Berkshire Design Group

July 11, 2025

Mary H. Grover, PWS
Environmental Analyst
MassDEP – Division of Wetlands and Waterways
436 Dwight Street
Springfield, MA 01103

RE: MassDEP Wetlands File No. 246-0785 – Information Request #4
8 View Avenue, Northampton, MA

Dear Mary:

This memorandum is in response to your additional information request #4 received in an email dated June 18, 2025. The following memo addresses the four items requested.

1. **The plans of record must include documentation of how SIS#2 meets the requirements of the Massachusetts Stormwater Standards. Specifically, the groundwater mounding analysis method shall account for the nearby vertical impervious barrier, be redesigned to remove the need for the barrier, or another alternative method of accurately completing the groundwater mounding analysis, considering the assumptions of the method. The mounding analysis shall be accompanied by a written narrative prepared by a qualified hydrogeologist or geotechnical engineer that explains the rationale for determining input values and analysis outputs.**

The infiltration basin has been redesigned to remove the impermeable barrier. The guideline in the Massachusetts Stormwater Handbook recommends that a setback for infiltration basins be maintained at 50 feet away from slopes greater than 15% (Volume 2, Chapter 2, Page 88). This general guideline is to prevent the groundwater breaking out above the finished grade at any location. Since we have a site-specific mounding analysis that was conducted and several test pits nearby, an analysis was conducted to determine the site-specific groundwater breakout elevations. The ESHGW elevation at TP-3 at the location of the basin and TP-1, 16 feet southwest of the basin both have depth to groundwater of 16 inches below existing grade. The mounding analysis indicates that the maximum groundwater depth above the ESHGW is at 1.36 feet in the center of the basin and is 0.122 at 40 feet from the center of the basin. Enclosed with this response is a cross-section of the proposed SIS #2, existing grades, proposed finished grades, the ESHGW surface and the height of mounding about the ESHGW surface. This analysis determines that there would not be breakout at the slope.

2. **A detail sheet of the roof drain collection system, including documentation that there is appropriate ground cover, slopes, cleanouts and inspection ports, protections against damage, and plans for long-term maintenance.**

Sheet LC-132 is enclosed which updates and clarifies the proposed roof drainage collection system. This sheet includes a note stating requirements of the architectural design to incorporate roof slope directions and design of gutters and downspouts to the piped drainage system, so these requirements are included on the plan of record.

3. **The Operation and Maintenance plan shall include plans to inspect and maintain roof gutters and conveyance pipes.**

The enclosed Operation and Maintenance plan and Maintenance Log sheet has been revised to include roof gutter and roof drain inspection and maintenance.

4. **Please identify the low impact development techniques which have been incorporated to prevent the generation of stormwater and non-point source pollution by reducing impervious surfaces, disconnecting flow paths, treating stormwater at its source, maximizing open space, minimizing disturbance, protecting natural features and processes, and/or enhancing wildlife habitat.**

The proposed project incorporates a variety of Low Impact Development (LID) techniques consistent with the Massachusetts Stormwater Handbook to minimize stormwater runoff from the site and treatment of stormwater for potential pollutants.

The project limits overall impervious cover by using a cluster development site layout. The amount of impervious surfaces on site is minimized by clustering the buildings, using 20 feet driveway width instead of 24 feet, clustering the parking into lots to limit the units with driveways, and creating a 500 square foot common outdoor space instead of providing each unit individual spaces to minimize impervious surfaces. The site grading and earthwork have been minimized by incorporating the existing topography and wetland buffers. The construction footprint for each of the units has been minimized and each structure is approximately 11 feet away from the neighboring building, thus limiting the overall construction limits on site.

Stormwater is managed on site through mimicking natural hydrology and preventing pollution at its source. Roof runoff and pavement drainage are directed to subsurface infiltration units to allow for infiltration and pollutant removal. Hydrodynamic separators and deep sump catch basins are used to remove TSS from the stormwater prior to discharging to the subsurface infiltration units.

