

## CADD NOTE 5

Chapter 1 – “Computer Aided Design (CAD) Standards” of Part 641 “Drafting and Drawings” in the National Engineering Handbook provides various standards to use in developing CADD drawings. The purpose of this CADD Note is to clarify and expand upon some of the standards in that document as well as provide tips on utilizing the standards.

### TEXT SIZES

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All text that may be reduced in size should have 0.06 inch minimum height after reduction. Titles should be all capitals, with 0.09 inch minimum height after reduction. Table 5.1 below shows small, medium, and large text sizes to use for the most common sheet sizes used.

**Table 5.1. Text Sizes**

Sheet Size	Text sizes (inches on plotted output)		
	Small	Medium	Large
A (8.5"x11")	0.08	0.12	0.16
L (8.5"x11")			
B (11"x17")			
D (22"x34")	0.12	0.18	0.24

It is suggested that only 2 sizes be used on a single drawing; either small and medium or medium and large depending on the complexity of the drawing. Dimension text and notes should use the smaller of the two and title text should use the larger of the two. Arrow sizes should use the “medium” size listed above in both cases.

When entering a text height in AutoCAD's model space, you must enter it in real world coordinates, not plotted units. For example, if you want 0.06 inch text and you are plotting at a 1"=100' scale, you will need to enter 6 (0.06 x 100) as your text height. Eagle Point's settings of horizontal scale and text size handle the conversion for you when you use any Eagle Point function that generates text.

The text style used should be consistent throughout the drawing. The suggested style to use is NRCS\_Text (based on ROMANS font) with a 15° oblique angle.

If the Missouri NRCS tools are installed, the command SETTEXT is available to assist you in setting the appropriate text sizes as well as dimension text and arrow sizes. It is explained below.

## USING SETTEXT

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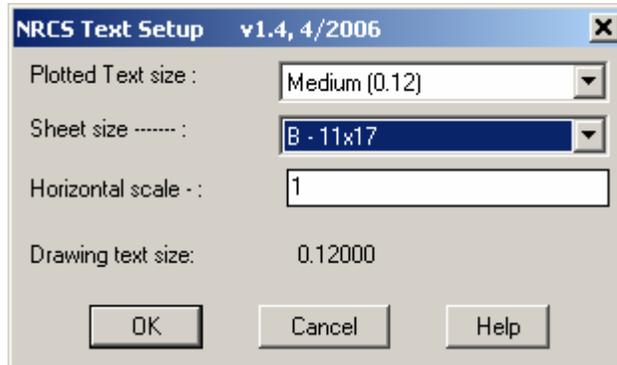
To use the SETTEXT tool, use one of the following methods:

MENU: **NRCS\_MO, Set Text...**

COMMAND: **settext**

ICON: 

A dialog box will then appear as shown below.



You should then do the following:

1. Select the desired text size for plotted output (small, medium, or large).
2. Select the sheet size you intend to plot on.
3. Enter the horizontal scale.
4. Press OK.

The drawing text size will be computed and set. Text style will be set to NRCS\_Text (based on ROMANS font) with a 15 degree oblique angle. Dimension variables to set arrow size and text size and style will be set accordingly.

# CADD STANDARDS

## **LINEWEIGHTS (via Plot Styles)**

The use of plot styles allows the implementation of standard lineweights by setting the color of objects. Several plot styles have been defined for your use. These are detailed below.

### **NRCS MO**

The table below defines the relation between Autocad colors and lineweights as defined in the NRCS MO.ctb plot style. This is the plot style that should be used most frequently.

AutoCAD Color	Print Color	Lineweight		Use for the following:
		inches	mm	
1 (red)	black	0.007	0.1778	Dimensions, centerlines, grid dots, etc. (slightly thinner than white).
2 (yellow)	black	0.014	0.35	Titles and object lines requiring more emphasis than white.
3 (green)	black	0.020	0.50	Border lines and object lines requiring more emphasis than yellow.
4 (cyan)	black	0.028	0.70	Object lines requiring more emphasis than green.
5 (blue)	black	0.014	0.35	Stream channels (same weight as yellow)
6 (magenta)	black	0.010	0.25	(same weight as white)
7 (white)	black	0.010	0.25	Most text, notes, tables, heavy grid lines, etc.
8 (dark gray)	black	0.000	0.00	Hatching and thinner lines than light gray
9 (light gray)	black	0.004	0.1016	Object lines that should be thinner than red.
10 (red)	red	Object lineweight		As-Built lines (print red on a color printer).
11-249	black	Object lineweight		
250 (dark gray) to 254 (light gray)	light to dark gray	Object lineweight		Use 251 for intermediate contours 254 for index contours.
255 (white)	white	Object lineweight		Text and linework on top of an aerial photo

### **NRCS MO 6color**

The plot style “NRCS MO 6color.ctb” is basically the same as “NRCS MO.ctb” above with the differences shown in Table 5.3 below. This provides a way to use some basic color in your plots.

AutoCAD Color	Print Color
50 (yellow)	yellow
90 (green)	green
130 (cyan)	cyan
170 (blue)	blue
210 (magenta)	magenta

# CADD STANDARDS

## **NRCS MO color**

The plot style “NRCS MO color.ctb” has every color assigned to “Use object color” and “Use object lineweight”.

## **NRCS MO objLW**

The plot style “NRCS MO objLW.ctb” is basically the same as “NRCS MO.ctb” above with the differences being that all colors are assigned “Use object lineweight” instead of a set value.

## **NRCS MO x50%**

The plot style “NRCS MO x50%.ctb” is basically the same as “NRCS MO.ctb” above with the difference being that all lineweights are roughly half the standard weight. This should be used when plotting a sheet half its intended scale to keep the lineweights from being too thick.

## **NRCS MO x200%**

The plot style “NRCS MO x200%.ctb” is basically the same as “NRCS MO.ctb” above with the difference being that all lineweights are roughly double the standard weight. This should be used when plotting a sheet twice its intended scale to keep the lineweights from being too thin.

## **LAYERS**

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Layers allow various drawing features to be separated. A standard set of layers has been developed which is too extensive to tabulate here. Refer to Appendix F in “Chapter 1 – Computer Aided Design (CAD) Standards” of “Part 641 Drafting and Drawings” in the National Engineering Handbook. This details the layer naming convention to use. The basic structure is comprised of up to 4 parts separated by periods as follows:

D.MMMM.mmmm.dddd

where: D = discipline code (e.g., C for civil site earthwork)

MMMM = major group (e.g., Topo for topography)

mmmm = minor group (e.g., Ognd for original ground)

dddd = additional descriptor (e.g., Indx for index contours)

One way to utilize these is to use the STDPROP command to find an object type you desire which in turn will have standard properties (including layer) associated with it.