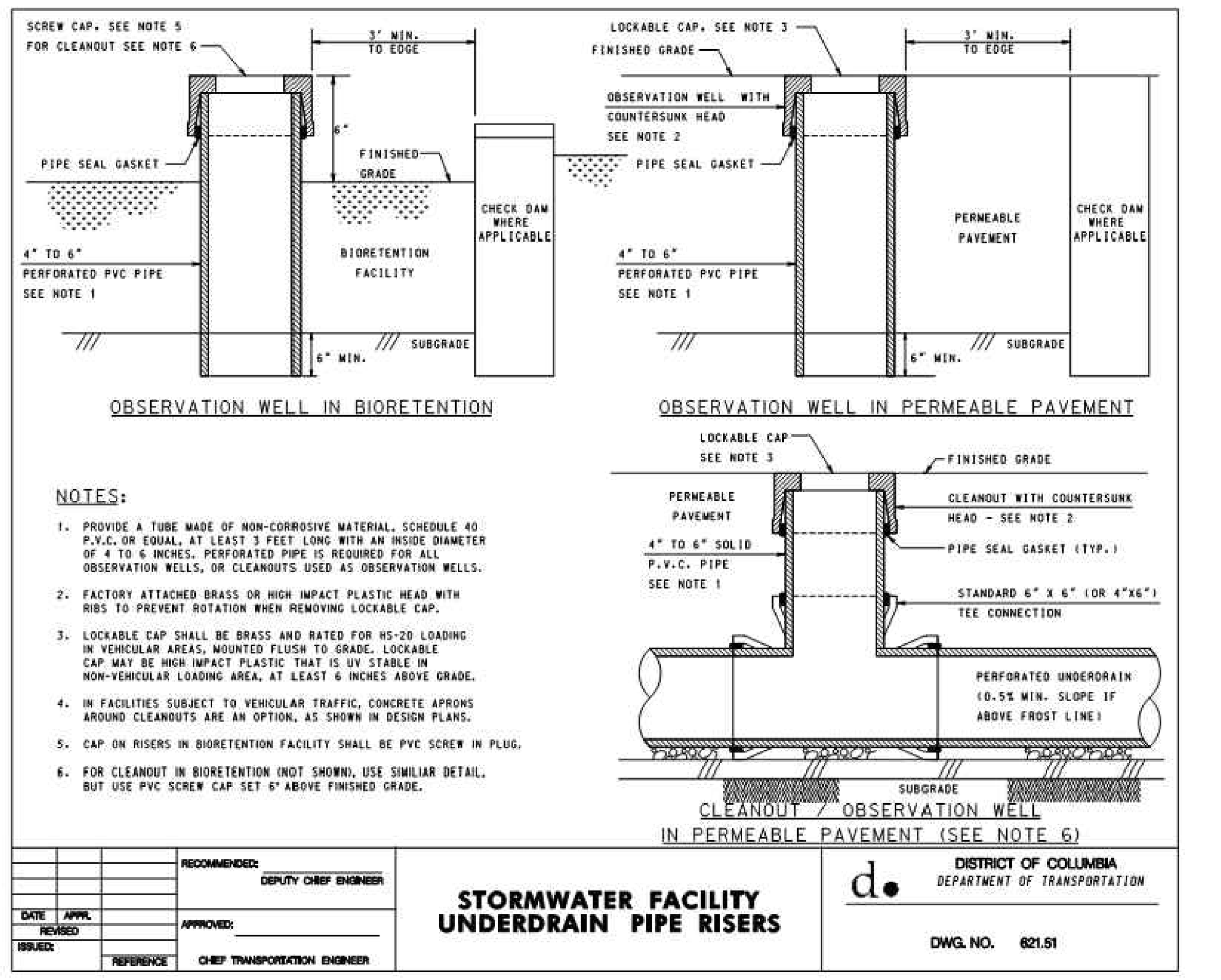
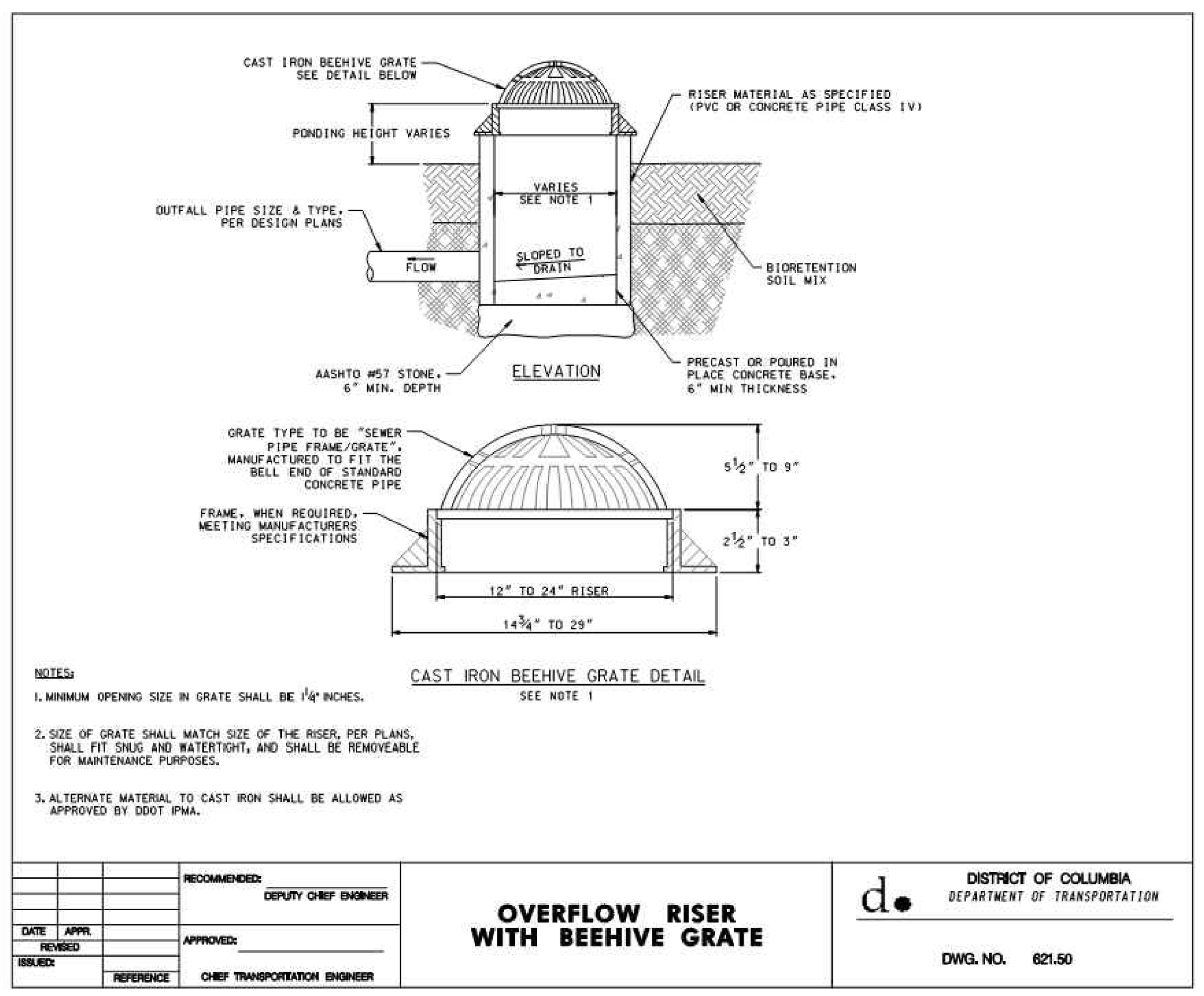


1 / CIV1100 — BIORETENTION PLANTER UNDERDRAIN PIPE RISERS

NOT TO SCALE



2 / CIV1100 — BIORETENTION OVERFLOW RISER WITH BEEHIVE GRATE

NOT TO SCALE

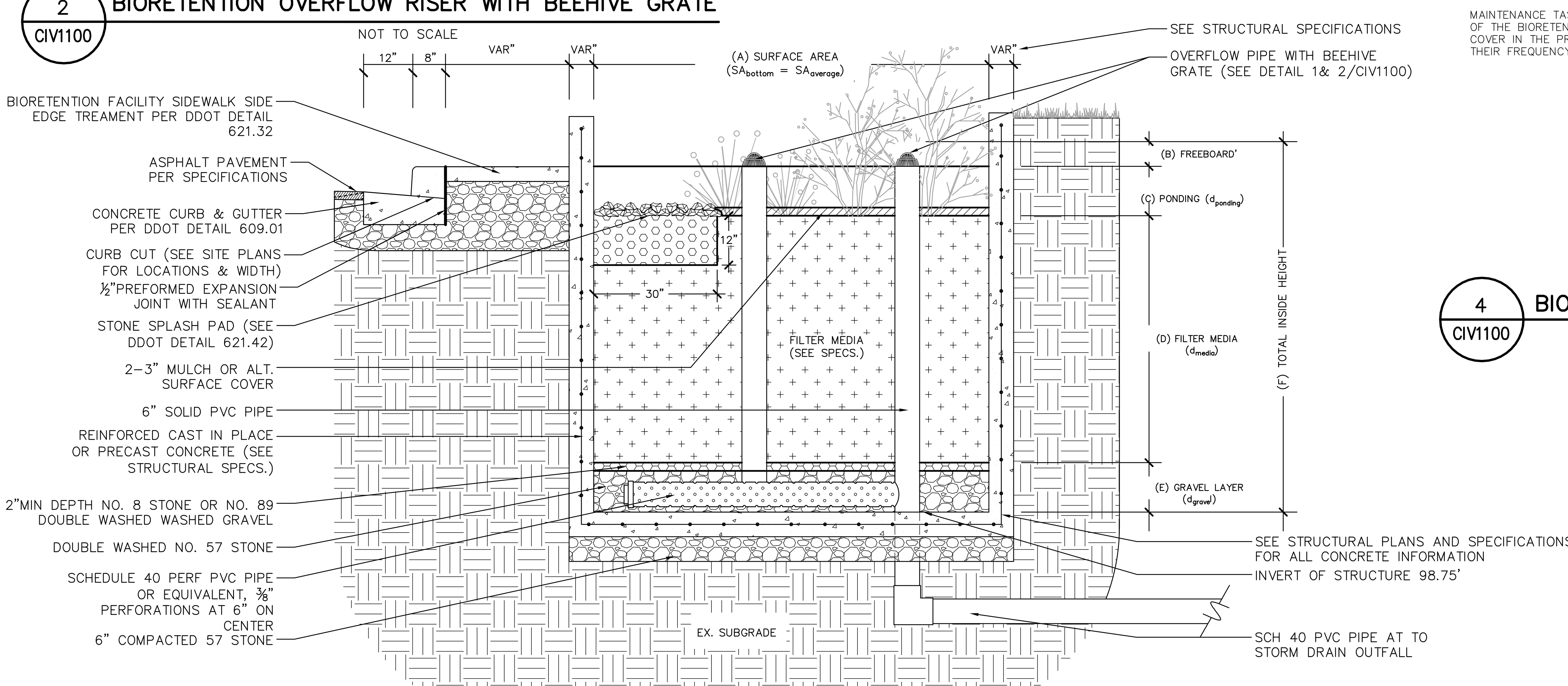


Table 3-21 Bioretention Material Specifications

Material	Specification	Notes
Filter Media	▪ See Table 3-18 and Table 3-19	Minimum depth of 24 inches (18 inches for standard design). To account for settling/compaction, it is recommended that 110% of the plan volume be utilized.
Mulch Layer	Use aged, shredded hardwood bark mulch	Lay a 2- to 3-inch layer on the surface of the filter bed.
Alternative Surface Cover	Use river stone or pea gravel, coir and jute matting, or turf cover.	Lay a 2- to 3-inch layer of to suppress weed growth.
Top Soil for Turf Cover	Loamy sand or sandy loam texture, with less than 5% clay content, pH corrected to between 6 and 7, and an organic matter content of at least 2%.	3-inch tilled into surface layer.
Geotextile or Choking Layer	An appropriate geotextile fabric that complies with AASHTO M-288 Class 2 (latest edition available here: https://store.transportation.org/item/publicationdetail/3791) requirements and has a permeability of at least an order of magnitude (10 times) higher than the soil subgrade permeability must be used	Can use in place of the choking layer where the depth of the practice is limited. Geotextile fabric may be used on the sides of bioretention areas as well.
	Lay a 2- to 4-inch layer of choker stone (e.g., typically No.8 or No.89 washed gravel) over the underdrain stone.	
Underdrain Stone	1-inch diameter stone must be washed clean and free of fines (with no more than 2% passing the No. 200 sieve) (e.g., ASTM D448 No. 57 or smaller stone).	At least 2 inches above and below the underdrain.
Storage Layer (optional)	To increase storage for larger storm events, chambers, perforated pipe, stone, or other acceptable material can be incorporated below the filter media layer.	
Impermeable Liner (optional)	Where appropriate, use a PVC Geomembrane liner or equivalent material of an appropriate thickness.	
Underdrains, Cleanouts, and Observation Wells	Use 4- or 6-inch rigid schedule 40 PVC pipe, or equivalent corrugated HDPE for small bioretention BMPs, with three or four rows of 3/8-inch perforations at 6 inches on center. Multiple underdrains may be necessary for bioretention areas wider than 40 feet, and each underdrain is recommended to be located no more than 20 feet from the next pipe or the edge of the bioretention.	Lay the perforated pipe under the length of the bioretention cell, and install non-perforated pipe as needed to connect with the storm drain system or to daylight in a stabilized conveyance. Install T's and Y's as needed, depending on the underdrain configuration. Extend cleanout pipes to the surface of ponding.
Plant Materials	See Section 3.6.5 Bioretention Landscaping Criteria	Establish plant materials as specified in the landscaping plan and the recommended plant list.

Table 3-19 Summary of Filter Media Criteria for Bioretention

Filter Media Criterion	Description	Standard(s)
General Composition	Filter media must have the proper proportions of sand, loam soil, and organic amendments to promote plant growth, drain at the proper rate, and filter pollutants.	80%–90% sand; 10%–20% soil fines; maximum of 10% clay; and 3%–5% organic content Must meet final filter media grain size distribution OR have a saturated hydraulic conductivity of 2–6 inches per hour
Sand	Medium to coarse aggregate	Based on final filter media grain size distribution
Loam Soil	Loamy sand, sandy loam, or loam	USDA Textural Triangle
Organic Amendments	Stable, well-composted, natural, carbon-containing organic materials such as leaf mulch, peat moss, humus, or yard waste.	Appendix K
P-Index or Phosphorus (P) Content	Filter media with high P levels will export P through the media and potentially to downstream conveyances or receiving waters.	P-Index of 10–30 or P content = 5–15 mg/kg (Mehlich I) or 18–40 mg/kg (Mehlich III)
Cation Exchange Capacity (CEC)	The CEC is determined by the amount of soil fines and organic matter. Higher CEC will promote pollutant removal.	CEC > 5 milliequivalents per 100 grams
pH	Soil pH influences nutrient availability and microbial populations.	Between 6.0 and 7.5
Soluble Salts	Filter media with high levels of soluble salts can injure or kill plants.	Less than 500 ppm or less than 0.5 mmhos/cm.

BIORETENTION AREA INSTALLATION NOTES

BIORETENTION AREA CONSTRUCTION SEQUENCE

STEP 1: STABILIZE CONTRIBUTING DRAINAGE AREA. CONSTRUCTION OF THE BIORETENTION AREA MAY ONLY BEGIN AFTER THE ENTIRE CDA HAS BEEN STABILIZED WITH VEGETATION. IT MAY BE NECESSARY TO BLOCK CERTAIN CURB OR OTHER INLETS WHILE THE BIORETENTION AREA IS BEING CONSTRUCTED. THE PROPOSED SITE SHOULD BE CHECKED FOR EXISTING UTILITIES PRIOR TO ANY EXCAVATION.

STEP 2: PRECONSTRUCTION MEETING. THE DESIGNER, THE INSTALLER, AND DOEE INSPECTOR MUST HAVE A PRECONSTRUCTION MEETING, CHECKING THE BOUNDARIES OF THE CDA AND THE ACTUAL INLET ELEVATIONS TO ENSURE THEY CONFORM TO ORIGINAL DESIGN. SINCE OTHER CONTRACTORS MAY BE RESPONSIBLE FOR CONSTRUCTING PORTIONS OF THE SITE, IT IS QUITE COMMON TO FIND SUBTLE DIFFERENCES IN SITE GRADING, DRAINAGE AND PAVING ELEVATIONS THAT CAN PRODUCE HYDRAULICALLY IMPORTANT DIFFERENCES FOR THE PROPOSED BIORETENTION AREA. THE DESIGNER SHOULD CLEARLY COMMUNICATE, IN WRITING, ANY PROJECT CHANGES DETERMINED DURING THE PRECONSTRUCTION MEETING TO THE INSTALLER AND THE INSPECTOR. MATERIAL CERTIFICATIONS FOR AGGREGATE, FILTER MEDIA, AND ANY GEOTEXTILES MUST BE SUBMITTED FOR APPROVAL TO THE INSPECTOR AT THE PRECONSTRUCTION MEETING.

STEP 3: INSTALL SOIL EROSION AND SEDIMENT CONTROL MEASURES TO PROTECT THE BIORETENTION. TEMPORARY SOIL EROSION AND SEDIMENT CONTROLS (E.G., DIVERSION DIKES, REINFORCED SILT FENCES) ARE NEEDED DURING CONSTRUCTION OF THE BIORETENTION AREA TO DIVERT STORMWATER AWAY FROM THE BIORETENTION AREA UNTIL IT IS COMPLETED. SPECIAL PROTECTION MEASURES, SUCH AS EROSION CONTROL FABRICS, MAY BE NEEDED TO PROTECT VULNERABLE SIDE SLOPES FROM EROSION DURING THE CONSTRUCTION PROCESS.

STEP 4: INSTALL PRETREATMENT CELLS. ANY PRETREATMENT CELLS SHOULD BE EXCAVATED FIRST AND THEN SEALED TO TRAP SEDIMENT.

STEP 5: AVOID IMPACT OF HEAVY INSTALLATION EQUIPMENT. EXCAVATORS OR BACKHOES SHOULD WORK FROM THE SIDES TO EXCAVATE THE BIORETENTION AREA TO ITS APPROPRIATE DESIGN DEPTH AND DIMENSIONS. EXCAVATING EQUIPMENT SHOULD HAVE SCOOPS WITH ADEQUATE REACH SO THEY DO NOT HAVE TO SIT INSIDE THE FOOTPRINT OF THE BIORETENTION AREA. CONTRACTORS SHOULD USE A CELL CONSTRUCTION APPROACH IN LARGER BIORETENTION BASINS, WHEREBY THE BASIN IS SPLIT INTO 500– TO 1,000–SQUARE FOOT TEMPORARY CELLS WITH A 10– TO 15–FOOT EARTH BRIDGE IN BETWEEN, SO THAT CELLS CAN BE EXCAVATED FROM THE SIDE.

STEP 6: PROMOTE INFILTRATION RATE. IT MAY BE NECESSARY TO RIP THE BOTTOM SOILS TO A DEPTH OF 6 TO 12 INCHES TO PROMOTE GREATER INFILTRATION.

STEP 7: ORDER OF MATERIALS. IF USING A GEOTEXTILE FABRIC, PLACE THE FABRIC ON THE SIDES OF THE BIORETENTION AREA WITH A 6–INCH OVERLAP ON THE SIDES. IF A STONE STORAGE LAYER WILL BE USED, PLACE THE APPROPRIATE DEPTH OF NO. 57 STONE (WASHED CLEAN AND FREE OF FINES) ON THE BOTTOM, INSTALL THE PERFORATED UNDERDRAIN PIPE, PACK NO. 57 STONE AT LEAST 2 INCHES ABOVE THE UNDERDRAIN PIPE, AND ADD THE CHOKING LAYER OR APPROPRIATE GEOTEXTILE LAYER AS A FILTER BETWEEN THE UNDERDRAIN AND THE FILTER MEDIA LAYER. IF NO STONE STORAGE LAYER IS USED, START WITH AT LEAST 2 INCHES OF NO. 57 STONE ON THE BOTTOM AND PROCEED WITH THE LAYERING AS DESCRIBED ABOVE.

STEP 8: LAYERED INSTALLATION OF MEDIA. APPLY THE MEDIA IN 12–INCH LIFTS UNTIL THE DESIRED TOP ELEVATION OF THE BIORETENTION AREA IS ACHIEVED. WAIT A FEW DAYS TO CHECK FOR SETTLEMENT AND ADD ADDITIONAL MEDIA, AS NEEDED, TO ACHIEVE THE DESIGN ELEVATION.

NOTE: THE BATCH RECEIPT CONFIRMING THE SOURCE OF THE FILTER MEDIA MUST BE SUBMITTED TO THE DOEE INSPECTOR.

STEP 9: PREPARE FILTER MEDIA FOR PLANTS. PREPARE PLANTING HOLES FOR ANY TREES AND SHRUBS, INSTALL THE VEGETATION, AND WATER ACCORDINGLY. INSTALL ANY TEMPORARY IRRIGATION.

STEP 10: PLANTING. INSTALL THE PLANT MATERIALS AS SHOWN IN THE LANDSCAPING PLAN, AND WATER THEM AS NEEDED.

STEP 11: SECURE SURFACE AREA. PLACE THE SURFACE COVER (I.E., MULCH, RIVER STONE, OR TURF) IN BOTH CELLS, DEPENDING ON THE DESIGN. IF COIR OR JUTE MATTING WILL BE USED IN LIEU OF MULCH, THE MATTING WILL NEED TO BE INSTALLED PRIOR TO PLANTING (STEP 10), AND HOLES OR SLITS WILL HAVE TO BE CUT IN THE MATTING TO INSTALL THE PLANTS.

STEP 12: INFLOWS. IF CURB CUTS OR INLETS ARE BLOCKED DURING BIORETENTION INSTALLATION, UNBLOCK THESE AFTER THE CDA AND SIDE SLOPES HAVE GOOD VEGETATIVE COVER. IT IS RECOMMENDED THAT UNBLOCKING CURB CUTS AND INLETS TAKE PLACE AFTER TWO TO THREE STORM EVENTS IF THE CDA INCLUDES NEWLY INSTALLED ASPHALT, SINCE NEW ASPHALT TENDS TO PRODUCE A LOT OF FINES AND GRIT DURING THE FIRST SEVERAL STORMS.

STEP 13: FINAL INSPECTION. CONDUCT THE FINAL CONSTRUCTION INSPECTION USING A QUALIFIED PROFESSIONAL, PROVIDING DOEE WITH AN AS–BUILT, THEN LOG THE GPS COORDINATES FOR EACH BIORETENTION FACILITY, AND SUBMIT THEM FOR ENTRY INTO THE MAINTENANCE TRACKING DATABASE.

CONSTRUCTION SUPERVISION

SUPERVISION DURING CONSTRUCTION IS RECOMMENDED TO ENSURE THAT THE BIORETENTION AREA IS BUILT IN ACCORDANCE WITH THE APPROVED DESIGN AND THIS SPECIFICATION. QUALIFIED INDIVIDUALS SHOULD USE DETAILED INSPECTION CHECKLISTS THAT INCLUDE SIGN–OFFS AT CRITICAL STAGES OF CONSTRUCTION, TO ENSURE THAT THE CONTRACTOR'S INTERPRETATION OF THE PLAN IS CONSISTENT WITH THE DESIGNER'S INTENTIONS.

DOEE'S CONSTRUCTION PHASE INSPECTION CHECKLIST CAN BE FOUND IN APPENDIX L – CONSTRUCTION INSPECTION CHECKLISTS.

BIOTENTION MAITENANCE CRITERIA

WHEN BIORETENTION PRACTICES ARE INSTALLED, IT IS THE OWNER'S RESPONSIBILITY TO ENSURE THEY, OR THOSE MANAGING THE PRACTICE, (1) BE EDUCATED ABOUT THEIR ROUTINE MAINTENANCE NEEDS, (2) UNDERSTAND THE LONG–TERM MAINTENANCE PLAN, AND (3) BE SUBJECT TO A MAINTENANCE COVENANT OR AGREEMENT, AS DESCRIBED BELOW.

MAINTENANCE OF BIORETENTION AREAS SHOULD BE INTEGRATED INTO ROUTINE LANDSCAPE MAINTENANCE TASKS.IF LANDSCAPING CONTRACTORS WILL BE EXPECTED TO PERFORM MAINTENANCE, THEIR CONTRACTS SHOULD CONTAIN SPECIFICS ON UNIQUE BIORETENTION LANDSCAPING NEEDS, SUCH AS MAINTAINING ELEVATION DIFFERENCES NEEDED FOR PONDING, PROPER MULCHING, SEDIMENT AND TRASH REMOVAL, AND LIMITED USE OF FERTILIZERS AND PESTICIDES.

MAINTENANCE TASKS AND FREQUENCY WILL VARY DEPENDING ON THE SIZE AND LOCATION OF THE BIORETENTION, THE LANDSCAPING TEMPLATE CHOSEN, AND THE TYPE OF SURFACE COVER IN THE PRACTICE. A GENERALIZED SUMMARY OF COMMON MAINTENANCE TASKS AND THEIR FREQUENCY IS PROVIDED IN TABLE 3–24.

Table 3-24 Typical Maintenance Tasks for Bioretention Practices

Frequency	Maintenance Tasks
Upon establishment	▪ For the first 6 months following construction, the practice and CDA should be inspected at least twice after storm events that exceed 0.5 inch of rainfall. Conduct any needed repairs or stabilization. ▪ Inspectors should look for bare or eroding areas in the CDA or around the bioretention area and make sure they are immediately stabilized with grass cover. ▪ One-time, spot fertilization may be needed for initial plantings. ▪ Watering is needed once a week during the first 2 months, and then as needed during first growing season (April through October), depending on rainfall. ▪ Remove and replace dead plants. Up to 10% of the plant stock may die off in the first year, so construction contracts should include a care and replacement warranty to ensure that vegetation is properly established and survives during the first growing season following construction.
At least 4 times per year	▪ Mow grass filter strips and bioretention with turf cover ▪ Check curb cuts and inlets for accumulated grit, leaves, and debris that may block inflow
Twice during growing season	▪ Spot weed, remove trash, and rake the mulch
Annually	▪ Conduct a maintenance inspection ▪ Supplement mulch in devoid areas to maintain a 3-inch layer ▪ Prune trees and shrubs ▪ Remove sediment in pretreatment cells and inflow points
Once every 2–3 years	▪ Remove sediment in pretreatment cells and inflow points ▪ Remove and replace the mulch layer
As needed	▪ Add reinforcement planting to maintain desired vegetation density ▪ Remove invasive plants using recommended control methods ▪ Remove any dead or diseased plants ▪ Stabilize the CDA to prevent erosion

STANDING WATER IS THE MOST COMMON PROBLEM OUTSIDE OF ROUTINE MAINTENANCE. IF WATER REMAINS ON THE SURFACE FOR MORE THAN 72 HOURS AFTER A STORM, ADJUSTMENTS TO THE GRADING MAY BE NEEDED OR UNDERDRAIN REPAIRS MAY BE NEEDED. THE SURFACE OF THE FILTER BED SHOULD ALSO BE CHECKED FOR ACCUMULATED SEDIMENT OR A FINE CRUST THAT BUILDS UP AFTER THE FIRST SEVERAL STORM EVENTS. THERE ARE SEVERAL METHODS THAT CAN BE USED TO REHABILITATE THE FILTER. THESE ARE LISTED BELOW, STARTING WITH THE SIMPLEST APPROACH AND RANGING TO MORE INVOLVED PROCEDURES (I.E., IF THE SIMPLER ACTIONS DO NOT SOLVE THE PROBLEM):

- OPEN THE UNDERDRAIN OBSERVATION WELL OR CLEANOUT AND POUR IN WATER TO VERIFY THAT THE UNDERDRAINS ARE FUNCTIONING AND NOT CLOGGED OR OTHERWISE IN NEED OF REPAIR. THE PURPOSE OF THIS CHECK IS TO SEE IF THERE IS STANDING WATER ALL THE WAY DOWN THROUGH THE SOIL. IF THERE IS STANDING WATER ON TOP, BUT NOT IN THE UNDERDRAIN, THEN THERE IS A CLOGGED SOIL LAYER. IF THE UNDERDRAIN AND STAND PIPE INDICATES STANDING WATER, THEN THE UNDERDRAIN MUST BE CLOGGED AND WILL NEED TO BE CLEANED OUT.
- REMOVE ACCUMULATED SEDIMENT AND TILL 2 TO 3 INCHES OF SAND INTO THE UPPER 6 TO 12 INCHES OF SOIL.
- INSTALL SAND WICKS FROM 3 INCHES BELOW THE SURFACE TO THE UNDERDRAIN LAYER. THIS REDUCES THE AVERAGE CONCENTRATION OF FINES IN THE MEDIA BED AND PROMOTES QUICKER DRAWDOWN TIMES. SAND WICKS CAN BE INSTALLED BY EXCAVATING OR AUGURING (I.E., USING A TREE AUGER OR SIMILAR TOOL) DOWN TO THE TOP OF THE UNDERDRAIN LAYER TO CREATE VERTICAL COLUMNS THAT ARE THEN FILLED WITH A CLEAN OPEN–GRADED COARSE SAND MATERIAL (E.G., ASTM C–33, STANDARD SPECIFICATION FOR CONCRETE AGGREGATES, CONCRETE SAND OR SIMILAR APPROVED SAND MIX FOR BIORETENTION MEDIA). A SUFFICIENT NUMBER OF WICK DRAINS OF SUFFICIENT DIMENSION SHOULD BE INSTALLED TO MEET THE DESIGN DEWATERING TIME FOR THE FACILITY.
- REMOVE AND REPLACE SOME OR ALL OF THE FILTER MEDIA.

BIO–RETENTION ELEVATIONS AND INVERTS BY CELL

LAYER	7718–1–1 A	7718–1–1 B	7718–1–1 C	7718–1–1 D
TOP OF CHECK DAM (FT)	320.55	319.63	318.71	N/A
TOP OF FREEBOARD (FT)	320.55	319.63	318.71	318.15
TOP OF PONDING (FT)	320.22	319.30	318.38	317.82
TOP OF MEDIA (FT)	319.22	318.30	317.38	316.82
TOP OF GRAVEL (FT)	314.22	313.30	312.38	311.82
BOTTOM OF FACILITY (FT)	313.22	312.30	311.38	310.82
UNDERDRAIN INVERT (FT)	313.47	312.55	311.63	311.09

BIORETENTION FREEBOARD COMPUTATIONS

$$Q = \tfrac{2}{3}C_d \times L \times [(2g)^{1/2}] \times [(H)^{3/2}];\quad Q = C \times i \times A;$$
$$C_d = 0.62;\quad i = 7.56\ in/hr;\quad g = 32.2\ ft/s^2$$

Bioretention Planter No.	Perimeter of Inlet (in)	CDA (sf)	Runoff Coefficient	15–Year Flowrate	Minimum Freeboard (ft)	Freeboard Above 15–yr WSE (ft)	15–yr WSE + Min. Freeboard (ft)
7718–1–1	131.88	38138	0.950	6.288	0.31	0.25	0.56

4 / CIV1100 — BIORETENTION FREEBOARD COMPUTATIONS & 15 YEAR STORM ELEVATION CALCULATIONS

NOT TO SCALE

BIORETENTION VOLUME COMPUTATIONS

$$Sv = SA_{bottom} \times [(d_{media} \times \eta_{media}) + (d_{gravel} \times \eta_{gravel})] + (SA_{average} \times d_{ponding});$$
$$\eta_{media} = 0.25;\quad \eta_{gravel} = 0.4$$

Bioretention Planter No.	(A) SA_{bottom} & $SA_{average}$ (ft)	(B) Freeboard (ft)	(C) $d_{ponding}$ (ft)	(D) d_{media} (ft)	(E) d_{gravel} (ft)	(F) Total Inside Depth (ft)	Storage Volume Sv (ft^3)
7718–1–1	2786	0.57	1.00	5.00	1	7.57	7383
TOTAL	2786						7383

3 / CIV1100 — BIORETENTION PLANTER DETAIL & COMPUTATIONS

NOT TO SCALE

ANY PROPOSED DEVIATION FROM THE STORMWATER MANAGEMENT DETAILS OR SPECIFICATIONS SHOWN ON THESE PLANS WILL REQUIRE SUBMISSION TO DOEE AS A FORMAL PLAN REVISION FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION. ALL SUBMITTALS RELATED TO THE STORMWATER MANAGEMENT FACILITIES SHALL BE PROVIDED TO THE OWNER, ARCHITECT, AND CIVIL ENGINEER FOR REVIEW AND COMPLIANCE VERIFICATION.

GOVERNMENT OF THE DISTRICT OF COLUMBIA
PERMIT OPERATIONS DIVISION
PLANS APPROVED
Permit No. SH2400019 Date 04/09/24

These plans are conditionally approved as submitted or noted during plan review and are subject to field inspection. Approved plans must be kept on site and are needed for all inspections. No changes or modifications to these plans. Changes require a revision permit with the revised plans. Trade Permits are required for trade work. e.g. Electrical or Plumbing

HPRB Review - Timothy Dennee - 04-09-2024
Zoning Review - Ernesto Warren - 04-09-2024
Structural Review - Tong Li - 04-09-2024
DOEE SE-SW Review - Saba Gharavi - 04-09-2024

VIKA CAPITOL
ENGINEERS ★ PLANNERS ★ LANDSCAPE ARCHITECTS ★ SURVEYORS ★ GEOMATICS
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MARET SCHOOL
PROPOSED ATHLETIC FIELDS
SQUARE 2319, LOT 832
5901 UTAH AVE NW
WASHINGTON, D.C. 20015

STORMWATER MANAGEMENT NOTES AND DETAILS

VIKA CAPITOL REVISIONS

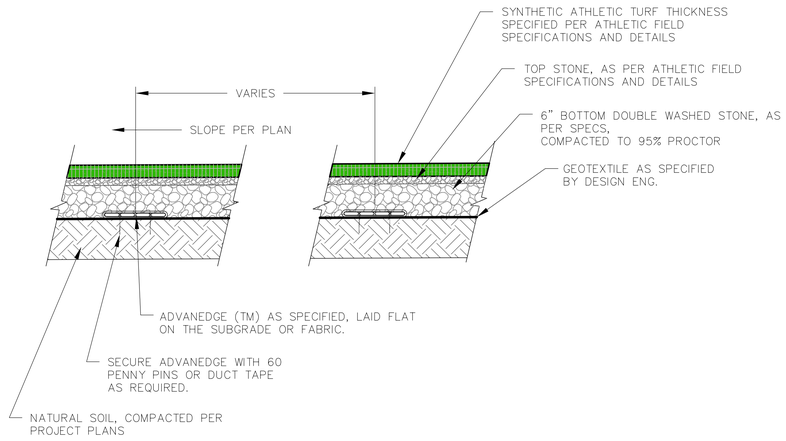
#	DATE	DESCRIPTION
2	8–11–23	DOEE RESUB
1	6–6–23	DDOT/DOEE RESUB

DISTRICT OF COLUMBIA — PROFESSIONAL ENGINEER — CIVIL — PE900770

DATE: 23–FEB–2023
DES. KUO DWN. BJR
SCALE: AS SHOWN
PROJECT/FILE NO. VC0626D
SHEET NO. CIV1100

Board of Zoning Adjustment
District of Columbia
CASE NO.21100
EXHIBIT NO.31A

SYNTHETIC TRUF ATHLETIC FIELD DRAIN PROFILE



NOTES:

1. PIPE INSTALLATION DEPTH, SPACING, SLOPE AND BACKFILL MATERIAL SHALL BE DETERMINED AND SPECIFIED BY DESIGN ENGINEER.
2. THE USE OF FABRIC AROUND ADVANEDGE OR IN THE TRENCH SHALL BE DETERMINED BY DESIGN ENGINEER TAKING INTO ACCOUNT THE PARTICLE SIZE DISTRIBUTION OF THE BACKFILL AND INSITU MATERIAL.

REV.	DESCRIPTION	BY	MM/DD/YY	CHK'D
1	FORMATTING UPDATES AND RENAMED	TJR	03/09/16	

SYNTHETIC TURF ATHLETIC FIELD DRAIN PROFILE (ADVANEDGE)
DRAWING NUMBER: STD-1222

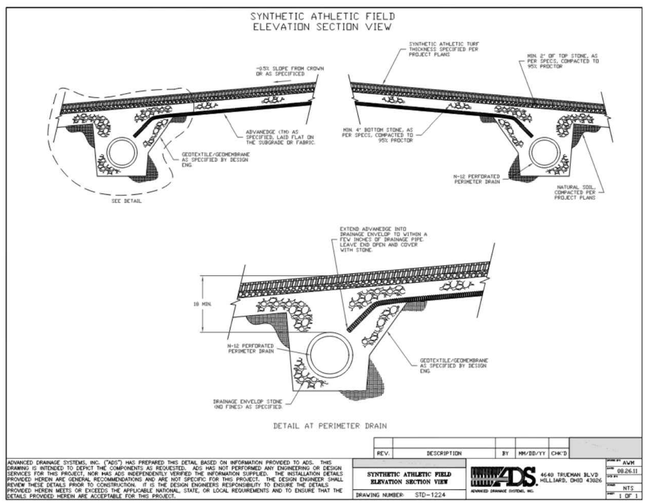
ADS. 4640 TRUEMAN BLVD HILLIARD, OHIO 43026
ADVANCED DRAINAGE SYSTEMS, INC.

DRAWN BY: AWM
DATE: 08.26.11
CHK'D BY:
SCALE: NTS
SHEET 1 OF 1

NOTES

- CONTRACTOR SHALL SUBMIT ARTIFICIAL TURF SAMPLE AND CROSS SECTION DETAIL FOR REVIEW AND APPROVAL BY CLIENT, AND CIVIL ENGINEER, PRIOR TO ORDERING, OR INSTALLATION
- ARTIFICIAL TURF PERMEABILITY MUST BE AT LEAST 10" PER HOUR IN ACCORDANCE WITH ASTM F2898 STANDARD TEST METHOD.

1 CIV1110 — ARTIFICIAL TURF AND ADVANEDGE DRAINAGE SCHEMATIC DETAIL
N.T.S.



REV.	DESCRIPTION	BY	MM/DD/YY	CHK'D

SYNTHETIC ATHLETIC FIELD ELEVATION SECTION VIEW
DRAWING NUMBER: STD-1224

ADS. 4640 TRUEMAN BLVD HILLIARD, OHIO 43026
ADVANCED DRAINAGE SYSTEMS, INC.

DRAWN BY: AWM
DATE: 08.26.11
CHK'D BY:
SCALE: NTS
SHEET 1 OF 1

2 CIV1110 — ADVANEDGE DRAINAGE EDGE DETAIL INTO GRAVEL DETENTION RESERVOIR
N.T.S.

ARTIFICIAL TURF SUBMISSION

1. CONTRACTOR SHALL SUBMIT ARTIFICIAL TURF SAMPLE AND SPECIFICATIONS TO THE PROJECT TEAM FOR APPROVAL.
2. ARTIFICIAL TURF PERMEABILITY MUST BE AT LEAST 10" PER HOUR IN ACCORDANCE WITH ASTM F2898 STANDARD TEST METHOD

PERMEABLE PAVEMENT STORAGE VOLUME COMPUTATIONS

$S_V = SA_{PP} \times [(d_r \times \eta_m) + (0.5 \times i \times t_F)]$

BMP NAME	SA_{PP} (sf) Surface Area of Permeable Pavement	d_r (in) Reservoir Depth	η_m Media Volume of Voids	i (ft/day) Infiltration Rate	t_F (day) Time to Fill	Storage Volume Sv (ft^3)
7718–1–2	108,013	6.00	0.40	–	.083	21,603
7718–1–2	22,000	48.00	0.40	–	.083	35,200
					TOTAL	56,803
Sv for Bio–Retention						7,203
Sv for 60" Pipe						2,651
					TOTAL	66,657

DETENTION NARRATIVE/SUMMARY

THE DETENTION REQUIREMENT HAS BEEN MET AND EXCEEDED THROUGH A COMBINATION OF THE FOLLOWING:

1. GRAVEL RESERVOIRS WITHIN THE ARTIFICIAL TURF SYSTEM
   - 108,013 SF WITH 6" OF GRAVEL BASE PLUS
   - 22,000 SF WITH A 48" (4') GRAVEL RESERVOIR
2. BIO–RETENTION STORAGE (SEE BIO–RETENTION CALCULATIONS)
3. 60" STORAGE PIPE – 150' OF 60" PIPE HAS 2,651 CF OF STORAGE

ANY PROPOSED DEVIATION FROM THE STORMWATER MANAGEMENT DETAILS OR SPECIFICATIONS SHOWN ON THESE PLANS WILL REQUIRE SUBMISSION TO DOEE AS A FORMAL PLAN REVISION FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION. ALL SUBMITTALS RELATED TO THE STORMWATER MANAGEMENT FACILITIES SHALL BE PROVIDED TO THE OWNER, ARCHITECT, AND CIVIL ENGINEER FOR REVIEW AND COMPLIANCE VERIFICATION.

VIKA CAPITOL
ENGINEERS ★ PLANNERS ★ LANDSCAPE ARCHITECTS ★ SURVEYORS ★ GEOMATICS
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SQUARE 2319, LOT 832
5901 UTAH AVE. NW
WASHINGTON, D.C. 20015

STORMWATER MANAGEMENT NOTES AND DETAILS

VIKA CAPITOL REVISIONS

#	DATE	DESCRIPTION

2 8-11-24 DOEE RESUB
1 6-6-23 DDOT/DOEE RESUB

DATE: 23–FEB–2023
DES. KUO DWN. BJR
SCALE: AS SHOWN
PROJECT/FILE NO. VC0626D
SHEET NO. CIV1110

DISTRICT OF COLUMBIA — KALE U. OLIVER — PE#900776 — 10/8/2023 — CIVIL — PROFESSIONAL ENGINEER

NOTE: THE BELOW SPECIFICATIONS ALSO APPLY TO THE ARTIFICIAL TURF INSTALLATION & MAINTENANCE, WHICH IS CONSIDERED PERMEABLE PAVEMENT. ALL REFERENCES TO PERMEABLE PAVEMENT BELOW SHALL APPLY TO THE ARTIFICIAL TURF ON THIS PROJECT

PERMEABLE PAVEMENT INSTALLATION NOTES

PERMEABLE PAVEMENT CONSTRUCTION SEQUENCE

EXPERIENCE HAS SHOWN THAT PROPER INSTALLATION IS CRITICAL TO THE EFFECTIVE OPERATION OF A PERMEABLE PAVEMENT SYSTEM.

SOIL EROSION AND SEDIMENT CONTROLS

THE FOLLOWING SOIL EROSION AND SEDIMENT CONTROL GUIDELINES MUST BE FOLLOWED DURING CONSTRUCTION:

- ALL PERMEABLE PAVEMENT AREAS MUST BE FULLY PROTECTED FROM SEDIMENT INTRUSION BY SILT FENCE OR CONSTRUCTION FENCING, PARTICULARLY IF THEY ARE INTENDED TO INFILTRATE RUNOFF.
- PERMEABLE PAVEMENT AREAS INTENDED TO INFILTRATE RUNOFF MUST REMAIN OUTSIDE THE LIMITS OF DISTURBANCE DURING CONSTRUCTION TO PREVENT SOIL COMPACTION BY HEAVY EQUIPMENT AND LOSS OF DESIGN INFILTRATION RATE (UNLESS THE AREA HAS BEEN DETERMINED TO HAVE A LOW CALIFORNIA BEARING RATIO AND WILL REQUIRE COMPACTION DURING THE PERMEABLE PAVEMENT CONSTRUCTION PHASE) (ASTM, 2009). WHERE IT IS INFEASIBLE TO KEEP THE PROPOSED PERMEABLE PAVEMENT AREAS OUTSIDE OF THE LIMITS OF DISTURBANCE, THERE ARE SEVERAL POSSIBLE REMEDIES FOR THE IMPACTED AREA.
  - IF EXCAVATION IN THE PROPOSED PERMEABLE PAVEMENT AREAS CAN BE RESTRICTED, THEN REMEDIATION CAN BE ACHIEVED WITH DEEP TILLING PRACTICES. THIS IS ONLY POSSIBLE IF IN SITU SOILS ARE NOT DISTURBED ANY DEEPER THAN 2 FEET ABOVE THE FINAL DESIGN ELEVATION OF THE BOTTOM OF THE AGGREGATE RESERVOIR COURSE. IN THIS CASE, WHEN HEAVY EQUIPMENT ACTIVITY HAS CEASED, THE AREA IS EXCAVATED TO GRADE, AND THE IMPACTED AREA MUST BE TILLED TO A DEPTH OF 12 INCHES BELOW THE BOTTOM OF THE RESERVOIR LAYER.
  - ALTERNATIVELY, IF IT IS INFEASIBLE TO KEEP THE PROPOSED PERMEABLE PAVEMENT AREAS OUTSIDE OF THE LIMITS OF DISTURBANCE, AND EXCAVATION OF THE AREA CANNOT BE RESTRICTED, THEN INFILTRATION TESTS WILL BE REQUIRED PRIOR TO INSTALLATION OF THE PERMEABLE PAVEMENT TO ENSURE THAT THE DESIGN INFILTRATION RATE IS STILL PRESENT. IF TESTS REVEAL THE LOSS OF DESIGN INFILTRATION RATES, THEN DEEP TILLING PRACTICES MAY BE USED IN AN EFFORT TO RESTORE THOSE RATES. IN THIS CASE, FURTHER TESTING MUST BE DONE BEFORE THE PERMEABLE PAVEMENT CAN BE INSTALLED TO ESTABLISH THAT DESIGN RATES HAVE BEEN ACHIEVED.
  - FINALLY, IF IT IS INFEASIBLE TO KEEP THE PROPOSED PERMEABLE PAVEMENT AREAS OUTSIDE OF THE LIMITS OF DISTURBANCE, EXCAVATION OF THE AREA CANNOT BE RESTRICTED, AND INFILTRATION TESTS REVEAL DESIGN RATES CANNOT BE RESTORED, THEN A RESUBMISSION OF THE SWMP WILL BE REQUIRED.
- PERMEABLE PAVEMENT AREAS MUST BE CLEARLY MARKED ON ALL CONSTRUCTION DOCUMENTS AND GRADING PLANS.
- DURING CONSTRUCTION, CARE SHOULD BE TAKEN TO AVOID TRACKING SEDIMENTS ONTO ANY PERMEABLE PAVEMENT SURFACE TO AVOID POST-CONSTRUCTION CLOGGING AND LONG-TERM MAINTENANCE ISSUES.
- ANY AREA OF THE SITE INTENDED ULTIMATELY TO BE A PERMEABLE PAVEMENT AREA WITH AN INFILTRATION COMPONENT SHOULD NOT BE USED AS THE SITE OF A TEMPORARY SEDIMENT TRAP OR BASIN. IF LOCATING A TEMPORARY SEDIMENT TRAP OR BASIN ON AN AREA INTENDED FOR PERMEABLE PAVEMENT IS UNAVOIDABLE, THE REMEDIES ARE SIMILAR TO THOSE DISCUSSED FOR HEAVY EQUIPMENT COMPACTION.
  - IF IT IS POSSIBLE, RESTRICT THE INVERT OF THE SEDIMENT TRAP OR BASIN TO AT LEAST 1 FOOT ABOVE THE FINAL DESIGN ELEVATION OF THE BOTTOM OF THE AGGREGATE RESERVOIR COURSE OF THE PROPOSED PERMEABLE PAVEMENT. THEN REMEDIATION CAN BE ACHIEVED WITH PROPER REMOVAL OF TRAPPED SEDIMENTS AND DEEP TILLING PRACTICES.
  - AN ALTERNATE APPROACH TO DEEP TILLING IS TO USE AN IMPERMEABLE LINEAR TO PROTECT THE IN SITU SOILS FROM SEDIMENTATION WHILE THE SEDIMENT TRAP OR BASIN IS IN USE.
  - IN EACH CASE, ALL SEDIMENT DEPOSITS IN THE EXCAVATED AREA MUST BE CAREFULLY REMOVED PRIOR TO INSTALLING THE SUB-BASE, BASE, AND SURFACE MATERIALS. THE PLAN MUST ALSO SHOW THE PROPER PROCEDURES FOR CONVERTING THE TEMPORARY SEDIMENT CONTROL PRACTICE TO A PERMEABLE PAVEMENT BMP, INCLUDING DEWATERING, CLEANOUT, AND STABILIZATION.

PERMEABLE PAVEMENT INSTALLATION

THE FOLLOWING IS A TYPICAL CONSTRUCTION SEQUENCE TO PROPERLY INSTALL PERMEABLE PAVEMENT, WHICH MAY NEED TO BE MODIFIED DEPENDING ON THE PARTICULAR TYPE OF PERMEABLE PAVEMENT THAT IS BEING INSTALLED.

STEP 1: STABILIZE CONTRIBUTING DRAINAGE AREA. CONSTRUCTION OF THE PERMEABLE PAVEMENT SHOULD ONLY BEGIN AFTER THE ENTIRE CDA HAS BEEN STABILIZED. THE PROPOSED SITE SHOULD BE CHECKED FOR EXISTING UTILITIES PRIOR TO ANY EXCAVATION. DO NOT INSTALL THE SYSTEM IN RAIN OR SNOW AND DO NOT INSTALL FROZEN BEDDING MATERIALS.

STEP 2: INSTALL SOIL EROSION AND SEDIMENT CONTROL MEASURES FOR THE PERMEABLE PAVEMENT. AS NOTED ABOVE, TEMPORARY SOIL EROSION AND SEDIMENT CONTROLS ARE NEEDED DURING INSTALLATION TO DIVERT STORMWATER AWAY FROM THE PERMEABLE PAVEMENT AREA UNTIL IT IS COMPLETED. SPECIAL PROTECTION MEASURES, SUCH AS EROSION CONTROL FABRICS, MAY BE NEEDED TO PROTECT VULNERABLE SIDE SLOPES FROM EROSION DURING THE EXCAVATION PROCESS. THE PROPOSED PERMEABLE PAVEMENT AREA MUST BE KEPT FREE FROM SEDIMENT DURING THE ENTIRE CONSTRUCTION PROCESS. CONSTRUCTION MATERIALS CONTAMINATED BY SEDIMENT MUST BE REMOVED AND REPLACED WITH CLEAN MATERIAL.

STEP 3: MINIMIZE IMPACT OF HEAVY INSTALLATION EQUIPMENT. WHERE POSSIBLE, EXCAVATORS OR BACKHOES SHOULD WORK FROM THE SIDES TO EXCAVATE THE RESERVOIR LAYER TO ITS APPROPRIATE DESIGN DEPTH AND DIMENSIONS. FOR SMALL PAVEMENT APPLICATIONS, EXCAVATING EQUIPMENT SHOULD HAVE ARMS WITH ADEQUATE EXTENSION SO THEY DO NOT HAVE TO WORK INSIDE THE FOOTPRINT OF THE PERMEABLE PAVEMENT AREA (TO AVOID COMPACTION). CONTRACTORS CAN UTILIZE A CELL CONSTRUCTION APPROACH, WHEREBY THE PROPOSED PERMEABLE PAVEMENT AREA IS SPLIT INTO 500- TO 1,000-SQUARE FOOT TEMPORARY CELLS WITH A 10- TO 15-FOOT-WIDE EARTH BRIDGE IN BETWEEN, SO CELLS CAN BE EXCAVATED FROM THE SIDE. EXCAVATED MATERIAL SHOULD BE PLACED AWAY FROM THE OPEN EXCAVATION SO AS TO NOT JEOPARDIZE THE STABILITY OF THE SIDE WALLS.

STEP 4: PROMOTE INFILTRATION RATE. THE NATIVE SOILS ALONG THE BOTTOM OF THE PERMEABLE PAVEMENT SYSTEM SHOULD BE SCARIFIED OR TILLED TO A DEPTH OF 3 TO 4 INCHES PRIOR TO THE PLACEMENT OF THE FILTER LAYER OR GEOTEXTILE FABRIC. IN LARGE-SCALE PAVING APPLICATIONS WITH WEAK SOILS, THE SOIL SUBGRADE MAY NEED TO BE COMPACTED TO 95% OF THE STANDARD PROCTOR DENSITY TO ACHIEVE THE DESIRED LOAD-BEARING CAPACITY.

NOTE: THIS MAY REDUCE OR ELIMINATE THE INFILTRATION FUNCTION OF THE INSTALLATION, AND IT MUST BE ADDRESSED DURING HYDROLOGIC DESIGN.

STEP 5: ORDER OF MATERIALS. GEOTEXTILE FABRIC SHOULD BE INSTALLED ON THE SIDES OF THE RESERVOIR LAYER (AND THE BOTTOM IF THE DESIGN CALLS FOR IT). GEOTEXTILE FABRIC STRIPS SHOULD OVERLAP DOWN-SLOPEBY A MINIMUM OF 2 FEET AND BE SECURED A MINIMUM OF 4 FEET BEYOND THE EDGE OF THE EXCAVATION. WHERE THE FILTER LAYER EXTENDS BEYOND THE EDGE OF THE PAVEMENT (TO CONVEY RUNOFF TO THE RESERVOIR LAYER), INSTALL AN ADDITIONAL LAYER OF GEOTEXTILE FABRIC 1 FOOT BELOW THE SURFACE TO PREVENT SEDIMENT FROM ENTERING INTO THE RESERVOIR LAYER. EXCESS GEOTEXTILE FABRIC SHOULD NOT BE TRIMMED UNTIL THE SITE IS FULLY STABILIZED.

STEP 6: INSTALL BASE MATERIAL COMPONENTS. THE UP-GRADIENT END OF UNDERDRAINS IN THE RESERVOIR LAYER SHOULD BE CAPPED. WHERE AN UNDERDRAIN PIPE IS CONNECTED TO A STRUCTURE, THERE SHALL BE NO PERFORATIONS WITHIN 1 FOOT OF THE STRUCTURE. ENSURE THERE ARE NO PERFORATIONS IN CLEAN-OUTS AND OBSERVATION WELLS WITHIN 1 FOOT OF THE SURFACE.

STEP 7: STONE MEDIA. SPREAD 6-INCH LIFTS OF THE APPROPRIATE STONE AGGREGATE (USUALLY NO. 2 OR NO. 57 STONE) WASHED CLEAN AND FREE OF FINES. PLACE AT LEAST 4 INCHES OF ADDITIONAL AGGREGATE ABOVE THE UNDERDRAIN, AND THEN COMPACT IT USING A VIBRATORY ROLLER IN STATIC MODE UNTIL THERE IS NO VISIBLE MOVEMENT OF THE AGGREGATE. DO NOT CRUSH THE AGGREGATE WITH THE ROLLER.

STEP 8: RESERVOIR MEDIA. INSTALL THE DESIRED DEPTH OF THE BEDDING LAYER, DEPENDING ON THE TYPE OF PAVEMENT, AS INDICATED IN TABLE 3-12.

STEP 9: PAVING MEDIA. PAVING MATERIALS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER OR INDUSTRY SPECIFICATIONS FOR THE PARTICULAR TYPE OF PAVEMENT.

PERMEABLE PAVEMENT (CONT)

PERMEABLE INTERLOCKING CONCRETE PAVER INSTALLATION

THE BASIC INSTALLATION PROCESS IS DESCRIBED IN GREATER DETAIL BY SMITH (2006):

- PLACE EDGE RESTRAINTS FOR OPEN-JOINTED PAVEMENT BLOCKS BEFORE THE BEDDING LAYER AND PAVEMENT BLOCKS ARE INSTALLED. PERMEABLE INTERLOCKING CONCRETE PAVEMENT SYSTEMS REQUIRE EDGE RESTRAINTS TO PREVENT VEHICLE LOADS FROM MOVING THE PAVER BLOCKS. EDGE RESTRAINTS MAY BE STANDARD CURBS OR GUTTER PANS, OR PRECAST OR CAST-IN-PLACE REINFORCED CONCRETE BORDERS A MINIMUM OF 6 INCHES WIDE AND 18 INCHES DEEP, CONSTRUCTED WITH CLASS A3 CONCRETE. EDGE RESTRAINTS ALONG THE TRAFFIC SIDE OF A PERMEABLE PAVEMENT BLOCK SYSTEM ARE RECOMMENDED.
- PLACE THE NO. 57 STONE IN A SINGLE LIFT. LEVEL THE FILTER COURSE AND COMPACT IT INTO THE RESERVOIR COURSE BENEATH WITH AT LEAST FOUR PASSES OF A 10-TON STEEL DRUM STATIC ROLLER UNTIL THERE IS NO VISIBLE MOVEMENT. THE FIRST TWO PASSES ARE IN VIBRATORY MODE, WITH THE FINAL TWO PASSES IN STATIC MODE. THE FILTER AGGREGATE SHOULD BE MOIST TO FACILITATE MOVEMENT INTO THE RESERVOIR COURSE.
- PLACE AND SCREED THE BEDDING COURSE MATERIAL (TYPICALLY NO. 8 STONE). FILL GAPS AT THE EDGE OF THE PAVED AREAS WITH CUT PAVERS OR EDGE UNITS. WHEN CUT PAVERS ARE NEEDED, CUT THE PAVERS WITH A PAVER SPLITTER OR MASONRY SAW. CUT PAVERS NO SMALLER THAN 1/3 OF THE FULL UNIT SIZE.
- PAVERS MAY BE PLACED BY HAND OR WITH MECHANICAL INSTALLERS. FILL THE JOINTS AND OPENINGS WITH STONE. JOINT OPENINGS MUST BE FILLED WITH ASTM D448 NO. 8 STONE; ALTHOUGH, NO. 8P OR NO. 9 STONE MAY BE USED WHERE NEEDED TO FILL NARROWER JOINTS. REMOVE EXCESS STONES FROM THE PAVER SURFACE.
- COMPACT AND SEAT THE PAVERS INTO THE BEDDING COURSE WITH A MINIMUM LOW-AMPLITUDE 5,000-POUND-FOOT,75- TO 95-HZ PLATE COMPACTOR.
- DO NOT COMPACT WITHIN 6 FEET OF THE UNRESTRAINED EDGES OF THE PAVERS.
- THE SYSTEM MUST BE THOROUGHLY SWEPT BY A MECHANICAL SWEEPER OR VACUUMED IMMEDIATELY AFTER CONSTRUCTION TO REMOVE ANY SEDIMENT OR EXCESS AGGREGATE.
- INSPECT THE AREA FOR SETTLEMENT. ANY BLOCKS THAT SETTLE MUST BE RESET AND RE-INSPECTED.
- INSPECT THE FACILITY 18 TO 30 HOURS AFTER A SIGNIFICANT RAINFALL (0.5 INCH OR GREATER) OR ARTIFICIAL FLOODING TO DETERMINE WHETHER THE FACILITY IS DRAINING PROPERLY.

CONSTRUCTION SUPERVISION

SUPERVISION BEFORE, DURING, AND AFTER CONSTRUCTION BY A QUALIFIED PROFESSIONAL IS RECOMMENDED TO ENSURE PERMEABLE PAVEMENT IS BUILT IN ACCORDANCE WITH THESE SPECIFICATIONS. ASTM TEST C1781 OR C1701 MUST BE PERFORMED TO ENSURE INITIAL PAVEMENT PERMEABILITY OF AT LEAST 6 INCHES PER HOUR. INSPECTION CHECKLISTS THAT REQUIRE SIGN-OFFS BY QUALIFIED INDIVIDUALS SHOULD BE USED AT CRITICAL STAGES OF CONSTRUCTION TO ENSURE THE CONTRACTOR'S INTERPRETATION OF THE PLAN IS CONSISTENT WITH THE DESIGNER'S INTENT.

DOEE'S CONSTRUCTION PHASE INSPECTION CHECKLIST FOR PERMEABLE PAVEMENT PRACTICES CAN BE FOUND IN APPENDIX L – CONSTRUCTION INSPECTION CHECKLISTS.

SOME COMMON PITFALLS CAN BE AVOIDED BY CAREFUL CONSTRUCTION SUPERVISION THAT FOCUSES ON THE FOLLOWING KEY ASPECTS OF PERMEABLE PAVEMENT INSTALLATION:

- STORE MATERIALS IN A PROTECTED AREA TO KEEP THEM FREE FROM MUD, DIRT, AND OTHER FOREIGN MATERIALS.
- THE CDA SHOULD BE STABILIZED PRIOR TO DIRECTING WATER TO THE PERMEABLE PAVEMENT AREA.
- CHECK THE AGGREGATE MATERIAL TO CONFIRM IT IS CLEAN AND WASHED, MEETS SPECIFICATIONS AND IS INSTALLED TO THE CORRECT DEPTH. AGGREGATE LOADS THAT DO NOT MEET THE SPECIFICATIONS OR DO NOT APPEAR TO BE SUFFICIENTLY WASHED MAY BE REJECTED.
- CHECK ELEVATIONS (I.E., THE INVERT OF THE UNDERDRAIN, INVERTS FOR THE INFLOW, AND OUTFLOW POINTS) AND THE SURFACE SLOPE.
- MAKE SURE THE PERMEABLE PAVEMENT SURFACE IS EVEN, RUNOFF SPREADS EVENLY ACROSS IT, AND THE STORAGE BED DRAINS WITHIN 48 HOURS.
- ENSURE CAPS ARE PLACED ON THE UPSTREAM (BUT NOT THE DOWNSTREAM) ENDS OF THE UNDERDRAINS.
- INSPECT THE PRETREATMENT STRUCTURES (IF APPLICABLE) TO MAKE SURE THEY ARE PROPERLY INSTALLED AND WORKING EFFECTIVELY.
- ONCE THE FINAL CONSTRUCTION INSPECTION HAS BEEN COMPLETED, LOG THE GPS COORDINATES FOR EACH FACILITY AND SUBMIT THEM FOR ENTRY INTO THE BMP MAINTENANCE TRACKING DATABASE.

RUNOFF DIVERSION STRUCTURES ARE RECOMMENDED TO PROTECT LARGER PERMEABLE PAVEMENT APPLICATIONS FROM EARLY RUNOFF-PRODUCING STORMS, PARTICULARLY WHEN UP-GRADIENT CONVENTIONAL ASPHALT AREAS DRAIN TO THE PERMEABLE PAVEMENT. THIS CAN HELP REDUCE THE INPUT OF FINE PARTICLES OFTEN PRODUCED SHORTLY AFTER CONVENTIONAL ASPHALT IS LAID.

PERMEABLE PAVEMENT MAINTENANCE CRITERIA

MAINTENANCE IS A REQUIRED AND CRUCIAL ELEMENT TO ENSURE THE LONG-TERM PERFORMANCE OF PERMEABLE PAVEMENT. THE MOST FREQUENTLY CITED MAINTENANCE PROBLEM IS SURFACE CLOGGING CAUSED BY ORGANIC MATTER AND SEDIMENT. PERIODIC STREET SWEEPING WILL REMOVE ACCUMULATED SEDIMENT AND HELP PREVENT CLOGGING; HOWEVER, IT IS ALSO CRITICAL TO ENSURE THAT SURROUNDING LAND AREAS REMAIN STABILIZED.

THE FOLLOWING TASKS MUST BE AVOIDED ON ALL PERMEABLE PAVEMENTS:

- SANDING
- RESEALING
- RESURFACING
- POWER WASHING
- STORAGE OF SNOW PILES CONTAINING SAND
- STORAGE OF MULCH OR SOIL MATERIALS
- CONSTRUCTION STAGING ON UNPROTECTED PAVEMENT

IT IS DIFFICULT TO PRESCRIBE THE SPECIFIC TYPES OR FREQUENCY OF MAINTENANCE TASKS THAT ARE NEEDED TO MAINTAIN THE HYDROLOGIC FUNCTION OF PERMEABLE PAVEMENT SYSTEMS OVER TIME. THE FREQUENCY OF MAINTENANCE WILL DEPEND LARGELY ON THE PAVEMENT USE, TRAFFIC LOADS, AND THE SURROUNDING LAND.

ONE PREVENTATIVE MAINTENANCE TASK FOR LARGE-SCALE APPLICATIONS (E.G., PARKING LOTS) INVOLVES VACUUM SWEEPING ON A FREQUENCY CONSISTENT WITH THE USE AND LOADINGS ENCOUNTERED IN THE SITE. MANY EXPERTS CONSIDER AN ANNUAL, DRY-WEATHER SWEEPING IN THE SPRING MONTHS TO BE IMPORTANT. THE CONTRACT FOR SWEEPING SHOULD SPECIFY THAT A VACUUM SWEEPER BE USED THAT DOES NOT USE WATER SPRAY, SINCE SPRAYING MAY LEAD TO SUBSURFACE CLOGGING. TYPICAL MAINTENANCE TASKS ARE OUTLINED IN:

Table 3-13 Typical Maintenance Tasks for Permeable Pavement Practices

Frequency	Maintenance Tasks
After installation	▪ For the first 6 months following construction, the practice and CDA should be inspected at least twice after storm events that exceed 0.5 inch of rainfall. Conduct any needed repairs or stabilization.
Once every 1–2 months during the growing season	▪ Mow grass in grid paver applications (clippings should be removed from the pavement area).
As needed	▪ Stabilize the CDA to prevent erosion. ▪ Remove any soil or sediment deposited on pavement. ▪ Replace or repair any pavement surfaces that are degenerating or spalling.
2–4 times per year (depending on use)	▪ Mechanically sweep pavement with a standard street sweeper to prevent clogging.
Annually	▪ Conduct a maintenance inspection ▪ Remove weeds as needed.
Once every 2–3 years	▪ Remove any accumulated sediment in pretreatment cells and inflow points.
If clogged	▪ Conduct maintenance using a regenerative street sweeper or a vacuum sweeper ▪ Replace any necessary joint material.

SEASONAL MAINTENANCE CONSIDERATIONS

WINTER MAINTENANCE FOR PERMEABLE PAVEMENTS IS SIMILAR TO STANDARD PAVEMENTS, WITH A FEW ADDITIONAL CONSIDERATIONS:

- LARGE SNOW STORAGE PILES SHOULD BE LOCATED IN ADJACENT GRASSY AREAS SO THAT SEDIMENT AND POLLUTANTS IN SNOWMELT ARE PARTIALLY TREATED BEFORE THEY REACH THE PERMEABLE PAVEMENT.
- SAND OR CINDERS SHOULD NEVER BE APPLIED FOR WINTER TRACTION OVER PERMEABLE PAVEMENT OR AREAS OF STANDARD (IMPERVIOUS) PAVEMENT THAT DRAIN TOWARD PERMEABLE PAVEMENT, SINCE IT WILL QUICKLY CLOG THE SYSTEM.
- WHEN PLOWING PLASTIC REINFORCED GRID PAVEMENTS, SNOW PLOW BLADES SHOULD BE LIFTED 0.5 INCH TO 1 INCH ABOVE THE PAVEMENT SURFACE TO PREVENT DAMAGE TO THE PAVING BLOCKS OR TURF. POROUS ASPHALT, PERVIOUS CONCRETE, AND SOME PERMEABLE PAVERS CAN BE PLOWED SIMILARLY TO TRADITIONAL PAVEMENTS, USING SIMILAR EQUIPMENT AND SETTINGS.
- CHLORIDE PRODUCTS SHOULD BE USED JUDICIOUSLY TO DEICE ABOVE PERMEABLE PAVEMENT DESIGNED FOR INFILTRATION, SINCE THE SALT WILL BE TRANSMITTED THROUGH THE PAVEMENT. SALT CAN BE APPLIED BUT ENVIRONMENTALLY SENSITIVE DEICERS ARE RECOMMENDED. PERMEABLE PAVEMENT APPLICATIONS WILL GENERALLY REQUIRE LESS SALT APPLICATION THAN TRADITIONAL PAVEMENTS.

WHEN PERMEABLE PAVEMENTS ARE INSTALLED ON PRIVATE RESIDENTIAL LOTS, HOMEOWNERS WILL NEED TO (1) BE EDUCATED ABOUT THEIR ROUTINE MAINTENANCE NEEDS AND (2) UNDERSTAND THE LONG-TERM MAINTENANCE.

IT IS RECOMMENDED THAT A QUALIFIED PROFESSIONAL CONDUCT A SPRING MAINTENANCE INSPECTION AND CLEANUP AT EACH PERMEABLE PAVEMENT SITE, PARTICULARLY AT LARGE-SCALE APPLICATIONS. DOEE'S MAINTENANCE INSPECTION CHECKLISTS FOR PERMEABLE PAVEMENTS AND THE MAINTENANCE SERVICE COMPLETION INSPECTION FORM CAN BE FOUND IN APPENDIX L – CONSTRUCTION INSPECTION CHECKLISTS.

TREE PRESERVATION NOTES

PROTECT TREES AND SOIL DURING CONSTRUCTION SEQUENCE

PHYSICAL BARRIERS SHOULD BE PROPERLY INSTALLED AROUND THE CRITICAL ROOT ZONE (CRZ) OF TREES TO BE PRESERVED. THE CRZ SHALL BE DETERMINED BY A LANDSCAPE PROFESSIONAL FROM THE ABOVE LIST, AND IN GENERAL IS EQUAL TO 1.5 FEET OF TREE PROTECTION (RADIUS OF CIRCLE) FOR EVERY 1 INCH IN TREE DIAMETER. FOR EXAMPLE, A 10-INCH DIAMETER TREE WOULD HAVE A CRZ RADIUS EXTENDING 15 FEET FROM THE TREE. THE BARRIERS MUST BE MAINTAINED AND ENFORCED THROUGHOUT THE CONSTRUCTION PROCESS. TREE PROTECTION BARRIERS INCLUDE HIGHLY VISIBLE, WELL-ANCHORED TEMPORARY PROTECTION DEVICES, SUCH AS 6-FOOT-TALL CHAIN LINK OR 4-FOOT WOODEN SNOW FENCING. ALL PROTECTION DEVICES MUST REMAIN IN PLACE THROUGHOUT CONSTRUCTION.

IF LAND DISTURBANCE IS PROPOSED WITHIN THE CRZ, THE TREE MAY BE COUNTED FOR PRESERVATION ONLY IF A TREE PRESERVATION PLAN IS PREPARED AND CERTIFIED BY ONE OF THE LANDSCAPE PROFESSIONALS IN THE LIST ABOVE (SEE "INVENTORY EXISTING TREES" SECTION). REFER TO DOEE'S EROSION AND SEDIMENT CONTROL MANUAL REGARDING TREE PROTECTION MEASURES THAT CAN BE TAKEN DURING CONSTRUCTION.

PRESERVED TREE BMPS MUST BE INCLUDED WITHIN THE LIMIT OF DISTURBANCE (LOD) DELINEATED ON THE PLANS TO BE COUNTED TOWARD MEETING STORMWATER MANAGEMENT REQUIREMENTS, EVEN IF NO DISTURBANCE TAKES PLACE WITHIN THE PROTECTED ZONE.

PROTECT TREES AFTER CONSTRUCTION

MAINTENANCE COVENANTS, AS DESCRIBED BELOW, ARE REQUIRED TO ENSURE THAT PRESERVED TREES ARE PROTECTED.

TREE MAINTENANCE CRITERIA

WATER NEWLY PLANTED TREES REGULARLY (AT LEAST ONCE A WEEK) DURING THE FIRST GROWING SEASON. WATER TREES LESS FREQUENTLY (ABOUT ONCE A MONTH) DURING THE NEXT TWO GROWING SEASONS. AFTER THREE GROWING SEASONS, WATER TREES ONLY DURING DROUGHT. THE EXACT WATERING FREQUENCY WILL VARY FOR EACH TREE AND SITE.

A GENERAL HORTICULTURAL RULE OF THUMB IS THAT TREES NEED 1 INCH OF RAINFALL PER WEEK DURING THE GROWING SEASON. THIS MEANS NEW TREES NEED A MINIMUM OF 25 GALLONS OF WATER A WEEK TO STAY ALIVE HTTP://CASEYTREES.ORG/GET-INVOLVED/WATER/). WATER TREES DEEPLY AND SLOWLY NEAR THE ROOTS. LIGHT, FREQUENT WATERING OF THE ENTIRE PLANT CAN ACTUALLY ENCOURAGE ROOTS TO GROW AT THE SURFACE. SOAKER HOSES AND DRIP IRRIGATION WORK BEST FOR DEEP WATERING OF TREES. IT IS RECOMMENDED THAT SLOW LEAK WATERING BAGS OR TREE BUCKETS ARE INSTALLED TO MAKE WATERING EASIER AND MORE EFFECTIVE. CONTINUE WATERING UNTIL MID-FALL, TAPERING OFF DURING LOWER TEMPERATURES.

PRUNING IS USUALLY NOT NEEDED FOR NEWLY PLANTED TREES BUT MAY BE BENEFICIAL FOR TREE STRUCTURE. IF NECESSARY, PRUNE ONLY DEAD, DISEASED, BROKEN OR CROSSING BRANCHES AT PLANTING. AS THE TREE GROWS, LOWER BRANCHES MAY BE PRUNED TO PROVIDE CLEARANCE ABOVE THE GROUND, OR TO REMOVE DEAD OR DAMAGED LIMBS.

DOEE'S MAINTENANCE INSPECTION CHECKLIST FOR TREE PLANTING AND PRESERVATION AND THE MAINTENANCE SERVICE COMPLETION INSPECTION FORM CAN BE FOUND IN APPENDIX M – MAINTENANCE INSPECTION CHECKLISTS.

POST-PLANTING TREE PROTECTION

ONCE THE TREE HAS BEEN PROPERLY PLANTED, 2 TO 4 INCHES OF ORGANIC MULCH MUST BE SPREAD OVER THE SOIL SURFACE OUT TO THE DRIP LINE (THE OUTERMOST CIRCUMFERENCE OF THE TREE CANOPY) OF THE TREE. IF PLANTING A CLUSTER OF TREES, MULCH THE ENTIRE PLANTING AREA. SLOW-DECOMPOSING ORGANIC MULCHES, SUCH AS SHREDDED BARK, COMPOST, LEAF MULCH, OR WOOD CHIPS PROVIDE MANY ADDED BENEFITS FOR TREES. MULCH THAT CONTAINS A COMBINATION OF RECOMMENDED AS MULCHES BECAUSE THEY DECOMPOSE RAPIDLY AND REQUIRE FREQUENT APPLICATION, RESULTING IN REDUCED BENEFITS.

FOR WELL-DRAINED SITES, UP TO 4 INCHES OF MULCH MAY BE APPLIED. FOR POORLY DRAINED SITES, A THINNER LAYER OF MULCH SHOULD BE APPLIED. MULCH SHOULD NEVER BE MORE THAN 4 INCHES DEEP OR APPLIED RIGHT NEXT TO THE TREE TRUNK; HOWEVER, A COMMON SIGHT IN MANY LANDSCAPED AREAS IS THE "MULCH VOLCANO." THIS OVER-MULCHING TECHNIQUE CAN CAUSE OXYGEN AND MOISTURE-LEVEL PROBLEMS, AND DECAY OF THE LIVING BARK AT THE BASE OF THE TREE. A MULCH-FREE AREA, 2 TO 3 INCHES WIDE AT THE BASE OF THE TREE, MUST BE PROVIDED TO AVOID MOIST BARK CONDITIONS AND PREVENT DECAY.

STUDIES HAVE SHOWN THAT TREES WILL ESTABLISH MORE QUICKLY AND DEVELOP STRONGER TRUNK AND ROOT SYSTEMS IF THEY ARE NOT STAKED AT THE TIME OF PLANTING. STAKING FOR SUPPORT MAY BE NECESSARY ONLY FOR TOP-HEAVY TREES OR AT SITES WHERE VANDALISM OR WINDY EXPOSURE ARE A CONCERN.

IF STAKING IS NECESSARY FOR SUPPORT, TWO STAKES USED IN CONJUNCTION WITH A WIDE FLEXIBLE TIE MATERIAL WILL HOLD THE TREE UPRIGHT, PROVIDE FLEXIBILITY, AND MINIMIZE INJURY TO THE TRUNK. TO PREVENT DAMAGE TO THE ROOT BALL, STAKES SHOULD BE PLACED IN UNDISTURBED SOIL BEYOND THE OUTER EDGES OF THE ROOT BALL. PERHAPS THE MOST IMPORTANT PART OF STAKING IS ITS REMOVAL. OVER TIME, GUY WIRES (OR OTHER TIE MATERIAL) CAN CUT INTO THE GROWING TRUNK BARK AND INTERFERE WITH THE MOVEMENT OF WATER AND NUTRIENTS WITHIN THE TREE. STAKING MATERIAL SHOULD BE REMOVED WITHIN 1 YEAR OF PLANTING.

IN AREAS IN OR ADJACENT TO PARKS, NATURAL AREAS, AND OPEN SPACES WHERE DEER PRESENCE IS EVIDENT AND BUCK RUB IS A COMMON PROBLEM RESULTING IN SIGNIFICANT PREVENTABLE DAMAGE TO NEWLY PLANTED TREES, CONSIDER INSTALLATION OF DEER PROTECTION FENCING, AS ILLUSTRATED IN FIGURE 3.48.

ANY PROPOSED DEVIATION FROM THE STORMWATER MANAGEMENT DETAILS OR SPECIFICATIONS SHOWN ON THESE PLANS WILL REQUIRE SUBMISSION TO DOEE AS A FORMAL PLAN REVISION FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION. ALL SUBMITTALS RELATED TO THE STORMWATER MANAGEMENT FACILITIES SHALL BE PROVIDED TO THE OWNER, ARCHITECT, AND CIVIL ENGINEER FOR REVIEW AND COMPLIANCE VERIFICATION.

GOVERNMENT OF THE DISTRICT OF COLUMBIA
PERMIT OPERATIONS DIVISION
PLANS APPROVED
Permit No. SH2400019 Date 04/09/24

These plans are conditionally approved as submitted or noted during plan review and are subject to field inspection. Approved plans must be kept on site and are needed for all inspections. No changes or modifications to these plans. Changes require a revision permit with the revised plans. Trade Permits are required for trade work, e.g. Electrical or Plumbing

HPRB Review - Timothy Dennee - 04-09-2024
Zoning Review - Ernesto Warren - 04-09-2024
Structural Review - Tong Li - 04-09-2024
DOEE SE-SW Review - Saba Gharavi - 04-09-2024

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MARET SCHOOL
PROPOSED ATHLETIC FIELDS
SQUARE 2319, LOT 832
5901 UTAH AVE NW
WASHINGTON, D.C. 20015

STORMWATER MANAGEMENT NOTES AND DETAILS

VIKA CAPITOL REVISIONS

#	DATE	DESCRIPTION
2	8-11-23	DOEE RESUB
1	6-6-23	DDOT/DOEE RESUB

DISTRICT OF COLUMBIA ★ KYLE U. OLIVER ★ PE900770 ★ 10/13/2023 ★ CIVIL ★ PROFESSIONAL ENGINEER

DATE: 23-FEB-2023
DES. KUO DWN. BJR
SCALE: AS SHOWN
PROJECT/FILE NO. VC0626D
SHEET NO. CIV1120

DEPARTMENT OF ENERGY & ENVIRONMENT

STATEMENT BY PROFESSIONAL ENGINEER REGISTERED IN THE DISTRICT OF COLUMBIA

This is to certify that the engineering features of all stormwater best management practices (BMPs), stormwater infrastructure, and land covers (collectively The 'Facility') have been designed/examined by me and found to be in conformity with modern engineering principles applicable to the treatment and disposal of stormwater pollutants. I further certify that the Facility has been designed in accordance with the specification required under Chapter 5 of Title 21 of the District of Columbia Municipal Regulations. It is also stated that the undersigned has furnished the applicant with a set of instructions for the maintenance and operation of the site's Facility.

Affix Seal

DISTRICT OF COLUMBIA · KYLE U. OLIVER · PE900770 · 10/13/2023 · CIVIL · PROFESSIONAL ENGINEER

KYLE U. OLIVER, PE
Name and Title (please type)

4910 MASSACHUSETTS AVE
Address
SUITE 16
WASHINGTON, DC 20016

Date_____Phone No.(202) 244-4140

AS-BUILT CERTIFICATION BY PROFESSIONAL ENGINEER

Within 21 days after completion of construction of all stormwater best management practices (BMPs), stormwater infrastructure, and land covers (collectively the 'Facility'), please send this page to the Watershed Protection Division of the Department of Energy and Environment.

1. **Facility Information:**

Source Name: _____

Source Location: Street: _____

City: _____

DCRA Permit No.: _____

Date Issued: _____

2. **As-Built Certification**

I hereby certify that all stormwater best management practices (BMPs), stormwater infrastructure, and land covers have been built substantially in accordance with the approved plans and specifications and that any deviations noted below will not prevent the system from functioning in compliance with the requirements Chapter 5 of Title 21 of the District of Columbia Municipal Regulations when properly maintained and operated. These determinations have been based upon on-site observation of construction, scheduled and conducted by me or by a project representative under my direct supervision. I have enclosed one set of as-built engineering drawings.

_____ _____ _____
Signature of Engineer Name (Please Type) D.C. Reg. No.

Affix Seal

_____
Company Name

_____
Company Address

_____
Date_____Phone No._____

Substantial deviations from the approved plans and specifications (attach additional sheets if required).

_____
_____
_____
_____

STATEMENT BY PERSON RESPONSIBLE FOR MAINTENANCE

The undersigned agrees to maintain compliance with the performance requirements and other provisions of Chapter 5 of Title 21 of the District of Columbia Municipal Regulations (DCMR). This includes maintaining and operating stormwater best management practices (BMPs), stormwater infrastructure, and land covers as specified in the Stormwater Management Plan approved by the District Department of Energy and Environment (DOEE).

Responsibility for maintenance and operation may be transferred to another entity upon written notice to the Watershed Protection Division of DOEE from the undersigned and the entity assuming responsibility. This notice must certify that the transfer of responsibility for maintenance and operation is in compliance with 21 DCMR Chapter 5.

_____
Signature of the person responsible for maintenance (It may be the applicant)

_____
Name and Title (please type)

_____
Address

_____
Date_____Phone No._____

MEP Memo for Public Right of Way (PROW) Area		
This memo shall provide a detailed explanation of each opportunity for installation of retention BMPs in the alley that was considered and rejected, and the reason for each rejection. The applicant shall address each retention practice specified in this guidance manual in BMP groups 1 through 13, specifically those noted below.		
Project Address		5901 Utah Ave NW
Drainage Area #		7718-2
Description		Major land disturbing activity
SWM Proposed		Permeable Pavement System and Tree planting
SWM Retention Volume (SWRv) Required		294 cf (2,198 gallons)
SWM Retention Volume (SWRv) Provided		5 cf (37 gallons)
BMP Group	**PRACTICE**	**JUSTIFICATION**
1	Green Roofs	Not applicable, no buildings proposed. Proposed ROW improvements are limited to sidewalk and plantings, and green roofs are not practical.
2	Rainwater Harvesting	Not applicable, no buildings. Proposed ROW improvements are limited to sidewalk, curb cut/driveway. Due to the presence of existing and proposed utilities (electric, sewer and water), electric vaults and bike racks within the sidewalk area, underground storage is not feasible.
3	Impermeable Surface Disconnection	Not applicable - existing compact cover does not meet initial site design criteria.
4	Permeable Pavement Systems	Not Applicable - The site is only limited to the the permeable pavement sytems proposed on site.
5	Bioretention	Not applicable - Due to the general lack of site area, the implementation of bioretention in the public right of way is not feasible. Also, the predominant soil type in the area is Brandywine Urban Land, and infiltration is not feasible in the public right of way.
7	Infiltration	Not applicable - Due to the location of the vehicular access area, and Brandywine Urban Land soil in the public right of way, infiltration is not feasible.
8	Open Channel Systems	Not applicable - Per the development plans for this site, as well as development in the immediate surroundings of the site, vehicular traffic is expected that will be serviced by the sidewalk. An open channel system would be unsafe and is not feasible based on the proposed finished conditions of the site.
13	Tree Planting / Tree Preservation	Applicable - One small tree is proposed to be planted in the ROW. A large tree cannot be planted due to the presence of overhead wires.

Stormwater Management Plan Compliance Data

Site Address	5901 Utah Avenue NW	Plan number	7718
Stormwater Management Plan?	Yes	Green Area Ratio?	No - GAR does not apply to this property
Soil Erosion and Sediment Control?	Yes	Floodplain Review?	No
Type of Activity	Major Land Disturbing	AWDZ?	Non-AWDZ
Is the entire site in the CSS?	No		

	Total Area (sf)	Site Area	PROW
Natural	0	0	0
Compacted	38,168	36,755	1,413
Impervious	34,548	31,389	3,159
BMP	132,799	132,799	0
Total	205,515	200,943	4,572

Curve Numbers

☐ Additional Detention Provided

Pre-development	70	2-year storm adjusted CN	40
Pre-project	74	15-year storm adjusted CN	40
		100-year storm adjusted CN	40

Requirements Summary (total is the sum of PROW and Parcel)	PROW (ft³)	Parcel (ft³)	Total (ft³)	Total (Gallons)
SWRv	294	4,134	4,428	33,120
WQTv	0	0	0	0
On-site retention achieved	5	10,456	10,461	78,251
On-site treatment achieved	0	12,008	12,008	89,817
% of SWRv met on-site	2%	253%	236.26%	236.26%
SRC eligibility				52,932
Offv				0

Compliance data last updated: 10-03-2023 05:23 PM
Plan 7718 Page 1 of 4

Site Drainage Area Compliance Data

Site Drainage Area ID	Public Right of Way	Total area (square feet)	Natural (square feet)	Compacted (square feet)	Impervious (square feet)	BMP (square feet)	Vehicular access area	SWRv (cubic feet)	WQTv (cubic feet)	Volume retained (cubic feet)	Volume treated (cubic feet)	2-year storm adjusted Curve Number	15-year storm adjusted Curve Number	100-year storm adjusted Curve Number	SDA Minimum Compliance
7718-1	☐	200,943	0	36,755	31,389	132,799	16,186	4,134	0	11,210	12,019	40	40	40	Yes

Site BMP Compliance Data

BMP ID number	Type	Total CDA (square feet)	Natural (square feet)	Compacted (square feet)	Impervious (square feet)	BMP (square feet)	Total Post project vehicular access area	Volume received from upstream BMPs (cubic feet)	Max volume received by BMP (cubic feet)	Storage volume (cubic feet)	Retention calculation	Volume retained (cubic feet)	Volume treated (cubic feet)	Downstream BMP ID Numbers
7718-1-1	Traditional bioretention - Standard	40,924		10,168	27,970	2,786	16,186	0	4,499	7,383	60% of storage volume	4,430	70	
7718-1-2	Permeable pavers - Standard	147,348		13,916	3,419	130,013		0	18,451	56,803	5 cubic feet per 100 square feet	6,501	11,950	
7718-1-3	Tree preservation - Heritage Trees	0						0	0		40 cubic feet per tree	280	0	

Compliance data last updated: 10-03-2023 05:23 PM
Plan 7718 Page 2 of 4

PROW Drainage Area Compliance Data

Site Drainage Area ID	Public Right of Way	Total area (square feet)	Natural (square feet)	Compacted (square feet)	Impervious (square feet)	BMP (square feet)	Vehicular access area	SWRv (cubic feet)	WQTv (cubic feet)	Volume retained (cubic feet)	Volume treated (cubic feet)
7718-2	☒	4,572	0	1,413	3,159	0	1,286	294	0	5	0

PROW BMP Compliance Data

BMP ID number	Type	Total CDA (square feet)	Natural (square feet)	Compacted (square feet)	Impervious (square feet)	BMP (square feet)	Total Post project vehicular access area	Volume received from upstream BMPs (cubic feet)	Max volume received by BMP (cubic feet)	Storage volume (cubic feet)	Retention calculation	Volume retained (cubic feet)	Volume treated (cubic feet)	Downstream BMP ID Numbers
7718-2-1	Tree planting - Average spread < 40 feet	0						0	0		5 cubic feet per tree	5	0	

Compliance data last updated: 10-03-2023 05:23 PM
Plan 7718 Page 3 of 4

STATEMENT BY PERSON RESPONSIBLE FOR MAINTENANCE

The undersigned agrees to maintain compliance with the performance requirements and other provisions of Chapter 5 of Title 21 of the District of Columbia Municipal Regulations (DCMR). This includes maintaining and operating stormwater best management practices (BMPs), stormwater infrastructure, and land covers as specified in the Stormwater Management Plan approved by the District Department of Energy and Environment (DOEE).

Responsibility for maintenance and operation may be transferred to another entity upon written notice to the Natural Resources Administration of DOEE from the undersigned and the entity assuming responsibility. This notice must certify that the transfer of responsibility for maintenance and operation is in compliance with 21 DCMR Chapter 5.

Electronic signature of the person responsible for maintenance (it may be the applicant):

Signed using the Surface and Groundwater System on 10-13-2023 02:59 PM

Stephanie Nash

Name and Title:
Stephanie Nash, President/CEO

Address:
Stephanie Nash
5901 Utah Avenue, Nw Washington Dc
Washington, DC 20011

Date: 10-13-2023 02:59 PM Phone No: (202) 363-1333

Email: snash@eccofdc.org

Compliance data last updated: 10-03-2023 05:23 PM
Plan 7718 Page 4 of 4

ANY PROPOSED DEVIATION FROM THE STORMWATER MANAGEMENT DETAILS OR SPECIFICATIONS SHOWN ON THESE PLANS WILL REQUIRE SUBMISSION TO DOEE AS A FORMAL PLAN REVISION FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION. ALL SUBMITTALS RELATED TO THE STORMWATER MANAGEMENT FACILITIES SHALL BE PROVIDED TO THE OWNER, ARCHITECT, AND CIVIL ENGINEER FOR REVIEW AND COMPLIANCE VERIFICATION.

