FINAL ROAD CONSTRUCTION, GRADING AND STORMWATER MANAGEMENT PLANS

OXFORD SQUARE
"A HOWARD COUNTY GREEN NEIGHBORHOOD"

Saint Margarets Boulevard
(Sta. 6+62.30 to Sta. 12+52.60 & Banbury drive
(Sta. 11+98 to Sta. 15+60.84)

(Being A Resubdivision Of Parcel 'B' To Create Parcel 'M', Banbury Drive And Saint Margarets Boulevard Right-Of-Way', As Shown On Plats Entitled "Oxford Square, "Green Neighborhood", Parcel 'C Thru 'L' And Open Space Lots 1 And 2' And Recorded Among The Land Records Of Howard County, Maryland As Plat Nos. 92954 Thru 92960)

Zoning: TOD
Tax Map: 38 Parcel: 761 Grid: 20
First Election District
Howard County, Maryland
Infiltration and Filter System Construction Specifications

I. DESIGN CONSIDERATIONS

A. General

1. The project involves the construction of a filter and infiltration system to treat and infiltrate stormwater from the development area. The system includes infiltration berms, filtering media, and collection systems to manage stormwater runoff.

2. The design is based on certified specifications and guidelines provided by the local regulatory agencies.

3. The system is designed to meet or exceed the requirements for infiltration and filtration as per local environmental regulations.

B. Site Characteristics

1. The site is a developed area with existing drainage systems.

2. Stormwater runoff will be managed using an infiltration system to reduce runoff volume and improve water quality.

C. Rain Gardens

1. Rain gardens are designed to infiltrate stormwater from the development area.

2. The rain gardens are intended to enhance the site aesthetics while managing stormwater.

III. FILTER SPECIFICATIONS

A. Filter Media

1. The filter media consists of a layer of coarse gravel followed by a layer of fine gravel.

2. The coarse gravel layer is designed to allow for infiltration while the fine gravel layer is intended to filter out pollutants.

B. Filter System Details

1. The filter system includes a perforated pipe to convey infiltrated stormwater.

2. The system is designed to infiltrate a maximum of 20% of the total runoff volume generated by the development area.

C. Filter System Installation

1. The filter system is installed in accordance with the manufacturer's guidelines.

2. The system is backfilled with soil to ensure proper infiltration and filtration.

D. Filter System Maintenance

1. The filter system requires periodic maintenance to ensure proper function.

2. Maintenance includes cleaning and inspection of the filter media and collection system.

IV. INFECTION BERM SPECIFICATIONS

A. Berm Design

1. The infiltration berms are designed to contain and infiltrate stormwater.

2. The berms are constructed using native soil and vegetation.

B. Berm Construction

1. The berm construction follows the guidelines provided by the local regulatory agencies.

2. The berms are designed to accommodate stormwater runoff from the development area.

C. Berm Maintenance

1. The berms require periodic maintenance to ensure proper infiltration.

2. Maintenance includes inspection and repair of any damage that may occur.

V. STORMWATER MANAGEMENT MAINTENANCE

A. Stormwater Management Practices

1. The project includes stormwater management practices to reduce runoff volume and improve water quality.

2. The practices include infiltration systems, rain gardens, and other measures to manage stormwater.

B. Stormwater Management System Inspection

1. The system is inspected periodically to ensure proper function.

2. Inspections include checking for any issues that may affect the system's performance.

C. Stormwater Management System Repair

1. The system is repaired as needed to maintain proper function.

2. Repairs include any necessary adjustments or replacement of damaged components.

VI. OBSERVATION WELL LOCATION

A. Observation Well Installation

1. Observation wells are installed to monitor the performance of the infiltration and filtration system.

2. The wells are installed at strategic locations to provide insights into the system's performance.

B. Observation Well Monitoring

1. The observation wells are monitored periodically to assess the system's performance.

2. Monitoring includes recording data such as infiltration rates and water quality parameters.

C. Observation Well Maintenance

1. The observation wells require periodic maintenance to ensure proper function.

2. Maintenance includes cleaning and inspection of the observation wells.

VII. OPERATION AND MAINTENANCE

A. Operation and Maintenance Schedule

1. An operation and maintenance schedule is developed to ensure the proper functioning of the infiltration and filtration system.

2. The schedule includes regular inspections and maintenance activities.

B. Operation and Maintenance Protocols

1. The operation and maintenance protocols are designed to ensure the system's longevity and performance.

2. Protocols include guidelines for inspections, repairs, and other maintenance activities.

C. Operation and Maintenance Training

1. Training is provided to the personnel responsible for the system's operation and maintenance.

2. Training includes instructions on how to perform the required tasks.

D. Operation and Maintenance Record Keeping

1. A record-keeping system is in place to document all operations and maintenance activities.

2. Records are maintained to ensure compliance with regulatory requirements.

E. Operation and Maintenance Reporting

1. Regular reports are submitted to the regulatory agencies.

2. Reports include data on the system's performance and any issues encountered.

VIII. CONSTRUCTION AND EVALUATION

A. Construction Monitoring

1. The construction process is monitored to ensure adherence to the design specifications.

2. Monitoring includes inspections of the site and quality control checks.

B. Evaluation Criteria

1. Evaluation criteria are established to assess the system's performance.

2. Criteria include infiltration rates, water quality, and other relevant parameters.

C. Evaluation Reports

1. Evaluation reports are prepared to document the system's performance.

2. Reports include data on the system's performance and any issues encountered.

D. Performance Improvement

1. The system is evaluated for potential improvements to enhance its performance.

2. Improvements may include changes in design or operational procedures.

IX. STORMWATER MANAGEMENT NOTES & DETAILS

A. Stormwater Management Notes

1. Notes are recorded to document any issues encountered during the system's installation and operation.

2. Notes include data on the system's performance and any necessary adjustments.

B. Stormwater Management Details

1. Details are provided to clarify specific aspects of the system's design and construction.

2. Details include specifications for materials and installation methods.

X. CONCLUSION

A. Conclusion

1. The project involves the construction of an infiltration and stormwater management system to manage stormwater runoff.

2. The system is designed to meet the requirements for infiltration and filtration as per local environmental regulations.

3. The system is expected to enhance the site's aesthetics while improving water quality.

4. The system's performance will be monitored to ensure proper function and compliance with regulatory requirements.
<table>
<thead>
<tr>
<th>#</th>
<th>Name of Component</th>
<th>Description</th>
<th>Required Action</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Solar Panel</td>
<td>Install solar panels on the roof</td>
<td></td>
<td>Complete</td>
</tr>
<tr>
<td>2</td>
<td>Rainwater Harvesting System</td>
<td>Install a rainwater harvesting system</td>
<td></td>
<td>In Progress</td>
</tr>
<tr>
<td>3</td>
<td>Composting Facility</td>
<td>Build a composting facility</td>
<td></td>
<td>Not Required</td>
</tr>
<tr>
<td>4</td>
<td>Energy-Efficient Lighting</td>
<td>Replace all lighting with energy-efficient options</td>
<td></td>
<td>Complete</td>
</tr>
<tr>
<td>5</td>
<td>Water Conservation Measures</td>
<td>Implement water conservation measures</td>
<td></td>
<td>Complete</td>
</tr>
<tr>
<td>6</td>
<td>Green Roofs</td>
<td>Install green roofs on all buildings</td>
<td></td>
<td>In Progress</td>
</tr>
<tr>
<td>7</td>
<td>Bicycle Storage</td>
<td>Provide designated bicycle storage areas</td>
<td></td>
<td>Complete</td>
</tr>
<tr>
<td>8</td>
<td>Pedestrian Paths</td>
<td>Ensure pedestrian paths are accessible and well-lit</td>
<td></td>
<td>Complete</td>
</tr>
</tbody>
</table>

**Notes:**
- Complete: Task has been fully completed.
- In Progress: Task is currently being worked on.
- Not Required: Task is not required based on the project's needs.

**References:**
- Project Design Specifications
- Local Building Codes
- Environmental Impact Study
GREEN NEIGHBORHOOD NOTES:

A.4. The 15′ setback requirement is established to allow for maximum sunlight and view opportunities for the owners of the neighboring buildings.

B.12. The 25′ setback requirement is intended to provide a buffer zone that separates the building mass from the adjacent property lines.

GREEN NEIGHBORHOOD CALCULATIONS & TABLES:

A-4b. Priority Parking for Low-Friction and Fuel Efficient Vehicles

Table: Number of Low-Friction Vehicles

<table>
<thead>
<tr>
<th>Class</th>
<th>Number</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pedestrian</td>
<td>10</td>
<td>10%</td>
</tr>
<tr>
<td>Bicycle</td>
<td>20</td>
<td>20%</td>
</tr>
<tr>
<td>Light Electric Vehicle</td>
<td>5</td>
<td>5%</td>
</tr>
</tbody>
</table>

C-6c. Pedestrian System (Paths and Tubs)

<table>
<thead>
<tr>
<th>Class</th>
<th>Number</th>
<th>Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pedestrian</td>
<td>10</td>
<td>1000 ft</td>
</tr>
<tr>
<td>Bicyclist</td>
<td>20</td>
<td>2000 ft</td>
</tr>
<tr>
<td>Wheelchair</td>
<td>5</td>
<td>500 ft</td>
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D-4. Site Improvement and Site Disturbance

Table: Site Improvement

<table>
<thead>
<tr>
<th>Item</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parking Area</td>
<td>$100,000</td>
</tr>
<tr>
<td>Landscape</td>
<td>$50,000</td>
</tr>
<tr>
<td>Sidewalks</td>
<td>$30,000</td>
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</tbody>
</table>

D-8. Excavation Minimum Forestry Conservation Requirements

Table: Forestry Conservation

<table>
<thead>
<tr>
<th>Species</th>
<th>Minimum</th>
<th>Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maple</td>
<td>30</td>
<td>3000 ft</td>
</tr>
<tr>
<td>Oak</td>
<td>20</td>
<td>2000 ft</td>
</tr>
<tr>
<td>Pine</td>
<td>10</td>
<td>1000 ft</td>
</tr>
</tbody>
</table>

C-1. Landscaping

Table: Landscape

<table>
<thead>
<tr>
<th>Item</th>
<th>Cost</th>
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</thead>
<tbody>
<tr>
<td>Trees</td>
<td>$150,000</td>
</tr>
<tr>
<td>Shrubs</td>
<td>$50,000</td>
</tr>
<tr>
<td>Grass</td>
<td>$20,000</td>
</tr>
</tbody>
</table>

D-4b. Excavation Minimum Drainage Requirements

Table: Drainage

<table>
<thead>
<tr>
<th>Item</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Septic</td>
<td>$200,000</td>
</tr>
<tr>
<td>Storm Drain</td>
<td>$150,000</td>
</tr>
<tr>
<td>Water Flows</td>
<td>$50,000</td>
</tr>
</tbody>
</table>

C-7. Green Spaces and Arrows Area

Table: Green Spaces

<table>
<thead>
<tr>
<th>Area</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Park</td>
<td>$100,000</td>
</tr>
<tr>
<td>Garden</td>
<td>$50,000</td>
</tr>
<tr>
<td>Orchard</td>
<td>$20,000</td>
</tr>
</tbody>
</table>

D-12. Slope Preservation

Table: Slope Preservation

<table>
<thead>
<tr>
<th>Slope</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steep</td>
<td>$300,000</td>
</tr>
<tr>
<td>Gentle</td>
<td>$100,000</td>
</tr>
<tr>
<td>Flat</td>
<td>$50,000</td>
</tr>
</tbody>
</table>