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Material Lists Summary -

ISOGEN has 3 types of Material List -

- Style1 - A ‘no frills’ BOM which does not need an MLD file
- Style2 - Is Column / Line based
- Style 3 - Is X-Y co-ordinate based

These two types are fully User definable - a Material List Definition file (MLD) is needed to specify the content and layout

MATERIAL LISTS

A Style 1 BOM

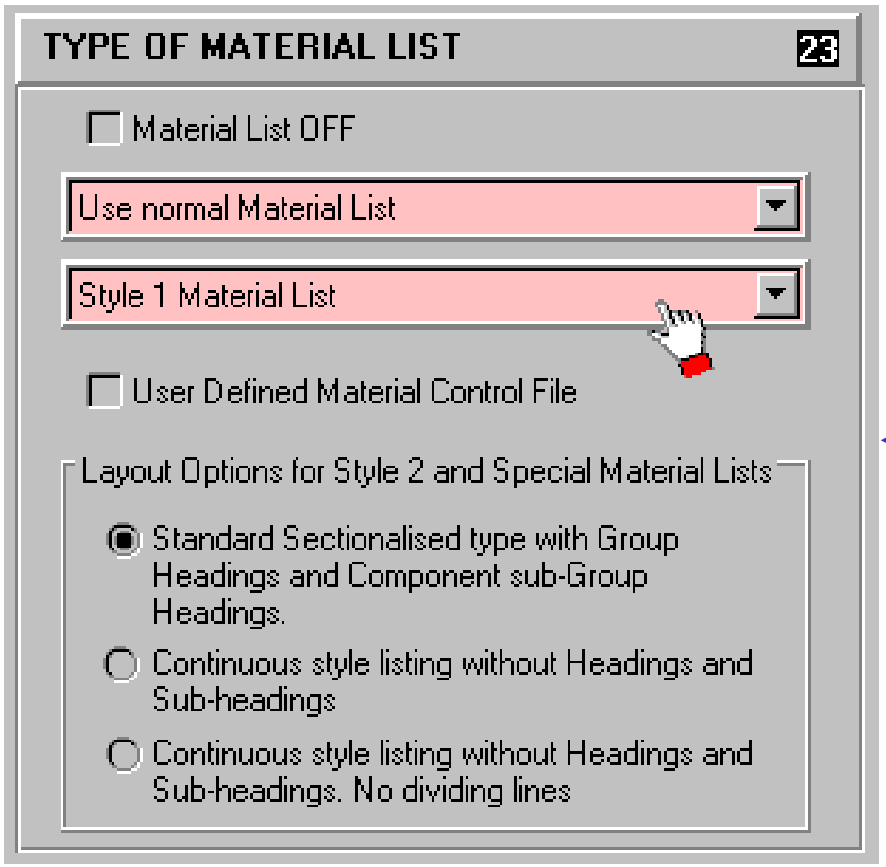
Has fixed content and layout

```
      ------------------------
      | FABRICATION MATERIALS |
      ------------------------
PT                                          N.S.
NO          COMPONENT DESCRIPTION          (INS)        ITEM CODE        QTY
--    PIPE    --------- -----------          ---         ---- ----        ---
      ----
 1     PIPE - WELDED CS API 5L GR B SCH 40    6           PAW40         13127 MM

 2     PIPE - WELDED CS API 5L GR B SCH 40    4           PAW40          1308 MM

 3     PIPE - WELDED CS API 5L GR B SCH 80    1           PAW80           568 MM

      FITTING
      -------
 4     TEE - EQ CS ASTM A234 GR WPB SCH 40    6X6         TAM-F             1

 5     REDUCER - BW ECC CS ASTM A234 GR WPB -  6X4        RAME40FF          2
          LARGE END SCH 40 SMALL END SCH 40
 6     WELDOLET - BW CS ASTM A105 GR 2 - RUN   6X1        LANW10FI          2
          SCH 40 BRANCH SCH 80
 7     ELBOW - BW 90 DEG LR CS ASTM A234 GR WPB 6         EAM90L40          3
          SCH 40

      FLANGE
      ------
 8     FLANGE - WN CS ASTM A105 SCH 40 150#   6           FAM150WN40        3

 9     FLANGE - SO CS ASTM A105 150#          4           FAM150SO          6
```

These headings & sub-headings are fixed except for possible AText changes

Style 1 BOM can be used with either a User defined drawing frame or the standard ISOGEN drawing frame

