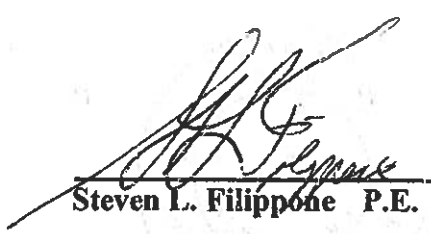
MAINTENANCE & INSPECTION PROGRAM
FOR
BLOCK 260, LOTS 4.04 & 4.05
DENNIS TOWNSHIP
CAPE MAY COUNTY, NJ

EDA #9444



12-13-2022

Steven L. Filippone P.E. **Date**
N.J.P.E. #29230

SCHEDULE A

MAINTENANCE AND INSPECTION PROGRAM
WET POND #1

Applicant/Owner:
Matt Ryan
Ryan Development Group
3283 Dune Drive
Avalon, NJ 08202
410-371-3122

RESPONSIBILITY

It shall be the responsibility of the current applicant/owner to maintain and inspect the proposed stormwater basins. Responsibility for the maintenance and inspection of the stormwater basins shall be clarified in the property deeds.

A. General Maintenance –

Wet Pond #1	Wet Pond #2
Block 260, Lots 4.04 & 4.05	Block 260, Lots 4.04 & 4.05
Easting (x) 416437	Easting (x) 416272
Northing (y) 117467	Northing (y) 117610

All basin components expected to receive and/or trap debris and sediment must be inspected for clogging and excessive debris and sediment accumulation at least four times annually, as well as after every storm exceeding one (1) inch of rainfall. Such components may include bottoms, riprap or gabion aprons, and inflow points. This applies to all basins.

Sediment removal should take place when the basin is thoroughly dry, basin will need to be pumped (Note; a permit may be required before discharging pond water. Contact NJDEP Division of Land use Regulation before discharge). Disposal of debris, trash, sediment, and other waste material should be done at suitable disposal/recycling sites and in compliance with all applicable local, state and federal waste regulations.

B. Vegetated Areas

Mowing and/or trimming of vegetation must be performed on a regular schedule based on specific site conditions. Grass should be mowed at least once a month during the growing season. Vegetated areas must also be inspected at least annually for erosion and scour. The structure must be inspected for unwanted tree growth at least once a year.

When establishing or restoring vegetation, bi-weekly inspections of vegetation health should be performed during the first growing season or until the vegetation is established. Once established, inspections of vegetation health, density and diversity should be performed at least twice annually during both the growing and non-growing season. If vegetation has greater than 50 percent damage, the area should be

reestablished in accordance with the original specifications and the inspection requirement presented above.

All use of fertilizers, mechanical treatments, pesticides and other means to assure optimum vegetation health must not compromise the intended purpose of the infiltration basin. All vegetation deficiencies should be addressed without the use of fertilizers and pesticides whenever possible.

All vegetated areas should be inspected at least annually for unwanted growth, which should be removed with minimum disruption to the remaining vegetation and basin subsoil.

C. Structural Components

All structural components must be inspected for cracking, subsidence, spalling, erosion and deterioration at least annually.

D. Stormwater Inlets and Manholes – NONE EXIST ON SITE

All stormwater inlets and stormwater manholes shall be inspected annually for accumulated sediment, trash and debris. Inlets and manholes shall also be inspected for any damage and structural deterioration. All sediment, trash and debris shall be removed from the structures. Any damaged inlets and manholes shall be repaired in kind. Any structures that cannot be repaired shall be removed and replaced.

E. Other Maintenance Criteria

The bottom layer in a surface basin should be inspected at least biannually as well as after every storm exceeding one (1) inch of rainfall. The permeability rate of the soil below the basin may also be retested periodically. If the water fails to infiltrate 72 hours after the end of the storm, corrective measures must be taken. Annual tilling by light equipment can assist in maintaining infiltration capacity and break up clogged surfaces.

SCHEDULE OF REGULAR INSPECTION AND TASKS

Frequency	Preventative Maintenance Actions	BMP
Monthly	Vegetation mowing and removal in growing season	Wet Pond 1 & 2
Quarterly	Quarterly inspection (Sediment removal, depending on the type of measure)	Wet Pond 1 & 2
Semiannual	Sediment removal & cleaning of any structures and basin bottom. Inspection of health of any landscaping around basin	Wet Pond 1 & 2
Annual	Basin Structural Inspection, erosion and vegetative cover inspection and any pumps should be inspected.	Wet Pond 1 & 2
Biennial	Sand layer replacement for sand filter and infiltration basin only	Wet Pond 1 & 2
Unscheduled	Quick inspection after every 1" rain	Wet Pond 1 & 2

COST ESTIMATE OF MAINTENANCE TASKS	
Mowing of Grass	$1000.00 Annually
Drain & reestablish basin bottom	$1,000.00
Sediment, trash and debris removal	$500.00
Inspection by Engineer	$750.00
Total Cost per Year	$3,250.00

The responsible party shall be required to keep detailed logs of all preventative and corrective maintenance performed at the stormwater management measure.

Maintenance Equipment Required:

- Mowing of Grass - Lawn mower, gasoline
- Tilling of Bottom - Light mechanical tilling
  Equipment gasoline
  Pump and Discharge
  Permit to discharge if required

F. Recommended Corrective Response to Sedimentation of Basin Bottom

Upon sedimentation of basin bottom, all water shall be removed from the basin by way of mechanical pump. This water shall be discharged at outfall structure. Sediment removal should take place when the basin is thoroughly dry. Removal shall be accomplished with light mechanical equipment to minimize compaction of the soil. All sediment shall be disposed in compliance with all applicable local, state and federal regulations. A new vegetative layer shall be installed on the basin bottom using light mechanical equipment.

Originals or copies of manufactured warranties on pertinent measure components shall be included in the Maintenance Plan.

As-Built construction plans of the stormwater management measure and copies of pertinent construction documents such as laboratory test results, permits and completion certificates shall be included in the maintenance plan.

G. Required Maintenance Plan Procedures

Once the Maintenance Plan is completed, the NJDEP Stormwater Management Rules require that the following procedures be followed:

1. Copies of the maintenance plan must be provided to the owner and operator of the stormwater management measure. Copies must also be submitted to all reviewing agencies as part of each agency's approval process. In addition, a copy should be provided to the local mosquito control or extermination commission upon request.

2. The title and date of the Maintenance Plan and the name, address and telephone number of the person with stormwater management measure maintenance responsibility as specified in the plan must be recorded on the deed of the property on which the measure is located. Any change in this information due, for example to a change in property ownership, must also be recorded on the deed.

3. The person with maintenance responsibility must evaluate the Maintenance Plan for effectiveness at least annually and revise as necessary.

4. A detailed, written log of all preventative and corrective maintenance performed at the stormwater management measure must be kept, including a record of all inspections and copies of maintenance-related work orders.

5. The person with maintenance responsibility must retain and, upon request, make available the maintenance plan and associated logs, and other records for review by a public entity with administrative, health, environmental or safety authority over the site. An Inspection, Maintenance and Repair Report shall be submitted to Dennis Township annually.

Long-Term Maintenance

In order to ensure proper function of all basins, every 5 years, each basin bottom shall be scarified to a depth of 6" to remove sediments and silts. Then vegetative material must be added to the basin bottom.

A 10-Year inspection/maintenance program shall consist of the following:

- Annual visual inspection of outlet structures and basins.
- Mowing of the grass regularly to ensure the aesthetic quality of the site.
- Fertilizing and liming bi-annually.
- Every five (5) years, each basin shall be scarified to a depth of 6" to remove sediments and silts.
- A bond in the form of two (2) year maintenance guarantee shall be required to ensure proper maintenance of the proposed basin. The amount of the guarantee shall be approved by the Dennis Township.

Permanent financing of the inspection, maintenance and repair of stormwater BMP's shall be accomplished by:

a) The assumption of the inspection and maintenance program by a municipality, county, public utility or homeowner's association.

b) The required payment of fees to a municipal stormwater fund in an amount equivalent to the cost of both on-going maintenance activities and necessary structural replacements. The fee schedule is attached

c) Other suitable method approved by the municipality.

Basin #: Wet Pond #1
Block 260, Lot 4.04 & 4.05
E: 416437 N: 117467

Inspection Checklist / Maintenance Actions
Wet Pond

Type of Inspection / Last Rain Depth. _____ Inspection Date: _____

Note: If emptying the pond is required before sediment removal, it shall be noted that a permit may be required before discharging the pond water. Contact NJDEP Division of Land Use Regulation before discharge

	For Inspector			For Maintenance Crew
Component No. Component Name	**Inspection Item and Inspection Item No.**		**Result**	**Preventative / Corrective Maintenance Actions**
A Pond Area	1	The water level in the pond is below the design water surface elevation	Y__ N__	Check for: *Changes in inflow *patterns (less runoff, *lower groundwater table) *Damages to the outlet structure *Damages to the liner (if applicable) Repair any structural damages
	2	Islands or shallow marsh emerging out of the pond	Y__ N__	Check whether there is excessive sediment in the pond Check whether the incoming flow has excessive sediment Find the source of excessive sediment and method to reduce the source Remove excessive sediment
	3	The observed detention time is longer than the design detention time. The observed detention time is approximately 30 hours (72 hrs max)	Y__ N__	Check whether the outlets are clogged, see section E-Outlet of this checklist

Basin #: Wet Pond #1
Block 260, Lot 4.04 & 4.05
E: 416437 N: 117467

Component No. Component Name	For Inspector			For Maintenance Crew
	Inspection Item and Inspection Item No.		Result	Preventative / Corrective Maintenance Actions
A Pond Area	4	Debris or trash floating on the water	Y__ N__	Remove debris and trash If trash and debris are excessive, find the source and the method to reduce the source.
	5	Excessive dead vegetation in the pond	Y__ N__	Clear and remove vegetation
	6	Mosquito breeding	Y__ N__	Aerate or circulate the pond Remove dead vegetation Consult local mosquito commission for guidance
	7	Presence of domestic waterfowl and wildlife	Y__ N__	Minimize mowing at the perimeter of the pong with a no-mow fringe to keep waterfowl from accessing the pond Contact NJDEP - Division of Fish and Wildlife for guidance and permits to capture and release
A Pond Area	8	Erosion on pond side	Y__ N__	Check whether the surrounding area has uncontrolled drainage into the pond Install an energy dissipater to slow down the incoming flow (e.g. deep-rooted riparian vegetation or bioengineering method) Check if the liner is damaged (if a liner is installed)
B Vegetation	1	Invasive plants are present	Y__ N__	Remove the invasive plants and restore the vegetation in accordance with the landscaping plan
	2	Algae blooming	Y__ N__	Remove algae Aerate the pond Find the nutrient source and the solution to reduce the nutrient loading

Basin #: Wet Pond #1
Block 260, Lot 4.04 & 4.05
E: 416437 N: 117467

	For Inspector			For Maintenance Crew
Component No. Component Name	**Inspection Item and Inspection Item No.**		**Result**	**Preventative / Corrective Maintenance Actions**
C Pond Embankment and Side Slopes	1	Signs of erosion, soil slide or bulges, seeps and wet spots, loss of vegetation, or erosion on the basin slope	Y__ N__	Check for excessive overland runoff flow through the embankment. Check for any sink hole development Direct the overland runoff to the forebay or pretreatment area Restabilize the bank
D Outlet (Low points at front of basin)	1	Trash or debris accumulation more than 20%	Y__ N__	Clean and remove Determine source of trash and address to reduce future maintenance costs or basin failure
E Miscellaneous	1	Fence: broken or eroded parts	Y__ N__	Repair or replace
	2	Gate: missing gate or lock	Y__ N__	Repair or replace
	3	Sign/plate: tiled, missing, or faded	Y__ N__	Repair or replace
	4	Excessive or overgrown vegetation blocking access to the basin	Y__ N__	Clear, trim, or prune the vegetation to allow access for inspection and maintenance

Follow Up Items (Component No. / Inspection Item No.)[i.e. B2]:

_____

_____ _____ _____
Inspector Name **Signature** **Date**

Report issues to the local authority and mosquito commission as required by local ordinances and regulatory authorities.
File this checklist in the Maintenance Log after performing maintenance.

Basin #: Wet Pond #1
Block 260, Lot 4.04 & 4.05
E: 416437 N: 117467

Preventative Maintenance Record

Work Logs

Activities	Components	Date Completed
Sediment/debris removal **Sediment removal should take place when the basin is thoroughly dry.**	A – Pond Area	
	C – Pond Embankment and Side Slopes	
	D – Outlet	
Vegetation removal	A – Pond Area	
	C – Pond Embankment and Side Slopes	
	D – Outlet	
	E – Emergency Spillway	

Vegetation is removed by _____ (type of equipment) with minimum disruption to the remaining vegetation.

Crew member:_____/_____ **Date:** _____
(name/ signature)

Supervisor:_____/_____ **Date:** _____

A permit may be required to discharge when emptying the pond. Contact NJDEP Division of Land Use Regulation before discharging.
File this Preventative Maintenance Record in the Maintenance Log after performing maintenance

Basin #: Wet Pond #1
Block 260, Lot 4.04 & 4.05
E: 416437 N: 117467

Corrective Maintenance Record

1. **Date Issued** _____

2. **Issues to be resolved:**

_____
_____
_____

3. **Required Actions**

Actions	Planned Date	Date Completed

4. **Responsible person(s):**

_____

5. **Special requirements**
   - Time of the season or weather condition:_____
   - Tools/equipment:_____
   - Subcontractor (name or specific type):_____

Approved by _____/_____ **Date** _____
(name/signature)

Verification of completion by _____/_____ **Date** _____
(name/signature)

File this Corrective Maintenance Record in the Maintenance Log after performing maintenance

Basin #: Wet Pond #2
Block 260, Lot 4.04 & 4.05
E: 416272 N: 117610

Inspection Checklist / Maintenance Actions
Wet Pond

Type of Inspection / Last Rain Depth. _____ Inspection Date: _____

Note: If emptying the pond is required before sediment removal, it shall be noted that a permit may be required before discharging the pond water. Contact NJDEP Division of Land Use Regulation before discharge

	For Inspector			For Maintenance Crew
Component No. Component Name	**Inspection Item and Inspection Item No.**		**Result**	**Preventative / Corrective Maintenance Actions**
A Pond Area	1	The water level in the pond is below the design water surface elevation	Y__ N__	Check for: *Changes in inflow *patterns (less runoff, *lower groundwater table) *Damages to the outlet structure *Damages to the liner (if applicable) Repair any structural damages
	2	Islands or shallow marsh emerging out of the pond	Y__ N__	Check whether there is excessive sediment in the pond Check whether the incoming flow has excessive sediment Find the source of excessive sediment and method to reduce the source Remove excessive sediment
	3	The observed detention time is longer than the design detention time. The observed detention time is approximately 30 hours (72 hrs max)	Y__ N__	Check whether the outlets are clogged, see section E-Outlet of this checklist

Basin #: Wet Pond #2
Block 260, Lot 4.04 & 4.05
E: 416272 N: 117610

	For Inspector			For Maintenance Crew
Component No. Component Name	**Inspection Item and Inspection Item No.**		**Resu lt**	**Preventative / Corrective Maintenance Actions**
A Pond Area	4	Debris or trash floating on the water	Y__ N__	Remove debris and trash If trash and debris are excessive, find the source and the method to reduce the source.
	5	Excessive dead vegetation in the pond	Y__ N__	Clear and remove vegetation
	6	Mosquito breeding	Y__ N__	Aerate or circulate the pond Remove dead vegetation Consult local mosquito commission for guidance
	7	Presence of domestic waterfowl and wildlife	Y__ N__	Minimize mowing at the perimeter of the pong with a no-mow fringe to keep waterfowl from accessing the pond Contact NJDEP - Division of Fish and Wildlife for guidance and permits to capture and release
A Pond Area	8	Erosion on pond side	Y__ N__	Check whether the surrounding area has uncontrolled drainage into the pond Install an energy dissipater to slow down the incoming flow (e.g. deep-rooted riparian vegetation or bioengineering method) Check if the liner is damaged (if a liner is installed)
B Vegetation	1	Invasive plants are present	Y__ N__	Remove the invasive plants and restore the vegetation in accordance with the landscaping plan
	2	Algae blooming	Y__ N__	Remove algae Aerate the pond Find the nutrient source and the solution to reduce the nutrient loading

Basin #: Wet Pond #2
Block 260, Lot 4.04 & 4.05
E: 416272 N: 117610

	For Inspector			For Maintenance Crew
Component No. Component Name	**Inspection Item and Inspection Item No.**		**Result**	**Preventative / Corrective Maintenance Actions**
C Pond Embankment and Side Slopes	1	Signs of erosion, soil slide or bulges, seeps and wet spots, loss of vegetation, or erosion on the basin slope	Y__ N__	Check for excessive overland runoff flow through the embankment. Check for any sink hole development Direct the overland runoff to the forebay or pretreatment area Restabilize the bank
D Outlet (Low points at front of basin)	1	Trash or debris accumulation more than 20%	Y__ N__	Clean and remove Determine source of trash and address to reduce future maintenance costs or basin failure
E Miscellaneous	1	Fence: broken or eroded parts	Y__ N__	Repair or replace
	2	Gate: missing gate or lock	Y__ N__	Repair or replace
	3	Sign/plate: tiled, missing, or faded	Y__ N__	Repair or replace
	4	Excessive or overgrown vegetation blocking access to the basin	Y__ N__	Clear, trim, or prune the vegetation to allow access for inspection and maintenance

Follow Up Items (Component No. / Inspection Item No.)[i.e. B2]:

_____

_____ _____ _____

Inspector Name **Signature** **Date**

Report issues to the local authority and mosquito commission as required by local ordinances and regulatory authorities.
File this checklist in the Maintenance Log after performing maintenance.

Basin #: Wet Pond #2
Block 260, Lot 4.04 & 4.05
E: 416272 N: 117610

Preventative Maintenance Record

Work Logs

Activities	Components	Date Completed
Sediment/debris removal **Sediment removal should take place when the basin is thoroughly dry.**	A – Pond Area	
	C – Pond Embankment and Side Slopes	
	D – Outlet	
Vegetation removal	A – Pond Area	
	C – Pond Embankment and Side Slopes	
	D – Outlet	
	E – Emergency Spillway	

Vegetation is removed by _____ (type of equipment) with minimum disruption to the remaining vegetation.

Crew member:_____/_____ **Date:** _____
(name/ signature)

Supervisor:_____/_____ **Date:** _____

A permit may be required to discharge when emptying the pond. Contact NJDEP Division of Land Use Regulation before discharging.
File this Preventative Maintenance Record in the Maintenance Log after performing maintenance

Basin #: Wet Pond #2
Block 260, Lot 4.04 & 4.05
E: 416272 N: 117610

Corrective Maintenance Record

1. **Date Issued** _____

2. **Issues to be resolved**:

_____
_____
_____

3. **Required Actions**

Actions	Planned Date	Date Completed

4. **Responsible person(s):**

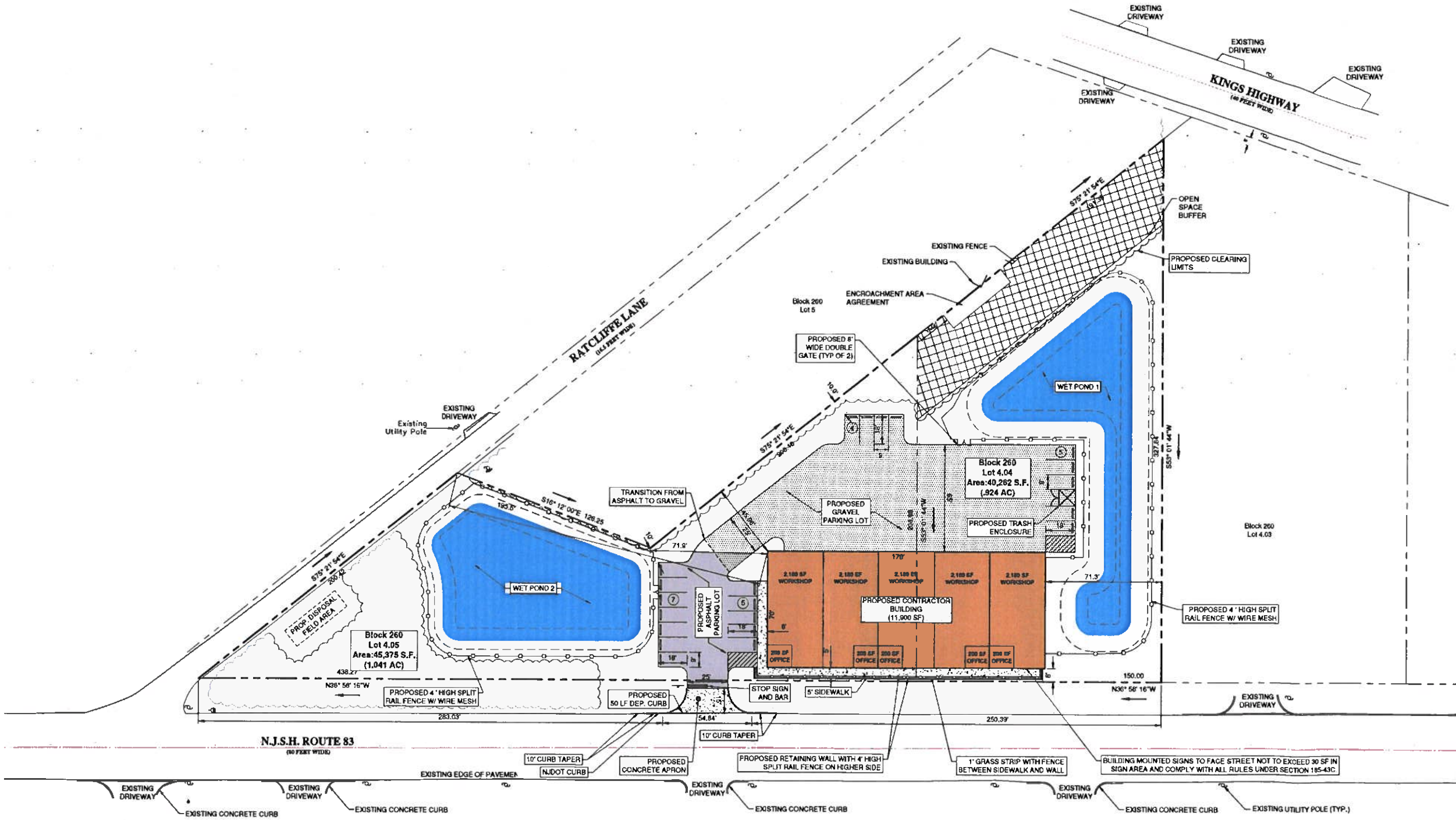
_____

5. **Special requirements**
   - Time of the season or weather condition:_____
   - Tools/equipment:_____
   - Subcontractor (name or specific type):_____

Approved by _____/_____ **Date** _____
(name/signature)

Verification of completion by _____/_____ **Date** _____
(name/signature)

File this Corrective Maintenance Record in the Maintenance Log after performing maintenance



GRAPHIC SCALE

(IN FEET)
1 inch = 30 ft.

MAJOR SITE PLAN

EDA Engineers - Landscape Architects - Planners

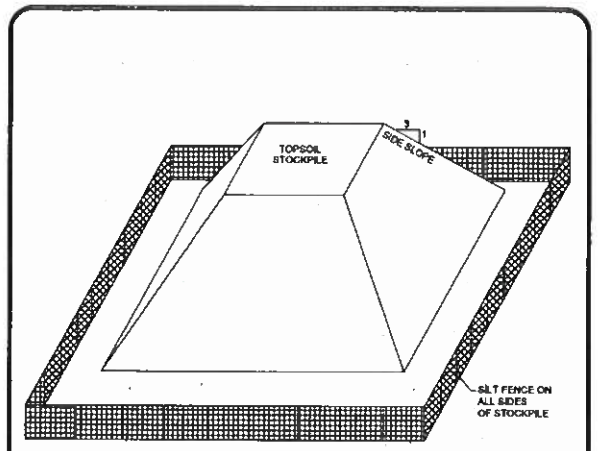
EDA Engineering Design Associates, P.A.
Engineers Environmental Planners Landscape Architects
CAMBRIDGE PROFESSIONAL OFFICES
5 Cambridge Drive Ocean View New Jersey 08230
(609) 390-0232 • Fax (609) 390-9204 • www.engineeringdesign.com • CERTIFICATE OF AUTHORIZATION# 24GA27970300

MAJOR SITE PLAN
BLOCK 260, LOT 4.04 & 4.05
DENNIS TOWNSHIP
CAPE MAY COUNTY, NEW JERSEY

STEVEN L. FILIPPONE
PROFESSIONAL ENGINEER
N.J.P.E. LIC. #29230

REVISION	DATE	BY

DATE: 11/30/22	DRAWN BY: MSB
SCALE: 1" = 30'	CHECKED BY: SLF
PROJECT #: 9444	SHEET: 3 OF 8



TOPSOIL STOCKPILE DETAIL N.T.S.

Soil Re-compaction and Testing Requirements

Soil Compaction Testing Requirements

1. Subgrade soils prior to the application of topsoil (see permanent seeding and stabilization notes for topsoil requirements) shall be free of excessive compaction to a depth of 6.0 inches (a minimum) to the establishment of permanent vegetative cover.

2. Areas of the site which are subject to compaction testing and/or mitigation are graphically denoted on the certified soil erosion control plan.

3. Compaction testing locations are denoted on the plan. A copy of the plan or portion of the plan shall be used to mark locations of tests, and attached to the compaction remediation form, available from the local soil conservation district. This form must be filled out and submitted prior to receiving a certificate of compliance from the district.

4. In the event that testing indicates compaction in excess of the maximum thresholds indicated for the simplified testing methods (see details below), the contractor/owner shall have the option to perform either (1) compaction mitigation over the entire mitigation area denoted on the plan (excluding exempt areas), or (2) perform additional, more detailed testing to establish the limits of excessive compaction whereupon only the excessively compacted areas would require compaction mitigation. Additional detailed testing shall be performed by a trained, licensed professional.

Compaction Testing Methods

A. Probing Wire Test (see detail)
B. Hand-held Penetrometer Test (see detail)
C. Tube Bulk Density Test (licensed professional engineer required)
D. Nuclear Density Test (licensed professional engineer required)

Note: Additional testing methods which conform to ASTM standards and specifications, and which produce a dry weight, soil bulk density measurement may be allowed subject to District approval.

Soil compaction testing is not required if/when subsoil compaction remediation (scarification/tillage [6" minimum depth] or similar) is proposed as part of the sequence of construction.

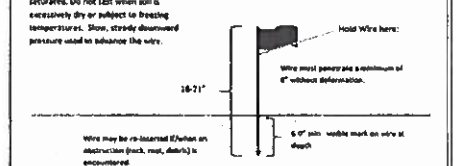
Procedures for Soil Compaction Mitigation

Procedures shall be used to mitigate excessive soil compaction prior to placement of topsoil and establishment of permanent vegetative cover.

Penetration of compacted soils shall be through deep scarification/tillage (6" minimum depth) where there is no danger to underground utilities (cables, irrigation systems, etc.). In the alternative, another method as specified by a New Jersey Licensed Professional Engineer maybe substituted subject to District Approval.

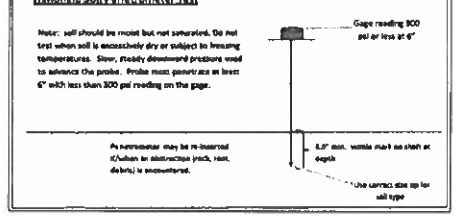
Probing Wire Test- .15 ga steel wire (survey flag)

Note: soil should be moist but not saturated. Do not test when soil is excessively dry or subject to freezing temperatures. Slow, steady downward pressure used to advance the wire.



Handheld Soil Penetrometer Test

Note: soil should be moist but not saturated. Do not test when soil is excessively dry or subject to freezing temperatures. Slow, steady downward pressure used to advance the probe. Probe must penetrate at least 6" with less than 300 psi reading on the gage.



NOTE:

1. SOIL COMPACTION AREA = 0.26 ACES, 2 SOIL COMPACTION TESTS

GRADING, DRAINAGE & SESC PLAN

GRAPHIC SCALE
30 0 15 30 60 120
(IN FEET)
1 inch = 30 ft.

EDA Engineering Design Associates, P.A.
Engineers Environmental Planners Landscape Architects
CAMBRIDGE PROFESSIONAL OFFICES
6 Cardinal Drive, Suite 1 West Berlin, New Jersey 08091
(609) 390-0322 • Fax (609) 390-0204 • www.engineeringdesign.com • CERTIFICATE OF AUTHORIZATION# 24GA27918600

GRADING, DRAINAGE & SESC PLAN
BLOCK 260, LOT 4.04 & 4.05
DENNIS TOWNSHIP
CAPE MAY COUNTY, NEW JERSEY

STEVEN L. FILIPPONE
PROFESSIONAL ENGINEER
N.J.P.E. LIC. #29230

REVISION	DATE	BY

DATE: 11/30/22	DRAWN BY: MSB
SCALE: 1" = 30'	CHECKED BY: SLF
PROJECT #: 9444	SHEET: 4 OF 6