

## APPENDIX B-6

### Record Drawing Checklist

Effective August 1, 2010

**General:**

1. Record Drawings will show accurate locations of site grading, stormwater management, storm drains, sewer, water mains and other water appurtenances, structures, light standards, vaults, streets, sidewalks, landscaping areas, building footprints, pavement markings, property lines, easements, etc.
2. Record Drawings shall be sealed by a professional surveyor, licensed in the State of Maryland, that the locations and elevations shown have been reviewed and meet the current standards of accuracy. Any deviations shall be noted by the surveyor along with corrective action required.
3. Stormwater management plans shall be reviewed for compliance by a professional engineer licensed in the State of Maryland. The review shall include all volumes, elevations and function as compared to the approved design. Recalculation and submission of an as-constructed stormwater management report shall be performed where site modifications exceed allowances.
4. As-built CAD requirements for water, sewer and storm drains are included under CAD Standards for New Construction and Renovation Projects dated October 2009. All utility and stormwater management (public or private) system installations completed by a Developer or Contractor at the direction of Easton Utilities or the Town of Easton must be delineated on the Record Drawings in CAD format.
5. The Town of Easton requires Record Drawings in accordance with these requirements prior to release of bonds and prior to issuance of a final site approval.
6. Record Drawings – To the fullest extent possible, the record drawings should be done in conjunction with approved plans, in order to readily identify any variances from the plans. Submit prints for approval. Upon approval of the record drawings, provide three (3) sets of prints, and one (1) digital copy.
7. The following checklists shall be completed and submitted with Record Drawings.

**General Information:**

- \_\_\_ Each drawing must be submitted on minimum 24"x36" sheets.
- \_\_\_ Each drawing must contain north arrow.
- \_\_\_ Each drawing must contain survey benchmarks and other reference points.
- \_\_\_ Each Drawing must contain the Engineer's and Surveyor's Certification Statement.
- \_\_\_ Provide a location map.
- \_\_\_ Provide property lines with boundary, easements.

**Title Block Information:**

- \_\_\_ Project Name, including "Record Drawings".
- \_\_\_ Name, address, telephone number and fax number of the individual preparing the plan.
- \_\_\_ Scale matching original plans.

- \_\_\_\_\_ Date of survey measurements.
- \_\_\_\_\_ Name of the Town, County and State.
- \_\_\_\_\_ Signature and seal of Maryland Professional Engineer or Professional Land Surveyor.

**Roadways:**

Edge of Pavement:

- \_\_\_\_\_ Show deviations from the approved plans for the width of pavement. Confirm distance from Centerline of the Street R-O-W at all curve tangents. Show notation of the field measurements on the as-built layer.

Centerline of Pavement:

- \_\_\_\_\_ Show any deviations of the centerline to the Street R-O-W.
- \_\_\_\_\_ Confirm elevations as profiled and at all grade breaks, and note on the as-built drawing layer.
- \_\_\_\_\_ Show deviations from the plans on the profile of the center of pavement.  
(Confirm at intervals to match design plans and record on profile.)

Flow line of curb:

- \_\_\_\_\_ Confirm as-constructed elevations at intervals per the design plans (at each curve tangent and at grade changes).
- \_\_\_\_\_ Confirm grades between each grade break and at sumps.
- \_\_\_\_\_ Provide centerline stationing for all curb cuts.
- \_\_\_\_\_ Show deviations from the proposed grades on the profile of the flow line of the curb.

Sidewalks:

- \_\_\_\_\_ Show any deviations from the planned location from the curb, width and grade of the sidewalks.
- \_\_\_\_\_ Measure and record cross slopes at 25 foot intervals.

Ramps:

- \_\_\_\_\_ For each ramp, confirm the location, length, grade of ramp and cross slope.

Structures within the Street R-O-W:

- \_\_\_\_\_ Confirm the location and rim elevation of all storm drain manholes and inlets as well as communications, traffic control or utility structures within the street. Include water meters and sanitary sewer cleanouts, street lights, electric boxes, communications boxes, gas cutoffs, gas vents and other at grade features. Show any deviation from the plans.

Street lights:

- \_\_\_\_\_ Locate all and denote type.

Grading:

- \_\_\_\_\_ Confirm general conformance to plans of site and lot grading. For deviations, include spot elevations and contours within Street R-O-W and beyond sidewalk area.

Survey Markers:

- \_\_\_\_\_ Confirm the location, type and elevation of all survey markers installed within and at the edge of Street R-O-W.

Traffic Control:

- \_\_\_\_\_ Confirm the location of lane paint, crosswalks or other lines, signage (Stop, Yield, Street Name, etc.) and traffic signalization. Show deviations on the As-built drawing layer.
- \_\_\_\_\_ Confirm the placement of parking spaces. Show deviation from plans.

Landscaping:

- \_\_\_\_\_ Confirm the location, size and type of each tree planted within the project.
- \_\_\_\_\_ Show deviations from plans.

**Sewer Collection System:**

Pipes:

- \_\_\_\_\_ Detail as constructed location, size and type of each sewer.

\_\_\_ Detail pipe slope and elevations for profile and plan.

**Manholes:**

- \_\_\_ Measure length from manhole centerline to manhole centerline.
- \_\_\_ Establish inverts of all pipelines.
- \_\_\_ Establish frame elevation.

**Laterals:**

- \_\_\_ Locate lateral with cleanout.
- \_\_\_ Establish distance from low manhole to lateral on sewer perpendicular to cleanout.
- \_\_\_ Establish distance from lower manhole to cleanout wye branch.
- \_\_\_ Note length of lateral to cleanout from sewer main.

**Water Distribution:**

**Pipes:**

- \_\_\_ Confirm as constructed location of main site and material type for each pipe run.
- \_\_\_ Note lengths from major components (i.e. tees, crosses, bends, sleeves, etc.) in plan view. Include a connection reference with each length recorded (e.g., "Tee to Sleeve"). If necessary, note any As-built lengths in profile that cannot be shown in the plan view (e.g., water main offset).
- \_\_\_ Note service locations, size and material (1", 1 1/2", and 2"). Locate valves, meter pits, curb stops, etc.
- \_\_\_ Establish distance along water main run to tap from known station, hydrant, main valve, etc.
- \_\_\_ Provide detail drawing of hydrant assembly. Include hydrant, bends, water main offset that cannot be clearly dimensioned on plan view.
- \_\_\_ Detail pipe slope and elevations for profile and plan.

**Storm Sewer:**

**Manholes/Inlets:**

- \_\_\_ Measure length from manhole centerline to manhole centerline or manhole centerline to inlet centerline.
- \_\_\_ Establish inverts material and size of all pipelines.
- \_\_\_ Establish frame and grate elevations for inlets. Establish inlet type, (grated inlet, cog, combination inlets, yard inlets or others).
- \_\_\_ Document elevation for front and back of inlet at centerline.

**Outfalls:**

- \_\_\_ Confirm type of outfall
- \_\_\_ Locate and confirm elevation at end walls, flaired and section, etc.
- \_\_\_ Confirm rip rap type, size and shape including approximate depth.

**Roadside Swales:**

- \_\_\_ Confirm location of swale and contours.
- \_\_\_ Provide spot grades of swale centerline at minimum 50 foot intervals.
- \_\_\_ Confirm swale cross section.

**Stormwater Management Record Drawings**

**Submittal Requirements:**

- \_\_\_ Record Drawing survey plan in accordance with the items of this Checklist.
- \_\_\_ Supporting calculations in accordance with the items of this Checklist.
- \_\_\_ A copy of the completed Construction Record Drawings Survey Submittal Checklist.
- \_\_\_ Geotechnical engineer's report, if applicable.

**Record Drawing Plan Requirements:**

**Title Block Supplemental Requirements:**

- \_\_\_ Name, address, telephone and fax numbers of party responsible for maintenance of the stormwater facility (i.e., owner, or maintenance corporation representative).

**Delineate and properly label the following (as applicable):**

- \_\_\_ Roads adjoining the stormwater facility.

- \_\_\_ Property lines with boundaries adjacent to the stormwater facility.
- \_\_\_ Easements (i.e. drainage, utility, access, etc.) adjacent to the stormwater facility.
- \_\_\_ Maintenance access to and around the stormwater facility.
- \_\_\_ Maintenance set aside area location and dimensions.
- \_\_\_ Location of maintenance marker in the forebay to indicate if sediment has been removed.

Provide the following as it relates to the stormwater facility's storage volume:

- \_\_\_ Record Drawing contours of the stormwater management facility including forebays, micropools and elevations below permanent pool at 1-foot intervals based on the datum of the approved plan.
- \_\_\_ Pond bottom elevations on a fifty-foot grid with high and low points noted.
- \_\_\_ Lowest top of bank elevation at fill for embankment/combination pond or lowest top of bank elevation for excavated pond. *The acceptable top of bank elevation may be no lower than the design elevation for top of bank.*
- \_\_\_ Flow line and cross slopes of swales or ditches.
- \_\_\_ Actual cross section showing elevations, inside slopes, benching, top width and backslope, as applicable (to scale).
- \_\_\_ Elevation of permanent pool.
- \_\_\_ Calculations of the volume of the pond as constructed with incremental storage and cumulative storage volumes in the cubic feet for each one-foot elevation contour. *Note: The allowable variances from the design volume of the basin is ten percent.*

Provide the following information related to the inlet and outlet structures within the stormwater facility. *Note: The allowable variances for invert elevations on any structure is 0.1ft.*

- \_\_\_ Diameter and material of all inlet and outlet pipes.
- \_\_\_ Invert elevations of all inlet and outlet pipes.
- \_\_\_ Dimensions (length, width, depth, d50) for all areas of rock outlet protection.
- \_\_\_ Dimensions and materials of outfall structures.
- \_\_\_ Profile through principal spillway showing inverts and dimensions of all pipes, weirs, orifices, risers and other appurtenances, as applicable (to scale).
- \_\_\_ Cross-section of emergency spillway (to scale).
- \_\_\_ Profile through emergency spillway (to scale).
- \_\_\_ Calculations of outflow from the stormwater management facility for all design storms. Routing computations must be based on the record drawing volumes and elevations for the facility.

Stormwater quality and subsurface systems shall require periodic documentation during their construction to adequately prepare record drawings. Provide the following information related to these systems.

- \_\_\_ Diameter and material of inlet/outlet and underdrains.
- \_\_\_ Location and elevation of setting bed fabric on subsurface structures with all pipe data for connected piping and chambers.
- \_\_\_ Chamber and sump size, inverts, location and separation.
- \_\_\_ Inspection port locations.
- \_\_\_ Top of stone bed and fabric and clearance to paving.
- \_\_\_ Denote type of Environmental Site Design (ESD) feature and represent area, length, width, depth, slope, etc. for conformance with design detail.
- \_\_\_ Document all living plantings within an ESD.

General Site Plans:

- \_\_\_ Document private water and sewer lines and services. Denote line size, materials, etc.
- \_\_\_ Document pipe inverts and slopes for storm drains and sanitary sewer.
- \_\_\_ Locate all manholes, cleanouts, meters, valves, etc.
- \_\_\_ Document all stormwater management features as defined herein.
- \_\_\_ Document location of all parking systems, streetlights and sidewalks including confirmation of compliance with ADA requirements.
- \_\_\_ Record elevations of finished handicap ramps and denote grades at all changes of slope.
- \_\_\_ Document all building structure and fixed site features shown on approved plans.
- \_\_\_ Document by measurement stormwater management systems inclusive of environmental site design features. Refer to prior requirements for such systems.

- \_\_\_\_\_ Verify site contours and provide periodic spot elevation as constructed. Document that facility as constructed does not encroach or impact on other private property.
- \_\_\_\_\_ Illustrate rights of way and easements.

This checklist completed by \_\_\_\_\_ Date \_\_\_\_\_