Style 1 BOM



Style 1 BOM is obtained by making these settings in the Options Editor

A Style 2 BOM

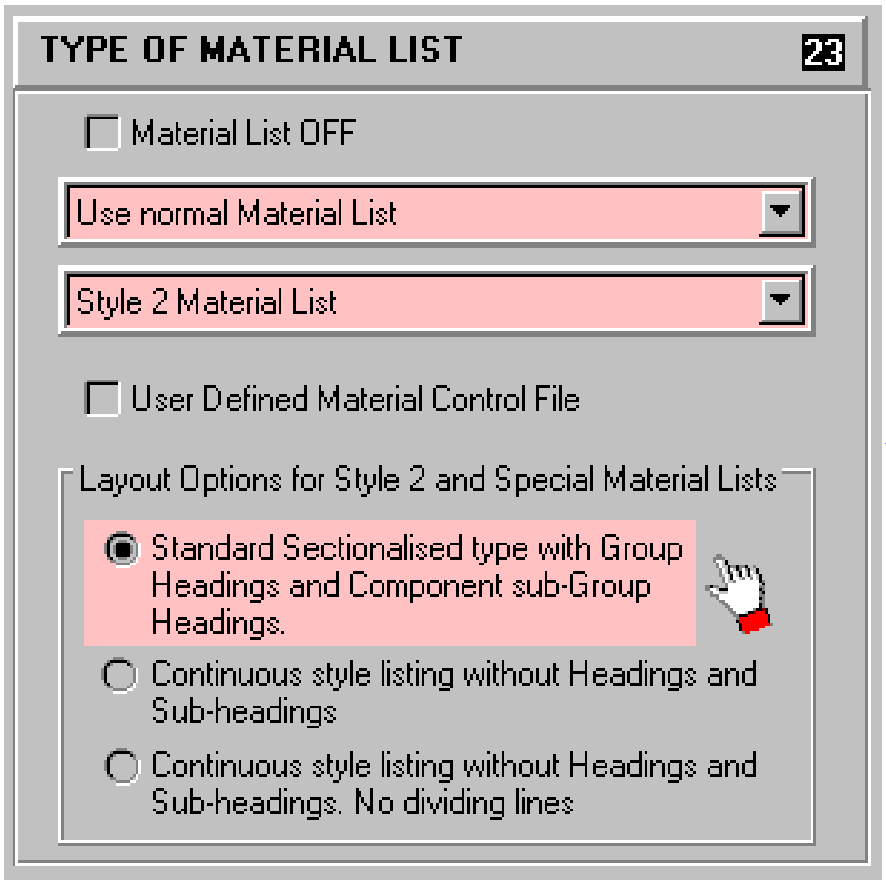
The content and layout can be varied

Here, the layout has been changed compared to the previous Style1 example

PART NO	SIZE (INS)	COMPONENT CODE	COMPONENT DESCRIPTION	QTY
	FABRICATION MATERIALS			
	PIPE			
1	6	PAW40	PIPE - WELDED CS API 5L GR B SCH 40	13127 MM
2	4	PAW40	PIPE - WELDED CS API 5L GR B SCH 40	1308 MM
3	1	PAW80	PIPE - WELDED CS API 5L GR B SCH 80	568 MM
	FITTING			
4	6X6	TAM-F	TEE - EQ CS ASTM A234 GR WPB SCH 40	1
5	6X4	RAME40FF	REDUCER - BW ECC CS ASTM A234 GR WPB - LARGE END SCH 40 SMALL END SCH 40	2
6	6X1	LANW10FI	WELDOLET - BW CS ASTM A105 GR 2 - RUN SCH 40 BRANCH SCH 80	2
7	6	EAM90L40	ELBOW - BW 90 DEG LR CS ASTM A234 GR WPB SCH 40	3
	FLANGE			
8	6	FAM150WN40	FLANGE - WN CS ASTM A105 SCH 40 150#	3
9	4	FAM150SO	FLANGE - SO CS ASTM A105 150#	6

Style 2 BOM can be used with either a User defined drawing frame or the standard ISOGEN drawing frame

Style 2 BOM



Style 2 BOM is obtained by making these settings

MATERIAL LISTS

The Material List Definition File (MLD) controls how the BOM looks in terms of style and content

This is the MLD file for the Style 2 BOM on page 4

Column Headings

```
STYLE2-COLUMN-HEADINGS
PART| SIZE    COMPONENT        COMPONENT                          |
 NO   (INS)     CODE          DESCRIPTION                     QTY |

STYLE2-DATA-ITEMS
'PT-NO' 2 R  2
'N.S.'  8 L  11
'ITEM-CODE' 15 L  16
'DESCRIPTION' 30 L 34
'QTY' 69 N  8
```

Data Items

Vertical Bar Character

Attribute Name

Column Start Position

Justification

Field Length

MATERIAL LISTS

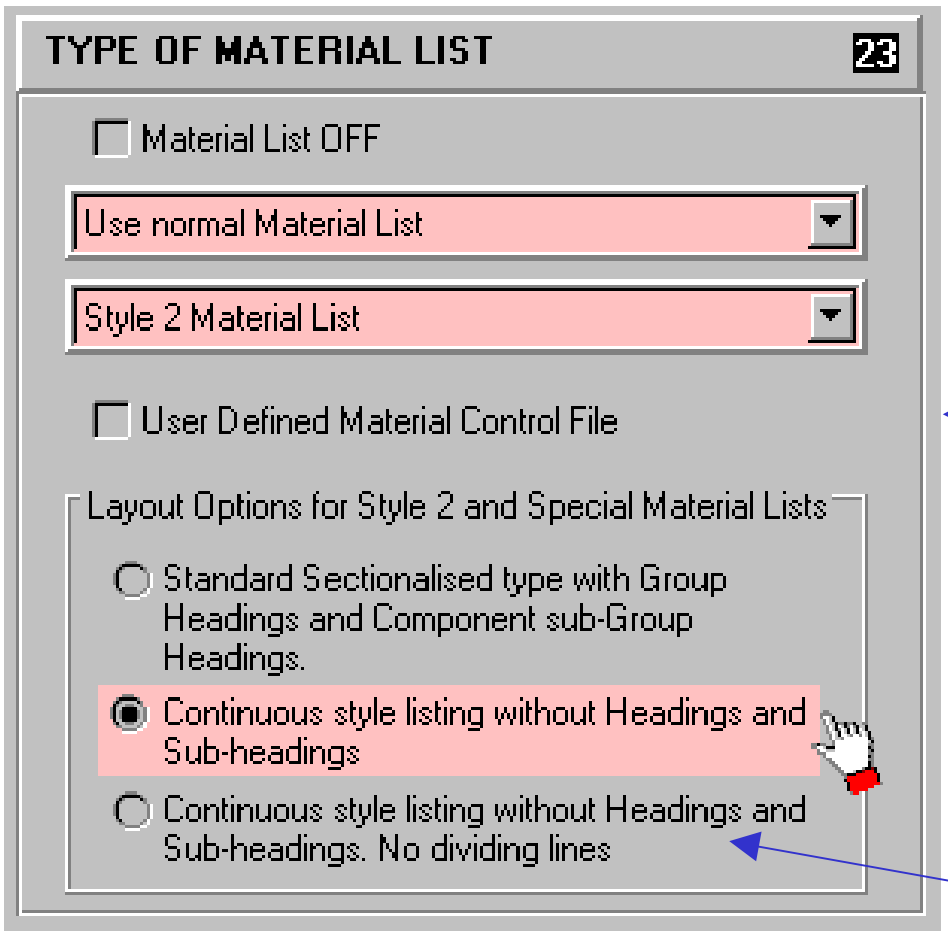
This is a different type of Style 2 BOM

PART NO	SIZE (INS)	COMPONENT CODE	COMPONENT DESCRIPTION	QTY	GROUP
1	6	PAW40	PIPE - WELDED CS API 5L GR B SCH 40	13127 MM	PIPE
2	4	PAW40	PIPE - WELDED CS API 5L GR B SCH 40	1308 MM	PIPE
3	1	PAW80	PIPE - WELDED CS API 5L GR B SCH 80	568 MM	PIPE
4	6X6	TAM-F	TEE - EQ CS ASTM A234 GR WPB SCH 40	1	FITTING
5	6X4	RAME40FF	REDUCER - BW ECC CS ASTM A234 GR WPB - LARGE END SCH 40 SMALL END SCH 40	2	FITTING
6	6X1	LANW10FI	WELDOLET - BW CS ASTM A105 GR 2 - RUN SCH 40 BRANCH SCH 80	2	FITTING
7	6	EAM90L40	ELBOW - BW 90 DEG LR CS ASTM A234 GR WPB SCH 40	3	FITTING
8	6	FAM150WN40	FLANGE - WN CS ASTM A105 SCH 40 150#	3	FLANGE
9	4	FAM150SO	FLANGE - SO CS ASTM A105 150#	6	FLANGE
10	6	JFA150R2	CAF IBC CLASS 150# GR A - 1/16" THK	3	GASKET
11	4	JFA150R2	CAF IBC CLASS 150# GR A - 1/16" THK	6	GASKET

This type is partitioned into logical groups by the program

It's available with or without these dividing lines

Style 2 Grouped BOM



The Style 2 Grouped type of BOM is obtained by making these settings

Select this option if you don't want the dividing lines

MATERIAL LISTS

This is the MLD file for the Style 2 BOM with Grouping on page 7

```
STYLE2-COLUMN-HEADINGS
PART| SIZE    COMPONENT       COMPONENT                                    |
 NO   (INS)     CODE          DESCRIPTION                          QTY    GROUP|

STYLE2-DATA-ITEMS
'PT-NO' 2 R 2
'N.S.'  8 L  11
'ITEM-CODE' 15  L  12
'DESCRIPTION' 30 L 34
'QTY' 69 N 8
'GROUP' 75 L 7
```

MLD File - Style 2 Plotted BOM - Permissible Data Items

'PT-NO'	L or R	
'QTY'	N	(Fixed)
'N.S.'	L	(Fixed)
'ITEM-CODE'	L or R	
'DESCRIPTION'	L	(Fixed)
'ANGLE'	L or N	
'WEIGHT'	N	(Fixed)
'GROUP'	L or R	(Pipe, Flange, Valve, Etc)
'CATEGORY'	L or R	(Fab, Erect, Offshore)
'-80' to '-89'	L or R	(User Defined Material Attributes)
'REMARK'	L or R	

Justification layout characters
L = Left R = Right N = Numeric

Printed Material List - Style 2 BOM

The BOM may also be sent to a print file - like this -

```
                                                PAGE 1

PIPELINE-REF :- 6"-ASC-6900                       DRAWING NO :- 1
REVISION     :- 1                                 PROJ NO.   :- P-102
PLANT AREA   :- AR-102                            DATE       :- 23/08/99
      -------------------------
      | FABRICATION MATERIALS |
      -------------------------
 PT                                              N.S.
 NO            COMPONENT DESCRIPTION            (INS)         ITEM CODE        QTY
 --   PIPE     --------- -----------             ---          ---- ----        ---
      ----
  1    PIPE - WELDED CS API 5L GR B SCH 40       6            PAW40          7977 MM

      FITTING
      -------
  2    TEE - EQ CS ASTM A234 GR WPB SCH 40       6X6          TAM-F             1

  3    ELBOW - BW 90 DEG LR CS ASTM A234 GR WPB  6            EAM90L40          1
          SCH 40

      FLANGE
      ------
  4    FLANGE - WN CS ASTM A105 SCH 40 150#      6            FAM150WN40        3
```

This example shows the optional page headings

The Printed BOM is also available in Style 1 standard form

MATERIAL LISTS

This is the MLD file for the Style 2 Printed BOM on the previous page

```
PRINTED-MATERIAL-LIST-TITLES
                                                    PAGE ''
'Blank'
PIPELINE-REF :- 'PIPELINE-REFERENCE'                DRAWING NO :- 'DRG'
REVISION     :- 'REVISION'                          PROJ NO.   :- 'PROJECT-IDENTIFIER'
PLANT AREA   :- 'AREA'                              DATE       :- 'DATE-DMY'

STYLE2-COLUMN-HEADINGS
PART| SIZE    COMPONENT       COMPONENT                                  |
 NO   (INS)     CODE         DESCRIPTION                            QTY |

STYLE2-DATA-ITEMS
'PT-NO' 2 R
'N.S.'  8 L
'ITEM-CODE' 15
'DESCRIPTION' 30 L 34
'QTY' 69 N
```

The printed BOM is output to a -108 Output File record for which an entry must be present in the OPT file

e.g.

-108 C:\P-900\FULLISO\OUTPUT\REPORTS\BOM.LIS

This -108 type of file operates on an Append basis

MLD File - Style 2 Printed BOM - Permissible Heading Items

'AREA'
'BATCH'
'Blank' (Creates a blank line)
'DATE-DMY'
'DRG'
'EQUIPMENT-TRIM-REFERENCE'
'NOMINAL-CLASS'
'NOMINAL-RATING'
'PAGE'
'PIPELINE-REFERENCE'
'PIPELINE-TEMP'
'PIPING-SPEC'
'PROJECT-IDENTIFIER'
'REVISION'
'SYSTEM-REFERENCE'
'-600' to '-699' (User Defined Pipeline Attributes)
'-900' to '-999' (User Defined Pipeline Atributes)
'ATTRIBUTE0' to 'ATTRIBUTE199' (User Defined Pipeline Attributes - PCF use)

MLD File - Style 2 Printed BOM - Permissible Data Items

The permitted Headings Items for a Printed Style 2 BOM are the same as for a plotted one

- See page 13 for details

Also, the Data Items for a Printed Style 2 BOM are the same as for a plotted one

- See page 10 for details

MATERIAL LISTS

This is a Style 3 BOM

MATERIAL LIST - FABRICATION

PT.NO	SIZE	ITEM CODE	DESCRIPTION	QTY
1	6	PAW40	PIPE - WELDED CS API 5L GR B SCH 40	13127 MM
2	4	PAW40	PIPE - WELDED CS API 5L GR B SCH 40	1308 MM
3	1	PAW80	PIPE - WELDED CS API 5L GR B SCH 80	568 MM
4	6X6	TAM-F	TEE - EQ CS ASTM A234 GR WPB SCH 40	1
5	6X4	RAME40FF	REDUCER - BW ECC CS ASTM A234 GR WPB - LARGE END SCH 40 SMALL END SCH 40	2
6	6X1	LANW10FI	WELDOLET - BW CS ASTM A105 GR 2 - RUN SCH 40 BRANCH SCH 80	2
7	6	EAM90L40	ELBOW - BW 90 DEG LR CS ASTM A234 GR WPB SCH 40	3
15	6	CLAMP-SUPPORT	PIPE SUPPORT - SEE PROJECT SUPPORT SCHEDULE	3
14	1	VG7	VALVE - GLOBE CS SW 150#	2
13	4	VW4	VALVE - WEDGEGATE CS FLANGED 150#	2
12	6	VW4	VALVE - WEDGEGATE CS FLANGED 150#	1
11	5/8	BAA5/8H70	BOLT - UNIFIED WTH NUT BS1769 HVY CS	48
10	3/4	BAA3/4H76	BOLT - UNIFIED WTH NUT BS1769 HVY CS	24
9	4	JFA150R2	CAF IBC CLASS 150# GR A - 1/16" THK	6
8	6	JFA150R2	CAF IBC CLASS 150# GR A - 1/16" THK	3
PT.NO	SIZE	ITEM CODE	DESCRIPTION	QTY

MATERIAL LIST - ERECTION

This Style of BOM has more layout variations and flexibility than the other two - e.g.
FAB DOWN
ERECT DOWN
or
FAB DOWN
ERECT UP
- etc.

