HOWARD COUNTY, DEPARTMENT OF PLANNING & ZONING
DEVELOPMENT ENGINEERING DIVISION

DEVELOPMENT PLAN CHECKLIST
PATHWAYS PROJECTS

DATE: _____

PROJECT: _____

PREVIOUS COUNTY FILE NUMBERS: _____

DESIGN FIRM: _____

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INSTRUCTIONS: To be completed by the applicant using the legend located on Page 8 of 9. It is to be signed by the appropriate design professional with the initial document submittal. Subsequent checklist submittal will be at the discretion of the Development Engineering Division, DP&Z.

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I. SUBMISSION DOCUMENTS

A. Stormwater Management Computations _____

B. Design Manual Waiver Request _____

C. Letter of Permission for Offsite Disturbance _____

II. GENERAL INFORMATION

A. Standard title and signature blocks (**ALL SHEETS**)
1. Owner/Developer name, address and phone number _____
2. Design Professional name, address, phone number, seal, signature, date _____
3. Project name, zoning, tax map, election district, street address, parcel no. _____
4. Permit, file reference numbers, water & sewer contract numbers, etc. _____

B. Vicinity map requirements (**COVER SHEET**)
1. Scale 1" = 2000', north arrow shown _____
2. ADC Map Coordinates _____
3. Two (2) Howard County Geodetic Coordinates shown and labeled _____
4. Site delineated _____

C. Notes and information (**COVER SHEET**)
1. Howard County Standard General Notes for Pathway Site Plan _____
2. Site Analysis Data Sheet _____
3. Legend _____
4. Sheet Index _____

D. General sheet information (**ALL SHEETS**)
1. Plan scale 1" = 10' to 1" = 50' _____
2. Profile scale 1" = 5' vertical, 1" = 50' horizontal _____
3. Minimum three (3) grid ticks on plan sheets _____
4. North arrow _____
5. Match lines labeled and referenced _____
6. Profiles, details and cross-sections drawn to scale _____
7. Design Professional's seal, signature and date _____
8. Sheets numbered _____

III. SITE DEVELOPMENT PLAN

A. Site information required
1. Layout with appropriate boundary information. _____
2. Adjacent right-of-ways, street names, centerline stationing, street classification shown, identify whether public or private. _____
3. Adjacent property owner information. _____

4. Existing and proposed easements shown and labeled with recording references. _____

B. Topographic information
1. Existing onsite and offsite contours labeled (at no greater an interval than 2') based on field run or aerial. (**Howard County GIS shall not be used.**) _____
2. Show existing pathway and existing facilities to remain or raised. _____
3. Show water, sewer, storm drainage, floodplain limits, environmental features, wetlands, wetland mitigation areas and easements. _____

C. Proposed grading
1. Proposed contours shown (at no greater an interval than 2'). _____
2. Proposed pathway identified. _____
3. Spot elevations along pathway with associated contours to adequately portray pathway grading. _____
4. Provide pavements section of pathway, minimum 6' wide. _____
5. Retaining walls shown with spot grades at top and bottom of wall. (Wall requirements in accordance with Section IV of this checklist.) _____
6. Provide full structural design and details for bridges and related structures. _____
7. Provide a complete set of pedestrian bridge plans and details. _____

D. Utility information
1. Label all existing and proposed storm drain pipes and structures with associated computations. _____
2. Show public water and sewer mains within pathway area (with easements). _____
3. Provide illumination details. _____

IV. RETAINING WALLS

A. General items to include:
1. Retaining walls greater than 3' in height measured from finished grade at the front to the top of the wall shall require structural design. _____
2. Grades shall not exceed 2:1 above the wall or 4:1 below the wall within the maintenance easement. _____
3. Horizontal dimensions measured from bottom face of the wall at the proposed grade. _____
4. Retaining walls shall not be constructed on fill materials. _____
5. Retaining walls & supports shall not be within a Howard County right-of-way or easement. _____
6. Computations signed and sealed by the appropriate design professional. _____

