

Backing Frame Explained - Style 3 Materials

I-Sketch User Training



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Backing Frame Explained - Style 3 Materials

User Knowledge

In order to use a Customers Designed Drawing Frame there are certain steps that need to be taken before you are ready to use it within I-Sketch.

Although I-Sketch users do not require to have a knowledge of how to use the various CAD packagers, i.e. AutoCAD and Microstation, to create Isometrics, if they require to customize or create a drawing borders for use within I-Sketch they will need to be familiar with how these systems operate.

This step by step guide is aimed at users who can create the required border and wish to use it in I-Sketch

Materials Section

Pipeline Properties

Welding and Cut List Section

DRAWING AREA									
<u>Drawing Area</u>									

MATERIAL LIST - FABRICATION				
ITEM NO.	SIZE	ITEM CODE	DESCRIPTION	QTY

MATERIAL LIST - ERECTION				
ITEM NO.	SIZE	ITEM CODE	DESCRIPTION	QTY

WELDING LIST				
WELD NO.	SIZE	TYPE	SHEET / FIELD	LOCATION

PIPELINE PROPERTIES				
<u>Pipeline Properties</u>				

WELDING AND CUT LIST SECTION				
<u>Welding and Cut List Section</u>				

TITLE DRAWING NO. PROJECT NO. DATE SCALE SHEET NO. OF SHEETS DRAWN BY CHECKED BY APPROVED BY DATE	REVISIONS <table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> </table>																	NOTES THIS DRAWING IS THE PROPERTY OF ALBAG LTD AND MUST NOT BE COPIED OR USED WITHOUT THE WRITTEN CONSENT OF THE COMPANY	PROJECT NO. AREA STATION DRAWN BY CHECKED BY APPROVED BY DATE	ALBAG LIMITED STURGE ROAD, SANDHURST, WILTS. WILMINGTON, WILMINGTON, WILMINGTON, WILMINGTON TELEPHONE: 44 (0) 1223 572311 PROJECT REFERENCE DRAW. NO. SHEET NO.

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General Information

You can see on the previous slide that in order to customize a typical Backing Frame for use in I-Sketch there are a number of sections you will need to define.

The size and configuration of the border we are going to use will, generally, be pre-defined. The customer will already have designed a border format and will ask that I-Sketch uses this format.

ISOGEN has only a few rules regarding the format of the border when using Style 3. These rules generally center around how the Materials on the Isometric are displayed. You can not, for instance, have the **Description** for the Fabrication Items shown in Column 2 and the Erection Items shown in Column 4. This is because when you define the location in the **MLD** we specify a start location using X and Y coordinates and then we tell ISOGEN where to place the relevant data (see slide 15) .

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Section 1 - Setting up I-Sketch to use Customer's Border

Before we begin to set up I-Sketch to use a customized border we will first need to insert the border in the correct location and inform the software that we intend to use it.

This will involve copying the file (DXF, DGN etc.) into the the correct style and then either manual editing the **FLS File** or using **Project Manager** to select the new file.

Once we have completed this exercise we are now ready to begin to configure I-Sketch

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Section 1 - Defining the Drawing Area

In order to define the reserved drawing area we are going to use the Option Switches contained within our ‘.OPL file’. This file can be found within all the Styles used by I-Sketch and it contains the 140 switches used by ISOGEN to configure the drawing.

There are two ways to display this file. The first is to use the supplied **Option Switch Editor** available via **Project Manager**, the second is to open the **OPL** file directly from the relevant project using a suitable text editor.

This guide will concentrate on the using a Text Editor to modify the OPL

If we look at **slide 7** we can see that by defining the reserved drawing area we are actual telling ISOGEN were to place the pipe detail etc.

[illegible]

In order to achieve this we will use the following switches within the **OPL File**.

