

West Springfield CADD Plan Submission Guidelines

Introduction

The Town of West Springfield maintains all maps in a digital format within a Geographic Information System (GIS). A considerable amount of staff time is devoted to keeping these maps up to date, while maintaining the integrity of the map information. Although a majority of engineers currently use Computer-Assisted Design and Drafting (CADD) software, subdivision plans have traditionally been submitted in paper format. A CADD-based submission standard is being proposed in an effort to minimize the potential for degradation of map accuracy, as well as minimizing the amount of effort that is necessary in order to convert subdivision plans into a GIS format.

General Guidelines

The submission of subdivision plans in a CADD format is not mandatory. If plans are not submitted in a CADD format, the existing paper-based subdivision plan specifications must be adhered to & a processing fee will be charged. This fee will be waived whenever a plan is submitted in the CADD format specified within these guidelines. It is the discretion of the Town Planner to reject a CADD-based plan if it is found that the format does not fall within these guidelines.

File Format, Delivery Medium, and Content

File Format

CADD files must be delivered as ASCII version of AutoCAD drawing exchange files (.DXF). This file format has become a de-facto standard for exchanging CADD files between CADD software and it can be imported by most GIS software. The ASCII version of DXF is a larger file size. However, if there are problems with the file, it can be examined in a text editor, perhaps making it possible to fix the problem.

It is acceptable for the DXF file(s) to be compressed into the Zip (.ZIP) format, which is a de-facto standard for exchanging compressed data.

Delivery Medium and Documentation

Files must be delivered on windows or MS-DOS formatted 3.5" diskette or CD-ROM. Submissions will also be accepted in ZIP format as attachments sent to rwerbiskis@west-springfield.ma.us

The delivery medium or e-mail message must be labeled/titled with project identifying information (e.g., street name, address, municipal project number, subdivision name, etc) and the format and version of the computer operating system on which the media was written. Accompanying documentation in a text (.TXT) file must include:

- Name & Release Number of the CADD software on which the DXF file was created.
- Format and version of the computer operating system on which the file was created.
- The same project identifying information as on the delivery media.
- A list of the file names on the delivery with a description of what is in each file. Certification that the delivery media is free of known computer viruses, the name of the virus scanning software and the date of its most recent update, and the date on which the virus scan was performed.

File Content

The following practices must be followed in creating the CADD file:

- CADD file model space must be the source of the DXF file.
- Linear features must be continuous
- Linear features must not be broken by text
- When creating features that will be represented as polygons in a GIS, CADD users must snap end points of lines together and must make sure polygon areas for the same feature type (e.g., property boundaries) do not overlap.
- Features destined for use in a GIS must be separated onto layers separate from features that will not be used in the GIS. In particular, details, insets, and title block information should be isolated on their own layers.
- Features must be organized into layers, with one layer for each separate linear and point feature type in each of the following categories of map features: water system, sanitary sewer system, storm drainage collection system, topographic, planimetric.

The CADD file used to produce the DXF file for import into West Springfield's GIS should conform to the following practices, and corresponding ones in Microstation (taken partly from A/E/C CADD Standard, p. 4 – see references):

Avoid using groups

Avoid multiline line types

Do not explode blocks representing point features before exporting to .DXF

Do not use hatching objects, splines, ellipses

Do not use external drawing references

Do not use dimension objects

Do not use layer 0 for features destined for a GIS database

- Do not rotate the UCS (User Coordinate System)
- Do not change the origin
- Do not use MTEXT (Multi-line Text) - Use DTEXT (Dimensional Text)
- Do not use dimensions unless they are exploded into simple text (DTEXT)
- Do not use hatches
- Do not use leaders (The line leading from a feature being labeled to the label)

File Naming and Symbolization

Each feature in the CADD .DXF file submitted will be named and symbolized as described in the CADD Standard Map Features table.

Spatial Reference

The Town of West Springfield maintains a set of Tax Maps, which are available free of charge online in the Adobe Acrobat™ format. In addition to a regular set of tax maps, a special set with property boundary reference numbers is also available. Each property boundary intersection in town has a unique reference number. All plans submitted in accordance with the subdivision regulations, whether paper or CADD format, must include at least three of these points, along with the reference number as text annotation. If three of these points do not fall within the map area, it is acceptable to place points with a tie (distance & bearing reference) to the location of a boundary point.

Tax Maps and Property Boundary Reference Tax Maps are available online at the following location: www.west-springfield.ma.us/gis/maps.htm

REFERENCES

“A/E/C CADDD Standard” (release 1.8), published by U.S. Army Engineer Research and Development Center Waterways Experiment Station as Technical Report CADDD-99-1, October 1999. Available at <http://tsc.wes.army.mil/Products/standards/aec/intro.asp>

“Integrating CADD Data with Geographic Information Systems using AutoCAD and Arc/Info Software”, by Pul T. Cedfeldt and Mark A. Scott, published by U.S. Army Engineer Research and Development Center Cold Regions Research and Engineering Laboratory, March 2000. Available from http://www.crrel.usace.army.mil/techpub/CRREL_Reports/html_files/Cat_S.html

“Draft MassGIS Standard for CADD Files Submitted for GIS Database Update” (version 2.0), by Neil MacGaffey, June 2001.

CADD Standard Map Features

NOTE: Because Microstation-based CADD systems cannot use alpha-numeric layer names, DXF files created in Microstation should use the suggested MICROSTATION NUMBERS

LAYER CATEGORY/NAME	DESCRIPTION	MICROSTATION NUMBER	SYMBOL TYPE
CADASTRAL FEATURES			
C-PROP	Property Boundary	1	Line
C-EASE	Easement	2	Line
C-ROW	Right-of-Way Boundary	3	Line
C-DIM	Property Dimension	4	Text
C-REF	Property Corner Reference Point	5	Point/block
C-REF-TXT	Property Corner Reference Number	6	Text
PLANIMETRIC FEATURES			
PB-EOP	Edge of Pavement	7	Line
P-SWALK	Edge of Sidewalk	8	Line
P-BLDG	Building Outlines	9	Line
P-WATER	Stream & Pond Edges	10	Line
P-WET	Wetland Boundaries	11	Line
P-TOPO	Topographic Contours - Interval	12	Line
P-TOPO-IDX	Topographic Contours - Index	13	Line
P-TOPO-TXT	Elevation Value	14	Text
P-SPOT	Spot Elevations	15	Point/block
P-WALL	Retaining Walls	16	Line
P-RAIL	Rail Road Line	17	Line
P-FENCE	Fence Line	18	Line
P-SHRUB	Shrub or Shrubbery	19	Point/block
P-CL	Road Centerline	20	Line
P-FOREST	Forested Area	21	Line
P-TREE	Tree (>= 6" diam)	22	Point/block
WATER UTILITY			
W-MAINS	Water Mains	23	Line
W-SERVICE	Water Services	24	Line
W-VALVE	Water Valves	25	Point/block
W-REDUCER	Water Reducer	26	Point/block
W-WELL	Well	27	Point/block
W-MPIT	Meter Pit	28	Point/block
W-STORE	Water Storage Unit	29	Point/block
W-PUMP	Water Pump Station	30	Point/block
SEWER UTILITY			
S-MAINS	Sewer Mains	31	Line
S-UNDER	Sewer Under Drains	32	
S-SERVICE	Service Lines	33	Line

S-MANHOLE	Manholes	34	Point/block
S-PUMP	Pump Station	35	Point/block
S-WET	Wet Well	36	Point/block
STORM DRAIN UTILITY			
D_MAIN	Mains	37	line
D-MANHOLE	Manholes	38	Point/block
D-CB	Catch Basin	39	Point/block
D-CULVERT	Culvert	40	Point/block