B. Construction drawings – plan view:
1. Retaining walls in plan view at a maximum scale of 1"=50'. _____
2. Grading around the retaining wall showing flow patterns around the wall. _____
3. Grading around the wall shall show spot elevations every 50' along the length of the wall at the top and bottom of the wall. _____
4. Flow arrows along the top of the wall indicating drainage patterns. _____
5. Sheet flow approaching wall. _____
6. Provide scour protection for runoff that cascades over the wall. _____
7. Walls less than 10' in height, 10' wide construction easement is required from the face of the wall. _____
8. For all walls the width of easement shall be equivalent to height of wall plus one-half the wall height. _____
9. Easement clear of floodplains, buffers, wetlands, property boundaries, structures, utility easements, environmentally sensitive areas. _____
10. No structures or underground utilities within the maintenance easement. _____
11. Global stability analysis for walls 10' in height or greater. _____
12. "NO TREE PLANTING ZONE" for all block or timber walls identified. _____
13. Maintenance easement shall not encroach on the building envelope of any residential lot. _____

C. Construction drawings – elevations:
1. Elevations for all walls at a scale not to exceed 1"=5' (1"=10' horizontal for walls over 50' long). Provide a vertical scale bar and horizontal stationing across the bottom of the elevation _____
2. Front view shall have typical section identified by a letter or number. _____
3. Section breaks clearly identified. _____
4. Element of the elevation shall include:
   (a) Complete outline of the wall. _____
   (b) Finished grade line superimposed over the wall at top and bottom. _____
   (c) Locations of weep holes (40' on center or as required by Geotechnical Engineer). _____
   (d) Location of all utilities in proximity to the walls shown. _____
   (e) Proposed geogrid arrangement location and length. _____
   (f) Vertical placement of geogrid identified. _____
   (g) Required allowable bearing strength for each typical section indicated. _____
   (h) Dimension typical section maximum height allowed. _____

D. Construction drawings – cross sections:
1. Typical cross section for each wall as it varies by height and geogrid placement and/or other significant design features. Maximum scale 1"=5'. _____
2. Typical section maximum height of wall. _____
3. Graphically show the number of blocks or timbers vertically placed. _____
4. Typical reinforcement for reinforced concrete walls. _____
5. Design notes for reinforced concrete walls including spacing requirements. _____
6. Indicate the slope above and below the wall. _____
7. Bearing strength required for soil beneath the wall on each typical section. _____
8. Drain placement behind the base of the wall shown, details, fabric placement. _____
9. Geogrid placement by layers and length shown in cross section detail. _____

E. Construction drawings – fences/guardrails/details
1. Fence for all retaining walls 30" in height or greater along the entire length. _____
2. Fences shall be a minimum of 36" in height, openings less than 4" in width. _____
3. Fences shall withstand 200 lbs loading applied horizontally at any point. _____
4. Typical fence footing detail provided. _____
5. If fence is setback from the wall, ends shall be tapered to prevent access. _____
6. Fences shall be shown in plan view. _____
7. Walls in proximity to vehicular traffic require guard rails. _____
8. For driveways, edge shall be a minimum 2' in front of guard rail or wall. _____
9. Face of guardrail shall be a minimum 3' from face at the top of the wall to the side of the guardrail facing the wall. _____

F. Design calculations/failure analysis:
1. Computations shall contain a failure analysis meeting the following factors of safety:
   (a) 2.0 for sliding failure (1.5 for manufactured block). _____
   (b) 2.0 for overturning failure. _____
   (c) 2.0 for bearing failure for concrete or timber walls. _____
   (d) 3.0 for bearing failure for concrete walls. _____
2. Failure analysis shall contain likely or anticipated surcharge loads. _____
3. For manufactured block walls, supplemental design booklets may be substituted for failure analysis but shall not be considered as part of the construction drawings. _____
4. Provide a complete set of design calculations, including the placement and spacing of steel reinforcement for reinforced concrete walls. _____

G. Construction drawings required notes:
1. On all retaining wall General Notes include the following:
   (a) Retaining walls shall only be constructed under the observation of a Registered Professional Engineer and a (NICET, WACEL or equivalent) certified soils technician. _____

