CITY OF WESTMINSTER, MARYLAND
DEPARTMENT OF PLANNING & PUBLIC WORKS
CHECKLIST
ROADS, STORM DRAINS AND GRADING
(COMMERCIAL, RESIDENTIAL AND INDUSTRIAL SUBDIVISION)

DATE: _____

NAME OF PROJECT: _____

LOCATION: _____

PROJECT NUMBER: _____

DESIGN FIRM: _____

LEGEND:

_√_	Complied with	_X_	Not complied with
Inc.	Incomplete	N.A.	Not Applicable

INSTRUCTIONS: To be completed by the applicant using the above legend. It is to be signed by a registered professional engineer with a Maryland Registration number and is to be dated and furnished with the initial document submittal.

I. ROAD CONSTRUCTION PLANS – GENERAL INFORMATION

A. **Format Presentation** – Provide the following:

1. All lines shown in standard symbols _____
2. All plans for road construction at a scale of 1" = 50' horizontal and 1" = 5' vertical _____
3. Three grid ticks per plan sheet and North arrow to be based on Maryland Coordinate System (NAD 83-91) _____
4. Cover sheet information shall include:
   a. Benchmarks and reference number, elevation and description shown (minimum two for the project) _____
   b. Reference topographic survey by source and date _____
   c. Applicable permits references, SHA drawings _____
5. Current General Notes _____
6. Sheet Index _____
7. Standard title and signature blocks _____
8. Owner Certification _____

9. Engineers Certification _____

B. **Base Information on Road Construction Plan – Plan View**

1. Existing Conditions
    a. Streets – Existing rights-of-way, property lines, all easements, pavement width, and street names shown and undimensioned _____
    b. Existing Utilities – water and sewer, project numbers, Invert of existing storm drains at point of connection (where accessible) _____
    --Storm drains, size, material
    --Telephone, gas and electric lines and street lights (if available) _____
2. Proposed Conditions
    a. Lots shown in solid line with lots numbered _____
    b. Separate plan sheets for work within SHA right-of-way _____
    c. Floodplain limits shown _____
    d. Wetland limits shown with buffers _____
3. 100 ft stream buffers (residential); 50 ft stream buffers (commercial, industrial) _____

II. **ROAD CONSTRUCTION PLANS (DESIGN INFORMATION – PLAN VIEW)**

A. **Roads**

1. Shown proposed street alignments, names, right-of-way widths, pavement widths, intersection taper dimensions, speed control devices, cul-de-sacs with radius _____
2. Provide following centerline data: intersection stations, 100 ft stations, horizontal curve data Delta, R, T, L and chord length and bearing _____
3. Show plus stations of centerline at 50 ft intervals and all P.C., P.R.C., P.C.C. and P.T., centerline equalities at all street Intersections and pavement transitions _____
4. Show beginning and end of road construction (limit of work) by stations _____
5. Show all curb fillet radii, as well as fillet PC and PT elevations and stationing _____
6. Show direction of flow, indicate by small arrows in the gutter line _____
7. Show tee or y-turnaround at terminus of the street with appropriate barricade detail _____
8. Show street tree locations and quantities _____
9. Provide location of curb and gutter transitions _____
10. Show street lights, type and location _____
11. Show existing features including structures, floodplain, wetland,

etc. within construction limits to be removed or retained _____
12. Show auxiliary lanes and improvements to existing roadways _____
13. Show sidewalks and dimensions _____
14. Site distance analysis provided _____
15. Provide cross sections at 50' stationing of improvements to existing public roads _____

B. **Storm Drainage** – provide the following

1. Drains – located by centerline stationing, coordinates or dimensions _____
2. Drains – size, type, class, length and flow direction shown _____
3. Drains – structure numbered beginning at downstream end of system as per drainage area map _____
4. Drainage easements for surface flow greater than 2 c.f.s. _____
5. Easements or fee simple transfers for storm drains, stormwater management, utilities and 100 year floodplain (check against record plat). Show off site easements _____
6. Road drainage at tee or y-turnarounds with provisions for erosion control and outlet protection _____
7. Driveway culverts with size and type shown _____
8. Label and dimension outlet protection _____
9. Flow tabulations _____
10. Details of all culvert crossings (profiles, cross sections, etc) _____
11. 15" SD between first two structures ONLY _____
12. Must use manholes when drain is ≥24" diameter _____
13. No more than three inlets prior to manhole. Once in system no inline inlets (Exception SHA COG/COS type inlets) _____

C. **Road Profiles** (1" = 5' vertical; 1' = 50' horizontal)

1. Show existing ground profile on centerline and left and right building restriction lines on profile and date. Check driveway grades and check for requirement of guard rails. _____
2. Profile grade line shown and location labeled _____
3. Show all plus stations, intersecions, etc. and give P.G.L. elevations every 50 feet (25 feet in vertical curve) _____
4. Label proposed grade and check against minimum and maximum grades _____
5. Provide vertical curve data:
   a. P.V.I. Station and Elevation _____
   b. Length of vertical curve, PVC and PVT stations and elevations _____
   c. Correction _____
   d. H.S.D. for sags and S.S.D. for crests _____
   e. Stationing and elevations for sump locations or crest locations _____
6. When proposed paving is to be extended in the futures, the profile grade line must be projected for a minimum of 400 feet _____

7. Cul-de-sac linear profile (P.G.L. station and elevation every 25 feet) _____
8. Show design speed _____

III. STORM DRAIN PROFILE SHEET (1" = 5' vertical, 1" = 50' horizontal)

Provide the following:

A. Base Data

1. Existing and finished ground line and/or pavement at centerline of storm drain shown, and date noted _____
2. Label road above profile (when appropriate) _____

B. Hydraulic Compliance

1. On grade inlet spacing analysis (2 year storm) _____
2. Sump inlet 100 percent precast pickup of 10 year storm _____
3. Last inlet before flow escapes from subdivision 100 percent precast pickup of 10 year storm _____
4. Label size, type, class and grade of pipe quantity and velocity of design year flow (10 year storm) (CL IV RCCP used on all publicly maintained systems) _____
5. Structures numbered and stationed (centerline to centerline) _____
6. Structure inverts labeled (Upstream & Downstream) at each structure. Show size and inverts of all pipes at the structure(s) _____
7. Hydraulic gradient shown and labeled for the design storm (25 year storm) _____

C. Structural Compliance

1. Pipe checked for allowable maximum and minimum cover _____
2. The use of pipe anchors, concrete cradle, bedding or encasement checked _____
3. Compacted backfill areas (per AASHTO T-180) identified and noted on plans _____
4. Show all utility crossings (Label ex: proposed, type and size) and check clearance (1' minimum outside of pipe to outside of pipe _____

D. Bridge/Culvert Crossing Analysis

1. Back-up calculations for bridge culvert parameters (Hy-8, etc) _____
2. Geometry, cross section _____
3. Road profile with survey centerline data _____
4. 100 year analysis required. If 100 year flow backs up onto another Property, easements are required _____
   In FEMA Floodplain reanalysis and revision of Floodplain mapping is required _____

IV. CONSTRUCTION DETAILS

A. Road Details

1. Road widening detail (section) for existing roads _____
2. Details not covered by County Standard Specifications _____
3. Work Zone Traffic Control Plan _____
4. Traffic control signage and striping plan _____

B. Storm Drainage Details

1. Details of non-standard structures (first choice for inlets SHA type WR combination inlet) _____
2. Structure schedule specifying type, location, standard detail, etc _____
3. Pipe Schedule specifying size, class, total length of each _____
4. Rip rap outlet protection detail and cross section _____
5. Channel cross section details with treatment, quantity and velocity of flow and depth of flow _____
6. All structures identified by MSHA standard detail number _____
7. Combination inlets required in all sumps _____
8. Minimum grade desired 1% (0.5% absolute minimum) _____
9. Minimum velocity 2 fps (10 year storm) _____
10. Minimum space between pipes in structures 8" outside wall to outside wall. Scale drawings/sketch may be required in questionable areas _____
11. Inlet to outlet angle 90° or greater (special consideration given for drop structures) _____
12. Granite splash blocks required for drop manholes/inlets _____

V. SUPPLEMENTAL DRAWINGS, INFORMATION

A. Grading Plan

1. Limit of disturbance shown _____
2. Proposed contours labeled _____
3. Insure that no mitigation is proposed within DPW right-of-way or access easements _____
4. Flow arrows shown in areas of concentrated flow _____
5. Spot elevations shown on all four sides of proposed structures, at garage entrances and high points & sumps _____
6. Maximum slope in areas of routine maintenance 3:1 (e.g. residential lots). No slope greater than 10% within 20 feet of proposed structure. _____
7. Concentrated flows & swales a minimum of 20 feet from buildings _____
8. Minimum slope away from structures 5% for 10 feet _____

B. **Drainage Area Map** (maximum 1" = 200')

1. Show and label proposed drainage system, pipe size and structure numbers _____
2. Label sub drainage areas to inlet structures and culverts; reference to design computations: (show ultimate drainage area) _____
3. Provide runoff data. Label sub area, "C" factor and percent of impervious area (summary table may be used), and total area, tc) _____
4. Show offside drainage easements _____
5. Label proposed contours (consistent with grading plan) _____
6. Show 100 year floodplain WSEL. Provide cross sections either on Drainage Area map or Grading Plan _____

C. **Storm Drain Computations** (in report form)

1. Runoff data (C, I, A, tc) (tc computations) _____
2. Inlet spacing (2 year). Sump (10 year). End of subdivision (10 year) _____
3. Flow tabulations (10 year) _____
4. Hydraulic gradient (25 year) _____
5. Outlet protection comps _____

D. **Sediment Control Approval** _____

E. **Traffic Control and Signage Plan**

1. Signs and markings in accordance with the MUTCD _____
2. Signs identified by MSHA Standard Identifications _____
3. Location of street lights _____

F. **Stormwater Management** _____

(Reviewed and approval recommended by Carroll County in accordance with City of Westminster ordinance, checklist, and Carroll County Policy for Publicly Maintained Facilities. Note these requirements apply to **all** facilities within the corporate limits public or private.

CARROLL COUNTY STORMWATER MANAGEMENT
FACILITY DESIGN POLICIES FOR PUBLICLY MAINTAINED FACILITIES

Due to state and federal dam maintenance requirements and citizen concerns about dangers to children and mosquito borne illnesses it has become imperative that stormwater facilities be maintained. To eliminate the unnecessary difficulties and costs inherent in hand mowing of steep slopes and to reduce the potential for residents and maintenance workers to be injured by falls the following design criteria must be met.

1. All publicly maintained ponds must be designed with slopes no steeper than four to one (4:1).
2. All publicly maintained facilities shall have an in-fee access from the bottom of the facility to a Public right-of-way. This access shall be a minimum twenty feet (20') in width containing a 12' wide paved access road constructed to minimum use-in-common drive standards. The access road shall have a maximum slope of seventeen percent (17%) with a maximum cross slope of three percent (3%) and a maximum side slope of four to one (4:1).
3. In areas of public maintenance no loose rip-rap may be left permanently exposed.

ADDITIONAL COMMENTS

_____
_____
_____
_____
_____
_____

Note:

1) This checklist is to be returned on subsequent submittals along with a detailed point-by-point response to all comments. Failure to do so will only result in delay of subsequent review or return of plans unreviewed.

2) This checklist is an addendum to City of Westminster "Development Design Criteria" dated April 1990.

OWNER/DEVELOPER CERTIFICATION

I/We hereby certify that all proposed work shown on these construction drawing(s) has been reviewed by me/us and that I/We fully understand what is necessary to accomplish this work and that the work will be conducted in strict accordance with these plans. I/We also understand that any changes to these plans will require an amended plan to be reviewed and approved by the City of Westminster Planning and Zoning Commission before any change in the work is made.

_____

NAME(S) (PRINTED) **DATE**

_____

SIGNED **DATE**

ENGINEERS CERTIFICATION

I hereby certify that these construction drawings and associated computations were prepared by me or under my supervision and comply with all applicable standards and regulations of The City of Westminster. I have reviewed these documents with the Owner/Developer.

_____

NAME (PRINTED) **DATE**

MARYLAND REGISTRATION NUMBER **No. _____**

_____

SIGNATURE **DATE**