

APPENDIX C: STORMWATER MANAGEMENT

Stormwater BMP Maintenance Log

Filterra Bioretention System

Date	Inspector (Name)	Work Performed	Comments
Additional Comments:			

INSPECTIONS & MAINTENANCE PLAN

Thames Street Extension, Portland, Maine

General inspection and maintenance during and after construction must take place in accordance with the requirements outlined in Appendix B of the Maine Department of Environmental Protection (MaineDEP) Chapter 500 Rules. Upon completion of the project, the Owner will assume responsibility for overseeing the property, including the inspection and maintenance of the Site's stormwater drainage system and treatment measures outlined herein. A person with knowledge of stormwater management and erosion and sediment control, including the standards and conditions in the permit, shall conduct the inspections and perform maintenance of the facilities.

Inspection and maintenance activities will be performed per the attached checklist, schedule, and Storm Tree guidelines; an example page of the BMP Maintenance Log that shall be kept on-site is also attached.

INSPECTION AND MAINTENANCE OF STORMWATER SYSTEMS

Trash, debris, and sediment shall be removed from storm drain pipes, catch basins, sand filters, and proprietary treatment systems as needed on a semi-annual basis. In addition to the inspection and maintenance of stormwater systems, roadways, parking areas and sidewalks will be inspected annually each spring. Visual inspections will enable parking areas to be kept clean and clear through periodic sweeping and winter plowing as required. The inspections will also ensure pavement markings are repainted as needed to maintain proper traffic circulation and parking space delineation. Paved areas will be plowed and sanded as often as necessary to maintain public safety. Periodic sweeping of pavement will keep the parking areas clean and will reduce the amount of sediment available to enter the stormwater systems, in turn reducing the need to clean the stormwater systems.

Storm Tree Biofiltration System

The Storm Tree Biofiltration System must be inspected at least once every six months, and the filters maintained twice annually per the manufacturer's guidelines, which are outlined in the attached guidance document.

STORMWATER INSPECTION CHECKLIST

Inspection by: _____

Date: _____

Stormwater Management Feature	Condition					Comments
Storm Tree Biofiltration System*	No sediment or trash accumulation		Some sediment or trash accumulation		Excessive sediment or trash accumulation	
Storm Tree Biofiltration System*	Plants healthy and pest-free		Plants are somewhat healthy		Plants are not healthy (no growth or excessive growth)	
Storm Tree Biofiltration System*	Structure is in good condition.		Structure has small visible cracks.		Structure has cracks wider than ½ inch.	

**See manufacturer's guidelines for Storm Tree Biofiltration System maintenance and inspection.*

Recommended Actions: _____

Actions Completed: _____ Date: _____

STORMWATER MANAGEMENT MAINTENANCE TASKS AND RECOMMENDED SCHEDULE

TASKS	STORM TREE SYSTEM	SAND FILTRATION BED	STORM DRAIN PIPES	SCHEDULE
Inspect for sediment accumulation	X	X	X	Spring and Fall
Remove sediment accumulation	X	X	X	As needed
Clean debris	X	X	X	As needed
Replace stone rip-rap			X	Every 3 – 5 years as needed
Inspect structural elements during wet weather and compare to as-built plans	X	X	X	Annually
Make adjustments or replacements as determined by wet weather observations	X	X	X	As needed
Keep records of all inspections and maintenance activities	X	X	X	Annually
Have a professional engineer perform emergency inspections upon identification of severe problems	X	X	X	As needed

APPENDIX D: CONSTRUCTION MANAGEMENT PLAN

Construction Management Plan

Thames Street Extension – City of Portland

Project Summary

The proposed project involves extension of roadway and utility infrastructure along Thames Street in Portland, Maine. The following general plan has been developed in accordance with the City's General Construction Management Template.. The Contractor for this project has not been selected.

A. Construction Management Principles

The following narrative provides an overview of the construction management principles that the City of Portland has identified to minimize impacts from the construction, such as noise, vibrations, ground movement, truck traffic, and other construction related factors to the surrounding building and communities.

B. Development Review of Construction Management Plan

The Contractor shall submit a construction management plan that provides a comprehensive logistics and safety program for the construction project, which will be reviewed and approved as part of the site plan review process. Minimizing impacts to areas surrounding the construction site will be primary considerations in the process.

C. Performance Guarantees, Inspection Fees, Preconstruction Meeting, and Permits

Prior to scheduling a preconstruction meeting and the issuance of any city required permits, the Applicant and Contractor shall meet all of the requirements contained in Section 14-530. Development review fees and post approval requirements and 14-532. General requirements and enforcement of Portland's Land Use Code.

Other permits, as applicable, include

1. **Street Opening and Street Occupancy Permits:** Construction activity in the public right-of-way are controlled by Chapter 25 and sewer and stormwater system connections are controlled by Chapters 24 and 32 of the Land Use Code. All required permits shall be obtained through the Department of Public Works and the requests shall conform with the approved construction management plan.
2. **Blasting:** Blasting, if required, shall conform with all measures of Article VIII. Regulation of Explosives in the Land Use Code and Section 3.7 Standards for Blasting and Regulation of Explosives in Portland's Technical Manual.

D. Construction Administration and Communication

The Contractor will work diligently to implement a communication strategy as outlined below. The communication strategy is intended to ensure that all construction operations are performed in accordance with all agreements, ordinances and special permits applicable to this project. The Construction Manager will work closely with adjacent abutters, businesses and all parties informed, as far in advance as possible, of scheduled work, particularly work anticipated to cause significant noise, vibrations, or dust.

The final construction management plan shall provide for the following:

1. Contact Person and contact information for the Contractor who is available 24 hours
2. Construction Signage posted on the site with Contact Information for Contractor and any Subcontractors.
3. Describe any additional communication strategies
4. All construction site signage is temporary and shall be removed at project completion.

E. Construction Schedule

The contractor shall submit a schedule or time line for the construction project, including any Phasing. Construction may occur during the daytime hours as defined in Section 17-18. Construction Activities for Building permit and Section 25-129. Noise, dust and debris. Pursuant to Section 17-18, this section not apply to emergency utility work or "Situations where the public works authority or the office of building inspections determines that the construction activity is of a unique character which cannot reasonably be completed or

performed during the permitted hours and which is not of a recurring nature, provided that prior to engaging in such activity the contractor or his representatives gives notice of the time and scope of such proposed activity, the notice to be given in a manner approved by the public works authority." The Contractor shall schedule and designate a location for delivery of materials and boxed goods.

The project is anticipated to commence in Fall of 2018. Work is expected to end in Winter 2018. A more detailed schedule shall be provided by the Contractor at or prior to the pre-construction meeting with the City of Portland.

F. Security & Public Safety

The following construction management provisions shall be implemented during construction:

1. Preserve public access and minimize impacts to the Eastern Promenade Trail.
2. Accommodate proposed MDOT Right-of-Way and preserve existing alignment of the Narrow Gauge Railroad.
3. Preserve public access to the cruise ship terminal, Sail Maine facility and Ripple Effect launch.

Public safety in the vicinity of the construction site is of utmost importance. A Construction Management Plan will be provided by the selected Contractor depicting all proposed fencing and other barriers with the intent of separating pedestrian and vehicle circulation from the construction site.

An overall construction of demolition fire safety program shall be developed. Essential items to be emphasized include good housekeeping, on-site security, installation of new fire protection systems as construction progresses, preservation of existing systems during demolition, organization and training of an on-site fire brigade, development of a pre-fire plan with the local fire department, rapid communication, consideration of special hazards resulting from previous occupancies, and protection of existing structures and equipment from exposure fires resulting from construction, alteration, and demolition operations.

Blasting, if required, shall conform with all measures of Article VIII. Regulation of Explosives in the Land Use Code and Section 3.7 Standards for Blasting and Regulation of Explosives in Portland's Technical Manual.

Any proposed temporary security lighting shall be shown on CMP submitted by the Contractor and all fixtures shall be full cutoffs.

G. Construction Permitting and Traffic Control Plans

1. Construction Activity in Public Streets: Construction activity in the public right-of-way is controlled by Chapter 25 Article VII of the City Code of Ordinances. Required licenses and permits, restrictions on activity, and fees & area are outlined in that Chapter. Rules and Regulations for Excavation Activity are available through the Street Opening Clerk at the Department of Public Works. At no time can construction activity including delivery vehicles close or block streets or affect public safety access without prior notice and approval of the Department of Public Works.
2. Sewer and Stormwater: Sewer and stormwater water system connections are controlled by Chapters 24 and 32 of the City Code of Ordinance. Required permits for new connections and/or abandonment of existing connections are available through the Street Opening Clerk at the Department of Public Works. Rules and Regulations for these utility systems are available through the City Engineer's office of the Department of Public Works and in Section II of the Technical Manual.
3. Traffic Control Plans: Construction activity that impacts the existing public street system must be controlled to protect the safety of the construction workers and all modes of the traveling public. Projects are required to submit a satisfactory 'maintenance of traffic' (MOT) plan prior to any site plan, subdivision, or street opening permit approval. MOT plans may be required for projects that have impacts on local streets.

Maintenance of Traffic (MOT) plans shall provide for the safe passage of the public through or along the construction work zone. On a case-by-case basis, applicants may be allowed to close a street and/or detour a mode of traffic when absolutely necessary for safety. MOT plans shall employ the appropriate techniques and devices as called for in the latest edition of the Manual on Uniform Traffic Control Devices (MUTCD). In addition:

- Construction speed signing may be used as needed to slow traffic
- Traffic Control signs shall not be placed where they are an obstruction to bicycles or pedestrians.
- In some situations, flaggers may be required.
- Police details may be required at lighted intersections and may be requested by the City's transportation engineer or his designee.

All existing modes of travel in work zone area shall be accommodated if impacted by the activity. The safe passage of pedestrians, bicyclists, transit providers, and motorists are of equal importance when planning out the work zone; no pre-existing travel mode may be eliminated without the express approval of the Department of Public Works. The MOT should also address on-street parking impacts, including deliveries and parking for adjoining businesses and property owners, analysis of roadway capacity or diversion capacity if street closure or change to roadway capacity is required, and coordination with other on-going or future construction or utility projects in the vicinity.

- Traffic control of bicycle and pedestrian facilities or routes through work zones shall be maintained until the bicycle and pedestrian facilities or routes are ready for safe operation. Traffic control will not be removed to allow auto travel at the expense of bicycle and pedestrians.
- Barrier systems utilized to separate the construction activity from the public street and /or sidewalk shall not inhibit sight distances, particularly for visibility of pedestrians and bicyclists.
- ADA compliance shall be maintained.

Use of public parking spaces or the blockage of any portion of sidewalk for the purpose of construction activity shall require an occupancy permit and appropriate fee as assessed by the Department of Public Works.

H. Site Management and Controls

1. Regular trash and debris will be removed from the site in compliance with all local, state and federal regulations.
2. Street cleaning and sweeping shall occur regularly as outlined in the Erosion and Sedimentation Control Plan and Notes in the Plan set. Damage to the street shall be the responsibility of the Contractor.
3. Dust shall be controlled per Portland's requirements under Section 25-129 on Noise, dust and debris.
4. Noise shall be controlled per Portland's requirements under Section 17-18 of the City Code and Section 25-129 on Noise, dust and debris.
5. Rodent Control will be provided, if applicable, by a professional exterminator and consistent with Chapter 22 of the City Code.
6. Snow Removal: Pursuant to Section 25-173 Contractors to ensure a safe means of travel within the work zone.
 - 1) Snow/ice removal or commence automatically from (1" of snow and up) or Ice

- 2) Remove snow as needed within the work zone, including parking spaces & not to block any driveways or sight lines with the piles of snow.
- 3) Clear all walks & ramps with the work zone
- 4) Sand or Salt as needed
- 5) Clear all basin or drainage to help snow melt
- 6) This would include Monday-Friday Sat/Sunday/Holidays

I. Erosion Control and Preservation of Trees

The Contractor shall install all erosion and sedimentation controls as depicted on the approved erosion and sedimentation control plan prior to the pre-construction meeting for inspection by the City. The contractor shall regularly inspect the control measures, no less than weekly and after significant storm events (0.5 inches or greater in 24 hours), and maintain any installed temporary or permanent stormwater management systems in working order. The contractor shall document all inspection activities and corrective actions and be prepared to provide these documents for inspection by the City, Maine Department of Environmental Protection or the U.S. Environmental Protection Agency upon request.

The Contractor shall maintain all tree and landscaping preservation measures as depicted on the landscaping plan within the area of construction.

The storage of materials shall be identified and avoid being located under or near trees.

J. Construction Staging Area

The Contractor shall submit a Construction Management Plan depicting locations of material staging areas, onsite temporary construction trailers, onsite truck delivery holding areas, onsite truck washing stations, masonry mixing stations, construction security fence, temporary construction dumpsters and open storage areas. The plan shall be submitted prior to the pre-construction meeting.

The delivery holding area shall be shown on the plan and shall not be blocked during construction. On days when the construction activities require multiple truck deliveries, these deliveries will be carefully scheduled so that there is always adequate on-site area for the holding of the trucks until they can be unloaded. Once at the site all vehicles will be brought within the fence line and will make every attempt to avoid queueing on public streets.

In the event that adequate on-site area for holding of trucks is not available, an off-site marshalling area will be utilized for trucking. The designated off-site location will be identified in the construction management plan.

K. Parking During Construction

Adequate parking for construction workers shall be provided on site or arrangements for off-street parking at an off-site location shall be provided. No street parking will be allowed by Contractor personnel. The parking arrangements shall be included in the construction management plan. Designated truck routes and expected truck volumes shall be addressed in the Construction Management Plan.

L. Special Measures as Necessary

No special measures are necessary for the proposed work.