The data items are positioned using X-Y co-ordinates on the drawing which must be a User defined backing sheet

This example is FAB DOWN ERECT UP

Contd...

Style 3 BOM

Style 3 BOM is obtained by making this setting in the Options Editor

Style 3 Features - Basic control information

The generated BOM is plotted onto a User defined backing sheet that must contain all column headings and boxing in lines

The User defines X/Y data positions in the MLD file

There are three types of layout -

- Continuous (all Up or all Down)
- Up and Down (e.g. FAB Up, ERECT Down)
- Defined Sections (1, 2, or 3)

Contd...

Style 3 Control Features

Two types of information are entered in the MLD file -

- Basic control information
- Data items

Contd...

MATERIAL LISTS

This is the MLD file for the Style 3 BOM example on page 15

```
STYLE3-CONTROLS
VERTICAL-SPACING          4.6
TEXT-HEIGHT               2.3
TEXT-FONT                 101
TEXT-THICKNESS            3
FABRICATION-DOWN
START-POSITION            400  387
MAXIMUM-ENTRIES           26
ERECTION-UP
START-POSITION            400  67
MAXIMUM-ENTRIES           26

STYLE3-DATA-ITEMS
'PT-NO'                   400  2
'N.S.'                    416  11
’ITEM-CODE’               442  12
’DESCRIPTION’             477  36
'QTY’                     563  8
```

X-Y Start Positions

X Start Positions

Attributes

Maximum number of characters permitted in the field

Contd...

Style 3 Features - Basic control information -

Three sectionalised material categories are available -

- FABRICATION
- ERECTION
- OFFSHORE

Contd...

Style 3 Features - Control items -

- Vertical line spacing
- Text height
- Text Font
- Text thickness
- Drawing layer of the BOM
- Layout form of the list
  - Continuous
  - Sectionalised
  - Up (or) Down, or Up & Down
- Group Headings (PIPE, FITTINGS FLANGES etc.)
- X-Y Co-ordinate position for the start of BOM data items list
- Maximum number of output lines before automatic BOM overflow

Contd...

Style 3 Features - Basic control information -

`Vertical Line Spacing` - Used to control the distance between each horizontal line of text

```
12   FLANGE - WN TO ...
13   FLANGE - SO TO ...
```

Format is - `VERTICAL-SPACING` *value*

e.g.

`VERTICAL-SPACING 6`

Numeric values must only be in mm's but may be whole or decimal

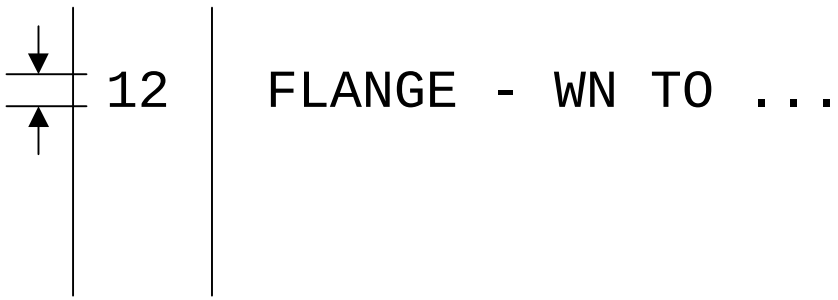
e.g.

5 or 5.5

Contd...

Style 3 Features - Basic control information -

`Text Height` - Specifies the Character Height



Format is - `TEXT-HEIGHT` *value*

e.g.

`TEXT-HEIGHT 3`

Numeric values must only be in mm's but may be whole or decimal

e.g.

2 or 2.5

Contd...

Style 3 Features - Basic control information -

`Text Font` - Specifies the Font type used in the production of the BOM

```
| 12 | FLANGE - WN TO ...
|    |
```

Format is - `TEXT-FONT` *number*

e.g.

`TEXT-FONT 101`

Where *number* is the Font Number in the Isogen Font File

Contd...

Style 3 Features - Basic control information -

`Text Width Factor` - Permits the Text characters to be widened or narrowed

```
| 12 | FLANGE - WN TO ...
```

Format is - `TEXT-WIDTH-FACTOR` *value*

Where *value* is the Text Width Factor expressed as a percentage of the normal 100%

e.g.

`TEXT-WIDTH-FACTOR 85` - would narrow the width to 85% and produce a shorter length text string

`TEXT-WIDTH-FACTOR 110` - would increase the width to 110% and produce a longer length text string

Contd...

Style 3 Features - Basic control information -

Text Thickness

Specifies the Text Weight (thickness) for BOM text in DGN for MicroStation users

```
12    FLANGE - WN TO ...
or
12    FLANGE - WN TO ...
```

Format is - `TEXT-THICKNESS` *value*

e.g.

`TEXT-THICKNESS 2`

Numeric values must be relevant for the target graphics system

Contd...

Style 3 Features - Basic control information -

Drawing Layer

Specifies the Drawing Layer for BOM text in DXF or DGN (LEVEL) drawing files

Format is - `DRAWING-LAYER` *value*

e.g

`DRAWING-LAYER 12`

Numeric values must be relevant for the target graphics system

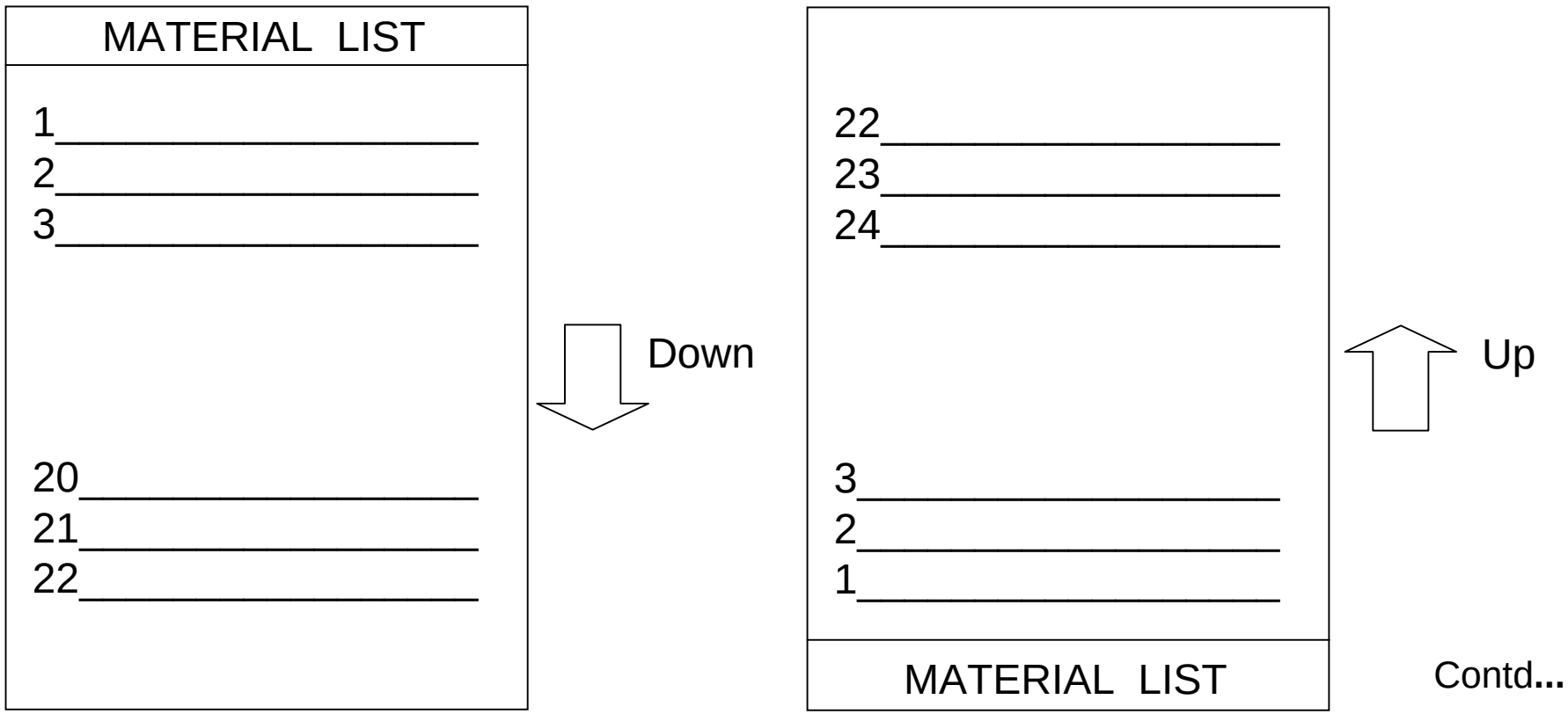
(DXF users may re-define Layer Numbers into Layer Names in the Data Definition File - DDF)

Contd...

Style 3 Features - Basic control information -

Layout Form of the List - **CONTINUOUS** -

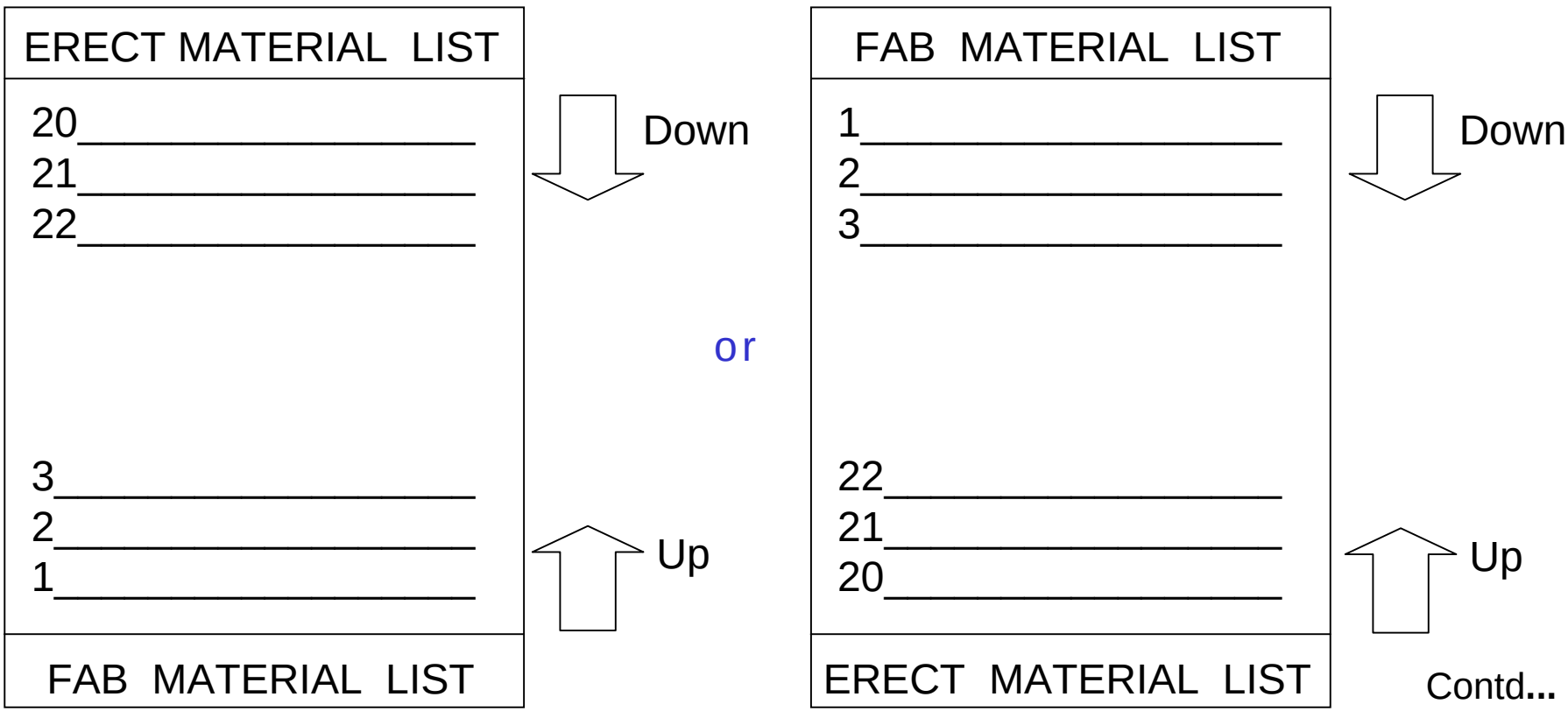
Gives a Continuous listing of all components in an Upwards or Downwards direction



Contd...

Style 3 Features - Basic control information -

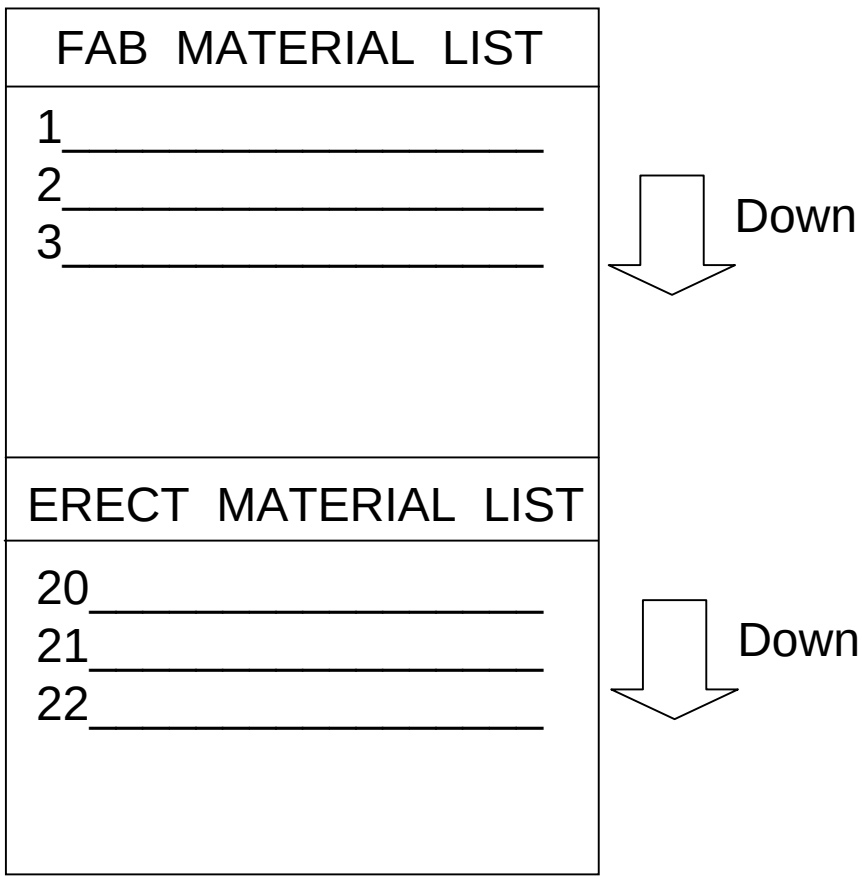
Layout Form of the List - **UP** and **DOWN** - Enables separate FAB and ERECT materials sections - One printed Top-Down - the other printed Bottom-up



Contd...

Style 3 Features - Basic control information -

Layout Form of the List - **DEFINED SPLIT SECTIONS**



Contd...

Style 3 Features - Basic control information -

Form of the List - Permitted Identifiers

```
CONTINUOUS-DOWN
CONTINUOUS-UP

FABRICATION-DOWN
FABRICATION-UP

ERECTION-DOWN
ERECTION-UP

OFFSHORE-DOWN
OFFSHORE-UP

ERECTION/OFFSHORE-DOWN
ERECTION/OFFSHORE-UP
```

Example combinations :-

```
1)  CONTINUOUS-DOWN

2)  FABRICATION-DOWN
    ERECTION-UP

3)  FABRICATION-DOWN
    ERECTION-DOWN
    OFFSHORE-DOWN

4   CONTINUOUS-UP
```

Contd...

Style 3 Features - Basic control information -

GROUP HEADINGS (PIPE, FITTINGS FLANGES etc.)

This option permits sectionalised headings to be generated like this -

MATERIAL LIST – FABRICATION

PT.NO	SIZE	ITEM CODE	DESCRIPTION	QTY
PIPE				
1	4	PA6BSTD	PIPE, CS API 5L SML, GRD B, STD WT	1.1 M
2	3	PA6BSTD	PIPE, CS API 5L SML, GRD B, STD WT	1.6 M
3	1.1/2	PA6BXS	PIPE, CS API 5L SML, GRD B, X-STG	1.6 M
4	1	PA6BXS	PIPE, CS API 5L SML, GRD B, X-STG	1.0 M
FITTINGS				
5	4X3	RRCFSTD-BW	REDUCER CONC, FRG CS A234 WPB, STD WT, BW	1
6	4	EEL90CFSTD-LBW	ELBOW, 90 DEG, FRG CS A234 WPB, STD WT, LR, BW	1
7	3	EEL90CFSTD-LBW	ELBOW, 90 DEG, FRG CS A234 WPB, STD WT, LR, BW	2
8	1.1/2	EEL90CF3000SW	ELBOW, 90 DEG, FRG CS A234 WPB, 3000#, SW	2
9	1	EEL90CF3000SW	ELBOW, 90 DEG, FRG CS A234 WPB, 3000#, SW	1
FLANGES				
10	4	FCD150-WNRSTD	FLANGE, CS ASTM A105, 150#, WN, RF, STD WT	3
11	1.1/2	FCD150-SWR	FLANGE, CS ASTM A105, 150#, SW, RF	1
12	1	FCD150-SWR	FLANGE, CS ASTM A105, 150#, SW, RF	1

X 393

The command to obtain this option is this entry line in the `STYLE3-CONTROLS` section of the MLD file -

```
GROUP-POSITION  x-pos UNDERLINED
```

Where x-pos is the horizontal start position of each generated Group Heading word in mm's

e.g.

```
GROUP-POSITION  393 UNDERLINED
```

You can now underline the Group Headings by entering the term UNDERLINED as shown here (introduced in V8.11.0)

Style 3 Features - Basic control information -

Outputting Category Headings- Fabrication, Erection and Offshore

This option permits category headings to be generated like this -

PT.NO	SIZE	ITEM CODE	DESCRIPTION	QTY
			FABRICATION MATERIALS	
PIPE				
1	6	PA5BSTD	PIPE, CS API 5L SML, GRD B, STD WT	14750 MM
2	4	PA5BSTD	PIPE, CS API 5L SML, GRD B, STD WT	9986 MM
FITTING				
3	6X4	T1RCFSTD-BW	TEE, RED, FRG CS A234 WPB, STD WT, BW	1
4	6	EEL90CFSTD-LBW	ELBOW, 90 DEG, FRG CS A234 WPB, STD WT, LR, BW	1
5	4	EEL90CFSTD-LBW	ELBOW, 90 DEG, FRG CS A234 WPB, STD WT, LR, BW	2
FLANGE				
6	6	FCD150-WNRSTD	FLANGE, CS ASTM A105, 150#, WN, RF, STD WT	3
7	4	FCD150-WNRSTD	FLANGE, CS ASTM A105, 150#, WN, RF, STD WT	3

The command to obtain this option is this entry line in the `STYLE3-CONTROLS` section of the MLD file -

```
CATEGORY-POSITION  x-pos UNDERLINED
```

Where x-pos is the horizontal start position of each generated Group Heading word in mm's

e.g.

```
CATEGORY-POSITION  496 UNDERLINED
```

You can underline the Category Headings by entering the term UNDERLINED as shown here.

Style 3 Features - Basic control information -

Start Position Definition **-** Each section of the BOM needs an X-Y start point

X 325 Y 220

MATERIAL LIST - FABRICATION				
PT.NO	SIZE	ITEM CODE	DESCRIPTION	QTY
1	6	PAW40	PIPE - WELDED CS API 5L GR B SCH 40	13127 MM
2	4	PAW40	PIPE - WELDED CS API 5L GR B SCH 40	1308 MM
3	1	PAW80	PIPE - WELDED CS API 5L GR B SCH 80	568 MM
4	6X6	TAM-F	TEE - EQ CS ASTM A234 GR WPB SCH 40	1
5	6X4	RAME40FF	REDUCER - BW ECC CS ASTM A234 GR WPB - LARGE END SCH 40 SMALL END SCH 40	2
6	6X1	LANW10FI	WELDOLET - BW CS ASTM A105 GR 2 - RUN SCH 40 BRANCH SCH 80	2
7	6	EAM90L40	ELBOW - BW 90 DEG LR CS ASTM A234 GR WPB SCH 40	3

Format is - **START-POSITION** X *pos* *Y pos*

e.g.

START-POSITION 325 220

Numeric values must only be in mm's but may be whole or decimal

e.g.

280 or 280.5

Contd...

Style 3 Features - Basic control information -

`Maximum Number of Lines` - Is used to control the Maximum Number of output Lines that can be fitted onto the BOM before over- spill occurs

The value entered is either for the BOM or for each section if the section function is being used (up to 3 sections)

Format is - `MAXIMUM-ENTRIES` value

e.g.

```
MAXIMUM-ENTRIES 36
```

Numeric values must only be whole numbers

Contd...

Style 3 Features - Permissible Data items

'PT-NO'	BOM Part Number
'QTY'	Quantity
'N.S.'	Size
'ITEM-CODE'	Component Code
'DESCRIPTION'	Component Description
'ANGLE'	Bend Angle
'WEIGHT'	Component Weight
'CATEGORY'	(Fab, Erect, Offshore, Etc)
'GROUP'	(Pipe, Flange, Valve, Etc)
'-80' to '-89'	User Defined material attributes
'REMARK'	Component Remark

Material Control File -

Overview -

The Material Control file is an output file used for transferring piping component data in BOM form to an external system

It's designated as a -104 ouput file record, e.g. -

-104 C:\P-900\OUTPUT\REPORTS\MATL.MTC

From controls set in the Material List Definition File (MLD), the output file is User Definable - both in terms of content and layout

The file is an append type - which means that the Material Control output data from each new ISOGEN processing run is added to the end of the existing Material Control file

Contd...

Material Control File -

The different sections that may be generated in a Material Control file are :-

- Title Headings (Optional)
- Column Headings (Optional)
- Data Items (Mandatory)

Contd...

Material Control File -

Title Heading

Column Headings

Data Items

PROJ. NUMBER P1289

PIPELINE REF	REV	COMPONENT CODE	SIZE (INS)	QTY
4"-P4523	3	PAL80	4	6.7 M
4"-P4523	3	TAM-F	4	1
4"-P4523	3	LANW20FF	4	3
4"-P4523	3	EAM45L80	2	6
4"-P4523	3	FAM150WN80	2	3
4"-P4523	3	JFA150R2	4	4
4"-P4523	3	BAA5/8H70	5/8	32
4"-P4523	3	BAA5/8H64	5/8	24
4"-P4523	3	VG22	4	1
4"-P4523	3	FAM150B	4	2
4"-P4523	3	VB14	2	3
2"-F4521	1	PAW40	2	5.5 M
2"-F4521	1	PAW40	2	12.3 M
2"-F4521	1	TAM-F	2	1
2"-F4521	1	EAM45L40	2	3
2"-F4521	1	FAM150WN40	2	3
2"-F4521	1	JFA150R2	2	6
2"-F4521	1	BAA1/2H70	1/2	24
2"-F4521	1	BAA5/8H38	5/8	48
2"-F4521	1	VB1	2	1
2"-F4521	1	FAM150B	2	2

A sample output file

Contd...

Material Control File -

BOM section of the MLD

```
STYLE2-COLUMN-HEADINGS
PART| SIZE    COMPONENT       COMPONENT                                  |
 NO   (INS)     CODE          DESCRIPTION                            QTY |

STYLE2-DATA-ITEMS
'PT-NO' 2 R
'N.S.'  8 L
'ITEM-CODE' 15
'DESCRIPTION' 30 L 34
'QTY' 69 N
```

Note that Material Control information is entered in the same MLD file that the BOM requirement are listed in

This is the Input Data section for the Material Control output example shown on the previous page

```
MATERIAL-CONTROL-FILE
MATERIAL-HEADINGS SINGLE

PRINTED-M/C-TITLES
PROJ. NUMBER 'PROJECT-IDENTIFIER'

PRINTED-M/C-COLUMN-HEADINGS
PIPELINE    REV  COMPONENT     SIZE    QTY
REF                CODE        (INS)

PRINTED-M/C-DATA-ITEMS
'PIPELINE-REFERENCE' 1 L
'REVISION' 14 L
'ITEM-CODE' 18 L
'N.S.' 33 L
'QTY' 40 L
```

Material Control File - Valid Items for outputting are :-

Unique Name	Alternative	Unique Name
'PROJECT-IDENTIFIER'	-9	'NUMBER-OF-DRGS'
'BATCH' or 'AREA'	-10	'SPOOL-NUMBER'
'PIPELINE-REFERENCE'	-6	
'SPOOL-ID'		
'DRG'		
'REVISION'	-8	
'DATE-DMY'	-14	
'PIPING-SPEC'	-11	
'PT-NO'		
'QTY'		
'N.S.'		
'N.S.SEC.'		
'ITEM-CODE'	-20	
'DESCRIPTION'	-21	
'ANGLE'		
'WEIGHT'		
'CATEGORY'	(Fab, Erect, Offshore)	
'GROUP'	(Pipe, Flange, Etc)	
'REMARK'	-79	
'THICKNESS/RATING'		
'-80' to '-89'		
'-600' to '-699'		
'-900' to '-999'		
'ATTRIBUTE0' to 'ATTRIBUTE99'	(PCF Use)	

Material Control File -

Title Headings and Column Headings may be output in the Material Control Output File in three different ways depending on the Users preference -

1. Once per complete file, at the beginning of the file

2. Once per Pipeline, at the start of each new Pipeline entry

3. Once per Drawing, at the start of each new Drawing entry

The controls for this appear in the optional `MATERIAL-HEADINGS 'data'` line like this -

```
MATERIAL-HEADINGS SINGLE
MATERIAL-HEADINGS PIPELINE
MATERIAL-HEADINGS DRAWING
```

Note. When used, the `MATERIAL-HEADINGS` data line must appear immediately following the `MATERIAL-CONTROL-FILE` data line in the MLD file

If a `MATERIAL-HEADINGS` 'data' entry is not used then the the option produced by default will be `MATERIAL-HEADINGS SINGLE`

