GREAT BASIN ENGINEERING INC

DAYCARE EDEN
4786 E 2600 N
EDEN, UTAH
PERCOLATION TEST
Project No. 12N244
1-10-2013

A percolation test was performed for Ray Bowden on Jan. 9, 2013 in order to gather information required to determine the needed retention volume for a proposed retention pond at his property located at 4786 E 2600 N in Eden, Utah. The temperature was about 38° with sunny conditions. A soil profile was taken at the location of the proposed retention facility. It extended down about 11 feet below the existing curb adjacent to the retention area (See the profile below). The percolation test was run at approximately 2:00 p.m. The test was performed at 7.5 feet below the curb. A 12" diam hole 12" deep was then dug for the test. This hole was filled completely two times and allowed to drain before conducting the test in order to saturate the soil in the testing area. Two tests were then run and measurements taken in order to determine the percolation rate. See the attached results.

Great Basin Engineering, Inc.

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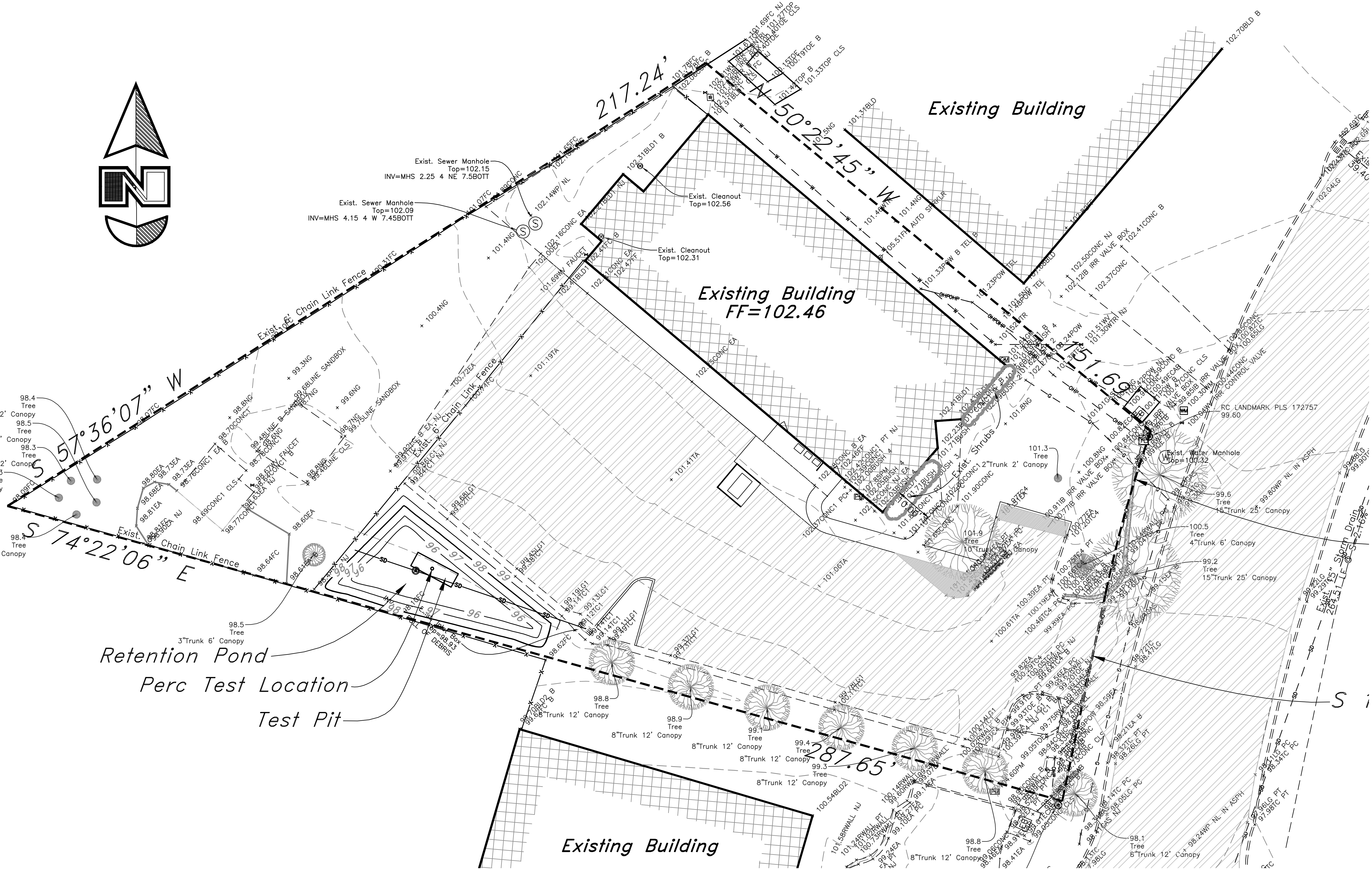

Existing Building
Existing Building
FF=102.46
Existing Building
217.24'
N 50°22'45" W
151.69'
S 57°36'07" W
S 74°22'06" E
287.65'
Exist. 6' Chain Link Fence
Exist. 6' Chain Link Fence
Exist. Chain Link Fence
Exist. Sewer Manhole
Top=102.15
INV=MHS 2.25 4 NE 7.5BOTT
Exist. Sewer Manhole
Top=102.09
INV=MHS 4.15 4 W 7.45BOTT
Exist. Cleanout
Top=102.56
Exist. Cleanout
Top=102.31
Exist. Water Manhole
Top=100.32
RC LANDMARK PLS 172757
99.60
Exist. Shrubs
Retention Pond
Perc Test Location
Test Pit
98.4 Tree 2"Trunk 2' Canopy
98.5 Tree 2"Trunk 2' Canopy
98.3 Tree 2"Trunk 2' Canopy
98.3 Tree 2"Trunk 2' Canopy
98.4 Tree 2"Trunk 2' Canopy
98.5 Tree 3"Trunk 6' Canopy
101.3 Tree 2"Trunk 2' Canopy
101.9 Tree 10"Trunk 12' Canopy
99.6 Tree 15"Trunk 25' Canopy
100.5 Tree 4"Trunk 6' Canopy
99.2 Tree 15"Trunk 25' Canopy
98.8 Tree 8"Trunk 12' Canopy
98.9 Tree 8"Trunk 12' Canopy
99.1 Tree 8"Trunk 12' Canopy
99.4 Tree 8"Trunk 12' Canopy
99.3 Tree 8"Trunk 12' Canopy
98.8 Tree 8"Trunk 12' Canopy
98.1 Tree 8"Trunk 12' Canopy
102.70BLD B

Ray Bowden Daycare Center
Percolation Test Results

Soil Profile

0 - 2' deep	gray Clayey sand/ clayey gravel
2' - 11' deep	gray/brown sandy gravel with rounded cobbles varying from 1" to 4" throughout

Test #1

Time	Depth in hole	Delta	Perc Rate (min/in.)	Volume drained (ft^3)	Flow Rate (cfs)	Surface area at this depth (ft^2)	Unit perc rate (cfs/ft^2)
1:46:34 PM	8.00	0					
1:46:54 PM	6.75	1.25	0.27	0.082	0.0041	2.553	0.001603
1:47:14 PM	6.25	0.50	0.67	0.033	0.0016	2.422	0.000676
1:47:34 PM	5.75	0.50	0.67	0.033	0.0016	2.291	0.000714
1:47:54 PM	5.25	0.50	0.67	0.033	0.0016	2.160	0.000758
1:48:14 PM	4.75	0.50	0.67	0.033	0.0016	2.029	0.000806
1:48:34 PM	4.50	0.25	1.33	0.016	0.0008	1.963	0.000417
1:48:54 PM	4.25	0.25	1.33	0.016	0.0008	1.898	0.000431
1:49:14 PM	4.00	0.25	1.33	0.016	0.0008	1.833	0.000446
1:49:34 PM	3.75	0.25	1.33	0.016	0.0008	1.767	0.000463
1:49:54 PM	3.50	0.25	1.33	0.016	0.0008	1.702	0.000481

Test #2

Time	Depth in hole	Delta	Perc Rate (min/in.)	Volume drained (ft^3)	Flow Rate (cfs)	Surface area at this depth (ft^2)	Unit perc rate (cfs/ft^2)
1:50:20 PM	7.00	0					
1:50:40 PM	6.50	0.50	0.67	0.033	0.0016	2.487	0.000658
1:51:00 PM	6.00	0.50	0.67	0.033	0.0016	2.356	0.000694
1:51:20 PM	5.60	0.40	0.83	0.026	0.0013	2.251	0.000581
1:51:40 PM	5.25	0.35	0.95	0.023	0.0011	2.160	0.000530
1:52:00 PM	4.75	0.50	0.67	0.033	0.0016	2.029	0.000806
1:52:20 PM	4.50	0.25	1.33	0.016	0.0008	1.963	0.000417
1:52:40 PM	4.20	0.30	1.11	0.020	0.0010	1.885	0.000521
1:53:00 PM	3.90	0.30	1.11	0.020	0.0010	1.806	0.000543
1:53:20 PM	3.65	0.25	1.33	0.016	0.0008	1.741	0.000470
1:53:40 PM	3.40	0.25	1.33	0.016	0.0008	1.676	0.000488
1:54:00 PM	3.15	0.25	1.33	0.016	0.0008	1.610	0.000508

=> Use 0.00049 cfs/ft^2 average

Perc area below 3' deep 4' wide 62' long trench plus 10' diam manhole bed = 825 square feet

Perc rate (cfs) for setup = 825*0.00049 = 0.404 cfs (without a safety factor)

Use release at 0.238 cfs for safety factor = .404/.238 = 1.70