



CONSTRUCTION DRAWING AND SITE PLAN REVIEW CHECKLIST

Town of Garner
Engineering Department

900 Seventh Avenue, Garner, NC 27529
Telephone: (919) 773-4423

Section A. DATA TO BE SHOWN ON PLANS

(a) Overall Submission requirements

- 1. The site plan drawings shall be drawn on a standard sheet size of either twenty-four (24) by thirty-six (36) inches or thirty (30) by forty-two (42) inches when included in an architectural submittal;
- 2. True north arrow, with north being at the top of the map;
- 3. Scale of the map using engineer's scale (1"=10', 1"=50', etc.) both graphic and numeric and date of preparation, including all revision dates;
- 4. Each plan sheet shall be signed AND sealed by a NC registered Professional Engineer;
- 5. A legend and notes sheet shall be included with all line types and symbols clearly shown for interpretation;
- 6. Add Town of Garner Approval stamp to each sheet of plans, preferably at lower or middle right side of page.
- 7. **Submit 3 sets of plans** in the order shown below:
 - Cover Sheet
 - Existing Conditions Plan
 - Site Plan
 - Utility Plan
 - Storm Drainage/Grading Plan
 - Erosion Control Plan
 - Stormwater Management Details (SCM plan/profile/cross sections/details)
 - Street Plans/Profiles, including property frontage road widening(s), as applicable;
 - Landscape Plan (including sight distance triangles on plans)
 - Lighting Plan
 - Standard Detail Sheets
 - Building Elevations (if applicable)
- 8. **Submit 2 sets of stormwater management calculations**, including all the following items:
 - Inlet gutter spread calculations (2-year storm)
 - Pipe HGL calculations (10-year storm)
 - Stormwater management calculations
 - Pre/post for 1-yr, 10-yr, and 25-yr storms
 - TSS calculations for Watershed Development Permit (Swift Creek watershed only)
 - Nitrogen calculations
 - Anti-buoyancy calculations for riser foundations
 - Outlet Dissipators (10 year)
 - Channels/Swales (2-year temp, 10-year permanent), including shear stress calcs for linings.
- 9. **Submit 1 signed copy of this Construction Drawing and Site Plan Review Checklist.**
- 10. For resubmittals, **submit 3 letters responding to each comment received on previous submittal.**
- 11. Submittals for **water/sewer permits** should be delivered directly by the applicant to City of Raleigh Public Utilities Department, located at One Exchange Plaza, Suite 620, Raleigh, NC 27602.
- 12. Submittal for **erosion control permit** should be submitted directly by the applicant to the NCDEQ Raleigh Regional Office, 3800 Barrett Drive, Raleigh, NC 27609.
- 13. Submittals for **driveway permit and/or encroachment agreements** should be submitted directly by the applicant to the NCDOT District Office, located at 4009 District Office, Raleigh, NC 27607. Driveway permit must be signed by Town Engineer prior to submittal to NCDOT.

Note: *Town of Garner will not sign construction drawings until all other agencies have approved plans and verification provided to the Town.*

(b) Title Sheet

- 1. The name of the development and primary owner agent, including name, address, email, and telephone number.
- 2. The name of the design consultant and primary agent, including name, address, email, and telephone number.
- 3. Project address, PIN number, and project name;
- 4. A vicinity sketch or key map at a scale of not more than one thousand (1000) feet to the inch (1"=200' is preferred on cover sheet), showing the position of the proposed project with its relation to surrounding streets and properties, and oriented in the same direction as the site plan;
- 5. Site information including total acreage, disturbed area, existing impervious area, proposed impervious area with percentage, future impervious (where applicable);
- 6. For residential developments – Planned number of units, along with their size (in terms of bedrooms);
- 7. For commercial developments – Proposed square footage of building space;
- 8. Add note - "Contact the North Carolina One Call Center prior to doing any digging. 1-800-632-4949";
- 9. Add note – "Please contact Town of Garner Engineering inspector at 919-773-4458 to schedule a pre-construction meeting prior to obtaining building permits for this plan.";
- 10. Add revision block with dates and description for each submittal.
- 11. Include **Infrastructure Inspection Table(s)** including all the following items (even if zero quantity).

Garner Engineering

- Linear footage of Public Streets
- Linear footage of Public Sidewalks
- Number of Stormwater Control Measures (SCM's)

City of Raleigh Public Utilities

- Linear footage of Public Watermain (by size)
- Linear footage of Public Sewermain (by size)
- Linear footage of Private Watermain (by size)
- Linear footage of Private Sewermain (by size)
- Number of Water Stubs/Ties (excluding services)
- Number of Water Meter(s) for Domestic (by size)
- Number of Water Meter(s) for Irrigation (by size)
- Number of Sewer Services (by size)
- 12. Include general note "All construction shall be in accordance with Town of Garner, City of Raleigh, and/or NCDOT standards and specifications as applicable."

(c) General Site Plan Information

- 1. An accurate and complete legend is required on each plan sheet (detail sheets do not require a legend);
- 2. Names of property owners of adjacent properties or subdivisions of record;
- 3. Proposed streets, existing and platted streets on adjoining properties and in the proposed development with right-of-way widths (and NCDOT SR numbers if applicable);
- 4. Existing and proposed topographical information, along with proposed finished floor elevations for structures, and spot elevations for all roadways and parking areas;
- 5. Existing or proposed sidewalks, both on public rights-of-way and on-site; labeled accordingly.
- 6. All proposed and existing easements, widths, purposes noted, public or private and book and page numbers;
- 7. Location, material, and size of any existing utilities (water, sanitary sewer, septic, storm water, etc.) along with their owners' names, and inverts on all sanitary sewer and storm water facilities;
- 8. Street centerline stations are shown for reference on all plan views and correspond to plan and profile sheets;
- 9. All curb ramps are drawn and labeled (by type) according to Town of Garner standard details.
- 10. All temporary road stubs include temporary turnarounds per Town of Garner details.
- 11. All permanent road stubs include signage/barricades per Town of Garner details.
- 12. Sight distances calculated at each intersection and easements provided for all applicable areas. Vegetation within sight distance easements shall be clear between 2' and 8' height for maximum visibility.

- 13. Add following note to site plan. "The Town will be responsible for payment of the monthly costs for public street lighting and the developer will be responsible for all initial fees charged with the light installation. All installation fees are required to be paid up front at the time of installation."
- 14. Add note: Mail kiosk parking inside public rights of way are not maintained by the Town of Garner. Any parking spaces along a public street shall be separated by a 2' wide x 8" deep concrete band to separate public street from private parking maintenance.
- 15. Parking spaces adjacent to sidewalk without curb and gutter are required to have curb stops to maintain sidewalk clearance from vehicle overhangs.
- 16. Add a note to contact the Town of Garner Engineering Department prior to conversion of any SCM onsite from an erosion control device to a stormwater control measure.
- 17. If project is phased, ensure delineation lines are clearly noted on the plan. Also, ensure the first proposed phase has appropriate fire truck turnaround that is not dependent on other phases.
- 18. If greenway paths are included, denote clearly on plan if proposed as public or private.
- 19. For access easements to stormwater or utility infrastructure (such as pump stations), include the following note "Contractor to ensure access easements and associated streets are fully maintained for reasonable access by maintenance personnel."

(d) Environmental Requirements (where applicable)

- 1. Floodplain information, including base flood elevation, 100-year flood boundary, floodway and floodway fringe areas, indicating source of information;
- 2. Riparian buffer information, including labels of both Zone 1 (inner 30') and Zone 2 (outer 20');
- 3. Include copy of NCDEQ buffer determination letter.
- 4. State and federal wetlands are shown on the site; with
- 5. Blue-line streams and other existing water features on the site, or are adjacent to the site and impact the site through previously mentioned buffers;
- 6. Drainage basin maps showing existing drainage basins with area and impervious broken down, and proposed drainage basin maps showing areas broken down by their destination (i.e. Pond #1, Bio-retention #4, Bypass area, etc.);

(e) Storm Drainage and Grading Plans

- 1. All existing and proposed contours shall be drawn at 1' or 2' intervals with major contours labeled;
- 2. Retaining walls shall be clearly drawn, labeled, including top and bottom of wall spot elevations; Retaining wall detail should be provided. **A Town building permit is required when 1) When adjacent to a structure, any retaining wall less than 5' in cumulative vertical relief and located closer to structure than the vertical relief, or 2) Any retaining walls providing cumulative vertical relief greater than 5' within a horizontal separation distance of 50' or less. Walls requiring a building permit shall be designed under the responsible charge of a registered design professional per the North Carolina Building Code, Section 1807.2.**
- 3. Ensure all existing and proposed storm drainage inlets and pipes are labeled with pipe sizes accordingly.
- 4. Include design chart/tables for all drainage inlets, pipe schedule, channel/swales, and dissipators.
- 5. Clearly label each outfall location and proposed outlet protection controls.
- 6. Add note that "All slopes to be vegetated with grass shall be a maximum of 3:1."

(f) General Storm Water Information Requirements (where applicable)

- 1. The overall storm water plan demonstrates the ability to treat for the site and location;
- 2. All existing and proposed storm water piping shown as well as their sizes and material type, and details on how they are to be constructed;
- 3. All existing and proposed storm water structures (curb inlets, drop inlets, manholes, and outlets) with their size, rim elevation, invert elevations, and labeling to correspond to calculations and details to show how they are to be constructed;
- 4. All existing and proposed swales for conveyance or treatment shown as well as spot elevations at the top and bottom of the swale and the linear footage of the swale (i.e. "335 LF grassed swale No. 1"), and details;
- 5. All proposed storm water BMP's or SCM's comply with the NCDEQ Minimum Design Criteria;
- 6. All BMP details are included for construction including a cross-sectional detail of each proposed BMP, and all elevations on plan and details match those in routing calculations of storm water narrative;
- 7. All outlet protection, rip-rap energy dissipaters, and their associated sizing calculations and details;
- 8. Add note on plans – "All roof drains shall be directed to the storm drain system";

- 9. Add note – “At the conclusion of the project all SCMs installed on-site must be certified by a design professional and the Town of Garner Engineering Department must receive all as-built drawings prior to receiving the certificate of occupancy.”
- 10. SCM Sheets shall include the following information.
 - Plan view of SCM, including existing/proposed contours, riser, pipes, spillway location, and outfall measures;
 - Profile/cross section showing inlet/forebay, SCM, and outfall infrastructure;
 - Risers (4'x 4' minimum), including rim/invert elevations, drawdown orifice size/elevations, foundation design, and riser steps @ 16" o.c.;
 - Draw/label water elevations for normal pool, Q1, Q10, Q25, and Q100;
 - Trash rack detail, including access hatch location/details;
 - Drain valve/handwheels, if applicable, should be located inside riser;
 - All proposed SCM landscaping, special media mix details, and installation requirements;
 - Spillway detail, including lining details, and spillway elevation;
 - Anti-seep collars and/or filter diaphragm, for any dam outfalls;

(g) General Transportation & Roadway Information Requirements (where applicable)

- 1. Site plan demonstrates conformance with Garner Transportation Plan (rights-of-way are dedicated, street sections match, sidewalk is in correct locations, etc.);
- 2. Connectivity to surrounding vacant parcels or existing streets is provided;
- 3. Street cross-sections match Town of Garner standards for the type of street;
- 4. Proposed curb and gutter types match the Town of Garner standards and are applicable for the area of the project;
- 5. Street details meet minimum design standards for Town of Garner;
- 6. Proposed cul-de-sacs meet Town of Garner minimum radii per standard details.
- 7. Plan/profiles provided for all public streets with K-values that meet rolling terrain in NCDOT Subdivision Manual for each street type.
- 8. Stop controlled intersections have a maximum rollover of 6%, or contain vertical curve to minimize transitions.
- 9. Plan/profiles include all applicable utility infrastructure for the street, including, but not limited to:
 - Watermain, hydrants, bends, ARV's, taps, reducers, clearances per COR handbook;
 - Sanitary sewer rims/inverts, pipe length/slope, clearances per CORPUD handbook;
 - Storm sewer rims/inverts, pipe length/slopes;
 - Private communication, gas, or other utility lines applicable or in conflict with the proposed improvements.
- 10. All driveways clear of drainage inlets and meet vertical design requirements in Town of Garner standard details
- 11. All proposed pavement markings to be shown and labeled for clarity. Add general note: “All pavement markings to be thermoplastic”

(h) General Water & Sewer Information Requirements (where applicable)

- 1. Utilize City of Raleigh Public Utilities Handbook for all design requirements of water and sewer utility plans.
- 2. Tie-ins and extension locations for connectivity to neighboring parcels is provided (either through construction or easements);
- 3. Add City of Raleigh Public utility details for all water/sewer infrastructure, as applicable.
- 4. Add City of Raleigh water/sewer approval blocks to utility plans for signature.

(i) Lighting Plans

- 1. Include street lighting for all public streets according to Town of Garner standards;
 - o Local and collector streets - 25' fiberglass poles (50W or 75W LED fixtures). Town approves lighting plan.
 - o Thoroughfare Streets – 30' fiberglass poles (105, 150, or 215 W LED fixtures), located behind sidewalk with appropriate clearance for non-breakaway poles. Town and NCDOT approve lighting plan.
- 2. Include private street lighting for all parking areas according to Town of Garner standards;

Section B. DATA TO BE SHOWN IN NARRATIVE AND CALCULATIONS

- 1. Storm water narrative demonstrates how site will be developed and how storm water runoff will be captured and treated to meet Town of Garner storm water ordinance and NCDEQ MDC;
- 2. Storm water narrative also includes all details about the storm water on the site, how it drains prior to the proposed development, how it will drain after the proposed development, and if any off-site drainage is being captured or if any on-site drainage is being bypassed and how the treatment over-detains to compensate;
- 3. Pipe/swale calculations included either on plans or in narrative package to justify sizing;
- 4. Basin maps show pre-developed condition and post-developed condition with clear delineation on treatment areas;
- 5. Storm water routing calculations provide clear justification for sizing of SCM's and outlet elevations;
- 6. Routing calculations provide 1-year, 10-year, and 25-year pre vs. post compliance (Post < Pre) and 100-year emergency sizing;
- 7. Nitrogen calculations on Town of Garner form;
- 8. Please enclose an O&M Agreement for any proposed water quality or water quantity SCMs, which will also require a Memorandum of Agreement at time of completion.

By signing below, I acknowledge that I have reviewed every requirement listed in this checklist and have addressed all items accordingly, or provided specific information to support which requirements may not be applicable to this project submittal.

Printed Name

Signature

Date

Plan Sheet Standard Approval Blocks

All Plan Sheets

Town of Garner
Engineering Department

APPROVED

SIGNED _____ DATE _____

Title Sheet Only

ATTENTION CONTRACTORS

The *Construction Contractor* responsible for the extension of water, sewer, and/or reuse, as approved in these plans, is responsible for **contacting the Public Utilities Department at (919) 996-4540** at least **twenty four hours** prior to beginning any of their construction.

Failure to notify both *City Departments* in advance of beginning construction, will result in the issuance of **monetary fines**, and require reinstallation of any water or sewer facilities not inspected as a result of this notification failure.

Failure to call for *Inspection, Install a Downstream Plug, have Permitted Plans* on the *Jobsite*, or any other *Violation of City of Raleigh Standards* will result in a **Fine and Possible Exclusion** from future work in the *City of Raleigh*.

Utility Plans Only (as applicable)

Public
Water Distribution / Extension System

The City of Raleigh consents to the connection and extension of the City's public water system as shown on this plan. The material and Construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook.

City of Raleigh
Public Utilities Department Permit # _____

Authorization to Construct _____

Date _____

Private
Water Distribution / Extension System

The City of Raleigh consents to the connection to its public water system and extension of the private water distribution system as shown on this plan. The material and constructions methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook.

City of Raleigh
Public Utilities Department Permit # _____

Authorization to Construct _____

Date _____

Public
Sewer Collection / Extension System

The City of Raleigh consents to the connection and extension of the City's public sewer system as shown on this plan. The material and Construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook.

City of Raleigh
Public Utilities Department Permit # _____

Authorization to Construct _____

Date _____

Private
Sewer Collection / Extension System

The City of Raleigh consents to the connection to its public sewer system and extension of the private sewer collection system as shown on this plan. The material and constructions methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook.

City of Raleigh
Public Utilities Department Permit # _____

Authorization to Construct _____

Date _____

Public
Reuse Distribution / Extension System

The City of Raleigh consents to the connection and extension of the City's public reuse system as shown on this plan. The material and Construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook.

City of Raleigh
Public Utilities Department Permit # _____

Authorization to Construct _____

Date _____