 feet of any pipe is no greater than 10 feet/feet. (The Hazen-Williams equation will be used to calculate head loss per 1,000 ft of pipe).

Figure 6-1.2 Average Day Water

Land Use	Demand (GPM)
Office	8.34E-04/SF
Restaurant	1.81E-03/SF
Resort Hotel (w/ Amenities)	0.63/room

B. Domestic Demand

Utilizing the above mentioned design criteria, the below demand was calculated:

Caesars Republic Scottsdale

The proposed water services off the existing 8-inch ACP water line in the Private Drive will include a 4-inch domestic water service and a 8-inch fire service line. Utilizing this design criteria along with the associated use demand, the following calculations were made:

Table 3. Proposed Average Day Water Demands

Building	Land Use	Gross Floor Lease Area (SF) Or Rooms	Demand (GPM)
Building C- Caesars Republic Scottsdale	Resort Hotel (w/ Amenities	266 Rooms	266 Rooms x 0.63 gpm/room = **167.58**
Total	**-**	**-**	**167.58**

Average =167.58 gpm
Max Day=167.58 gpm x 2 (peak factor) = 335.16 gpm
Peak Hour=167.58 gpm x 3.5 (peak factor) = 586.53 gpm
Maximum Day Demand + Fire Flow=335.16 gpm + 2,625 gpm= 2,960.16 gpm
2,960.16 gpm < 3,535 gpm ==> O.K.

The proposed system adequately provides peak hour demands and maximum day demand plus fire flow. Flow and pressures throughout the system during all design conditions meet or exceed minimum requirements. Adequate flow and pressure are available for the domestic water service and fire protection for The Project.

Service lines – domestic, dedicated fire, or combined domestic/fire, are generally sizes as required to satisfy both hydraulic modeling requirements and Fire Code. However, City staff has acknowledged that modeling of the proposed water infrastructure for the Caesar's Republic Scottsdale would not be required due to the proximity of the existing test fire hydrant to the new meter and fire line.

C. Fire Flow Demand

Per City of Scottsdale – 2018 Design Standards & Policies Manual, a minimum of 2,500 gpm for high rise structures (buildings over 75-feet) to account for potential firefighting activities. This fire flow must be available concurrent with maximum day demand conditions, while maintaining a minimum residual pressure of 30 psi at the source.

Utilizing the buildings code summary (Table 2) and Appendix B; Table B105.1(2) of the International Fire Code (IFC), the minimum fire flow at 30 psi is Caesars Republic Scottsdale is 2,625 pgm.

III. Conclusions

A. Compliance with Manual

This Final Water Basis of Design Report was prepared in accordance with City of Scottsdale—2018 Design Standards & Policies Manual. For The Project, water design described within this Final Water Basis of Design Report was designed to collect and convey the projects water under Average Day + Fire Flow. Flow and pressures throughout the system during all design conditions meet or exceed minimum pressure requirements.

B. Effect of Development on Adjacent Properties

Modification to the existing infrastructure are not proposed or required, since adequate flow and pressure are available for the domestic water service and fire protection for The Project.

APPENDIX “A”

(City of Scottsdale Water Quarter Section Map (18-44))

19-44

18-43

18-45

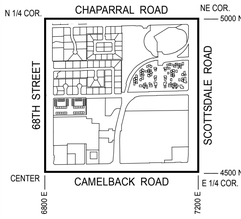
GENERAL NOTES:

- THIS IS A COMPUTER GENERATED DRAWING. FOR ANY REVISIONS PLEASE CONTACT THE CITY OF SCOTTSDALE GIS DEPARTMENT AT (480) 312-7792.
- THE SECTION LINE BEARING AND DISTANCES ARE BASED ON THE CITY OF SCOTTSDALE GPS SURVEY OF SEPTEMBER, 1991. BEARINGS ARE NAD 83 GRID AND DISTANCES ARE FLATTENED TO GROUND. WHERE NO CORNER WAS FOUND THE DIMENSIONS ARE GIVEN TO CALCULATED SECTION CORNERS AND ARE NOTED AS 'CALCULATED' ON THE MAP.

LEGEND:

- Air Release Valve
- Non-potable Air Release Valve
- Blowoff
- Cap
- Cathodic Protection
- Fill Drain
- Fire Hydrant
- Non-GPS Point
- Pressure Reducing Valve
- Pump
- Reducer
- Sample Station
- Water Manhole
- Non-Potable Manhole
- Well
- Valve
- Non-potable Valve
- Vault
- Water Main
- Non-Potable Main
- Fire / Private Main
- Non-Scottsdale Main

VICINITY MAP



NORTH

SCALE: 1" = 100'

0 50 100 200

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

WATER

QUARTER SECTION MAP

18-44

NE 1/4 SEC. 22 T2N R4E

CITY OF SCOTTSDALE

SCOTTSDALE GEOGRAPHIC INFORMATION SYSTEMS

3629 North Drinkwater Boulevard
Scottsdale, Arizona 85251

05-AUG-18

APPENDIX “B”

(Fire Flow Test)

Arizona Flow Testing LLC

HYDRANT FLOW TEST REPORT 1

Project Name:	Scottsdale Hotel
Project Address:	Highland and Goldwater, Scottsdale, Arizona, 85251
Client Project No.:	Not Provided
Arizona Flow Testing Project No.:	18392
Flow Test Permit No.:	C56653
Date and time flow test conducted:	November 8, 2018 at 7:30 AM
Data is current and reliable until:	May 8, 2019
Conducted by:	Floyd Vaughan – Arizona Flow Testing, LLC (480-250-8154)
Witnessed by:	B. Dick/R. Padilla –City of Scottsdale-Inspector (602-228-2187)

Raw Test Data

Static Pressure: **94.0 PSI**
(Measured in pounds per square inch)

Residual Pressure: **80.0 PSI**
(Measured in pounds per square inch)

Pitot Pressure: **27.0 PSI**
(Measured in pounds per square inch)

Diffuser Orifice Diameter: One 4-inch Hose Monster
(Measured in inches)

Coefficient of Diffuser: .7875

Flowing GPM: **1,954 GPM**
(Measured in gallons per minute)

GPM @ 30 PSI: **4,439 GPM**
GPM @ 20 PSI: **4,801 GPM**

Data with 22 PSI Safety Factor

Static Pressure: **72.0 PSI**
(Measured in pounds per square inch)

Scottsdale requires a maximum Static Pressure of 72 PSI for AFES Design.

Residual Pressure: **58.0 PSI**
(Measured in pounds per square inch)

Distance between hydrants: Approx. 450 Feet

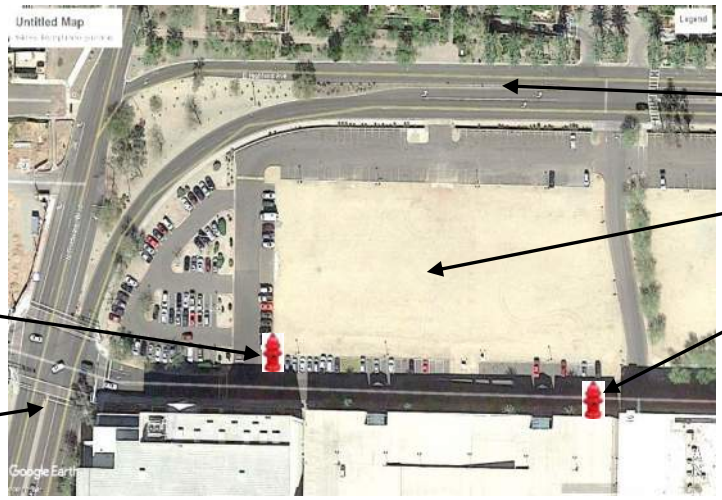
Main size: Not Provided

Flowing GPM: **1,954 GPM**

GPM @ 30 PSI: **3,535 GPM**
GPM @ 20 PSI**:** **3,968 GPM**

Flow Test Location

North



Arizona Flow Testing LLC

HYDRANT FLOW TEST REPORT 2

Project Name:	Scottsdale Hotel
Project Address:	Highland and Goldwater, Scottsdale, Arizona, 85251
Client Project No.:	Not Provided
Arizona Flow Testing Project No.:	18392
Flow Test Permit No.:	C56653
Date and time flow test conducted:	November 8, 2018 at 7:45 AM
Data is current and reliable until:	May 8, 2019
Conducted by:	Floyd Vaughan – Arizona Flow Testing, LLC (480-250-8154)
Witnessed by:	B. Dick/R. Padilla –City of Scottsdale-Inspector (602-228-2187)

Raw Test Data

Static Pressure: **92.0 PSI**
(Measured in pounds per square inch)

Residual Pressure: **76.0 PSI**
(Measured in pounds per square inch)

Pitot Pressure: **26.0 PSI**
(Measured in pounds per square inch)

Diffuser Orifice Diameter: One 4-inch Hose Monster
(Measured in inches)

Coefficient of Diffuser: .7875

Flowing GPM: **1,917 GPM**
(Measured in gallons per minute)

GPM @ 30 PSI: **3,984 GPM**
GPM @ 20 PSI: **4,319 GPM**

Data with 20 PSI Safety Factor

Static Pressure: **72.0 PSI**
(Measured in pounds per square inch)

Scottsdale requires a maximum Static Pressure of 72 PSI for AFES Design.

Residual Pressure: **56.0 PSI**
(Measured in pounds per square inch)

Distance between hydrants: Approx. 510 Feet

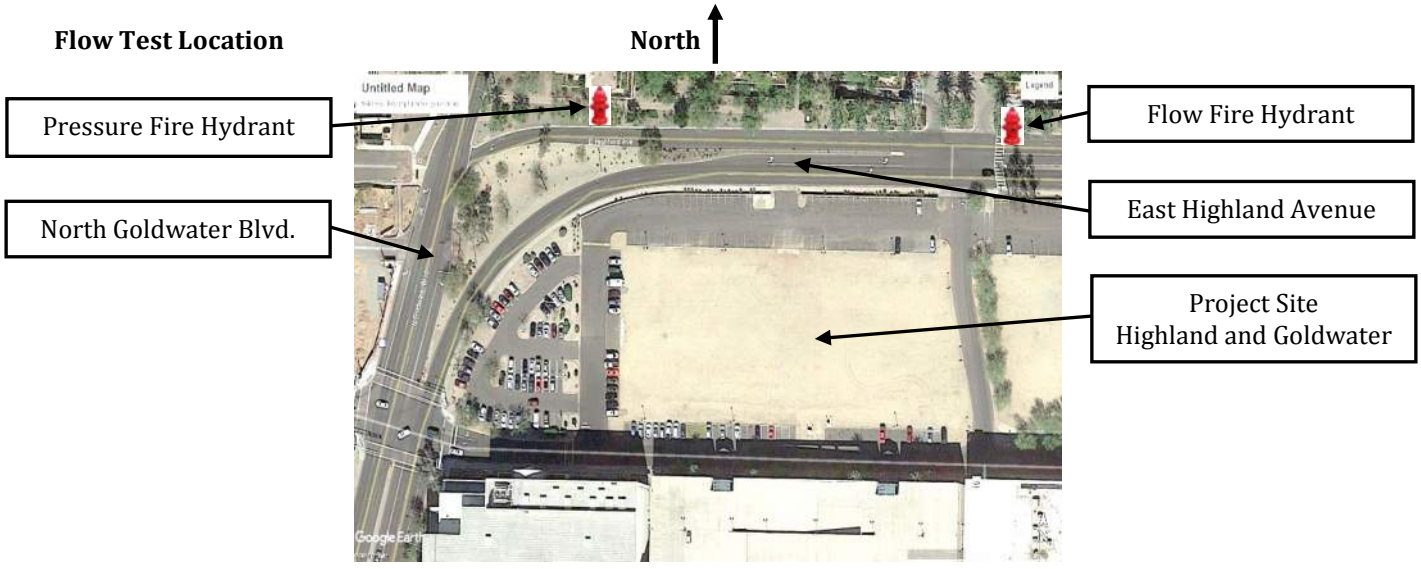
Main size: Not Provided

Flowing GPM: **1,917 GPM**

GPM @ 30 PSI**:** **3,228 GPM**
GPM @ 20 PSI**:** **3,623 GPM**

Flow Test Location

North

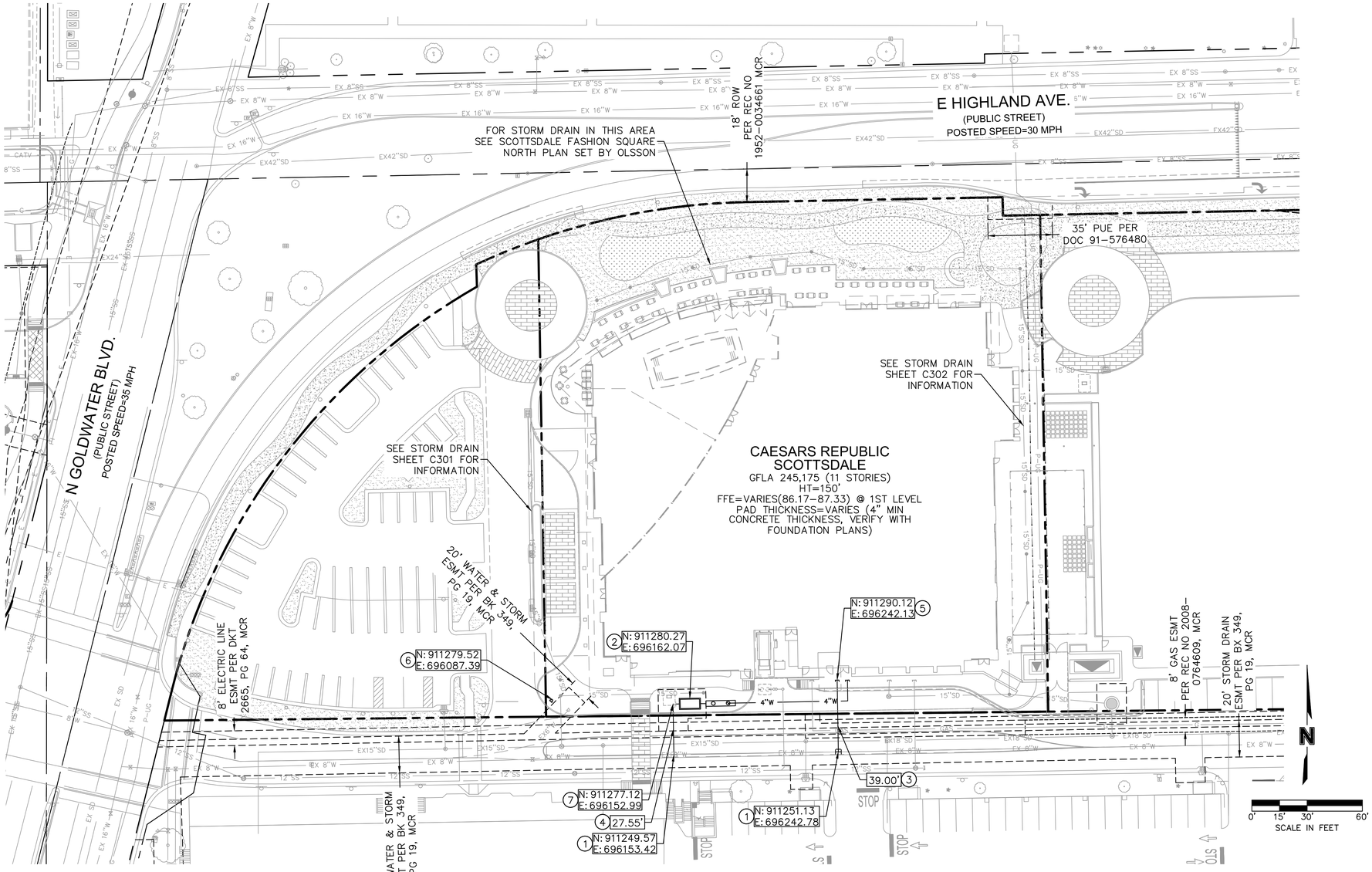


APPENDIX “C”

(Preliminary Utility Plan- Phase I)

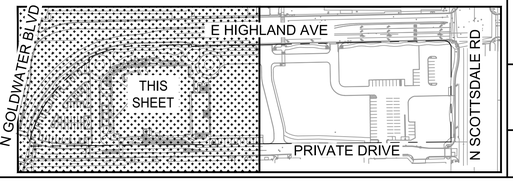
UTILITY PLAN KEYNOTES

1. CONNECT TO EXISTING WATERLINE WITH A SERVICE SADDLE PER C.O.S. STD DETAIL 2330
2. 4" TURBINE WATER METER PER COS STD DETAIL 2345, PROVIDE 11.5' L X 6' W STANDARD WATER METER VAULT PER MAG STD DETAIL 321.
3. 8" CLASS 350 POLY-WRAPPED DUCTILE IRON PIPE
4. 4" DOMESTIC WATER SERVICE
5. TERMINATE AND CAP 8" FIRE SERVICE LINE. SEE MECHANICAL PLANS FOR CONTINUATION INTO BUILDING
6. REMOTE FDC PER COS STD DTL 2367
7. 4" 90° BEND



UTILITY NOTES:

1. CONTRACTOR TO VERIFY LOCATIONS AND INVERTS OF ALL EXISTING UTILITIES 72 HOURS PRIOR TO THE CONSTRUCTION AND NOTIFY ENGINEER OF DISCREPANCIES FROM PLANS.
2. PIPE BEDDING FOR ALL UTILITY LINES TO BE PER CITY OF SCOTTSDALE SPECIFICATIONS, AND CITY OF SCOTTSDALE STANDARD DETAIL 2201.



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FAX 602.748.1001
www.olsson.com

Registered Professional Engineer
CERTIFICATE NO. 42633
ANDREA K. PAGE
Date Signed 10/25/19
ARIZONA U.S.A.

Call at least two full working days before you begin excavation.
ARIZONA 811
Arizona Blue Stake, Inc.
Dial 8-1-1 or 1-800-STAKE-IT (782-5348)
In Maricopa County: (602) 263-1100

REV. NO.	DATE	REVISIONS DESCRIPTION
		REVISIONS

IMPROVEMENT PLANS
PUBLIC WATER PLAN

CAESARS REPUBLIC SCOTTSDALE
SE CORNER OF GOLDWATER BLVD AND HIGHLAND AVE
SCOTTSDALE, AZ 85251

2019

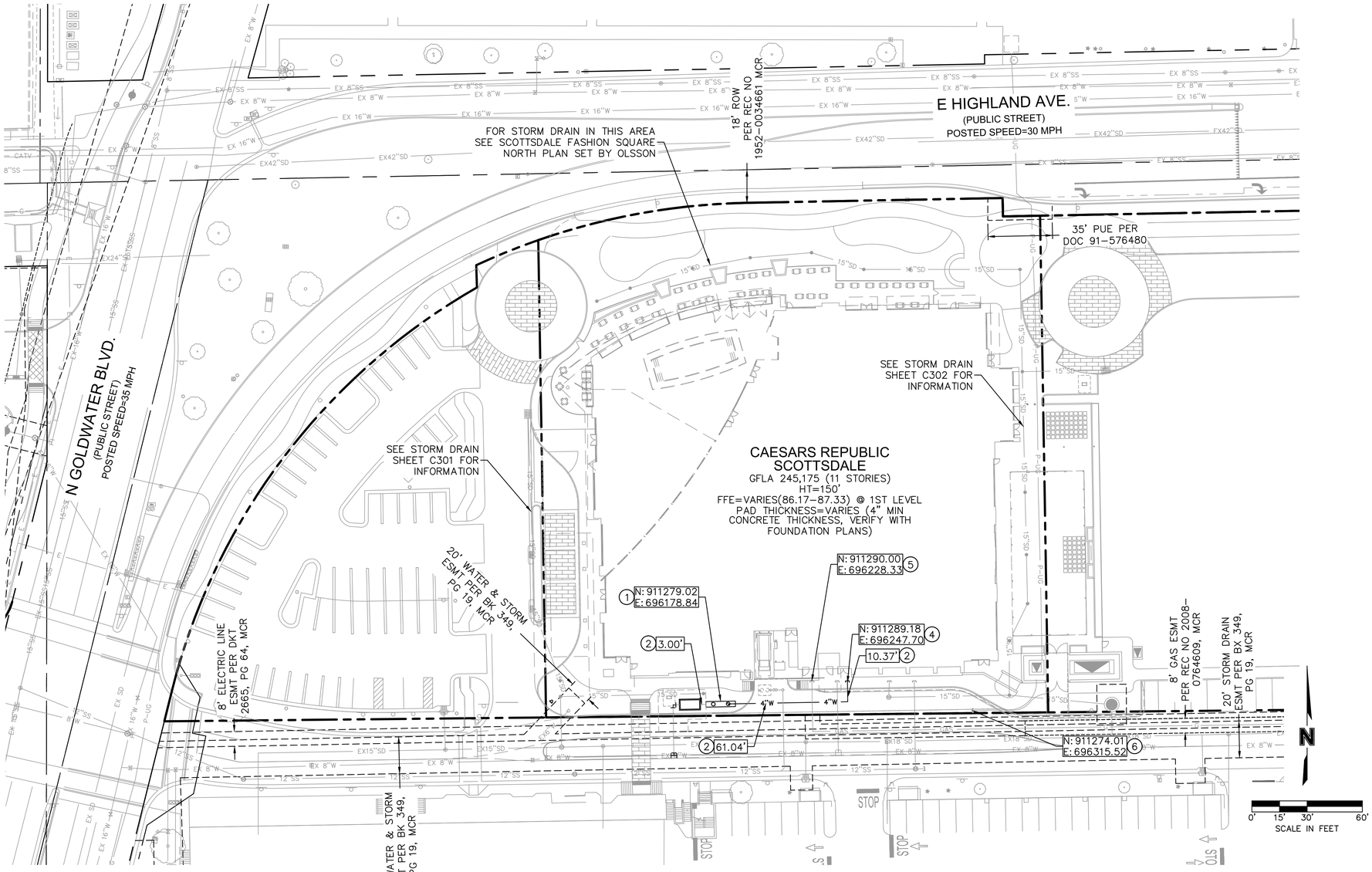
drawn by:	THW
designed by:	SJV
checked by:	CAII
project no.:	018-3159
date:	07.25.2019

C501
12 of 25

DWG: C:\Users\thutchinswoss\Desktop\018-3159 hotel\Final Plans\Sheets\GNCV\CAESARS\C501 PUB WTR _0183159.dwg USER: thutchinswoss
DATE: Oct 27, 2019 7:57pm XREFS: C_PBASE_CAESARS_0183159 C_XBASE_0183159 C_XBASE_OVERALL IMPROVEMENTS C_PTBLK_0183159 - CAESARS C_PBASE_0183159 e_plt9_0183159

UTILITY PLAN KEYNOTES

1. 4" BACKFLOW PREVENTION ASSEMBLY PER COS STD DETAIL 2353
2. 4" DOMESTIC WATER SERVICE
3. 1" DOMESTIC WATER SERVICE
4. TERMINATE AND CAP 4" DOMESTIC WATERLINE. SEE MECHANICAL PLANS FOR CONTINUATION INTO BUILDING
5. GASLINE TERMINATE AND CAP. SEE MECHANICAL PLANS FOR CONTINUATION INTO BUILDING
6. ELECTRIC LINE. SEE ELECTRICAL PLANS FOR CONTINUATION INTO BUILDING



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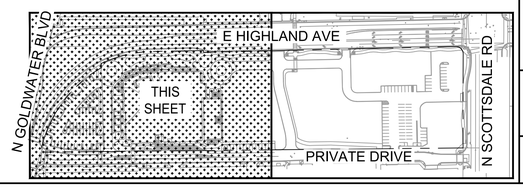
2. PIPE BEDDING FOR ALL UTILITY LINES TO BE PER CITY OF SCOTTSDALE SPECIFICATIONS. AND CITY OF SCOTTSDALE STANDARD DETAIL 2201.



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IMPROVEMENT PLANS
PRIVATE UTILITY PLAN

CAESARS REPUBLIC SCOTTSDALE
SE CORNER OF GOLDWATER BLVD AND HIGHLAND AVE
SCOTTSDALE, AZ 85251

2019

drawn by: THW
designed by: SJV
checked by: CAII
project no.: 018-3159
date: 07.25.2019

C551
13 of 25

DWG: C:\Users\thutchinswass\Desktop\018-3159 hotel\Final Plans\Sheets\GNCV\CAESARS\C551 PRVT UTIL_0183159.dwg USER: thutchinswass
DATE: Oct 27, 2019 7:57pm XREFS: C_PBASE_CAESARS_0183159 C_XBASE_0183159 C_XBASE_OVERALL IMPROVEMENTS C_PTBLK_0183159
C_PBASE_0183159 e_pltg_0183159

SCOTTSDALE FASHION SQUARE- LOT 2
FINAL WATER BASIS OF DESIGN REPORT

Scottsdale, AZ

February 2020

Olsson Project No. 018-3159