Specifications for Digital Submissions of Civil Engineering Plans

Version 1.3

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City of Rancho Cordova
Public Works Department
2729 Prospect Park Drive
Rancho Cordova, CA 95670
(916) 851-8700

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1. INTRODUCTION

The City of Rancho Cordova requires As-Built Civil Engineering/Improvement Plans (referred herein as record drawings) to be submitted in digital (e.g. AutoCAD) format. As identified in the conditions of approval for acceptance in the City of Rancho Cordova Development Related Process and Fees booklet, this requirement is in addition to the hard copy and electronic (PDF) submissions.

The intent of this document is to describe the digital record drawing requirements in terms of the content, format, structure, and standards before submittals can be considered meeting the City's conditions of approval and thereby officially filed. Meeting these requirements will help the City stay updated with the latest improvements by speeding processing time while also improving the accuracy of captured information. The digital files will be used for reference and the recorded signed hardcopy will continue to be the official document.

2. PURPOSE

The City of Rancho Cordova uses Geographic Information Systems (GIS) to store and manage data about various aspects of the City. For example, the GIS system contains inventories of infrastructure improvements such as bikeways, street lights, curb ramps, and drainage facilities. A GIS allows multiple users to view geographic features in a map format and identify tabular information associated with those features. For example, storm drain pipes contain tabular information such as material, diameter, length, and installation date. However, in order for the GIS to be fully utilized by the City, it must be as accurate and current as possible.

The purpose of this document is to communicate the standards for digital file submissions in order facilitate ease of conversion of record drawing data into the City's GIS System. This prerequisite will allow the City to more easily update and maintain improvement records in the GIS and therefore to allow the City of Rancho Cordova's GIS to stay both accurate and up to date.

3. FORMAT REQUIREMENTS

The format requirements for digital submission of civil engineering plans are one of the following:
- **.DXF or *.DWG (AutoCAD 2005 or later)*
- *ESRI File Geodatabase (10.x or later)*
- *ESRI Shapefile*

4. SUBMISSION REQUIREMENT

In order for the information in the drawings to be added to the City's GIS in an accurate and timely manner, the following standards are required for digital submission.

1. *All CAD or GIS files are to be submitted in the California State Plane, Zone 2, North American Datum of 1983 (NAD83) coordinate system, US Survey feet.*

2. *CAD Submissions should include:*

    1. *A BASE drawing/file including reference features such as right-of-way, roadway centerline, street names, parcel lots, lot numbers, curbs and sidewalk.*

    2. *A CIVIL drawing/file including utilities such as pipes, manholes, storm drain inlets, sewer and water pipes and service lines, street lights, and conduit.*

3. *BASE drawing/file shall include an appropriately named layer delimiting the extent of all project work including any grading (e.g. "limit of work" or "project boundary". The layer entity should be a closed polyline (polygon).*

4. *For CAD, no externally referenced files (XREFS), attachments, or third party layers should be included. The only exception is for external reference between the two drawing/files mentioned in submission requirement 2 above.*

5. *Drawing/file integrity shall follow the following guidelines, where applicable:*

    1. *Line work should be constructed without deliberate gaps, slivers, or overruns.*

    2. *Lines delimiting areas should be constructed as closed polylines (CAD) or polygons (GIS) whenever possible.*

    3. *Entity types shall be individually isolated on separate layers with logically defined names. If the drawing/file contains both existing and proposed features, these should be on separate layers (e.g. EX_DRN_MH, PROP_DRN_MH, EX_SWR_PIPE, PROP_SWR_PIPE, etc.)*

    4. *Blocks will not be permitted as a valid data element for point feature symbols (explode all blocks).*

    5. *No additional "Layouts" for plan sheets should be included other than "Model". Layout elements such as north arrows, scale bars, and title blocks should not be included in the model.*

    6. *Units will be decimal feet.*

    7. *Drawing scale will be 1:1.*

    8. *Drawings will be oriented due north.*

5. FILE NAMING CONVENTION

File names for CAD drawings and GIS files shall be appropriately assigned based on the corresponding project numbers.

