



CITY OF ANDERSON LAND DEVELOPMENT REGULATIONS

City of Anderson, South Carolina

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1.0 PURPOSE OF LAND DEVELOPMENT REGULATIONS

These regulations present a set of minimum requirements and standards for storm water management for development within Anderson, South Carolina. The purpose of the minimum requirements and standards is to reduce the impact of stormwater runoff on receiving waterbodies downstream from land development. The goal of this document is to address both water quantity and water quality requirements and standards associated with storm water runoff from land development and to document the process for receiving Land Disturbance Approval from the City of Anderson.

2.0 SITE DEVELOPMENT PLAN CHECKLIST

For land development/building activities within the City of Anderson, SC, please follow the guidelines contained herein for submitting plans and obtaining permits and approvals.

A **full set of plans** shall include, at a minimum, the following:

- Plan Review Checklist (pgs. 5-17 of the City of Anderson Land Development Regulations)
- Existing Conditions and Demolition Plan
- Site Layout Plan
- Erosion Control and Grading Plan
** Phased plans are required for sites disturbing more than 5 acres
- Utility Plan*
- Stormwater Management Plan
- Landscaping Plan
- Any necessary details

The Detailed Site Development Plan Checklist can be found in **APPENDIX A** of this document.

*Subdivision plan package shall include construction plans for sanitary sewer and potable water systems.

Each plan shall be drawn on its own sheet and each sheet shall be signed and sealed by an architect, professional engineer, professional land surveyor, or other licensed professional as appropriate.

3.0 STORMWATER MANAGEMENT PLAN AND CALCULATION PACKAGE

In addition, a Stormwater Management Calculation Package shall be submitted with appropriate sketches and drawings and shall include at least the following items:

- Specific location, including north arrow
- Project narrative
- Parking plan; for parking areas with ten (10) or more spaces, plan shall be prepared by a licensed engineer
- Existing and proposed topographic and spot elevations
- Dumpster location(s) and screening
- Development site shall comply with DHEC's stormwater management requirements and Article V of the Code of the City of Anderson, SC.
- Existing and proposed utility locations

Provide the items listed in the detailed Stormwater Management Calculation Package Checklist as found in **APPENDIX B** of this document. In addition, the items listed in the Stormwater Management Design Standards Checklist as found in **APPENDIX C** are also required.

4.0 PERMITTING PROCESS

In order to provide for adequate plan review and to receive Land Disturbance Approval from the City of Anderson, please submit a Land Disturbance Submittal Package, to the City of Anderson Building Department at 601 South Main Street, Anderson, SC 29624.

Land Disturbance Submittal Package:

- One (1) complete set of plans in PDF format,
- A copy (PDF format) of the Notice of Intent (NOI) for Stormwater Discharges from Large and Small Construction Activities (NPDES General Permit SCR 100000) (if necessary),
- One (1) Stormwater Management Calculation Package (PDF format).

Upon receipt of Land Disturbance Approval from the City of Anderson:

- South Carolina Department of Health and Environmental Control (SCDHEC) Approval Letter¹ (if necessary),
- One (1) complete set of plans in PDF format for approval stamp.

Partial plans cannot be accepted.

A detailed flowchart outlining the permitting process including the Detailed Permitting and Notice of Termination (NOT) Process can be found in **APPENDIX D**.

The City's review process will be performed and MS4 approval provided to SCDHEC. Upon MS4 approval, the NOI form and NPDES fee(s) should be sent directly to DHEC. For development of a site disturbing one (1) acre or more, an approved SCDHEC Approval Letter accepting the application shall be submitted to the City prior to obtaining Land Disturbance Approval in the City of Anderson. For development of a site not part of a larger common plan (LCP), disturbing less than one (1) acre, the City may conduct a simplified review and issue Land Disturbance Approval.

For a property located on a street within the State Highway System, all activities within the Right-of-Way must be approved by applying to the SC Department of Transportation (SCDOT) for an encroachment permit. Such application shall also be routed to the City for review and approval.

The anticipated review time is **ten (10) business days**. A review letter will then be returned to the developer/engineer. If revisions are necessary, a cover letter addressing the revisions made, a revised set of plans, and/or Stormwater Management Calculations Package shall be submitted to the Public Works Division.

For any additional information, please contact the Building Department at (864)231-2217.

¹ Where "SCDHEC Approval Letter" is used in this document it refers to the approval letter that is received from SCDHEC as a result of following the submittal requirements contained within the "Notice of Intent (NOI) for Coverage(s) of Primary Permittees Under South Carolina NPDES General Permit for Stormwater Discharges from Construction Activities SCR100000". This form can be found on the SCDHEC website at <http://www.scdhec.gov/stormwater>. The SCDHEC Approval Letter shall be submitted to the City of Anderson upon its receipt by the owner or entity responsible for the Land Disturbance Submittal Package. See Appendix D: Detailed Permitting and Notice of Termination (NOT) Processes for more information.

5.0 REQUIREMENTS TO ADDRESS TOTAL MAXIMUM DAILY LOADS (TMDL'S)

A Total Maximum Daily Load (TMDL) is the amount of a pollutant that a water body can incorporate while meeting water quality standards. TMDL is further defined as the pollutant load developed by the Environmental Protection Agency (EPA) and SCDHEC that designates the permitted amount of discharge allowed to flow into a water body of the State or United States.

If a TMDL has been established for any watershed into which you discharge, you must incorporate any limitations, conditions and requirements contained in the TMDL applicable to your discharges, if any, including monitoring frequency and reporting required in order to become eligible for permit coverage. Applicable limitations, conditions and requirements contained in the TMDL are those limitations, conditions and requirements set forth in the TMDL implementation plan and attributed specifically to the City of Anderson.

A list of impaired waterbodies, known as the 303(d) list, can be found on SCDHEC's website at (<http://www.scdhec.gov/environment/water/regs/r61-110.doc>). Further information on TMDL's can also be found on that site.

6.0 INSPECTION AND MAINTENANCE SCHEDULES

Maintenance of the stormwater management system is critical for the achievement of its purpose of controlling stormwater runoff quantity and quality and the short-term and long-term public health, safety, and general welfare of the citizens of the City of Anderson.

- a. A permanent maintenance plan for the stormwater management system shall be included in the Land Disturbance Submittal Package. As part of the maintenance plan, the property owner or lessee of such facility shall specifically agree to be responsible for permanent maintenance. In order to transfer maintenance responsibility, a letter of acceptance by the new owner(s) accepting permanent maintenance responsibility shall be filed with the City of Anderson Public Works Division. It will be required to file the permanent maintenance plan with the Anderson County Register of Deeds upon submittal of the Notice of Termination (NOT).
- b. As part of the Land Disturbance Submittal Package, the applicant shall submit construction and BMP maintenance and inspection schedules. Required and recommended schedules for BMP maintenance and inspection can be found in the most recent version of the South Carolina DHEC Stormwater Management BMP Handbook on the DHEC website at <http://www.scdhec.gov/stormwater>.
- c. If construction is to be phased, no stage work related to the construction of stormwater management facilities shall commence until the preceding stage of work is completed in accordance with the approved Land Disturbance Submittal Package. The procedure for construction phases beginning and ending and what constitutes such conditions can be found in the most recent version of the South Carolina DHEC Stormwater Management BMP Handbook.
- d. The permittee shall notify the City of Anderson Public Works Division prior to commencing any work to implement the approved Land Disturbance Submittal Package and upon completion of any phase or designated component of the site. Notification schedules can be found in the most recent version of the South Carolina DHEC Stormwater Management BMP Handbook. All self-inspections, maintenance actions, BMP replacements, and changes to the approved Land Disturbance Submittal Package shall be documented and presented upon request to the City of Anderson through the City Manager or his duly appointed designee.

APPENDIX A: DETAILED SITE DEVELOPMENT PLAN CHECKLIST

The following checklists can be used to identify development plan minimum requirements. The “Reference Documentation” column in the checklists below can be populated by permittees to help make the City’s review process more efficient. Submitters simply add a reference to the location in the submittal (i.e. plan sheet number and name, calculations package page number and paragraph, etc.), that contains the plan requirement item from the checklist. More detailed information, in some cases, may expedite the City’s review process.

SINGLE PARCEL DEVELOPMENT PLAN CHECKLIST (Revised March 2013):

EXISTING SITE INFORMATION

Check	Reference Documentation	Plan Requirements
Complete <input type="checkbox"/>		1. Boundary Survey showing all boundary/property lines, easements, rights-of-way, acreage, adjoining property owners with TMS, deed, and plat reference.
Complete <input type="checkbox"/>		2. Each sheet shall contain a title block, containing the owners name, project name, date, and scale; north arrow; vicinity map; and name of PE, PLS, Landscape Architect, or Architect preparing the plan, affixed with seals and signatures.
Complete <input type="checkbox"/>		3. Identify current zoning, existing land use, and existing adjacent land uses.
Complete <input type="checkbox"/>		4. Location of all existing buildings, access drives, easements, water and sewer lines, storm drainage, and all other existing improvements and utilities.
Complete <input type="checkbox"/>		5. Topographic information 1, 2, or 5 feet contour interval dependent upon land slope and proposed grading Provide a minimum of two (2) project bench marks. Note Datum (i.e., assumed, NGVD, NAVD 88, etc.).
Complete <input type="checkbox"/>		6. Tree lines of existing wooded areas. Location of individual trees (NOT located in existing wooded areas) larger than 18" in diameter, identified by common name.
Complete <input type="checkbox"/>		7. Identify and provide copy of certification by US Army Corp of Engineers, Wetlands permits. Locate streams, ponds, drainage ditches, boundaries of floodway, and 100-year floodplain and other wetlands.
Complete <input type="checkbox"/>		8. Provide copies of Restrictive Covenants, Deed Restrictions, or “Mutual Use Agreements.”

PROPOSED SITE INFORMATION

Check	Reference Documentation	Plan Requirements
Complete <input type="checkbox"/>		1. Location and layout of all proposed principal and accessory buildings, dimensions of proposed buildings, and setbacks of buildings from property lines, and distance separating structures.
Complete <input type="checkbox"/>		2. Where proposed, show the number, size and type of residential dwelling units.
Complete <input type="checkbox"/>		3. The number of required off-street parking spaces, and number and location of parking spaces proposed. Include details of typical striping, handicap striping, handicap ramps, and directional painting/striping.
Complete <input type="checkbox"/>		4. Location and type of all required landscaping, buffer yards, and screening identified by common plant names. Include details and planting schedule.
Complete <input type="checkbox"/>		5. Location, type, size, and height of all exterior lighting and signs. Include details.
Complete <input type="checkbox"/>		6. Location of areas intended to satisfy the open space requirement and the percent of such areas with regard to the overall site.
Complete <input type="checkbox"/>		7. Impervious surface area, total surface area, and impervious area ratio. Include sidewalks, drives, and walkways as a part of the impervious area.
Complete <input type="checkbox"/>		8. Location of proposed street or drives showing curb and gutter arrangements, shoulders and swales, and street or drive width. Include details of road section typical, curb and gutter, islands, cul-de-sacs, and turnabouts.
Complete <input type="checkbox"/>		9. Provide a traffic, parking, and circulation plan showing arrangements and drives, ingress and egress to and from existing streets, direction of travel lanes, dimensions and angle of typical parking spaces and width of all proposed drives and isles, and documentation of cross easements for parking/drives. Include details as needed.
Complete <input type="checkbox"/>		10. Location and dimensions of sidewalks and walkways. Include details as needed.
Complete <input type="checkbox"/>		11. Dumpster location and screening. Include detail of dumpster pad, dumpster, and screening.
Complete <input type="checkbox"/>		12. Proposed finished grade by contour, use spot elevations to prevent ponding water.

PROPOSED SITE INFORMATION (continued)

Check	Reference Documentation	Plan Requirements
Complete <input type="checkbox"/>		13. Location of all existing and proposed above and underground utilities, including water, fire hydrants, sewer, gas, storm drainage, electric, irrigation systems, and telephone.
Complete <input type="checkbox"/>		14. Existing and proposed easements.
Complete <input type="checkbox"/>		15. Provide stormwater management and erosion control calculations using the 2- and 10-year design storm to compare pre and post-developed storm runoff. Post-developed runoff can be no greater than the pre-developed. Sediment control calculations are required when the disturbed area is greater than 5.0 acres. (See also <u>Stormwater Management Calculation Package Checklist</u>)
Complete <input type="checkbox"/>		16. Provide approved SCDOT encroachment permit(s) for entrances, stormwater conveyance, grading and/or utility construction within SCDOT maintained right-of-way.
Complete <input type="checkbox"/>		17. Provide approved SCDHEC stormwater permits.

SUBDIVISION PLAN CHECKLIST (Revised March 2013):

EXISTING SITE INFORMATION

Check	Reference Documentation	Plan Requirements
Complete <input type="checkbox"/>		1. Boundary Survey showing all boundary/property lines, easements, rights-of-way, acreage, adjoining property owners with TMS, deed, and plat reference.
Complete <input type="checkbox"/>		2. Each sheet shall contain a title block, containing the owners name, project name, date, and scale; north arrow; vicinity map; and name of PE, PLS, or Landscape Architect preparing the plan, affixed with seals and signatures.
Complete <input type="checkbox"/>		3. Identify current zoning, existing land use, and existing adjacent land uses.
Complete <input type="checkbox"/>		4. Location of all existing buildings, access drives, easements, water and sewer lines, storm drainage, and all other existing improvements and utilities.
Complete <input type="checkbox"/>		5. Topographic information 1, 2, or 5 feet contour interval dependent upon land slope and proposed grading. Provide a minimum of two (2) project bench marks. Note Datum (i.e., assumed, NGVD, NAVD 88, etc.).
Complete <input type="checkbox"/>		6. Tree lines of existing wooded areas. Location of individual trees (NOT located in existing wooded areas) larger than 18" in diameter, identified by common name.
Complete <input type="checkbox"/>		7. Identify and provide copy of certification by US Army Corp of Engineers, Wetlands permits. Locate streams, ponds, drainage ditches, boundaries of floodway, and 100-year floodplain and other wetlands.
Complete <input type="checkbox"/>		8. Provide copies of Restrictive Covenants, Deed Restrictions, or "Mutual Use Agreements."

PROPOSED SUBDIVISION PLAN INFORMATION

Check	Reference Documentation	Plan Requirements
Complete <input type="checkbox"/>		1. Sewer Plan to include top elevation, invert elevation, type of manhole, station or identification number or designation, collector line identification, location of physical interferences and elevation, i.e., overhead power, underground power, gas, water, or storm drainage. The minimum acceptable right-of-way is 25'. The sewer must be located by bearing and distance from a known point and then subsequent manholes are to be located by bearing (angle) and distance.
Complete <input type="checkbox"/>		2. Sewer Profile to include existing and proposed grades, pipe slope, pipe material, pipe size, and distance between manholes. Horizontal scale should be a factor of 10 greater than the vertical scale.
Complete <input type="checkbox"/>		3. As-built plans must be submitted with all service taps located before final plat approval.
Complete <input type="checkbox"/>		4. Water Distribution Plan to include fire hydrants, meter locations, line sizes, valves, blow-offs, and other appurtenances. As-built plans must be submitted prior to final plat approval.
Complete <input type="checkbox"/>		5. Road Plan to include 18" curb and gutter, only 2 streets can enter at one point, and must be located by bearing and distance from a known point. The road alignment must be shown using bearings (angles) and stationing every 100' and at each horizontal curve the PC and PT station must be shown. Each horizontal curve information shall include the radius and delta angle. The centerline radius shall be no less than 150'. The right-of-way at street intersections shall have a 25' radius. The roadway at the street intersections shall have a 25' radius. Streets shall intersect as nearly as possible to right angles - angle less than 60o will not be accepted. Street intersections must be spaced a minimum of 150' right-of-way to right-of-way. Street right-of-way can be no closer than 150' from the Railroad right-of-way. The center of a cul-de-sac can be no greater than 750' from the intersecting street.
Complete <input type="checkbox"/>		6. Vertical curves must be a minimum of 100' or 15 times the algebraic difference of the slopes. Grades at intersections shall be no greater than 5% within 50' of the right-of-way of said intersection. Maximum grade is 10% and minimum grade is 0.5%. Minor Street 50' R/W 24' FOC to FOC Minor Collector Street 60' R/W 40' FOC to FOC Cul-de-Sac 50' Radius 40' Radius FOC.

PROPOSED SUBDIVISION PLAN INFORMATION (continued)

Check	Reference Documentation	Plan Requirements
Complete <input type="checkbox"/>		7. Grading and Drainage Plan to include pipe and swale location, slope, size, material, and document the stormwater discharges and capacity of pipe and swale. Swale should have a minimum freeboard of 0.5' or 33% of the flow depth, whichever is greater. See also <u>Stormwater Management and Erosion Control Plan Checklist</u> .
Complete <input type="checkbox"/>		8. Storm drains and swales should have a minimum of 20' drainage easement. All side and rear lot lines shall have a minimum of 7.5' reserved for drainage and utility easements.
Complete <input type="checkbox"/>		9. Lot depth must be greater than 100'.
Complete <input type="checkbox"/>		10. Provide copies of SCDOT encroachment permits for entrances, stormwater conveyance, grading, or utility construction. Provide copies of SCDHEC Stormwater Permit, Permit to Construct Sanitary Sewer System, and Permit to Construct Drinking Water System.

STORMWATER MANAGEMENT PLAN CHECKLIST

Check	Reference Documentation	Plan Requirements
Complete <input type="checkbox"/>		1. North Arrow, Scale, and Graphic Scale Bar
Complete <input type="checkbox"/>		2. Property Boundary
Complete <input type="checkbox"/>		3. Legend
Complete <input type="checkbox"/>		4. Registered Engineer Stamp and Signature. Engineering Firm or Engineer Title Block.
Complete <input type="checkbox"/>		5. Certificate of Authorization (COA) Stamp
Complete <input type="checkbox"/>		6. Existing and Proposed Contours.
Complete <input type="checkbox"/>		7. Limits of Disturbed Area and Areas to Stockpile Soil or Debris
Complete <input type="checkbox"/>		8. Construction Sequence. Include installation of critical measures prior to initiation of the land disturbing activity and removal of measures after the areas have been permanently stabilized.
Complete <input type="checkbox"/>		9. Waters of the state and wetlands must be delineated on the plans. If waters are impacted, provide copies of correspondence from US Army Corp of Engineers.
Complete <input type="checkbox"/>		10. Maintenance Requirement. Each erosion control measure shall have maintenance requirements stated on each detail for that control practice.
Complete <input type="checkbox"/>		11. Location and details of all temporary and permanent control measures.
Complete <input type="checkbox"/>		12. Grassing and stabilization specifications
Complete <input type="checkbox"/>		13. Construction Entrance/Exit. Provide location and detail.
Complete <input type="checkbox"/>		14. Inlet protection must be provided at all existing and newly installed inlets that receive stormwater runoff from the disturbed areas.
Complete <input type="checkbox"/>		15. Outlet protection must be provided at all existing and newly installed outlets, within the construction site's boundary, that discharge stormwater runoff from the disturbed areas. Silt fence may not be used as outlet protection.
Complete <input type="checkbox"/>		16. For non-linear construction sites disturbing more than 5 acres, the Construction Site Plans must include a phased stormwater management plan. For sites disturbing more than 5 acres and less than 10 acres, two (2) separate plan phases shall be developed. Each plan phase shall be identified

		<p>and must be addressed separately on at least one single plan sheet, with each sheet reflecting the conditions and the BMP's necessary to manage stormwater runoff, erosion and sediment during the phases, at a minimum:</p> <p>Initial Land Disturbance Phase. This includes, but is not limited to the perimeter BMP's, the necessary sediment and erosion control BMP's to be installed prior to initial/mass grading, and any additional BMP's necessary to keep the construction site in compliance with this permit.</p> <p>Stabilization Phase. This includes, but is not limited to all BMP's required to be installed, maintained, and retrofitted during the time required to begin the majority of all construction and grading activities, and the time required to bring the construction site into compliance with permanent water quality requirements and into final stabilization.</p>
<p>Complete <input type="checkbox"/></p>		<p>17. For sites disturbances greater than or equal to 10 acres, at least three (3) separate plan phases shall be developed. Each plan phase shall be identified and must be addressed separately on at least one single plan sheet, with each sheet reflecting the conditions and the BMP's necessary to manage stormwater runoff, erosion and sediment during the phases, at a minimum:</p> <p>Initial Land Disturbance Phase. This includes, but is not limited to the perimeter BMP's, the necessary sediment and erosion control BMP's to be installed prior to initial/mass grading, and any additional BMP's necessary to keep the construction site in compliance with this permit.</p> <p>Construction Phase. This includes, but is not limited to all sediment and erosion control BMP's necessary to be installed, maintained and designed to prevent sediment-laden stormwater from discharging off-site during construction. Examples of such BMP control measures to include in this phase are all temporary BMP's used to convey, manage, and treat stormwater runoff (i.e. sediment traps and basins, rock check dams, silt fence, sediment tubes, inlet protection, temporary conveyance channels and any other sediment control measure.</p> <p>Stabilization Phase. This includes, but is not limited to all BMP control measures required to be installed, maintained, and retrofitted during the time required to bring a construction site into compliance with permanent water quality requirements and into final stabilization.</p>
<p>Complete <input type="checkbox"/></p>		<p>18. Buffer Zone Management. Identify all undisturbed buffer zone(s) when surface waters are located on or immediately adjacent to the construction site and describe how the plans will address all applicable Buffer Zone Management requirements.</p>
<p>Complete <input type="checkbox"/></p>		<p>19. Construction Debris Management. Identify and describe measures to prevent the discharge of building or other similar materials to Surface Waters of the State, except as authorized by a permit issued under section 404 of the CWA.</p>
<p>Complete <input type="checkbox"/></p>		<p>20. Stock Pile Management. Identify and describe potential construction and waste materials expected to be stored on-site. The controls, including storage practices such as roll off containers, spill prevention, and response practices used to minimize exposure of these waste materials to Stormwater discharges must also be identified and described.</p>

Check	Reference Documentation	Plan Requirements
21. Required notes to be included on the STORMWATER MANAGEMENT PLAN:		
Complete <input type="checkbox"/>		1. Slopes which exceed (8) vertical feet should be stabilized with synthetic or vegetative mats, in addition to hydroseeding. It may be necessary to install temporary slope drains during construction.
Complete <input type="checkbox"/>		2. Stabilization measures shall be initiated as soon as practicable whenever land-disturbing activities have temporarily or permanently ceased, but in no case more than 14 days after land-disturbing activity in that portion of the construction site has temporarily or permanently ceased, except; (a) Where snow cover or frozen ground conditions preclude stabilization by the 14 th day, stabilization measures must be initiated as soon as practicable. (b) Where construction activity on a portion of the construction site is temporarily ceased, and earth-disturbing activities will be resumed within 14 days, temporary stabilization measures do not have to be initiated on that portion of the construction site.
Complete <input type="checkbox"/>		3. All sediment and erosion control devices shall be inspected at a minimum of once every calendar week recommended within 24 hours of the end of a storm event of 0.5 inches or greater. Damaged or ineffective devices shall be repaired or replaced, as necessary.
Complete <input type="checkbox"/>		4. Provide silt fence and/or other control devices, as may be required, to control soil erosion during utility construction. All disturbed areas shall be cleaned, graded, and stabilized with grassing immediately after the utility installation.
Complete <input type="checkbox"/>		5. All erosion control devices shall be properly maintained during all phases of construction until the completion of all construction activities and all disturbed areas have been stabilized. Additional control devices may be required during construction, in order to control erosion and/or offsite sedimentation. All temporary control devices shall be removed once construction is complete and the site is stabilized.
Complete <input type="checkbox"/>		6. The contractor must take necessary action to minimize tracking of mud onto paved roadway from construction areas. The contractor shall daily remove mud/soil from pavement as may be required.
Complete <input type="checkbox"/>		7. Residential subdivisions require erosion control features for infrastructure as well as for individual lot construction. Individual property owners shall follow these plans during lot construction or provide an individual plan meeting Section R.72.307 of the Stormwater Management and Sediment Reduction Act Requirements.

APPENDIX B: STORMWATER MANAGEMENT CALCULATIONS PACKAGE CHECKLIST

The following checklist can be used to identify the Stormwater Management Calculations Package minimum requirements. The "Reference Documentation" column in the checklists below can be populated by permittees to help make the City's review process more efficient. Submitters simply add a reference to the location in the submittal (i.e. plan sheet number and name, calculations package page number and paragraph, etc.), that contains the plan requirement item from the checklist. More detailed information, in some cases, may expedite the City's review process.

Check	Reference Documentation	Plan Requirements
Complete <input type="checkbox"/>		1. Copy of approved <u>SCDHEC Approval Letter</u> .
Complete <input type="checkbox"/>		2. Location map with north arrow and scale.
Complete <input type="checkbox"/>		3. Project Narrative that accurately addresses the following requirements for the construction site: <ul style="list-style-type: none"> (a) Scope of project outlined, including a detailed description of pre- and post-development conditions. (b) Description of existing and potential flooding problems at the site due to pre-construction drainage conditions, and any potential flooding problems within the surrounding area that may be a direct result of current site conditions or the proposed site development. *Identify if the site is located within a floodplain. (c) The function of the project and describe if part of a larger common plan of development. (d) Estimates of the total area expected to be disturbed by excavation, grading, or other construction activities, including dedicated off-site borrow and fill areas. (e) Information regarding the required on-site support activities (i.e. concrete and asphalt batch plants, etc.) (f) Identification of prior uses of the construction site or potential sources of pollution that may reasonably be expected to cause or contribute to a violation of any applicable water quality standard based upon the existing condition of the construction site.
Complete <input type="checkbox"/>		4. USGS Topographic Map showing the site location, the route of runoff from the site to the nearest offsite receiving waterbody, and identify any critical areas downstream of the proposed site (i.e., road crossings, ponds, wetlands, etc.).
Complete <input type="checkbox"/>		5. Drainage Areas Map showing existing drainage areas and discharge points, proposed drainage areas and discharge points, and offsite drainage areas that drain through the site.
Complete <input type="checkbox"/>		6. Floodway maps/FEMA Flood Insurance Rate Maps.

STORMWATER MANAGEMENT SUBMITTAL PACKAGE CHECKLIST (continued)

Check	Reference Documentation	Plan Requirements
Complete <input type="checkbox"/>		7. Anderson County Soils Map showing the site and specify each soil type and NRCS Hydrologic Soil Group.
Complete <input type="checkbox"/>		8. Include summary sheet of calculations to include the 2- and 10-year pre and post-developed discharges (cfs) at each outfall, the 2- and 10-year pre and post-developed velocities (fps) at each outfall. For each detention structure include peak inflow, peak outflow, and maximum water surface elevation. Sediment structures must have greater than 80% trapping efficiency.
Complete <input type="checkbox"/>		9. Detention waiver request must include certification from engineer, in writing, that the increased flows will not have a significant adverse impact on the downstream/adjacent properties. Request must be qualified with appropriate supporting calculations.
Complete <input type="checkbox"/>		10. Rip-rap with a geotextile lining must be used to stabilize all outfalls - unless some other energy dissipater is used. When applicable, submit detailed calculations for the design of riprap aprons. These calculations must be based off of the most current edition of the SC DHEC BMP Handbook or other appropriate design criteria.
Complete <input type="checkbox"/>		11. Proposed drainage must flow to an existing outfall. Storm drainage or pond outfalls must be carried to an existing drainage outfall such as a ditch, swale, pipe, etc. A point discharge onto adjacent property, where there was not a point discharge previously, cannot be allowed unless written permission from the adjacent property owner is granted or calculations show that no adverse impacts will result from the point discharge. In some cases, a level spreader can be used to dissipate the flows before they are released to the adjacent property.
Complete <input type="checkbox"/>		12. Proposed fill slopes or embankments shall remain far enough away from adjacent property to “work” without going on the adjacent property (a 20' to 30' buffer is recommended). Slopes must be stabilized and “extra measures” may be required to stabilize slopes greater than 4:1. Extra measures may include retaining walls, the use of synthetic or vegetative matting, diversion berms, temporary slope drains, in addition to hydro-seeding.
Complete <input type="checkbox"/>		13. Full set of properly signed and sealed site plans (see also Site Development Checklist and Subdivision Checklist) and copy of appropriate calculations (see also <u>Stormwater Management Calculations Checklist</u>).

APPENDIX C: STORMWATER MANAGEMENT DESIGN STANDARDS CHECKLIST

The following checklist can be used to identify the minimum requirements for stormwater management designs. The "Reference Documentation" column in the checklists below can be populated by permittees to help make the City's review process more efficient. Submitters simply add a reference to the location in the submittal (i.e. plan sheet number and name, calculations package page number and paragraph, etc.), that contains the plan requirement item from the checklist. More detailed information, in some cases, may expedite the City's review process.

All design standards must, at a minimum, meet the requirements stated in State Regulation R.61-9.

Check	Reference	Plan Requirements
Complete <input type="checkbox"/>		1. Pre and Post-developed calculation must include the 2- and 10-year peak flow rate at each outfall and the 2- and 10-year peak velocities at each outfall. Stormwater conveyance structures must be designed to pass the 10-year design storm.
Complete <input type="checkbox"/>		2. The Rational Method/Equation cannot be used to size detention ponds. A volume-based hydrograph routing is required for full pond routing. The TR55 program does not perform a full pond routing so that hand calculations, spreadsheets, or other computer programs (i.e., SEDCAD, PONDPACK, etc.) must be used to perform the pond routing. A 24-hour rainfall event using the 241 point NRCS rainfall distribution must be used. Run the 2, 10, 25, and 100-year storm events. For the City of Anderson use the following information R₁ = 3.0" , R₂ = 3.6" , R₅ = 4.5" , R₁₀ = 5.3" , R₂₅ = 6.5" , R₅₀ = 7.7" , R₁₀₀ = 9.2" , Rainfall Factor = 275, and NRCS Type II storm. Note that detention is required for the 2- and 10-year design storm; however, it is recommended that the principal spillway pass the 25-year design storm (before reaching the emergency spillway) and that the emergency spillway be sized to pass all of the 100-year design storm with 6" of freeboard. Provide peak inflow, peak outflow, and the maximum water surface elevation at the pond. Provide the stage/storage/discharge relationships for the outlet structure(s) of the pond. Include all data to support the development of these rating curves/equations. For ponds that are to remain dry during non-storm events, the pond must completely drain within a 24 to 72-hour time period. Provide a horseshoe shaped rip rap filter berm around the outlet structure. Include a detail of the rip rap berm and structure with maintenance notes. Provide a construction detail of the cross-section of the dam and outlet structure and include this in the plans. The data in the detail must be consistent with the data used in the calculations. A minimum of 2 anti-seep collars must be used along barrel pipe. <i>*Rainfall information obtained from NOAA's Precipitation Frequency Data Server (http://hdsc.nws.noaa.gov/hdsc/pfds/index.html)</i>
Complete <input type="checkbox"/>		3. Provide calculations showing that the existing and proposed channels are stable for the proposed conditions. If temporary or permanent rolled erosion control products (e.g. erosion control blankets and turf reinforcement mats), riprap, geotextiles, or other armoring materials are needed, they should be designated on the plan sheets and on the cross-section details for the channel.

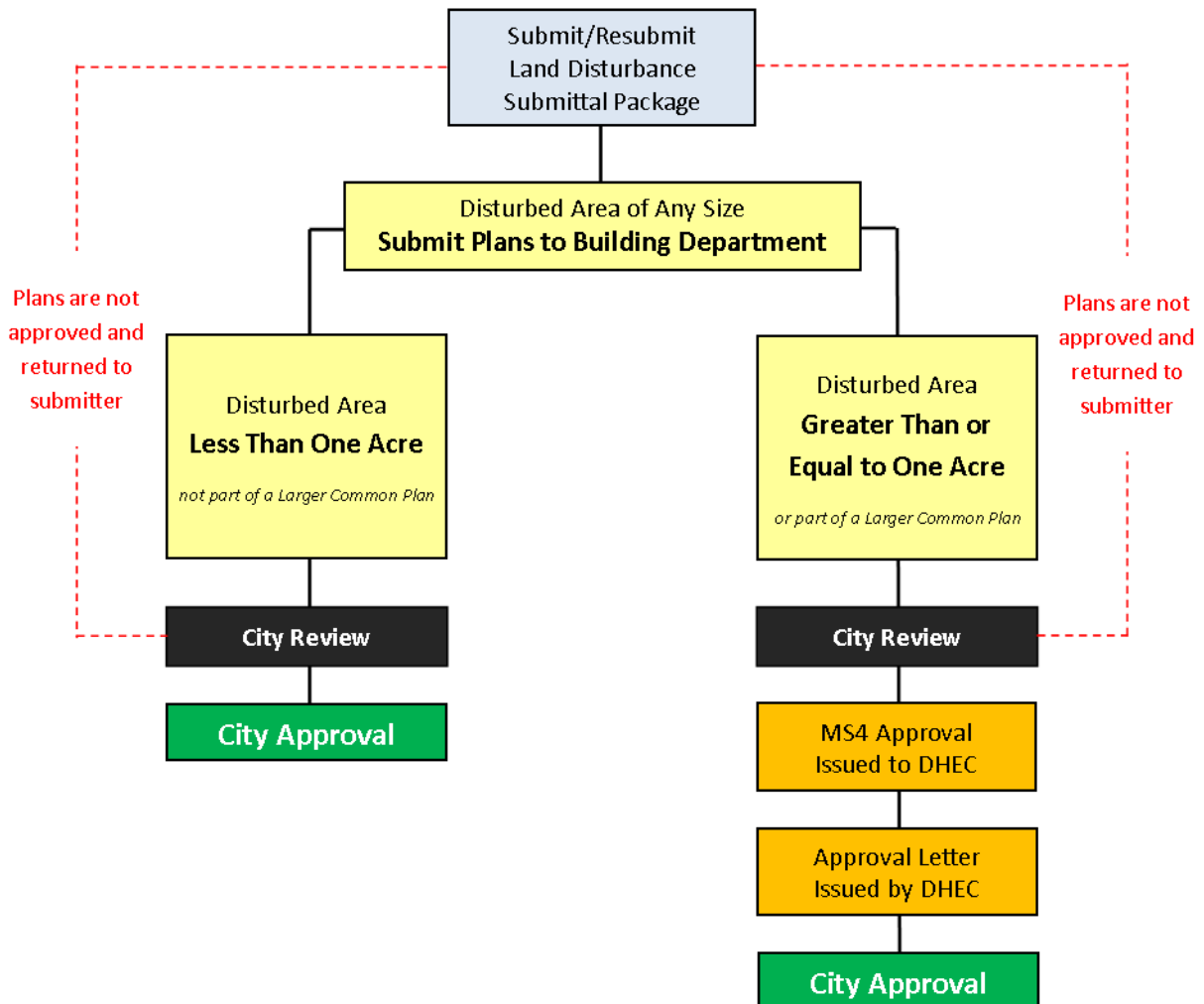
Check	Reference	Plan Requirements
Complete <input type="checkbox"/>		4. When velocities at outfalls are greater than the pre-development velocities, energy dissipators calculations must be provided. Energy dissipators include velocity breakers, plunge pools, rip rap aprons, etc. Provide appropriate details, dimensions, and indicate required stone size when appropriate.
Complete <input type="checkbox"/>		<p>5. When 5 or more acres are disturbed, the design sediment trapping efficiency must be greater than 80% TSS removal. When 10 or more disturbed acres drain to a single outlet, a sediment basin is required. Computer programs such as SEDCAD, SEDIMOT or SEDPRO may be used to calculate the trapping efficiency. When discharging from sediment basins and similar impoundments, utilize outlet structures that only withdraw water from near the surface of the basin or impoundment, unless infeasible. This outlet structure should be capable of conveying the flow for the 10-year, 24 storm event. The use of perforated risers is not acceptable. Unless infeasible, install sediment forebays, or similar control measures capable of providing sediment trapping at inlets of sediment basins, based on sediment storage requirements of each sediment basin. Unless infeasible, install a cleanout stake indicating when the basin needs to be cleaned.</p> <p>Sediment traps are applicable to drainage areas up to 5 acres and should be sized appropriately to handle the amount of land disturbance and drainage discharging to the trap. Rock check dam weir overflows should be designed to handle the 10-year storm. Sediment trap calculations relating to disturbed area less than 5 acres may be required if the adjoining area (i.e. wetland, lake, etc.) is sensitive to sediment deposition using SEDIMOT, IDEAL, SEDCAD, SEDPRO or other acceptable design methodologies.</p> <p>Unless infeasible, properly design, install and maintain porous baffles, or similar control measures in all temporary sediment traps and sediment basins capable of enhancing settling capabilities and restricting the accumulation of sediment around the outlet structure, to reduce velocity, turbulence, and improve sediment trapping efficiency.</p>
Complete <input type="checkbox"/>		<p>6. Permanent Water Quality Analysis. When applicable, identify and describe all post-construction stormwater management measures (LIDs, BMP's, etc.) that will be installed during the construction process to control pollutants in stormwater discharges after construction operations have been completed. Provide detailed calculations for all structural BMPs used to achieve post-construction water quality requirements.</p>

Checklist Completed by:

Name: _____ Signature: _____ Date: _____

APPENDIX D: DETAILED PERMITTING AND NOTICE OF TERMINATION (NOT) PROCESSES

Detailed Permitting and Construction Plan Submittal Process



For development of a site disturbing over one (1) acre, the Developer/Engineer sends a complete Land Disturbance Submittal Package to the City of Anderson MS4. The City's review process will be performed and MS4 approval provided to DHEC. For development of a site disturbing one (1) acre or more, an approved SCDHEC Approval Letter accepting the application shall be submitted to the City prior to obtaining Land Disturbance Approval in the City of Anderson.

For development of a site not part of a larger common plan (LCP), disturbing less than one (1) acre, the City may conduct a simplified review and issue Land Disturbance Approval.

DETAILED NOTICE OF TERMINATION (NOT) PROCESS

The permittee shall notify the City of Anderson that the site, or portion of the site, is sufficiently stabilized to begin the NOT process. If portions of the site are to be completed prior to others (e.g. phased construction), a proposed schedule shall be included in the approved Land Disturbance Submittal Package. The NOT process shall at a minimum require:

1. A final plat showing the location of all stormwater easements and responsible party for the maintenance of the system. References shall be made to any and all ownership and lessee Covenants established for ensuring the maintenance and long term functioning of the stormwater system. The plats shall also show conflicts with other new or existing easements. If a permanent maintenance plan was required to be filed with the Anderson County Register of Deeds then a copy of the record shall be submitted along with the final plat.
2. Documentation from the owner of the approved Land Disturbance Submittal Package, which includes any revisions and as-built construction drawings, inspection reports, and stormwater system ownership transfers;

The As-built Survey must provide, at a minimum, the following information:

- a. All existing grades/contours/depths of the structure(s),
 - b. All elevations and dimensions of all outlet structures, including:
 - i. Pipe and orifice inverts and diameters,
 - ii. Weir elevations and dimensions,
 - iii. Riser dimensions and elevations,
 - iv. Emergency spillway dimensions and elevations,
 - v. Locations and inverts for all pipes discharging into the pond.
 - c. Spot elevations along the top of the structural BMP's embankment.
 - d. Contours, dimensions, and locations of all structural components (i.e. forebays, level spreaders, riprap aprons, inlet structures) of the structural BMP's.
3. Certification and verification by a professional engineer that all components of the stormwater management system meet the approved Land Disturbance Submittal Package and specifications achieve the function for which they were designed. In addition, the site shall be cleared of all construction trash and debris from the stormwater system and the site as a whole;
 4. A final inspection conducted by the City of Anderson through the City Manager or his duly appointed designee.

The NOT process must be completed by the City Manager or his designee prior to:

1. The use or occupancy of any newly constructed components of the site.
2. Final acceptance of any road into the Official Road Inventory Database or designated of road owner and associated stormwater management system.
3. Release of any bond held by the City of Anderson.
4. Approval and/or acceptance for recording of map, plat, or drawing, the intent of which is to cause a division of a single parcel of land into two or more parcels.

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- a. For projects located within an MS4, a letter or other statement from the MS4 that the site meets the MS4 requirements for project completion.
 - b. Permanent maintenance agreement filed with Anderson County Register of Deeds.

WHERE TO SUBMIT

Notice of Termination (NOT) must be submitted to:

City of Anderson Public Works Division
Stormwater Department
1100 Southwood Street
Anderson, SC 29624
(864) 231-2246