

Plan Name: _____ Plan #: _____
 Submitting Firm: _____ Contact Engineer: _____
 Review Date: _____ ESI Team: _____

**ENGINEERS & SURVEYORS INSTITUTE
 PEER REVIEW CHECKLIST
 CITY OF ALEXANDRIA**

**EROSION & SEDIMENT CONTROL (E&S) CHECKLIST
 VIRGINIA EROSION & SEDIMENT CONTROL HANDBOOK**

Item #	Description	Sheet #	OK	NO	N/A
1	Limits of clearing and grading match on all appropriate sheets				
2	Construction entrance provided with source of water and silt trap indicated				
3	Show the total disturbed area on all phases of E&S plans and grading plan				
4	Silt fence used where maximum drainage area is 1 acre or less and size of drain area is no more than 0.25 acre per 100' of silt fence				
5	Inlet protection provided where drain area is no greater than 1 acre				
6	Culvert inlet protection (silt fence) provided where maximum drainage area is 1 acre				
7	Culvert inlet protection (sediment trap) provided where maximum drainage area is 3 acres				
8	Maximum drainage area for diversion dike is 5 acres				
9	Silt trap computations shown with storage of 134 cubic feet per acre				
10	Pipe outlet required on silt trap of 1 to 3 acres				
11	The use of diversion dikes to break up drainage divides to support the use of silt traps shall only be allowed when maintenance of dike can be accomplished				
12	Computations provided for sediment basin – VESCH standard format				
13	Rock check dams shall be used in small open channels draining 10 acres or less				
14	Tree save areas with drip lines within 25' of limits of disturbance delineated and tree protection limits shown on the plan				
15	Show all soil stockpiling areas staging areas and temporary parking areas with adequate erosion controls and adequate sequencing. This applies to both on-site and off-site areas				
16	Drainage areas to silt fence conform to the VESCH				
17	Outlet protection conforms to the VESCH				
18	Special instructions for the handling of any contaminated soils are included				
19	Two phased narrative description. Narrative organized to the order as outlined in the checklist of the VESCH				
20	Phase one controls complete and correct				
21	Phase two controls complete and correct				

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ENVIRONMENTSL ISSUES (EI) CHECKLIST

Item #	Description	Sheet #	OK	NO	N/A
1	Major trees and shrubs depicted				
2	Natural and artificial watercourses, bodies of water and wetlands shown				
3	Limits of floodplains delineated				
4	Significant geological features depicted				
5	Areas of contaminated soils or materials identified				
6	Underground storage tanks located				
7	Areas located within 1000' of a former sanitary landfill, dump or disposal area identified				
8	Areas with the potential of generating combustible gases or other noxious gases identified				
9	Show RPA buffers				
10	A water quality impact assessment (WQIA) (major/minor) is required for any proposed development or redevelopment in the RPA or adjacent to any RPA				
11	Verification showing the issuance of all environmental permits required by law				
12	Standard City environmental notes included				
13	Tabulations of any RPA encroachments are included				
14	Tabulations of any wetland encroachments are included				
15	Mitigation described and tabulated for any RPA encroachment				

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**STORM DRAINAGE DESIGN (SD) CHECKLIST
 (1 of 2)**

Item #	Description	Sheet #	OK	NO	N/A
1	Adequate storm drainage outfall with computations. Provide cross-section of off-site channel or show connection to existing storm sewer				
2	Storm drainage design honors natural drainage divides. Drainage areas denoted on divides				
3	Appropriate coefficients of runoff shown				
4	Minimum size storm sewer main is 18"				
5	Minimum size storm sewer catch basin lead is 15"				
6	All storm sewers in the public right of way shall be concrete. Minimum class IV				
7	Minimum pipe slope shall be 0.50%				
8	Minimum velocity in pipe shall be 2 fps, Maximum velocity in pipe shall be 20 fps				
9	Minimum cover for storm sewer pipe is 2'				
10	Concrete pipe under 36", use "n" = 0.015, Concrete pipe 36" and larger, use "n" = 0.013				
11	Design computations for closed and open systems provided				
12	All construction information (i.e. inverts, pipe size, pipe class, length and slope shall be shown on plan and/or profile)				
13	Inlet design computations provided				
14	Culvert pipe size shall be determined by hydraulic computations (provide the standard headwater/tailwater computations)				
15	The ends of any storm drainage pipe shall be provided with an appropriate appurtenance				
16	Inlet/outlet protection (Rip-rap) shall be provided. Length calculations shall be shown based on VESCH, Chapter III charts				
17	All open channels will be in a minimum drainage easement of 15'				
18	Minimum grade on open channels shall be 1.0% with grass lining and 0.50% w/ armored lining				

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**STORM DRAINAGE DESIGN (SD) CHECKLIST
(2 of 2)**

Item #	Description	Sheet #	OK	NO	N/A
19	The appropriate size storm sewer easement shall be provided on all storm sewers where necessary				
20	Concrete anchors must be provided on storm sewer lines with slopes of 20% or greater. A detail shall be provided on the plan with spacing requirements				
21	Wherever possible, storm sewer appurtenances should conform to design and construction standards of the Department of T&ES. Provide details of all non-standard storm sewer appurtenances sufficient for construction				
22	No quantity of design surface runoff across lots shall be erosive				
23	Quantities of runoff greater than 2cfs flowing through lots shall be collected and conveyed in a closed storm drainage system except that the Director may approve an open channel where the preservation of a natural drainage way is desirable or the use of open channel will not interfere with use of the property				
24	Lots generally shall be graded in such a manner that surface runoff does not cross more than 3 lots before it is collected in a storm sewer system. The system may be a closed conduit, open channel (swale) or a combination of both. The appropriate drainage easement shall be provide with said system				
25	Over-lot grading shall be provided. Areas shall be graded in such a manner that if a complete failure of the storm sewer system occurs, no residential or commercial building will be flooded by the 100 year storm				
26	All roof drains (down spouts) shall be connected to an existing or proposed storm sewer. All existing down spouts connected to an existing combined or sanitary sewer shall be disconnected and directed to a storm sewer				
27	Show all utility crossing on profiles				
28	Maximum length of storm sewer between structures is 300' or a waiver required				
29	HGL provided where applicable. 2' free board from top of manhole and/or gutter flow line as applicable				
30	HGL computations certified by a Virginia P.E.				

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STORM WATER MANAGEMENT (SWM) CHECKLIST

Item #	Description	Sheet #	OK	NO	N/A
1	A stormwater management plan addressing the quantity of stormwater runoff and meeting the requirements of article 13-117 of the zoning code, unless exempted by the provisions therein, must be developed				
2	In watersheds with significant potential for flooding or existing drainage problems, or where the existing capacity of the storm sewer system is insufficient for the flow, the existing runoff must be reduced by 10%. Additional detention to the satisfaction of the Director of T&ES may be required to accomplish necessary reduction				
3	The SWM plan shows the location and design of all planned stormwater control devices				
4	Pre and post development peak runoff rates shown for both a 2 year and 10 year storm, considered individually, with supporting documentation of all utilized coefficients and calculations				
5	The SWM plan shall establish a long term schedule for inspection and maintenance that includes all maintenance requirements and persons responsible for performing maintenance				

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BEST MANAGEMENT PRACTICES (BMP) CHECKLIST

Item #	Description	Sheet #	OK	NO	N/A
1	BMP plans and calculations shall be designed in accordance with the Northern Virginia and City of Alexandria BMP Handbook requirements				
2	The BMP plan has the pre and post development non-point source pollutant loadings with supporting documentation of all utilized coefficients and calculations				
3	BMP phosphorus removal efficiency calculations provided for the development site				
4	Calculations provided for Water Quality Volume (Calculations on worksheet A or B and worksheet C) for the development site				
5	Calculations provided for the BMP device using the appropriate worksheet in the Northern Virginia Handbook or the City of Alexandria Supplement to the Handbook				
6	BMP drainage divide map provided with 2' contour delineating pervious and impervious surfaces (1' contour map required for flat sites)				
7	BMP maintenance and operation schedule provided				
8	Standard BMP notes included				
9	A master plan provided for the overall BMP coverage if applicable				
10	Watershed and receiving body of water identified				
11	Total area of development site (parcels) listed				
12	Existing and proposed total impervious site areas listed				
13	Total are contributing to the water quality volume listed				
14	% Treated of the area contributing to water quality volume included				
15	List area treated by each BMP as: 1. On site impervious 2. On site pervious 3. Off site impervious 4. Off site pervious 5. Total				
16	Construction details included for all BMP structure and appurtenance				
17	The BMP plan shall establish a long term schedule for inspection and maintenance that includes all maintenance requirements and persons responsible for performing maintenance				

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SANITARY SEWER (SS) CHECKLIST

Item #	Description	Sheet #	OK	NO	N/A
1	Sanitary sewer design computations provided				
2	Plan and profile have been provided for each run of sanitary sewer				
3	Length of pipe, pipe size, slope and pipe material provided for each pipe run				
4	Use of PVC SDR-35 pipe				
5	Inverts in and out provided at each manhole				
6	Minimum sanitary sewer velocity is 2.5 fps. Maximum sanitary sewer velocity is 10 fps				
7	Minimum cover on sanitary sewer without encasement is 3.5'				
8	Maximum cover on sanitary sewer without cast iron is 20'				
9	Minimum sanitary sewer size is 10"				
10	Sanitary sewer material "n" factors Concrete pipe under 36" n = 0.015 Concrete pipe 36" and over n = 0.013 Clay pipe n = 0.013 (existing condition only) Asbestos cement pipe n = 0.015 Corrugated metal pipe fully paved n = 0.015 Smooth wall plastic pipe n = 0.010 Ductile Iron Pipe n = 0.013				
11	Minimum slope on sanitary sewer terminal run is 1.00%				
12	Minimum slope on sanitary sewer is 0.5%				
13	Use of City's standard structure				
14	Details of non-City standard structure provided				
15	Show all utility crossing on profiles				

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STREET LIGHT/SITE LIGHTING (SL) CHECKLIST