(b) The required bearing pressure beneath the footing of the wall shall be verified in the field by a certified spoils technician. Testing documentation shall be provided to the Howard County Inspector prior to the start of construction. The required test procedure shall be the Dynamic Cone Penetrometer Test ASTM STP-399. _____

(c) The suitability of fill material shall be confirmed by the onsite soils technician. Each eight (8) inch lift shall be compacted to a minimum of 95% Standard Procter Density and the testing report shall be made available to the Howard County Inspector upon completion of construction. _____

(d) For "CRITICAL" walls, one soil boring shall be required every 100' along the entire length of the wall. Copies of all boring reports shall be provided to the Howard County Inspector prior to the start of construction. _____

(e) If no surcharge loads are considered add a note to the cross section details stating, "*THIS WALL NOT DESIGNED FOR SURCHARGE LOADS.*" _____

2. All information required for the construction of the retaining walls shall be included on the construction drawings including:
   (a) Material specification. _____
   (b) Block wall system manufacturer notes. _____
   (c) Design Engineer notes. _____
   (d) Specific instruction for non-typical designs. _____
3. Design plans and computations shall include:
   (a) Seal, Signature and date of responsible design professional. _____
   (b) Name, address, telephone number of responsible design firm. _____
   (c) Name, address, telephone number of owner/developer. _____

E. Tiered walls:
1. Tiered walls 10' high or greater shall be designed as "CRITICAL" walls. _____
2. Setback between walls shall be equal to the height of the lower wall or greater. _____
3. Slope between tiered walls shall not exceed 4:1. _____

V. STORM WATER MANAGEMENT – Pathways Only

NOTE: OTHER AGENCIES RESERVE THE RIGHT TO ENFORCE MORE STRINGENT CRITERIA AND SHOULD THEREFORE BE CONSULTED AS TO THEIR ADDITIONAL REQUIREMENTS. THE MORE RESTRICTIVE CRITERIA SHALL GOVERN.

A. Hydrology Submission
1. Existing Drainage Area Map
   (a) Sub-areas shown per Design Manual, Volume I, Section 2.2.4 requirements. Identify study points. _____
   (b) Subareas include offsite area draining through the property. _____
   (c) Time of Concentration Paths shown from the hydrologically most distant point in the subarea. Segments are shown as sheet flow (100' maximum length), concentrated flow and channel flow. Each segment specifies type, length and slope. _____
   (d) Existing Tc, RCN, Area (acres) specified for each sub-area. _____
   (e) Soil types and hydrologic soil groups shown on the map. _____
2. Proposed Drainage Area Map
   (a) Sub-areas shown per Design Manual, Volume I, Section 2.2.4 requirements. Identify study points. _____
   (b) Subareas include offsite area draining through the property. _____
   (c) Time of Concentration Paths shown from the hydrologically most distant point in the subarea. Segments are shown as sheet flow (100' maximum length), concentrated flow and channel flow. Each segment specifies type, length and slope. _____
   (d) Proposed Tc, RCN, Area (acres) specified for each sub-area. _____
   (e) Soil types and hydrologic soil groups shown on the map. _____
   (f) Final grading contours (2' max. interval) on the map. _____

3. Site Only Drainage Area Map (for pathways)
   (a) Pathway area to each practice identified. _____
   (b) Proposed area (acres/sft) specified for each practice identified. _____
   (d) Soil types and hydrologic soil groups shown on the map. _____
   (e) Final grading contours (2' max. interval) on the map. _____
   (f) Graphically identify all proposed, innovative non-structural credits.
      (1) Label the area in acres for each Natural Area of Conservation, Sheet Flow to Buffer Area and Grass Channel Credit. Label proposed impervious area and Natural Conservation Area in acres for large lots using the Environmentally Sensitive Development credit. _____
      (2) Identify each disconnected rooftops and non-roof top areas in acres. _____
      (3) BMP shown being used for mitigation on lot. _____
4. Hydrology Computations (TR-55 & TR-20 Methods Only)
   (a) Existing RCN (All cropland assumed to be meadow, developed land and other covers in good hydrologic condition only). _____
   (b) Onsite developed RCN shall be based on the zoning unless Disconnection of Rooftop Runoff or Sheet Flow to Buffer non-structural practices is used within the drainage area. _____
   (c) Time of concentration computations (sheet flow max.100 ft. in developed condition concentrated flow and channel flow as per TR-55, channel flow must have cross sectional information for velocity computation.) _____
   (d) Discharge computations.
      (1) 1-year storm managed _____
   (e) <u>BMP Design Methodology</u>
      Final design computations considering credits for all proposed structural practices (include credit for non-structural practices):
      (1) BMP Systems
         (i) I-1 Infiltration Trench _____
         (ii) F-6 Bioretention _____
         (iii) Rain Gardens _____
         (iv) Dry Wells _____
         (v) O-1 Dry Swale _____
      (2) Others (must be approved by MDE, DPZ/DED) _____
   (f) Storage Computations
      (1) WQv and Rev required for development. _____
      (2) Disconnection of impervious surfaces for credits _____

B. Soils Investigation
1. Geotechnical report submitted by the appropriate design professional giving conclusions and recommendations. Report shall include registration number, date, seal and signature of responsible design professional. _____
2. Minimum boring locations: 1 at each end of underground infiltration trench, 1 every 100 feet of an engineered swale, at least 1 within 50' of a rain garden or dry well. Borings shall be to 5 feet below the proposed bottom of structure, seasonal high ground water or refusal. (Proposed bottom of infiltration structure to be a minimum four feet above both.) _____
3. Unified Soil Classification System textural classification for various layers with depth. _____
4. Seasonal high ground water determination. _____
5. Fill areas identified. _____
6. In-situ permeability test, minimum geotechnical requirements for Infiltration, Bioretention and Sand Filters shall be based on Volume II of the Stormwater Design Manual, Appendix D.1. (Minimum rate of 1.02 in/hr required for acceptability) _____
7. Rate of infiltration. _____
8. Scaled boring location map with surface elevation. _____

C. Field Investigation **(Design professional must study the following in the field before starting design)**
1. Drainage area. _____
2. Time of Concentration Paths. _____
3. Ground Cover _____
4. Downstream Hazards _____
5. Soil Investigation _____

D. Report Submission
1. Title Page
   (a) Job Name _____
   (b) Owner _____
   (c) Design Professional _____
   (d) Date Prepared _____
   (e) Seal and Signature _____
2. Table of Contents
   (a) Sections listed _____
   (b) Appendix Listed _____
   (c) Figures & Tables Listed _____
3. Narrative
   (a) Introduction - gives overview of what is contained in report. _____
   (b) General site information: (i.e., acreage, zoning, location, slopes, soils, vegetation, average conditions, variances, restrictions, etc.) _____
   (c) Impervious cover information. _____
   (d) Site Specific Information
      (1) Justification for type of system used (Provide narrative in response to each of he Performance Standards defined in the MDE SWM Design Manual, Vol. I, Chapter1). _____
      (2) Drainage Easements _____
      (3) Drainage Systems _____
      (4) Methodology/analysis used for design (reference all assumptions). _____
      (5) Water quality requirements/analysis _____
      (6) Quantity requirements/analysis _____
      (7) Facility summary _____
      (8) Provide name of watershed and stream use designations for all discharge points. _____
   (e) Summary: In tabular form identify the area in acres, the required and provided Rev, WQv, Cpv, Qp10 and Qp100 for each drainage area. In a narrative, summarize the type of facility(s) used to achieve each of the above requirements in accordance with Chapter 4 of the MDE SWM Design Manual. _____
   (f) Conclusions and recommendations. _____
   (g) Appendix (contains <u>all</u> computations, design charts and <u>relevant data</u> references. Number all sheets and provide list of included computations in the table of contents. _____

E. Plans Submission - include all of the following on plans:
1. Stormwater Management Plan (1" = 50' or less)
   (a) General Items
      (1) Type of non structural practice labeled. _____
      (2) Existing and final contours (1' or 2' interval). _____
      (3) Existing and proposed improvements. _____
      (4) Delineation of all WSEL's _____
      (5) Locations of soil borings. _____
      (6) Show floodplain, environmentally sensitive areas, wetlands, etc. _____
      (7) No woody vegetation zone delineated from toe of slope. _____
      (8) Buffer to property lines. _____
      (9) Provide a summary table identifying the area in acres, the required and provided Rev, WQv, Cpv, Qp10 and Qp100 for each drainage area. In a narrative, below the table, summarize the type of facility(s) used to achieve each of the above requirements in accordance with Chapter 4 of the MDE SWM Design Manual. _____

(b) Maintenance Items
(1) Indicate maintenance access, ownership and maintenance responsibility of the facility. _____

(c) Public Safety Considerations
(1) Maximum side slopes for earthen embankment no steeper than 3:1. _____
(2) Design Manual Alternative Compliance required for side slopes for alternative materials. _____

(d) Landscaping/Multiple Use/Aesthetic Considerations
(See Section 16.124 of the Subdivision and Land Development Regulations and Landscaping Manual and Appendix "A" of the MDE SWM Design Manual for minimum requirements).
(1) Landscaping plan, where required (e.g., low maintenance vegetation on steep slopes optional a forestation outside of 1-year pool, aquatic plantings, etc.) _____
(2) Natural, variable looking pond shapes. _____
(3) Clear maintenance access. _____
(4) Dam clear of tree and shrub plantings. _____

2. Profiles (consistent scales - e.g., 1" = 5', 1" = 50')
(a) Principal Spillway/Along Underdrain
(1) Existing ground. _____
(2) Proposed Ground (label slopes, top width, outfall protection). _____
(3) Cut-off trench. _____
(4) Impervious core (top width, top elevation). _____
(5) Phreatic line and slope based on design storm. _____
(6) Show all WSEL's. _____
(7) Outlet protection for underdrain. _____
(8) Elevations
(i) Settled top of dam. _____
(ii) Constructed top of dam. _____
(iii) Riser crest. _____
(iv) Design storms water surfaces shown. _____
(9) Underdrain 4" (min) PVC, HDPE lengths, limits shown. _____

(b) Cross Section of Dam along Centerline
(1) Existing ground. _____
(2) Proposed ground line within pond (invert). _____
(3) Top of dam (constructed and settled).
Add 10% minimum additional fill to account for settlement. _____
(4) Core/Cut-off trench _____
(5) Location of soil borings. _____

(c) Section & Profile through Infiltration Trench
(1) Existing ground and proposed grade. _____
(2) Test boring locations with plot of textural classes. _____
(3) Observation well location(s) (centered). _____
(4) Observation well cap and lock with depth clearly marked. _____
(5) Aggregate depth - give elevations and inverts. _____
(6) Aggregate size: 12 to 3-inch minimum; (with no fines) _____
(7) 1-foot minimum soil or gravel covering. _____
(8) 6-inches of clean, washed sand on bottom of trenches.
(9) Filter cloth specifications and location. No filter cloth on bottom of trench/well. _____
(10) Minimum 10' from basement walls and 100' from water wells in non-residential projects. _____

(d) Soil Information
(1) Boring logs on plan. _____
(2) Unified soil classification system. _____
(3) Infiltration rate on log. _____
(4) Seasonal high ground water. _____
(5) Bearing strength. _____
(6) Boring locations on drainage area map. _____

3. Details
(a) Underdrain section and details for construction. _____
(b) Outlet protection _____

4. Construction Specifications (Latest MD-378) _____

5. Notes
   (a) Structure hazard classification (A, B, C or D). _____
   (b) Operation and Maintenance Schedule for each type of facility specifying routine and non-routine maintenance. _____
   (c) Sequence of construction with approximate time frames for each operation. _____
6. Certifications
   (a) Design Professional, sealed, signed and dated. _____
   (b) Developer's signed and dated. _____

(NOTE: SUBMISSION WILL NOT BE REVIEWED WITHOUT PROPER SIGNATURES)

VI. FINANCIAL

Developer Review Fees – Attached to this submission is a copy of the preliminary construction cost estimate sheet and payment instructions. Return the "pink" cashier's receipt for payment of 50% up-front review fee. _____

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LEGEND

__√__ Complied with
__X__ Not complied with, explanation attached
__N/A__ Not Applicable
__W__ Waiver submitted ($500 fee attached ___) Account #011-005-4223
__A__ Alternative Compliance submitted ($250 fee attached ___) Account #011-005-4223

****

Prepared by: _____ _____ _____
Name (Signed) Company Date

_____ _____ _____
Name (Printed) Registration Number Telephone

Developer: _____
Name (Signed) Telephone

COMMENTS: _____

_____

_____

(Section V)

DEVELOPMENT ENGINEERING DIVISION (DPZ), ENGOINEERING REVIEW FEE
AND DEPARTMENT OF PUBLIC WORKS, ADMINISTARATIVE AND INSPECTION FEE
For Pathway Projects Site Development Plan
Preliminary Site Construction Cost Estimate & Fee Calculations

Developer: _____ Engineer: _____
Address: _____ Phone #: _____
_____ DPZ File#: _____
_____ W&S Contract #: _____
Phone #: _____ Tax Map: _____ Election District: _____
Name of Development: _____ Sec. _____ Area: _____ Lot/Parcel: _____

DESCRIPTION OF WORK: (Privately Maintained Facilities)

I. SITE WORK:
Clearing & Grubbing ..... $_____
Grading ..... $_____
Paving ..... $_____
Concrete Curb & Gutter ..... $_____
Bituminous Curbs ..... $_____
Sidewalks & Walkways ..... $_____
Sod, Seeding & Mulching ..... $_____
Guardrails & Barricades ..... $_____
Signs, Road Markings & Traffic Control Devices ..... $_____
Street Trees ..... $_____
Miscellaneous ..... $_____
Utility Relocations ..... $_____ $_____

II. STORMWATER MANAGEMENT:
Clearing & Grubbing ..... $_____
Grading ..... $_____
Control Structures & Pipes ..... $_____
Rip-rap & Stones ..... $_____
Sod, Seeding & Mulching ..... $_____
Miscellaneous ..... $_____ $_____
Subtotal Items I & II: $_____
Fee I & II: _____%: $_____

III. STORM DRAINAGE:
Pipe & Underdrains ..... $_____
Endwalls, Inlets & Manholes ..... $_____
Swales, Riprap ..... $_____
Sod, Seeding & Mulching ..... $_____ $_____

IV. WATER & SEWER:
Water Main ..... $_____
Sewer Main ..... $_____
House Connections ..... $_____
Manholes ..... $_____
Miscellaneous ..... $_____ $_____
Subtotal Items III & IV: $_____
Fee III & IV: _____%: $_____
Preliminary Estimate Construction Cost: $_____
Required Fee (RF): $_____
Partial Advanced Fee (50% of RF): $_____

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Total Estimate Site Construction Cost	Fee (Items I & II) Private Roads & Stormwater Management	Fee (Items III & IV) Private Storm Drains, Water & Sewer
Less than $50,000	5.5%	1.6%
$50,000 - $150,000	5.0%	1.4%
$150,000 - $250,000	4.5%	1.2%
Over $250,000	4.0%	1.0%
Minimum Total Fee = $200.00		

* A Partial Advance Fee shall be paid with the initial submission of the Site Development Plan for review. This partial advance fee shall be 50% of the required fee based upon the developer's preliminary construction cost estimate.
The Final Fee shall be calculated after the Site Development Plan is approved by DED and shall be based on the actual construction quantities for the subdivision site work, storm drainage and stormwater management using the current established unit prices. The Final Fee shall be paid simultaneously with (1) the submission of any associated Developer Agreement(s) and/or (2) the submission of the original Site Development Plan to DPZ for signature.

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FOR DPZ OFFICE USE:

ENGINEERING FEE: $_____ ACCOUNT #:1000000000-3000000000-432220
(50% of the Preliminary Fee)
DPW ADMINISTRATIVE & INSPECTION FEE DUE: $_____ ACCOUNT#: 1000000000-3100000000-432220
(50% of the Preliminary Fee)