GOVERNMENT OF THE DISTRICT OF COLUMBIA
PERMIT OPERATIONS DIVISION
PLANS APPROVED
Permit No. SH2400039 Date 04/09/24

These plans are conditionally approved as submitted or noted during plan review and are subject to field inspection. Approved plans must be kept on site and are needed for all inspections. No changes or modifications to these plans. Changes require a revision permit with the revised plans. Trade Permits are required for trade work, e.g. Electrical or Plumbing

HPRB Review - Timothy Dennee - 04-09-2024
Zoning Review - Ernesto Watren - 04-09-2024
Structural Review - Tong Li - 04-09-2024
DOEE SE-SW Review - Saba Gharavi - 04-09-2024

VIKA CAPITOL
ENGINEERS ★ PLANNERS ★ LANDSCAPE ARCHITECTS ★ SURVEYORS ★ GEOMATICS
PROJECT COORDINATOR:
BRIAN RUHL
ruhl@vikacapitol.com
VIKA CAPITOL, LLC 4910 MASSACHUSETTS AVENUE, NW SUITE 16
WASHINGTON, DC 20016 PHONE: 202.244.4140
WWW.VIKACAPITOL.COM

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WASHINGTON, D.C. 20015

STORMWATER MANAGEMENT NOTES AND DETAILS

VIKA CAPITOL REVISIONS

#	DATE	DESCRIPTION
2	8-11-23	DOEE RESUB
1	6-6-23	DDOT/DOEE RESUB

DATE: 23-FEB-2023
DES. KUO DWN. BJR
SCALE: AS SHOWN
PROJECT/FILE NO. VC0626D
SHEET NO. CIV1130

DISTRICT OF COLUMBIA · KYLE U. OLIVER · PE900770 · 10/13/2023 · CIVIL · PROFESSIONAL ENGINEER

LAYOUT: CIV1130 SWM DETS, Plotted By: Lopez

VIKA CAPITOL
ENGINEERS ★ PLANNERS ★ LANDSCAPE ARCHITECTS ★ SURVEYORS ★ GEOMATICS
PROJECT COORDINATOR:
BRIAN RUHL
ruhl@vikacapitol.com
VIKA CAPITOL, LLC ★ 4910 MASSACHUSETTS AVENUE, NW SUITE 16 ★ WASHINGTON, DC 20016 ★ PHONE: 202.244.4140 ★ WWW.VIKACAPITOL.COM

MARET SCHOOL
PROPOSED ATHLETIC FIELDS
SQUARE 2319 LOT 832
5901 UTAH AVE. NW
WASHINGTON, D.C. 20015

STORMWATER MANAGEMENT CALCULATIONS

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WinTR-20 Printed Page File      Beginning of Input Data List
V:\DC\MAret\NORTH POND.inp

WinTR-20: version 3.30                0        0        .01      0        ,
MARET SCHOOL

SUB-AREA:
        Field     POND                .00533   98.      .0833

STREAM REACH:
        POND      OUTLET              Field Unde

STORM ANALYSIS:
        25 year                       5.9      NOAA_C   2


STRUCTURE RATING:
        Field Unde308.5
                  308.5    0.        0.
                  311.     .3737     .02812
                  313.50   .5285     .05624
                  318.     .7285     1.22437
                  321.5    .8844     3.03223



RAINFALL DISTRIBUTION:
        NOAA_C
                    0.0   0.00128   0.00231   0.00335   0.00441
                0.00547   0.00654   0.00763   0.00872   0.00982
                0.01093   0.01206   0.01319   0.01433   0.01548
                0.01665   0.01782   0.01900   0.02019   0.02140
                0.02261   0.02383   0.02506   0.02631   0.02756
                0.02882   0.03009   0.03137   0.03267   0.03397
                0.03528   0.03660   0.03793   0.03927   0.04062
                0.04199   0.04336   0.04474   0.04613   0.04753
                0.04894   0.05036   0.05179   0.05324   0.05469
                0.05615   0.05762   0.05910   0.06059   0.06209
                0.06360   0.06512   0.06665   0.06819   0.06974
                0.07130   0.07287   0.07445   0.07604   0.07764
                0.07925   0.08090   0.08259   0.08432   0.08609
                0.08790   0.08975   0.09164   0.09356   0.09553
                0.09754   0.09959   0.10168   0.10380   0.10597
                0.10818   0.11042   0.11271   0.11503   0.11740
                0.11981   0.12225   0.12474   0.12726   0.12982
                0.13243   0.13507   0.13776   0.14048   0.14324
                0.14605   0.14900   0.15210   0.15536   0.15876
                0.16231   0.16602   0.16987   0.17387   0.17803
                0.18233   0.18678   0.19139   0.19614   0.20104
                0.20610   0.21173   0.21793   0.22471   0.23206
                0.23999   0.24899   0.25907   0.27022   0.28245
                0.29550   0.31372   0.33700   0.36618   0.40669
                0.47660   0.59331   0.63382   0.66300   0.68428
                0.70450   0.71755   0.72978   0.74093   0.75101
                0.76001   0.76794   0.77529   0.78207   0.78827
                0.79390   0.79896   0.80386   0.80861   0.81322
                0.81767   0.82197   0.82613   0.83013   0.83398
                0.83769   0.84124   0.84464   0.84790   0.85100
                0.85395   0.85676   0.85952   0.86224   0.86493
                0.86757   0.87018   0.87274   0.87526   0.87775
                0.88019   0.88260   0.88497   0.88729   0.88958
                0.89182   0.89403   0.89620   0.89832   0.90041
                0.90246   0.90447   0.90644   0.90836   0.91025
                0.91210   0.91391   0.91568   0.91741   0.91910
                0.92075   0.92236   0.92396   0.92555   0.92713
                0.92870   0.93026   0.93181   0.93335   0.93488
                0.93640   0.93791   0.93941   0.94090   0.94238
                0.94385   0.94531   0.94676   0.94821   0.94964
                0.95106   0.95247   0.95387   0.95526   0.95664
                0.95801   0.95938   0.96073   0.96207   0.96340
                0.96472   0.96603   0.96733   0.96863   0.96991
                0.97118   0.97244   0.97369   0.97494   0.97617
                0.97739   0.97860   0.97981   0.98100   0.98218
                0.98335   0.98452   0.98567   0.98681   0.98794

                0.98907   0.99018   0.99128   0.99237   0.99346
                0.99453   0.99559   0.99665   0.99769   0.99872
                1.0



GLOBAL OUTPUT:
        2         .01       .25       YY  Y     NY  N




WinTR-20 Printed Page File      End of Input Data List

                                MARET SCHOOL

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                                STORM 25 year

Area or    Drainage  Rain Gage     Runoff     ---------- Peak Flow ----------
 Reach       Area      ID or       Amount   Elevation   Time      Rate      Rate
Identifier (sq mi)   Location      (in)       (ft)      (hr)      (cfs)     (csm)

Field          0.005                5.662                12.11     22.46   4213.06

   Line
Start Time  ---------- Flow Values @ time increment of  0.250 hr ----------
   (hr)       (cfs)      (cfs)      (cfs)      (cfs)      (cfs)      (cfs)      (cfs)

     0.750      0.0       0.04       0.06       0.09       0.11       0.13       0.14
     2.500      0.16      0.17       0.18       0.19       0.21       0.22       0.23
     4.250      0.24      0.24       0.25       0.26       0.27       0.28       0.28
     6.000      0.29      0.31       0.33       0.35       0.38       0.40       0.42
     7.750      0.44      0.46       0.48       0.50       0.52       0.55       0.62
     9.500      0.69      0.77       0.84       0.92       1.00       1.27       1.56
    11.250      2.09      2.59       4.87      13.27       7.77       4.13       2.40
    13.000      1.85      1.45       1.16       0.98       0.91       0.83       0.76
    14.750      0.68      0.60       0.56       0.54       0.52       0.50       0.48
    16.500      0.46      0.44       0.42       0.40       0.38       0.36       0.34
    18.250      0.32      0.32       0.31       0.31       0.30       0.30       0.29
    20.000      0.29      0.28       0.28       0.27       0.27       0.26       0.26
    21.750      0.25      0.25       0.24       0.24       0.23       0.23       0.22
    23.500      0.22      0.21       0.25       0.0

Area or    Drainage  Rain Gage     Runoff     ---------- Peak Flow ----------
 Reach       Area      ID or       Amount   Elevation   Time      Rate      Rate
Identifier (sq mi)   Location      (in)       (ft)      (hr)      (cfs)     (csm)

POND           0.005  Upstream      5.662                12.11     22.46   4213.06

   Line
Start Time  ---------- Flow Values @ time increment of  0.250 hr ----------
   (hr)       (cfs)      (cfs)      (cfs)      (cfs)      (cfs)      (cfs)      (cfs)

     0.750      0.0       0.04       0.06       0.09       0.11       0.13       0.14
     2.500      0.16      0.17       0.18       0.19       0.21       0.22       0.23
     4.250      0.24      0.24       0.25       0.26       0.27       0.28       0.28
     6.000      0.29      0.31       0.33       0.35       0.38       0.40       0.42
     7.750      0.44      0.46       0.48       0.50       0.52       0.55       0.62
     9.500      0.69      0.77       0.84       0.92       1.00       1.27       1.56
    11.250      2.09      2.59       4.87      13.27       7.77       4.13       2.40
    13.000      1.85      1.45       1.16       0.98       0.91       0.83       0.76
    14.750      0.68      0.60       0.56       0.54       0.52       0.50       0.48
    16.500      0.46      0.44       0.42       0.40       0.38       0.36       0.34
    18.250      0.32      0.32       0.31       0.31       0.30       0.30       0.29
    20.000      0.29      0.28       0.28       0.27       0.27       0.26       0.26
    21.750      0.25      0.25       0.24       0.24       0.23       0.23       0.22
    23.500      0.22      0.21       0.25       0.0

WinTR-20 Version 3.30               Page   1                 03/02/2023 16:04
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		Orifice Equation		
$Q = Cd\ (A)\ \sqrt{2gh}$		*Input*		
		D = Diameter of Orifice	3	IN
$A = (\frac{\pi D^2}{4})$		Diameter of Orifice	0.2500	FT
		Sv = Storage Volume	132,083.50	CF
$Dt = (\frac{Sv}{Q})$		h = Head on Centerline	13.0000	FT
		Constants		
		Cd = Coeff. of Orifice	0.6000	
		g = Gravity or 32.2 (FT/S)	32.2000	FT/S
		Calculation		
		A = Area of Orifice	0.0491	SF
		Q = Flow from System	0.8522	CFS
		Dt=Drawdown Time	154,993	s
		Drawdown Time	43.1	Hours

ORIFICE EQUATION FOR JUNCTION BOX

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                                MARET SCHOOL

Area or    Drainage  Rain Gage     Runoff     ---------- Peak Flow ----------
 Reach       Area      ID or       Amount   Elevation   Time      Rate      Rate
Identifier (sq mi)   Location      (in)       (ft)      (hr)      (cfs)     (csm)

OUTLET         0.005                5.659                14.76     0.68    126.99

   Line
Start Time  ---------- Flow Values @ time increment of  0.250 hr ----------
   (hr)       (cfs)      (cfs)      (cfs)      (cfs)      (cfs)      (cfs)      (cfs)

     1.000      0.0       0.02       0.03       0.05       0.06       0.08       0.10
     2.750      0.11      0.13       0.14       0.16       0.17       0.18       0.19
     4.500      0.21      0.22       0.23       0.24       0.24       0.25       0.26
     6.250      0.27      0.28       0.30       0.31       0.33       0.35       0.37
     8.000      0.38      0.39       0.40       0.41       0.43       0.44       0.47
     9.750      0.49      0.53       0.53       0.53       0.53       0.54       0.54
    11.500      0.55      0.56       0.58       0.64       0.65       0.66       0.67
    13.250      0.67      0.67       0.67       0.68       0.68       0.68       0.68
    15.000      0.68      0.68       0.68       0.68       0.67       0.67       0.67

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                                MARET SCHOOL

   Line
Start Time  ---------- Flow Values @ time increment of  0.250 hr ----------
   (hr)       (cfs)      (cfs)      (cfs)      (cfs)      (cfs)      (cfs)      (cfs)

    16.750      0.67       0.67       0.67       0.67       0.67       0.67       0.67
    18.500      0.67       0.67       0.66       0.66       0.66       0.66       0.66
    20.250      0.66       0.65       0.65       0.65       0.65       0.65       0.65
    22.000      0.65       0.65       0.64       0.64       0.64       0.64       0.64
    23.750      0.64       0.64       0.63       0.63       0.63       0.63       0.62
    25.500      0.62       0.62       0.62       0.62       0.61       0.61       0.61
    27.250      0.61       0.60       0.60       0.60       0.60       0.60       0.59
    29.000      0.59       0.59       0.59       0.59       0.58       0.58       0.58
    30.750      0.58       0.58       0.57       0.57       0.57       0.57       0.57
    32.500      0.56       0.56       0.56       0.56       0.56       0.55       0.55
    34.250      0.55       0.55       0.55       0.55       0.54       0.54       0.54
    36.000      0.54       0.53       0.53       0.53       0.53       0.47       0.42
    37.750      0.38       0.29       0.22       0.17       0.13       0.10       0.07
    39.500      0.06       0.04       0.03       0.02       0.02       0.01       0.01
    41.250      0.0

Area or    Drainage  Rain Gage     Runoff     ---------- Peak Flow ----------
 Reach       Area      ID or       Amount   Elevation   Time      Rate      Rate
Identifier (sq mi)   Location      (in)       (ft)      (hr)      (cfs)     (csm)

OUTLET         0.005                5.659                14.76     0.68    126.99

   Line
Start Time  ---------- Flow Values @ time increment of  0.250 hr ----------
   (hr)       (cfs)      (cfs)      (cfs)      (cfs)      (cfs)      (cfs)      (cfs)

     1.000      0.0       0.02       0.03       0.05       0.06       0.08       0.10
     2.750      0.11      0.13       0.14       0.16       0.17       0.18       0.19
     4.500      0.21      0.22       0.23       0.24       0.24       0.25       0.26
     6.250      0.27      0.28       0.30       0.31       0.33       0.35       0.37
     8.000      0.38      0.39       0.40       0.41       0.43       0.44       0.47
     9.750      0.49      0.53       0.53       0.53       0.53       0.54       0.54
    11.500      0.55      0.56       0.58       0.64       0.65       0.66       0.67
    13.250      0.67      0.67       0.67       0.68       0.68       0.68       0.68
    15.000      0.68      0.68       0.68       0.68       0.67       0.67       0.67

WinTR-20 Version 3.30               Page   3                 03/02/2023 16:04
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                                MARET SCHOOL

Area or    Drainage               ---------- Peak Flow by Storm ----------
 Reach       Area                    25 year
Identifier (sq mi)                   (cfs)      (cfs)      (cfs)      (cfs)      (cfs)

Field          0.005                  22.46
POND           0.005                  22.46
DOWNSTREAM                             0.68
OUTLET         0.005                   0.68

WinTR-20 Version 3.30               Page   4                 03/02/2023 16:04
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TR-20 CALCULATION NOTES

- TR-20 WAS USED TO CALCULATE OUTFALL RATE FOR THE ENTIRE PROJECT
- 25 YEAR STORM EVENT WAS UTILIZED FOR DETENTION CALCULATIONS.

1 CIV1140 — TR-20 CALCULATIONS FOR FINAL OUTFALL
N.T.S.

ANY PROPOSED DEVIATION FROM THE STORMWATER MANAGEMENT DETAILS OR SPECIFICATIONS SHOWN ON THESE PLANS WILL REQUIRE SUBMISSION TO DOEE AS A FORMAL PLAN REVISION FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION. ALL SUBMITTALS RELATED TO THE STORMWATER MANAGEMENT FACILITIES SHALL BE PROVIDED TO THE OWNER, ARCHITECT, AND CIVIL ENGINEER FOR REVIEW AND COMPLIANCE VERIFICATION.

DISTRICT OF COLUMBIA
KYLE U. OLIVER
PE900770
10/6/2023
CIVIL
PROFESSIONAL ENGINEER

VIKA CAPITOL REVISIONS

#	DATE	DESCRIPTION
2	8-11-23	DOEE RESUB
1	6-6-23	DDOT/DOEE RESUB

DATE: 23-FEB-2023
DES. KUO DWN. BJR
SCALE: AS SHOWN
PROJECT/FILE NO. VC0626D
SHEET NO. CIV1140

VIKA CAPITOL
ENGINEERS ★ PLANNERS ★ LANDSCAPE ARCHITECTS ★ SURVEYORS ★ GEOMATICS
PROJECT COORDINATOR: BRIAN RUHL
ruhl@vikacapitol.com
VIKA CAPITOL, LLC ★ 4910 MASSACHUSETTS AVENUE, NW SUITE 16 ★ WASHINGTON, DC 20016 ★ PHONE: 202.244.4140 ★ WWW.VIKACAPITOL.COM

LEGION NXT™ 2.0 shaw SPORTS TURF

1.0 GENERAL REQUIREMENTS

1.1 Related Documents

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions, apply to this section.

1.2 Scope of Work

A. Furnish all labor, materials, tools, and equipment necessary to install, in place, all synthetic turf material as indicated on the plans and as specified herein. The installation of all new materials shall be performed in strict accordance with the Manufacturer's written installation instructions, and in accordance with all approved shop drawings.

B. Prior to order of materials, the Synthetic Turf Contractor shall submit the following:
1. Product data, including Independent Laboratory Test Results,
2. Installation details,
3. Sample Warranty,
4. Field layout and striping plans,
5. Details on construction, especially any details that may deviate from plans and specifications.

C. Prior to the beginning of installation, the Synthetic Turf Contractor of the synthetic turf shall verify the base for planarity. Upon written confirmation from the base contractor that compaction/planarity and drainage/permeability specifications have been achieved, the installation of synthetic turf will proceed as arranged.

D. Prior to Final Acceptance, the Synthetic Turf Contractor shall submit to the Owner three (3) copies of Executed Warranty Documents and Maintenance Manuals, which will include necessary instructions for the proper care and preventative maintenance of the synthetic turf system, including painting and striping.

1.3 Shop Drawings

A. Shop drawings shall be prepared and contain all pertinent information regarding installation. These drawings shall be submitted to the Owner or Owner's representative for approval prior to the manufacturing and shipment of materials.

B. Submit drawings for:
1. Installation details, edge detail, goal post detail, other inserts, and covers, etc., as required by contract.
2. The Synthetic Turf Manufacturer must have been in business under the same ownership for at least five years, and shall have been installing similar sports fields for that entire period.
3. Striping plan showing any field lines, markings and boundaries, and field logos per project drawings.

1.4 Quality Assurance

A. Synthetic Turf Manufacturer is defined as:
1. A company specializing in the design and manufacturing of infilled turf systems with not less than eight (8) years documented experience.
2. The Synthetic Turf Manufacturer must have been in business under the same ownership for at least five (5) years, and shall have been installing similar sports fields for that entire period.
3. The manufacturer, or "brand", of turf must not have gone through, or been involved in, any type of bankruptcy in the past seven (7) years
4. The Manufacturer must be free and clear of any lawsuits, class action lawsuits, or litigation due to product quality.
5. Manufacturer shall have an experienced technical services and sales professional who is available during the course of the work to meet personally with the Owner, Contractor, and Landscape Architect.

B. Synthetic Turf Manufacturer's Experience:
1. The Synthetic Turf Manufacturer shall have the experience of at least one hundred (100) acceptable installations of full-size fields (minimum 65,000 sq. ft.) in the United States within the past five (5) years of turfed, polyethylene grass-like fabrics that are filled with either all rubber or a mixture of SBR rubber and sand. Submit a list of all applicable installations with the bid.
2. The Synthetic Turf Manufacturer shall have the experience of twenty-five (25) acceptable installations (minimum 65,000 sq. ft.) of fields that are at least eight (8) years old. Submit a list of all applicable installations with the bid.
3. The Synthetic Turf Manufacturer shall have the experience (if applicable to this project specification) of one hundred (100) installations with main fabric seams.
4. The Synthetic Turf Manufacturer must be a certified member of the Synthetic Turf Council in good standing.
5. The Synthetic Turf Manufacturer must have and operate its own extensive research and development laboratory. This laboratory must include testing devices for the following tests: Yarn Tensile Strength, Yarn Elongation, Tuft Bind, Grab Tear Strength, Seam Strength, g-max, Force Reduction, Vertical Deformation, Ball Roll, Ball Rebound, Rotational Resistance, Linear

Traction, Relative Abrasive Index, UV Resistance, Flammability, and Simulated Aging.
6. For quality verification, the synthetic turf manufacturer must have a laboratory on site that is accredited by the U.S. Department of Commerce, National Institute of Standards and Technology (NIST) National Voluntary Laboratory Accreditation Program (NVLAP). Accreditation requirements are established in accordance with the U.S. Code of Federal Regulations (CFR, Title 15, Part 285), *National Voluntary Laboratory Accreditation Program*, and encompass the requirements of ISO/IEC 17025. Manufacturers without this accreditation will be deemed unqualified.
7. The Synthetic Turf Manufacturer must have manufactured and installed fields at every level of competition, including high school, college and professional.
8. The Synthetic Turf Manufacturer must have at least (1) one current NCAA Division 1 and (2) two current NFL game stadium or NFL practice field installation and (1) one MLB field.
9. The Synthetic Turf Manufacturer must not have had more than (5) five fields replaced, under warranty, during the past 5 years.
10. The Synthetic Turf Manufacturer must be vertically integrated including in-house tufting, polyethylene monofilament extrusion, in-house coating, polyurethane compounding, manufacture own primary backing, in-house yarn texturizing, ability and flexibility to tuft various gauge widths and have the ability to recycle used/old fields.
11. The Synthetic Turf Manufacturer must have a fully integrated quality system, directly based on and compliant with ISO 9000, ISO 14001 and OHSAS 18001 international standards.

C. Synthetic Turf Contractor is defined as:
1. A contractor that has built and installed a minimum of ten (10) in-filled synthetic turf fields. Turf contractors and on-site superintendent shall provide a resume to provide proof of experience.
   a. At any time after award of the contract and before the completion of the project, should any member of the approved crew or subcontractor discontinue their relationship with the synthetic turf crew or subcontractor, the Owner shall be notified. Failure to provide personnel meeting the minimum qualifications shall be considered default of the contract requirements.

D. Warranty: The Synthetic Turf Contractor shall submit its Manufacturer's Warranty, which guarantees the usability and playability of the synthetic turf system for its intended uses for an eight (8) year period commencing with the date of Substantial Completion.
1. The warranty submitted must have the following characteristics:

a) Must provide full-field coverage for eight (8) years from date of Substantial Completion,
b) Must warrant materials and workmanship,
c) Must warrant that the materials installed meet or the product specifications within manufacturing tolerances,
d) Must have a provision to either repair or replace such portion of the installed materials that are no longer serviceable to maintain a serviceable and playable surface,
e) Must be a Manufacturer's warranty from a single source covering workmanship and all self-manufactured or procured materials,
f) Must not be limited to the amount of annual usage,
g) Must provide, at the time of bid, a copy of its pre-paid 3rd party insurance policy. This policy must have an annual aggregate amount of no less than $60 million, and a per incident limit of no less than $7 million per claim. The third party insurer must have an AM Best rating of A++ or better.

1.5 Existing Conditions

A. If the surface on which the new synthetic turf is to be installed is an existing asphaltic/concrete base, the Synthetic Turf Contractor will be responsible for any damage due to negligence to the concrete during removal/installation of the synthetic turf system provided there are no failures below the surface which contribute to the damage. The football goal posts, if any, are to be removed and reinstalled by the Owner or Prime Contractor to facilitate the installation of the new synthetic turf system.

B. If the surface on which the new synthetic turf to be installed is a new asphaltic/concrete base or a new base of compacted, porous aggregate, the Synthetic Turf Contractor will be responsible for any damage to the base during removal/installation of the synthetic turf system after the deficiencies (if any) have been corrected by the base contractor with respect to planarity, compaction, and drainage/permeability. New in ground equipment, football goal post (if any) and /or infield mix backfill within the contiguous synthetic turf limits or immediately adjacent thereto are to be installed prior to the installation of the synthetic turf system. Damage to the synthetic turf system during the installation of such materials is not the responsibility of the Synthetic Turf Contactor.

1.6 Schedule

A. The Synthetic Turf Contractor shall complete all work on the synthetic turf system in accordance with the published project schedule, or as mutually agreed upon.

B. The synthetic turf contractor will require unencumbered use of staging area within fifty (50) feet of the synthetic turf area(s) being installed in order to complete the work. The Synthetic Turf Contractor shall also be afforded unencumbered access through the construction site to reach the synthetic turf field area being installed.

1.7 Surface Area

A. The Synthetic Turf Contractor is to verify all measurements.

1.8 Utilities

A. Owner or Prime Contractor will supply necessary water, adequate lighting, and electricity for installation. Owner or Prime Contractor shall permit use of toilet and wash up facilities.

2.0 PRODUCTS

2.1 Approved Products: Shaw Sports Turf: Legion NXT

2.2 Materials

A. Shall be tufted, polyethylene, grass-like fabric coated with a secondary backing of high-grade polyurethane. Refer to grid in section 2.2 H. The two fibers specified in this grid shall be tufted through the same needle in a grass-like fabric to a finished pile-height also specified in the grid. The monofilament fiber must have multiple contours in the fiber cross-section consisting of a four-peak wave. The contour angles of the surface must result in interference of the light rays reflected by the surface to produce a dull appearance to the turf surface. The fiber must exhibit a general decrease in thickness from the center of the cross section to each tip.

B. All components and their installation method shall be designed and manufactured for use on outdoor athletic fields. The materials as hereinafter specified should be able to withstand exposure in all climates, be resistant to insect infestation, rot, fungus, mildew, ultraviolet light and heat degradation, and shall have the basic characteristics of flow-through drainage, allowing free movement of surface runoff through the synthetic turf fabric where such water may flow to the existing base and into the field drainage system.

C. The finished playing surface shall appear as mowed grass and shall resist abrasion and cutting from normal use.

D. The polyethylene, high micron pile yarn shall be a proven athletic caliber yarn designed specifically for outdoor use and stabilized to resist the effect of ultraviolet degradation, heat, foot traffic, water, and airborne pollutants.

E. The system shall be tufted at the pile height and gauge listed in specification grid, refer to grid in section 2.2 H.

F. The Primary Backing must be a multi-layer backing, contain UV stabilizers and must pass 3000 hours of QUV A testing, refer to grid in section 2.2 H.

G. The Secondary Backing of high-grade polyurethane shall be applied to the Primary Backing. Secondary Backing adds resistance to water degradation and strengthens grip on fibers, refer to grid in 2.2 H.

H. The entire backing shall be coated with holes perforated throughout the backing at the Synthetic Turf Manufacturer's recommended interval to allow for drainage. Partially coated backings or latex coating materials shall not be acceptable.

Pile Yarn	Polyethelene Monofilament/Slit Film	METHOD
Linear Density (Denier) Mono/Slit*	10,800/5,000	ASTM D 1577
Yarn Thickness Mono/Slit	375/100 microns	ASTM D 3218
Pile Weight****	50 oz./yd²	ASTM D 5848
Finished Pile Height****	2.0	ASTM D 5823
Product Weight (total)***	78 oz./yd²	ASTM D 5848
Primary Backing Weight****	8 oz./yd²	ASTM D 5848
Secondary Coating Weight+	20 oz./yd²	ASTM D 5848
Fabric Width	15' (4.57m)	ASTM D 5793
Tuft Gauge	1/2"	ASTM D 5793
Grab Tear Strength Avg.	> 200 lb.-F	ASTM D 5034
Tuft Bind (Avg.)	> 10 lb.-F	ASTM D 1335
Infilltrometer	> 25	ASTM D3885

Except where noted the above specifications are nominal.
* Values are +/- 8%, ***Values are +/- 10 oz. ****Values are +/- 5%. +Values are +/- 3 oz./yd2.

I. Infill materials must conform to the grid in section 2.2 I

Property	Standard	Specification
Rubber Granule Comp	N/A	All black SBR
Rubber Granule Shape	EN 14955	Spherical, Moderate, Angular
Rubber Sieve Analysis	ASTM D 5644	10 / 20MESH (2.0mm – 0.85mm)
Sand Granule Shape	ASTM D442	Semi-rounded to rounded angularity
Sand Sieve Analysis	ASTM E11	20 / 40 MESH (0.85mm - 0.425 mm)
Infill Lbs. of Rubber	N/A	3.01 lbs.
Infill Lbs. of Sand	N/A	1.29 lbs.

J. Perimeter edge details, underground storm sewer piping and connections, and goal post foundations required for the system shall be as detailed and recommended by the Design Professional, and as approved by the Owner. The cost for these embedded items shall be included in the Sitework Contractor's price along with the compacted, porous base.

3.0 EXECUTION

3.1 General

A. The installation shall be performed in full compliance with approved shop drawings.

B. Only factory-trained technicians skilled in the installation of athletic caliber synthetic turf systems shall undertake the placement of the system.

C. Subject to the requirements in Section 1.2(B), the surface to receive the synthetic turf shall be verified by the Synthetic Turf Contractor as ready for the installation of the synthetic turf system and must be perfectly clean as installation commences and shall be maintained in that condition throughout the process.

3.2 Removal (if necessary)

A. Synthetic Turf Contractor shall remove the existing synthetic turf and under-pad from the field (as required by contract).

B. After removal of the stadium surface, the existing synthetic turf and pad materials shall be rolled up and placed at a location designated by the Owner.

3.3 Installation

A. The completed base and adjacent curbs/perimeter nailer shall be inspected by the Engineer or Sitework Contractor by means of a laser and plotted on a 10-foot grid. Based upon the Contractor's inspection of the topographical survey, the

Sitework Contractor shall fine grade the base suitably, including properly rolling and compacting the base to achieve a surface planarity within ½" in 10-feet (+0, -1/4"). OWNER, ENGINEER, OR PRIME CONTRACTOR SHALL NOT APPROVE THE BASE FOR TOLERANCE TO GRADE WITHOUT OBTAINING THE TOPOGRAPHICAL SURVEY.

B. Subgrade and base shall be uniformly compacted to a minimum of 95% of maximum dry density. Care must be exercised to minimize segregation. Engineer/Sitework Contractor shall make written records available to Synthetic Turf Contractor's inspector for both drainage/permeability and compaction/planarity as obtained from a minimum 10' x 10' grid.

C. The Synthetic Turf Project Superintendent shall thoroughly inspect all synthetic turf materials delivered to the site for both mixing and quantity to assure that the entire installation shall have sufficient material to maintain proper mixing ratios.

D. Synthetic turf shall be loose-laid across the field, stretched, and attached to the perimeter edge detail. Synthetic turf shall be of sufficient length to permit full cross-field installation. No head or cross seams will be allowed except as needed for inlaid fabric striping or to accommodate programmed cut-outs.

E. All seams shall be flat, tight, and permanent with no separation or fraying. Selvedge edges of all panels must be cut and discarded prior to being sewn together. If glued, only approved adhesives and seam tape by the synthetic turf manufacturer shall be used. If sewn, a butt-stitch method of seaming must be implemented and a double-lock stitch with cord recommended by the Synthetic Turf Manufacturer shall be utilized. Bagger stitching is prohibited. Seaming tape is to be constructed of high tenacity, coated non-woven fabric. Inlaid markings shall be adhered to seaming tape with a high strength polyurethane adhesive applied per the Synthetic Turf Manufacturer's standard procedures for outdoor applications. All main fabric seams shall be transverse to the field direction (i.e. run perpendicularly across the field).

F. Infill materials shall be properly applied in numerous lifts using special broadcasting equipment. The synthetic turf shall be raked and brushed properly as the mixture is applied. The infill materials can only be applied when the synthetic turf fabric is dry.

K. *g*-Max (shock attenuation) test < 200 at installation.

3.4 Field Markings and Decorations

A. Field markings and decorations shall be installed in accordance with approved project shop drawings.

3.5 Clean Up

A. Synthetic Turf Contractor shall provide the labor, supplies, and equipment, as necessary, for final cleaning of the surfaces.

B. The Synthetic Turf Contractor shall keep the area clean and clear of debris throughout the project.

C. Surfaces, recesses, enclosures, etc., shall be cleaned as necessary to leave the work area in a clean, immaculate condition ready for immediate occupancy and use by Owner.

ARTIFICAL TURF NOTES

- CONTRACTOR SHALL SUBMIT SPECIFICATIONS, DETAILS, AND SHOP DRAWINGS AND OBTAIN APPROVAL BEFORE ORDERING OR INSTALLATION

1 CIV1150 — ARTIFICIAL TURF SPECIFICATIONS
N.T.S.

ANY PROPOSED DEVIATION FROM THE STORMWATER MANAGEMENT DETAILS OR SPECIFICATIONS SHOWN ON THESE PLANS WILL REQUIRE SUBMISSION TO DOEE AS A FORMAL PLAN REVISION FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION. ALL SUBMITTALS RELATED TO THE STORMWATER MANAGEMENT FACILITIES SHALL BE PROVIDED TO THE OWNER, ARCHITECT, AND CIVIL ENGINEER FOR REVIEW AND COMPLIANCE VERIFICATION.

DISTRICT OF COLUMBIA — KUO U. OWEN — PE900770 — 4/8/2023 — CIVIL — PROFESSIONAL ENGINEER

MARET SCHOOL
PROPOSED ATHLETIC FIELDS
SQUARE 2319 LOT 832
5901 UTAH AVE. NW
WASHINGTON, D.C. 20015

STORMWATER MANAGEMENT NOTES AND DETAILS

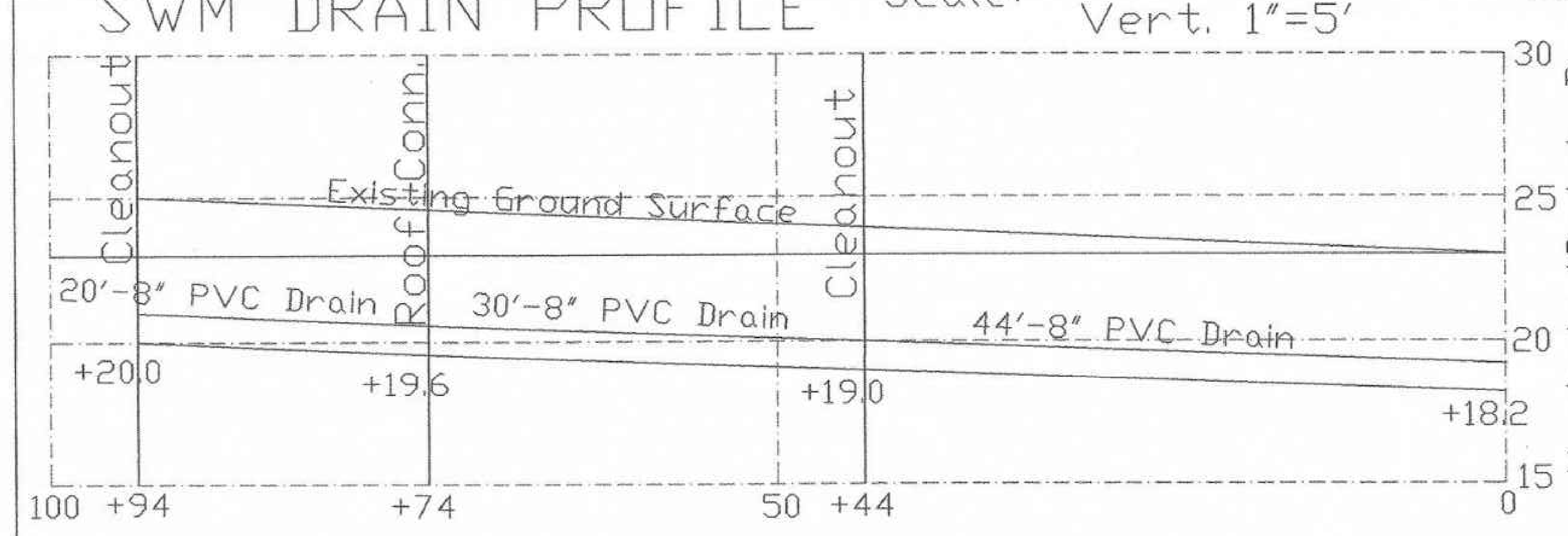
VIKA CAPITOL REVISIONS

#	DATE	DESCRIPTION
2	8-11-23	DOEE RESUB
1	6-6-23	DDOT/DOEE RESUB

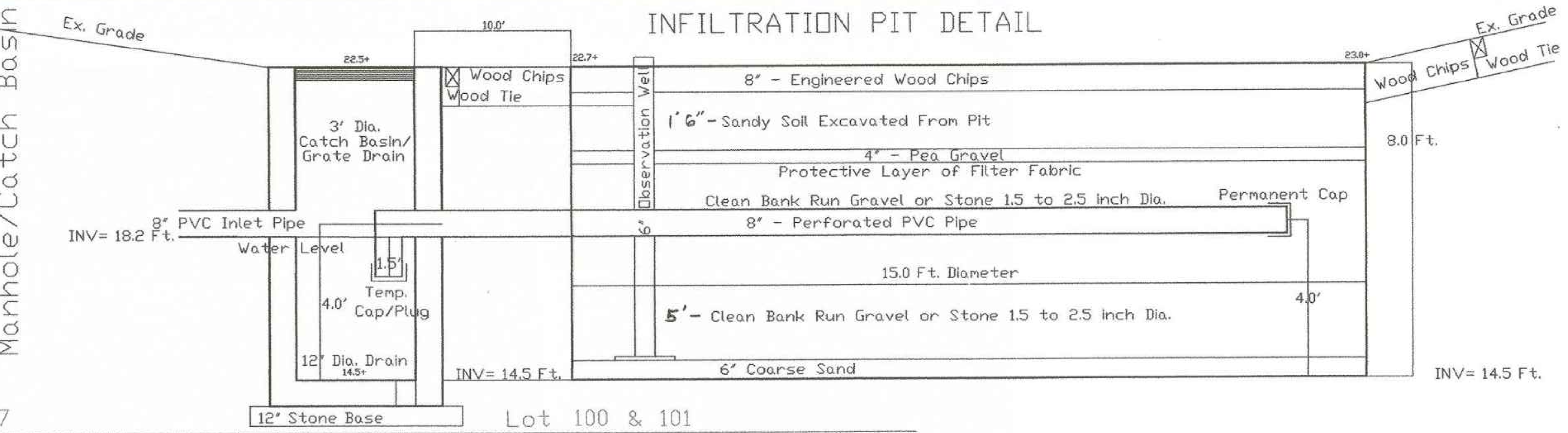
DATE: 23-FEB-2023
DES. KUO DWN. BJR
SCALE: AS SHOWN
PROJECT/FILE NO. VC0626D
SHEET NO. CIV1150

SWM DRAIN PROFILE

Scale: Horiz. 1″=10′ Vert. 1″=5′



INFILTRATION PIT DETAIL

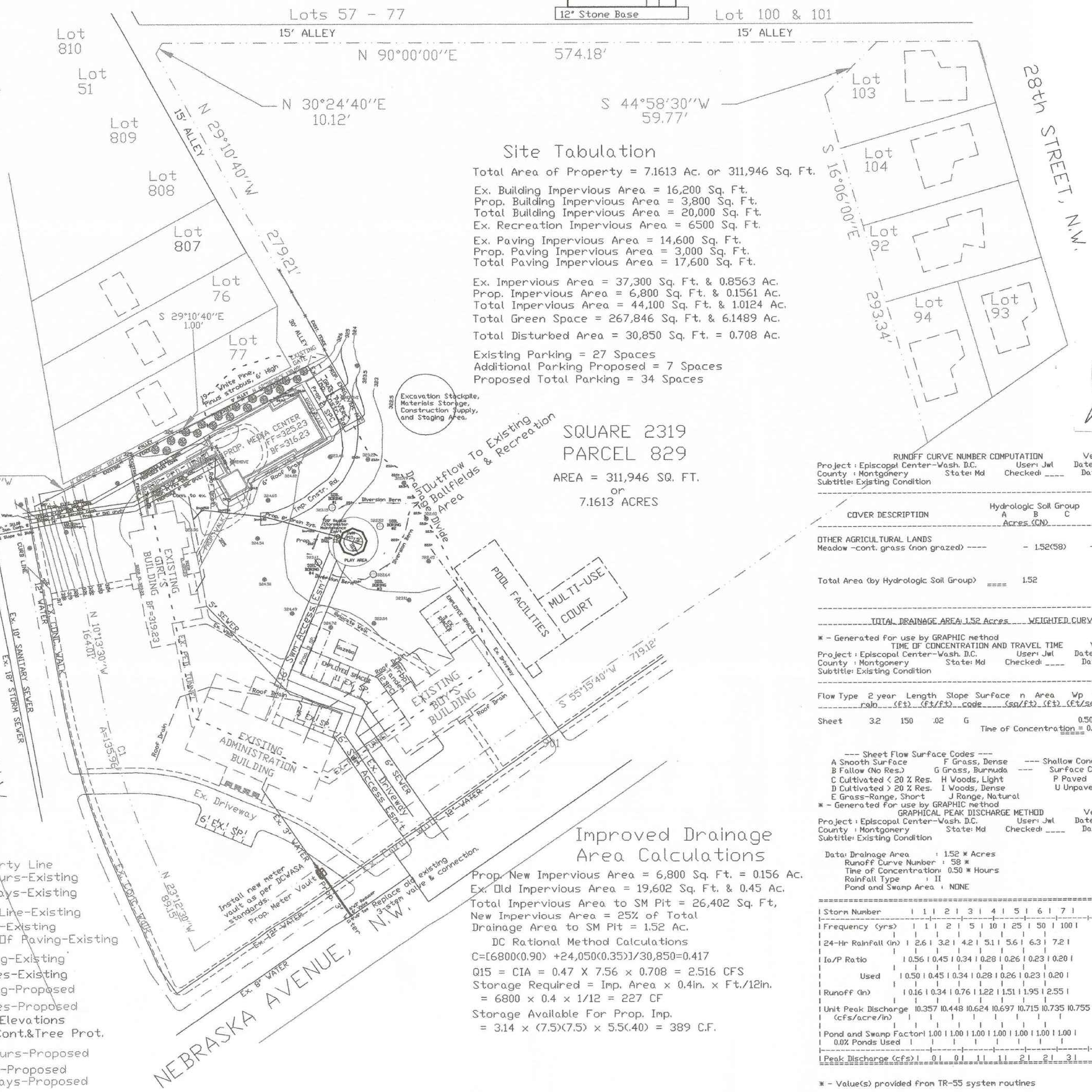


NOTES:
1. All pipes to be schedule 40 PVC, unless noted otherwise.
2. Perforations to be 3/4″ diameter, 6″ o/c, staggered.
3. Filter cloth to be installed on top and side of pit.
4. A 6″ layer of clean, washed sand should be used in place of fabric on the bottom of the pit.
5. Gravel layer to contain 1 1/2″ to 3″ washed, bank-run gravel or DC DOT #4.
6. Gravel/stone to be placed from a drop height of 3-feet or less so as not to damage filter fabric.
7. Approved filter fabrics (top & sides) - Geotex 451 or Mirafi 140N

SURVEY NOTES:
1. Base information shown on this plan was completed by Lanier Poppe Engineering based on field survey of the property.
2. The horizontal datum is that of the office of the D.C. Surveyor.
3. Utilities shown hereon as per surface evidence and as shown on DCDPW Record Plans.
4. The vertical Datum is based on DCDPW Plans and Records.

UTILITY NOTE:
For marking of underground utility lines, call Miss Utility at 1-800-257-7777 at least 48 hours prior to any excavation or construction.

Curve	1
Delta Angle	12°59′00″
Radius	600.00
Arc	135.96
Tangent	68.27
Chord	135.67
Chord Bearing	N 16°43′00″ W



Site Tabulation

Total Area of Property = 7.1613 Ac. or 311,946 Sq. Ft.

Ex. Building Impervious Area = 16,200 Sq. Ft.
Prop. Building Impervious Area = 3,800 Sq. Ft.
Total Building Impervious Area = 20,000 Sq. Ft.
Ex. Recreation Impervious Area = 6500 Sq. Ft.

Ex. Paving Impervious Area = 14,600 Sq. Ft.
Prop. Paving Impervious Area = 3,000 Sq. Ft.
Total Paving Impervious Area = 17,600 Sq. Ft.

Ex. Impervious Area = 37,300 Sq. Ft. & 0.8563 Ac.
Prop. Impervious Area = 6,800 Sq. Ft. & 0.1561 Ac.
Total Impervious Area = 44,100 Sq. Ft. & 1.0124 Ac.
Total Green Space = 267,846 Sq. Ft. & 6.1489 Ac.
Total Disturbed Area = 30,850 Sq. Ft. = 0.708 Ac.

Existing Parking = 27 Spaces
Additional Parking Proposed = 7 Spaces
Proposed Total Parking = 34 Spaces

DATUM
DISTRICT OF COLUMBIA
SURVEYOR'S OFFICE
SCALE: 1″ = 50′

LEGEND:
- Property Line
- Contours-Existing
- Walkways-Existing
- Curb Line-Existing (Curb Line)
- Trees-Existing
- Edge Of Paving-Existing (Edge Of Paving)
- Building-Existing
- Utilities-Existing
- Building-Proposed
- Utilities-Proposed
- Spot Elevations (24.9+)
- Sed. Cont.&Tree Prot. (SF)
- Contours-Proposed
- Trees-Proposed
- Walkways-Proposed

Improved Drainage Area Calculations

Prop. New Impervious Area = 6,800 Sq. Ft. = 0.156 Ac.
Ex. Old Impervious Area = 19,602 Sq. Ft. & 0.45 Ac.
Total Impervious Area to SM Pit = 26,402 Sq. Ft,
New Impervious Area = 25% of Total
Drainage Area to SM Pit = 1.52 Ac.
DC Rational Method Calculations
C=[6800(0.90) +24,050(0.35)]/30,850=0.417
Q15 = CIA = 0.47 X 7.56 x 0.708 = 2.516 CFS
Storage Required = Imp. Area x 0.4in. x Ft./12in.
= 6800 x 0.4 x 1/12 = 227 CF
Storage Available For Prop. Imp.
= 3.14 x (7.5)(7.5) x 5.5(.40) = 389 C.F.

STORMWATER MANAGEMENT NOTES:
1. Construction of the stormwater management facilities are to be started after all other construction activities are completed and permanent stabilization has been established.
2. Positive drainage shall be maintained during all phases of construction. Ponding or standing water will not be permitted.
3. It shall be the responsibility of the contractor to submit shop drawings and material certifications to the architect for stormwater management items.
4. All construction shall conform to the D.C. codes, standards, and ordinances.
5. During the installation of the stormwater management facilities, all surface drainage shall be diverted to the recreation field to the east. The 8″ drainage storm drain piping and manhole shall be constructed first. The manhole outflow pipe shall be plug to prevent storm water from flowing into the pit during construction and final stabilization.
6. Connect the rear roof drains from the Media Center and the Girls building to new 8″ storm drain flowing to the Swm Pit.
7. Complete the Swm Pit excavation install the bottom sand, 1.5 to 2.5 gravel, filter cloth, pea gravel, wood chips, install silt fence around the Swm Pit, complete final grade except leaving an opening to the recreation field, and permanently stablize the area.
8. After the final stabilization has matured complete the grading of the drainage gap to the recreation field. Remove the silt fence around the Swm Pit, and clean catch basin and remove the plug in the catch basin outlet.

RUNOFF CURVE NUMBER COMPUTATION Version 2.10
Project : Episcopal Center-Wash. D.C. User: Jwl Date: 08-27-2002
County : Montgomery State: Md Checked: ____ Date: ________
Subtitle: Existing Condition

COVER DESCRIPTION	Hydrologic Soil Group A	B	C	D
	Acres (CN)			
OTHER AGRICULTURAL LANDS				
Meadow -cont. grass (non grazed) ----	-	1.52(58)	-	-
Total Area (by Hydrologic Soil Group)		1.52		

TOTAL DRAINAGE AREA: 1.52 Acres WEIGHTED CURVE NUMBER: 58*

* - Generated for use by GRAPHIC method
TIME OF CONCENTRATION AND TRAVEL TIME Version 2.10
Project : Episcopal Center-Wash. D.C. User: Jwl Date: 08-27-2002
County : Montgomery State: Md Checked: ____ Date: ________
Subtitle: Existing Condition

Flow Type	2 year rain	Length (ft)	Slope (ft/ft)	Surface code	n	Area (sq/ft)	Wp (ft)	Velocity (ft/sec)	Time (hr)
Sheet	3.2	150	.02	G					0.505

Time of Concentration = 0.50*

--- Sheet Flow Surface Codes ---
A Smooth Surface F Grass, Dense
B Fallow (No Res.) G Grass, Burmuda
C Cultivated < 20 % Res. H Woods, Light
D Cultivated > 20 % Res. I Woods, Dense
E Grass-Range, Short J Range, Natural

--- Shallow Concentrated --- Surface Codes ---
P Paved
U Unpaved

* - Generated for use by GRAPHIC method
GRAPHICAL PEAK DISCHARGE METHOD Version 2.10
Project : Episcopal Center-Wash. D.C. User: Jwl Date: 08-27-2002
County : Montgomery State: Md Checked: ____ Date: ________
Subtitle: Existing Condition

Data: Drainage Area : 1.52 * Acres
Runoff Curve Number : 58 *
Time of Concentration: 0.50 * Hours
Rainfall Type : II
Pond and Swamp Area : NONE

Storm Number	1	2	3	4	5	6	7
Frequency (yrs)	1	2	5	10	25	50	100
24-Hr Rainfall (in)	2.6	3.2	4.2	5.1	5.6	6.3	7.2
Ia/P Ratio	0.56	0.45	0.34	0.28	0.26	0.23	0.20
Used	0.50	0.45	0.34	0.28	0.26	0.23	0.20
Runoff (in)	0.16	0.34	0.76	1.22	1.51	1.95	2.55
Unit Peak Discharge (cfs/acre/in)	0.357	0.448	0.624	0.697	0.715	0.735	0.755
Pond and Swamp Factor 0.0% Ponds Used	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Peak Discharge (cfs)	0	0	1	1	2	2	3

* - Value(s) provided from TR-55 system routines

RUNOFF CURVE NUMBER COMPUTATION Version 2.10
Project : ECCA User: JWL Date: 08-27-2002
County : Montgomery State: MD Checked: ____ Date: ________
Subtitle: Proposed Conditions
Subarea : L

COVER DESCRIPTION	Hydrologic Soil Group A	B	C	D
	Acres (CN)			
FULLY DEVELOPED URBAN AREAS (Veg Estab.)				
Open space (Lawns,parks etc.) Fair condition; grass cover 50% to 75%	-	-	.920(79)	-
Streets and roads Paved; open ditches (w/right-of-way)	-	-	.600(92)	-
Total Area (by Hydrologic Soil Group)			1.52	

SUBAREA: L TOTAL DRAINAGE AREA: 1.52 Acres WEIGHTED CURVE NUMBER: 84*

* - Generated for use by GRAPHIC method
TIME OF CONCENTRATION AND TRAVEL TIME Version 2.10
Project : ECCA User: JWL Date: 08-27-2002
County : Montgomery State: MD Checked: ____ Date: ________
Subtitle: Proposed Conditions

Flow Type	2 year rain	Length (ft)	Slope (ft/ft)	Surface code	n	Area (sq/ft)	Wp (ft)	Velocity (ft/sec)	Time (hr)
Sheet	3.2	75	.0025	e					0.298
Shallow Concent'd		75	.0025	p					0.020

Time of Concentration = 0.32*

--- Sheet Flow Surface Codes ---
A Smooth Surface F Grass, Dense
B Fallow (No Res.) G Grass, Burmuda
C Cultivated < 20 % Res. H Woods, Light
D Cultivated > 20 % Res. I Woods, Dense
E Grass-Range, Short J Range, Natural

--- Shallow Concentrated --- Surface Codes ---
P Paved
U Unpaved

* - Generated for use by GRAPHIC method
GRAPHICAL PEAK DISCHARGE METHOD Version 2.10
Project : ECCA User: JWL Date: 08-27-2002
County : Montgomery State: MD Checked: ____ Date: ________
Subtitle: Proposed Conditions

Data: Drainage Area : 1.52 * Acres
Runoff Curve Number : 84 *
Time of Concentration: 0.32 * Hours
Rainfall Type : II
Pond and Swamp Area : NONE

Storm Number	1	2	3	4	5	6	7
Frequency (yrs)	1	2	5	10	25	50	100
24-Hr Rainfall (in)	2.6	3.2	4.2	5.1	5.6	6.3	7.2
Ia/P Ratio	0.15	0.12	0.09	0.07	0.07	0.06	0.05
Used	0.15	0.12	0.10	0.10	0.10	0.10	0.10
Runoff (in)	1.19	1.68	2.55	3.36	3.82	4.48	5.33
Unit Peak Discharge (cfs/acre/in)	0.990	1.011	1.026	1.026	1.026	1.026	1.026
Pond and Swamp Factor 0.0% Ponds Used	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Peak Discharge (cfs)	2	3	4	5	6	7	8

* - Value(s) provided from TR-55 system routines
STORAGE VOLUME FOR DETENTION BASINS Version 2.10
Project : ECCA User: JWL Date: 08-27-2002
County : Montgomery State: MD Checked: ____ Date: ________
Subtitle: Proposed Conditions

Drainage Area: 1.52 Acres Rainfall Frequency: 2 years
Rainfall-Type: II
Runoff: 1.7 inches
Peak Inflow: 2.59 cfs
Peak Outflow: 0.44 cfs
Detention Basin Storage Volume: 0.81 inches or 0.1 acre feet

EccaSm__

MANION & CORATOLA ARCHITECTS
7307 MACARTHUR BLVD. SUITE 216
BETHESDA, MD. 20816
TELEPHONE 301/229-7000

Lanier Poppe Engineering
ENGINEERING + SURVEYING + PLANNING
224 North Adams Street
Rockville, MD 20850
Ph 301 251 6730

Media Center
Episcopal Center for Children
PARCEL 829, SQUARE 2319
5901 Utah Ave. NW
Washington, DC

STORMWATER MANAGEMENT PLAN

seal:

Written dimensions on these drawings shall have precedence over scale dimensions. Contractors shall verify and be responsible for all dimensions and conditions on the job and this office must be notified of any variations from the dimensions and conditions.

SCALE: 1″=50′
DRAWN: JWL
CHECKED:
DATE: 9/02/02
REVISIONS:
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SHEET C2-5 OF 6

INFILTRATION FACILITY #517-0-1 PLAN NOTES

- PLAN PROVIDED FOR INFORMATIONAL PURPOSES ONLY
- THE 389 CF DETENTION SHALL BE PROVIDED BY THE PROPOSED BIO-RETENTION FACILITY

FOR INFORMATIONAL PURPOSES ONLY

1 / CIV1200 — INFILTRATION FACILITY #517-0-1 PLAN FROM APPROVED DOEE PLANS
N.T.S.

VIKA CAPITOL
ENGINEERS ★ PLANNERS ★ LANDSCAPE ARCHITECTS ★ SURVEYORS ★ GEOMATICS
PROJECT COORDINATOR: BRIAN RUHL
ruhl@vikacapitol.com
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MARET SCHOOL
PROPOSED ATHLETIC FIELDS
SQUARE 2319, LOT 832
5901 UTAH AVE NW
WASHINGTON, D.C. 20015

EXISTING INFILTRATION FACILITY PLAN

VIKA CAPITOL REVISIONS

#	DATE	DESCRIPTION
2	8-11-23	DOEE RESUB
1	6-6-23	DDOT/DOEE RESUB

DISTRICT OF COLUMBIA KYLE U. OLIVER PE900770 CIVIL PROFESSIONAL ENGINEER 10/3/2023

DATE: 23-FEB-2023
DES. KUO DWN. BJR
SCALE: AS SHOWN
PROJECT/FILE NO. VC0626D
SHEET NO. CIV1200