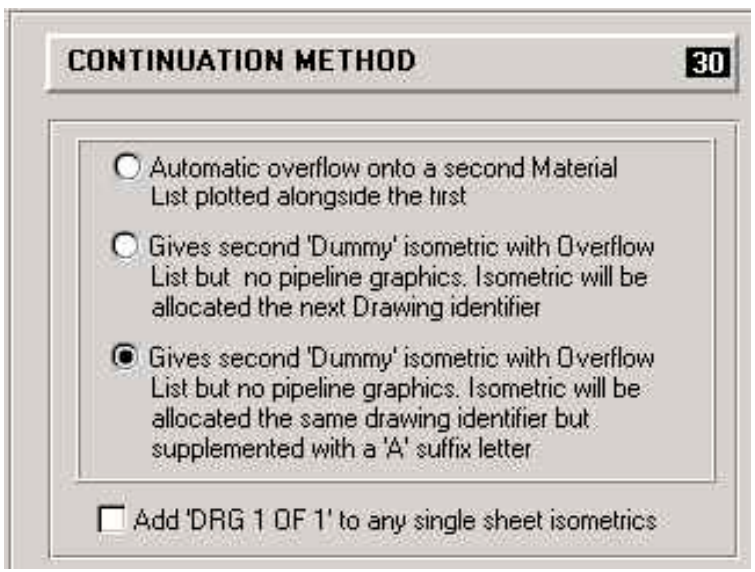
Material Control File -

Number of Drawings

To allow the number of drawing to be output as a data item in the Material Control File an additional entry has been added to the MLD and is to be placed in the **PRINTED-M/C-DATA-ITEMS** section of the MLD.

PRINTED-M/C-DATA-ITEMS

'NUMBER-OF-DRGS' Position Justification



For this option to function correctly 'Dummy' isometrics containing overflow materials / welds must be numbered using suffix letters. This is achieved by selecting the option shown here in Switch 30.

Material Control File -

Spool Number

To allow the Spool Identification number or letter to be output as a data item in the Material Control File an additional entry has been added to the MLD and is to be placed in the **PRINTED-M/C-DATA-ITEMS** section of the MLD.

PRINTED-M/C-DATA-ITEMS

'SPOOL-NUMBER' Position Justification

SPOOL I.D.	ISS.	ITEM CODE	SIZE (INS.)	QTY	GROUP	No.DRG	SPOOL No
SG-T1-A	1	PA5BSTD	6	5526 MM	PIPE	4	A
SG-T1-A	1	EEL90CFSTD-LBW	6	1	FITTING	4	A
SG-T1-A	1	FCD150-WNRSTD	6	2	FLANGE	4	A
SG-T1-B	1	PA5BSTD	6	28673 MM	PIPE	4	B
SG-T1-B	1	PA5BSTD	4	13030 MM	PIPE	4	B
SG-T1-B	1	T1RCFSTD-BW	6X4	2	FITTING	4	B
SG-T1-B	1	EEL90CFSTD-LBW	6	4	FITTING	4	B
SG-T1-B	1	EEL90CFSTD-LBW	4	2	FITTING	4	B
SG-T1-B	1	FCD150-WNRSTD	6	2	FLANGE	4	B
SG-T1-B	1	FCD150-WNRSTD	4	2	FLANGE	4	B
SG-T1-C	1	PA5BSTD	4	4844 MM	PIPE	4	C
SG-T1-C	1	EEL90CFSTD-LBW	4	1	FITTING	4	C
SG-T1-C	1	FCD150-WNRSTD	4	2	FLANGE	4	C
SG-T1-D	1	PA5BSTD	6	2117 MM	PIPE	4	D
SG-T1-D	1	FCD150-WNRSTD	6	2	FLANGE	4	D

Here we can see a generated report which includes both the Number of Drawings and Spool Number Identifier functions introduced with V8.11.0

Material Control File -

Individual Entries

An option as been added to allow individual data entries to be output to the Material Control File, when material accumulation of materials is being used on the Material List. This new facility will allow components with different attributes to be listed individually in the output report, but avoid non-accumulation of materials in the material section of the generated isometric.

PRINTED-M/C-DATA-ITEMS

'INDIVIDUAL-ENTRIES'

SPOOL I.D.	ISS.	ITEM CODE	SIZE (INS.)	QTY	GROUP	No.DRG	SPOOL No
SG-T1-A	1	PA5BSTD	6	3181 MM	PIPE	4	A
SG-T1-A	1	PA5BSTD	6	2345 MM	PIPE	4	A
SG-T1-A	1	EEL90CFSTD-LBW	6	1	FITTING	4	A
SG-T1-A	1	FCD150-WNRSTD	6	1	FLANGE	4	A
SG-T1-A	1	FCD150-WNRSTD	6	1	FLANGE	4	A
SG-T1-B	1	PA5BSTD	6	2346 MM	PIPE	4	B
SG-T1-B	1	PA5BSTD	6	6878 MM	PIPE	4	B
SG-T1-B	1	PA5BSTD	6	2543 MM	PIPE	4	B
SG-T1-B	1	PA5BSTD	6	3642 MM	PIPE	4	B
SG-T1-B	1	PA5BSTD	6	5529 MM	PIPE	4	B
SG-T1-B	1	PA5BSTD	6	5528 MM	PIPE	4	B
SG-T1-B	1	PA5BSTD	6	2207 MM	PIPE	4	B
SG-T1-B	1	PA5BSTD	4	3518 MM	PIPE	4	B
SG-T1-B	1	PA5BSTD	4	1624 MM	PIPE	4	B
SG-T1-B	1	PA5BSTD	4	4718 MM	PIPE	4	B
SG-T1-B	1	PA5BSTD	4	3170 MM	PIPE	4	B

Here we can see a new report which has been generated using the same data as that shown on slide 44, only this time we have specified that the data is listed as individual entries

Material Control File -

Example MLD

```
MATERIAL-CONTROL-FILE

PRINTED-M/C-COLUMN-HEADINGS

SPOOL                ITEM          SIZE
I.D.          ISS.   CODE         (INS.)        QTY     GROUP      No.DRG  SPOOL No
-----         ----   ----          -----        ---     -----      ------  --------

PRINTED-M/C-DATA-ITEMS
'INDIVIDUAL-ENTRIES'
'SPOOL-ID'        1    L
'REVISION'       18   L
'ITEM-CODE'      24   L
'N.S.'           39   L
'QTY'            53   N
'GROUP'          59   L
'NUMBER-OF-DRGS' 72   L
'SPOOL-NUMBER'   79   L
```

Here we can see an example of the MLD used to generate the report shown in slide 45.

In it we can see how the new functions added in ISOGEN V8.11.0 are entered in to the correct section of the the file.