

## SECTION 10000 RECORD DRAWING CHECKLIST

All entities who construct public infrastructure, private streets, private storm drain collection systems, and/or travel lanes shall submit to Cary a record drawing set. **The record drawing submittal set must be approved prior to acceptance of the improvements and/or issuance of a certificate of occupancy.** In general, the submittal set shall consist of the following items:

- **Record Drawing Checklist** – A completed copy of this checklist in (.PDF) format.
- **Record Drawings** - A certified set of record drawings, signed and sealed by a North Carolina PE or RLA, in (.PDF) format.
- **As-Built Survey Submittals**
  - **As-Built Survey** – A certified post-construction as-built survey, signed and sealed by an NCPLS, in (.PDF) format.
  - **Survey Point File** – A comma-delimited point file of the NCPLS certified post-construction as-built survey in (.TXT) format.
  - **ACAD Survey File** - An electronic CADD drawing file of the NCPLS certified post-construction as-built survey in (.DWG) format.
  - **Stormwater Pipe and Structure Table File** - An electronic Microsoft Excel file in (.XLS) format updated from as-built survey.
- **Easement/Encroachment Submittals**
  - **Recorded Plat** – A recorded plat indicating all easements (including sight distance, greenway easements, and off-site utility extensions) and right-of-way in (.PDF) format.
  - **Off-site Easement Plat (If Applicable)** - A separate, recorded easement dedication plat for off-site utility extensions outside of the right-of-way in (.PDF) format.
  - **NCDOT Encroachment Agreements (If Applicable)** – All NCDOT encroachment agreements for the project, executed by all parties, in (.PDF) format.
- **PE Certification of Utilities (If Applicable)** - Separate 8.5"x11" sheets with certification by NCPE of construction in accordance with the water, sewer, forcemain and/or reclaimed extension permits in (.PDF) format.
- **Stormwater Control Measure Submittals (If Applicable)**
  - **Stormwater Control Measure Record Drawing** – A certified record drawing of all permanent stormwater control measures, signed and sealed by a North Carolina PE, RLA, or PLS in (.PDF) format.
  - **Certification of Engineered Stormwater Control Measures** - A separate 8.5"x11" sheet with North Carolina PE, RLA, or PLS certification of any engineered stormwater control measure(s).

The following checklist provides additional detail regarding the precise requirements for each component of the record drawing submittal set. Each blank must be initialed by the applicant as being included with the record drawing submittal set or marked N/A if not

applicable to the project. All applicable information listed below must be included with the record drawing submittal set.

### 10010 PROJECT INFORMATION

Please fill out the following project information for this record drawing checklist:

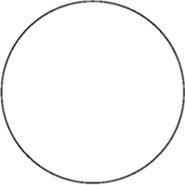
Project Name:	_____
Project Phase:	_____
Project #:	_____
Submitted by:	_____
Sealing NCPE/RLA:	_____
NCPE/RLA License #:	_____
Phone #:	_____
Date:	_____

### 10020 RECORD DRAWING COVERSHEET

The Record Drawing Plan Set shall have a coversheet including, at a minimum, the following information:

#### 10021 GENERAL INFORMATION

- \_\_\_\_\_ Project Name
- \_\_\_\_\_ Project Phase(s)
- \_\_\_\_\_ Project #
- \_\_\_\_\_ Firm Name, Address, and Contact Info
- \_\_\_\_\_ Developer/Owner Name
- \_\_\_\_\_ Vicinity Map – 500 scale with all project phases identified as well as the phase(s) applicable for the Record Drawing Plan Set.
- \_\_\_\_\_ Sheet Index
- \_\_\_\_\_ PE Utility Certification(s) – Certification(s) by NCPE of construction in accordance with the water, sewer, forcemain and/or reclaimed extension permit(s).
- \_\_\_\_\_ Record Drawing Certification - Completed, signed, and sealed by the N.C. registered PE or RLA responsible for the Record Drawing Plan Set.

