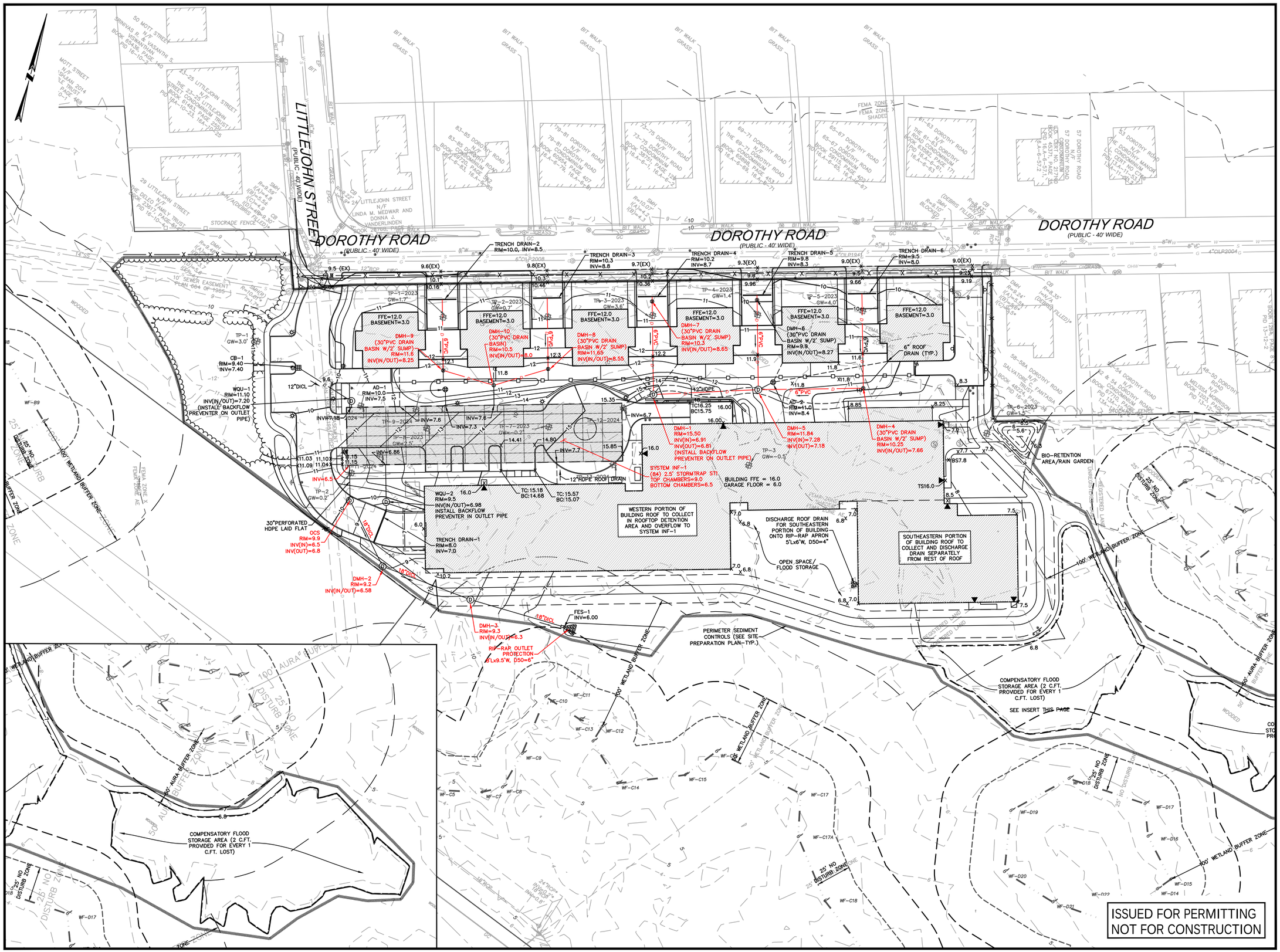

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PROFESSIONAL ENGINEER

THORNDIKE PLACE
NOTICE OF INTENT

DOROTHY ROAD
IN
ARLINGTON
MASSACHUSETTS
(MIDDLESEX COUNTY)

GRADING & DRAINAGE PLAN

SEPTEMBER 6, 2023

REVISIONS:

NO.	DATE	DESC.

PREPARED FOR:
ARLINGTON LAND REALTY, LLC
84 SHERMAN STREET, 2ND FLOOR
CAMBRIDGE, MA

BSC GROUP
803 Summer Street
Boston, Massachusetts
02127
617 896 4300

SCALE: 1" = 30'
0 15 30 60 FEET

FILE: 2340702\C\D\2340702-GR
DWG.:
JOB. NO: 23407.02
SHEET C-104

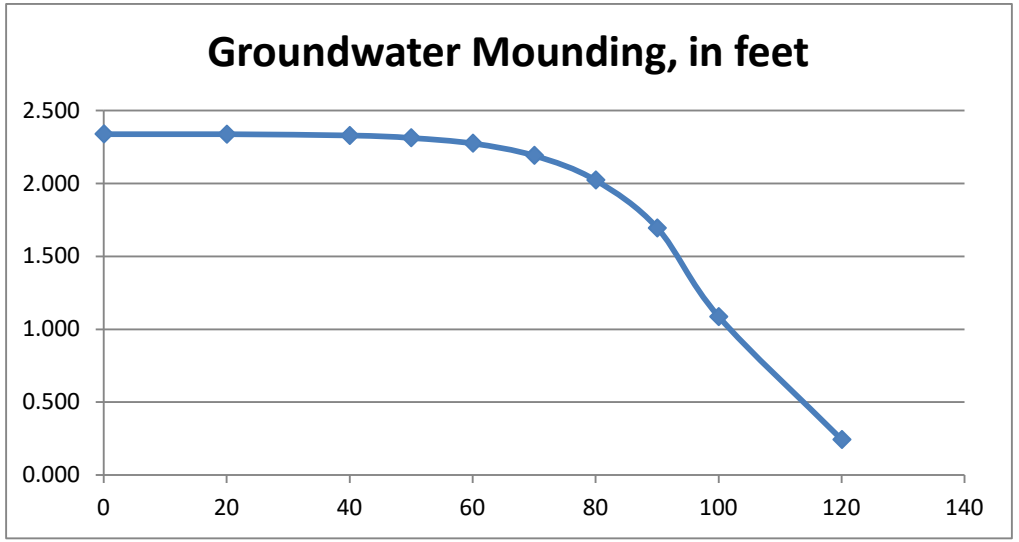
Input Values

			inch/hour	feet/day	
0.2580	*R*	Recharge (infiltration) rate (feet/day)	0.67	1.33	
0.080	Sy	Specific yield, Sy (dimensionless, between 0 and 1)			
5.40	K	Horizontal hydraulic conductivity, Kh (feet/day)*	2.00	4.00	In the repor
98.420	x	1/2 length of basin (x direction, in feet)			(USGS SIR 2(
20.670	y	1/2 width of basin (y direction, in feet)	hours	days	(ft/d) is assu
1.000	t	duration of infiltration period (days)	36	1.50	hydraulic co
5.000	hi(0)	initial thickness of saturated zone (feet)			

7.339	h(max)	maximum thickness of saturated zone (beneath center of basin at end of infiltration period)
2.339	Δh(max)	maximum groundwater mounding (beneath center of basin at end of infiltration period)

Ground-water Mounding, in feet	Distance from center of basin in x direction, in feet
2.339	0
2.338	20
2.329	40
2.313	50
2.275	60
2.192	70
2.022	80
1.695	90
1.086	100
0.243	120

Re-Calculate Now



Disclaimer

This spreadsheet solving the Hantush (1967) equation for ground-water mounding beneath an infiltration basin is made available to the general public as a convenience for those wishing to replicate values documented in the USGS Scientific Investigations Report 2010-5102 "Groundwater mounding beneath hypothetical stormwater infiltration basins" or to calculate values based on user-specified site conditions. Any changes made to the spreadsheet (other than values identified as user-specified) after transmission from the USGS could have unintended, undesirable consequences. These consequences could include, but may not be limited to: erroneous output, numerical instabilities, and violations of underlying assumptions that are inherent in results presented in the accompanying USGS published report. The USGS assumes no responsibility for the consequences of any changes made to the spreadsheet. If changes are made to the spreadsheet, the user is responsible for documenting the changes and justifying the results and conclusions.

Recharge/Infiltration Rate (ft/day) = [Required Recharge Volume (cft)/Bottom Recharge System (sft)]/Duration (day)

Required Recharge Volume	2,099	cft
Bottom Recharge System	8,137	sft
Duration	1	day
Recharge/Infiltration Rate	**0.2580**	**ft/day**

Horizontal Hydraulic Conductivity (ft/day) = [Rawls Rate (in/hr) * (1ft/12in) * (24hr/1day)] * 10

Rawls Rate (silt loam)	0.27	in/hr
Horizontal Hydraulic Conductivity	**5.40**	**ft/day**

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
6.5	8,137	0
6.55	8,137	350
6.6	8,137	700
6.65	8,137	1,050
6.7	8,137	1,400
6.75	8,137	1,750
6.8	8,137	2,099
6.85	8,137	2,449
6.9	8,137	2,799
6.95	8,137	3,149
7	8,137	3,499
7.05	8,137	3,849
7.1	8,137	4,199
7.15	8,137	4,549
7.2	8,137	4,899
7.25	8,137	5,249
7.3	8,137	5,599
7.35	8,137	5,948
7.4	8,137	6,298
7.45	8,137	6,648
7.5	8,137	6,998
7.55	8,137	7,348
7.6	8,137	7,698
7.65	8,137	8,048
7.7	8,137	8,398
7.75	8,137	8,748
7.8	8,137	9,098
7.85	8,137	9,447
7.9	8,137	9,797
7.95	8,137	10,147
8	8,137	10,497
8.05	8,137	10,847
8.1	8,137	11,197
8.15	8,137	11,547
8.2	8,137	11,897
8.25	8,137	12,247
8.3	8,137	12,597
8.35	8,137	12,947
8.4	8,137	13,296
8.45	8,137	13,646
8.5	8,137	13,996
8.55	8,137	14,346
8.6	8,137	14,696
8.65	8,137	15,046
8.7	8,137	15,396
8.75	8,137	15,746
8.8	8,137	16,096
8.85	8,137	16,446
8.9	8,137	16,796
8.95	8,137	17,145
9	8,137	17,495