For example (CAD Submissions):

Capital Improvement Projects	Development Projects
CP17-2999_BASE.DWG	*PDR-2017-001-01_BASE.DWG*
CP17-2999_CIVIL.DWG	*PDR-2017-001-01_CIVIL.DWG*

As GIS file structures typically include separate files for each entity types (drain pipes, manholes, service lines, street lights, etc.) the BASE & CIVIL drawing file naming convention for CAD submissions is not applicable. Instead, each entity type should be provided on separate GIS files when it does not makes sense to merely distinguish entity types within a given layer. For example, separate GIS layers make sense when the tabular information recorded for the entity is substantially different.

For example (GIS Submissions):

Capital Improvement Projects	Development Projects
CP17-2999_Boundary.SHP	*PDR-2017-001-01_Boundary.SHP*
CP17-2999_DrainageManholes.SHP	*PDR-2017-001-01_StreetLights.SHP*
CP17-2999_DrainagePipes.SHP	*PDR-2017-001-01_StreetConduit.SHP*

When project numbers are not known or applicable the project name shall be used in file names and may be abbreviated.

For example: SomeDevelopmentVillage4_BASE.DWG or SomeDevVill4_CIVIL.DWG

6. MEDIA REQUIREMENTS

Media should be clearly marked with the project name and number. The following methods of data transfer are considered acceptable for digital submission:

- *CD Rom*
- *Thumb Drive*
- *Email*
- *FTP (must be the submitting party's FTP account, not the City's FTP account).*
- *Cloud Storage Services (Dropbox, Google Drive, etc.)*

Note: the City will not accept FTP or cloud storage service submittals which require an account for access. File compression may be used if the file is self-extracting and does not require the use of special software.

All digital data will require an accompanying metadata file in ASCII (.txt) format using the same convention as the civil plans being submitted. The following information should be included in the file as shown in this example:

> **Development or Project Name:** *Some Development II Village 4*
> **City Project Number:** *PDR-XXXX-XXX-XX*
> **File Names:** *PDR-XXXX-XXX-XX_BASE.DWG, PDR-XXXX-XXX-XX_CIVIL.DWG*
> **Date:** *MM/DD/YYYY*
> **Contact Name:** *Mr. John Doe*
> **Contact Phone:** *(123) 456-7891*
> **Contact Email***: jdoe@someengineeringco.com*
> **Supplemental Information:** *Landscaping plans included in civil drawing are proposed and included for reference only.*

7. DIGITAL FILE SUBMISSION PROCEDURE

All digital file submissions need to include a completed Digital Submission Form provided at the end of this document and also available on the City's [Public Works Development Services & Permitting](#) webpage. The digital file for record drawing should be submitted to the A) the project manager (Capital Improvement Projects) or B) Development Services Staff (Development Projects) at the following address:

> *Department of Public Works*
> *Rancho Cordova City Hall*
> *2729 Prospect Park Drive*
> *Rancho Cordova, CA*

For questions regarding digital submissions or to obtain an email address for email submittals please contact the Public Works Department at 916-851-8710.

Digital Submission Form

Development Services
Department of Public Works
City of Rancho Cordova

Please refer to the City's Specifications for Digital Submissions of Civil Engineering Plans for guidance on how to meet the requirements specified on this form. The document is available on the City's [Public Works Development Services & Permitting](#) *webpage.*

Project Name: _____

Project Number: _____

Company Name: _____ *Contact Name:* _____

Contact Phone: _____ *Contact Email:* _____

Submission Media: ☐*Email,* ☐*CD,* ☐*Other:* _____

If Email, to whom submitted: _____ *Submission Date:* _____

Electronic Files Provided: ☐*PDF,* ☐*TIFF,* ☐*TXT,* ☐*Other:* _____

Digital Data Provided: ☐*CAD,* ☐*GIS,* ☐*Other:* _____

Digital Data Checklist   (Internal Use Only)

☐	*Coordinate system is California State Plane Zone II, NAD83*	
☐	*Drawing Scale is 1:1, units are in feet, orientation is north*	
☐	*Entity types are on separate layers with logical names*	
☐	*Includes layer delimiting project boundary / limits of work*	
☐	*Includes BASE and CIVIL files for all improvements and file names correspond to City project number or name.*	
☐	*No externally referenced files (XREFS)**	
☐	*All line work is constructed without unintended gaps, slivers or overruns. Lines delimiting areas are closed polylines (polygons in GIS) whenever possible.*	
☐	*No blocks used for individual point feature entities.**	
☐	*No layout elements or layouts other than the model**	
☐	*All media is clearly marked with project name and number and includes associated ASCII metadata file.*	

*Requirement applicable to CAD submissions only.