<b>RECORD DRAWING CERTIFICATION</b>	
Firm Name : _____	 SEAL
Address : _____	
Name / Title : _____	
Signature : _____	
<p>I hereby certify to the best of my knowledge and belief that this record drawing is based on actual field survey information provided by _____ dated _____ and accurately represents the final condition of this project. The constructed improvements have been field verified and conform to all the provisions of the Town of Cary.</p>	
Water Permit # _____	
Sewer Permit # _____	
Reclaimed Water Permit # _____	

**10022 AS-BUILT QUANTITY TABLE**

Included on Cover Sheet shall be an As-Built Total Quantity of Infrastructure Table indicating, at a minimum, the following information:

- \_\_\_\_\_ Streets (List lengths individually: Public, Private and/or Fire Lane)
- \_\_\_\_\_ Water mains (Identify diameter, material (including wrapping and/or coating (if applicable), pressure class and length)
- \_\_\_\_\_ Sewer mains (Identify diameter, material (including wrapping and/or coating (if applicable), pressure class and length)
- \_\_\_\_\_ Storm pipe (Identify diameter, material and length)
- \_\_\_\_\_ Reclaimed water mains (Identify diameter, material, pressure class, and length)
- \_\_\_\_\_ Number of water/sewer/reclaimed services (including service diameter/material and tap type (direct/saddle))
- \_\_\_\_\_ Number of and manufacturer of valves (For each size)
- \_\_\_\_\_ Number of and manufacturer of fire hydrants
- \_\_\_\_\_ Number of and manufacturer of manholes
- \_\_\_\_\_ Other (Any additional appurtenances)
- \_\_\_\_\_ Number of stop signs
- \_\_\_\_\_ Sidewalks
- \_\_\_\_\_ Greenways & Street-side trails
- \_\_\_\_\_ Greenway structures (bridges & culverts)
- \_\_\_\_\_ Greenway signs, benches & trashcans

**10030 RECORD DRAWINGS**

The Record Drawing plan sheets shall include the following:

**10031 GENERAL**

- \_\_\_\_\_ **A.** The record drawing certification stamp (Page 10000-2) is to be placed on each sheet, the information filled in, stamped and certified by

the North Carolina registered PE or RLA responsible for the Record Drawing Plan Set.

- \_\_\_\_\_ B. Scale of drawings and bar scale
- \_\_\_\_\_ C. North arrow
- \_\_\_\_\_ D. All easements identified and dimensioned. Include legal reference (deed, BOM, page #)
- \_\_\_\_\_ E. Record drawing files in PDF format, named to indicate sheet title, type of sheet, and sheet number
- \_\_\_\_\_ F. Plan sheets in 24" X 36" or 22" X 34" format

### **10032 STREETS (Public, Private, Off-Road Greenway, Street-Side Trail, Sidewalk or Fire Lane)**

- \_\_\_\_\_ A. Horizontal alignment with radii, P.C.'s, and P.T.'s of all curves
- \_\_\_\_\_ B. Vertical alignment with centerline grades, vertical curve lengths and station and elevation of all PVC's and PVT's and centerline profile
- \_\_\_\_\_ C. Dimensioned right-of-way and street widths
- \_\_\_\_\_ D. Pavement design (actual) and typical cross section
- \_\_\_\_\_ E. Horizontal and vertical sight lines
- \_\_\_\_\_ F. Engineering Certification for retaining walls (if applicable)  
\_\_\_\_\_ Statement "built as designed" or include sealed record drawing
- \_\_\_\_\_ G. Official street names on each applicable sheet
- \_\_\_\_\_ H. Curb ramp slope labeled (from as-built survey)

### **10033 STORM DRAINAGE**

- \_\_\_\_\_ A. Plan and profiles
- \_\_\_\_\_ B. Updated pipe and structure table (from as-built survey)
- \_\_\_\_\_ C. Pipe slope and length labeled (greater than or equal to 12" only)
- \_\_\_\_\_ D. Pipe/Box/End treatment material labeled
- \_\_\_\_\_ E. Pipe shape & size (diameter or height & width) labeled
- \_\_\_\_\_ F. Box size (height & width) labeled (ex: 12'6"W x 9'0"H)
- \_\_\_\_\_ G. End treatment labeled (ex: headwall, FES, etc...)
- \_\_\_\_\_ H. Structure top\rim elevations labeled (from as-built survey)
  - 1.) Grated yard inlet—lowest elevation on top of grate
  - 2.) Slab-top yard inlet—structure surface inlet (lowest opening/weir)
  - 3.) Grated curb inlet—lowest elevation on top of grate
  - 4.) Curb inlet (old style)—surface inlet (weir)
  - 5.) Flume—flow line elevation in gutter
- \_\_\_\_\_ I. Structure invert elevations labeled (from as-built survey) —If more than one pipe enters structure, include reference to North beside elevation (SE XXX.XX'); *include all roof and area drains*
- \_\_\_\_\_ J. Dissipation pad type, dimensions & riprap size classification (if applicable)
- \_\_\_\_\_ K. Permanent stormwater control measures (SCM) labeled
- \_\_\_\_\_ L. Permanent SCM record drawing submittal, upon SCM completion (see Section 10040)
- \_\_\_\_\_ M. Post-Construction CCTV submitted and approved, including any repairs (see Standard Specification Section 8000)

