

**Project Identification Information:**

**VDOT HYDRAULIC CALCULATIONS PLAN CHECKLIST**

**1.0 GENERAL**

Section	Description	Check Box	Sheet Number	If Check Box is left unchecked, provide explanation below
1.1	Additional information as required by specific Land Use Section	<input type="checkbox"/>		

**2.0 DRAINAGE MAP**

2.1	Provide a scaled map delineating the subareas draining to each inlet and/or hydraulic analysis point. Include all off-site areas draining to proposed storm drainage system within dedicated right-of-way. Note, drainage subareas to be based on actual total drainage area rather than drainage area on site.	<input type="checkbox"/>		
2.2	Provide on map "C-value" or "CN – value" as appropriate that is used for each drainage subarea.	<input type="checkbox"/>		
2.3	Provide area (in acres) of each drainage subarea.	<input type="checkbox"/>		
2.4	Provide time of concentration for each drainage subarea.	<input type="checkbox"/>		
2.5	Provide existing and proposed contours for each drainage subarea.	<input type="checkbox"/>		
2.6	Provide typical section roadside ditches as appropriate including lining, side slopes, depth of ditch, width of bottom if not a V-ditch.	<input type="checkbox"/>		

**3.0 DRAINAGE PROFILES  
IF NOT INCLUDED IN DEVELOPMENT PLAN**

3.1	Sheet number (Sheet__of __)	<input type="checkbox"/>		
3.2	Seal and signature on each sheet by a professional engineer or land surveyor, or clearly marked "Preliminary"	<input type="checkbox"/>		
3.3	Graphic Scale: 1" = 50' or larger horizontal; 1" = 5' or larger vertical	<input type="checkbox"/>		
3.4	Existing grade line at storm sewer/ditch centerline.	<input type="checkbox"/>		
3.5	Finished grade line of centerline at storm sewer/ditch centerline.	<input type="checkbox"/>		
3.6	Stations on profiles in agreement with stations of storm sewer/ditch on plan view. Note, stationing for storm sewer/ditch typically different than stationing for road centerline.	<input type="checkbox"/>		
3.7	Invert elevations (In and Out), type of structure, and rim elevations for storm sewer structures.	<input type="checkbox"/>		
3.8	Clearly indicate "From" structure for each Invert In and "To" structure for each Invert Out at each storm structure.	<input type="checkbox"/>		
3.9	Pipe material, diameter, length, and slope for storm sewer/culverts.	<input type="checkbox"/>		

<b>3.0 DRAINAGE PROFILES IF NOT INCLUDED IN DEVELOPMENT PLAN</b>				
<b>Section</b>	<b>Description</b>	<b>Check Box</b>	<b>Sheet Number</b>	<b>If Check Box is left unchecked, provide explanation below</b>
<b>3.10</b>	Show sanitary sewer, waterline, and any known utility crossings to scale and at correct invert elevation at the centerline of storm sewer/ditch.	<input type="checkbox"/>		
<b>3.11</b>	Show HGL of the governing design storm at each storm structure.	<input type="checkbox"/>		
<b>3.12</b>	Show grade/grade break of ditch centerline for each section of grade change.	<input type="checkbox"/>		
<b>3.13</b>	Show station of each grade break on ditch centerline.	<input type="checkbox"/>		
<b>3.14</b>	Show clearance between storm sewer/ditch centerline for each crossing utility as applicable.	<input type="checkbox"/>		
<b>3.15</b>	Show minimum cover for each section of storm sewer as applicable.	<input type="checkbox"/>		
<b>4.0 HYDRAULIC CALCULATIONS</b>				
<b>4.1</b>	Calculations sealed and signed by professional engineer	<input type="checkbox"/>		
<b>4.2</b>	If calculations provided in booklet rather than on plans, each page to be: 1) Numbered 2) Include project name 3) Include date of calculation	<input type="checkbox"/>		
<b>4.3</b>	Provide summary table indicating "C-value/RCN-value", area, time of concentration, design storm intensity, peak 2-year, 10-year, 25-year, 100-year runoff, hydraulic grade line elevation for appropriate storm for each inlet and/or analysis point subarea.	<input type="checkbox"/>		
<b>4.4</b>	Clearly indicate appropriate design storm	<input type="checkbox"/>		
<b>4.5</b>	Provide available capacity of each section of storm sewer/culvert and/or ditch as applicable	<input type="checkbox"/>		
<b>4.6</b>	Provide water velocity in each section of storm sewer/culvert and/or ditch based on design storm	<input type="checkbox"/>		
<b>4.7</b>	Provide material and roughness coefficient for each section of storm sewer/culvert and/or ditch as applicable	<input type="checkbox"/>		
<b>4.8</b>	Provide final grade of each section of storm sewer/culvert and/or ditch as applicable	<input type="checkbox"/>		
<b>4.9</b>	Provide diameter of each section of storm sewer/culvert	<input type="checkbox"/>		
<b>4.10</b>	Provide upstream and downstream invert elevation of each section of storm sewer as applicable	<input type="checkbox"/>		
<b>4.11</b>	Provide structure from and structure to for each section of storm sewer as applicable	<input type="checkbox"/>		
<b>4.12</b>	Provide dimensions and number of barrels for each box culvert as applicable	<input type="checkbox"/>		
<b>4.13</b>	Provide side slopes, base width, lining, and depth of each section of ditch as applicable	<input type="checkbox"/>		
<b>4.14</b>	Provide structure type	<input type="checkbox"/>		
<b>4.15</b>	Identify whether inlet is on grade or in sag	<input type="checkbox"/>		
<b>4.16</b>	Provide inlet length	<input type="checkbox"/>		
<b>4.17</b>	Provide curb type	<input type="checkbox"/>		
<b>4.18</b>	Provide spread width based on design storm	<input type="checkbox"/>		

#### 4.0 HYDRAULIC CALCULATIONS

Section	Description	Check Box	Sheet Number	If Check Box is left unchecked, provide explanation below
4.19	Provide water depth in curb or ditch at inlet/analysis point as applicable	<input type="checkbox"/>		
4.20	Provide hydraulic grade line elevation at each inlet based on design storm	<input type="checkbox"/>		
4.21	Provide tailwater elevation based on design storm or 0.8 times the diameter if actual elevation is unknown.	<input type="checkbox"/>		
4.22	LD-204 (or equivalent) as applicable.	<input type="checkbox"/>		
4.23	LD-229 (or equivalent) as applicable.	<input type="checkbox"/>		
4.24	LD-347 (or equivalent) as applicable.	<input type="checkbox"/>		