

Specification

for

Mango Wall Format

Version 1.0

FINAL

Document History

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Version Control

The version of this document and hence the file format described shall only change when the record format is altered to accommodate additional features or capability.

Revision	Date	Author	Comment
-	-	W. Porter	Original Document
1.0	29/10/2004	R. Cuno	General Revision
	18/11/2004	R. Cuno	Added some notes to Appendix B regarding miters.
	19/11/2004	R. Cuno	Fixed examples to match specification table for Member Definition
	03/12/2004	R. Cuno	Added replication of MEM record to describe rear face of timber for angled walls. This alteration will not affect the ability to read current writings of the format.
	28/11/2006	R. Cuno	Remove additional corner definition to limit description of members to four coordinate points defined in clockwise order beginning at the bottom left corner. Only use this file format to describe walls.
	19/7/2007	W.Porter	Added various edits to simplify the file generation. These are based on issues discovered during the Canadian implementation
	12/02/2008	R. Cuno	Clarified use of member types and roles. Describe the use of MemberRoles.ini for software independent role look-up.

Acceptance and Release

This document is accepted and released by completion of the details below.

Accepted by	Date	Comment
W. Porter	18/11/2004	Content and constraints/limitations accepted as sufficient for most use cases.
W. Porter	03/11/2004	Content and constraints/limitations accepted as sufficient for most use cases.

Application

This document applies to the development of the listed software and versions.

Major	Minor	Revision	Software
7	2	0.1494	MTAutomation

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1 Introductory Notes

1.1 Purpose

The document is designed to capture the requirements for the generation of wall framing data files of the type Mango Wall Format (MWF). The data written to the MWF file shall be sufficient and complete enough to make those files useful for all timber processing required to build wall frames and their components.

1.2 Scope

This document is defined for use by any manufacturer of software that is capable of designing and outputting data for wall framing.

The key objective is to provide a file format that can be used by automation systems used in the timber and building industries. In particular the file format shall satisfy the needs of MangoTech Automation Systems.

1.3 Intended Audience (and Reading Suggestions)

This document is directed at the designers of software for the timber and building industries and those who develop software solutions for automation system used in those industries.

1.4 Document Conventions

The following may be required to interpret this document.

- The symbol ~ (tilde) shall be used to mean ‘approximately’.
- Single quotes shall be used to denote a literal string. Hence ‘123456’ is a sequence of numbers and not the number value of 123456.
- All numbers are written without separation of thousands and the decimal point for fractions if required. Hence 1600.5 is one thousand six hundred and a half.
- Units of measurement are included for all numbers where required. If a unit of measurement is not provided the number is purely a counter value.

1.5 Assumptions and Dependencies

The successful support for the MWF file and deployment of data files shall depend upon the ability of wall design software that is used to provide the required data. The successful use of the MWF format shall depend upon the ability of automation software to adequately process and filter the content of the data file. Limitations include:

- All members defined in a wall file shall have a single cut at each end.
- Each cut may be a single or double mitered (derived).
- Member data will describe the whole member face that is seen when looking at the panel.
- The hidden parts of a member shall not be truncated or left to assumption.
- The walls written to the MWF file are designed according to ...

The data file content defined by this document is considered sufficient and complete enough for Mango Tech to process and utilise.

1.6 Review Process

TBD - Require a standard for the review of the specification, relevant documentation etc to pin-point the differences, inadequacies, missing features, inadequate implementation, unsuitable implementation, lack of extensibility etc ...

In the absence of a defined review process the owner and sponsor of this specification shall take sole responsibility for assessing its suitability and completeness for use. The sponsor shall also be responsible for dictating changes and accepting the consequences thereof.

1.7 Documents for Consultation

For the purpose of eliciting potential usage of wall file data outside the perceived scope of Mango Tech, external wall definition specifications should be consulted.

1.8 File Organisation

The data written to a MWF file shall conform to this specification in terms of the record structure, order of records and the data content of all records written. A failure to provide data in the specified order and completely will render the data useless.

1.9 File Naming

The naming of data files is open. The only constraint is that each file is named with the file extension ‘.MWF’.

1.10 Change Process

TBD - Require a change methodology, process, reason, requested by, impact upon other systems, requirements to implement change (documentation), time frame, decision to go ahead or reject change (cost, time, scope, relevance, business impact), by whom, versions, rebuilds of other systems, compatibility issues, new components, deployment issues, approvals.