Item #	Description	Sheet #	OK	NO	N/A
1	A street lighting plan is required showing all existing and proposed lights				
2	Site lighting plan provided for on-site development including parking lot lighting				
3	A photometric lighting calculation plan shall be provided				
4	Provide the type of fixture, strength of light in lumens and the mounting height of all existing and proposed lights				
5	Manufacture’s specifications provided for private site lighting fixtures showing type of fixture, strength of light in lumens, and mounting height				

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**STREET DESIGN (S) CHECKLIST
 (1 of 2)**

Item #	Description	Sheet #	OK	NO	N/A
1	Design speed limit provided for each new road per AASHTO				
2	Posted speed limit provided for each existing road				
3	Width of each existing right of way provided				
4	Width of each proposed right of way provided, minimum 66'				
5	When a development abuts one side of any street which has been included in the City system of streets the developer shall be required to dedicate one-half of the right of way necessary to make such street comply with the minimum width established for same				
6	A typical street cross-section has been provided for each proposed street				
7	A typical street cross-section has been provided for each existing street being widened				
8	Existing and modified lane widths and uses				
9	EVE and non EVE pavement design thickness provided with the thickness and materials description of each layer				
10	The standard CBR note provided on the plan with supporting geotechnical analysis				
11	The standard "smooth grade" note provided				
12	A plan and profile have been provided for each new street				
13	The centerline curve radius has been provided for each street				
14	Curve data provided for each horizontal curve				
15	Stations at 100' maximum on the centerline, P.C., P.T., street intersections, etc. show on street plan and/or profile				
16	BRL profile or 25' from the right of way				

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**STREET DESIGN (S) CHECKLIST
 (2 of 2)**

Item #	Description	Sheet #	OK	NO	N/A
17	Percent of grade for proposed streets				
18	Elevations at beginning and end of all vertical curves				
19	Length of vertical curves and PVI elevations				
20	Elevations computed every 50' on tangents and 25' on vertical curves				
21	Elevations at the centerline street intersections				
22	Elevations at curb returns				
23	Culvert and storm sewer crossings shown in street profile				
24	Top elevations shown for all manholes and curb inlets				
25	Profile shown for all street landings at intersections				
26	Pavement striping plan provided				
27	Traffic control signage and structures, street name and stop signs				
28	Road intersections designed as nearly as possible to 90 degrees				
29	Geometry for cul-de-sac, 45' radius at face of curb or edge of pavement, 55' radius for clear zone				
30	For local subdivision and inner city streets, the travel way inside radius at an intersection shall be a minimum 25' radius except for alleys				
31	Direction of traffic and average daily vehicle count (VPD) shall be shown at all legs of a street intersection and at each proposed entrance to a street				
32	Driveways, entrances, exits, parking areas and sidewalks shown				
33	Show emergency vehicle easements (minimum width = 22')				
34	Sight distance plan and profile for all entrances and intersections				
35	Traffic maintenance plan provided				

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TRAFFIC SIGNALIZATION (TS) CHECKLIST

Item #	Description	Sheet #	OK	NO	N/A
1	Specification for poles, mast arms and pole foundations provided				
2	City standard traffic control cabinets provided				
3	Signal head configuration provided for traffic signal and pedestrian crossing signals				
4	Signal phasing and sequences charts provided in compliance with Traffic Impact Study				
5	Timing charts provided				
6	Cable and conduit runs provided				
7	Interconnect cable details provided				
8	Wiring size and type specification provided				
9	Conduit size and type specification provided				

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STAGE II GENERAL REQUIREMENTS (GR) CHECKLIST

Item #	Description	Sheet #	OK	NO	N/A
1	All sanitary sewer easements must be recorded prior to the plan approval				
2	Provide two benchmark locations on the plan with elevations on USC&GS datum and descriptions				
3	North arrow provided with reference to source of meridian				
4	24" X 36" sheet size				
5	All plan sheets sealed and signed by a professional engineer or licensed surveyor				
6	Name and address of the developer				
7	Scale and date of plan – no less than 1"=40'				
8	Index to plan sheets provided				
9	Key to plan sheets if more than one sheet is required to show the entire site				
10	Property lines with course and distance for each				
11	Total land area				
12	Present zoning of site and all abutting properties				
13	All easements, reservations, rights-of-way and conservation easements				
14	Deed Book and Page Nos. for all existing easements				
15	Topography with 2' contour interval except for the BMP drainage divide map				
16	Provide signature approval block in the lower right quadrant (see standard notes for the recommended format)				
17	A location map				
18	A complete narrative description of the proposed development				
19	List of SUP conditions provided on plans with response letter under separate cover				
20	Plan is in compliance with SUP conditions				
21	A list of all modifications and waivers of the applicable zoning regulations on cover sheet				
22	Water mains with their size and fire hydrants identified				
23	Building restriction lines, highway setback lines, zone transition lines				
24	Dimensions of front, side and rear yards				
25	Recreation areas and swimming pools depicted				
26	Standard construction notes included				
27	Completed and signed ESI Checklist included				

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