

## CHAPTER 2

### CONSTRUCTION RECORD DRAWINGS & DEVELOPMENT CERTIFICATIONS

#### 2.0 GENERAL

The purpose of Construction Record Drawings (CRD) is to provide the City with a permanent record of public facility construction and comply with the requirements of State law. Deviations in the approved plan and as-constructed data shall be marked on the CRD for review and acceptance by the City. The drawings and/or certifications also provide verification that facilities are installed in accordance with the appropriate specifications.

The City requires Construction Record Drawings and/or certifications for all public facilities, and some specific private construction to insure compliance with requirements.

A. Submittal Requirements:

The CRD should be prepared on the approved plans, with additional as-constructed information specified herein. It is acceptable for another consultant other than the designer to prepare the CRDs. In this event, contact Development Construction for minimum criteria. As-built elevations that deviate from the approved plans should be clearly distinguished by strike-through of the plan grades and as-built elevations added in bolder text.

B. Certification Statement:

The following CRD certification statement shall be placed on the cover sheet of the mylars and prints submitted to the City:

1. Construction Record Drawing (CRD) PREPARING PROFESSIONAL.

MY FIRM MEASURED THE AS-INSTALLED LOCATIONS AND ELEVATIONS OF THAT PORTION OF THE IMPROVEMENTS WHICH CAN BE MEASURED FROM THE SURFACE AND THAT THOSE MEASUREMENTS:

- A. WERE TAKEN IN THE MANNER AND TO THE ACCURACY SET FORTH IN THE PUBLIC FACILITIES MANUAL, AND
- B. HAVE BEEN INDICATED ON THE FOLLOWING SHEETS ACCURATELY AND IN THE MANNER WHICH DISTINGUISHES THIS AS-BUILT INFORMATION FROM THE AS-DESIGNED INFORMATION AND THAT
- C. ANY ADDITIONAL INFORMATION FURNISHED BY THE CITY HAS BEEN ACCURATELY TRANSCRIBED ONTO THESE CRD'S.

FIRM NAME: \_\_\_\_\_

NAME, TITLE LICENSE TYPE AND NUMBER: \_\_\_\_\_

C. City Review:

City staff will review the CRD to insure all required information is included. Items constructed beyond specified tolerances (see Table 2-1) may require plan revisions or analysis to insure the facility functions as intended.

**2.1 LOT GRADING CERTIFICATION**

A. General:

A Rough Grading Certification is required for residential subdivisions prior to plat recordation. The certifications must be provided and sealed by a Professional Engineer or Certified Land Surveyor in accordance with the certification form provided in the appendix.

B. Tolerances:

Rough grading tolerances are specified in Chapter 5 – Drainage, and on the Certification Form, located in the Appendices. In the event the constructed grades are not within the specified tolerances, a plan revision may be required.

If an alternate drainage pattern (direction of flow, utilization of swale, etc.) is constructed by the Contractor, a standard plan revision must be submitted and approved by the development review section. Upon approval, the engineer or surveyor may certify construction is within the specified tolerances for the approved plan revision.

The City will accept a lot grading CRD in lieu of a plan revision for rough grading that exceeds the approved grades in a manner that enhances lot grading and maintains the approved drainage pattern. In these situations, the engineer or surveyor shall provide a modified lot grading certification and four (4) copies of a lot grading CRD. The modified lot grading certification should state the minimum slopes are provided, and describe the revisions to the approved plans. The lot grading CRD should clearly depict the revised design grades, by strike-through and bold text. This lot grading as-built will be processed by Development & Permits as a plan revision for subsequent use by builders for the final lot grading.

C. Certification Exceptions:

Lot grading certifications are not required for commercial subdivisions. SDMP and farmette-type lots will require certification of lot grades within 50' of the building area only.

## 2.2 PUBLIC UTILITIES

A. Submittal Requirements:

1. Four (4) prints of the CRD's required prior to Utility Activation, submit to Development Construction of Department of Development & Permits to process for review.
2. The CRD is to include only the plan and profile sheets pertinent to Public Utilities (water, sanitary sewer, forcemain and pump station).
3. One (1) final signed print of the CRD is required. Some changes made to be identified at utility final inspection, therefore, submit final print once any changes are complete and the activation will occur.
4. An electronic version of the CRD's on CD is required once the prints are approved by inspection staff. It is preferred that the electronic submission be in AutoCAD format. If the AutoCAD file of the originally approved electronic plans cannot be provided, then contact an Engineering Technician in Development Construction for an acceptable alternative. In addition to the electronic drawing file, an image file is required for each sheet submitted in PDF or TIFF format. The as-built coordinate data for all sanitary sewer manholes is to be provided and manholes redrawn to actual coordinate data. Submit CD immediately following the Utility Final Inspection.

B. Construction Data Requirements:

1. General

The consultant will make plan view changes (horizontal) on the CRDs for any sanitary manholes that are out of tolerance and profile (vertical) changes for water or sewer that is out of tolerance. (Refer to Table 2-1)

2. Sewer Mains

The consultant will be required to field survey all sanitary sewer manholes and provide elevations of rims and inverts and indicate slopes of gravity lines.

3. Water Mains

The consultant will provide a valve information table on the CRDs to include *Size, Manufacturer, Date Set and Joint Type* (Development & Permits inspector will provide this data to consultant). The valve table is to also include blank spaces for *Depth, # of Turns, and Open Direction* (Maintenance & Operations M&O will fill in this data in at a later date).

All horizontal bends, vertical offsets and corp stops (water service taps) that are not perpendicular to water main shall also be accurately located on the plans using station & offset from downstream sanitary manhole. The Development & Permits Inspector will collect this data and provide it to the consultant prior to submittal of the CRDs.

4. Hydrants

The consultant will provide a Hydrant Information Table on the CRDs to include *Size, Date Set, and Manufacturer*. (Development & Permits inspector will provide this data to consultant) The Hydrant Table is to also include blank space for *Open Direction, # of Turns and Depth* (M&O will fill in this data at a later date).

<b>Feature</b>	<b>Who Provides</b>
Field survey of sewer rims and inverts and coordinates of Sanitary Manholes	Consultant
Valve data: Size, Manufacturer., Date, Joint Type	City Inspector provides to consultant
Valve data continued: Depth, # of turns, Direction	M & O at final inspection
Above ground features station & offset (hydrants, meters,...)	M & O at final inspection
U/G features station & offset (bends, corp stops)	City Inspector provides to consultant
Out of tolerance facilities (vertical or horizontal)	City Inspector provides to consultant
Final Drafting of all CRD data	Consultan

To view an example of the proposed format:

<http://www.cityofchesapeake.net/Government/City-Departments/Departments/Department-of-Development-and-Permits/construction-engineering/streets-drainage-constr-record-drawings-examples.htm>

## 5. Pump Stations

Information for pump stations shall include all drawings submitted with the plan approval with construction record information shown on the drawings.

- a. Internal piping and mechanical layout with sizes, dimensions, material and measurements from the structure.
- b. Architectural drawing of the structure showing sizes, dimensions, and materials.
- c. Dimensioned site plan showing how the station external piping, driveway, landscaping, other utilities, and drainage are situated on the site.
- d. All pump criteria as to present and ultimate capacity, head conditions, RPM's, impeller size, pump type and motor size.
- e. Field surveyed elevations of all floor slabs, influent and effluent lines, and pump suction and discharge piping.
- f. Wiring schematics for pumping station.

## 2.3 STREETS & DRAINAGE

### A. Submittal Requirements:

1. Three (3) prints of the CRD's required for review prior to the Streets & Drainage final inspection.
2. The CRD must show the entire approved plan to include all plan revisions and field changes. The landscaping plan does not have to be included.
3. One (1) final signed print of the CRD may be required subsequent to final inspection if any revisions are identified by inspector.
4. An electronic version of the CRD's on CD is required once the prints are approved by inspection staff. It is preferred that the electronic submission be in AutoCAD format. If the AutoCAD file of the originally approved electronic plans cannot be provided, then contact an Engineering Technician in Development Construction for an acceptable alternative. In addition to the electronic drawing file, an image file is required for each sheet submitted in PDF or TIFF format. Submit CD immediately following the Streets & Drainage Final Inspection.

**B. Construction Data Requirements:**

1. Final constructed elevations shall be provided for all ditch, pipe and structure inverts and rims. Generally as-builts grades are to be provided wherever invert and rim grades are reflected on the design plans.
2. Impoundment/detention/lake/BMP facilities: If the excavated volume is  $\geq$  1000 cy, provide: Top of bank and toe of slope at 50' intervals and excavated volume.
3. No Street & Drainage CRDs are required if there are  $<$  5 structures and  $<$  300' of public or subdivision storm drain facility (pipe or ditch).

To view an example of the proposed format:

<http://www.cityofchesapeake.net/Government/City-Departments/Departments/Department-of-Development-and-Permits/construction-engineering/streets-drainage-constr-record-drawings-examples.htm>

---

## **2.4 CONSTRUCTION DATA TOLERANCES**

**A. General:**

Table 2-1 (based on HRPDC Regional Construction Standards) indicates some requirements for the various components of the CRD. These requirements are intended to supplement the specifications. In the event of a conflict, the most restrictive shall govern.

**B. Tolerance Deficient Construction:**

CRD with construction deficiencies that exceed established tolerances are subject to rejection. Such deficiencies in construction and proposed corrective action should be identified by the developer's representative, to expedite CRD approval.

**TABLE 2-1**

	RECORD INFORMATION			Construction Tolerance
	Survey Accuracy	Construction Measurement	Record Drawings	
Manhole Rim	X		Note Elevation on Plans	± 0.1 ft.
Manhole Invert	X		Note Elevation on Plans, Note 1	± 0.05 ft. *
Gravity Sewer Slope			Note on Plans	± 0.02%
Manhole Location	X		Note 2	± 1.0 ft.
Fire Hydrant	X		Note 2	± 1.0 ft.
Valve	X		Note 2	± 1.0 ft.
Valve Depth	X		Note 1	± 0.1 ft.
Air Vent	X		Note 2	± 1.0 ft.
Fitting		X	Note 2	± 1.0 ft.
Offset		X	Note 1, 2	± 1.0 ft.
Lateral		X	Note 2	± 1.0 ft.
Lateral Depth		X	Note 1	± .25 ft.
Corporation Stop		X	Note 2	± 1.0 ft.
Meter	X		Note 2	± 1.0 ft.
Blow Off Assembly	X		Note 2	± 1.0 ft.
Pressure Pipe Location		X	Note 1	± 1.0 ft.
Pressure Pipe Depth		X	Note 1	± 1.0 ft.
Pump Station Elevations	X		Note 3	± 0.10 ft.
Pump Station Dimensions		X	Note 3	± 1.0 inches

\* The total deviation of both inverts at each end of a particular line shall be within ± 0.08 ft.

- Notes:
1. The record drawings must be adjusted to reflect the actual elevation if the variance from the approved plans is more than 10% of the vertical scale.
  2. The record drawings must be adjusted to reflect the actual location if the variance from the approved plans is more than 10% of the horizontal scale.
  3. The record drawings must show dimensions and elevations as identified in the PFM.
  4. Record drawing information must be shown in a manner to easily distinguish it from the original design.

## 2.5 SITE PLANS

### A. Public Utilities:

If the site plan requires an extension to a public sewer main, water main or force main, a CRD is required prior to activation. All submittal and construction data requirements under Public Utilities in this chapter must be met. No CRD is required for the meter vault and appurtenances.

### B. Streets & Drainage

If there are ≥ 5 structures or ≥ 300' of public or BMP outfall facility (pipe or ditch), then CRDs are required. All submittal and construction data requirements under Streets & Drainage in this chapter must be met.

C. Site Plan Certification

Prior to issuance of a Certificate of Occupancy, a Site Plan Certification Statement is required. (Note: There is an ongoing effort to bring inspection and/or certification in line with other municipalities. Development & Permits is considering input received from the consultant community. Once the requirement is developed further it will be forwarded to all stakeholders. Any questions contact Tom Crawford 757 382-6498)

No Certificate of Occupancy (CO) shall be issued for a building constructed on a site which is subject to the site plan requirements of City Code 18-701 until the following have been completed in regard to the site.

Having provided visits to the site appropriate for the various stages of construction, to the best of my professional knowledge and belief the site construction substantially conforms to the approved final site plan known as: \_\_\_\_\_ and all approved plan revisions. Reasonable site inspection and inquiries during and after the construction of the project were made by me or a qualified agent to ensure:

The onsite pavement is consistent with the approved site plan.

Onsite storm drainage has been provided in accordance with the site plan to ensure positive site drainage, no adverse impacts to adjacent property, the detention/BMP facility is constructed as well as all drainage facilities are installed consistent with the approved plan.

On-site water and sewer were installed between City right-of-way and up to building structures.

Site plan is in substantial conformity to include private street name signs, ADA facilities (handicap ramps, etc.) and pavement markings.

Note any deviations from the certification:

\_\_\_\_\_

\_\_\_\_\_

By: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
VA Registered Professional Engineer