The preserved wetland areas on the parcel contribute to habitat protection and hydrologic function. The project avoids fragmentation of natural areas by clustering the development a minimum of 35 feet from the adjacent wetland area. This area may still be utilized by wildlife. The design incorporates native landscaping. These features are designed to maintain or enhance biodiversity and support ecological connectivity across the site. Several mature trees on the site are preserved and protected. There is a total of 713 caliper inches at DBH of trees being removed on the site and a total of 171 caliper inches at DBH being planted onsite with an additional 186 caliper inches at DBH worth of offsite mitigation being offered to the City of Northampton.

Please don't hesitate to contact me regarding these responses at chrisc@berkshiredesign.com.

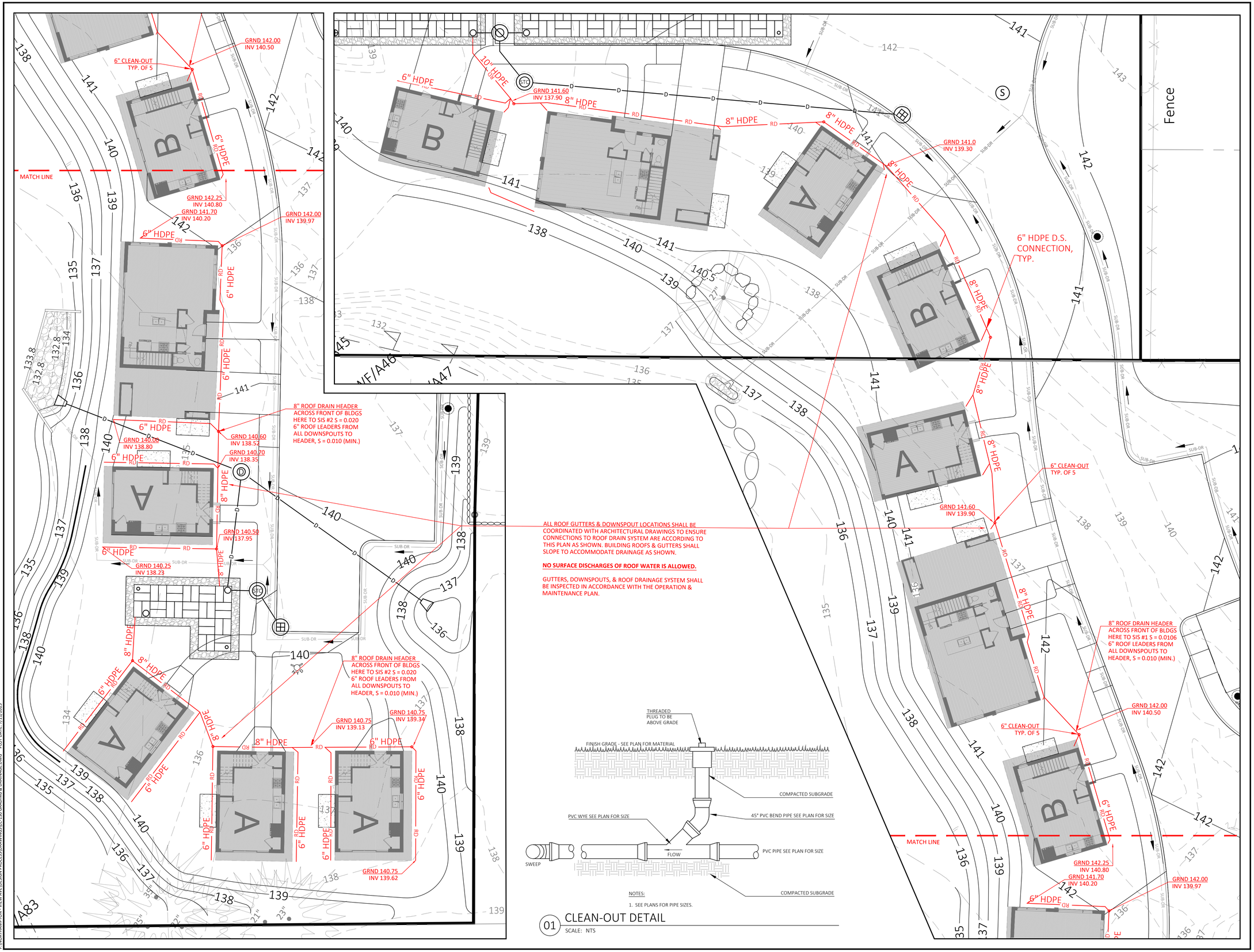
Enclosures:

Updated drainage plan LC-132
Groundwater Elevation Plan Fig. 1 and Hantush Mounding Analysis
Operation and Maintenance Plan and Log Sheet

Sincerely,

Berkshire Design Group

Chris Chamberland, P.E.
Principal Civil Engineer



01 CLEAN-OUT DETAIL
SCALE: NTS

F:\NORTHAMPTON - VIEW AVE\DESIGN PROCESS\DRAWINGS\LC-130 GRADING & DRAINAGE.DWG PLOT DATE: 7/11/2025

Berkshire Design Group
Landscape Architecture
Civil Engineering
Planning
Land Surveying

4 Allen Place, Northampton, Massachusetts 01060
(413) 582-7000 • FAX (413) 582-7005
Email: bdg@berkshiredesign.com
Web: http://www.berkshiredesign.com

Sovereign Builders, Inc.

8 View Avenue
Northampton, MA

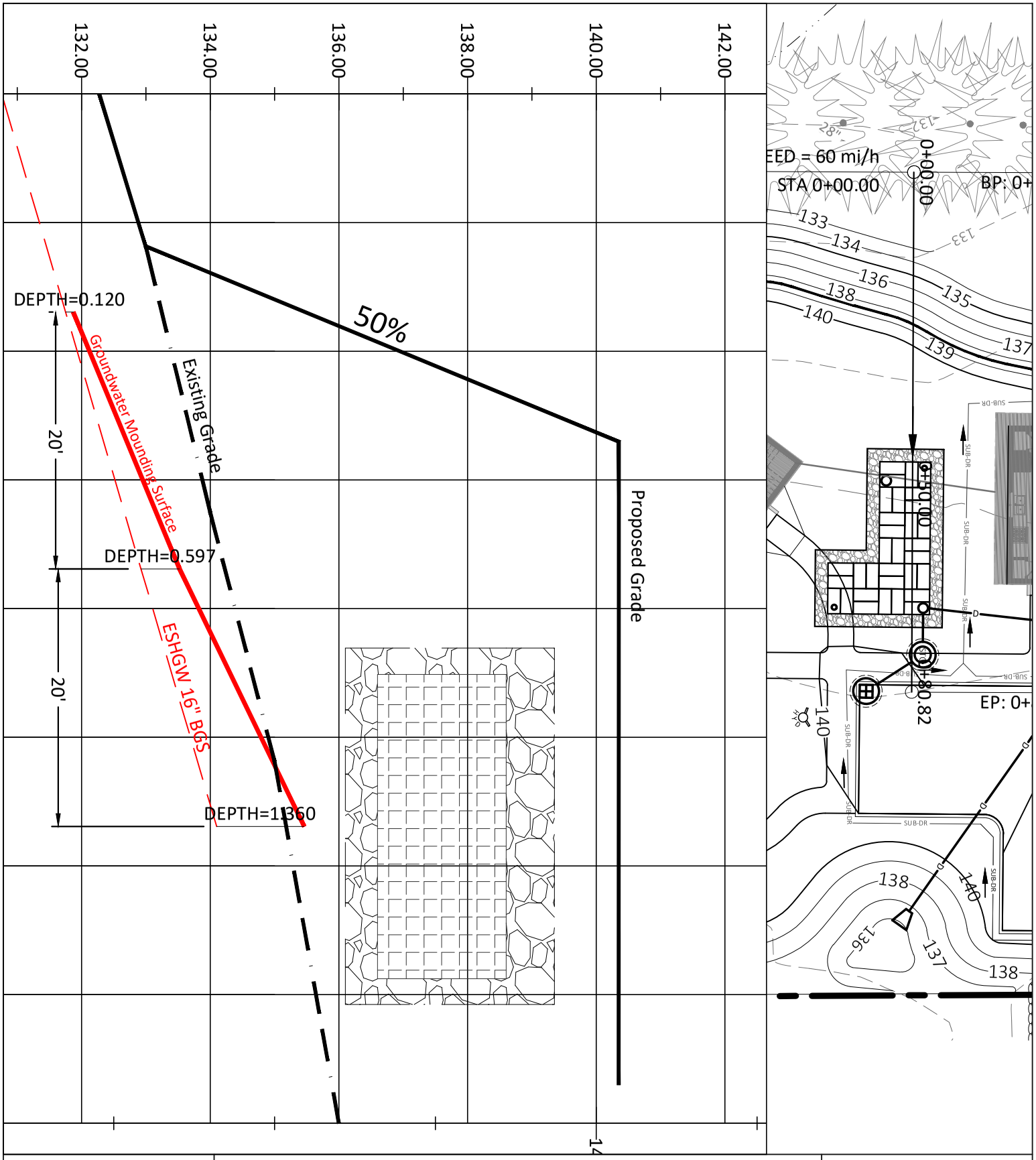
PERMIT SET
NOT FOR CONSTRUCTION

ROOF DRAIN DETAIL PLAN

SCALE 1"=10'-0" (if printed full size @ 24" x 36")
0 5' 10' 20' 30'

Revisions

Date:	July 11, 2025
Scale:	1"=10'
Drawn By:	KB/JS
Checked By:	JDS
Sheet Number	LC-132



Berkshire Design Group
4 Allen Place
Northampton, MA 01060
(413) 582-7000
www.berkshiredesign.com

Sovereign Builders
8 View Avenue
Northampton, MA

Estimated Groundwater Elevations

FIG. 1
07/11/2025

This spreadsheet will calculate the height of a groundwater mound beneath a stormwater infiltration basin. More information can be found in the U.S. Geological Survey Scientific Investigations Report 2010-5102 "Simulation of groundwater mounding beneath hypothetical stormwater infiltration basins".

The user must specify infiltration rate (R), specific yield (Sy), horizontal hydraulic conductivity (Kh), basin dimensions (x, y), duration of infiltration period (t), and the initial thickness of the saturated zone (hi(0), height of the water table if the bottom of the aquifer is the datum). For a square basin the half width equals the half length (x = y). For a rectangular basin, if the user wants the water-table changes perpendicular to the long side, specify x as the short dimension and y as the long dimension. Conversely, if the user wants the values perpendicular to the short side, specify y as the short dimension, x as the long dimension. All distances are from the center of the basin. Users can change the distances from the center of the basin at which water-table aquifer thickness are calculated.
Cells highlighted in yellow are values that can be changed by the user. Cells highlighted in red are output values based on user-specified inputs. The user MUST click the blue "Re-Calculate Now" button each time ANY of the user-specified inputs are changed otherwise necessary iterations to converge on the correct solution will not be done and values shown will be incorrect. Use consistent units for all input values (for example, feet and days)

use consistent units (e.g. feet & days **or** inches & hours)

Input Values		
0.5400	*R*	**Recharge (infiltration) rate (feet/day)**
0.200	Sy	**Specific yield, Sy (dimensionless, between 0 and 1)**
5.40	K	**Horizontal hydraulic conductivity, Kh (feet/day)***
13.860	x	**1/2 length of basin (x direction, in feet)**
9.900	y	**1/2 width of basin (y direction, in feet)**
1.700	t	**duration of infiltration period (days)**
7.670	hi(0)	**initial thickness of saturated zone (feet)**

Conversion Table

inch/hour	feet/day
0.67	1.33
2.00	4.00

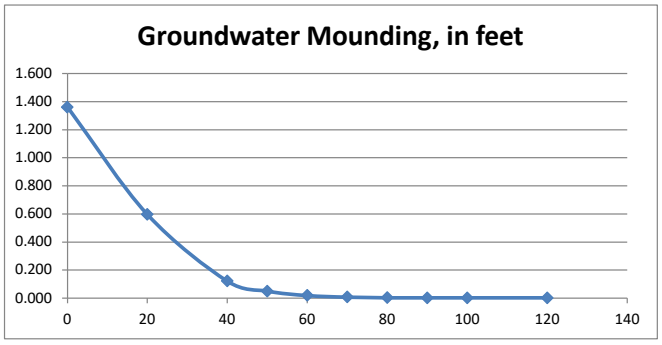
hours	days
36	1.50

In the report accompanying this spreadsheet (USGS SIR 2010-5102), vertical soil permeability (ft/d) is assumed to be one-tenth horizontal hydraulic conductivity (ft/d).

9.031	h(max)	**maximum thickness of saturated zone (beneath center of basin at end of infiltration period)**
1.361	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
1.361	0
0.597	20
0.122	40
0.050	50
0.019	60
0.007	70
0.003	80
0.002	90
0.002	100
0.002	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.

Proposed
Operation & Maintenance Plan
Stormwater Management

During Construction

The Contractor shall be responsible for inspection and maintenance during construction.

At all times, siltation fabric fencing, stakes and hay bales sufficient to construct a sedimentation control barrier a minimum of 50 feet long will be stockpiled on the site in order to repair established barriers which may have been damaged or breached.

An inspection of all erosion control and stormwater management systems shall be conducted by the Contractor at least once a week and during all rain storms until the completion of construction. In case of any noted breach or failure, the Contractor shall immediately make appropriate repairs to any erosion control system and notify the engineer of any problems involving stormwater management systems.

A rain storm shall be defined as all or one of the following:

- Any storm in which rain is predicted to last for twelve consecutive hours or more.
- Any storm for which a flash flood watch or warning is issued.
- Any single storm predicted to have a cumulative rainfall of greater than one-half inch.
- Any storm not meeting the previous three thresholds but which would mark a third consecutive day of measurable rainfall.

The Contractor shall also inspect the erosion control and stormwater management systems at times of significant increase in surface water runoff due to rapid thawing when the risk of failure of erosion control measures is significant.

In such instances as remedial action is necessary, the Contractor shall repair any and all significant deficiencies in erosion control systems within two days.

The Contractor shall remove the sediment from behind the face of the sedimentation control barrier when the accumulated sediment has reached one-half of the original installed height of the barrier.

This project will require a NPDES General Permit for Stormwater Discharges from Construction Activities. The area of disturbance is greater than an acre.

Post-Construction

***Stormwater Management System Owner*:**

Sovereign Builders, Inc.
710 Southampton Road
Westfield, MA 01085
Phone: (413) 527-8001
Email: tcellura@sovereignbuilders.com

Party Responsible for Operation & Maintenance:

Sovereign Builders, Inc.
710 Southampton Road
Westfield, MA 01085
Phone: (413) 527-8001
Email: tcellura@sovereignbuilders.com

Contacts for Cleaning out Drainage Structures and Systems:

JR Sweeping
Bridget T. Burris, Office Manager
J. R. Sweeping Service, LLC
28 Moylan Lane
Agawam, MA 01001
Tel: 413-786-2168
Fax: 413-789-3738
jrsweeping@aol.com

REWC Land Management
Rob Collins
695 East Street
Dalton, MA 01226
Tel: 413-822-2622
robert@rewcinc.com

Inspection & Maintenance Schedule:

1) Subsurface Infiltration System – StormBrixx®

This Subsurface Infiltration System – StormBrixx® will be located at the east end of the proposed parking lot expansion as shown on the plans.

Maintenance Requirements

A. ACO recommends that the system be inspected at least twice a year, and during the first year after significant storm events.
B. For additional maintenance requirements of the Manufacturer of this system, see Attachment #1.

2) Stormwater Treatment Chamber

The Stormwater Treatment Chambers, Barracuda Max, Model S4 water quality structure will be located just prior to the two subsurface infiltration systems. See Attachment #2 for the operation and maintenance requirements of the Manufacturer of this structure. The results of inspecting this structure and actions to be taken shall be recorded in the attached Stormwater Management System Inspection & Maintenance Log.

3) Catch Basins

Structures shall be inspected at least four times per year and cleaned annually, or more frequently if required. Oil and sediments shall be removed and disposed of in accordance with local, state and federal guidelines and regulations. In the case of an oil or bulk pollutant release, the system must be cleaned immediately following the spill and the proper authorities notified. After the first two years, cleaning frequency may be reduced based on sediment buildup rate. Basins shall be cleaned anytime 6” or more sediment has been collected.

4) Level Spreader

The level spreader shall be inspected once per month and after any rainfall greater than one inch during the first year of operation, and four times per year thereafter. Inspections shall identify any damage to the level spreader, low spots and signs of erosion at or near the level spreader, which shall be repaired immediately.

5) Roof Leaders

Gutters, downspouts, and cleanout locations shall be inspected twice per year through visual inspection of the gutters and downspout discharge locations. The cleanouts on site shall be opened and visually inspected for debris or deficiencies that require maintenance to maintain clear drainage for the roof runoff.

SOVEREIGN BUILDERS, INC.- RESIDENTIAL DEVELOPMENT – 8 VIEW AVE, NORTHAMPTON
STORMWATER MANAGEMENT SYSTEM
INSPECTION & MAINTENANCE LOG

REQUIRED MAINTENANCE ACTIVITIES

ACO STORMBRIXX® - 2 STRUCTURES (In 1st year, inspect after every major rainfall event in addition to every 6 month period)

- Remove the StormBrixx® cover to inspect depth of sediment.
- If water is present, vacuum the water first before visually inspecting the tank.
- Maintenance is required if sediment and debris accumulation is 6" or more.
- Use high pressure jet nozzle/wand to loosen and suspend any solid debris.
- Shut off water when level reaches 12".
- Insert vacuum hose and remove suspended debris until all water removed. Repeat if sediment or debris still present.
- Dispose of sediment and debris by a licensed waste management company in accordance with local, state and federal regulations.

Task	Initials	Inspection & Maintenance Log - SAMPLE		
Inspection Date:		*mm/dd/yy*	*mm/dd/yy*	*mm/dd/yy*
Depth of Sediment:	*ABC*	***6"***	*3"*	*5"*
Action Taken:		*Clean*	*No Action*	*No Action*
Inspection Date:				
Depth of Sediment:				
Action Taken:				
Inspection Date:				
Depth of Sediment:				
Action Taken:				
Inspection Date:				
Depth of Sediment:				
Action Taken:				

**See attached plan for StormBrixx location.*

SOVEREIGN BUILDERS, INC.- RESIDENTIAL DEVELOPMENT – 8 VIEW AVE, NORTHAMPTON
STORMWATER MANAGEMENT SYSTEM
INSPECTION & MAINTENANCE LOG

REQUIRED MAINTENANCE ACTIVITIES

ADS BARRACUDA MAX, MODEL S4 – 2 STRUCTURES (Once a year, and as needed if sediment fills more quickly)

- Remove the Treatment Chamber cover to inspect depth of sediment and depth of hydrocarbons.
- Use rod or tape measure to measure distance from the sediment at the bottom of the basin to the outlet pipe (should be the same as the water level).
- The maximum sediment depth is 8". When the depth of sediment reaches 6" or more, call service contractor to clean basin.
- Clean when hydrocarbons reach 1" in depth (D-hyd) or immediately after an oil or fuel spill., they should be pumped and disposed of by a licensed waste management company in accordance with local, state and federal guidelines.

Inspection & Maintenance Log

Task	**Initials**	**SAMPLE**		
Inspection Date:		*mm/dd/yy*	*mm/dd/yy*	*mm/dd/yy*
D-sed / D-hyd:	*ABC*	***6"** / 0.5"*	*3" / 0.75"*	*5" / **1.5"***
Action Taken:		*Clean*	*No Action*	*Clean*
Inspection Date:				
D-sed / D-hyd:				
Action Taken:				
Inspection Date:				
D-sed / D-hyd:				
Action Taken:				
Inspection Date:				
D-sed / D-hyd:				
Action Taken:				

**See attached plan for Barracuda locations.*

SOVEREIGN BUILDERS, INC.- RESIDENTIAL DEVELOPMENT – 8 VIEW AVE, NORTHAMPTON
STORMWATER MANAGEMENT SYSTEM
INSPECTION & MAINTENANCE LOG

REQUIRED MAINTENANCE ACTIVITIES

CATCH BASINS – 2 STRUCTURES (Inspect four times per year, clean annually)

- Use rod or tape measure to measure distance from the sediment at the bottom of the basin to the outlet pipe (should be the same as the water level).
- The maximum sediment depth is 6". When the depth of sediment reaches 6" or more, call service contractor to clean basins.
- Clean immediately after an oil or fuel spill.
- Clean annually the first two years. After that clean at least every 2 years and any time sediment depth is 6" or more.

Inspection & Maintenance Log

Task	**Initials**	**SAMPLE**		
Inspection Date:		*mm/dd/yy*	*mm/dd/yy*	*mm/dd/yy*
Sediment:	*ABC*	***6"***	*3"*	*5"*
Action Taken:		*Clean*	*No Action*	*No Action*
Inspection Date:				
Sediment:				
Action Taken:				
Inspection Date:				
Sediment:				
Action Taken:				
Inspection Date:				
Sediment:				
Action Taken:				

**See attached plan for Catch Basin locations.*

SOVEREIGN BUILDERS, INC.- RESIDENTIAL DEVELOPMENT – 8 VIEW AVE, NORTHAMPTON
STORMWATER MANAGEMENT SYSTEM
INSPECTION & MAINTENANCE LOG

REQUIRED MAINTENANCE ACTIVITIES

LEVEL SPREADERS – 2 LOCATIONS (Inspect four times per year)

- Inspect level spreaders for physical damage or signs of erosion in or around level spreader.
- Repair any damage or erosion as necessary

Inspection & Maintenance Log

Task	**Initials**	**SAMPLE**		
Inspection Date:		*mm/dd/yy*	*mm/dd/yy*	*mm/dd/yy*
Condition:	*ABC*	*Good*	*Good*	*Erosion on North Side*
Action Taken:		*Clean*	*No Action*	*Repaired by Landscaper, LLC*
Inspection Date:				
Sediment:				
Action Taken:				
Inspection Date:				
Sediment:				
Action Taken:				
Inspection Date:				
Sediment:				
Action Taken:				

**See attached plan for Level Spreader locations.*

SOVEREIGN BUILDERS, INC.- RESIDENTIAL DEVELOPMENT – 8 VIEW AVE, NORTHAMPTON
STORMWATER MANAGEMENT SYSTEM
INSPECTION & MAINTENANCE LOG

REQUIRED MAINTENANCE ACTIVITIES

ROOF DRAINAGE SYSTEM CLEANOUTS – (Inspect TWO times per year)

- Inspect cleanouts physical damage or signs of clogging or debris inside the port.
- Repair any damage or remove debris as necessary.

Inspection & Maintenance Log

Task	**Initials**	**SAMPLE**		
Inspection Date:		*mm/dd/yy*	*mm/dd/yy*	*mm/dd/yy*
Condition:	*ABC*	*Good*	*Good*	*Erosion on North Side*
Action Taken:		*Clean*	*No Action*	*Repaired by Landscaper, LLC*
Inspection Date:				
Sediment:				
Action Taken:				
Inspection Date:				
Sediment:				
Action Taken:				
Inspection Date:				
Sediment:				
Action Taken:				

**See attached plan for Roof Leader Cleanout locations.*