

Department of Public Works Construction Site Plan Review Checklist

Plan Name: _____

Date Submitted: _____

Site Plan Checklist		
1.0 GENERAL		
Section	Description	Check Box
1.1	Additional information as required by City of Richmond Departments	<input type="checkbox"/>
1.2	All sheets to include sheet number (Sheet ____of ____)	<input type="checkbox"/>
1.3	Seal and signature on each sheet by a professional engineer or land surveyor	<input type="checkbox"/>
1.4	All plan/profile sheets to include a graphic scale (horizontal - 1" = 50' or larger; vertical - 1" = 5' or larger)	<input type="checkbox"/>
1.5	All sheets to include date of plan preparation.	<input type="checkbox"/>
1.6	All sheets to include revision date(s).	<input type="checkbox"/>
1.7	All sheets to include a title block that has at a minimum the title of the project and title for the page, i.e. Site Layout, Demolition, Utilities, Landscape.	<input type="checkbox"/>
1.8	Owner/Developer name and address on plan	<input type="checkbox"/>
1.9	Plan sheets are on 24" x 36" paper. Drawing organization and format comply with DPU and DPW standards	<input type="checkbox"/>
2.0 COVER SHEET		
2.1	Name of development and phase/block as applicable.	<input type="checkbox"/>
2.2	Seal and signature by a professional engineer or land surveyor	<input type="checkbox"/>
2.3	Title block including Owner/Developer Name, telephone number, address, e-mail; Engineer Name, telephone number, address, e-mail.	<input type="checkbox"/>
2.4	Parcel identification including legal reference, tax map number(s), present zoning, total acreage, and magisterial district.	<input type="checkbox"/>
2.5	Plan sheet index.	<input type="checkbox"/>
2.6	Vicinity map (1" = 2,000') with north arrow.	<input type="checkbox"/>
2.7	Reference of all previously approved master plans, waivers, variances, rezonings or proffers approved for this site including date of approval and approving entity.	<input type="checkbox"/>
2.8	Latitude and longitude of connection to all City Of Richmond roadways	<input type="checkbox"/>
2.9	Tabulation of total number of lots/units to account for the total site acreage.	<input type="checkbox"/>

2.10	City Standard Notes.	<input type="checkbox"/>
2.11	Plan Legend.	<input type="checkbox"/>
2.12	Block for department signatures/stamps	<input type="checkbox"/>

3.0 Plan Sheets

Section	Description	Check Box
3.1	Survey and mapping control information including north arrow, benchmark, datum, and elevations	<input type="checkbox"/>
3.2	Parcel information for development and adjacent parcels including tax map numbers, owners' names, present zoning.	<input type="checkbox"/>
3.3	Existing and proposed contours with differing and distinguishable line types at a maximum of 5' intervals.	<input type="checkbox"/>
3.4	Elevation labels for index contours. Minimum of 2 labels per index contour.	<input type="checkbox"/>
3.5	Proposed street names.	<input type="checkbox"/>
3.6	Road names of all existing City Of Richmond maintained roadways that are being connected to with the development and direction of flow, i.e. two-way or one-way with direction arrow.	<input type="checkbox"/>
3.7	Posted or regulatory speed limit of all existing City Of Richmond maintained roadways that are being connected to with the development.	<input type="checkbox"/>
3.8	Design speed for proposed roadways.	<input type="checkbox"/>
3.9	Clearly identified site layout including lot numbers and acreage.	<input type="checkbox"/>
3.10	Clearly label all existing and proposed right-of-way, including width.	<input type="checkbox"/>
3.11	Clearly label existing and proposed edge of pavement, roadway centerline, roadway width, curb type, signage as appropriate	<input type="checkbox"/>
3.12	Clearly label existing and proposed, existing and proposed utilities within existing and proposed right-of-way; to include storm structures, manholes (with rim and invert elevations), pipe size and material, valves (water and gas),	<input type="checkbox"/>
3.13	Indicate the location and dimensions of all proposed entrances, exits, off-street parking areas, loading zones, handicapped spaces, interior drives, sidewalks and walkways.	<input type="checkbox"/>
3.14	Clearly label radius of all intersection returns measured from face of curb or edge of pavement as appropriate.	<input type="checkbox"/>
3.15	Clearly label the angle between road centerlines at each skew intersection.	<input type="checkbox"/>
3.16	Clearly label the angle between each upstream pipe and downstream pipe at each drainage structure as applicable.	<input type="checkbox"/>
3.17	Clearly label all roadway centerline radii.	<input type="checkbox"/>
3.18	Provide stations tick marks and labels at 100 foot intervals along the roadway centerline and at points of curvature and tangent, intersections, section limits, and turnarounds. Provide tick marks only at each intermediate 50 foot station.	<input type="checkbox"/>

3.19	Clearly identify all existing and proposed easements within or immediately adjacent to City Of Richmond right-of-way. Identify existing and proposed easements across private property if impacted by development. Include use, legal reference, and bearings and distances.	<input type="checkbox"/>
3.20	Clearly identify all roadways to remain privately owned and maintained	<input type="checkbox"/>
3.21	For on-street parking on one side only, clearly identify side of street parking will be located.	<input type="checkbox"/>
3.22	Show intersection sight line triangles at each intersection. Include available sight distance, offset from edge of travel way, centerline offset, and sight line profiles.	<input type="checkbox"/>
3.23	Provide pipe schedule including material, diameter, upstream/downstream invert elevation, grade	<input type="checkbox"/>

4.0 Profile Sheets

4.1	Clearly label existing and proposed elevations at 25 foot interval.	<input type="checkbox"/>
4.2	Design Speed of proposed roadway	<input type="checkbox"/>
4.3	Existing grade line at roadway centerline	<input type="checkbox"/>
4.4	Finished grade line of centerline	<input type="checkbox"/>
4.5	Percent grade of centerline, elevation and station of PVI, PVC, and PVT, Length of vertical curve, and K value of vertical curve	<input type="checkbox"/>
4.7	Station and finished elevation of high point (crest) and low point (sag)	<input type="checkbox"/>
4.8	Stations on profiles in agreement with stations on plan view	<input type="checkbox"/>
4.9	Invert elevations (In and Out), type of structure, and rim elevations for Sanitary Sewer and Storm Sewer structures	<input type="checkbox"/>
4.10	Pipe material, diameter, length, and slope for Sanitary Sewer and Storm Sewer Infrastructure. Insure direction of flow is in the same direction on both the plan and profile sheets.	<input type="checkbox"/>
4.11	Show sanitary sewer, waterline, and storm sewer crossings to scale and at correct invert elevation. Identify any utility conflicts and how they are to be resolved.	<input type="checkbox"/>
4.12	Profile and grade for outfall channels shown and/or special channels	<input type="checkbox"/>
4.13	Show HGL of the governing design storm at each storm structure	<input type="checkbox"/>
4.14	Sight line, available sight distance, height of eye (3.5') and height of object (3.5' feet intersection sight distance, 2' stopping sight distance) for sight distance profiles	<input type="checkbox"/>
4.15	Location, finished elevation, and station of cross-street intersections	<input type="checkbox"/>

5.0 Details

Section	Description	Check Box
5.1	Standard details from current versions of Right of Way Excavation and Restoration Manual, Road and Bridge Standards, etc.	<input type="checkbox"/>
5.2	Details showing method of connecting to existing storm sewer structures	<input type="checkbox"/>
5.3	Detail showing roadway layout with ADT of each roadway labeled	<input type="checkbox"/>

5.4	Include potential ADT of adjacent parcels at stub streets based on potential density of existing zoning	<input type="checkbox"/>
5.5	Provide structure schedule including top elevation, invert in/out elevation, structure type, inlet length as appropriate, height of structure, hydraulic grade line elevation for each structure.	<input type="checkbox"/>
5.6	Provide pipe schedule including material, diameter, upstream/downstream invert elevation, grade	<input type="checkbox"/>
6.0 Roadway Typical Section		
6.1	Pavement structure including thickness and material of each layer shown graphically	<input type="checkbox"/>
6.2	Width of each travel lane from edge of pavement to edge of pavement	<input type="checkbox"/>
6.3	Width of each bicycle lane as appropriate	<input type="checkbox"/>
6.4	Curb and gutter type as applicable, labeled and shown graphically	<input type="checkbox"/>
6.5	Shoulder cross-slope and width as applicable shown graphically	<input type="checkbox"/>
6.6	Roadside ditch typical section as applicable shown graphically (include elevation of bank and typical depth and slope of ditch invert)	<input type="checkbox"/>
6.7	Sidewalk width and cross-slope as applicable shown graphically	<input type="checkbox"/>
6.8	Buffer width and cross-slope between back of curb and/or ditch and sidewalk as applicable	<input type="checkbox"/>
6.9	Street tree graphically shown with dimension to back of curb as applicable	<input type="checkbox"/>
6.10	Location and width of proposed right-of-way lines	<input type="checkbox"/>
6.11	Clearly label road name with applicable typical section	<input type="checkbox"/>
6.12	Clearly identify roadway design speed	<input type="checkbox"/>
6.13	Clearly label design standard used (appropriate GS)	<input type="checkbox"/>
6.14	Clearly label whether there will be on-street parking (one side, both sides, or none)	<input type="checkbox"/>

7.0 Maintenance of Traffic		
Section	Description	Check Box
7.1	Appropriate Temporary Traffic Control (TTC) from the current version of the Virginia Work Area Protection Manual	<input type="checkbox"/>
7.2	Regulatory speed limit of roadway	<input type="checkbox"/>
7.3	Locations of channelizing devices and signage shown to scale and in plan view in accordance with appropriate TTC	<input type="checkbox"/>
7.4	Certification and signature of MOT plan preparer	<input type="checkbox"/>
7.5	Lane width(s) and number of travel lane(s) and turn lane(s) to be maintained	<input type="checkbox"/>
7.6	Identify all detour/alternate routes	<input type="checkbox"/>
7.7	List allowable work activity hours	<input type="checkbox"/>
7.8	Clearly show access to all businesses and private dwellings	<input type="checkbox"/>
7.9	Provide note with contact information for DPW-Traffic Engineering	<input type="checkbox"/>

7.10	Provide note indicating requirement for DPW-Traffic Engineer to be contacted min 72 hours for approval prior to any lane closure	<input type="checkbox"/>
7.11	MOT has been prepared in accordance with the VA Work Area Protection Manual	<input type="checkbox"/>
8.0 DPU Water Resources		
8.1	SEE ATTACHED CHECKLIST BELOW	<input type="checkbox"/>
9.0 DPU Sanitary Sewer		
9.1	SEE ATTACHED CHECKLIST BELOW	<input type="checkbox"/>
10.0 DPU Water		
10.1	Water system is designed to provide adequate domestic service and fire protection to owner's property. ____ diameter line is required to adequately serve this project in accordance with City Standards. a. Average Domestic Design Flow _____ b. Per hour Domestic Flow _____ c. Design Fire Flow _____ d. Total Design Peak Flow _____ e. Residual Pressure at Total Design Peak Flow (last hydrant) _____	<input type="checkbox"/>
10.2	Information Sheet for Preparation of water Agreement has been submitted.	<input type="checkbox"/>
10.3	Domestic water meter calculations are shown on plans where applicable with A.W.W.A. Manual M-22.	<input type="checkbox"/>
10.4	I.S.O. Fire Flow computations are shown on plans (where applicable).	<input type="checkbox"/>
10.5	All water mains 6-inches and larger are profiled. Where water mains of any size cross other utilities, these crossings are profiled, and the means for crossing and resolving any conflicts are clearly shown.	<input type="checkbox"/>
10.6	Any and all existing sewer and water connections to the property are shown on plans	<input type="checkbox"/>
10.7	All off-site easements necessary for the completion of this project have been acquired, recorded and their Deed Book and Page references are shown on the plans.	<input type="checkbox"/>
10.8	A list of the Appropriate material Quantities to be used and the latest material Notes are shown on the plans.	<input type="checkbox"/>
10.9	A Backflow Prevention Device is provided on domestic and fire service connections in accordance with Part II, Article 3 of the Commonwealth of Virginia, State Board of Health Water works Regulations and the Cross Connection Control and backflow Prevention Program.	<input type="checkbox"/>
10.10	Plans comply with all applicable Local, State and Federal regulations including City and State erosion control and application has been made for all required permits.	<input type="checkbox"/>
11.0 DPU Cross Connection		
11.1	Site Plan showing: a. Location and size of water service(s). b. Location and size of fire service(s) (where applicable). c. Location and size of irrigation system service(s) (where applicable). d. Proposed location of domestic service backflow prevention device(s). e. Proposed location of fire service detector check meter(s) and backflow prevention device(s) (where applicable). f. Proposed location of irrigation system exclusion meter(s) and backflow	<input type="checkbox"/>

	prevention device(s) (where applicable).	
11.2	Detailed installation drawing(s) of each backflow prevention device to be installed. a. Type, manufacturer, model and size of backflow prevention device(s). b. Clearance(s) between backflow prevention device and wall. c. Clearance(s) between backflow prevention device and floor and ceiling (where applicable). d. Clearance(s) between backflow prevention device and any walls in front or behind (where applicable). e. Type, manufacturer, model and size of enclosure(s). f. List of the materials and approximate quantities to be used for each of the backflow preventions.	<input type="checkbox"/>
11.3	Water System designed to provide adequate domestic service and fire protection to Owner's property. ____-inch diameter line required to adequately serve this project in accordance with the City standards.	<input type="checkbox"/>
11.4	Overall water plan submitted for phased projects. a. Future locations of domestic, fire and irrigation system services shown on overall water plan (where applicable). b. Future locations for domestic, fire and irrigation system backflow prevention devices shown on overall water plan (where applicable).	<input type="checkbox"/>
11.5	Any and all existing connections to property are shown on plans.	<input type="checkbox"/>
11.6	This project has been designed in accordance with the latest version of the City of Richmond DPU Standards and State regulations (whichever is more restrictive).	<input type="checkbox"/>
11.7	This project has been designed in accordance with the latest version of the City of Richmond DPU Cross Connection Control and Backflow Prevention Manual.	<input type="checkbox"/>
11.8	All proposed service lines connect to existing facilities that have previously accepted by the City for operations and maintenance.	<input type="checkbox"/>
12.0 Landscaping		
12.1	General location, height, and material for all fences, walls, screen plantings, berms, and peripheral landscaping. The dimensions of required perimeter and front buffer(s), if any, shall be shown.	<input type="checkbox"/>
12.2	Provide a Planting schedule showing symbol, Common and botanical name, quantity, root, caliper, and height of all proposed plantings.	<input type="checkbox"/>
12.3	Plant material sizes and grading comply with the American standards for nursery stock as published by the American Association of Nurseryman.	<input type="checkbox"/>
12.4	No trees or shrubs shall be planted within utility easements or drainage ways. Trees and shrubs shall not be planted near utility structures where the roots could damage the structure in the future.	<input type="checkbox"/>
12.5	Provide any landscaping notes necessary regarding installation, maintenance and any other information needed to explain the intent of the work.	<input type="checkbox"/>
12.6	All existing trees shall be shown/labeled and state which trees are to remain in-place or will be removed for construction. Existing trees need to be identified with the City of Richmond tree site ID #.	<input type="checkbox"/>
12.7	Buffer yards containing specified screening and plantings shall be required between zoning districts of different intensities as shown under section 114-710.13 of the City Zoning ordinance. Any required buffer area shall be clearly delineated, and any plant material shown that is to be added to establish or supplement the buffer area.	<input type="checkbox"/>

12.8	Trees shall be minimum 1.5" caliper and sold as root pruned, hardened off, balled in burlap.	<input type="checkbox"/>
12.9	Minor species (trees with size potential of 25' or less) shall be spaced 25' on center. Major species (trees with size potential of over 40' in height) shall be spaced at 40' on center.	<input type="checkbox"/>
12.10	Irrigation specs shall be shown	<input type="checkbox"/>
12.11	Critical Root Zone for establishment shall be defined as extending 1' from the stem for every 1" of caliper. The Critical Root Zone for a 1.5" tree is 3' diameter.	<input type="checkbox"/>
12.12	The area within the Critical Root Zone shall not be compacted, paved over, or underplanted with other species.	<input type="checkbox"/>
12.13	Trees shall be mulched with natural wood mulch from the edge of the root ball to a minimum of the Critical Root Zone diameter from the stem. No underplantings of other species shall encroach within the Critical Root Zone.	<input type="checkbox"/>
12.14	Tree planting on City property is to be in identified tree sites with ID # provided.	<input type="checkbox"/>
12.15	Arborist shall oversee selection and installation.	<input type="checkbox"/>
13.0 DPU Streetlights		
13.1	Street Light Permit Complete	<input type="checkbox"/>
13.2	Easements acquired for completion of streetlight work if applicable.	<input type="checkbox"/>
13.3	Photometric Plan showing: A. Only public ROW data points and City lights (private lighting shown separately). B. Summary Data: i. New roadway(s) or no existing City light(s), provide photometric summary with average illumination (fc) and average/min (uniformity ratio) at a minimum. ii. Existing light(s) show existing light data and proposed light data summary with average illumination (fc) and average/min (uniformity ratio) at a minimum. C. Fixture/Light Schedule with symbol, manufacturer, part number, quantity, wattage, mounting height and description.	<input type="checkbox"/>
13.4	Streetlight Detail Plan showing applicable DPU standard drawings, construction standards and quantity of materials.	<input type="checkbox"/>
13.5	Electrical Plan showing (Contact DPU Streetlight engineering for circuit type): ___ a. DPU Streetlight circuit: ___ i. Connection(s) to streetlight grid. ___ ii. Underground Circuit: ___ 1. Conduit routing, size and quantity (showing applicable encasement). ___ 2. Structure placement (manhole(s), junction boxes, pole base(s), etc). ___ iii. Overhead Circuit: ___ 1. Proposed wire routing and device location(s). ___ 2. Span lengths ___ 3. Clearances from overhead structures to meet NESC requirements (when applicable). ___ iv. City streetlight infrastructure demolition or relocates shown on plan if applicable. ___ v. Calculation showing voltage drop percentage (DPU streetlight will provide connection point voltage reading). ___ b. Metered circuit:	<input type="checkbox"/>

	<ul style="list-style-type: none"> ___ i. Meter location and Dominion Energy feed for circuit. ___ ii. Underground Circuit: <ul style="list-style-type: none"> ___ 1. Conduit routing, size and quantity (showing applicable encasement). ___ 2. Structure placement (manhole(s), junction boxes, pole base(s), etc). ___ iii. Overhead Circuit: <ul style="list-style-type: none"> ___ 1. Proposed wire routing and device location(s). ___ 2. Span lengths ___ 3. Clearances from overhead structures to meet NESC requirements (when applicable). ___ iv. Calculation showing voltage drop percentage. ___ c. Dominion Energy Connect circuit: <ul style="list-style-type: none"> ___ i. Proposed or existing connection(s) to Dominion Energy circuit. ___ ii. Underground Circuit: <ul style="list-style-type: none"> ___ 1. Conduit routing, size and quantity (showing applicable encasement). ___ 2. Structure placement (manhole(s), junction boxes, pole base(s), etc). ___ iii. Overhead Circuit: <ul style="list-style-type: none"> ___ 1. Proposed wire routing and device location(s). ___ 2. Span lengths ___ 3. Clearances from overhead structures to meet NESC requirements (when applicable). 	
13.6	This project has been designed in accordance with the latest version of the City of Richmond DPU Streetlight Standards and National Electrical Safety Code.	
13.12	Show and identify any required easements.	
14.0 Traffic Signalization		
14.1	City Standard Note to be shown on Plan: The MUTCD (2009 edition) as the standard for all traffic control devices installed on any street, highway, or bicycle trail open to public travel in accordance with 23 U.S.C. 109(d) and 402(a) and (ii) the Virginia Supplement to the MUTCD (2011 edition), of which the WAPM (2011 edition) is considered a part of, to be the standard for all highways under the jurisdiction of the Virginia Department of Transportation, and that adoption of these standards will be effective January 1, 2012.	
14.2	City Standard Note to be shown on Plan: On any highway project in which Federal funds hereafter participate, or on any such project constructed since December 20, 1944, the location, form and character of informational, regulatory and warning signs, curb and pavement or other markings, and traffic signals installed or placed by any public authority or other agency, shall be subject to the approval of the State transportation department with the concurrence of the Secretary, who is directed to concur only in such installations as will promote the safe and efficient utilization of the highways.	
14.3	Show all BRT-related equipment	
14.4	Adhere to all Universal Power Supply (UPS) specifications	
14.5	Adhere to all Transit Signal Priority (TSP) specifications	
14.6	Adhere to all Gridsmart specifications	
14.7	Adhere to all Pedestrian Push Button specifications	
14.8	Show all standard construction notes for traffic control signals on BRT corridor	



DPU Water Resources Division
Plan Review Checklist

To be completed by WRD	
Plan Number:	_____
Reviewer:	_____
Previously Reviewed:	_____

Instructions: This checklist is to be completed during the design or during quality control check by the plan preparer and submitted with the permit application package. All items must be fully addressed and indicated so by checking the box for that item or providing rationale as to why the item has not been addressed. Where applicable, identify plan sheet(s) addressing specific requirements to help facilitate plan review.

Project Information

Project Address:	Project Name:
Total Disturbed Acres:	
Plan Prepared By:	Email:
Date Checklist Prepared:	Phone:
Parcel Owner:	Email
	Phone:

Check features applicable to this plan:

- | | | | | | |
|--------------------------|--------------------------|----------------------------------|--------------------------|--------------------------|---|
| Yes | No | | Yes | No | |
| <input type="checkbox"/> | <input type="checkbox"/> | Perennial Stream | <input type="checkbox"/> | <input type="checkbox"/> | Common Plan of Development |
| <input type="checkbox"/> | <input type="checkbox"/> | Wetland | <input type="checkbox"/> | <input type="checkbox"/> | Subdivision (3+ parcels) |
| <input type="checkbox"/> | <input type="checkbox"/> | 100 Year Floodplain | <input type="checkbox"/> | <input type="checkbox"/> | Combined Sewer Service Area |
| <input type="checkbox"/> | <input type="checkbox"/> | Chesapeake Bay Preservation Area | <input type="checkbox"/> | <input type="checkbox"/> | Municipal Separate Storm Sewer System (MS4) |

Check which areas apply and complete indicated checklist section:

Checklist Section		Regulation/Guidance	Checklist Section		Regulation/Guidance
Section 2	<input type="checkbox"/>	Erosion and Sediment Control [Chapter 14, Article III]	Section 5	<input type="checkbox"/>	Stormwater Management Facilities [Sec. 14-327]
Section 3	<input type="checkbox"/>	Chesapeake Bay Plan [Chapter 14, Article IV]	Section 6	<input type="checkbox"/>	Floodplain [Chapter, 14, Article II]
Section 4	<input type="checkbox"/>	Storm Drain System [Richmond Stormwater Manual]			

Check if additional permits or supporting documentation may apply and are included with application:

YES	NA	
<input type="checkbox"/>	<input type="checkbox"/>	USACE wetland delineation approval/permit
<input type="checkbox"/>	<input type="checkbox"/>	Stream perenniality study with all supporting documentation
<input type="checkbox"/>	<input type="checkbox"/>	City confirmation letter of stream perenniality study (include on appropriate plan sheet)
<input type="checkbox"/>	<input type="checkbox"/>	Nutrient Credit information (include DEQ approval of Bank and recorded approval of sale on appropriate plan sheet)
<input type="checkbox"/>	<input type="checkbox"/>	General permit coverage registration statement
<input type="checkbox"/>	<input type="checkbox"/>	A copy of all Federal permits
<input type="checkbox"/>	<input type="checkbox"/>	A copy of all State permits

DPU Water Resources Division

Plan Review Checklist

Section 1 – General Information

YES	SHEET #	REQUIREMENT	NA
<input type="checkbox"/>		1) Cover Sheet	<input type="checkbox"/>
<input type="checkbox"/>		a) Project name	<input type="checkbox"/>
<input type="checkbox"/>		b) Owner/developer name, address, phone number, and contact person	<input type="checkbox"/>
<input type="checkbox"/>		c) Vicinity map with project outlined	<input type="checkbox"/>
<input type="checkbox"/>		d) List all required permits	<input type="checkbox"/>
<input type="checkbox"/>		e) Sheet index	<input type="checkbox"/>
<input type="checkbox"/>		f) Plan date/revision dates	<input type="checkbox"/>
<input type="checkbox"/>		g) List ESC quantities	<input type="checkbox"/>
<input type="checkbox"/>		h) List storm drainage quantities	<input type="checkbox"/>
<input type="checkbox"/>		i) Provide BMP summary table (example Excel file available for download)	<input type="checkbox"/>
<input type="checkbox"/>		2) Plan Sheets	<input type="checkbox"/>
<input type="checkbox"/>		a) Engineer's, Architect's, Land Surveyor's, or Landscape Architect's stamp signed and dated on all plan sheets	<input type="checkbox"/>
<input type="checkbox"/>		b) All drawings must be to scale	<input type="checkbox"/>
<input type="checkbox"/>		c) Provide a north arrow on every plan sheet	<input type="checkbox"/>
<input type="checkbox"/>		d) Show all existing and proposed contours (2' intervals maximum)	<input type="checkbox"/>
<input type="checkbox"/>		e) Show property lines with metes and bounds and owner information. Include legal description for adjacent properties	<input type="checkbox"/>
<input type="checkbox"/>		f) Provide detail schematic for plans that cover two or more sheets	<input type="checkbox"/>
<input type="checkbox"/>		g) Complete title block	<input type="checkbox"/>
<input type="checkbox"/>		h) Show and label extents of buildable area (setbacks, floodplain limits, RPA, etc.)	<input type="checkbox"/>
<input type="checkbox"/>		i) Show limits of construction, limits of disturbance, and limits of grading	<input type="checkbox"/>
<input type="checkbox"/>		3) Existing Conditions; show the following features, were applicable:	<input type="checkbox"/>
<input type="checkbox"/>		a) All 100-year flood plain limits (No land disturbance or structures shall be permitted in the floodplain limits without prior City Approval)	<input type="checkbox"/>
<input type="checkbox"/>		b) Location and boundaries of tidal and non-tidal wetlands, as delineated on the National Wetland Inventory (NWI) Maps prepared by the U.S. Department of the Interior (available from the Program Administrator)	<input type="checkbox"/>
<input type="checkbox"/>		c) Any Chesapeake Bay Preservation Area (RMA and/or RPA) buffer zones	<input type="checkbox"/>
<input type="checkbox"/>		d) Existing/proposed right of way (including improved and unimproved)	<input type="checkbox"/>
<input type="checkbox"/>		e) All existing easements (utilities, streets)	<input type="checkbox"/>
<input type="checkbox"/>		f) Physical features, including streets, alleys, parking areas and existing site improvements to remain, such as structures and their use, parking areas, driveways and all areas of impervious cover	<input type="checkbox"/>
<input type="checkbox"/>		g) Existing utilities including storm sewer, curb and gutter, sewer (including septic drain fields), water, electrical, and gas	<input type="checkbox"/>
<input type="checkbox"/>		h) Existing streams, ponds, culverts, ditches, and other water bodies; including field located perennial streams	<input type="checkbox"/>
<input type="checkbox"/>		i) Soil types	<input type="checkbox"/>
<input type="checkbox"/>		j) Forest cover and other vegetative areas	<input type="checkbox"/>
<p>Provide reasoning for above NA responses in the space below. Attach additional pages if necessary.</p>			

DPU Water Resources Division

Plan Review Checklist

Section 2 – Erosion and Sediment Control Plan

YES	SHEET #	REQUIREMENT	NA
<input type="checkbox"/>		1) ESC Narrative per VAESCH	<input type="checkbox"/>
<input type="checkbox"/>		a) <i>Project Description</i> – Describe purpose and scope of land disturbing activity and area (acres) to be disturbed	<input type="checkbox"/>
<input type="checkbox"/>		b) <i>Existing Site Conditions</i> – Describe existing topography, vegetation, drainage, etc.	<input type="checkbox"/>
<input type="checkbox"/>		c) <i>Adjacent Site</i> – Describe neighboring areas, streams, lakes, residential areas, roads, parks, etc., which may be affected by the land disturbance	<input type="checkbox"/>
<input type="checkbox"/>		d) <i>Off-Site areas</i> – Describe if off-site soil borrow/disposal or off-site grading is planned	<input type="checkbox"/>
<input type="checkbox"/>		e) <i>Soils</i> – Provide brief description including, name, mapping unit, erodibility, permeability, depth, texture, and soil structure	<input type="checkbox"/>
<input type="checkbox"/>		f) <i>Critical areas</i> – Describe critical areas with potential erosion problems (long/steep slopes, water bodies, wetlands, etc.)	<input type="checkbox"/>
<input type="checkbox"/>		g) <i>Erosion & Sediment Control measures</i> – Describe methods and measures used	<input type="checkbox"/>
<input type="checkbox"/>		h) <i>Permanent stabilization</i> – Describe how the site will be stabilized after construction is complete	<input type="checkbox"/>
<input type="checkbox"/>		i) <i>Maintenance</i> – Designate responsible party for maintaining ESC measures	<input type="checkbox"/>
<input type="checkbox"/>		j) <i>Maintenance, continued</i> – Provide a description and schedule of regular inspection and repair of ESC measures	<input type="checkbox"/>
<input type="checkbox"/>		k) <i>Stormwater run-off considerations</i> – Will site cause increase in peak run off rates?	<input type="checkbox"/>
<input type="checkbox"/>		l) <i>Calculations</i> – All channels, basins, diversions, pre- and post-development run-off, MS-19, etc.	<input type="checkbox"/>
<input type="checkbox"/>		2) Show limits of disturbance outlined and labeled (all ESC measures must be within the limits of disturbance)	<input type="checkbox"/>
<input type="checkbox"/>		3) Show existing vegetation with any tree protection	<input type="checkbox"/>
<input type="checkbox"/>		4) Show limits of clearing and any undisturbed areas	<input type="checkbox"/>
<input type="checkbox"/>		5) Provide a soils map	<input type="checkbox"/>
<input type="checkbox"/>		6) Provide ESC measures during demolition of the site (this should be stated in the sequence of construction under the first phase)	<input type="checkbox"/>
<input type="checkbox"/>		7) Provide adequate access, staging, and stockpiling areas with appropriate ESC measures	<input type="checkbox"/>
<input type="checkbox"/>		8) List key of ESC measures with quantities	<input type="checkbox"/>
<input type="checkbox"/>		9) Show and label all ESC measures on plan sheet	<input type="checkbox"/>
<input type="checkbox"/>		10) List construction sequence/schedule specific to project and all phases, including any site demolition and removal of ESC measures	<input type="checkbox"/>
<input type="checkbox"/>		11) All detention/retention ESC measures within 20' of a building's foundations must be evaluated	<input type="checkbox"/>
<input type="checkbox"/>		12) Show existing and proposed drainage patterns with flow arrows, time of concentration flow paths, and c- factors (or curve numbers)	<input type="checkbox"/>
<input type="checkbox"/>		13) Notate any off-site drainage areas (in acres) entering site	<input type="checkbox"/>
<input type="checkbox"/>		14) Sediment traps (Disturbed area with contributing drainage area of < 3 acres):	<input type="checkbox"/>
<input type="checkbox"/>		a) Provide inlet protection and outlet location	<input type="checkbox"/>
<input type="checkbox"/>		b) Maximize flow length from inlet to outlet	<input type="checkbox"/>

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YES	SHEET #	REQUIREMENT	NA
<input type="checkbox"/>		c) Provide existing drainage area, proposed drainage area, storage capacity, and all supporting calculations per VAESCH Chapter 3.13	<input type="checkbox"/>
<input type="checkbox"/>		15) Sediment basins (Disturbed area with contributing drainage area of > 3 acres):	<input type="checkbox"/>
<input type="checkbox"/>		a) Provide inlet and outlet protection	<input type="checkbox"/>
<input type="checkbox"/>		b) Maximize flow length from inlet to outlet (add baffles as needed)	<input type="checkbox"/>
<input type="checkbox"/>		c) Provide basin data as follows: Basin type, existing drainage areas, proposed drainage area, storage required, storage provided, weir crest elevation, storage depth, bottom dimensions, cleanout elevation, channel depth of flow, maximum side slopes (specify cut or fill), bottom elevation, embankment elevation, riser dimensions, barrel dimensions. Include Temporary Sediment Basin Design Data Sheet.	<input type="checkbox"/>
<input type="checkbox"/>		d) Show separate dewatering device for pipe outlet traps	<input type="checkbox"/>
<input type="checkbox"/>		e) Provide all supporting calculations per VAESCH Chapter 3.14	<input type="checkbox"/>
<input type="checkbox"/>		16) Temporary storm drain diversions	<input type="checkbox"/>
<input type="checkbox"/>		a) Show profile	<input type="checkbox"/>
<input type="checkbox"/>		b) Give invert elevations of temporary pipe into trap on plan view	<input type="checkbox"/>
<input type="checkbox"/>		c) Provide details	<input type="checkbox"/>
<input type="checkbox"/>		17) Required notes on plans	<input type="checkbox"/>
<input type="checkbox"/>		a) General ESC Notes 1-9 (VAESCH Chapter 6 , Table 6-1, pg. VI-15)	<input type="checkbox"/>
<input type="checkbox"/>		b) City of Richmond Standard ESC notes	<input type="checkbox"/>
<input type="checkbox"/>		c) City of Richmond Standard ESC measure maintenance items	<input type="checkbox"/>
<input type="checkbox"/>		d) All 19 Minimum standards (9VAC25-840-40)	<input type="checkbox"/>
<input type="checkbox"/>		18) Provide details for all erosion & sediment control measures proposed per VAESCH Chapter 3	<input type="checkbox"/>
<input type="checkbox"/>		19) Provide temporary seeding schedule per ESC Technical Bulletin #4 .	<input type="checkbox"/>
<input type="checkbox"/>		20) Provide permanent seeding schedule per ESC Technical Bulletin #4 (use Table 3.32-D for west of I-95 and Tabled 3.32-E for east of I-95).	<input type="checkbox"/>
<input type="checkbox"/>		21) Off-site grading requires written documentation of permission from adjoining owner. Otherwise, include on current permit or separate land disturbing plan.	<input type="checkbox"/>
<input type="checkbox"/>		22) Subdivision	<input type="checkbox"/>
<input type="checkbox"/>		a) For the MS-19 requirements, an analysis of the outfall of the proposed development shall be done so that the natural channel is extended to the receiving stream.	<input type="checkbox"/>
<input type="checkbox"/>		b) If the drainage analysis fails to meet MS-19, stormwater management shall be required at the road construction plan stage of submission for a central facility.	<input type="checkbox"/>
<input type="checkbox"/>		c) Any lots submitted for a building permit that are part of a subdivision development shall not be considered as separate project, rather the subdivision development, shall be considered as a single project. Therefore, the central stormwater management facility and the overall site grading plan shall govern.	<input type="checkbox"/>

Provide reasoning for above NA responses in the space below. Attach additional pages if necessary.

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Plan Review Checklist

Section 3 – Chesapeake Bay Plan

Instructions: Applicable requirements of a Chesapeake Bay Plan include: Physical site characteristics, proposed improvements, grading plan, BMPs, landscape plan, narrative, WQIA, hydrology, impacts, wastewater, stream perennial flow determination, USACOE wetland delineation approval, etc.

YES	SHEET #	REQUIREMENT	NA
<input type="checkbox"/>		1) The City of Richmond Chesapeake Bay Preservation Program Public Information Manual has been reviewed by the plan preparer and submitted plan(s) meet all requirements	<input type="checkbox"/>
<input type="checkbox"/>		2) All existing conditions, as specified in Section 1 of this checklist	<input type="checkbox"/>
<input type="checkbox"/>		4) Location of all significant plant material, including all trees on site six inches or greater in diameter at breast height; groupings of trees or significant vegetation may be outlined	<input type="checkbox"/>
<input type="checkbox"/>		5) Areas of proposed impervious surface, including:	<input type="checkbox"/>
<input type="checkbox"/>		a) Streets, alleys, sidewalks, curbs and gutters, driveways, and access, loading and other paved areas	<input type="checkbox"/>
<input type="checkbox"/>		b) Structures, including building footprint, dimensions, and use	<input type="checkbox"/>
<input type="checkbox"/>		6) The location of any sewage disposal system or reserve drain fields	<input type="checkbox"/>
<input type="checkbox"/>		7) Preliminary grading plan and/or cross-section drawings (if necessary to evaluate site drainage and conservation of natural features)	<input type="checkbox"/>
<input type="checkbox"/>		8) If structural Best Management Practice (BMP)/stormwater management facilities are proposed, complete Section 5 of this checklist	<input type="checkbox"/>
<input type="checkbox"/>		9) Additional supporting information shown in a table format	<input type="checkbox"/>
<input type="checkbox"/>		a) Total site area	<input type="checkbox"/>
<input type="checkbox"/>		b) Total ChesBay area	<input type="checkbox"/>
<input type="checkbox"/>		c) Amount of impervious area	<input type="checkbox"/>
<input type="checkbox"/>		d) Amount of impervious area in ChesBay	<input type="checkbox"/>
<input type="checkbox"/>		e) Amount of open/forested space on site	<input type="checkbox"/>
<input type="checkbox"/>		f) Amount of open/forested space in ChesBay	<input type="checkbox"/>
<input type="checkbox"/>		g) Percentage of impervious area for existing and proposed conditions	<input type="checkbox"/>
<input type="checkbox"/>		10) An Erosion and Sediment Control Plan that meets (at a minimum) the requirements in Section 2 of this checklist, and specifically addresses stream crossings, wetland disturbances, and shoreline conditions	<input type="checkbox"/>
<input type="checkbox"/>		11) Landscape plan	<input type="checkbox"/>
<input type="checkbox"/>		a) Major landscaping features, including existing vegetation, to be retained	<input type="checkbox"/>
<input type="checkbox"/>		b) Clear delineation of all trees proposed for removal	<input type="checkbox"/>
<input type="checkbox"/>		c) Description of plant species to be disturbed or removed	<input type="checkbox"/>
<input type="checkbox"/>		d) Treatment of the RPA buffer, indicating proposed landscaping and vegetation to be retained by type and quantity	<input type="checkbox"/>
<input type="checkbox"/>		e) Replanting schedule for trees and other significant vegetation removed for construction, including list of trees and plants to be used	<input type="checkbox"/>
<input type="checkbox"/>		f) Demonstration that the design will preserve, to the greatest extent possible, any significant trees and vegetation on site and provide maximum erosion control and overland flow benefits; provide description in narrative	<input type="checkbox"/>

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YES	SHEET #	REQUIREMENT	NA
<input type="checkbox"/>		g) Demonstration that indigenous plants (see the City of Richmond Chesapeake Bay Preservation Program Public Information Manual Plant List, Appendix C) are to be used to the greatest extent possible	<input type="checkbox"/>
<input type="checkbox"/>		h) At the discretion of the Program Administrator, the applicant may be required to provide additional information, particularly in support of significant mitigation requirements for a project that disturbs more than 50,000 square feet of area	<input type="checkbox"/>
<input type="checkbox"/>		12) A Water Quality Impact Assessment (WQIA) is required for all development proposed in an RPA or any other area warranted as determined by the Program Administrator. The WQIA consists of the following elements:	<input type="checkbox"/>
<input type="checkbox"/>		a) Describe existing topography, soils, hydrology and geology of the site and immediately adjacent lands	<input type="checkbox"/>
<input type="checkbox"/>		b) Describe impacts of the proposed development on topography, soils, hydrology and geology on site and adjacent lands	<input type="checkbox"/>
<input type="checkbox"/>		c) Quantify disturbance/destruction of wetlands and provide justification	<input type="checkbox"/>
<input type="checkbox"/>		d) Describe disruption/reduction in supply of water to wetlands, streams, lakes, rivers or other water bodies	<input type="checkbox"/>
<input type="checkbox"/>		e) Describe disruption to existing hydrology, including wetland and stream circulation patterns	<input type="checkbox"/>
<input type="checkbox"/>		f) Provide source, location and description of proposed fill material	<input type="checkbox"/>
<input type="checkbox"/>		g) Characterize dredge material and provide location of dumping area for material	<input type="checkbox"/>
<input type="checkbox"/>		h) Locate and describe impacts on shellfish beds, submerged aquatic vegetation, and fish spawning areas	<input type="checkbox"/>
<input type="checkbox"/>		i) Describe any creation of wetlands to replace those lost	<input type="checkbox"/>
<input type="checkbox"/>		j) Describe efforts to minimize cut and fill	<input type="checkbox"/>
<input type="checkbox"/>		13) Septic System & Drain Fields	<input type="checkbox"/>
<input type="checkbox"/>		a) Show any existing septic tank and drain field location	<input type="checkbox"/>
<input type="checkbox"/>		b) Include calculations and locations of anticipated changes which affect existing septic drain field or wastewater irrigation areas	<input type="checkbox"/>
<input type="checkbox"/>		c) Provide justification for sewer line locations in environmentally sensitive areas and describe construction techniques and standards	<input type="checkbox"/>
<input type="checkbox"/>		d) New septic tanks are not allowed	<input type="checkbox"/>
<p>Provide reasoning for above NA responses in the space below. Attach additional pages if necessary.</p>			

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Plan Review Checklist

Section 4 – Storm Drain System

Instructions: All storm drain systems shall be designed according to the [COR Stormwater Management Design and Construction Standards Manual](#). In General, components required for review of a storm drain system include: *existing hydrology, proposed hydrology, hydraulics (culvert, storm drain, open channel), profiles, calculation/modeling report with narrative/data/results, etc.*

YES	SHEET #	REQUIREMENT	NA
<input type="checkbox"/>		1) Hydrology	<input type="checkbox"/>
<input type="checkbox"/>		a) Identification of each stormwater outfall, including existing and proposed drainage areas: show size of drainage area, time of concentration flow path, composite break down of the runoff coefficient, and arrows indicating flow directions	<input type="checkbox"/>
<input type="checkbox"/>		b) Clearly define any sub-drainage areas and drainage divide lines	<input type="checkbox"/>
<input type="checkbox"/>		c) Show all existing and proposed hydrology computations	<input type="checkbox"/>
<input type="checkbox"/>		2) Hydraulics	<input type="checkbox"/>
<input type="checkbox"/>		a) Show and label all existing and proposed drainage structures on plan	<input type="checkbox"/>
<input type="checkbox"/>		b) Existing and proposed storm drain pipes should show the length of the pipe, the size of the pipe, and the type of the pipe in plan and profile	<input type="checkbox"/>
<input type="checkbox"/>		c) Any storm drainage within a building footprint shall comply with Chapter 7 in the latest edition of the International Plumbing Code.	<input type="checkbox"/>
<input type="checkbox"/>		d) Storm drainage design requirements:	<input type="checkbox"/>
<input type="checkbox"/>		i. Show all storm drain hydraulic computations on plans	<input type="checkbox"/>
<input type="checkbox"/>		ii. Demonstrate the 10-year design flow less than pipe capacity	<input type="checkbox"/>
<input type="checkbox"/>		iii. Storm sewer slopes meet minimum criteria (0.3%)	<input type="checkbox"/>
<input type="checkbox"/>		iv. All calculations shall be submitted on standard VDOT forms or other acceptable documentation	<input type="checkbox"/>
<input type="checkbox"/>		v. Manhole steps required in structures 4-feet and greater in depth	<input type="checkbox"/>
<input type="checkbox"/>		vi. Provide a minimum cover of 3.5-feet for all storm drain structures, OR, provide protective fill for all storm drainage with less than two feet of cover	<input type="checkbox"/>
<input type="checkbox"/>		vii. Provide storm drain load protection where necessary such as cradle and encasement (provide pipe loading table on plan)	<input type="checkbox"/>
<input type="checkbox"/>		viii. Show and analyze the outfall of the storm drain profile. Submit storm drain computations to support all drainage outfalls	<input type="checkbox"/>
<input type="checkbox"/>		ix. Specify/show on plan/profile a dimensioned outfall channel section with 10-year lining depth, side slopes, bottom width	<input type="checkbox"/>
<input type="checkbox"/>		e) Open channel design requirements:	<input type="checkbox"/>
<input type="checkbox"/>		i. Provide cross-section details for open channel section. Show and label the location of the section on plan. Show the section's depth of flow, velocity, discharge and channel lining 'n' value, etc.	<input type="checkbox"/>
<input type="checkbox"/>		ii. Open channel depth of flow less than 3', otherwise flow path shall be piped	<input type="checkbox"/>
<input type="checkbox"/>		iii. Maximum permissible flow velocity of 3.5 fps for grass ditches	<input type="checkbox"/>
<input type="checkbox"/>		iv. Open channel longitudinal slope > minimum slope (0.2%)	<input type="checkbox"/>
<input type="checkbox"/>		v. Show rip-rap channel(s) meet design criteria: >100 ft from front of single family dwellings, unless otherwise approved; >75 ft from rear of single family dwellings	<input type="checkbox"/>

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YES	SHEET #	REQUIREMENT	NA
<input type="checkbox"/>		vi. Rip-rap lining thickness meets minimum criteria of 24-inch thickness with geotextile fabric underlayment	<input type="checkbox"/>
<input type="checkbox"/>		vii. Specify paved channels when open channel slopes < 0.75%	<input type="checkbox"/>
<input type="checkbox"/>		viii. Where paved channels are steeper than 15%, anchor lugs are required every 10-feet on center	<input type="checkbox"/>
<input type="checkbox"/>		ix. 9-inch freeboard (vertical wall) is required along outside radius of paved ditches	<input type="checkbox"/>
<input type="checkbox"/>		f) Storm drain/open channel profile requirements:	<input type="checkbox"/>
<input type="checkbox"/>		i. Show existing and proposed storm drain profiles, where applicable	<input type="checkbox"/>
<input type="checkbox"/>		ii. Show existing ground and proposed grade surface elevations along the centerline of the system	<input type="checkbox"/>
<input type="checkbox"/>		iii. Label the percent grade (slope) and length	<input type="checkbox"/>
<input type="checkbox"/>		iv. Label the size and type of material	<input type="checkbox"/>
<input type="checkbox"/>		v. Show and label all existing and proposed storm drain structures to include rim elevations, inverts in and out, etc.	<input type="checkbox"/>
<input type="checkbox"/>		vi. Show the hydraulic grade line on storm drain profile (all hydraulic grade lines must be supported with computations shown on plan)	<input type="checkbox"/>
<input type="checkbox"/>		vii. Show and label all existing and proposed utilities that cross the proposed storm drain/open channel and label clearances (minimum clearance is required)	<input type="checkbox"/>
<input type="checkbox"/>		viii. Show all storm drain crossings with the appropriate clearances	<input type="checkbox"/>

Provide reasoning for above NA responses in the space below. Attach additional pages if necessary.

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Plan Review Checklist

Section 5 – Stormwater Management Facilities

Instructions: Complete the following checklist to document RSMP, technical criteria, and BMP requirements.

YES	SHEET #	REQUIREMENT	NA
<input type="checkbox"/>		1) Stormwater management plan requirements (9VAC25-870-55)	<input type="checkbox"/>
<input type="checkbox"/>		a) A general description of the proposed stormwater management facilities and the mechanism through which the facilities will be operated and maintained after construction is complete;	<input type="checkbox"/>
<input type="checkbox"/>		b) Documentation and summary of calculations verifying compliance with the water quality and quantity requirements (9VAC25-870-63 and 9VAC25-870-66 , respectively); or	<input type="checkbox"/>
<input type="checkbox"/>		c) If an operator intends to meet the quality and quantity requirements using off-site compliance options, where applicable, then a letter of availability from the off-site provider must be included, as well as documentation of the applicant's acquisition of nutrient credits;	<input type="checkbox"/>
<input type="checkbox"/>		d) A map or maps of the site includes:	<input type="checkbox"/>
		i. Existing conditions, as defined in Section 1	
<input type="checkbox"/>		ii. Existing and proposed land use/land cover with tabulation of percentages of surface area for various uses (if not already included with Section 3);	<input type="checkbox"/>
<input type="checkbox"/>		iii. Sufficient information on adjoining parcels to assess the impacts of stormwater from the site on these parcels;	<input type="checkbox"/>
<input type="checkbox"/>		iv. Proposed stormwater management facilities and associated existing and proposed drainage patterns;	<input type="checkbox"/>
<input type="checkbox"/>		e) Stormwater management facility/BMP design calculation summary. (See VA Stormwater Management Handbook or Virginia Stormwater BMP Clearinghouse standards and specifications , as appropriate.) Refer to Item 4 for additional calculation requirements	<input type="checkbox"/>
<input type="checkbox"/>		2) Profile requirements	<input type="checkbox"/>
<input type="checkbox"/>		a) Storm drainage system entering device (refer to Section 4 of this checklist)	<input type="checkbox"/>
<input type="checkbox"/>		b) Low flow channel in basins (Pilot channel)	<input type="checkbox"/>
<input type="checkbox"/>		c) Profiles of all structures	<input type="checkbox"/>
<input type="checkbox"/>		d) Existing ground	<input type="checkbox"/>
<input type="checkbox"/>		e) Proposed grade	<input type="checkbox"/>
<input type="checkbox"/>		f) Pipes and other utilities	<input type="checkbox"/>
<input type="checkbox"/>		g) Water Surface Elevation of 2, 10 and 100-year design storms and Normal Pool	<input type="checkbox"/>
<input type="checkbox"/>		h) Emergency spillway elevation	<input type="checkbox"/>
<input type="checkbox"/>		i) Sub-surface details, if required (i.e., cutoff trench, clay core, clay liner, etc.)	<input type="checkbox"/>
<input type="checkbox"/>		3) Additional Stormwater BMP information	<input type="checkbox"/>
<input type="checkbox"/>		a) All BMPs	<input type="checkbox"/>
<input type="checkbox"/>		i. Construction and material specifications	<input type="checkbox"/>
<input type="checkbox"/>		ii. Details and notes	<input type="checkbox"/>
<input type="checkbox"/>		iii. All permanent material to be equal to standard inlet and structure quality and materials	<input type="checkbox"/>
<input type="checkbox"/>		iv. Grades 15% max	<input type="checkbox"/>
<input type="checkbox"/>		v. Side slopes 2:1 max	<input type="checkbox"/>

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<input type="checkbox"/>		vi. maintenance access provisions (fence and gate details with location, height, materials, and specifications, if applicable)	<input type="checkbox"/>
<input type="checkbox"/>		b) Infiltration BMPs	<input type="checkbox"/>
<input type="checkbox"/>		i. Soil investigation data	<input type="checkbox"/>
<input type="checkbox"/>		ii. Soil borings locations	<input type="checkbox"/>
<input type="checkbox"/>		iii. Soil classification	<input type="checkbox"/>
<input type="checkbox"/>		iv. Strata profile	<input type="checkbox"/>
<input type="checkbox"/>		v. Water table elevation	<input type="checkbox"/>
<input type="checkbox"/>		vi. Elevations of strata	<input type="checkbox"/>
<input type="checkbox"/>		vii. Location and easements	<input type="checkbox"/>
<input type="checkbox"/>		viii. Phreatic line	<input type="checkbox"/>
<input type="checkbox"/>		c) Attenuation BMPs	<input type="checkbox"/>
<input type="checkbox"/>		i. Design flow inundation areas	<input type="checkbox"/>
<input type="checkbox"/>		4) Design Report	<input type="checkbox"/>
<input type="checkbox"/>		a) Narrative	<input type="checkbox"/>
<input type="checkbox"/>		i. Explanation of method used	<input type="checkbox"/>
<input type="checkbox"/>		ii. Findings of existing conditions	<input type="checkbox"/>
<input type="checkbox"/>		iii. Proposed development	<input type="checkbox"/>
<input type="checkbox"/>		iv. Best management investigation	<input type="checkbox"/>
<input type="checkbox"/>		v. Alternatives considered	<input type="checkbox"/>
<input type="checkbox"/>		vi. Why chosen or abandoned	<input type="checkbox"/>
<input type="checkbox"/>		vii. Water quality benefits of design	<input type="checkbox"/>
<input type="checkbox"/>		viii. Peak management benefits of design	<input type="checkbox"/>
<input type="checkbox"/>		b) Design data	<input type="checkbox"/>
<input type="checkbox"/>		i. Formulas and source of information	<input type="checkbox"/>
<input type="checkbox"/>		ii. HEC-2 or HEC-RAS, or other appropriate computer modeling input/output	<input type="checkbox"/>
<input type="checkbox"/>		iii. Details, nomographs, formulas	<input type="checkbox"/>
<input type="checkbox"/>		1. Existing peak flows for 2- and 10-year storms	<input type="checkbox"/>
<input type="checkbox"/>		2. Proposed peak flows for 2- and 10-year storms	<input type="checkbox"/>
<input type="checkbox"/>		3. Performance curve of device (elevation vs. discharge)	<input type="checkbox"/>
<input type="checkbox"/>		4. Hydrograph plot for proposed conditions 2- and 10-year storms	<input type="checkbox"/>
<input type="checkbox"/>		5. Water quality computations	<input type="checkbox"/>
<input type="checkbox"/>		iv. Clearances – vertical and horizontal	<input type="checkbox"/>
<input type="checkbox"/>		c) Outfall study	<input type="checkbox"/>
<input type="checkbox"/>		i. Existing conditions recommendations and hydraulic analysis	<input type="checkbox"/>
<input type="checkbox"/>		ii. Proposed conditions	<input type="checkbox"/>
<input type="checkbox"/>		1. Statement	<input type="checkbox"/>
<input type="checkbox"/>		2. Proposed flows	<input type="checkbox"/>
<input type="checkbox"/>		5) Maintenance Requirements	<input type="checkbox"/>
<input type="checkbox"/>		a) Provide inspection and maintenance schedules/frequencies on plans	<input type="checkbox"/>
<input type="checkbox"/>		b) Stormwater Utility Maintenance Agreement (SUMA) completed by owner and notarized	<input type="checkbox"/>
<input type="checkbox"/>		c) Stormwater Management Access Exhibit (Attachment A) provided	<input type="checkbox"/>

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<input type="checkbox"/>		6) For projects with Limits of Disturbance > 1 acre:	<input type="checkbox"/>
<input type="checkbox"/>		a) Pollution Prevention Plan (PPP, Standard plan sheet available for download), that addresses the following:	<input type="checkbox"/>
<input type="checkbox"/>		i. Wastewater from washout of concrete	<input type="checkbox"/>
<input type="checkbox"/>		ii. Washout and cleanout of stucco, paint, form release oils, curing compounds, and other construction materials	<input type="checkbox"/>
<input type="checkbox"/>		iii. Fuels, oils, or other pollutants used in vehicle and equipment operation and maintenance	<input type="checkbox"/>
<input type="checkbox"/>		iv. Soaps or solvents used in vehicle and equipment washing	<input type="checkbox"/>
<input type="checkbox"/>		b) Stormwater Pollution Prevention Plan (SWPPP)	<input type="checkbox"/>
<input type="checkbox"/>		i. Designation forms	<input type="checkbox"/>
<input type="checkbox"/>		ii. See template for a list of requirements	<input type="checkbox"/>
<p>Provide reasoning for above NA responses in the space below. Attach additional pages if necessary.</p>			

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Section 6 – Floodplain

Instructions: For Floodplain management review, provide the following: a description of work, other development activities, floodplain determination, building alterations, etc.

Description of work

Activity	Structure Type
<input type="checkbox"/> New Structure	<input type="checkbox"/> Residential (1-4 family)
<input type="checkbox"/> Addition	<input type="checkbox"/> Residential (>4 family)
<input type="checkbox"/> Alteration	<input type="checkbox"/> Non-residential (Floodproofing? <input type="checkbox"/> Yes <input type="checkbox"/> No)
<input type="checkbox"/> Relocation	<input type="checkbox"/> Mixed Use (Residential & Commercial)
<input type="checkbox"/> Demolition	<input type="checkbox"/> Manufactured (Mobile) Home (In Manufactured Home Park? <input type="checkbox"/> Yes <input type="checkbox"/> No)
<input type="checkbox"/> Replacement	

Nearest intersection: _____

Estimated Cost of Project: \$ _____

Other Development Activities	
<input type="checkbox"/> Clearing	<input type="checkbox"/> Fill <input type="checkbox"/> Mining <input type="checkbox"/> Drilling <input type="checkbox"/> Grading
<input type="checkbox"/> Excavation (except for structural development checked above)	
<input type="checkbox"/> Watercourse Alteration (including dredging and channel modifications)	
<input type="checkbox"/> Drainage Improvements (including culvert works)	
<input type="checkbox"/> Road, Street or Bridge Construction	
<input type="checkbox"/> Subdivision (<input type="checkbox"/> New or <input type="checkbox"/> Expansion)	
<input type="checkbox"/> Individual Water or Sewer System	
<input type="checkbox"/> Other:	

Floodplain Determination

The proposed development is located on:	FIRM Panel #:	Effective Date:
The proposed development is:		
Yes	No	
<input type="checkbox"/>	<input type="checkbox"/>	Partially located in the SFHA, but building/development is NOT
<input type="checkbox"/>	<input type="checkbox"/>	Located in a Special Flood Hazard Area
		FIRM Zone designation is: _____
		100-year flood elevation at the site is _____ ft. NAV88 (MSL) or <input type="checkbox"/> Unavailable
<input type="checkbox"/>	<input type="checkbox"/>	Located in the floodway
<input type="checkbox"/>	<input type="checkbox"/>	Located in the flood fringe

Additional Information
Change in water elevation _____ ft., meets floodplain ordinance limits.
Top of new compacted fill elevation: _____ ft. NAVD 88 (MSL)
Floodproofing protection level (non-residential): _____ ft. NAVD 88 (MSL)

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YES	SHEET #	Requirement	NA
<input type="checkbox"/>		1) Show ultimate condition (as zoned) for the 100-year storm	<input type="checkbox"/>
<input type="checkbox"/>		2) Show existing natural channel grade:	<input type="checkbox"/>
<input type="checkbox"/>		a) Profile along natural line boundary to boundary	<input type="checkbox"/>
<input type="checkbox"/>		b) Average grade line	<input type="checkbox"/>
<input type="checkbox"/>		3) Show required plan information	<input type="checkbox"/>
<input type="checkbox"/>		a) Base Flood Elevation (BFE) at the property limits and work area	<input type="checkbox"/>
<input type="checkbox"/>		b) Limits of Special Flood Hazard Area (SFHA) including floodway where applicable	<input type="checkbox"/>
<input type="checkbox"/>		c) Location and elevation of existing and proposed construction in the SFHA, including, but not limited to: streets, pavement, retaining walls, accessory buildings, swimming pools, parking lots, driveways, trash enclosures, storage tanks, and other onsite features	<input type="checkbox"/>
<input type="checkbox"/>		d) The extent of watercourse relocation and/or landform alterations	<input type="checkbox"/>
<input type="checkbox"/>		e) Compaction requirements for fill areas	<input type="checkbox"/>
<input type="checkbox"/>		f) Locations of existing and proposed underground utilities	<input type="checkbox"/>
<input type="checkbox"/>		g) "100-year" flood elevations, if they are not otherwise available, for subdivision or other development plans (Required if the subdivision or other development exceeds 50 lots or 5 Acres, whichever is the lesser)	<input type="checkbox"/>
<input type="checkbox"/>		4) Show information required if buildings are to be constructed, enlarged, or altered within the floodplain	<input type="checkbox"/>
<input type="checkbox"/>		a) Anchorage of proposed structures, including details for anchoring structures	<input type="checkbox"/>
<input type="checkbox"/>		b) Residential: Basement or lowest floor at least 1 foot above BFE	<input type="checkbox"/>
<input type="checkbox"/>		c) Non-Residential: Lowest floor or flood proofing 1 foot above BFE	<input type="checkbox"/>
<input type="checkbox"/>		d) For floodproofed structures, applicant must attach certification from registered engineer or architect	<input type="checkbox"/>
<input type="checkbox"/>		e) Show types of water-resistant materials used below the first floor	<input type="checkbox"/>
<input type="checkbox"/>		f) Provide details of floodproofing of utilities located below the first floor	<input type="checkbox"/>
<input type="checkbox"/>		g) Provide details of enclosures below the first floor	<input type="checkbox"/>
<input type="checkbox"/>		h) Show venting of enclosed areas for pressure equalization	<input type="checkbox"/>
<input type="checkbox"/>		i) Demonstrate that electrical, heating, ventilation, plumbing, air-conditioning, and other service equipment is designed or located to prevent water from entering or accumulating within the components during flooding (above BFE)	<input type="checkbox"/>
<input type="checkbox"/>		j) Show on-site waste disposal systems located to avoid impairment or contamination	<input type="checkbox"/>

Provide reasoning for above NA responses in the space below. Attach additional pages if necessary.

APPENDIX A

ENGINEERING REPORT

PROJECT _____

LOCATION _____ SPS (BASIN) _____

USE _____ ACREAGE _____

EQUIVALENT POPULATION _____ POPULATION DENSITY _____

IS PROJECT PHASED YES NO (CIRCLE ONE)

SANITARY SEWER DESIGN:

DESIGN BASIS _____ SOURCE _____

NUMBER OF UNITS _____

AVERAGE DESIGN FLOW (ON-SITE) _____

OFF-SITE FLOW CONTRIBUTION (AVERAGE) _____

AVERAGE DESIGN FLOW (TOTAL) _____

PEAK FLOW _____ PEAKING FACTOR _____

DOWNSTREAM MH: SEWER SHEET _____ MANHOLE NUMBER _____

ATTACH FLOW ANALYSIS CALCULATION
ATTACHE SEWER LAYOUT MAP

SEWAGE PUMPING STATIONS AND FORCE MAINS:

A MEETING WITH THE DEPARTMENT OF PUBLIC UTILITIES, TECHNICAL SERVICES DIVISION IS REQUIRED TO DETERMINE THE REQUIREMENTS FOR ASSESSMENT OF THE SERVICE AREA AND SCOPE OF THIS ENGINEERING REPORT.

CERTIFICATION:

I HEREBY CERTIFY THAT THIS ENGINEERING REPORT AND ATTACHED CALCULATIONS HAVE BEEN PREPARED BY ME OR UNDER MY DIRECT SUPERVISION.

Signature

Certificate Number

Name Typed or Printed

Date

APPENDIX B

Manhole #	Area (Acres)		Population Density of Area	Domestic Flow (MGD)		Industrial Flow (MGD)			Total Flow Maximum		Length in Feet	Slope (%)	Type of Pipe	Diameter of Pipe	Capacity of Pipe (Full)		Velocity Feet/Sec	Elevation of		Remarks																			
	From	To		Average Daily For Year	Peak Flow Factor	Peak Flow	Average	Maximum	MGD	CFS					MGD	CFS		Upper End	Lower End																				
3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32										

APPENDIX C

ENGINEERS CHECKLIST FOR SEWER PLANS

- I. Title Page
- A. Engineer's or Class B Surveyor's Seal and Signature
 - B. Project Name
 - C. Vicinity Sketch (complete in detail)
 - D. Table of Estimated Quantities (including breakdown of type of pipe)
 - E. Title Block
 - F. Tax Map and Parcel Numbers
 - G. Magisterial District
 - H. Name, Address, and Phone Number of Developer/Owner.
 - I. Legend of sanitary sewer lines, other utilities and structures existing and proposed ground and pavement profile. Profile information must be shown on profile sheet.
 - J. Certification statement of the lot numbers, block letters/numbers and road names, etc.
- II. General
- A. The utility plan includes an overall plan of the sewer layout, including any phasing of the development
 - B. A subdivision plat indexed to sheet numbers.
 - C. Engineer and/or Surveyor has notified all property owners prior to performing any design and/or surveying work (copy of such notification is attached).
- III. Standards
- A. Sewer Notes (as a minimum., reference has been made to City specifications and details)
 - B. Vertical scale is 1" = 5' or 1" = 10'; and horizontal scale is 1"=50' or as approved by the City. A "bar" scale is shown on each sheet.

C. All sewer designs conform to the latest City, State and Federal regulations or standards.

D. Plan and Profile sheets are on 24" x 36" paper.

E. Scale drawings are accurate to within +/- 2% for vertical and horizontal scales.

IV. Plans

A. Utility Plans

1. All water, sewer, road, and drainage structures are shown on one plan sheet, where applicable. May require larger scale to adequately obtain horizontal integrity.

2. All plans include:

a. Existing water and/or sewer lines are properly labeled with size and with horizontal and vertical distances referenced on the plan.

b. A bench mark is required on the site plan.

c. Horizontal and vertical scale shown on each sheet.

d. All existing easements are shown accurately and proposed utility easements are shown on plans. The existing easements reflect accurate recordation information.

e. All existing and proposed storm sewer lines, gas, telephone, power, and other utility lines, which cross or rim parallel to the sewer lines are shown with exact horizontal and vertical separations given, where applicable. Subsurface exploration has been performed where potential conflicts exist, where applicable.

f. Adjacent road and drainage projects are shown as required.

g. Consideration has been given to areas where roads and drainage structures may be lowered in the future.

h. Road names, state route numbers, and right-of-way widths are shown.

i. Plan and profile are drawn in the same direction. Stations will ascend from left to right.

j. Proposed sewer lines are shown with reference distances from right of way, boundary, buildings, other utility lines, etc.

k. All property lines and property markers (stones, rods, pins, pipes, monuments, etc.) are shown.

- l. Location of existing houses, buildings, fences, wells and other structures are shown on plans. In lawn or kept areas, trees and shrubs in the easements are shown (size and type).
- m. All designs conform to the latest City and State erosion control and sedimentation rules, regulations and ordinances.
- n. The engineer understands that he/she is responsible for coordinating the utility design and construction work with other engineers where their projects connect or are affected by other projects.
- o. Locations of special features (conc. Encasement, rip-rap, stabilization at creek crossings, clay dams, etc.).
- p. Detail drawings of all stream crossings and storm sewer outlets, with elevations of the stream bed and high (100 year flood elevation) and normal water elevations.
- q. Proper labeling of subdivision (lot, block, street names, subdivision boundaries, etc.).
- r. Adjacent property owner name(s) are shown on plans.
- s. All fill and cut areas are shown within the area of the existing and proposed sewer lines.
- t. Necessary easement plats onsite and/or offsite have been submitted for processing.
- u. Pavement replacement detail, boring detail, etc. are shown on all plans.
- v. Location and dimensions of all sewer service connections are shown.
- w. Proposed, existing, and original ground elevations are shown.
- x. Municipal, subdivision and/or drainage area boundaries are shown.
- y. North Arrow is reflected on all plan sheets.
- z. Miss Utility notation is shown.
- aa. Engineer understands that any changes made to the sewer design will require a submittal to the Department of Public Utilities for review and approval of the revised sewer plans reflecting those changes.
- bb. All revisions include an explanation either on the plans or by separate transmittal.

- cc. Plans have been submitted to the State Health Department for review and approval where applicable. A copy of the transmittal letter is attached to the checklist.
- dd. If horizontal bore is required, bore location, length of bore, pit location (average 8' x 35') are shown and shown in relation to all existing and/or proposed utilities on plan and profile.
- ee. Alignment of utility in existing VDOT right of way is consistent with City guidelines. A copy of a transmittal letter to VDOT for their review is attached. Engineer understands that letter of approval from VDOT is required prior to final utility plan approval.
- ff. Clay dams or other acceptable designs are shown at the appropriate locations to avoid water from creek and/or lake being diverted along pipe bedding.
- gg. Engineer has contacted Virginia Power to obtain exact location of power lines and received as-built information. Utility plans reflect this information and is in accordance with the "Overhead High Voltage Line Safety Act".

3. Sanitary Sewer Plans

- a. All sanitary sewer plans are labeled with size, grade, length, direction of flow, and type & class of pipes (with backup calculations on the type & class pipe needed, where applicable).
- b. Manholes are labeled with top and invert elevations; coordinates; and locations, size and inverts of drop stacks when a vertical drop exceeds 2 feet.
- c. Deflection angles at all manholes or bearings of all lines are shown on the plans.
- d. All minimum finished floor elevations and basement elevations are to be shown on plans, where applicable.
- e. A sewerage drainage area map with hydraulic analysis is included in plans.
- f. The engineer has field verified the inverts of the existing manhole(s). Where invert elevations are different from the as-built plan, the engineer has verified his survey work and notified the Department of Utilities of the discrepancy.
- g. All manholes are designed to an elevation above the 100 year flood plain elevation as set forth in the design standards, unless otherwise approved by the Department of Public Utilities.

- h. Reference all manholes in easements.
- i. Ground coverage over sewer pipe meets minimum criteria.
- j. Engineer has put a notation that a backwater valve is to be used where the building with a finished floor elevation of the building is below the top elevation of the nearest upgrade manhole from the building connection.
- k. Where the sewer lines are in excess of 12' deep, the Engineer has identified where the sewer lateral must be installed in accordance with the standard details and the appropriate notes are reflected on the plans.
- l. A NOTE stating that the contractor must field verify the inverts of all existing manholes, gas lines, other utility lines prior to the start of construction.
- m. All "%" slopes are divisible by 4 to the nearest hundredth where possible.
- n. Greater than 0.4% minimum slope has been used whenever possible.
- o. Solid lines have been used for proposed sewers, short dashed lines for existing sewer and labeled future sewer or portions covered under other phases of construction.
- p. A minimum of ten (10) feet horizontal separation is maintained between sewer lines, sewer laterals and water meters or water blow-off devices (flushing hydrants) and between sewer line and storm drainage structures.
- q. All calculations have been checked for accuracy.
- r. All pipes between manholes are of like material and class.
- s. All temporary and/or permanent silt basins are shown and the sewer lines and manholes have been designed around these structures.
- t. All existing sewer laterals are shown on the plans, with station, length and depth, as depicted on the as built plans.
- u. All sewer lines are designed with the entry into the manhole by the proposed sewer lines at an angle of 90 degrees or greater to the downstream line, or if an exception has been granted, the engineer has increased the drop through the manhole to compensate for the reduced angle and has provided a blowup detail for the appropriate invert shaping that achieves the same results as a 90 degrees or greater entry.
- v. The crowns of all sewer lines enter the manholes at crown's level or higher as specified in the design standards.

- w. Whenever connecting sewer lateral to an existing sewer line, Engineer has put on the plans the proper notation that "the contractor must use a mechanical hole cutter when tapping the existing sewer line and that an approved saddle shall be used and the appropriate lots affected by this have been identified in the note.
- x. Where new manholes are proposed over existing lines, distance from the new manhole to the two existing manholes is shown; inverts of the manhole and each existing manhole are shown; slope of existing line from new manhole to upstream and downstream existing manholes is shown.
- y. Where future extensions are necessary, these lines are reflected on the plan.
- z. All manholes proposed within areas where vehicles travel are to be located either on center line of road or center of traveling lane.
- aa. Sampling manholes are required for new facilities currently regulated by local or federal industrial waste pretreatment laws. Examples of these commercial facilities include restaurants, car washes, auto repair shops, and laundromats to name a few. Appropriate measures have been included in the design to allow for sampling of industrial waste. A sampling manhole shall be provided at the property line to facilitate random 24-hour composite sampling. In those cases where a private manhole on site can be utilized for this function, adequate provisions will be agreed upon to facilitate sampling. Provisions include ingress/egress to the private manhole, ability to sample, and adequate space to set a 24-hour composite sampler. Existing on site manholes, possibly inside buildings, will be approved on a case by case basis.
- bb. At all existing manholes, the engineer has provided the manhole number as reflected on the as built drawings, and the City project number associated with the existing manhole.

Date: _____.

Engineering Firm: _____.

Engineer's Name: _____.

APPENDIX D

REVIEW PROCEDURES FOR SEWER PLANS

(Developer Projects)

Prior to construction of public sewer facilities and issuance of any building permits, sewer plans must be submitted to and approved by the Department of Public Utilities.

1. It is required for sewer projects that the engineer arranges a meeting with the Department- of Public Utilities to discuss the approach to be taken to obtain sewer service. All sewer systems must be sized properly and the location designed to provide sewer availability to the entire service area. An overall sewer plan shall be submitted for development.
2. The engineer is required to submit three (3) sets of sewer plans directly to the Department of Public Utilities for review and approval. The submittal of a site plan through the Planning Department is not sufficient for review of the extension and/or relocation of the sewer systems, therefore, sewer plans are required to be submitted prior to or at the same time site plans are submitted to the planning Department.
3. The sewer plans must be designed by a Professional Engineer in Civil Engineering or Professional Surveyor with a Class B license who is registered by the State of Virginia- The plans must conform to the City's latest overall sewer master plan and the Engineers Checklist for Water and Sewer Plans (see Appendix 4).
4. Prior to approving the sewer plans, the Department of Public Utilities must approve the erosion control plan for sanitary sewer installations.
5. The engineer shall coordinate the location of all proposed sewer lines within all existing and proposed road rights-of-way with regard to existing and proposed roads and drainage structures. In addition, coordination shall be made with other appropriate utility companies and agencies, i.e., Virginia Power, C&P, gas companies, railroad rights-of-way, VDOT, State Health Department, etc. with regard to their existing easements, rights-of-way, and facilities.
6. The engineer must submit a copy of the checklist with his/her certification that the plans reflect all applicable items on the checklist. The plans will be reviewed and a review letter will be sent to the engineer with a copy to the developer. When the revisions are made, the engineer must resubmit the plans for final review. A letter of approval will be sent when all the City criteria are met. Four sets of additional plans shall be sent once all the approvals are granted for construction purposes.
7. Before the utilities contractor can start work, a road grade certification must be furnished by the engineer. It shall include his verification that the entire proposed road rights-of-way has been graded as required.
8. The contractor must give the Inspection Section at least 48 hours notice before construction may begin. At such time, a preconstruction meeting is required and shall be arranged by the contractor and the Inspection Section.

APPENDIX E

SITE PLAN REQUIREMENTS FOR SEWER MAIN LINE EXTENSIONS

1. The location of the existing sewer main must be shown on the site plan.
2. The exact location of the existing sewer (lateral) connection must be shown, making referenced to the length, depth and station location of the sewer lateral and the relationship of the sewer services and appurtenances with the existing, proposed and future buildings, etc.
3. Existing and proposed sewer line easements must be shown on the site plan and Engineer needs to make sure there are no buildings or other permanent structures encroaching onto easements. Also, if there are any other type of structures and/or activities proposed, i.e., storm sewers, retaining walls, grading, curb and gutter, concrete paving, obstacles (garbage pads, light posts, and other utility lines), etc. the Engineer shall make site design changes and take appropriate measures to protect the existing water and/or sewer line and its appurtenances.
4. Proposed plumbing from building to sewer connection must be shown.
5. When the site plan reflects the installation of a new sewer connection, the appropriate notes outlining the Utilities Department's requirements for installing a connection must be shown on the plan. The point where the utilities contractor stops his work and the plumber begins needs to be clearly denoted on the plan.
6. Site plan needs to clearly reflect the proposed "Fill" and "Cut" areas. Engineer is to analyze how it will affect the existing and/or proposed sewers and submit his evaluation and recommendation with the site plan in writing for review and approval by the Department of Public Utilities.
7. Adjustment of sewer appurtenances will require notes, i.e., notifying the Bureau of Permits and Inspections at 804-646-6955 to inspect any adjustments, that an acceptable licensed Utilities Contractor perform all utility work, etc.
8. Engineer must be aware of where proposed and future sewer extensions are needed and show this information on the plans and reflect sufficient easement width for future water and/or sewer extensions. A separate easement plat needs to be submitted to the Department of Public Utilities and an agreement will be prepared by the Right-of-Way Section for Developer to obtain necessary signatures. All onsite and offsite tanks and/or wells are being used, and offsite utility easements where proposed extensions are needed to serve the site must be recorded prior to the release of the building permit. Normally, the site plan will not be approved until the offsite easement is dedicated.
9. Where additional Road Right-of-Way and/or widening is proposed, the site plan needs to reflect the extension of the existing sewer (lateral) connection just beyond new Right-of-Way line.

10. Schematic Plans will be reviewed by the Department of Utilities. As a minimum, all plans must reflect the following information:

- Vicinity map - scale 1:2000
- Tax map and parcel number(s)
- Development name
- Conceptual layout of sewer
- Existing easement, including deed book and page number
- Proposed easements

APPENDIX F

SITE PLAN CHECKLIST

PROJECT _____.

C.S.A. PAGE # _____ DATE _____.

UTILITIES

1. The site plan shows the sewer lines and how this project will connect to the sewer system.
2. Site Utilization Survey Form Appendix G has been submitted.
3. The plan needs to show the show the location of any existing or installed sewer infrastructure.
4. The site plan designates that a utilities contractor will install the 6-inch connection to the edge of the right-of-way or sewer easement and show the plumber starting his work from that point.
5. The site plan reflects any necessary adjustment of the existing manhole tops and notes that the utilities contractor needs to give the Department of Public Utilities Inspector 48 hours notice prior to starting work.
6. The site plan shows the location of the sewer easement and an easement plat has been submitted to the Department of Public Utilities.
7. Where industrial waste is a possible influent to the public sewer system, the engineer has incorporated appropriate measures on the plans, i.e. sampling points, metering stations, etc.

APPENDIX G

SITE UTILIZATION SURVEY

Please complete this form and submit to the Department of Public Utilities, Technical Services Division.

Name of Proposed Company: _____

Proposed Site Location: _____

City Project Number: _____

Type of Company Activity: Commercial
 Residential
 Office
 Manufacturing/Industrial
 Food Service
 Warehouse/Distribution
 Service Related
 Other : _____

Description of Company Activity: _____

S. I. C. Code: _____

If manufacturing, description of products, by-products and waste products generated:

Company Contact Person:

Name: _____

Title: _____

Address: _____

Phone Number: _____

Fax Number: _____

APPENDIX H

OVERALL SYSTEM PLAN REQUIREMENTS

Checklist for overall system plan submittal requirements.

I. General plan requirements shall include:

- A. Location of all existing water and wastewater lines with the size and reference distance identified. Also, the nearest appurtenance such as a manhole or valve should be shown.
- B. Show accurate locations of all existing utility easements. The easement should note the proper width, and permanent/temporary status.
- C. Indicate any existing and proposed ~~storm sewer or gas lines~~ utilities ~~csy~~ which may cause a conflict with proposed water and wastewater lines at the time of installation.
- D. Identify all existing and proposed roadways with the name, state route number, and right-of-way widths, noted.
- E. Adjacent property owners' names should be shown.
- F. Proposed, existing, and original ground elevations should be shown at 5-foot vertical contour intervals. Also, indicate any permanent or established benchmarks within the area.
- G. All plans shall have a north directional arrow.

II. Wastewater: Design support information shall be submitted on or attached with overall plan. This information is listed below.

- A. The routing and size of all proposed wastewater lines.
- B. For all existing manholes to which the proposed system will connect, the complete wastewater system computer model node number shall be shown. (These can be obtained from the Department of Utilities).
- C. Indicate all proposed future connection points and the associated easements for all adjacent properties.

D. A detailed hydraulic analysis for the proposed system, including the overall service area for all trunks and/or sub-trunks, shall accompany the plans. Also, include all of the appropriate land use densities for each area. The analysis should cover the upstream adjacent properties and, as deemed necessary, any portions of the downstream system.