<u>Switch</u>	<u>Operation</u>
14	Drawing Size
18	ISOGEN Drawing Frame
10	Left Margin
11	Right Margin
12	Top Margin
13	Bottom Margin

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Setting Switches

1. Using a text editor we will need to open the relevant **OPL File** which will give us access to the **Option Switches**.
2. The first switch we will set is **Switch 14**, this will in tell IOSGEN what paper size we intend to use. In this Tutorial we will be using a standard **A2 Sheet** of paper. So we need to select the A2 format.



14 2 ! Drawing Size control (Standard Sizes)

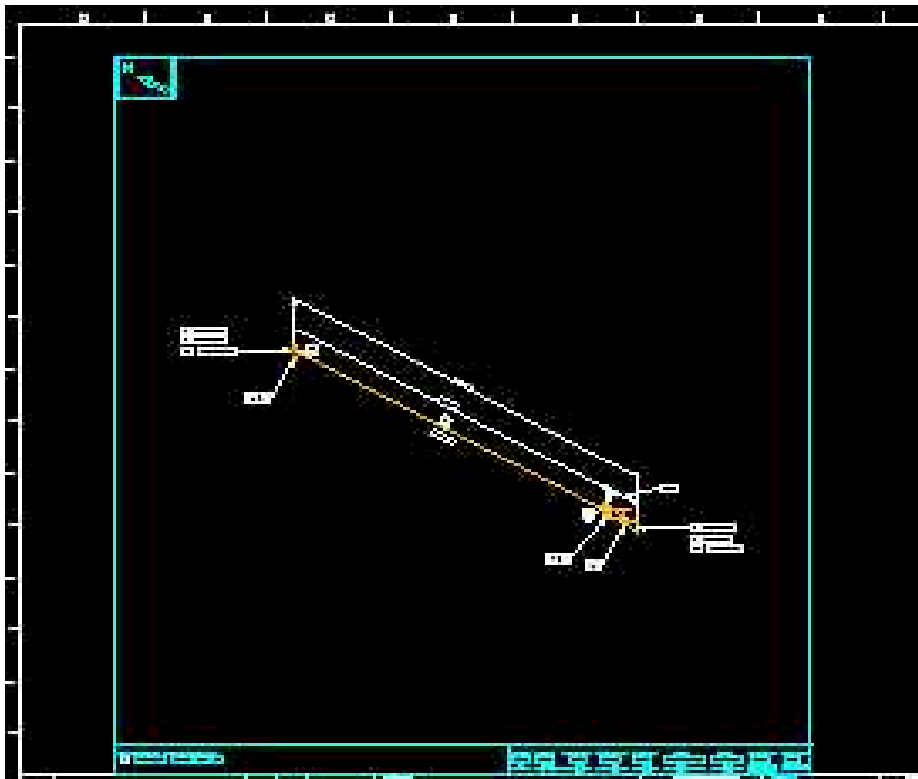
In the clip above we can see **Switch 14** has the number **2** placed in the first position.

If we were using the Option Switch Editor we would simple set the switch to read **European A2 paper size (420 x 594 mm)**

ISOGEN now knows the correct paper size to use.

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3. Once we have set the paper size the next step is to tell ISOGEN to use its **default border**, which we have set to use A2 size. This border is extremely useful because it allows us to see where the existing ISOGEN border is located. To achieve this we need to set **Switch 18** to read **0** (please note this switch as two setting 0 = ON and 1 = OFF)



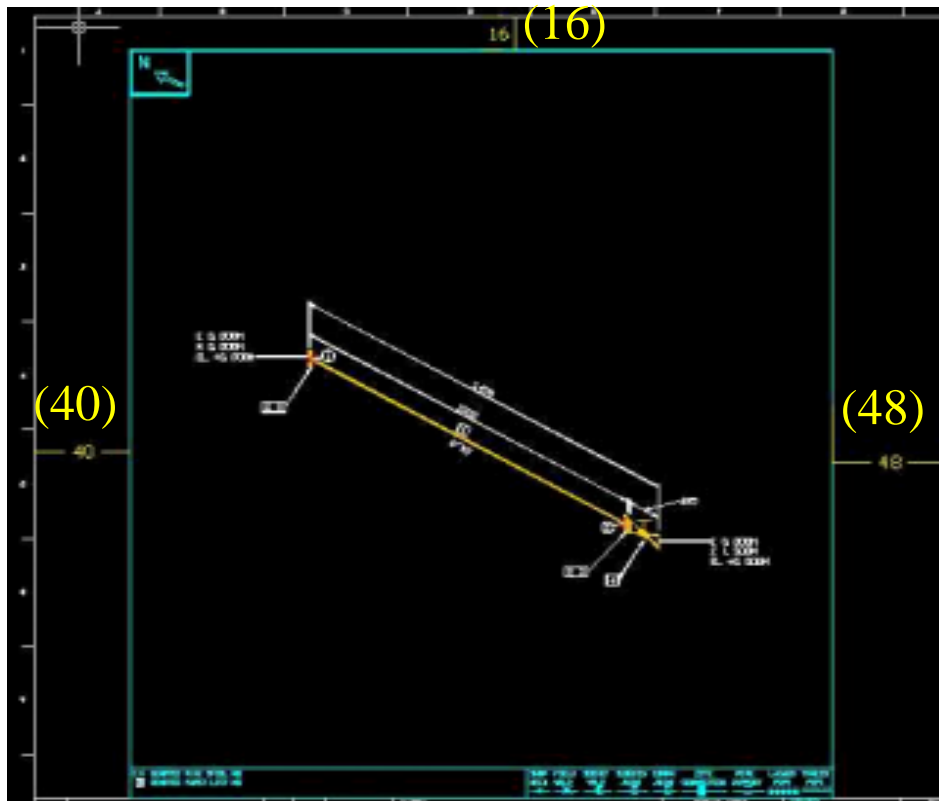
If we look at the the drawing we can see that ISOGEN as placed the drawing data within a predefined area and this predefined area is now visible because we have switched on the default border.

The area in question is defined by the smaller border.

*** Please note the difference in the borders has been exaggerated for this tutorial***

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4. Know that we have displayed the defined drawing area we need to change the relevant switched to move this area to the required location. By checking the distance between the ISOGEN default border and the required limits of the customers border we can see that in order to place the isometric within these limits we need to change the switches that control the margins,



<u>Switch</u>	<u>Operation</u>
10	Left Margin
11	Right Margin
12	Top Margin
13	Bottom Margin

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The clip below shows the settings used to produce the previous slide

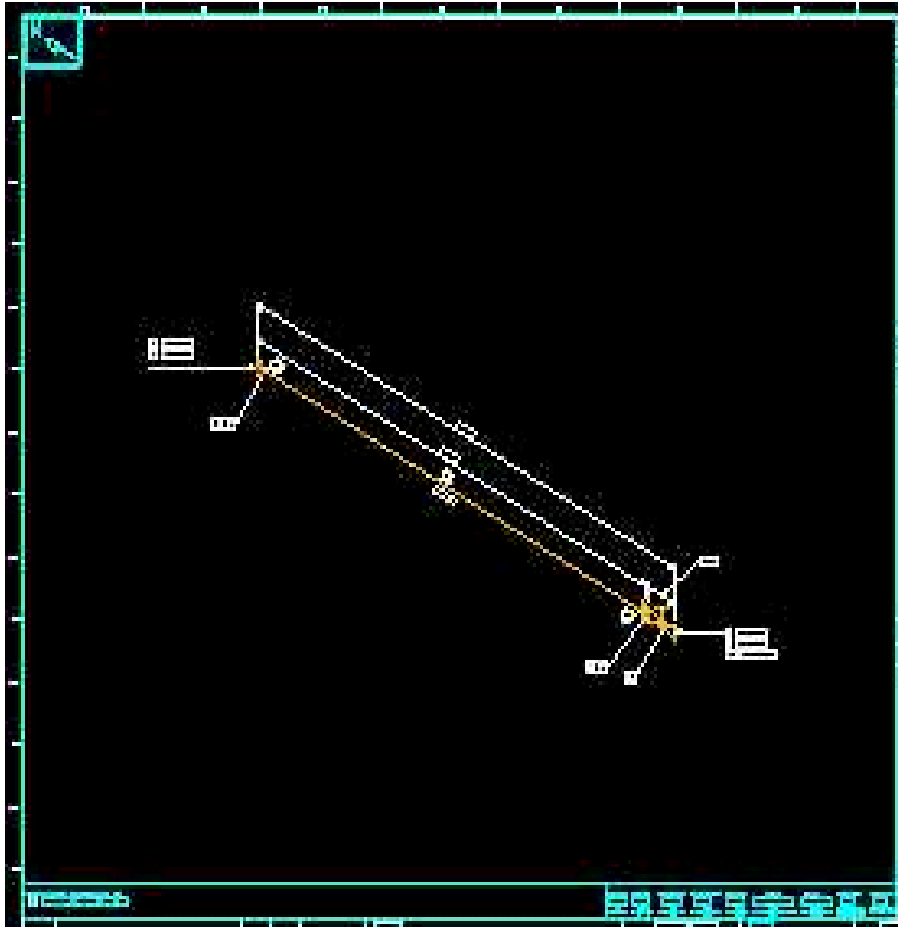
<u>Switch</u>	<u>Setting</u>	<u>Operation</u>
10	50	! Drawing Margin - Left
11	250	! Drawing Margin - Right
12	25	! Drawing Margin - Top
13	50	! Drawing Margin - Bottom

We know from our calculations that we need to move the **Left, Right and Top** margins so that they take in to account the difference between ISOGENS border and the required customers drawing area..

Below we can now see the new switch settings which take into account the required movement.

<u>Switch</u>	<u>Setting</u>	<u>Operation</u>
10	10	! Drawing Margin - Left
11	202	! Drawing Margin - Right
12	9	! Drawing Margin - Top
13	50	! Drawing Margin - Bottom

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Once we have made the changes we can generate an Isometric and view the results.

This operation may take a few minor adjustments before you are totally happy with the results. But with practice the time needed to create the defined drawing area will decrease.

5. All that is required now is turn of the ISOGEN border by setting **Switch 18** to read **1**.

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Section 2 - Defining the Material and Cut List Sections

MATERIAL LIST - FABRICATION				
FIELD	SIZE	ITEM CODE	DESCRIPTION	QTY
1	3	PAWES00	PIPE, CS API 5L SML, ESD B, SCH 80	1.0 M
2	3	FLC150-001	FLANGE, CS ASTM A105, 150#, 10, RF	2
MATERIAL LIST - ERECTION				
FIELD	SIZE	ITEM CODE	DESCRIPTION	QTY
3	3	GOALCO-REE	BASKET, CAP, 150#L RING, 1/16 IN	2
4	3	WV00730-YLD	VALVE, BLIND, CS ASTM A234, 150#, FL. DEAT	1

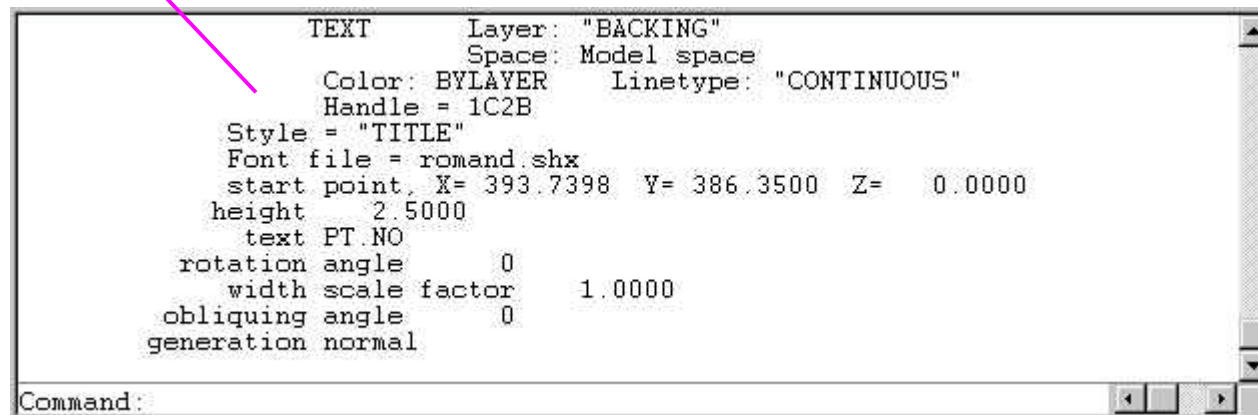
6. Now that we have defined the drawing area the next step involves using the **MLD** (Material List Definition File) to place the Material Data in the correct location.

Here we can see that in order to place the Materials in the correct location we first need to find the correct X and Y co-ordinates.

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The easiest method to define the correct location is copy the border headings, as shown below, and then if using AutoCAD select the List Command and identify the exact location of the copied text.

H		J		K		L	
MATERIAL LIST – FABRICATION							
PT.NO	SIZE	ITEM CODE	DESCRIPTION			QTY	
PT.NO	SIZE	ITEM CODE	DESCRIPTION			QTY	



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7. We now need to edit the MLD.

```

STYLE3-CONTROLS
VERTICAL-SPACING  5.0
TEXT-HEIGHT       2.8
TEXT-THICKNESS    0
DRAWING-LAYER     25
FABRICATION-DOWN
START-POSITION    396  387
MAXIMUM-ENTRIES   31
ERECTION-DOWN
START-POSITION    396  205
MAXIMUM-ENTRIES   31

STYLE3-DATA-ITEMS
'PT-NO'           396  2
'N.S.'            409  17
'ITEM-CODE'       438  16
'DESCRIPTION'     477  36
'QTY'             563  9
  
```

This actually defines the **MAX** number of characters **NOT** the **Y** location

If we look at the example of an MLD we can see that it contains two sections.

1. The first controls the general format in which we can specify **Text Height** etc. We also use this section to specify the **Direction** the data is **displayed** and also the **X** and **Y** start locations.

2. The second tells ISOGEN which data is required, i.e. **Part Number**, and also the **X** and **Y Co-ordinates** that this data is to be placed at. (You will notice that the **X** position for the first entries are the same).

'The object of this exercise is to give the user a basic knowledge of how to customize a Customers Border and so we will only cover the MLD functions that relate to positioning data onto the drawing frame. Please see separate slide for full MLD functions'

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8. Now using the data we have collected using the AutoCAD list command and having decided what data we require to be placed on the Isometric we are able to set the requirements in the MLD. This would involve,

- a) Setting the correct Vertical Spacing and deciding on the correct Text Height etc.
- b) Once we have done this we need to set the correct X and Y co-ordinates and enter the maximum number of rows we would like to place for both the Fabrication and Erection items (it maybe you only require FAB items, if this is the case you would not need to specify any EREC data).
- c) Finally inform ISOGEN what data it needs to look for and having found it where on the drawing it must be placed. We can also specify the maximum number of characters placed in the text string.

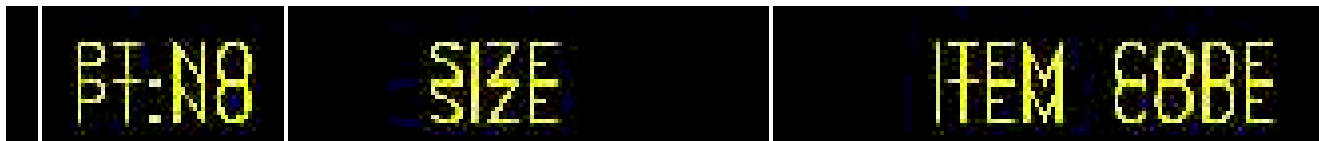
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Once again it may take a few attempts to configure the MLD so that all the data is positioned in the correct location. Again with practice this will become easier.

Common Mistakes

Any mistakes made can easily be put right.

If for instance the vertical spacing is incorrect all we need to do is increase the setting in the MLD



If the description allowance is too long which means that when we generate the Isometric the text passes over into the next data set, all we need to do is reduce the maximum number of characters allowed in the string (please note spaces are also counted as characters).

DESCRIPTION	QTY
90 DEG LR ELBOW A234-WPB WELD	BE 20"

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Here we can see that the Y position is correct but the data is not positioned correct on the X . What we need to do is re-set the co-ordinates to the correct setting.

PT.NO.	SIZE	ITEM CODE	DESCRIPTION
1	20	5356649****3D	90 DEG LR ELBOW A234

A common mistake when specifying what data ISOGEN needs to find, can be down to the incorrect input of the '**Keyword**' used by the program. Here for instance the Item Code has not been placed. You will need to check the MLD to ensure you have entered the data in the correct format. It may simply contain a typing error

PT.NO.	SIZE	ITEM CODE	DESCRIPTION	QTY
1	20		90 DEG LR ELBOW A234	1

```
STYLE3-DATA-ITEMS
'PT-NO'      396  2
'N.S.'       409  17
'ITEM-COD'   438  16
'DESCRIPTION' 477  36
'QTY'        563  9
```

Incorrect

Correct

```
STYLE3-DATA-ITEMS
'PT-NO'      396  2
'N.S.'       409  17
'ITEM-CODE'   438  16
'DESCRIPTION' 477  36
'QTY'        563  9
```

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9. Should you wish to place a 'Cut List' section onto the generated Isometric you would enter the correct data into the MLD in the same manner that you entered the Material Data .

CUTTING LIST				
PIECE NO.	SIZE	LENGTH	END PREP.1	END PREP.2
<A>	6"	3181	BEVEL	BEVEL
	6"	2345	BEVEL	BEVEL

```

CUT-LIST-CONTROLS
START-POSITION  408 146
TEXT-HEIGHT  2.8
VERTICAL-SPACING 5.0
DRAWING-LAYER 25
TEXT-THICKNESS 1
MAXIMUM-ENTRIES 20
  
```

```

CUT-LIST-DATA-ITEMS
'CUT-PIECE-NO' 408
'N.S.' 436
'CUT-PIECE-LENGTH' 468
'END-PREPARATION-1' 498
'END-PREPARATION-2' 531
  
```

The problems shown when specifying the Materials can also apply to the Cut List data

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Section 3 - Defining the Welding Section

10. The next stage will involve setting up the area set a side for the Welding Data.

When setting up the Materials we edited the MLD file. In order to define the welding area all we need to do is edit the **WDF** (Welding Definition File) in the same way.

```
WELD-INFO-CONTROLS
CONTINUOUS-DOWN
START-POSITION      410 147
VERTICAL-SPACING    4
TEXT-HEIGHT         2.4
TEXT-THICKNESS      0
DRAWING-LAYER       2
MAXIMUM-ENTRIES     25
DRAWING-COLOUR      4
TEXT-FONT           134
```

```
WELD-INFO-DATA-ITEMS
'WELD-NO'           410
'N.S.'              445
'WELD-TYPE'         485
'WELD-CAT'          521
'WELD-LOCATION'       562
```

Once again we are asked to specify general information. Including defining our X and Y Start Position etc. and then enter the required data ISOGEN needs to find. The software will then place it as required.

The major bonus of ISOGEN is that when you know how to set one of the control files the majority of the remaining files are formatted in the same way.

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WELDING LIST				
WELD NO.	SIZE	TYPE	SHOP / FIELD	LOCATION
1	3"	SOF	SHOP	2-1
2	3"	SOB	SHOP	1-1
3	3"	SOF	SHOP	1-2
4	3"	SOF	SHOP	1-2

Using the settings defined in the **WDF**, ISOGEN has created the above Welding List.

The problems shown when specifying the Materials can also apply to the Welding List data

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Section 4 - Defining the Pipeline Header Section

11. Now that we have set three of the four sections all that remains is to set the **TEXT. POS** (Text Positioning File) so that the **Pipeline Header Data** is placed in the correct location.

				NOTES		PIPING SPEC: C3100		PROJECT NO: P-500		 <div>ALIAS LIMITED STANT ROAD, MANOR PARK RUNCORN, CHESHIRE U.K. TELEPHONE 44 (0) 1928 378311</div>		Dwg. No. A2	
						OPERATING TEMP: 100C		PROJECT: PROCESS 500					
						PRESSURE RATING: 1500		AREA: AR-1					
						BITE X-RAY: 10		SYSTEM: AR-100					
						BITE TEST: T-50		DESIGNED BY: TSK					
						INSULATION SPEC:		CHECKED BY: ALH		PIPELINE REFERENCE		Dwg. No. 1 / 1	
						INSULATION THICK:		APPROVED BY: WAL		P-1		1	
						BITE PAINTING: INT-1		Dwg. No. 1 / 1					
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ISOGEN allows this data to be entered in various ways. In I-Sketch the user can enter it manually using the **Pipeline Header Information Tab**, however it may also be read directly from an **IDF / PCF File** should either of these be imported (see slide 23). Regardless of how the data is entered the operation needed to place it onto the isometric is the same

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Pipeline Header Information

Specifications Miscellaneous Weld Prefixes Attributes

Revision

Project Identifier

Batch/Area

Pipeline Type

Nominal Class or Rating

Pipeline Temperature

Specific Gravity

Spool Prefix

Highest Part No

Highest Weld No

OK Cancel Apply Help

ISOGEN-FILES	ISOGEN.FLS
UNITS-BORE	INCH
UNITS-CO-ORDS	MM
UNITS-BOLT-LENGTH	MM
UNITS-BOLT-DIA	MM
UNITS-WEIGHT	KGS
PIPELINE-REFERENCE	ATRIB2
REVISION	A
PROJECT-IDENTIFIER	W-PEP
AREA	ZZ11
PIPING-SPEC	CS150
NOMINAL-RATING	150
PIPELINE-TYPE	LINED
DATE-DMY	12/10/2001
INSULATION-SPEC	ROCKWOOL
TRACING-SPEC	STEAM
PAINTING-SPEC	RAL 053
PIPELINE-TEMP	150 DEG
SPECIFIC-GRAVITY	98.1
SPOOL-PREFIX	SRG
MISC-SPEC1	SITE CHECK DIMS
MISC-SPEC2	SAFETY FIRST
MISC-SPEC3	CHECK PERMITS
MISC-SPEC4	MAGNO TEST
MISC-SPEC5	FULL INSPECTION
WELD-PREFIX-GENERAL	GW
WELD-PREFIX-FABRICATION	FW
WELD-PREFIX-ERECTION	EW
WELD-PREFIX-OFFSHORE	OW
SUPPORT-WELD-PREFIX-FABRICATION	SF
SUPPORT-WELD-PREFIX-ERECTION	SE
SUPPORT-WELD-PREFIX-OFFSHORE	OS
ATTRIBUTE0	C:\Cert_3\DXF\PIPES\ATRIB2.iso
ATTRIBUTE1	100%
ATTRIBUTE2	HYDRO @ 150 BAR
ATTRIBUTE3	25mm
ATTRIBUTE4	WPEP-PHASE2
ATTRIBUTE5	HYDRO
ATTRIBUTE6	SPARK1
ATTRIBUTE7	FAB-1
ATTRIBUTE8	S.RICE
ATTRIBUTE9	THE BOSS

To Manually enter Data

Data can be taken directly from an
Imported PCF / IDF File

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12. In order to place this data ISOGEN needs to know the correct **Negative Record** allocated to each specific piece of data.

ISOGEN has certain amount of data which is hard coded into the software i.e.

-6	Pipeline Name	PIPELINE-REFERENCE
-7	Spool Prefix Identifier	SPOOL-PREFIX
-8	Revision Identifier	REVISION
-9	Project Name	PROJECT-IDENTIFIER
-10	Batch Reference / Plant Area Name	BATCH or AREA
-11	Piping Specification Name	PIPING-SPEC
-12	Pipeline Nominal Pressure Class / Rating	NOMINAL-CLASS or NOMINAL-RATING

As well as, having hard coded data ISOGEN allows the user to specify **Personal Attributes** in the form of -600 data.

-600 Series User Defined Attributes		
Isogen Record	Description	PCF Name
-600 to -699	Attributes -600 to -699 are for User Defined attributes in <u>Isogen</u>	ATTRIBUTE0 to ATTRIBUTE99

Once again this tutorial is not designed to cover ISOGEN training and will not therefore go into the Negative Record used by the software. However lists are available upon request

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13. Now that we have idea of what data we require we will use the **Text.Pos** file to position it on the Isometric.

Text ID No	X Pos	Y Pos	Char Width	Char Height												
-6	48000	1300	0	450	0	0	0	0	0	0	0	0	0	101	0	0
-8	57600	1300	0	280	0	0	0	0	0	0	0	0	0	101	0	0
-8	1550	1630	0	280	0	0	0	0	0	0	0	0	0	101	0	0
-9	42600	4620	0	280	0	0	0	0	0	0	0	0	0	101	0	0
-10	42600	3620	0	280	0	0	0	0	0	0	0	0	0	101	0	0
-11	32700	4620	0	280	0	0	0	0	0	0	0	0	0	101	0	0
-12	32700	3620	0	280	0	0	0	0	0	0	0	0	0	101	0	0
-14	13300	1630	0	280	0	0	0	0	0	0	0	0	0	101	0	0
-15	32700	2120	0	280	0	0	0	0	0	0	0	0	0	101	0	0
-17	32700	1120	0	280	0	0	0	0	0	0	0	0	0	101	0	0
-19	32700	4120	0	280	0	0	0	0	0	0	0	0	0	101	0	0
-601	32700	3120	0	280	0	0	0	0	0	0	0	0	0	101	0	0
-602	32700	2630	0	280	0	0	0	0	0	0	0	0	0	101	0	0
-603	32700	1610	0	280	0	0	0	0	0	0	0	0	0	101	0	0
-604	42600	4120	0	280	0	0	0	0	0	0	0	0	0	101	0	0
-605	42600	3120	0	280	0	0	0	0	0	0	0	0	0	101	0	0
-606	42600	1120	0	280	0	0	0	0	0	0	0	0	0	101	0	0
-607	42600	2630	0	280	0	0	0	0	0	0	0	0	0	101	0	0
-608	42600	2120	0	280	0	0	0	0	0	0	0	0	0	101	0	0
-609	42600	1610	0	280	0	0	0	0	0	0	0	0	0	101	0	0
-702	54900	1300	0	280	0	0	0	0	0	0	0	0	0	101	0	0
-703	56100	1300	0	280	0	0	0	0	0	0	0	0	0	101	0	0

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In this file we can see a number of columns, we are only concerned with the first 5.

Column 1 - we need to state the Negative Record we wish ISOGEN to place

Column 2 - we need to specify an X Position

Column 3 - we need to specify an Y Position

Column 4 - we need to state the Character Width

Column 5 - we need to state Character Height

Once again we would use AutoCAD's list command to find the correct co-ordinates on the customers drawing frame and using the above procedure tell ISOGEN where we would like the data placed.

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Section 5 - Finished Border

Now that you have followed the step by step guide to customizing a border you should have a basic knowledge of what files are required and how they need to be formatted. We have seen how,

- a) The **OPTION SWITCHES** are used to configure the drawing area.
- b) The **MLD** controls the placing of materials and cut list data
- c) The **WDF** is used to place weld information, and,
- d) You can use the **TEXT.POS** file to position the various pipeline header information.

Once you have mastered the methods shown in this tutorial, you will be able to customize a drawing frame to meet your requirements whether it be in I-Sketch, SPOOLGEN or other non ALIAS software that also uses ISOGEN .