PRINCE GEORGE'S COUNTY GOVERNMENT
Department of Permitting, Inspections and Enforcement
(301) 883-5710

SWM FACILITY DESIGN REVIEW CHECKLIST*

This checklist serves as a guide for the consultant in the preparation and for the County the review of a SWM Facility. Any questions regarding items contained herein should be referred to the Prince George's County DPIE for clarification. Applicable page number or section in the Stormwater Design Manual, County Code, or MDE Design Manual for specific design criteria is included for reference.

NOTE: PLANS SUBMITTED WITHOUT A COMPLETED CHECKLIST MAY BE RETURNED WITHOUT REVIEW

Site/Project Name: _____ Date: _____

Consultant: _____ Applicant: _____

Phone Number: _____ Phone Number: _____

Email Address: _____ Email Address: _____

Site Development Concept Plan No.:_____ Site Development Plan No.: _____

Permit No.: _____

Consultant: Please complete the checklist below by indicating the following:
C or ✓ = Complete or checked; X = Not Applicable; O = Outstanding, need to address
Please place the appropriate symbol in the CONSULT column.

Item #	Design Checklist Item	Reference	CONSULT	DPIE
A	**REPORT**			
A-1	Concept Plan and Site Development Plan approval letter in report...			
A-2	Project overview provided describing design methodology, criteria, and results.			
A-3	Table summarizing drainage area, required and provided volumes, and at least the 1-year and 100-year WSEL.			
A-4	Dam hazard classification discussion and computations according to SCS-378 (Always try for a Class "A" LOW HAZARD FACILITY). Class "B" or "C" dams require state review and may not be acceptable to the county.			
A-5	Provide watershed schematic for combining multiple pond analysis.			
A-6	TC and RCN determinations for CPv: ultimate development (any existing developed off-site areas are considered as existing condition)...			
A-7	WQ_v and Re_v. for onsite area.			
A-8	Use 24-hour NRCS rainfall tables for the storm events from PGSCD manual.			

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A-9	Stage-storage and Stage-Discharge tables. Required and provided permanent pool volumes noted.			
A-10	Check for barrel control prior to riser orifice flow. Computations to reflect water surface elevation in riser structure and submergence of weir.			
A-11	High stage weir designed to pass 100-year storm before top of weir opening is reached. Use blocked scenario if low flow opening is less than 6". Floodplain or tailwater control of principal spillway considered.			
A-12	Emergency spillway design (earthen spillways to be totally in cut with a 25 foot control section).			
A-13	TR-20 routing for appropriate ultimate development (including off-site areas) safety storms (criteria from MD-378, Table 1).			
A-14	Low flow openings of 6" and smaller in any direction must be considered blocked for a separate routing of the 100-year storm. The routing must start at the first opening greater than 6-inches in all directions, and the resultant water surface elevation must still be 2 feet below top of dam for a riser only structure and 1 foot for an emergency spillway.			
A-15	If a pond drain is provided, the drain down time shall not exceed 24 hours for permanent pool.			
A-16	Provide computations or sizing of riser base with a flotation factor of safety greater than 1.2.			
A-17	Anti-seep collar design (increase seepage length by 15%).			
A-18	Provide computations to show that the weight of riser, riser base, and soil above riser base will not exceed the soil bearing capacity in soils report.			
A-19	Trash rack design shall have an area greater than or equal to 6 times the protected opening area if the drainage is wooded or 3 times for non-wooded drainage areas; 4:1 upstream face for low flow pipe and 12" minimum projection for high stage weir.			
A-20	Low flow channel design (0.5% channel slope, minimum).			
A-21	Rip rap outfall protection design.			
A-22	Filter Diaphragm design, if applicable.			
B	**GEOLOGICAL INVESTIGATION (By Geotechnical Engineer)**			
B-1	Minimum of three soil boring with additional as needed for these locations: borrow area; riser structure; top of dam near each abutment and emergency spillway, if provided.			
B-2	Boring logs with Unified Soil Classification, blow counts and soil descriptions, and groundwater elevations. The boring locations shall be shown on the plan with the report.			
B-3	Provide geotechnical report with construction and design recommendations. Include laboratory tests.			
B-4	Core trench dimensions including depth and material recommendations noted.			
B-5	Soil bearing capacity provided for riser structure.			
B-6	Soil compactions requirements and construction recommendations noted. Provide on plan.			
B-7	If groundwater is within 1 foot of the proposed bottom of a dry pond, drain tile is required.			
B-8	Recommended undercut for poor soils.			
B-9	Slope stability analysis of the dam embankment, if applicable.			

Item #	Design Checklist Item	Reference	CONSULT	DPIE
B-10	Dewatering plan, if applicable.			
B-11	Settlement analysis, if applicable.			
B-12	Joint extension analysis, if applicable.			
B-13	Filter diaphragm details and installation instructions, if applicable.			
B-14	If sufficient material is not available at the SWM facility site, provide a soil boring documenting that sufficient on-site material suitable for embankment and core trench construction is available. Delineate borrow area and soil boring on plan view.			
C	**DRAINAGE AREA MAP**			
C-1	Vicinity Map with a maximum size of 4" x 4". Locate 5" over from upper right hand corner, to allow for approval stamp border. Provide maximum scale of 1"=2,000 feet with WSSC 200 foot sheet number, Prince George's Street Map page and grid, and Tax Map page and grid.			
C-2	Title block: Name of project, Drainage Area Map, Election District, Prince George's County, and State of Maryland.			
C-3	The sheet size shall be no greater than 36" x 24".			
C-4	Provide 3 grid coordinates in WSSC datum in an "L" shaped pattern to the nearest 100 feet on each plan sheet.			
C-5	Drainage divides shown with Tc path labeled for each type of reach such as sheet flow, pipe, channel, etc.			
C-6	Scale may be up to 1=200 feet if SWM facility only and 1"=50 feet if ESD devices are also shown. An inset may be used for offsite areas at a smaller scale.			
C-7	Lots and/or parcels shown with land use or masters plan zoning.			
C-8	North arrow shown and plan horizontal and vertical datum noted.			
C-9	Property lines, street names and stream names shown.			
C-10	Label adjacent off-site ownership with plat or deed reference			
C-11	Provide off-site topography to document drainage divides.			
C-12	Soil types and hydrologic soil groups noted. Shade each type hydrologic soil group with a different pattern. No shading may be used for one of the groups.			
C-13	Environmental constraints and 100 year floodplain shown.			
C-14	Existing and proposed contours shown with 1"=2 foot contour interval maximum.			
C-15	Soil types with hydrologic soil group noted.			
C-16	Stormwater concept approval number shall be noted on plan.			
D	**PLAN VIEW OF POND AT SCALE OF 1"=30' OR LESS (25', 20', ETC)**			
D-1	Vicinity Map with a maximum size of 4"x4" in upper right hand corner at maximum scale of 1"=2,000 feet with WSSC 200 foot sheet number, Prince George's Street Map page and grid, and Tax Map page and grid.			
D-2	Provide legend and MD-378 specifications on cover sheet based on latest date. For revisions to specifications, note with asterisk and provide revision below. Do not erase and substitute in specifications.			
D-3	Title Block with name of project, Election District, Prince George's county Maryland noted.			
D-4	DPIE as-built approval and consultant as-built certification blocks on all sheets.			

Item #	Design Checklist Item	Reference	CONSULT	DPIE
D-5	PGSCD Pond Approval Block and DPIE Approval Block on cover sheet.			
D-6	Owner/Developer/Applicant noted.			
D-7	Provide 3 grid coordinates in WSSC datum in an "L" shaped pattern to the nearest 100 feet on each plan sheet.			
D-8	Match lines coordinated with current number of sheets.			
D-9	Property lines shown and adjacent property ownership labeled with liber/folio and/or plat reference and zoning.			
D-10	Signed pond, drainage, and utility certifications.			
D-11	Existing and proposed contours shown for SWM facility at a maximum of 1"=2 feet contour interval and plan scale at a maximum of 1'=30 feet.			
D-12	Show existing and proposed buildings and utilities that are adjacent to the proposed facility.			
D-13	Locations of test borings numbered to match geotechnical report.			
D-14	Show all pipes and structures a minimum of 5" horizontal from all other utilities.			
D-15	Removal, connection, and/or relocation notes for existing utilities.			
D-16	Show dam centerline and stationing with core trench limits noted.			
D-17	Show a minimum clearance of 25 foot radius from riser and 15 feet from toe of slopes and label as non woody buffer line. Provide adequate clearing for construction.			
D-18	Emergency spillway crests elevation shown (in cut); control section labeled (minimum of 25 feet long); rip rap or gabions provided for velocities greater than 5 fps. Provide centerline stationing. Maximum of 10% slope below emergency spillway.			
D-19	Low flow channel suggested for all dry ponds and provided with a minimum of 2% slope for grass and 1% slope for rip rap and flow arrow for direction: bottom width ≥ pipe diameter; minimum of 1 foot depth and 2 feet wide flat bottom; inverts at 50 foot intervals; details required. Stabilize with grass or provide turf reinforcement for higher velocities. Provide turf reinforcement detail.			
D-20	Delineation of permanent pool, 1, 10, and 100-year pool limits. Other storm events may be required if they shall be mitigated per the approved Site Development Concept Plan. If the 10-year storm utilizes the emergency spillway, the 5-year water surface elevation must be noted to confirm the emergency spillway is not used.			
D-21	All easements including but not limited to SWM, storm drain, PUE, etc. The SWM easement should not have curves and should have fewer but longer courses rather than shorter courses.			
D-22	Show limits of FEMA or DPIE approved 100-year floodplain (label with FPS approval number).			
D-23	All environmental features including wetlands, streams, and buffers shown.			
D-24	For public ponds retaining walls may hold up back slopes of SWM facilities but shall be located above the 100-year WSEL and outside of the SWM easement.			

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D-25	North arrow, scale, and datum noted.			
D-26	Check effect of outfall on existing or proposed water, sewer, or other utilities.			
D-27	Pipes shall be perpendicular into or out of precast riser structure.			
D-28	Water, sewer, storm drain, and other utilities may traverse a roadway acting as a SWM embankment; however provide necessary design information per MD-378.	**MD-378**		
D-29	Any utility line that crosses the embankment shall include an anti-seep collar or filter diaphragm. No gravel bedding shall be allowed.			
D-30	Sewer manholes may not be located under a wet pool or within the 2-year flood elevation.			
D-31	If located in the SWM storage area, a sewer manhole shall be set above the 10-year WSEL.			
D-32	Provide a 50 foot minimum buffer or as approved by the Concept Plan from the 100-year WSEL to the nearest residential property line.			
D-33	The forebay shall be separated from the main pool by a non-erodible material such as gabions. Provide details and specifications.			
D-34	Sufficient vehicular recovery area or a guardrail will be provided adjacent to a road when the SWM slopes extend up to the R/W line.			
D-35	A 10 foot wide, access road shall be provided from the existing public rights-of-way to the control structure, forebay and to the outflow pipe. Provide turnarounds near the end of the access road where appropriate, preferably near the riser structure.			
D-36	A minimum of 25 foot dedication is required for the access road from the street to the SWM easement when the road is located between residential lots.			
D-37	The access road shall be constructed of bituminous asphalt meeting the secondary road section standard or grass pavers/rings when located adjacent to residential lots. Provide typical section.			
D-38	Access roads may be located on developed residential lots that are less than acres in size. The access road must be contained within the SWM rights-of-way.			
D-39	Modified commercial driveway apron will be placed at the public road for access. With a minimum 12 foot wide galvanized gate.			
D-40	The access road has a maximum of 15% running slope and 4% cross slope.			
E	**MAINTENANCE AND SAFETY ITEMS**			
E-1	Slopes no steeper than 3:1 below the top of dam except where natural topography is preserved or for the downstream toe of a dam used as a public roadway. Slopes above the top of dam shall be no steeper than 3:1 for residential areas or 2:1 for non-residential areas, and steeper if natural topography is preserved.			
E-2	Submerged pond bank slopes shall not be steeper than 3:1.			
E-3	Dry pond bottom sloped no flatter than 2% to a low flow channel.			

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E-4	For wet ponds or extend detention ponds deeper than 2 feet, provide underwater bench 5 feet wide, 6-12" below normal pool and a cross slope of 2%.			
E-5	A 10 foot wide bench 1-3 feet above the permanent pool or 1-year WSEL. Provide cross slope of 2% and show stabilization with 6" of #57 bluestone or CR-6, grass pavers, or asphalt.			
E-6	Forebay provided with a volume of at least 0.1 inches of runoff per impervious acre for any storm drain outfall greater than 20% of the pond drainage area. Not required if pretreated by ESD devices.			
E-7	If the drainage area to a pond is greater than 8 acres, a forebay must be provided for any storm drain outfalls.			
E-8	If a fence is provided around the pond, the detail shall be provided on plan. Gate detail shall be included and the gate must be at least 12 feet wide.			
E-9	An all-weather maintenance access road from public right-of-way or publicly traveled way shall be provided to the riser structure. The maximum slope shall be 15% and the road must be at least 10 feet wide. A grass or gravel road may be used for access to the remaining of the facility.			
E-10	SWM and storm drain easements may overlap but are not required to do so. The storm drain easement may stop at the SWM easement but is not required to do so.			
F	**PRINCIPAL SPILLWAY PROFILE AND ASSOCIATED DETAILS**			
F-1	Provide a minimum of 3:1 side slopes for dam embankment and all slopes below the 100-year WSEL.			
F-2	Label top width and design and constructed elevation of dam. The top width must be noted to meet the minimum required. (1 foot freeboard above blocked 100-year WSEL with an emergency spillway, 2 feet freeboard without emergency spillway). Refer to MD-378 for minimum dam top widths. Show 3:1 constructed side slopes.			
F-3	Must be concrete for diameters less than or equal to 48". All concrete pipes must be ASTM C-361 thru the embankment and shall be circular. Label diameter, class, and slope. Cast in place box culvert may be considered for heights greater than 48".			
F-4	Label "Existing Ground" and "Proposed Grade".			
F-5	Dashed line for emergency spillway.			
F-6	Inlet and outlet inverts of pipes, percent slope. Pipe lengths are shown by stationing at each structure (0+ 00 at low end) and shall be from the inside wall to inside wall of structures.			
F-7	Show phreatic line (4:1 slope starting from 10-year WSEL or emergency spillway elevation).			
F-8	Show core trench with a minimum of 4 foot wide bottom, 4 feet below bottom of concrete cradle, pond bottom, or existing ground and maximum 1:1 side slopes. Refer to soils report for additional design information. Note on profile the type of soil shall be GC, CH, SC, or CL.			
F-9	Provide stations for anti-seep collars or filter diaphragm. Locate anti-seep collar a minimum of 2 feet from pipe joints and at least one within the phreatic zone. If there is more than one collar, they shall be separated between 5 and 14 times the required vertical projection of the collar between collars.			

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F-10	Note that the first pipe joint shall be located within four feet of inside of riser face.			
F-11	Provide typical rip rap section(s) specifying inverts, length, slope, bottom width, height, side slope, filter cloth, grouted cut-off wall, rip rap size and thickness.			
F-12	Provide profile of emergency spillway to include 25 foot level section and control section. The crest of emergency spillway shall be at least 2 feet below top of settled embankment) and 1 foot above main weir crest of concrete riser.			
F-13	Label permanent pool, extended detention, 1-, 100-year or other control elevations per Site Development Concept Plan approval, as applicable.			
F-14	Provide Q_{10}, V_{10}, Q_{100}, and V_{100}.			
F-15	For embankment ponds, i.e. where the downstream slope elevation is equal to the bottom of the pond and is within the length of 10H+20, the core trench shall be excavated the full length of the embankment to a depth of 4-feet below the bottom elevation of the pond.			
F-16	Show 100 year tailwater or floodplain elevation.			
F-17	Label property line and downstream owner on outfall reach.			
F-18	Label street centerline and street name if applicable.			
G	**EMBANKMENT SECTION**			
G-1	Top of dam (constructed and settled) with a minimum of 5% additional fill to account for settlement.			
G-2	Location of emergency spillway with side slopes labeled, minimum of 3:1 side slopes.			
G-3	Bottom of core trench (4 foot minimum depth and width) below existing ground, pipe outfall, or pond bottom with top of impervious core (zoned fill) at 10-year WSEL or higher.			
G-4	All excavation for pipe spillways into existing embankments, whether previous fill or natural ground shall have side slopes of 2:1 for dam centerline cross section.			
G-5	Label existing ground and proposed grade.			
G-6	Barrel location with concrete cradle shown. The barrel shall reflect the invert at the centerline of the core trench.			
G-7	Existing and proposed utility location shown. Pipes and utilities parallel to the axis of the dam shall be constructed with no granular bedding.			
G-8	Show peak elevations for the storm events and the permanent pool, if applicable.			
G-9	Label soil borings to match geotechnical report and show top and bottom. Label per Unified Soil Classification System (ML, CH, SC, etc.).			
H	**EMERGENCY SPILLWAY**			
H-1	Design must be per NRCS from the 2011 ECS manual or NRCS EFM-Chapter 11.			
H-2	Spillway flow area must be in natural ground or cut.			
H-3	Existing ground and proposed grade shown.			
H-4	Provide cross section of emergency spillway side slopes (3:1 minimum) flow depth, and total depth bottom width of at least 8 feet.			

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H-5	Provide profile with the following; stationing, control section width elevation, and length (minimum of 25 feet). Label exit channel and length. Extend profile at least 100 feet.			
H-6	Label approach and exit slopes.			
H-7	Provide design discharge and velocity for 10 and/or 100-year storms. Label 10 and/or 100-year WSEL.			
H-8	If velocity is greater than 5 fps provide rip rap or gabion stabilization.			
I	**RISER OR CONTROL STRUCTURE (SPECIFIC DETAIL REQUIRED)**			
I-1	Material shall be reinforced concrete not CMU, cinder block, or brick.			
I-2	It may be either poured in place or pre-cast. If pre-cast, provide standard shop drawing note. "Shop drawing must be reviewed by the engineer and accepted by DPIE prior to fabrication".			
I-3	Cast in place concrete collar for pre-cast riser only. Detail required.			
I-4	Provide structural detail for cast-in-place structures, including reinforcing and construction specifications.			
I-5	Structural computations (signed and sealed) for cast-in-place designs.			
I-6	Show riser based outline with inside dimensions, incoming and outgoing pipes, inside and outside walls of riser with dimensions including wall thickness and location of manhole frame and cover. Note steps with county standard number. Show locations of section(s) thru riser.			
I-7	Show locations of section(s) thru riser.			
I-8	Rise base with heights and width riser orifice and/or weir opening dimensions. Top slab with manhole frame and cover. Show manhole steps (set 12" on center).			
I-9	Provide elevations for riser base, weir elevations, top of riser, and pipe invert.			
I-10	Provide thickness of top slab and connection details to riser.			
I-11	Location of gate valve. Provide means to lock gate valve handle.			
I-12	Show and label riser joint fasteners. Provide detail.			
I-13	Show permanent pool, 1-, 10-, and 100-year elevation, as applicable.			
I-14	Provide dimensions of riser base on plan and section views.			
I-15	Bolted 30" diameter vented manhole covers in top slab.			
I-16	Anti-vortex device detail provided for open top riser. (if required)			
I-17	Provide table of design water surface elevations versus storm events. Leave room for as-built elevations.			
J	**OVERFLOW WEIR**			
J-1	The weir wall shall be embedded a minimum of 5 feet horizontally into the embankment at the top of dam.			
J-2	In the event the weir wall plus foundation above the footer is greater than 10 feet, the embedment shall be minimum of one half the height of the wall.			
J-3	The top of the weir wall shall be extended to the top of dam elevation.			

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J-4	The rip rap outfall for a weir structure shall consider the length of a hydraulic jump from the overflow before beginning the required length or rip rap to reduce the velocity to less than 5 fps.			
J-5	Structural computations for the weir wall shall also address the overturning movement of the weir wall based on the WSEL at the top of dam.			
J-6	Appropriate material shall be placed at the bottom of the downstream side of the weir. Rip rap with grouting is NOT acceptable.			
K	**OUTFALL PROTECTION (DETAIL REQUIRED)**			
K-1	Standard rip rap description for all outfalls shall be as follows. "Provide __' long X__' wide C1 __ rip rap @ 0% slope placed on approved filter cloth". Provide d_{50}, d_{max}, and thickness for class of rip rap.			
K-2	Size for maximum barrel release (but not greater than 10-year storm).			
K-3	For inflow pipes into a wet pond, the rip rap shall extend down the slope of the wet pool and at least 10 feet along the bottom of the pond. The width of the rip rap outfall shall be at least 10 feet wide for pipes 30" or less with class 1 rip rap and 15 feet wide with class 2 rip rap for pipes greater than 30" up to 60". For larger pipe sizes additional width may be required.			
K-4	Provide typical rip rap section(s) specifying inverts, length, slope, bottom width, height, side slope, filter cloth, grouted cut-off wall, rip rap size and thickness. Use MDE Table H.2 for size and dimensions.			
K-5	Provide a 4 foot high chain link fence on endwalls when pipe size exceeds 24".			
K-6	Contour proposed grades at end of rip rap to connect to existing contours.			
K-7	If the storm drain outfall rip rap apron crosses an access road, a gabion-reno-mattress or equivalent must be placed for the road width.			
L	**APPURTENANCES**			
L-1	Provide concrete collar, anti-seep collar, and pipe cradle details including reinforcing.			
L-2	Provide at least 2 feet projection outside of pipe wall or cradle for concrete cradle.			
L-3	The detail for anti-seep collar shall match the dimensions from design from design computations.			
L-4	Concrete cradle shall extend to the spring line of the pipe, and a minimum thickness of 6" below the pipe.			
L-5	Provide concrete collar for any pipe entering or leaving the precast riser structure. A cast in place structure does not require a concrete collar.			
L-6	Bottom of trash opening shall be at least 8" below riser opening or 12" below low flow opening for wet ponds.			
L-7	High stage trash rack shall project a minimum of 12" from face of structure. High stage trash rack shall not be attached to the top slab.			

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L-8	Orifice(s) > 6" shall be removable, hot dipped galvanized, minimum #6 rebar trash rack with an area > 6 times the protected opening area; low flow trash rack shall have 4:1 upstream face, maximum bar spacing shall be 6", and vertical bars on the outside. If orifice < 6", use galvanized expanded steel grate. An orifice size < 3" is not permitted without permission of DPIE.			
L-9	Wet or wetland ponds: non-clogging, non-hydraulically interfering inlet drawing water from at least one foot below permanent pool and 50% of total depth above pond bottom (e.g. corrosion resistant, removable hood; turned down elbow, or reverse slope pipe hidden in dam).			
L-10	Reverse slope pipe design non-clogging, non-hydraulically interfering inlet drawing water from at least 1 foot below permanent pool and 50% of total depth above pond bottom (e.g. corrosion resistant removable hood or reverse slope pipe place in riser).			
L-11	Provide non-clogging trash rack for any orifice.			
L-12	For any pipe extensions from the riser into the facility, the end shall terminate on a concrete pad (County storm drain standard detail SD 160.0) and shall be protected by a trash rack or other protection.			
L-13	Ductile iron or concrete pipe only.			
L-14	Inlet upturned to prevent uptake of sediment (removable elbow). Provide trash rack.			
L-15	Easily accessible, non-clogging, reseating valve.			
L-16	Extend valve stem to the top slab of the riser.			
L-17	Opening for gate valve shall be provided for gate valve stem extension in top slab. Use County storm drain standard SD2010.0			
M	**RIGHTS OF WAY**			
M-1	Show proposed stormwater management easement. Coordinate with stormwater concept approval letter.			
M-2	Provide ingress and egress easement for stormwater management basin, if necessary.			
M-3	Existing and proposed water, sewer, and storm drain easement shown.			
M-4	Label Public Utility Easements or other utility easements.			
M-5	Label 100-year floodplain easements.			
N	**LANDSCAPING**			
N-1	Landscaping plan required (low maintenance vegetation on steep slopes, only approved shrubs and bedding stock on the dam, optional reforestation outside the 1-year WSEL, aquatic plantings, etc.) If the embankment will serve as a roadway, refer to MD-378 for planting requirements.			
N-2	No woody planting on embankment, within 15 feet of embankment toe, or within 25 feet of riser.			
N-3	Verify adjacent lot buffer requirements from Concept Plan			
N-4	Landscaping along the access road adjacent to lots is encouraged to buffer the access road impact to nearby lots.			
N-5	Planting material from DPIE recommended list.			
N-6	Provide wetland plantings and notes if SWM facility has a permanent pool.			

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N-7	Use natural, variable looking slope shapes.			
N-8	Fencing may be provided around private ponds. Provide detail of fence and gate.			
N-9	Provide plant schedule and show standard details and notes.			
O	**MISCELLANEOUS ITEMS**			
O-1	Inspector Check-off list			
O-2	Provide warning sign with detail, if applicable.			
O-3	Provide specifications for structural concrete.			
O-4	Provide map with location of sufficient onsite material necessary to construct dam with soil boring locations, if applicable.			
O-5	Provide map with location of sufficient onsite material necessary to construct dam with soil boring locations, if applicable.			
O-6	For offsite borrow areas provide soil boring(s), location of soil borings with sufficient information to ensure necessary volume for core trench is available and grain size analysis.			
O-7	Provide soil borings logs on plan, geotechnical recommendation, and a note referencing geotechnical report.			

* For the latest available design checklists, scan the barcode below: