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.

RECORD DRAWING CERTIFICATION

Firm Name : _____

Address : _____

Name / Title : _____

Signature : _____

SEAL

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.

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, 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.** Water quality volume and elevation compared to design
_____ **J.** As-built peak flow calculations compared to pre-development for storm events required by regulation at time of plan approval.
_____ **K.** Soil report for soil mix in bioretention for information on phosphorus index needs to meet requirements for NCDEQ's 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

10045 SOIL CELL

_____ **A.** Manufacturer and model of the soil cell system
_____ **B.** Dimensions of the system (width, length, depth, elevation)
_____ **C.** Location of the ports which contain the locate wire that was placed around the perimeter of the tree root infrastructure system (include coordinates of the ports)
_____ **D.** Label underdrain location, cleanouts, inverts, material, and pipe diameter
_____ **E.** Label and identify any utility or conduit running through the system

_____ **F.** Label the species of the trees installed within the system using both common and scientific name

_____ **G**. If soil cell is designed to meet stormwater management requirements, a soils report for the media shall be submitted demonstrating that the media meets NCDEQ MDCs.

LICENSED PROFESSIONAL CERTIFICATION OF ENGINEERED STORMWATER CONTROL MEASURE

Specific type of Engineered Stormwater Control Measure(s):

_____

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)

SOIL CELL
- _____ Delineated perimeter of the soil cell system
- _____ Coordinates of corners of overall soil cell system
- _____ Locate wire port
- _____ Clean Outs
- _____ Underdrain system connection to stormwater infrastructure

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: