

Mountain View Medical Center Redevelopment

Concept Drainage Report



Prepared for:
Mountain View Medical Center,
LLC

Prepared by:
Stantec Consulting Services, Inc.



September 20, 2018

GRADING, DRAINAGE, AND ROUTING SUMMARY

The Mountain View Medical Center Redevelopment Project is a 3-phase, approximately 10-acre project in Paradise Valley, AZ at the intersection of Tatum Boulevard and Shea Boulevard. The site's grading and drainage have been designed so that each of the 3 phases will stand alone, ensuring that the storm water systems will function independent of construction phase.

The majority of the site's storm water will collect in the curb and gutter and be routed to the perimeter of the project where it will collect in above and below ground retention basins. The above ground retention basins have a 3-foot maximum depth and collected storm water will percolate into the ground over time. In storm events that exceed the 100-year, 2-hour design storm, the basins have been designed with overflows that direct water away from structures and into the City's storm water system. For the above ground retention ponds that are not large enough to contain the full amount of the contributing sub-basins storm water volume, underground retention systems and dry wells will be utilized to capture and drain storm water in a controlled manner. The underground storage systems will be comprised of large diameter pipes, ranging in size from 6-foot diameter RCP to 10-foot diameter coated CMP. The systems will be provided by Contech or a similar manufacturer. The underground storage systems will empty into dry wells that have the capacity to drain 12,500 cubic feet of water over a 36-hour period. A total of 5 drywells will be utilized for this project.

In addition to the retention basins on the perimeter, there are two underground retention systems located under asphalt pavement parking lots and one above and below ground retention system located in an interior landscape area. These systems will function in a similar manner to the perimeter systems previously described.

STORM DRAIN METHODOLOGY AND DESIGN BASIS

Per the Paradise Valley Storm Drainage Design Manual, the retention requirement for this project is the runoff flowrate during the 100-year, 2-hour storm event in the post-development condition, so long as the calculated rainfall volume is greater than the first flush event. Upon completion of the analysis, the 100-year, 2-hour storm event was in fact larger than the first flush volume for all 22 drainage sub-basins in the project.

The 100-year, 2-hour design storm produces approximately 2.2 inches of rain as is shown on the Maricopa County Drainage Manual Figure A.56 (Rainfall Isopleths). This rainfall value was used in the Storm Water Storage Volume formula provided in the Paradise Valley Drainage Design Manual. The formula is:

$$\text{Required Storage Volume} = \text{Weighted Average Runoff Coefficient} \times (2.2/12) \times \text{Area}$$

The weighted average runoff coefficient was determined by calculating the weighted average of impervious area vs. pervious area for each of the 22 sub-basins. The runoff coefficient values were taken from the Maricopa County Drainage Manual Table 3.2. Two runoff coefficients were used for the project, one for impervious surfaces (roofs and pavement) and one for pervious surfaces (landscape). Table 3.2 lists impervious surface as having a runoff coefficient of 0.94. The landscape coefficient used was 0.38, which corresponds to DL2 "landscaping without impervious under treatment." This value was

used across the entire site as all existing grass will be replaced with desert landscape. Summaries of the retention basins, flow routing, runoff coefficients, and drainage areas are shown on the Concept Grading and Drainage Plan.

CONCLUSION

In conformance with the Paradise Valley Storm Drainage Design Manual, the proposed drainage system will retain the required rainfall from the 100-year, 2-hour design storm across the +/- 10-acre project site. This will be accomplished through the utilization of on-site underground retention pipes and above ground retention ponds. The underground retention pipes will drain over a period of 36 hours via one of five total dry wells. In total, the above ground retention ponds have a volume of 39,900 cubic feet (cf), which is 1,406 cf more than required and the underground retention pipes have a total volume of 20,178 cf which is 182 cf more than required.



Stantec Consulting Services, Inc.
8211 South 48th Street,
Phoenix, Arizona 85044

September 21, 2018
File: 180101666

Attention: Mr. Paul Michaud
Interim Development Director
Town of Paradise Valley
6401 E Lincoln Drive
Paradise Valley, AZ 85253

Dear Mr. Michaud,

**Reference: Major Special Use Application for Mountain View Medical Center Review #2
Response to Comment 13**

In response to comment 13 provided by your office on September 5, 2018, requesting information regarding utilities located on and adjacent to the property, we offer the following information for your use:

Water service:

Water service is provided by the City of Phoenix and is located along Beryl Avenue, Tatum Boulevard and Shea Boulevard. Tatum Boulevard has an existing 12" waterline located on the east side and a 6" waterline located on the west side. The 12" line has two existing 6" fire lines that are stubbed to the property and three existing 2" services lines, all of which serve the existing development located on the property. There is also an 8" water line that runs along the north side of Shea Boulevard. No services are existing or currently expected to be proposed off the 8" line. There is a 6" line along Beryl Avenue, but no services are existing or currently expected to be proposed off the Beryl Avenue line

Calculation of fire flow requirements and evaluation of capacity will be provided as a separate document once the fire department is able to do a fire flow test on the existing fire hydrants adjacent to the property. Existing building plans indicate the original water pressure at Tatum Boulevard are about 60 psi.

Sewer service:

Sewer service is provided by the City of Phoenix and is located on both Tatum Boulevard and on Shea Boulevard. There is a 12" sewer line along Tatum Boulevard and an 18" sewer line along Shea Boulevard. The sewer line flows north along Tatum Boulevard and then east along Shea Boulevard. There appears to be a sewer service at the southwest corner of the site. Sewer conveys to a line along the eastern boundary of the property.

Electric:

APS is the service provider for Electric. The existing primary electric line enters the site off Tatum Boulevard near Beryl Avenue and runs along the eastern boundary of the property to Shea Boulevard. Services are provided off this line to serve the existing buildings. It appears that the gas line and electric line are within the same trench.

September 21, 2018

Mr. Paul Michaud

Page 2 of 2

Reference: Major Special Use Application for Mountain View Medical Center Review #2

Gas:

Southwest Gas is the service provider for gas to the property. Per record information, there is an 8" gas line on the property and each service is a 2" gas line with a pressure reducing valve for each existing building. The line enters the site off Beryl Avenue and runs along the eastern boundary of the property to Shea Boulevard. Services are provided off this line to serve the existing buildings. It appears that the gas line and electric line are within the same trench.

Phone/Cable:

Cox Communications is the service provider for fiber optic and telephone. There is an existing service line that enters the site off Beryl Avenue and runs along the eastern boundary of the property. Services are provided off this line to serve the existing buildings.

Please let me know if you need any additional information.

Regards,



Kelly J. Bell, PE
Principal

Phone: 602.707.4642
Kelly.bell2@stantec.com



 FLOW ARROW
 FINISH GRADE ELEVATION
 WATERSHED BOUNDARY
 RETENTION BASIN
 PROPOSED STORM DRAIN
 UNDERGROUND STORAGE



SCALE: 1 INCH = 30 FEET

CONCEPT GRADING &
DRAINAGE PLAN

MEDICAL PLAZA AT
SHEA BLVD & TATUM BLVD
PARADISE VALLEY, ARIZONA
9.20.2018



Stantec

DRAINAGE AREA RAINOFF COEFFICIENT SUMMARY					
SAR	Drainage Area (km ²)	Drainage Area Rainoff Coefficient Summary		Percent Contribution	Annual Contribution (mm)
		SAF	SAF		
1	3,552	37.0%	5.6	0.05	1.9
2	3,552	37.0%	5.6	0.05	1.9
3	3,552	37.0%	5.6	0.05	1.9
4	3,552	37.0%	5.6	0.05	1.9
5	3,552	37.0%	5.6	0.05	1.9
6	3,552	37.0%	5.6	0.05	1.9
7	3,552	37.0%	5.6	0.05	1.9
8	3,552	37.0%	5.6	0.05	1.9
9	3,552	37.0%	5.6	0.05	1.9
10	3,552	37.0%	5.6	0.05	1.9
11	3,552	37.0%	5.6	0.05	1.9
12	3,552	37.0%	5.6	0.05	1.9
13	3,552	37.0%	5.6	0.05	1.9
14	3,552	37.0%	5.6	0.05	1.9
15	3,552	37.0%	5.6	0.05	1.9
16	3,552	37.0%	5.6	0.05	1.9
17	3,552	37.0%	5.6	0.05	1.9
18	3,552	37.0%	5.6	0.05	1.9
19	3,552	37.0%	5.6	0.05	1.9
20	3,552	37.0%	5.6	0.05	1.9
21	3,552	37.0%	5.6	0.05	1.9
22	3,552	37.0%	5.6	0.05	1.9
23	3,552	37.0%	5.6	0.05	1.9
24	3,552	37.0%	5.6	0.05	1.9
25	3,552	37.0%	5.6	0.05	1.9
26	3,552	37.0%	5.6	0.05	1.9
27	3,552	37.0%	5.6	0.05	1.9
28	3,552	37.0%	5.6	0.05	1.9
29	3,552	37.0%	5.6	0.05	1.9
30	3,552	37.0%	5.6	0.05	1.9
31	3,552	37.0%	5.6	0.05	1.9
32	3,552	37.0%	5.6	0.05	1.9
33	3,552	37.0%	5.6	0.05	1.9
34	3,552	37.0%	5.6	0.05	1.9
35	3,552	37.0%	5.6	0.05	1.9
36	3,552	37.0%	5.6	0.05	1.9
37	3,552	37.0%	5.6	0.05	1.9
38	3,552	37.0%	5.6	0.05	1.9
39	3,552	37.0%	5.6	0.05	1.9
40	3,552	37.0%	5.6	0.05	1.9
41	3,552	37.0%	5.6	0.05	1.9
42	3,552	37.0%	5.6	0.05	1.9
43	3,552	37.0%	5.6	0.05	1.9
44	3,552	37.0%	5.6	0.05	1.9
45	3,552	37.0%	5.6	0.05	1.9
46	3,552	37.0%	5.6	0.05	1.9
47	3,552	37.0%	5.6	0.05	1.9
48	3,552	37.0%	5.6	0.05	1.9
49	3,552	37.0%	5.6	0.05	1.9
50	3,552	37.0%	5.6	0.05	1.9
51	3,552	37.0%	5.6	0.05	1.9
52	3,552	37.0%	5.6	0.05	1.9
53	3,552	37.0%	5.6	0.05	1.9
54	3,552	37.0%	5.6	0.05	1.9
55	3	3.0%	0.5	0.01	0.2
56	10,704	10.0%	1.6	0.33	13.0
57	10,704	10.0%	1.6	0.33	13.0
58	10,704	10.0%	1.6	0.33	13.0
59	10,704	10.0%	1.6	0.33	13.0
60	10,704	10.0%	1.6	0.33	13.0
61	10,704	10.0%	1.6	0.33	13.0
62	10,704	10.0%	1.6	0.33	13.0
63	10,704	10.0%	1.6	0.33	13.0
64	10,704	10.0%	1.6	0.33	13.0
65	10,704	10.0%	1.6	0.33	13.0
66	10,704	10.0%	1.6	0.33	13.0
67	10,704	10.0%	1.6	0.33	13.0
68	10,704	10.0%	1.6	0.33	13.0
69	10,704	10.0%	1.6	0.33	13.0
70	10,704	10.0%	1.6	0.33	13.0
71	10,704	10.0%	1.6	0.33	13.0
72	10,704	10.0%	1.6	0.33	13.0
73	10,704	10.0%	1.6	0.33	13.0
74	10,704	10.0%	1.6	0.33	13.0
75	10,704	10.0%	1.6	0.33	13.0
76	10,704	10.0%	1.6	0.33	13.0
77	10,704	10.0%	1.6	0.33	13.0
78	10,704	10.0%	1.6	0.33	13.0
79	10,704	10.0%	1.6	0.33	13.0
80	10,704	10.0%	1.6	0.33	13.0
81	10,704	10.0%	1.6	0.33	13.0
82	10,704	10.0%	1.6	0.33	13.0
83	10,704	10.0%	1.6	0.33	13.0
84	10,704	10.0%	1.6	0.33	13.0
85	10,704	10.0%	1.6	0.33	13.0
86	10,704	10.0%	1.6	0.33	13.0
87	10,704	10.0%	1.6	0.33	13.0
88	10,704	10.0%	1.6	0.33	13.0
89	10,704	10.0%	1.6	0.33	13.0
90	10,704	10.0%	1.6	0.33	13.0
91	10,704	10.0%	1.6	0.33	13.0
92	10,704	10.0%	1.6	0.33	13.0
93	10,704	10.0%	1.6	0.33	13.0
94	10,704	10.0%	1.6	0.33	13.0
95	10,704	10.0%	1.6	0.33	13.0
96	10,704	10.0%	1.6	0.33	13.0
97	10,704	10.0%	1.6	0.33	13.0
98	10,704	10.0%	1.6	0.33	13.0
99	10,704	10.0%	1.6	0.33	13.0
100	10,704	10.0%	1.6	0.33	13.0

Drainage Area #	Drainage Area Summary		Total Area (km ²)	Total Population
	Number of Households	Number of People		
1	1,000	4,000	1,000	4,000
2	2,000	8,000	2,000	8,000
3	3,000	12,000	3,000	12,000
4	4,000	16,000	4,000	16,000
5	5,000	20,000	5,000	20,000
6	6,000	24,000	6,000	24,000
7	7,000	28,000	7,000	28,000
8	8,000	32,000	8,000	32,000
9	9,000	36,000	9,000	36,000
10	10,000	40,000	10,000	40,000
11	11,000	44,000	11,000	44,000
12	12,000	48,000	12,000	48,000
13	13,000	52,000	13,000	52,000
14	14,000	56,000	14,000	56,000
15	15,000	60,000	15,000	60,000
16	16,000	64,000	16,000	64,000
17	17,000	68,000	17,000	68,000
18	18,000	72,000	18,000	72,000
19	19,000	76,000	19,000	76,000
20	20,000	80,000	20,000	80,000
21	21,000	84,000	21,000	84,000
22	22,000	88,000	22,000	88,000
23	23,000	92,000	23,000	92,000
24	24,000	96,000	24,000	96,000
25	25,000	100,000	25,000	100,000
26	26,000	104,000	26,000	104,000
27	27,000	108,000	27,000	108,000
28	28,000	112,000	28,000	112,000
29	29,000	116,000	29,000	116,000
30	30,000	120,000	30,000	120,000
31	31,000	124,000	31,000	124,000
32	32,000	128,000	32,000	128,000
33	33,000	132,000	33,000	132,000
34	34,000	136,000	34,000	136,000
35	35,000	140,000	35,000	140,000
36	36,000	144,000	36,000	144,000
37	37,000	148,000	37,000	148,000
38	38,000	152,000	38,000	152,000
39	39,000	156,000	39,000	156,000
40	40,000	160,000	40,000	160,000
41	41,000	164,000	41,000	164,000
42	42,000	168,000	42,000	168,000
43	43,000	172,000	43,000	172,000
44	44,000	176,000	44,000	176,000
45	45,000	180,000	45,000	180,000
46	46,000	184,000	46,000	184,000
47	47,000	188,000	47,000	188,000
48	48,000	192,000	48,000	192,000
49	49,000	196,000	49,000	196,000
50	50,000	200,000	50,000	200,000
51	51,000	204,000	51,000	204,000
52	52,000	208,000	52,000	208,000
53	53,000	212,000	53,000	212,000
54	54,000	216,000	54,000	216,000
55	55,000	220,000	55,000	220,000
56	56,000	224,000	56,000	224,000
57	57,000	228,000	57,000	228,000
58	58,000	232,000	58,000	232,000
59	59,000	236,000	59,000	236,000
60	60,000	240,000	60,000	240,000
61	61,000	244,000	61,000	244,000
62	62,000	248,000	62,000	248,000
63	63,000	252,000	63,000	252,000
64	64,000	256,000	64,000	256,000
65	65,000	260,000	65,000	260,000
66	66,000	264,000	66,000	264,000
67	67,000	268,000	67,000	268,000
68	68,000	272,000	68,000	272,000
69	69,000	276,000	69,000	276,000
70	70,000	280,000	70,000	280,000
71	71,000	284,000	71,000	284,000
72	72,000	288,000	72,000	288,000
73	73,000	292,000	73,000	292,000
74	74,000	296,000	74,000	296,000
75	75,000	300,000	75,000	300,000
76	76,000	304,000	76,000	304,000
77	77,000	308,000	77,000	308,000
78	78,000	312,000	78,000	312,000
79	79,000	316,000	79,000	316,000
80	80,000	320,000	80,000	320,000
81	81,000	324,000	81,000	324,000
82	82,000	328,000	82,000	328,000
83	83,000	332,000	83,000	332,000
84	84,000	336,000	84,000	336,000
85	85,000	340,000	85,000	340,000
86	86,000	344,000	86,000	344,000
87	87,000	348,000	87,000	348,000
88	88,000	352,000	88,000	352,000
89	89,000	356,000	89,000	356,000
90	90,000	360,000	90,000	360,000
91	91,000	364,000	91,000	364,000
92	92,000	368,000	92,000	368,000
93	93,000	372,000	93,000	372,000
94	94,000	376,000	94,000	376,000
95	95,000	380,000	95,000	380,000
96	96,000	384,000	96,000	384,000
97	97,000	388,000	97,000	388,000
98	98,000	392,000	98,000	392,000
99	99,000	396,000	99,000	396,000
100	100,000	400,000	100,000	400,000

LOT 8
FIREBRAND RANCH
BK. 231, PG. 28, M.C.R.
A.P.N. 168-07-009
BPA C. & DAVID C. VANOSDALL
2000-0148041, M.C.R.

City of Phoenix, Water Services Department Fire Flow Test



Location: **12944 N 44th STREET** Q.S. No. **29-39**

For: **HENDERSON ENGINEERING**

Requested By: **HENDERSON ENGINEERING** Request Date: **10/15/2018**

Phone: **N/A** Fax Number: **E-MAIL**

Test Type: **2.5" Std. X 4" Std. X Complex**

Observers: **CAMPBELL YARD - CMFFTF**

Test Time: **11:30 AM** Test Date: **10/22/2018**

CAUTION:

Results of this flow test identify water system characteristics for the date, time, and locations of this test only.

Pressure and flows within the water system vary of time, it is expected and should be considered when preparing designs based upon fire flow test data.

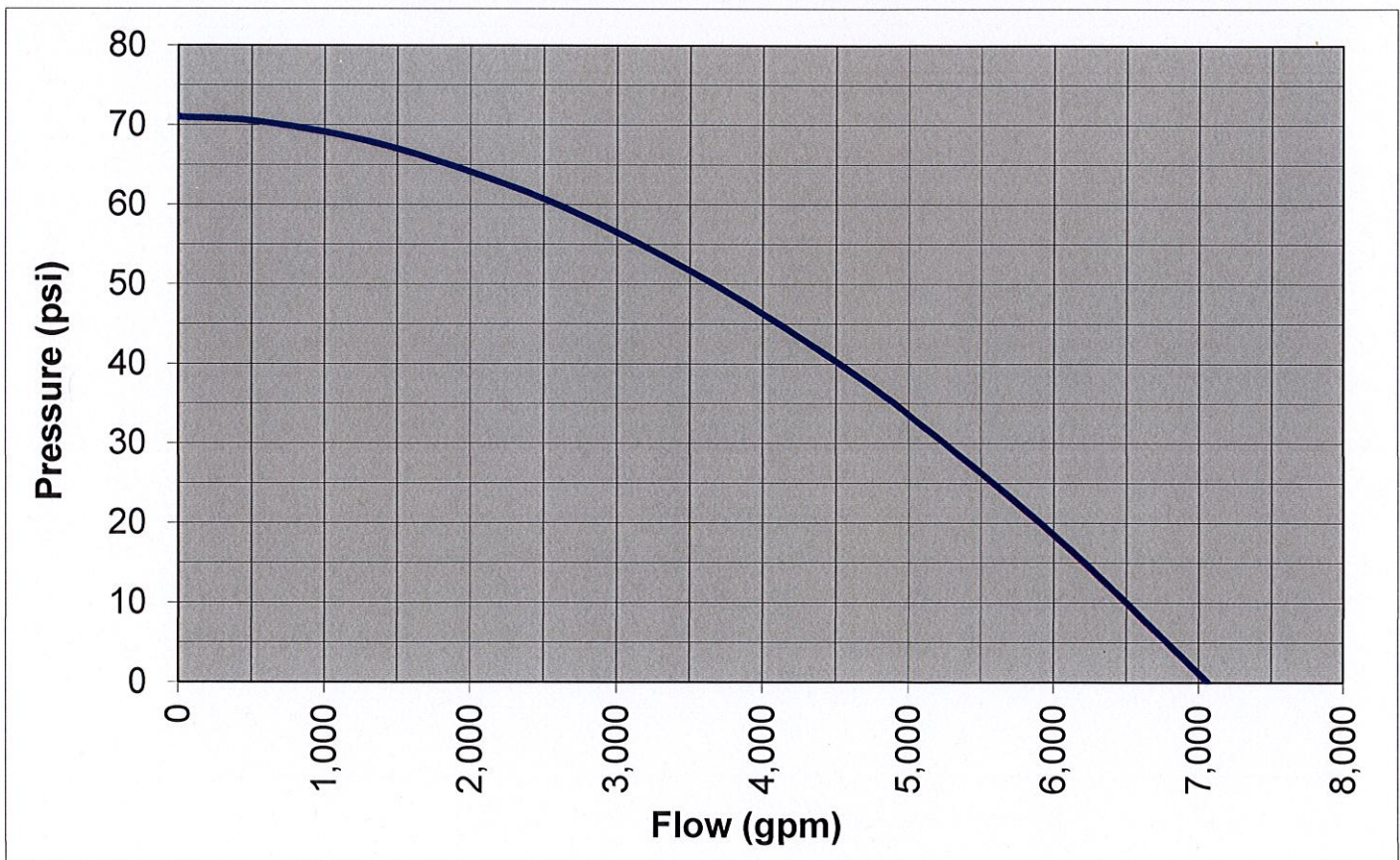
Numerous factors affect the water system, such as water level fluctuations in reservoirs, operating pressure ranges at booster pump stations, elevations at point of use, daily demand fluctuations, seasonal demands, emergency demands, water treatment plant availability, increased demands due to growth, operation/maintenance schedules, etc.

Designers should consider the above when preparing designs based upon fire flow test data. The City of Phoenix may be able to provide additional information on water system characteristics upon request.

NOTE: TEST LOCATION SKETCH IS ATTACHED

Observed Test Data						
Hydrant Designation	Hydrant Number	Flow Opening (2.5" or 4")	Static Pressure (psi)	Residual Pressure (psi)	Pitot Pressure (psi)	Flow (gpm)
Pressure; R	109		71	48		
Flow, F1	156	4			20	1921
Flow, F2	110	4			20	1921
Flow, F3						
Flow, F4						
Note: Hydrant Nozzle Coef. = 0.9			(1) Pressure Drop % 32.4%		Total Flow: 3842	

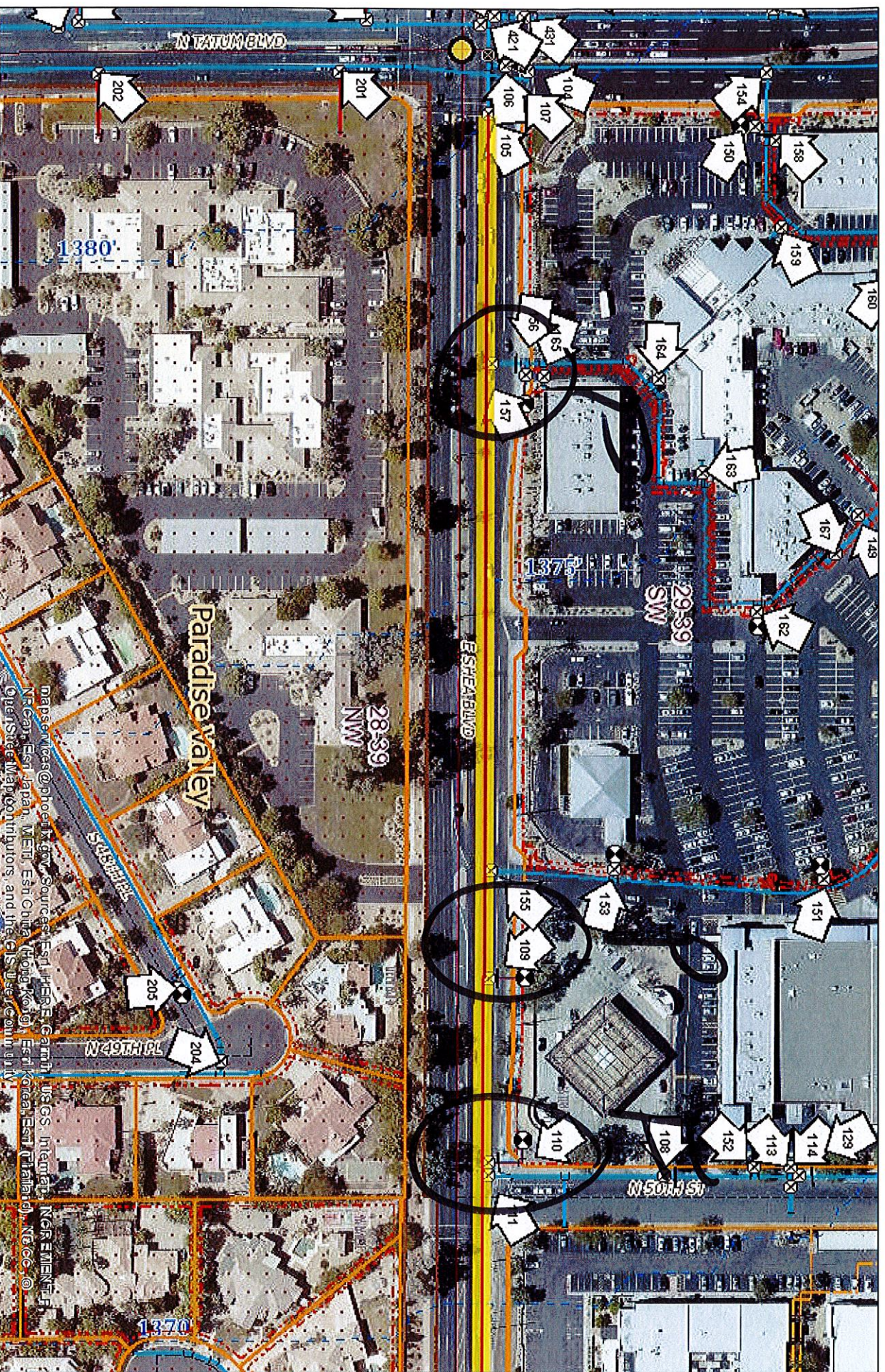
Calculated Results			NOTES:
Pressure (psi)	20	25	
(2) Flow (gpm)	5906	5586	(1) To obtain satisfactory test results of theoretical calculation of expected flows or rated capacities, sufficient discharge should be achieved to cause a drop in pressure at the residual hydrant of at least 25%, or to flow the total demand necessary for fire-fighting purposes. (2) Calculated flow values will not appear if a 25% pressure drop between static and residual pressures is not reached. If additional volume is required, a complex 4-inch port fire flow test may be needed.



Revision Date: 05/16/2013 (NPR)

3

SEC Shea & Tatum



Note: Protected Critical Infrastructure Information and Exempt from Public Disclosure



City Of Phoenix
Water Services Department
Infrastructure Record Services

10/4/2018

STANTEC CONSULTING SERVICES INC.
8211 S 48TH ST
PHOENIX AZ 85044

RE: 10555-10599 N TATUM BOULEVARD
APN 168-07-001C
Q.S.# 28-39

Kelly J Bell PE

Your request for water/sewer availability to the mentioned properties/street has been reviewed. The property has direct frontage to the City of Phoenix public water and sewer mains.

If you have any questions regarding these guidelines, please contact via email
Leticia.saenz@phoenix.gov or call (602) 256-4276

Sincerely,

Leticia Saenz 
Water Services Department
Infrastructure Record Services

Enclosures:

CC: Shauna Johnson, Water Services Department - Infrastructure Record Services

Shane Hurd, Water Services Department - Infrastructure Record Services



Water and Sewer Availability Request

September 25, 2018

Via Email: irspubliccounterwsd@phoenix.gov

City of Phoenix
Water Services Department
Infrastructure Record Services
975 E. Armstrong Way, Bldg. K
Chandler, AZ. 85286

Project: Mountain View Medical Center
10555-10599 North Tatum Boulevard, Town of Paradise Valley, Arizona.

Quarter Section 29, Township 3 North, Range 4E, Maricopa County, Arizona.

Please consider this inquiry for water and sewer service availability for the above-mentioned property at the southeast corner of Tatum and Shea Boulevards in the City of Phoenix Service District. Attached please find a site location map for your consideration.

Please feel free to contact our office with any additional questions.

Sincerely,

A handwritten signature in blue ink, appearing to read "KJB", with a stylized flourish at the end.

Kelly J. Bell, PE

Principal
STANTEC CONSULTING SERVICES INC.
8211 South 48th Street, Phoenix AZ 85044-5355
Phone: (602) 707.4642
Kelly.Bell2@stantec.com