

**STORMWATER
OPERATION & MAINTENANCE PLAN
43 RIVER ROAD
NEWTON, MASSACHUSETTS**

The proposed project includes stormwater runoff controls associated with a new 2-family house construction. These controls will require during construction by the site contractor and for continue maintenance by the property owner.

After Construction

The major system components associated with maintenance needs are the roof drain manifold and infiltration systems. These facilities will need to be cleaned periodically as noted below. Cleaning of these structures shall be done by the property owner or via a specialty Contractor with hydraulic cleaning ability and or landscaping knowledge as part of a long term maintenance program.

The components of the entire system include:

1. System 1- Stormwater from the driveways enter trench drains at the opening at River Road, then discharges into a manhole structure with 4-foot sump; discharge from the structure enters a Stormtech recharge (infiltration) system in the side (left) yard. Stormwater from the front section and rear side of the house roof discharges to this system as well.

The recharge system includes a minimum of 12-StormTech 310 Recharge units encased by 14' x 34' - 1-1/2 inch stone. See attached 11" x 17" - attached.

In addition to the facilities noted below, the property owner should maintain any roof gutters/drains on a regular basis to prevent clogging and overflow of the gutters. The following outlines the major maintenance issues associated with the project:

Driveway and Sediment Basin (trap)

The property has a proposed sediment basin with 4-foot sump and oil/water separators at the driveway off River Road. The proposed plan shows that the trench drains will collect stormwater from the driveways and discharge to the "trap" and eventually to the infiltration system (side yard). The sediment basin (trap) is subject to monitoring during storm events in order to determine frequency of maintenance needs. During construction the basin and sumps will be monitored and cleaned regularly and when the sump is at half capacity (maximum allowed condition).

After construction, driveway sweeping shall occur after a rain event deposit sediment into the driveway, and on regular seasonal schedule (January, April, July, and October minimum) for prevention; but more often if basin is determined by observation to fill with sediment. The sump will be continued to be monitored and cleaned when the sumps reach a maximum of ½ capacity.

Monitoring and cleanouts of the trap are accessible at the basin cover. Open the cover and visually inspect the structure, use a tape measure to determine how much sediment has accumulated. Sediment should be no closer than 2-feet from the outlet pipe. Use of a clam shell shovel or vactor system are the preferred method of to clean the trap. Fill out form attached.

Roof gutters, leaders and manifold Cleaning:

The pipe network collects roof drainage and discharges to one of the 12 Stormtech recharger units (Infiltration system) below grade. This pipe network should be inspected after completion of construction to assure that all debris were removed and no construction material will be cause the system to clog or restrict the outlet. Maintenance of this system is subject to continuous monitoring after storm events to determine frequency of maintenance needs. The roof gutters and leaders should be cleaned manually, after all major storms or as a minimum, and seasonally to remove accumulated solids and debris. This is required to prevent clogging and overflow of the infiltration units and potential overtopping the drain and discharging offsite. Assuming that the manifold is maintained and cleaned routinely, the roof runoff should be routed to the infiltration system.

The drainage through the gutters, leaders, and manifold should be inspected after major storm events, but no longer than a quarterly basis to note if slow to drain flow, standing water or sediment buildup is an issue. Visually inspect the gutters for signs of sediment, or leaf litter.

Monitoring should include noting flow of stormwater out of the gutter laterals during storm events to determine that the water is being collected. Initial observations should be compared to later observations to determine the loss of flow. Each leader is fitted with an overflow outlet just above grade.

Infiltration System (Stormtech 310 Rechargers, System 1)

The Infiltration system (aka system 1) consists of 12- Stormtech 310 Recharge units surrounded by 1-1/2" aggregate (14' x 34' bed). The stone bed on which the Stormtech units are placed should be inspected after completion of construction to assure that all debris was removed, and no construction material will be cause the system to clog.

Filter fabric is designed to separate the parent and fill soil materials from the infiltration system stone.

The Infiltration system has observation ports in the center of each Stormtech 310 Recharger unit. These ports can be unscrewed and accessed to observe if standing water or sediment remains underground and may be fitted with a vacuum system that can clean sediment on the bottom. It is not expected that these types of cleanouts will be warranted on a regular basis, but will need to be managed if the preceding prescribed maintenance is not followed regularly.

The system should be inspected after major storm events, but no longer than a quarterly basis to note if sediment buildup is an issue. Monitoring should include noting flow of stormwater out of the gutter laterals during storm events to determine that the water is surcharging the Infiltration units. Initial observations should be compared to later observations to determine the loss of infiltration capacity. Check if overflows are occurring at the closest roof leader that is attached to the gutters.

Maintenance Responsibilities

The maintenance of the Drainage System is the exclusive responsibility of the Property Owner. The actual work can be manually accomplished by the owner or representative or it could be subcontracted to a company that specializes in the cleaning of storm drainage facilities. Inspections should be performed by the owner and by independent individual such as the design

engineer or other experienced individual in the field, with yearly reports to the Town Engineer,
At the end of January each year.

STORMWATER MANAGEMENT REPORT
43 RIVER ROAD
Newton, MASSACHUSETTS

INSPECTION REPORT: Complete quarterly (January, April, July, and October)

Inspection Firm: _____

Inspectors Name: Date: _____

Components Inspected: _____

Signed: _____

SYSTEM MAINTENANCE Complete quarterly (January, April, July, and October):

Maintenance Firm: Date: _____

Driveway Sweeping Yes No Comments: _____

Gutters Cleaned: Yes No Comments: _____

Downspouts Flushed: Yes No Comments: _____

Manifold and other pipes Cleaned: Yes No Comments: _____

Catch Basin and traps monitored/cleaned: Yes No Comments: _____

Recharge (System 1) inspected/cleaned if necessary Yes No Comments: _____

Yard planting/re-vegetating: Yes No Comments: _____

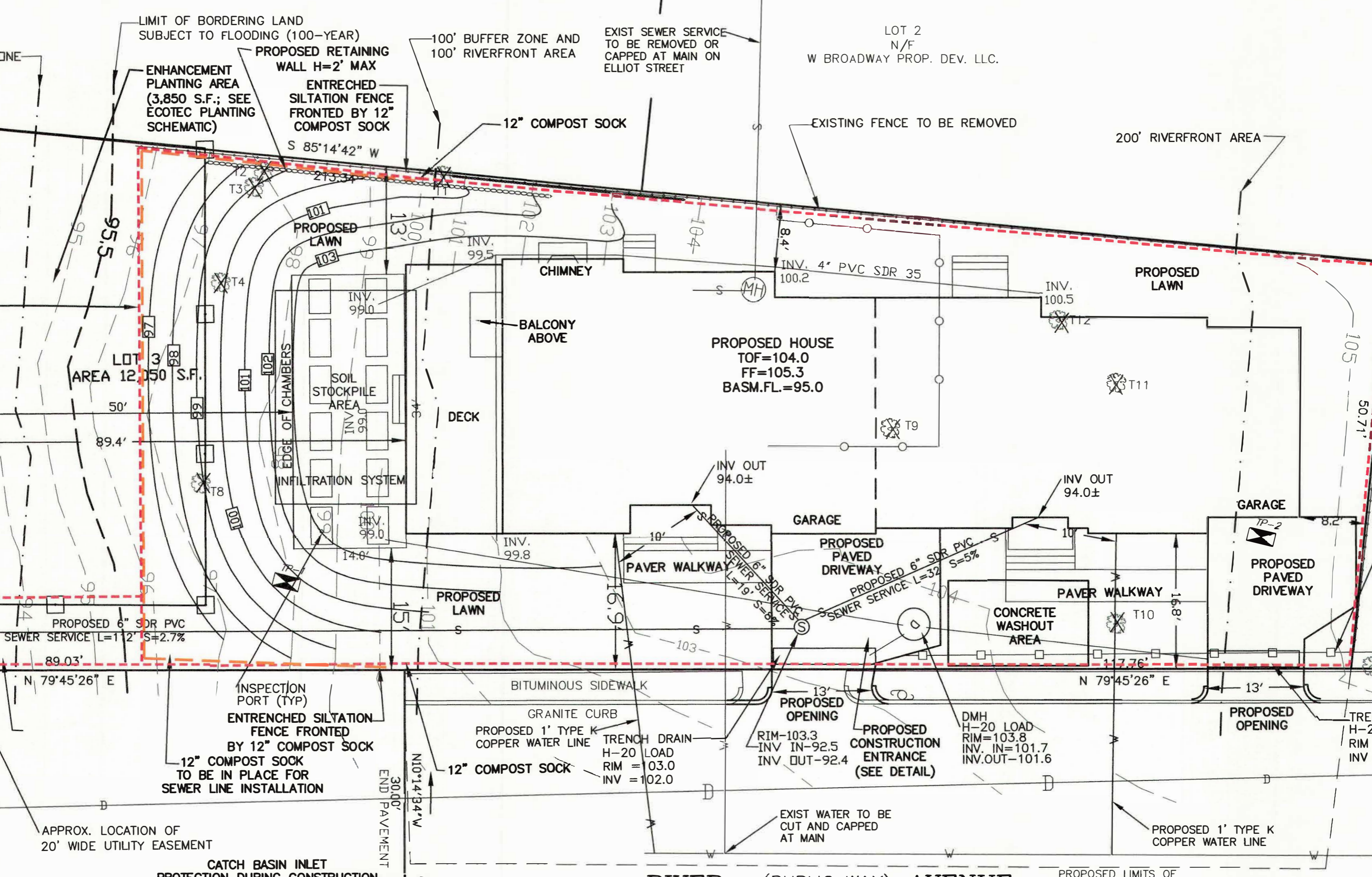
Estimate of Material Removed: _____

Disposal Location: _____

Other Comments: _____

Signed: _____

Submit this form to the Newton Town Engineer by the end of January each year



LIMIT OF BORDERING LAND
SUBJECT TO FLOODING (100-YEAR)

PROPOSED RETAINING
WALL H=2' MAX

ENTRENCHED
SILTATION FENCE
FRONTED BY 12"
COMPOST SOCK

100' BUFFER ZONE AND
100' RIVERFRONT AREA

EXIST SEWER SERVICE
TO BE REMOVED OR
CAPPED AT MAIN ON
ELLIOT STREET

LOT 2
N/F
W BROADWAY PROP. DEV. LLC.

EXISTING FENCE TO BE REMOVED

200' RIVERFRONT AREA

ENHANCEMENT
PLANTING AREA
(3,850 S.F.; SEE
ECOTEC PLANTING
SCHEMATIC)

12" COMPOST SOCK

95.5

PROPOSED
LAWN

CHIMNEY

BALCONY
ABOVE

PROPOSED HOUSE
TOF=104.0
FF=105.3
BASM.FL.=95.0

PROPOSED
LAWN

LOT 3
AREA 12,050 S.F.

SOIL
STOCKPILE
AREA

EDGE OF CHAMBERS
INFILTRATION SYSTEM

DECK

GARAGE

GARAGE

PAVER WALKWAY

PROPOSED
PAVED
DRIVEWAY

PAVER WALKWAY

CONCRETE
WASHOUT
AREA

PROPOSED
PAVED
DRIVEWAY

PROPOSED 6" SDR PVC
SEWER SERVICE L=112' S=2.7%

PROPOSED
LAWN

BITUMINOUS SIDEWALK

GRANITE CURB
PROPOSED 1' TYPE K
COPPER WATER LINE

TRENCH DRAIN
H-20 LOAD
RIM = 103.0
INV = 102.0

RIM-103.3
INV IN-92.5
INV OUT-92.4

PROPOSED
CONSTRUCTION
ENTRANCE
(SEE DETAIL)

DMH
H-20 LOAD
RIM=103.8
INV. IN=101.7
INV. OUT=101.6

PROPOSED
OPENING

INSPECTION
PORT (TYP)
ENTRENCHED SILTATION
FENCE FRONTED
BY 12" COMPOST SOCK

12" COMPOST SOCK
TO BE IN PLACE FOR
SEWER LINE INSTALLATION

APPROX. LOCATION OF
20' WIDE UTILITY EASEMENT

CATCH BASIN INLET
PROTECTION DURING CONSTRUCTION

EXIST WATER TO BE
CUT AND CAPPED
AT MAIN

PROPOSED 1' TYPE K
COPPER WATER LINE

PROPOSED LIMITS OF