- \_\_\_\_\_ **N.** Certification by NCPE of construction in accordance with the approved plans, calculations, and hydraulic grade lines on the plans (includes repairs from CCTV review comments)

### **10034 WATER SYSTEM**

- \_\_\_\_\_ **A.** Plan and profile
- \_\_\_\_\_ **B.** Pipe material and pressure class labeled
- \_\_\_\_\_ **C.** Pipe size labeled
- \_\_\_\_\_ **D.** Pipe encasement material labeled (if applicable)
- \_\_\_\_\_ **E.** Restrained joint pipe length labeled (if applicable)
- \_\_\_\_\_ **F.** Appurtenances (Valves, Fittings, Fire Hydrants, Blow-offs, Air Release Valves, Meters, Marker Balls, etc.)
- \_\_\_\_\_ **G.** Marker tape labeled (if applicable)
- \_\_\_\_\_ **H.** Separation from sanitary sewer, storm, reclaimed water and gas shown on plans
- \_\_\_\_\_ **I.** Existing pipe material when tying into an existing water main.
- \_\_\_\_\_ **J.** Existing water service material on the customer side when tying into an existing water service.

### **10035 SANITARY SEWER SYSTEM**

- \_\_\_\_\_ **A.** Plan and profile
- \_\_\_\_\_ **B.** Pipe slope and length labeled
- \_\_\_\_\_ **C.** Pipe material and dimension ratio/pressure class labeled
- \_\_\_\_\_ **D.** Pipe size labeled
- \_\_\_\_\_ **E.** Manhole rim elevations labeled (from as-built survey)
- \_\_\_\_\_ **F.** Manhole invert elevations labeled (from as-built survey)
- \_\_\_\_\_ **G.** Manhole material and coating material labeled (if applicable)
- \_\_\_\_\_ **H.** Cleanouts
- \_\_\_\_\_ **I.** Separation from potable water, storm, reclaimed water and gas shown on plans
- \_\_\_\_\_ **J.** 100-year flood plain elevation
- \_\_\_\_\_ **K.** Horizontal control (angles at manholes)

### **10036 RECLAIMED WATER SYSTEM**

- \_\_\_\_\_ **A.** Plan and profile
- \_\_\_\_\_ **B.** Pipe material and dimension ratio/pressure class labeled
- \_\_\_\_\_ **C.** Pipe size labeled
- \_\_\_\_\_ **D.** Appurtenances (Valves, Fittings, Blow-offs, Air Release Valves, Meters, Marker Balls, etc.)
- \_\_\_\_\_ **E.** Marker tape labeled (if applicable)
- \_\_\_\_\_ **F.** Separation from potable water, sanitary sewer, storm and gas shown on plans

### **10037 FORCE MAINS**

- \_\_\_\_\_ A. Plan and profile
- \_\_\_\_\_ B. Pipe material and dimension ratio/pressure class labeled
- \_\_\_\_\_ C. Pipe size labeled
- \_\_\_\_\_ D. Restrained joint pipe length labeled (if applicable)
- \_\_\_\_\_ E. Appurtenances (Valves, Air Release Valves, Meters, Marker Balls, etc.)
- \_\_\_\_\_ F. Marker tape labeled (if applicable)
- \_\_\_\_\_ G. Separation from potable water, gravity sanitary sewer, storm, reclaimed water, and gas shown on plans

### **10038 PUMP STATIONS**

- \_\_\_\_\_ A. Site plan and design drawings
- \_\_\_\_\_ B. Pump station design capacity
- \_\_\_\_\_ C. Pump type and manufacturer
- \_\_\_\_\_ D. Manhole/wet well top/rim elevation labeled (from as-built survey)
- \_\_\_\_\_ E. Invert elevations labeled (from as-built survey)

### **10039 STANDARD DETAILS**

- \_\_\_\_\_ A. The standard detail sheets from the approved construction plans.

## **10040 STORMWATER CONTROL MEASURE RECORD DRAWING**

All entities that construct engineered stormwater control measures (SCM) shall submit to the Cary Stormwater Division, an as-built record drawing set as a part of Cary's acceptance process. Record drawings must be submitted prior to acceptance of the stormwater control measure(s) and issuance of a certificate of occupancy.

### **10041 SITE DATA**

- \_\_\_\_\_ A. Acreage in total site
- \_\_\_\_\_ B. Acreage of impervious surface
- \_\_\_\_\_ C. Percent of impervious surface
- \_\_\_\_\_ D. All information from Section 10021 Record Drawing Coversheet: General Information

### **10042 GENERAL INFORMATION**

- \_\_\_\_\_ A. Copy of recorded plat (all sheets) or deed of easements
- \_\_\_\_\_ B. All information from Section 10031 Record Drawings: General
- \_\_\_\_\_ C. All information from Section 10050 As-Built Survey, items A, B, C, D, F and G
- \_\_\_\_\_ D. Tie to N.C. grid coordinate system
- \_\_\_\_\_ E. Location of benchmark with M.S.L elevations

### **10043 SCM AND STORM DRAINAGE**

- \_\_\_\_\_ **A.** Outline of 100-year floodplain, Urban Transition Buffers and Riparian Buffers
- \_\_\_\_\_ **B.** Identify all materials used for construction of SCM and storm drain
- \_\_\_\_\_ **C.** Invert and top elevations for riser structure and all catch basins, inlets and junction boxes immediately upstream and downstream from the SCM
- \_\_\_\_\_ **D.** Topographic drawing of SCM, including elevation shots, showing interior slopes, top of dam, exterior slopes to toe of slope, emergency spillway, bottom of pond, deep pools, forebay berms, shallow areas and littoral shelves
- \_\_\_\_\_ **E.** Pipe information: material, shape, slope, distance and size in diameter or height and width
- \_\_\_\_\_ **F.** Dimensions and stone class of riprap dissipation pads
- \_\_\_\_\_ **G.** Cross section of the SCM and structures with elevations
- \_\_\_\_\_ **H.** Statement of stormwater velocities at all outlets
- \_\_\_\_\_ **I.** Volume and storage capacity of SCM
- \_\_\_\_\_ **J.** As-built SCM calculations (Routing – model or hand calculations)
- \_\_\_\_\_ **K.** Soil report for soil mix in bioretention for information on phosphorus index needs to meet requirements for NCDEMLR Minimum Design Criteria (MDC)
- \_\_\_\_\_ **L.** Plant list and planting plan for bioretention cells, stormwater wetlands and wet ponds
- \_\_\_\_\_ **M.** Grass Swale – Slope of swale and cross section elevations
- \_\_\_\_\_ **N.** Level Spreader – Elevations of level spreader lips

### **10044 LICENSED PROFESSIONAL CERTIFICATION**

- \_\_\_\_\_ **A.** A separate 8.5"x11" sheet with North Carolina PE, RLA, or PLS certification of any engineered stormwater control measure(s) (as applicable), following the template provided below

**LICENSED PROFESSIONAL CERTIFICATION OF ENGINEERED  
STORMWATER CONTROL MEASURE**

Specific type of Engineered Stormwater Control Measure(s):

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I \_\_\_\_\_ as a duly licensed Professional,  
do hereby certify that the Stormwater Control Measure for the project entitled:  
\_\_\_\_\_ with Cary  
Development Plan #: \_\_\_\_\_ has been constructed within  
substantial compliance and intent of the approved construction plans, drawings,  
and specifications and that the associated infrastructure has been installed in  
compliance with the approved construction plans, drawings, and specifications.  
This statement is based upon reference and reviews of the record drawings  
prepared for this site and upon periodic field inspections and project reviews  
completed during the construction of the referenced Stormwater Control  
Measure, including a final inspection of the stormwater control measure made  
within 30-days prior to the signature date outlined below.

\_\_\_\_\_  
*Signature*

\_\_\_\_\_  
*Date*

PE/RLA/PLS REGISTRATION #: \_\_\_\_\_

SEAL:

## 10050 AS-BUILT SURVEY

The certified post-construction as-built survey that supports the record drawing set shall be submitted. The survey shall be produced in accordance with the requirements of 21 NCAC, Chapter 56, Section 1600 and include, at minimum, the following:

- \_\_\_\_\_ **A.** All easements identified and dimensioned. Include legal references (deed, Book of Maps, page #).
- \_\_\_\_\_ **B.** Horizontal tie to North American Datum (NAD83/Suffix year). This datum to be consistent with the approved project plans.
- \_\_\_\_\_ **C.** Vertical tie to North American Vertical Datum of 1988 (NAVD88).
- \_\_\_\_\_ **D.** Certificate block in accordance with 21 NCAC 56.1600, completed, signed and sealed by the North Carolina registered PLS responsible for the as-built survey.
- \_\_\_\_\_ **E.** Survey grade NAD83 coordinates and NAVD88 elevations per 21 NCAC 56.1600 for each of the following:

### STORMWATER

- \_\_\_\_\_ Structure Tops \ Rims (with elevations labeled on record drawing profile)
- \_\_\_\_\_ Structure Inverts (with elevations labeled on record drawing profile and included in survey text file)

### WATER

- \_\_\_\_\_ Valves
- \_\_\_\_\_ Fittings
- \_\_\_\_\_ Fire Hydrants
- \_\_\_\_\_ Blow-offs
- \_\_\_\_\_ Meters
- \_\_\_\_\_ Air Release Valves
- \_\_\_\_\_ Marker Balls

### SEWER

- \_\_\_\_\_ Clean Outs
- \_\_\_\_\_ Manhole Rims (with elevations labeled on record drawing profile)
- \_\_\_\_\_ Manhole Inverts (elevations only, labeled on record drawing profile and included in survey text file)

### RECLAIMED WATER

- \_\_\_\_\_ Valves
- \_\_\_\_\_ Fittings
- \_\_\_\_\_ Blow-offs
- \_\_\_\_\_ Meters
- \_\_\_\_\_ Air Release Valves
- \_\_\_\_\_ Marker Balls

**FORCE MAINS**

- \_\_\_\_\_ Valves
- \_\_\_\_\_ Meters
- \_\_\_\_\_ Air Release Valves
- \_\_\_\_\_ Marker Balls

**PUMP STATIONS**

- \_\_\_\_\_ Manholes/Wet Well Top/Rim (with elevation labeled on record drawing plan)
- \_\_\_\_\_ Inverts (elevations only, labeled on record drawing profile)
- \_\_\_\_\_ Wetwell Floor Elevation (elevation only, labeled on record drawing plan)

- \_\_\_\_\_ **F.** Survey Point File - A comma-delimited (.TXT) file of all the NCPLS certified post-construction survey points listed above in P,N,E,Z,D format (Point #, Northing, Easting, Elevation, Description). The descriptions used shall be common industry abbreviated terms (MH,CB, FH, WV, WM, CO, etc.)
- \_\_\_\_\_ **G.** ACAD Survey File - An electronic CADD drawing file of the NCPLS certified post-construction survey in (.DWG) format.

**10060 ADDITIONAL SUPPORTING INFORMATION**

The following additional information shall be submitted with the Record Drawing Submittal Set in order to be deemed complete:

- \_\_\_\_\_ **A.** A recorded plat indicating all easements (including sight distance & greenway easements) and right-of-way.
- \_\_\_\_\_ **B.** A separate, recorded easement dedication plat for utility extensions outside right-of-way or offsite (if applicable).
- \_\_\_\_\_ **C.** Any NCDOT encroachment agreements, executed by all parties (if applicable).
- \_\_\_\_\_ **D.** Separate 8.5"x11" sheets with certification by NCPE of construction in accordance with the water, sewer, forcemain and/or reclaimed extension permit (as applicable), following the template provided below.

**PROFESSIONAL ENGINEERS UTILITY CERTIFICATION**

PROJECT NAME: \_\_\_\_\_

PROJECT #: \_\_\_\_\_

PERMIT #: \_\_\_\_\_ DATE ISSUED: \_\_\_\_\_

I, \_\_\_\_\_, as a duly registered Professional Engineer in the State of North Carolina, hereby certify that construction of these permitted facilities has been completed in accordance with the approved plans and specifications.

\_\_\_\_\_  
*Signature*

\_\_\_\_\_  
*Date*

P.E. REGISTRATION #: \_\_\_\_\_

SEAL: