

LOW IMPACT DEVELOPMENT CHECKLIST

A checklist for identifying nonstructural stormwater management strategies incorporated into proposed land development.

Municipality: Township of Lawrence

County: Mercer County Date: 10/9/20

Review board or agency: Township of Lawrence Zoning Board of Adjustment

Proposed land development name: Proposed Residential Development

Lot(s): 3, 60-66 & 68 Block(s): 2001

Project or application number: 1279-99-010

Applicant's name: RPM Development, LLC

Applicant's address: 77 Park Street
Montclair, NJ 07042

Telephone: _____ Fax: _____

Email address: kkavanaugh@rpmdev.com

Designer's name: Thomas J. Muller PE, PP
Dynamic Engineering Consultants, PC

Designer's address: 1904 Main Street
Lake Como, NJ 07719

Telephone: (732) 974-0198 Fax: (732) 974-5321

Email address: tmuller@dynamiccec.com

Part 1: Description of Nonstructural Approach to Site Design

In narrative form, provide an overall description of the nonstructural stormwater management approach and strategies incorporated into the proposed site's design. Attach additional pages as necessary. Details of each nonstructural strategy are provided in Part 3 below.

The proposed development will minimize impacts to the existing pervious areas to the maximum extent possible. The proposed development provides landscaped areas to provide pervious coverage. The impervious coverage has been minimized as much as possible to meet the intent of the design. The development was designed with consideration to the existing drainage patterns and to ensure the preservation of existing natural features to maximum extent practical. During construction, existing natural features will be protected by silt fences, tree protection fences, and haybale sediment barriers. The decrease in the time of concentration has been minimized by maintaining existing overland flow slopes to the maximum extent practical. The time to peak for stormwater exiting the site is increased under proposed conditions. The project has been designed to minimize land disturbance to the maximum extent practicable by limiting disturbance in areas that are generally currently disturbed. Land outside of the proposed limit of disturbance and limit of clearing will be protected during construction by silt fences. Soil compaction is to occur within the footprint area of the proposed development including the areas beneath the proposed parking lot areas. The remaining areas outside of the limit of disturbance (LOD) will remain undisturbed and in a natural condition. Landscaped areas will be graded with lightweight construction equipment in order to avoid unnecessary soil compaction. All exposed areas will be stabilized with temporary and/or permanent seeding or mulch upon completion of construction. The proposed landscaping design has been prepared to provide an aesthetic improvement to the interior and perimeter of the site through use of native species and other low maintenance vegetation.

Part 2: Review of Local Stormwater Management Regulations

Title and date of stormwater management regulations used in development design:

Stormwater Management Regulations N.J.A.C. 7:8, dated June 20, 2016

Do regulations include nonstructural requirements? Yes: X No:

If yes, briefly describe: Proposing minimal impervious coverage, minimizing land clearing and soil compaction, maximize the protection of natural features drainage and minimize the decrease in the pre-development time of concentration.

List LID-BMPs prohibited by local regulations:

Pre-design meeting held: Yes: Date: No:

Meeting held with:

Pre-design site walk held: Yes: X Date: 5/30/2019 No:

Site walk held with: Dynamic Survey, LLC

Other LID agencies with stormwater review jurisdiction:

Name: Township of Lawrence Zoning Board of Adjustment

Required approval: Preliminary and Final Major Site Plan and Subdivision Approval

Name: Mercer County Planning Department

Required approval: Site Plan and Subdivision Approval

Name: New Jersey Department of Transportation

Required approval: Subdivision Approval

Name: Delaware and Raritan Canal Commission

Required approval: DRCC Approval

Name: New Jersey Department of Environmental Protection

Required approval: Flood Hazard Area Verification, Freshwater Wetlands Letter of

Interpretation, Treatment Works Approval Permit, Bureau of Water System Engineering

Part 3: Nonstructural Strategies and LID-BMPs in Design

3.1 Vegetation and Landscaping

Effective management of both existing and proposed site vegetation can reduce a development's adverse impacts on groundwater recharges and runoff quality and quantity. This section of the checklist helps identify the vegetation and landscaping strategies and nonstructural LID-BMPs that have been incorporated into the proposed development's design to help maintain existing recharge rates and/or minimize or prevent increases in runoff quantity and pollutant loading.

- A. Has an inventory of existing site vegetation been performed? Yes: X No: _____
If yes, was this inventory a factor in the site's layout and design? Yes: X No: _____

- B. Does the site design utilize any of the following nonstructural LID-BMPs?

Preservation of natural areas? Yes: X No: _____ If yes, specify % of site: 7.9%
Native ground cover? Yes: X No: _____ If yes, specify % of site: 7.9%
Vegetated buffers? Yes: X No: _____ If yes, specify % of site: 7.9%

- C. Do the land development regulations require these nonstructural LID-BMPs?

Preservation of natural areas? Yes: _____ No: X If yes, specify % of site: _____
Native ground cover? Yes: _____ No: X If yes, specify % of site: _____
Vegetated buffers? Yes: _____ No: X If yes, specify % of site: _____

- D. If vegetated filter strips or buffers are utilized, specify their functions: N/A
- Reduce runoff volume increases through lower runoff coefficient: Yes: _____ No: _____
- Reduce runoff pollutant loads through runoff treatment: Yes: _____ No: _____
- Maintain groundwater recharge by preserving natural areas: Yes: _____ No: _____

3.2 Minimize Land Disturbance

Minimizing land disturbance is a nonstructural LID-BMP that can be applied during both the development's construction and post-construction phases. This section of the checklist helps identify those land disturbance strategies and nonstructural LID-BMPs that have been incorporated into the proposed development's design to minimize land disturbance and the resultant change in the site's hydrologic character.

- A. Have inventories of existing site soils and slopes been performed? Yes: X No: _____
- If yes, were these inventory a factor in the site's layout and design? Yes: X No: _____

- B. Does the development's design utilize any of the following nonstructural LIB-BMPs?

Restrict permanent site disturbance by land owners? Yes: _____ No: X

If yes, how:

Restrict temporary site disturbance during construction? Yes: X No: _____

If yes, how: Inlet protection, silt fences, tree protection fence, and stabilized construction entrances will be constructed to limit the construction activities to within the limit of disturbance area and to protect undeveloped areas.

Consider soils and slopes in selecting disturbance limits? Yes: X No: _____

If yes, how: The site development is designed to minimize disturbance to the surrounding areas including Texas Avenue and adjacent properties and incorporate open space areas into the design.

- C. Specify percentage of site to be cleared: 82.8% Regraded: 82.8%

- D. Specify percentage of cleared areas done so for buildings: 18.8% (32,117 SF)

For driveways and parking: 11.4% (19,437 SF) 5.6% (9,558 SF)

E. What design criteria and/or site changes would be required to reduce the percentages in C and D above?

Nothing. The access drives and parking areas provide the minimum required to address concerns regarding the traffic and pedestrian circulation and parking.

F. Specify site's hydrologic soil group (HSG) percentages:

HSG A: 0% HSG B: 0% HSG C/D: 0% HSG D: 100%

G. Specify percentage of each HSG that will be permanently disturbed:

HSG A: N/A HSG B: N/A HSG C: N/A HSG D: 100%

H. Locating site disturbance within areas with less permeable soils (HSG C and D) and minimizing disturbance within areas with greater permeable soils (HSG A and B) can help maintain groundwater recharge rates and reduce runoff volume increases. In light of the HSG percentages in F and G above, what other practical measures if any can be taken to achieve this?

I. Does the site include Karst topography? Yes: _____ No: X

If yes, discuss measures taken to limit Karst impacts:

3.3 Minimize Land Disturbance

New impervious surfaces at a development site can have the greatest adverse effect on groundwater recharge and stormwater quality and quantity. This section of the checklist helps identify those nonstructural strategies and LIB-BMPs that have been incorporated into a proposed development's design to comprehensively manage the extent and impacts of new impervious surfaces.

A. Specify impervious cover at site: Existing: 69% Proposed: Lot A: 74.4% Lot B: 44.4%

B. Specify maximum site impervious coverage allowed by regulations: HC Zone: 70% (lots < 5 Ac),
75% (lots > 5 Ac)
R-4 Zone: 50%

C. Compare proposed street cartway widths with those required by regulations:

Type of Street	Proposed Cartway Width (feet)	Required Cartway Width (feet)
Residential access – low intensity	N/A	
Residential access – medium intensity	N/A	
Residential access – high intensity with parking	N/A	
Residential access - high intensity without parking	N/A	
Neighborhood	N/A	
Minor collector – low intensity without parking	N/A	
Minor collector – with one parking lane	N/A	
Minor collector – with two parking lanes	N/A	
Minor collector – without parking	N/A	
Major collector	N/A	

D. Compare proposed parking space dimensions with those required by regulations:

Proposed: 9' x 18' Regulations: 9' x 18'

E. Compare proposed number of parking spaces with those required by regulations:

Proposed: 59 spaces on site, 43 spaces on shopping center property Regulations: 141

F. Specify percentage of total site impervious cover created by buildings: 18.8% (32,117 SF)

By driveways and parking: 17.0% (28,995 SF) By roadways: 0%

G. What design criteria and/or site changes would be required to reduce the percentages in F above?

Nothing. The access drives and parking areas provide the minimum required to address concerns regarding the traffic and pedestrian circulation and parking.

H. Specify percentage of total impervious area that will be unconnected:

Total site: 0% Buildings: 0% Driveways and parking: 0% Roads: 0%

I. Specify percentage of total impervious area that will be porous:

Total site: 0% Buildings: 0% Driveways and parking: 0% Roads: 0%

J. Specify percentage of building roof area that will be vegetated: 0%

K. Specify percentage of total parking area located beneath buildings: 0%

L. Specify percentage of total parking located within multi-level parking deck: 0%

3.4 Time of Concentration Modifications

Decreasing a site's time of concentration (Tc) can lead directly to increased site runoff rates which, in turn, can create new and/or aggravate existing erosion and flooding problems downstream. This section of the checklist helps identify those nonstructural strategies and LID-BMPs that have been incorporated into the proposed development's design to effectively minimize such Tc decreases.

When reviewing Tc modification strategies, it is important to remember that a drainage area's Tc should reflect the general conditions throughout the area. As a result, Tc modifications must generally be applied throughout a drainage area, not just along a specific Tc route.

A. Specify percentage of site's total stormwater conveyance system length that will be:

Storm sewer: 32.8% (966 SF) Vegetated swale: 4.81% (142 SF) Natural channel: _____

Stormwater management facility: 62.4% (1840 SF) Other: _____

Note: The total length of the stormwater conveyance system should be measured from the site's downstream property line to the downstream limit of sheet flow at the system's headwaters.

B. What design criteria and/or site changes would be required to reduce the storm sewer percentages and increase the vegetated swale and natural channel percentages in A above?

Nothing. An existing manmade drainage ditch is maintained downstream of the proposed underground detention basin. The proposed stormwater conveyance system provides the minimum required structures in order to meet the stormwater runoff requirements of N.J.A.C. 7:8 and the Township of Lawrence Ordinance.

C. In conveyance system subareas that have overland or sheet flow over impervious surfaces or turf grass, what practical and effective site changes can be made to:

Decrease overland flow slope: The overland flow slope within the proposed parking areas are minimized to the maximum extent practicable while providing enough pitch so that the stormwater runoff will be conveyed to the proposed stormwater management facilities.

Increase overland flow roughness: The overland flow roughness within the proposed drive aisles is minimized to the maximum extent practicable while providing enough pitch so that the stormwater runoff will be conveyed to the proposed inlets.

3.5 Preventive Source Controls

The most effective way to address water quality concerns is by pollution prevention. This section of the checklist helps identify those nonstructural strategies and LIB-BMPs that have been incorporated into the proposed development's design to reduce the exposure of pollutants to prevent their release into the stormwater runoff.

A. Trash Receptacles

Specify the number of trash receptacles provided: 1

Specify the spacing between the trash receptacles: N/A

Compare trash receptacles proposed with those required by regulations:

Proposed: 15' x 20' Regulations: N/S

B. Pet Waste Stations

Specify the number of pet waste stations provided: 1

Specify the spacing between the pet waste stations: N/A

Compare pet waste stations proposed with those required by regulations:

Proposed: 1 Regulations: N/S

C. Inlets, Trash Racks, and other Devices that Prevent Discharge of Large Trash and Debris

Specify percentage of total inlets that comply with the NJPDES storm drain inlet criteria: 100%

D. Maintenance

Specify the frequency of the following maintenance activities:

Street sweeping: Proposed: At Owner's Discretion Regulations: Not Specified

Litter collection: Proposed: At Owner's Discretion Regulations: Not Specified

Identify other stormwater management measures on the site that prevent discharge of large trash and debris:

Proposed underground detention basin

E. Prevention and Containment of Spills

Identify locations where pollutants are located on the site, and the features that prevent these pollutants from being exposed to stormwater runoff:

Pollutant: N/A Location: N/A

Feature utilized to prevent pollutant exposure, harmful accumulation, or contain spills:

Pollutant: N/A Location: N/A

Feature utilized to prevent pollutant exposure, harmful accumulation, or contain spills:

Pollutant: N/A Location: N/A

Feature utilized to prevent pollutant exposure, harmful accumulation, or contain spills:

Pollutant: N/A Location: N/A

Feature utilized to prevent pollutant exposure, harmful accumulation, or contain spills:

Pollutant: N/A Location: N/A

Part 4: Compliance with Nonstructural Requirements of NJDEP Stormwater Management Rules

1. Based upon the checklist responses above, indicate which nonstructural strategies have been incorporated into the proposed development's design in accordance with N.J.A.C. 7-8-5.3(b):

No.	Nonstructural Strategy	Yes	No
1	Protect areas that provide water quality benefits or areas particularly susceptible to erosion and sediment loss.	X	
2	Minimize impervious surfaces and break up or disconnect the flow of runoff over impervious surfaces.	X	
3	Maximize the protection of natural drainage features and vegetation.	X	
4	Minimize the decrease in the pre-construction time of concentration.	X	
5	Minimize land disturbance including clearing and grading.	X	
6	Minimize soil compaction.	X	
7	Provide low maintenance landscaping that encourages retention and planting of native vegetation and minimizes the use of lawns, fertilizers, and pesticides.	X	
8	Provide vegetated open-channel conveyance systems discharge into and through stable vegetated areas.	X	
9	Provide preventative source controls.	X	

2. For those strategies that have not been incorporated into the proposed development's design, provide engineering, environmental, and/or safety reasons. Attached additional pages as necessary.

N/A

- 8., Due to the existing site development conditions and associated topography, the redevelopment of the site does not lend itself to provide stable swale conditions.

N/A