**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 | ☐ | | |
| **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. | ☐ | | |
| **2.2** | Provide on map "C-value" or "CN – value" as appropriate that is used for each drainage subarea. | ☐ | | |
| **2.3** | Provide area (in acres) of each drainage subarea. | ☐ | | |
| **2.4** | Provide time of concentration for each drainage subarea. | ☐ | | |
| **2.5** | Provide existing and proposed contours for each drainage subarea. | ☐ | | |
| **2.6** | Provide typical section roadside ditches as appropriate including lining, side slopes, depth of ditch, width of bottom if not a V-ditch. | ☐ | | |
| **3.0 DRAINAGE PROFILES IF NOT INCLUDED IN DEVELOPMENT PLAN** | | | | |
| **3.1** | Sheet number (Sheet__of __) | ☐ | | |
| **3.2** | Seal and signature on each sheet by a professional engineer or land surveyor, or clearly marked "Preliminary" | ☐ | | |
| **3.3** | Graphic Scale: 1" = 50' or larger horizontal; 1" = 5' or larger vertical | ☐ | | |
| **3.4** | Existing grade line at storm sewer/ditch centerline. | ☐ | | |
| **3.5** | Finished grade line of centerline at storm sewer/ditch centerline. | ☐ | | |
| **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. | ☐ | | |
| **3.7** | Invert elevations (In and Out), type of structure, and rim elevations for storm sewer structures. | ☐ | | |
| **3.8** | Clearly indicate "From" structure for each Invert In and "To" structure for each Invert Out at each storm structure. | ☐ | | |
| **3.9** | Pipe material, diameter, length, and slope for storm sewer/culverts. | ☐ | | |

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

| 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 | ☐ | | |
| **4.20** | Provide hydraulic grade line elevation at each inlet based on design storm | ☐ | | |
| **4.21** | Provide tailwater elevation based on design storm or 0.8 times the diameter if actual elevation is unknown. | ☐ | | |
| **4.22** | LD-204 (or equivalent) as applicable. | ☐ | | |
| **4.23** | LD-229 (or equivalent) as applicable. | ☐ | | |
| **4.24** | LD-347 (or equivalent) as applicable. | ☐ | | |