



**Grading Plan**  
Scale: 1" = 20'

**INSPECTION SCHEDULE & LONG TERM MAINTENANCE OF STORMWATER STRUCTURES**

**CATCH BASINS AND PIPING:**  
ALL CATCH BASINS SHALL BE INSPECTED AFTER EACH STORM EVENT FOR SEDIMENT ACCUMULATION, AND DEBRIS, AND REMOVE AS NECESSARY. WHEN SEDIMENT ACCUMULATION WITHIN THE CATCH BASIN SUMP REACHES 1/2 OF THE SUMP DEPTH, IT SHALL BE REMOVED. ASSOCIATED PIPING SHALL BE INSPECTED ANNUALLY AND ACCUMULATED SEDIMENT SHALL BE REMOVED AS NEEDED.

**UNDERGROUND DETENTION/INFILTRATION:**  
THE GDS STORMWATER TREATMENT SYSTEM IS A HIGH-PERFORMANCE HYDRODYNAMIC SEPARATOR AND REQUIRES REGULAR INSPECTION AND MAINTENANCE TO ENSURE OPTIMAL PERFORMANCE. MAINTENANCE FREQUENCY WILL BE DRIVEN BY SITE CONDITIONS. THE MAINTENANCE SCHEDULES QUARTERLY INSPECTIONS TO DETERMINE THE ACCUMULATION OF POLLUTANTS, AND SUGGESTS ANNUAL REMOVAL OF ACCUMULATED POLLUTANTS. VORTEX UNITS SHALL BE INSPECTED QUARTERLY, GENERALLY AROUND THE CHANGE OF EACH SEASON. INSPECTIONS AND MAINTENANCE SHALL BE PERFORMED BY QUALIFIED PERSONNEL WITH ADEQUATE TRAINING IN THESE TYPES OF UNITS. THE UNITS SHALL BE CLEANED BY VACUUM TRUCK. ADDITIONAL CLEANINGS SHOULD BE ANTICIPATED DURING THE FIRST YEAR OF OPERATION. THE RECOMMENDED CLEANOUT OF SOLIDS WITHIN THE GDS UNITS SUMP SHOULD OCCUR AT 75% OF THE SUMP CAPACITY.

**BEST MANAGEMENT PRACTICE FOR MAINTAINING OPTIMUM PERFORMANCE OF THE UNDERGROUND INFILTRATION SYSTEM IS A COMBINATION OF THE FOLLOWING:**  
1. PROPER MAINTENANCE OF THE PRETREATMENT HYDRODYNAMIC DEVICE.  
2. REMOVAL OF ACCUMULATED SEDIMENT FROM THE UPSTREAM CATCH BASIN AND STORMWATER COLLECTION SYSTEM, AND  
3. MAINTENANCE OF THE SITE IMPERVIOUS AND LAWN AREAS IN A STABLE CONDITION, ANY FUTURE LAND DISTURBANCE ASSOCIATED WITH MAINTENANCE OF THE BUILDINGS AND GROUNDS SHALL CAUTELY PREPARE AN EROSION AND SEDIMENT CONTROL PLAN TO LIMIT THE TRANSPORT OF SEDIMENT LOADS SUBJECT TO THE COLLECTION SYSTEM.  
THE COLLECT SYSTEM SHALL BE EQUIPPED WITH AN INSPECTION PORT LOCATED ON THE INLET ROW. THE INSPECTION PORT IS A CIRCULAR CAST IRON PLACED IN A RECTANGULAR CONCRETE COLLAR WHEN THE LID IS REMOVED, A 6-INCH PIPE WITH A SCREW-IN PLUG BE EXPOSED. REMOVE THE PLUG. THE WALL PROVIDE ACCESS TO THE COLLECT CHAMBER RUN BELOW FROM THE SURFACE. THROUGH THIS ACCESS, THE SEDIMENT MAY BE MEASURED AT THIS LOCATION. A STAGMETER MAY BE USED TO MEASURE THE DEPTH OF SEDIMENT IN THE CHAMBER. THE SEDIMENT MAY BE REMOVED BY HAND OR BY USING A VACUUM TRUCK. THE ACCESS PORT TO DETERMINE IF ANY SEDIMENT HAS ACCUMULATED. IF THE DEPTH OF SEDIMENT IS IN EXCESS OF 3 INCHES, THEN THIS ROW SHOULD BE CLEANED BY HIGH PRESSURE WATER THROUGH A CULVERT CLEANING NOZZLE. THIS MUST BE CARRIED OUT THROUGH THE UPSTREAM PRETREATMENT DEVICE. THE ACCESS POINT THROUGH THE HYDRODYNAMIC DEVICE REQUIRES A TECHNICIAN TRAINED IN CONTROLLED SPACING OF THE WALKED STONE BENCHING. THE INSPECTION EQUIPMENT SHOULD BE EQUIPPED WITH THE PROPER SAFETY EQUIPMENT FOR ENTRY INTO THE HYDRODYNAMIC DEVICE. THE INLET ROW IS PLACED ON A POLYETHYLENE LINER TO PREVENT SCOURING OF THE WALKED STONE BENCHING. THE INSPECTION EQUIPMENT SHOULD BE EQUIPPED WITH THE PROPER SAFETY EQUIPMENT FOR ENTRY INTO THE HYDRODYNAMIC DEVICE. THE NOZZLE IS DEPLOYED THROUGH THE HYDRODYNAMIC DEVICE AND EXTENDED TO THE END OF THE SUMP CAPACITY. THE INLET ROW IS BACK-FLUSHED INTO THE HYDRODYNAMIC DEVICE WHERE IT IS REMOVED BY USING A VACUUM TRUCK.

**MAINTENANCE SCHEDULE:**  
THE OWNER SHALL KEEP A MAINTENANCE LOG WHICH SHALL INCLUDE DETAILS OF ANY EVENTS WHICH WOULD HAVE AN EFFECT ON THE SYSTEM'S OPERATIONAL CAPACITY.  
1. THE OPERATION AND MAINTENANCE PROCEDURE SHALL BE REVIEWED PERIODICALLY AND CHANGED TO MEET SITE CONDITIONS.  
2. MAINTENANCE OF THE STORMWATER MANAGEMENT SYSTEM SHALL BE PERFORMED BY QUALIFIED WORKERS AND SHALL FOLLOW APPLICABLE OCCUPATIONAL HEALTH AND SAFETY REQUIREMENTS.  
3. DEBRIS REMOVED FROM THE STORMWATER MANAGEMENT SYSTEM SHALL BE DISPOSED OF IN ACCORDANCE WITH APPLICABLE LAWS AND REGULATIONS.  
SUGGESTED MAINTENANCE SCHEDULE (TO BE RE-ASSESSED BY THE OPERATOR PERIODICALLY BASED ON SITE CONDITIONS AND EVALUATION OF SYSTEM FUNCTIONALITY):  
1. YEAR 1: INSPECT INLETS AND OUTLETS MONTHLY FOR ANY CLOGGING, AND REMOVE DEBRIS AS MAY BE NECESSARY. INSPECT THE SURFACE AROUND THE CHAMBERS FOR ANY DEPRESSIONS.  
2. YEAR 2 AND AFTER: INSPECT INLETS AND OUTLETS EVERY SPRING AND FALL FOR ANY CLOGGING, AND REMOVE DEBRIS AS MAY BE NECESSARY. INSPECT THE SURFACE AROUND THE CHAMBERS FOR ANY DEPRESSIONS.  
3. 2 YEARS AFTER COMMISSIONING: INSPECT THE INTERIOR OF THE STORMWATER MANAGEMENT CHAMBERS THROUGH INSPECTION PORT FOR DEBRIS USING CCTV OR COMPARABLE TECHNIQUE.  
4. 9 YEARS AFTER COMMISSIONING, AND EVERY 9 YEARS THEREAFTER (OR AS MAY BE NEEDED): CLEAN STORMWATER MANAGEMENT CHAMBERS AND FEED CONNECTORS OF ANY DEBRIS. INSPECT THE INTERIOR OF THE STORMWATER MANAGEMENT CHAMBERS THROUGH INSPECTION PORT FOR DEBRIS USING CCTV OR COMPARABLE TECHNIQUE.  
5. 45 YEARS AFTER COMMISSIONING: A PROFESSIONAL ENGINEER SHALL ASSESS THE REMAINING LIFE EXPECTANCY OF THE STORMWATER MANAGEMENT CHAMBERS AND RECOMMEND ACTIONS TO REHABILITATE, RESTORE OR REPLACE THE STORMWATER MANAGEMENT CHAMBERS AS MAY BE REQUIRED.  
6. ANNUALLY: CONFIRM THAT NO UNAUTHORIZED MODIFICATIONS HAVE BEEN PERFORMED TO THE SITE THAT MAY IMPACT THE ADEQUATE FUNCTIONING OF THE SYSTEM.  
7. PERIODICALLY: MONITOR WATER LEVELS IN THE CHAMBER SYSTEM FOLLOWING SIGNIFICANT STORM EVENTS. DEWATERING OF THE SYSTEM SHOULD TAKE NO LONGER THAN 24 HOURS.

**EXISTING UNDERGROUND UTILITY NOTES:**

- CONTRACTOR SHALL DIG TEST PITS TO VERIFY LOCATION, SIZE AND PIPE MATERIAL OF EXISTING UNDERGROUND UTILITIES. IF ANY EXISTING UTILITIES ARE NOT IN THE LOCATION WHERE THEY ARE SHOWN ON THE PLAN, IT SHALL BE BROUGHT TO THE ENGINEER'S ATTENTION IMMEDIATELY.

**GENERAL CONSTRUCTION NOTES:**

- ALL OTHER UTILITIES (TELEPHONE, ELECTRIC, GAS, ETC.) SHALL BE INCORPORATED PRIOR TO CONSTRUCTION. ALL SUCH UTILITY DESIGNS SHALL BE DEVELOPED IN COOPERATION WITH THE RESPECTIVE UTILITY COMPANIES.
- THE CONTRACTOR SHALL PERFORM A UTILITIES CALL-OUT PRIOR TO CONSTRUCTION TO VERIFY ALL UNDERGROUND UTILITY LOCATIONS BY CONTACTING UPPO @ 1-800-962-7962.
- 2 YEARS AFTER COMMISSIONING: INSPECT THE INTERIOR OF THE STORMWATER MANAGEMENT CHAMBERS THROUGH INSPECTION PORT FOR DEBRIS USING CCTV OR COMPARABLE TECHNIQUE.
- 9 YEARS AFTER COMMISSIONING, AND EVERY 9 YEARS THEREAFTER (OR AS MAY BE NEEDED): CLEAN STORMWATER MANAGEMENT CHAMBERS AND FEED CONNECTORS OF ANY DEBRIS. INSPECT THE INTERIOR OF THE STORMWATER MANAGEMENT CHAMBERS THROUGH INSPECTION PORT FOR DEBRIS USING CCTV OR COMPARABLE TECHNIQUE.
- 45 YEARS AFTER COMMISSIONING: A PROFESSIONAL ENGINEER SHALL ASSESS THE REMAINING LIFE EXPECTANCY OF THE STORMWATER MANAGEMENT CHAMBERS AND RECOMMEND ACTIONS TO REHABILITATE, RESTORE OR REPLACE THE STORMWATER MANAGEMENT CHAMBERS AS MAY BE REQUIRED.
- ANNUALLY: CONFIRM THAT NO UNAUTHORIZED MODIFICATIONS HAVE BEEN PERFORMED TO THE SITE THAT MAY IMPACT THE ADEQUATE FUNCTIONING OF THE SYSTEM.
- PERIODICALLY: MONITOR WATER LEVELS IN THE CHAMBER SYSTEM FOLLOWING SIGNIFICANT STORM EVENTS. DEWATERING OF THE SYSTEM SHOULD TAKE NO LONGER THAN 24 HOURS.

**POST CONSTRUCTION NOTES:**

- RECORD DRAWINGS OF THE PROJECT INCLUDING ALL UTILITIES WILL BE PROVIDED TO THE BUILDING INSPECTOR AFTER CONSTRUCTION IS COMPLETE.
- AN OPERATION AND MAINTENANCE PLAN MANUAL SHALL BE PROVIDED TO THE CITY OF BEACON BUILDING INSPECTOR FOLLOWING COMPLETION OF THE STORMWATER FACILITIES.

**RETAINING WALL NOTES:**

- CONTRACTOR TO REFER TO PLANS AND SPECIFICATIONS FOR THE RETAINING WALL AS PREPARED BY CIVIL DESIGN PROFESSIONALS.
- CLAY KEY AND/OR STONE CHIMNEY DRAIN TO BE INSTALLED AT THE DIRECTION OF THE FINAL DESIGN AS APPROVED BY THE CITY OF BEACON.
- RETAINING WALL UNDERDRAINS TO BE INSTALLED AND DIRECTED TO THE CATCH BASINS ON THE DOWNHILL SIDE OF THE WALL AS SHOWN ON THE UTILITY PLAN.

INFILTRATION TEST TABLE:		
INFILTRATION TESTS RESULTS ESTABLISHED ON 9/17/2017		
ALL TESTS PRESUMED 24 HOURS PRIOR		
TEST ID	TEST HOLE ELEVATION	RESULTS
IT1	110	>5" PER HOUR; >5" PER HOUR; >5" PER HOUR
IT2	108	>5" PER HOUR; >5" PER HOUR; >5" PER HOUR
IT3	108.5	>5" PER HOUR; >5" PER HOUR; >5" PER HOUR
IT4	107.5	>5" PER HOUR; >5" PER HOUR; >5" PER HOUR
IT5	108	>5" PER HOUR; >5" PER HOUR; >5" PER HOUR
IT6	85	5/8" PER HOUR; 1/8" PER HOUR
IT7	85	1-7/8" PER HOUR; 1-1/2" PER HOUR; 1-1/2" PER HOUR

DEEP TEST HOLE TABLE:		
DEEP TEST HOLE RESULTS ESTABLISHED ON 9/11/2017		
TEST PIT ID	EX. ELEVATION	DESCRIPTION
TP1	125	0'-8" NON-NATIVE SILTY LOAM FILL WITH BRICKS, CONCRETE AND BOULDERS; 8'-12" BROWN SILTY-CLAY LOAM WITH COBBLES; NO GROUNDWATER, NO MOTTLING, NO BEDROCK
TP2	123.5	0'-8" NON-NATIVE SILTY LOAM FILL WITH BRICKS, CONCRETE AND BOULDERS; 8'-16.5" BROWN SILTY-CLAY LOAM WITH COBBLES; NO GROUNDWATER, MOTTLING AT 15'; NO BEDROCK
TP3	122.5	0'-2" NON-NATIVE SILTY LOAM FILL WITH BRICKS, CONCRETE AND BOULDERS; 6'-15" BROWN SILTY-CLAY LOAM WITH COBBLES; NO GROUNDWATER, NO MOTTLING, NO BEDROCK
TP4	124	0'-8" NON-NATIVE SILTY LOAM FILL WITH BRICKS, CONCRETE AND BOULDERS; 8'-17.5" BROWN SILTY-CLAY LOAM WITH COBBLES; NO GROUNDWATER, NO MOTTLING, NO BEDROCK
TP5	124	0'-8" NON-NATIVE SILTY LOAM FILL WITH BRICKS, CONCRETE AND BOULDERS; 8'-10" BROWN SILTY-CLAY LOAM WITH COBBLES; NO GROUNDWATER, NO MOTTLING, NO BEDROCK
TP6	90	0'-1" TOPSOIL; 1'-6" BROWN SILTY LOAM WITH GRAVEL; NO GROUNDWATER, NO MOTTLING, BEDROCK @ 6'
TP7	91	0'-1" TOPSOIL; 1'-4" BROWN SILTY LOAM WITH GRAVEL; NO GROUNDWATER, NO MOTTLING, BEDROCK @ 4'

APPROVED BY RESOLUTION OF THE PLANNING BOARD OF THE CITY OF BEACON, NEW YORK, ON THE

DAY OF 20, SUBJECT TO ALL REQUIREMENTS AND CONDITIONS OF SAID RESOLUTION, ANY CHANGE, ERRASURE, MODIFICATION OR REVISION OF THIS PLAN, AS APPROVED, SHALL VOID THIS APPROVAL.

SIGNED THIS DAY OF 20, BY

CHAIRMAN

SECRETARY

IN ABSENCE OF THE CHAIRMAN OR SECRETARY, THE ACTING CHAIRMAN OR ACTING SECRETARY RESPECTIVELY MAY SIGN IN THIS PLACE.



SEAL  
JON D. BODENDORF, P.E.  
NYS LICENSE NO. 0768245  
DANIEL G. KOEHLER, P.E.  
NYS LICENSE NO. 082716