

# CMW CADD PRODUCTION WORKFLOW

Version 1.0

Code: CMW-CADD-STD-07

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# 1 - CREATION OF A DRAWING (for example Floor Plan drawing)

# 1.1 – Using SPS

The project manager assigns the project to an architect or the relevant engineer to supervise it. The architect starts by creating the Floor Plan using the CMW SPS Program.

This program will create a new DWG file, model and/or paper space-sheet.

a sps			
	دة الأشغال العسكرية COMMAND OF MILITARY CREATION OF CADD MODEL	قیاہ WORKS	Version 2.7
Current Project Code LF-015-09 Select Project Code LF-015-09 Select Drawing type Design Drawings	CMW Internal Code : 3015-00	Current Darwing type DESIGN Current Discipline Architectu Select Sheet Type	ral
Choose Discipline Architectural Choose Model Files Floor Plan Press for User Codes	Find modelfile name of the code :	Choose Discipline Designator 2	(optional)
Click here to see the Model Name Copy Model Template to My Folder	Open it in AUTOCAD	Click here to see the Sheet Name	Open it in AUTOCAD
User manual Models lists A Open Projects List	EC Symbols NCS module 4 NCS Notations	Text Size Calculator Cancel	Naming Check

# **1.1.1 - Selection of the project**

#### 1.1.1.1 - If this is the *first* time

If this is the first project the architect should select the project code provided by the project manager in "**Select Project Code**". This will read the text file with the name of the project from:

...\CMW\_Resources\projectscodes

and populate the internal code number and its name.

Next, the architect will type in the facility number in the field "**Enter Facility Number if any**". This will create a file curproj.txt under the under the SPS ProjectPath folder and records in it the project code, project name, and the drawing number currently defined. If no facility number is included, then the system will assign 00 as the facility number. For example:

		ة الأشغال العسكرية COMMAND OF MILITAR	قیاد Y WORKS	Ve	ersion 3.
	C	REATION OF CADD MODEL	AND SHEET FILES		
Current Project Code	LF-015-09	CMW Internal Code : 3015-55			
Select Project Code	LE-015-09	Enter Facility number If any	Current Darwing type	DESIGN	
	Refresh		Current Discipline	Civil	
Select Drawing type		PROJECT NAME	Select Shee	t Tune	
Choose Discipline	TEST PRO	JECT		<u> </u>	
choose biscipline	-				

"LF-015-09", "TEST PROJECT", "3015-55".

# 1.1.1.2 - If this is the *second* time

If this is not the first time the system simply reads the file curproj.txt and displays the previously used project code, drawing number and name.

#### 1.1.2 - Selection of the drawing type

Specify whether DESIGN or AS-BUILT drawing

#### **1.1.3 - Selection of the discipline**

#### 1.1.3.1 - If this is the *first* time

The architect should select the discipline he is working on by selecting it from the "**Choose Discipline**" field. This will then create a file curdiscipline.txt locally and records in it the current discipline

Example: Architectural

#### 1.1.3.2 - If this is the *second* time

If this is not the first time the system simply reads the file curdiscipline.txt and displays the discipline used in the previous session.

#### 1.1.4 - Selection of the Model File

To create the model file for the Floor Plan, press "Choose Model file" and select the option for *Floor Plan*.

If no model file is selected the system will display a message "Please Select which model file you want to copy" when you try to create a drawing.

#### **1.1.5** - Entering the four user digits

Optionally the architect can use four digits for reference by typing in the digits with the "**Press for User Codes**" button: (*i.e. XX-XX*) See <u>Annex 6</u>

For Floor Plan, Roof Plan, Reflected Ceiling Plan, Equipment Plan, and Area Calculation Plan

The four digits will be: XN-PN

X will be B for Basement F for Floor

N will be the number of the floor or basement or the part number

🛱 Architectural	
Drawing Type Floor	Floor/basement Number
Part Number	Apply

For example if you have an Architectural plan of Floor 1, Facility 01 and you need to define 7 different model-DWG-files, then you must create 7 different drawings and use the "part number" 1 to 7 and you will get files named like

3015-01-AFP-F1-P1.DWG 3015-01-AFP-F1-P1.DWG 3015-01-AFP-F1-P2.DWG 3015-01-AFP-F1-P3.DWG 3015-01-AFP-F1-P4.DWG 3015-01-AFP-F1-P5.DWG 3015-01-AFP-F1-P6.DWG 3015-01-AFP-F1-P7.DWG

For Architectural models, the maximum part number is 9.

#### For Elevation, Detail, Legend, and Schedule

The four digits will be: XN-PN

X will be E for Elevation D for Detail L for Legend S for Schedule N will be the number Elevation, Detail Legend and Schedule or the part number

#### For Section

The four digits will be: XX-PN

XX will cross section AA BB CC DD EE FF II JJ N will be the part number (1 2 ...) (if the plan is subdivided into parts)

If you are using another discipline (not Architectural) for example Civil, then the "**Press** for User Codes" dialog allows you to enter two digits x2:

TheTwo	o First Digits	The Tw	vo Second Digits	
33	•	55	•	

This means you can create more than 9 model-drawings, of the form 3015-01-CAF-01-01.DWG 3015-01-CAF-01-02.DWG ... 3015-01-CAF-33-55.DWG

# 1.1.6 - Copy the model file template to the local directory

The model templates are created and stored under the server directory. When the architect/engineer selects the model file Floor Plan and presses "**Copy Model Template to My Folder**" the template "Floor Plan.dwg" is copied to the local directory.

"ProjectPath"\PROJECTS\"project code"\DESIGN\"discipline"\MODEL\_FILES\

(if the current drawing type is DESIGN)

The ProjectPath setting is defined in the SPS.ini configuration file (see the installation document <u>CMW-CADD-STD-Installation</u> for more information on Preparing the Production Environment).

The new model file can be opened in AUTOCAD by pressing "Open it in AUTOCAD".

For more information on model files (units, origin, naming convention, contents, etc.) see document <u>CMW-CADD-STD-01</u>.

# 1.1.7 - Log in to CADconform

To start drafting using CADconform select the CADconform tool bar

4-	DB		n - A> -	⊜ ₹			-	AutoCAD 201	0 - NOT FOR	RESALE Dra	wing1.dwg				i <u>vne a k</u> eywi
B	File	Edit	View	Insert	Format	Tools	Draw	Dimension	Modify	Parametric	Window	Express	Help	CADconfo	m
Home	Inse	rt An	notate	Parametric	: View	Manage	Outpu	it Express	Tools 🗖						
Draw	Modify	Layers	Annotati	on Block	Properties	× Utilities	Clipboa	rd		_	_	_	_	_	_
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6	)¢C	<b>∄∎</b> 0		_		• 🗳	*Ø fi	ByLayer		•	— ByLayer	•][[-	— ByL	ayer 🔹	ByColor

If CADconform does not appear across the top be sure that the 'Menu' tool bar is turned on:



Select "Log In" from the CADconform menu

Licenced to:	Altiva Software
User Login:	cmw
Password:	×04
Remember	my password and auto-login
Data Source:	CMW_Architectural_Models

Type the username and the password (both should be "cmw") and choose the required Data Source, in this example CMW\_Architectural\_Models.

CADconform will then load with the Architectural database for use with Architectural discipline model file drawings.

#### 1.1.8 - Open the CADconform Draft tool bar

Click the Draft icon on the CADconform User tool bar (or the Ribbon if you have loaded that interface)



Select the feature table you will be working with in this case Floor\_Plan

Feature Tables	*	Table Source:	CMW_Architectural_Models	
Area_Calc		branded Tables;		
Demolition_Plan Details		Name	Foor Plan	
Elevations	-	Description	Floor Plan	
Equip Plan Floor_Plan	-	Version:	1.0	
Legend		Created:	Wed Mar 28 12:00:00 2012	
Ref_Ceil_Plan		Last Modified:	Wed Mar 28 12:00:00 2012	
Schedule	-	Local Cache:		
t III t		Entries:	123	
Brand				
Automatically David				

Note: Drawings created using SPS will be Branded to the particular standard they should use, so this step would be skipped automatically.

# 1.2 – Creation of the Floor Plan Model

# **1.2.1 - Drawing simple linear features (i.e. Walls)**

Select *Walls* from Floor\_Plan table



To draft wall centerlines click on Wall centerlines



This will set the layer of the wall centerlines with its symbology



Then you can start drawing. Enter the measurement in METERS as all the drawings units are meters. No scaling takes place for linear features

# **1.2.2 - Drawing Linear features with a line style scale**

When you draw lines that have a line style you should know the final plotting scale. This will define the LTSCALE to be used to have the correct line style presentation. See the line style guideline and enter the line style scale as global scale factor.

1

Linetype filters			Last	Delete
Show all linetypes	¥ [	Invert filter	Curren	t Hide details
iument Linetype: ByLaye	et			
Linetype	Appearance	Description		3
lyLayer		<u> </u>		
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0\$DGN Style 2		Dgn Style 2		
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Details	·	<ul> <li>Dasned hiplif</li> <li>Chain double</li> <li>Sixteenth line</li> </ul>	dashed Global scale factor: Current object scale:	1.0000 1.0000

Line scale factors for each scale

1:10	0.1
1:20	0.2
1:30	0.3
1:50	0.5
1:100	1
1:200	2
1:300	3
1:400	4
1:500	5
1:1000	10

# 1.2.3 – Drawing True Dimension Symbols

True dimension Symbols are like doors and windows whose dimensions are in meters and they can be scaled to have any other dimension.

For doors and Windows, their symbols are all to scale. Draw a symbol for example Door Double and measure its dimensions. If needed you may scale it to fit the required measurements. Otherwise you have to draw it at scale; or create a symbol with the required measurement and ask CMW to include it in the standard.

To scale symbols for Architectural discipline are stored as Architectural\_Objects that you can trigger by selecting the **Floor Plan/Symbols/Architectural\_Objects** 

Refer to the Symbol and Objects lists from ("AEC Symbols" button in SPS) to find out the required symbols.



For example to place a door symbol click on Doors

And choose the Door Symbols library



Select the	right door symbol	
	/	
Select Block		
-		
Library: AEC Do	ors objects	▼ Browse
iaht		
	/	
Blocks		
Block Name	Block Description	
DOR 18R	Right Door,180 Degree Swing	
DORBER	Right Bifold Door	
DORDBR	Right Double Door	
DORDER	Right Double Egress Door	
DORFSR	Right Single Full Swing Door	
DORSHR	Right Single Hinged Door	
DORSPR	Right Single Pivot Door	
DORUDR	Right Uneven Double Door	
the o Table 24		
sible: 8, 10tal: 24.		UK Cancel

This will place the door symbol with its real measures here 200 cm = 2m



# 1.2.4 – Placing a symbol that is Not to scale

Each discipline has a symbol library with its name for example Architectural\_symbols

Refer to the Symbol and Objects lists from ("AEC Symbols" button in SPS) to find out the required symbols.

Follow the same procedure as placing the symbols to scale . Then enter the scale factor until it fits the drawing



# **1.2.4.1 - Architectural Symbols**

- Door symbols are placed on A-DOOR-SYMB layer
- Door identifier is placed on A-DOOR-IDEN layer
- Windows symbol are placed on A-GLAZ-PRHT layer
- Window identified symbol is placed on A-GLAZ-IDEN layer
- Room Identifier Symbol is placed on A-FLOR-NUMB
- Other architectural symbols and objects are placed in A-ANNO-SYMB layer

#### 1.2.4.2 - General Symbols

Some symbols that can be used by several disciplines are in each symbol library of each discipline.

See <u>Annex 5</u> for the list of these symbols.

All the symbols are placed in ANNO-SYMB layer.

#### **1.2.4.3 - Structural Symbols**

Structural symbols are gathered from AEC and NCS as well as CMW symbols.

To access the symbols press on symbols from the feature table for the following symbols:

- *Structural symbols*: These are the AEC symbols they can be viewed from the "**AEC Symbols**" button in SPS
- CMW\_Structural\_symbols: See <u>Annex 5</u> Concrete, Metals, wood plastic composite, exterior improvements

All the symbols are placed in S-ANNO-SYMB layer **except** the following:

- Column I.D. tags (horizontal) is placed in S-GRID-HORZ-IDEN
- Column I.D. tags (vertical) is placed in S-GRID-VERT-IDEN

#### 1.2.4.4 - Landscape Symbols

- *landscape symbols:* a collection of landscape symbols.

All the symbols are placed in L-ANNO-SYMB layer

#### 1.2.4.5 - Surveying Symbols

- Survey Symbols: this is a combination of:
- the AEC survey symbols ("AEC Symbols" button in SPS and see survey symbols)
- the CMW surveying symbols (see <u>Annex 5</u>)

All the symbols are placed in V-ANNO-SYMB layer.

#### **1.2.4.6 - Electrical Symbols**

- *CMW Electrical\_symbol:* from the feature table, select the required symbol. To place text select "Text" and type in the required text and adjust the location
- AEC Electrical symbols: for symbols that do not exist in the CMW Electrical symbols you can choose from the AEC Electrical Symbols directly accessed from the AEC Electrical Symbols feature table
- All the symbols are placed in E-ANNO-SYMB layer.

#### 1.2.4.7 - Other disciplines Symbols

All the remaining disciplines have the AEC symbols. That can be selected from the model files table. And can be previewed from the "**AEC Symbols**" button in SPS.

All the symbols are placed in ANNO-SYMB layer.

#### 1.2.5 - Add Annotations

The following fonts are considered :

- **Monotext** font for schedules and some cases in title blocks. This font provides text with evenly spaced characters
- **Proportional** font for general notes, labels, and title blocks. It creates text with characters that are proportionally spaced
- **Slanted** font to be used where text needs to be easily distinguished from other text
- dmw\_romant for Titles
- mj for block annotation

To add annotation you should know the scale of the final plot

Select the annotation from the CADconform drafting tool palette, for example "General notes and general remarks"



This will set the layer and will set the text style.

Home Insert Annotate Parametric View           Home Insert         Annotate         Parametric         View           AaBbCa         AaBbCa         Annotative         0.2000         0.2000	Manage Output Express Tools	ditor	Columns Symbol Field
Style	Formatting *	Paragraph 🔹 🕷	Insert
		F 💩 沿 🗐 🕐 🗛 Standard	- 🖌 Standard -
a Q ☆ B a A-ANNO-NOTE	- 🖉 🗿 🖴 🗖 🗖 ByLayer	= ]] ByLayer = ]] ByL	ayer =][[ByColor +]

The user has to enter the size of the text according to the scale of the final plot. There is a tool in the SPS program to calculate the correct size for the text based on the plot scale. Select the "**Text Size Calculator**" on the main SPS dialog to open this tool.

The user needs to know what size the text will be in the plot and what scale. By using the Text Size Calculator the user enters the scale and the text size in the plot in mm



Then the calculator provides the text size to enter in the drawing.

#### 1.2.5.1 - Text Placement

Text in the drawings should follow as much as possible the guidelines provided in the NCS Notations module that can be triggered from the "NCS Notations" button in SPS.

#### 1.2.6 - Add Dimensions

To add dimensions use the Draft tool palette. The General Information of all the models contains an Interior dimension feature and/or an Exterior dimension feature. However first we need to define the scale to be used.

#### **1.2.6.1 – Setting the Drawing Scale**

Open the Drawing Scale dialog from the Draft tool palette.



Select or enter the scale to be used and Save it to the drawing.

A 3733-00-AFPP.o	lwg				- <b>-</b> X
Current Drawing Sca	le Scale: Scale Labe	1.00000		Save	Delete.
User Defined     Allowed Drawing Sc.	F	hom Botder Riel		Annotation Sca	sle
Multiple Scales			_	Save	Delete
Focus Item Description	r				
Applies the current dra linestyles).	awing scale	to all scaleable	eleme	nts (i.e. text, blocks	and custom

If more than one scale is defined in one CAD file, then each scale can be defined in the "Multiple Scales" section of the Drawing Scale dialog box, separated by commas. If Annotation Scale is being used, it will automatically populate as the user changes between different AutoCAD Annotation Scales.

Defining multiple scales effectively means that all features in the CAD file can be interpreted at any of the multiple scales defined. This can create ambiguity if only specific areas of the drawing are at different scales and should be used with caution.

Although features are allowed at any of the multiple scales for matching purposes, they are only ever drafted or checked at the active scale. For more examples of this, see the YouTube video located - <u>http://www.youtube.com/watch?v=xB4ENMj\_yro</u>

# **1.2.6.2 – Selecting the dimension feature**

Select the Interior Dimension feature. This will set all the required properties for the dimensioning including the layer and the dimension style.



Note: Unlike previous versions of the CMW CADD Standards you should not change the dimension style.

If there are exterior dimensions in your drawing choose the Exterior dimension feature, however some model files have only the Interior dimension feature. In this case you can also use it to place the exterior dimensions as both are placed on the same layer

#### **1.2.6.1 - Dimension placements guidelines**

Notation in the drawings should follow as much as possible the guidelines provided in the NCS drafting conventions (page 19). This document can be opened from the "NCS module 4" button on the SPS program dialog.

# 1.2.7 - Add Patterns

To add patterns from Draft tool select the pattern outline. For example: carpet pattern



This will set the layer where the pattern outline will be placed

🚱 File Edit View	Insert Format	Tools Dra	w Dimension
	2 - 6 0	145	· > 1 4 9
🛛 📚 🖓 📿 🗣 🔞 🖬 A-	FLOR-PATT		<ul><li>✓ ≫ €</li></ul>
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Then from CADconform draft select the patterns



This will display all the available patterns from the standard.



To preview the patterns see the document accessed via the "AEC Symbols" button on the SPS program dialog.

Selecting a pattern feature will start the placement command for that pattern. The scale for the pattern will be defined by the current active drawing scale (see section 1.2.6.1 in this document for information about the drawing scale).

# 1.3 – Adding Schedule, Elevations, Sections, and Legend

From the SPS program select Schedule, Details, Legend, Elevations, or Sections. Then press "Copy Model Template to My Folder".



This will copy, for example, the Schedule template to the local folder with its correct naming convention, i.e. 900101\_A-SHF1XX.

Drawing of features will be carried out through the CADconform Drafting tools as above.

For Legend, lines can be drawn in their respective model files and then copied to the Legend model file.

# **2 - CREATION OF THE PLOTTING SHEET**

Once the Floor Plan, Sections, Details, Schedule, and Legend model files are ready, the composition of the sheet file can be done by triggering the CMW SPS Program.

2.1 -	Creation	of x-reference	sheet file
-------	----------	----------------	------------

CREA	TION OF CADD MODEL AND	SHEET FILES	
Current Project Code LF_001_07	DMW Internal Code : 9001	_	Creation of a new Project By the Project Manager
Enter Project code and Click here	Enter Facility number If any	Current Discipline	Architectural
Choose Discipline	PROJECT NAME	Select Shee	at Type
	5 ME33	Fhan	<u> </u>
Choose Model Files		Choose Discipline All Architectural	Designator 2 (optional)
Enter 4 Digits User Code (Optional)		Enter Sheet Seque	
Click here to see the Model Name	-	Click here to see the She	et Mame
Copy Model Template to My Folder		Copy the Sheet Template to	
Select the sheet type Se	elect the designator E	nter the sheet se	rial Copy the sheet

This will copy the sheet template to the local folder:

"ProjectPath"\PROJECTS\"project code"\DESIGN\"discipline"\SHEET\_FILES

(if the current drawing type is DESIGN)

The ProjectPath setting is defined in the SPS.ini configuration file (see the installation document <u>CMW-CADD-STD-Installation</u> for more information on Preparing the Production Environment).

The new sheet file can be opened in AUTOCAD by pressing "Open it in AUTOCAD".

For more information on sheet files (sizes, naming convention, plotting, etc.) see document <u>CMW-CADD-STD-01</u>.

Then the user attaches the content of the Floor Plan, Schedule, Legend, Elevations, Details to the sheet file model as an XREF. There are 4 sizes A0, A1, A2, and A3.



Open the layout to be used for plotting.

The border texts are **NOT** filled in by the SPS program. You need to fill them in yourself.

At this time you XREF in all the drawings from the disciplines.

The user creates as many viewports as needed to place all the components Floor Plan, Sections, Details, Schedule, and Legend and arranges these in the sheet file.

Be sure to change and enter the relevant elements in the marginal information such as sheet number, revisions, etc.

Then the plot is sent directly to the plotter by selecting only the plotter and not changing any settings.

Plot - A	M			?
Page setup			/	Elearn about Plotting     Plot style table (pen assignments)
Name:	<none></none>		- Add	monochrome.ctb 🛛 🗸 💋
Printer/plotter				Shaded viewport options
Name:	HP LaserJet 2100 PCL6		Properties	Shade plan Re displayed
Plotter: Where:	HP LaserJet 2100 PCL6 - Windows System Driver - by A>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>			Quality Normal V
Description:			7 MN-X	Plot options
aper size			Number of copies	Plot object lineweights
A4			v 1 🗘	Plot with plot styles
lot area		Plot so	ale	Hide paperspace objects
What to plot:			to paper	Plot stamp on
Layout	*	Scale:	Custom	Save changes to layout
lot offset (or	igin set to printable area)		1 mm 💙 =	Drawing orientation
X: 0.00	mm Center the plot		0.001 upit	OPortrait
	1000			⊙ Landscape >
γ: 0.00			Scale lineweights	Plot upside-down
Desuisu				

# 4 - CREATION OF SITE PLAN IMPORTED FROM SURVEY SECTION

#### 4.1 - Creation of Site Plan

Survey section will provide the following model files according to the segregation in the model list: <u>CMW-CADD-STD-02.xls</u> under ...\Standard\_documents and referring to <u>Survey\_section\_layers.doc</u> under ...\Standard\_documents also:

- s\_survey\_and mapping
- s\_existing\_airfield lighting
- s\_existing communication systems
- s\_existing utilities plan
- s\_existing HTCW utilities plan
- s\_existing electrical utilities plan

Using SPS, create the corresponding model file (i.e. Survey and Mapping).

Copy the contents of s\_survey\_and\_mapping into the new Survey and Mapping model file.

Use CADconform to confirm the file complies with the CMW CADD Standard.

Then create the sheet file for the site plan and reference the relevant model files.

#### **5 - CREATION OF ROAD PROFILES IMPORTED FROM SURVEY SECTION**

#### 5.1 - Creation of Road Profiles

Survey section will provide the different road profiles as drawing files, i.e.

- road\_profile\_1
- road\_profile\_2
- etc.

Create Civil Profiles model files from SPS and assign the number of the profile in the 01 using the user four digits (i.e. 900100\_C-PR01XX).

Copy the contents of the s\_road\_profile\_1.dwg into the new 900100\_C-PR01XX file.

Create the sheet to produce the profile x-reference all the model files.

Plot the profile.

# **6 - CREATION OF DEMOLITION PLAN**

#### 6.1 - Creation of Demolition Plan

Example: The creation of an Architectural Demolition file for the Floor Plan

Create a model file Demolition Plan called for example 3000-01-AXD-F9-P1.

Open the Demolition model file for Floor Plan and x-reference the Floor Plan.

Draw line to be demolished over the one in the Floor Plan.

Draw area to be demolished and assign proper hatching.

Then create the sheet file and x-reference the Demolition model file.

Then select all the layers of the Floor Plan x-referenced and change their color to a light gray

# 7 - QUALITY CONTROL OF THE CADD DRAWING

#### 7.1 – Quality Control as per CADD Deliverable document

For Quality Control, refer to the "CMW Deliverables Specification" document code: <u>CMW-CADD-STD-06</u> under ...\Standard\_documents.

#### 8 - CONVERSION OF EXISTING DRAWINGS

#### 8.1 – How to convert existing drawings to CMW standard

For existing drawings the conversion process steps are as follows:

- Use the SPS program to create the empty model files
- Then copy the content of the existing drawing into the corresponding model file
- Use CADconform check/fix tool to fix incorrect objects and verify all objects match the CAD standard

NOTE: Some objects may need to be redrafted using the CADconform draft tool.