

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:

Required Storage Volume = Weighted Average Runoff Coefficient x (2.2/12) x 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 coveys 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.

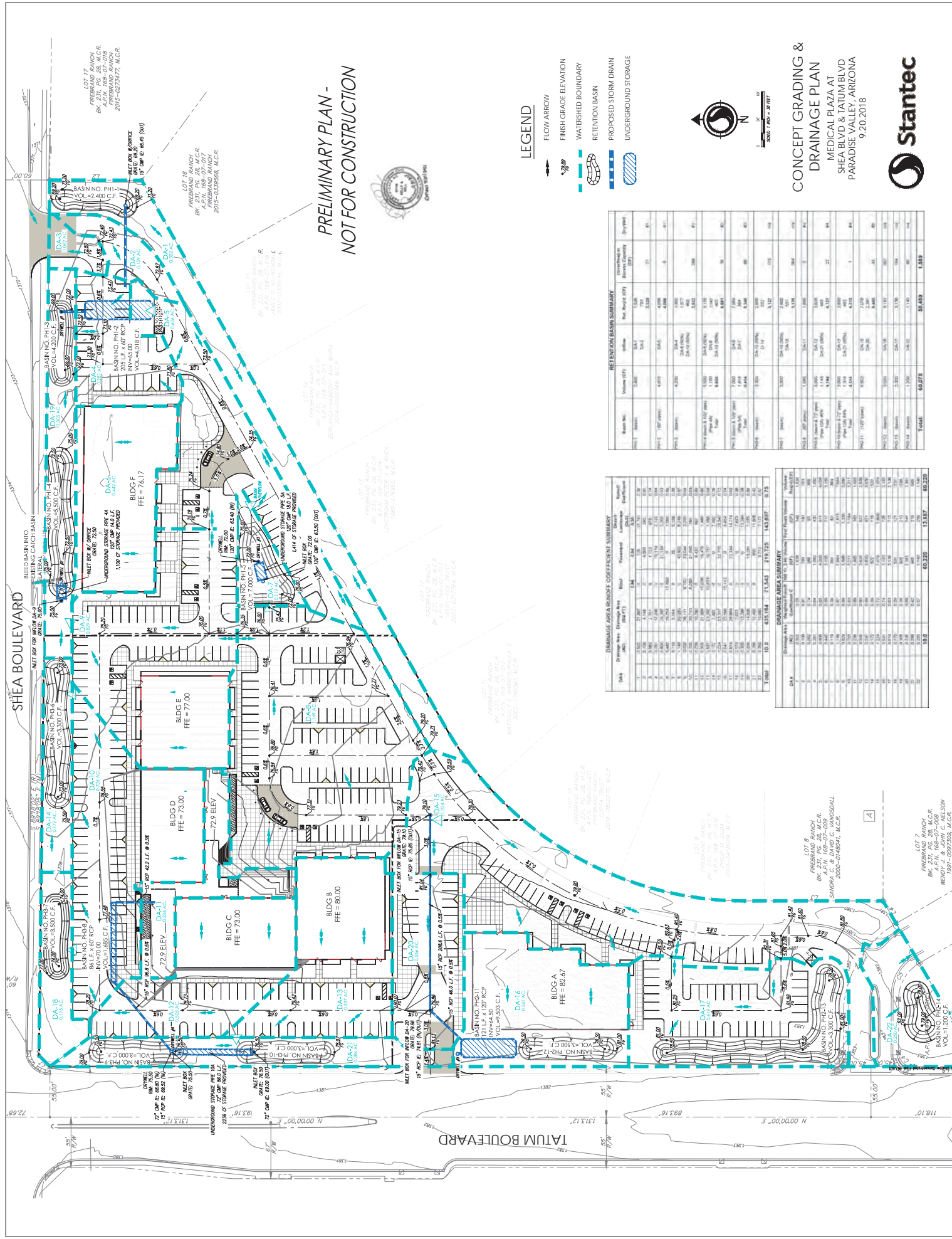
Please let me know if you need any additional information.

Regards,



Kelly J. Bell, PE
Principal






Phone: 602.707.4642
Kelly.bell2@stantec.com



PRELIMINARY PLAN -
NOT FOR CONSTRUCTION



LEGEND

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



SCALE: 1 INCH = 50 FEET

CONCEPT GRADING & DRAINAGE PLAN

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



Stantec

DRAINAGE AREA RAINFALL COEFFICIENT SUMMARY						
Date	Drainage Area (Ac)	Drainage Area (Sq Ft)	Rainfall (In/ Hr)	Precipitation	Drainage Coefficient	
					Drainage Area	Precipitation
1	4,025	37,662	0.00	0.00	17.91	0.00
2	4,025	37,662	0.00	0.00	17.91	0.00
3	4,025	37,662	0.00	0.00	17.91	0.00
4	4,025	37,662	0.00	0.00	17.91	0.00
5	4,025	37,662	0.00	0.00	17.91	0.00
6	4,025	37,662	0.00	0.00	17.91	0.00
7	4,025	37,662	0.00	0.00	17.91	0.00
8	4,025	37,662	0.00	0.00	17.91	0.00
9	4,025	37,662	0.00	0.00	17.91	0.00
10	4,025	37,662	0.00	0.00	17.91	0.00
11	4,025	37,662	0.00	0.00	17.91	0.00
12	4,025	37,662	0.00	0.00	17.91	0.00
13	4,025	37,662	0.00	0.00	17.91	0.00
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16	4,025	37,662	0.00	0.00	17.91	0.00
17	4,025	37,662	0.00	0.00	17.91	0.00
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95	4,025	37,662	0.00	0.00	17.91	0.00
96	4,025	37,662	0.00	0.00	17.91	0.00
97	4,025	37,662	0.00	0.00	17.91	0.00
98	4,025	37,662	0.00	0.00	17.91	0.00
99	4,025	37,662	0.00	0.00	17.91	0.00
100	4,025	37,662	0.00	0.00	17.91	0.00

Year	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100	2101	2102	2103	2104	2105	2106	2107	2108	2109	2110	2111	2112	2113	2114	2115	2116	2117	2118	2119	2120	2121	2122	2123	2124	2125	2126	2127	2128	2129	2130	2131	2132	2133	2134	2135	2136	2137	2138	2139	2140	2141	2142	2143	2144	2145	2146	2147	2148	2149	2150	2151	2152	2153	2154	2155	2156	2157	2158	2159	2160	2161	2162	2163	2164	2165	2166	2167	2168	2169	2170	2171	2172	2173	2174	2175	2176	2177	2178	2179	2180	2181	2182	2183	2184	2185	2186	2187	2188	2189	2190	2191	2192	2193	2194	2195	2196	2197	2198	2199	2200	2201	2202	2203	2204	2205	2206	2207	2208	2209	2210	2211	2212	2213	2214	2215	2216	2217	2218	2219	2220	2221	2222	2223	2224	2225	2226	2227	2228	2229	2230	2231	2232	2233	2234	2235	2236	2237	2238	2239	2240	2241	2242	2243	2244	2245	2246	2247	2248	2249	2250	2251	2252	2253	2254	2255	2256	2257	2258	2259	2260	2261	2262	2263	2264	2265	2266	2267	2268	2269	2270	2271	2272	2273	2274	2275	2276	2277	2278	2279	2280	2281	2282	2283	2284	2285	2286	2287	2288	2289	2290	2291	2292	2293	2294	2295	2296	2297	2298	2299	2300	2301	2302	2303	2304	2305	2306	2307	2308	2309	2310	2311																									
DA4	1	1.30	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1

RETENTION BASE SUMMARY					Drawdown as Percent Capacity (DP)	Dry Pond
Event No.	Volume (cfs)	inflow	Ret. Pond (cfs)			
PM-11 (1 hour)	5,500	5,500	1,500 50%	4,000	71	8%
PM-12 (100 years)	4,010	5,040	4,000	0	41	
PM-13 (30 years)	4,200	5,040	4,000	0		
PM-14 (30 years & 100 years)	5,500	5,040 (20%) 5,040 (100%)	1,500	4,000	71	200
PM-15 (1 hour)	1,100	5,040	1,000	200	42	
PM-16 (1 hour)	4,000	5,040 (20%) 5,040 (100%)	1,000	3,000	42	
PM-17 (30 years & 100 years)	7,000	5,040	5,000	200	42	
PM-18 (1 hour)	1,610 4,000	1,610 5,040 (20%) 5,040 (100%)	1,610 1,000	340 4,000	42	
PM-19 (30 years)	3,300	5,040 (20%) 5,040 (100%)	1,610	1,690	42	
PM-20 (30 years)	3,300	5,040 (20%) 5,040 (100%)	1,610	1,690	42	
PM-21 (30 years)	3,300	5,040 (20%) 5,040 (100%)	1,610	1,690	42	
PM-22 (100 years)	1,900	5,040	1,900	0	46	
PM-23 (100 years & 100 years)	1,900	5,040	1,900	0	46	
PM-24 (100 years & 100 years)	1,900	5,040	1,900	0	46	
PM-25 (100 years & 100 years)	1,900	5,040	1,900	0	46	
PM-26 (100 years & 100 years)	1,900	5,040	1,900	0	46	
PM-27 (100 years & 100 years)	1,900	5,040	1,900	0	46	
PM-28 (100 years & 100 years)	1,900	5,040	1,900	0	46	
PM-29 (100 years & 100 years)	1,900	5,040	1,900	0	46	
PM-30 (100 years & 100 years)	1,900	5,040	1,900	0	46	
PM-31 (100 years & 100 years)	1,900	5,040	1,900	0	46	
PM-32 (100 years & 100 years)	1,900	5,040	1,900	0	46	
PM-33 (100 years & 100 years)	1,900	5,040	1,900	0	46	
PM-34 (100 years & 100 years)	1,900	5,040	1,900	0	46	
PM-35 (100 years & 100 years)	1,900	5,040	1,900	0	46	
PM-36 (100 years & 100 years)	1,900	5,040	1,900	0	46	
PM-37 (100 years & 100 years)	1,900	5,040	1,900	0	46	
PM-38 (100 years & 100 years)	1,900	5,040	1,900	0	46	
PM-39 (100 years & 100 years)	1,900	5,040	1,900	0	46	
PM-40 (100 years & 100 years)	1,900	5,040	1,900	0	46	
PM-41 (100 years & 100 years)	1,900	5,040	1,900	0	46	
PM-42 (100 years & 100 years)	1,900	5,040	1,900	0	46	
PM-43 (100 years & 100 years)	1,900	5,040	1,900	0	46	
PM-44 (100 years & 100 years)	1,900	5,040	1,900	0	46	
PM-45 (100 years & 100 years)	1,900	5,040	1,900	0	46	
PM-46 (100 years & 100 years)	1,900	5,040	1,900	0	46	
PM-47 (100 years & 100 years)	1,900	5,040	1,900	0	46	
PM-48 (100 years & 100 years)	1,900	5,040	1,900	0	46	
PM-49 (100 years & 100 years)	1,900	5,040	1,900	0	46	
PM-50 (100 years & 100 years)	1,900	5,040	1,900	0	46	
PM-51 (100 years & 100 years)	1,900	5,040	1,900	0	46	
PM-52 (100 years & 100 years)	1,900	5,040	1,900	0	46	
PM-53 (100 years & 100 years)	1,900	5,040	1,900	0	46	
PM-54 (100 years & 100 years)	1,900	5,040	1,900	0	46	
PM-55 (100 years & 100 years)	1,900	5,040	1,900	0	46	
PM-56 (100 years & 100 years)	1,900	5,040	1,900	0	46	
PM-57 (100 years & 100 years)	1,900	5,040	1,900	0	46	

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.

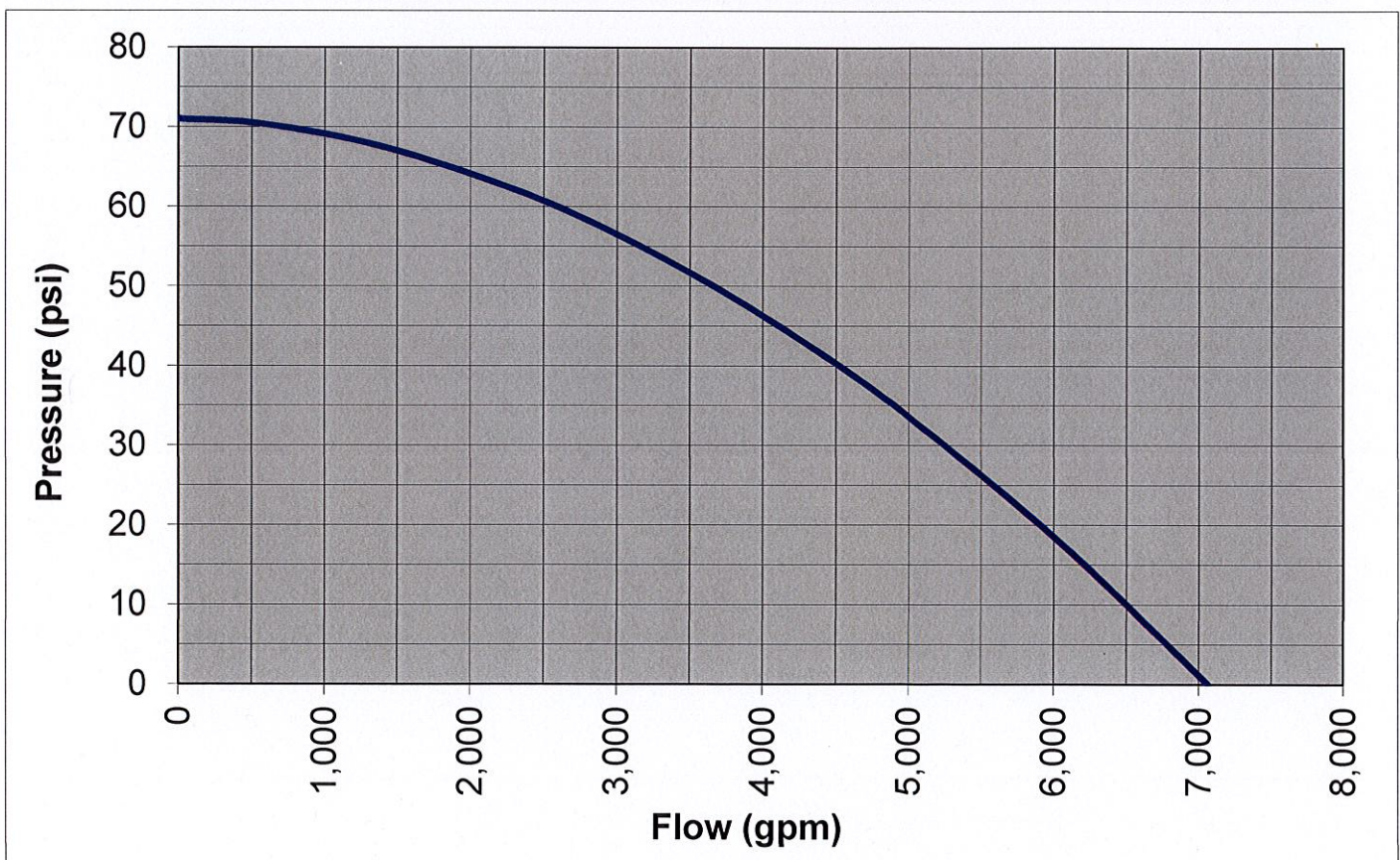
Numerous factors affect the water system, such as water level fluctuations in reservoirs, operating pressure ranges at booster pump stations, elevations at point of use, daily demand fluctuations, seasonal demands, emergency demands, water treatment plant availability, increased demands due to growth,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

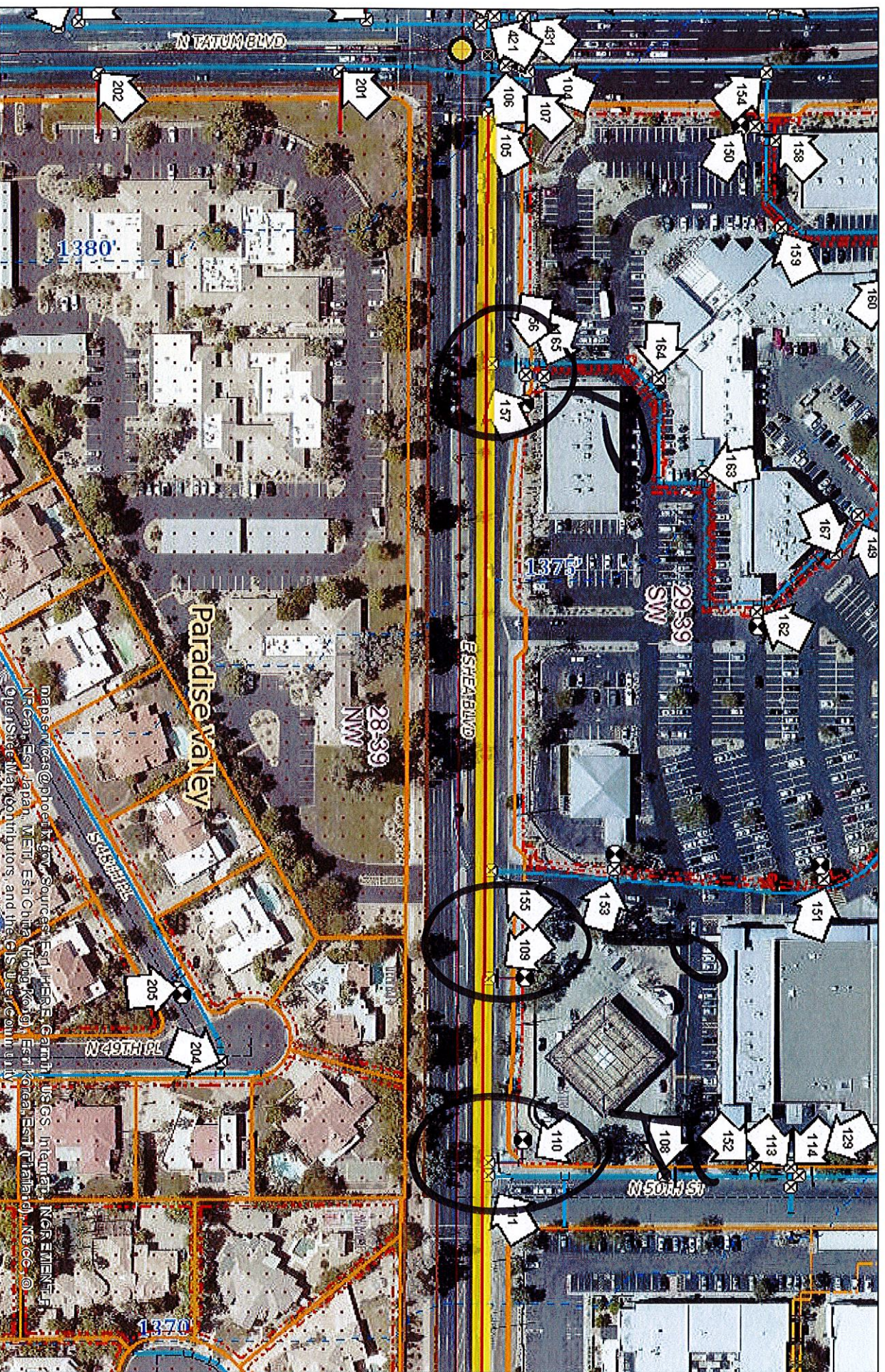
Calculated Results			NOTES:
Pressure (psi)	20	25	
(2) Flow (gpm)	5906	5586	(1) To obtain satisfactory test results of theoretical calculation of expected flows or rated capacities, sufficient discharge should be achieved to cause a drop in pressure at the residual hydrant of at least 25%, or to flow 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)

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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