In the absence of any defined change process any alteration to this specification once accepted and released shall cause a version change. The new version of this specification and hence MWF shall be documented in a copy of this document leaving the details of the current version valid and intact.

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2 The MWF File

This section of the document details the MWF file and outlines the overall file structure along with the record structures.

2.1 Overview

The file format shall contain all of the information required to cut and manufacture wall frames in a factory. The file shall contain sufficient data to allow

- A picture of a contained wall to be displayed on a screen.
- Data separation by type to process subsets or components of walls.
- Automation software to derive information for window and door openings.
- Automation software to determine wall lengths, wall heights, nailing positions, miters, trenching requirements etc.
- A variety of machines to be driven with the one data file.

The file is to be a coordinate file of the wall with every member in the wall described by at least four extreme points that are seen when viewing the side elevation of the wall.

Every component in the wall shall be assigned a type identifier to aid decisions relating to the handling of the component.

A suggested list of numbers to identify members is attached to this document in Appendix A – List of Component Types, however, any numbering system will be acceptable as long as it remains consistent by the data file generation software and is document for general use.

2.2 File Structure

The MWF file shall include a header line followed by a variable number of customer specific data lines followed by blocks of panel, member and optional member label definitions. The related and grouped panel-member-label definitions shall be separated from each other by the insertion of a blank line.

The customer specific data lines shall be ignored in general and are free to be used as required by the producers and readers of the MWF file data.

A MWF file shall have the following general appearance:

File Header Line (CRLF)
Customer Data Line 1 (CRLF)
Customer Data Line 2 (CRLF)
...
(CRLF)
PNL, ... Panel Definition 1 (CRLF)
MEM, ... Member Definition 1 (CRLF)
MER, ... Member Definition 1 (Rear Face Delta) (CRLF)
LBL, ... Label Definition 1 (Optional) (CRLF)
MEM, ... Member Definition 2 (CRLF)
LBL, ... Label Definition 2 (Optional) (CRLF)
...
(CRLF)
PNL, ... Panel Definition 2 (CRLF)
MEM, ... Member Definition 13 (CRLF)
LBL, ... Label Definition 13 (optional) (CRLF)
...
(CRLF)
PNL, ... Panel Definition 20 (CRLF)
MEM, ... Member Definition 104 (CRLF)
LBL, ... Label Definition 104 (optional) (CRLF)
...
MEM, ... Last Member Definition 110 (CRLF)
LBL, ... Last Label Definition 110 (optional) (CRLF)

2.3 Record Structure

Each line of process data written to an MWF file shall be a comma-separated list of items in human-readable form terminated with a carriage-return and line-feed sequence (CRLF).

Blank lines terminated with the CRLF sequence shall be provided to separate data blocks.

2.4 Record Content

This section describes the content and purpose of each record in the MWF file.

2.4.1 Data General

Any data item written by the generation software shall not include any comma of its own. The insertion of commas into data items will break the record's place-holding structure and hence the interpretation of the data.

Data items defined as mandatory shall be meaningful strings and not have zero length. Where a data item is not mandatory and data is not available for population a zero-length string must be written for place-holding purposes.

Numeric data values can be whole numbers or decimal numbers. The number of decimal places is open to the writer, however, a reasonable maximum of four (4) shall be expected.

Each data item shall be delimited from the next by a single comma. The comma shall be omitted before the CRLF terminating sequence is written at the end of the data record.

2.4.2 File Header

The file header shall be a comma-separated list of data items (strings) written once as the first line of the file. The file header is used to identify the version and to apply any version specific processing requirements.

The file header shall be a comma-separated list of data items (strings) that includes the following in the given order.

FIELD NAME	REQUIREMENT	COMMENT
Version	Mandatory	Revision of this document as defined in the Document History = 1.0
Customer Job	Mandatory	Job name or identification assigned by the customer
Customer Business Name	Mandatory	Customer's business Name
Generation Software	Mandatory	Name of the software used to write the file. Used by MemberRoles.ini to pull member types (roles) when not defined internally.
Generation Software Version	Mandatory	Version of the software used to write the file
Units of Measure	Mandatory	The unit of measure for each length, X,

		Y etc in the file. Must be one of: MM = Millimeters DF = Decimal feet DI = Decimal Inches
(CRLF)	Mandatory	Terminates the line of data

Example file header lines:

1.0, Job12345, WallMaker Int, WallBuilder, 3.2, MM (CRLF)

... all member coordinates and lengths to follow are in millimeters.

1.0, Job12346, WallMaker Int, WallBuilder, 3.2, DF (CRLF)

... all member coordinates and lengths to follow are in decimal feet.

1.0, Job12346, WallMaker Int, WallBuilder, 3.2, DI (CRLF)

... all member coordinates and lengths to follow are in decimal inches.

2.4.3 Lines for Customer Specific Data

The writer of the MWF file shall be able to freely insert a number of lines of data for their own specific use immediately after the file header line. The file readers created to load the MWF file will be expected to ignore these lines of data and continue to read until the end of file or a panel definition is encountered (PNL). Each customer specific line can be free-format text and shall be terminated with CRLF.

2.4.4 Panel Definition Line

A panel definition line shall occur once for each panel posted to a file. Each panel definition shall mark the beginning of a set of member definition lines and optional label definition lines that are required to make up that panel.

A panel definition shall only be included if there are member definitions to complement it. It shall remain the responsibility of the software used to generate the panel data to ensure that member-less panels are not included.

A panel definition shall be a comma-separated list of data items (strings) that includes the following in the given order.

FIELD NAME	REQUIREMENT	COMMENT
Panel Definition Marker	Mandatory	Insert PNL
Panel ID	Mandatory	Unique running number or key for each panel to be written.
Panel Type	Mandatory	Code that defines the type of panel. Must be one of: 2 = Wall
Panel Description	Empty string if not populated	Preferred panel description for presentation to the operator.
Overall Panel Length	Mandatory	The length of the panel from long point to long point OPL = maximum X – minimum X
Overall Panel Height	Mandatory	The highest point of the panel OPH = maximum Y
Left Panel Junction	Empty string if not populated	The Panel ID of the panel that touches this one at the left hand end
Right Panel Junction	Empty string if not populated	The Panel ID of the panel that touches this one at the right hand end
Stack Number	Empty string if not populated	The package number that this panel will be stacked in for distribution
Label	Empty string if not populated	Any label text that should be printed for the panel
(CRLF)	Mandatory	Terminates the line of data

Example panel definition lines:

PNL, 1, 2, Front Wall, 5000, 2500, 2, 3, 1, House Wall Job 12345 (CRLF)

PNL, 2, 2, Left Wall, 5000, 2500, 4, 1, 1, House Wall Job 12345 (CRLF)

PNL, 3, 2, Right Wall, 5000, 2500, 1, 4, 1, House Wall Job 12345 (CRLF)

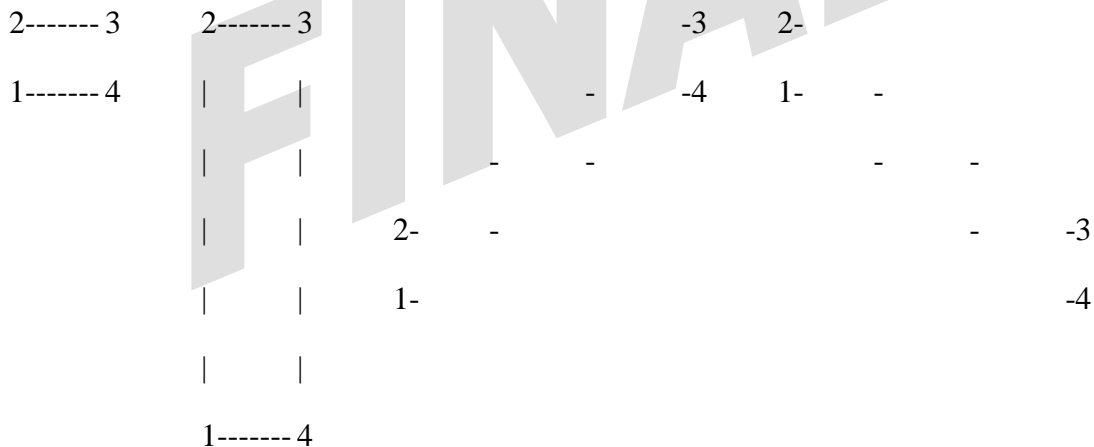
PNL, 4, 2, Rear Wall, 5000, 2500, 3, 2, 1, House Wall Job 12345 (CRLF)

2.4.5 Member Definition Line

A member definition line shall occur once for each member that is a part of a panel and is desired for processing. Any members that do not require processing or are not desired for processing do not need to be included in the data file. Members that need to be included for informational value only and do not require any processing (such as a shower stud or lintel to determine trenching data) can be marked to be ignored. Any software that processes such members shall include settings to override this condition.

The extents or position of each member shall be described by:

- Four (4) ordered pairs of X and Y coordinates that mark the corners of the member's front face (the one seen when looking at the panel) and trace its edges. The first and last coordinate pairs shall be used to close the member face.



- The distance Z of the panel's front face from the table top when the panel lies flat.

The positioning from the table-top allows the dimensions of marks and trenches to be determined and nailing can be avoided where timber is not present.

A member definition shall be written to a separate line. The definition shall be a comma-separated list of data items (strings) that includes the following in the given order.

FIELD NAME	REQUIREMENT	COMMENT
Member Definition Marker	Mandatory	Insert MEM
Member ID	Mandatory	Unique running number or key per panel for each member to be written.
Member Type	Mandatory	Code that defines the type of member. See Appendix A for valid codes.
Process Flag	Mandatory	Mark the member for processing or ignore. Must be one of: P = Process I = Information only
Member Description	Empty string if not populated	Preferred member description for presentation to the operator. If blank then TYPE field is used to find a software internal description. If still blank the MemberRoles.ini file is consulted via generation software value. If still blank member role is COMPONENT.
Overall Member Length	Mandatory	The total length of the member OPL = maximum X – minimum X
Member Depth	Mandatory	The dimension of the timber edge projecting through the panel
Member Width	Mandatory	The dimension of the timber edge seen looking at the panel
Stock	Mandatory	The stock that the operator shall select for cutting the member. This data section is to contain the full stock description. Don't expect the file reader to extract data from here to display elsewhere.
Stock Grade	Empty string if not populated	The strength grade of timber to use

Stock Species	Empty string if not populated	The species of timber to use for geographical considerations regarding destination of the final panel structures.
Label	Empty string if not populated	Any label text that should be printed for the member
Offset from Table-Top Z	Mandatory	The height of the member face being described above the table-top when the panel lies flat
Corner 1 X	Mandatory	Coordinate value, bottom left as viewed from the side of the wall
Corner 1 Y	Mandatory	Coordinate value, bottom left as viewed from the side of the wall
Corner 2 X	Mandatory	Coordinate value, top left as viewed from the side of the wall
Corner 2 Y	Mandatory	Coordinate value, top left as viewed from the side of the wall
Corner 3 X	Mandatory	Coordinate value, top right as viewed from the side of the wall
Corner 3 Y	Mandatory	Coordinate value, top right as viewed from the side of the wall
Corner 4 X	Mandatory	Coordinate value, bottom right as viewed from the side of the wall
Corner 4 Y	Mandatory	Coordinate value, bottom right as viewed from the side of the wall
(CRLF)	Mandatory	Terminates the line of data

Example member definition lines:

MEM, 1, 3, P, Bottom Plate, 5000, 90, 35, 5100 / 2x4, Grade, Species, Print This, 90, 0, 0, 5000, 0, 5000, 35, 0, 35 (CRLF)
 ... mango definition for bottom plate

MEM, 2, 8, P, Lintel, 2000, 45, 120, 2100 / 2x4, Grade, Species, Print This, 90, 1000, 2000, 3000, 2000, 3000, 2120, 1000, 2120 (CRLF)

... mango definition for lintel – at front of panel

MEM, 3, 14, I, Shower Stud, 1500, 35, 90, 1500 / 2x4, Grade, Species, Print This, 35, 3500, 0, 5000, 0, 5000, 90, 3500 (CRLF)

... mango definition for shower stud provided as information only – at back of panel.

2.4.6 Member Definition Line (Rear Face)

The required member definition described in the previous paragraph is not sufficient to describe angled walls. An additional member definition line can be added immediately after the required definition to provide coordinate pairs for the rear face of the member if different to the front face.

Where the written MWF file does not contain the additional member definition line for the rear face it shall be assumed that the rear face underlies the front face: the rear face coordinates shall be taken to match the front face coordinates corner for corner.

The additional member definition line shall include the MER marker and the respective member ID followed by the same number of coordinate pairs found in the required member definition line.

FIELD NAME	REQUIREMENT	COMMENT
Member Rear Definition Marker	Mandatory	Insert MER
Member ID	Mandatory	Same running number or key assigned to the respective Member Id (MEM record)
Corner 1 X	Mandatory	Coordinate value, bottom left as viewed from the side of the wall
Corner 1 Y	Mandatory	Coordinate value, bottom left as viewed from the side of the wall
Corner 2 X	Mandatory	Coordinate value, top left as viewed from the side of the wall
Corner 2 Y	Mandatory	Coordinate value, top left as viewed from the side of the wall

Corner 3 X	Mandatory	Coordinate value, top right as viewed from the side of the wall
Corner 3 Y	Mandatory	Coordinate value, top right as viewed from the side of the wall
Corner 4 X	Mandatory	Coordinate value, bottom right as viewed from the side of the wall
Corner 4 Y	Mandatory	Coordinate value, bottom right as viewed from the side of the wall
(CRLF)	Mandatory	Terminates the line of data

Note: Where a member face must be described by more than four corners insert as many additional corner X and Y pairs as are needed before terminating the record.

Example member definition lines for rear face:

MER, 1, -90, 0, 5090, 0, 5090, 35, -90, 35 (CRLF)

... mango definition for rear of bottom plate – in relation to MEM 1 front face this produces a bottom plate with ends angled at 45 degrees.

2.4.7 Label Definition Line

A label definition line may occur once after any member-back definition line that is written. It shall appear immediately after its related member definition line if inserted. The label definition shall provide labeling data at specific locations along the member and may include as many labels as are required.

A label definition shall be a comma-separated list of data items (strings) that includes the following in the given order.

FIELD NAME	REQUIREMENT	COMMENT
Label Definition Marker	Mandatory	Insert LBL
Label ID	Mandatory	Same running number or key assigned to the respective Member Id (MEM record)

Label	Mandatory	Any label text that should be printed for the member
Label Position	Mandatory	Position along the member from relative to the member datum LP = minimum X + Offset
Label Orientation	Mandatory	Angle of rotation of the text. Must be between 0 and 360 degrees where 0 is normal flat and rotation is anti-clockwise from 0.
Additional Label	Mandatory	Any label text that should be printed for the member
Additional Label Position	Mandatory	Position along the member from relative to the member datum LP = minimum X + Offset
Additional Label Orientation	Mandatory	Angle of rotation of the text. Must be between 0 and 360 degrees where 0 is normal flat and rotation is anti-clockwise from 0.
(CRLF)	Mandatory	Terminates the line of data

Note: If a label definition is written it shall include at least one label to print.

Insert as many additional label, label position and label orientation triplets as are needed before terminating the record.

Example label definition lines:

LBL, 1, ---, 500, 90, ---, 1000, 90, ---, 2500, 90, ---, 4965, 90, Truss 6, 4985, 90 (CRLF)
... mango labeling definition for related top plate

3 Appendix A: Glossary

3.1 List of Component Types

The listing below shows the member types currently defined and used by the industry to identify member roles (MEM record – TYPE field). The member roles are displayed for the user on cutting screens in the TYPE column of the member listing.

The DESCRIPTION field of the MEM record is the preferred role to display for the operator. If blank then the TYPE field is used to find a role via the list defined below. If no role is found then the MemberRoles.ini file in the application path is consulted for a description. The MemberRoles.ini must be populated by the user of the MWF file and shall include a section that matches the generating software (File Header Record – Generation Software Field) to succeed. For example, if the file header contains GenSoftware in the Generation Software field we need the following:

```
[GenSoftware]
1=Top Plate           -> '1' is the type, 'Top Plate' becomes the role for display
2=Bottom Plate       -> '2' is the type, 'Bottom Plate' becomes the role for display
...
```

If still no role is found then the member will be displayed as a COMPONENT.

3.1.1 Mango (0 -> 99)

- 1 = Top Plate
- 2 = Double Top Plate
- 3 = Bottom Plate
- 4 = Double Bottom Plate
- 5 = Stud
- 6 = End Stud
- 7 = Nogging
- 8 = Lintel
- 9 = Sill
- 10 = Head
- 11 = Spacer
- 12 = Packer
- 13 = Block
- 14 = Shower Stud
- 15 = Generic

3.1.2 *Hay/HFS file format member names (100 - > 199)*

115 = Ply Brace
116 = Block
117 = Noggin
118 = Over stud
119 = Under stud
120 = Stud
121 = Support stud
122 = Top Plate
123 = Bottom plate
124 = Lintel
125 = Angle Brace
126 = Hoop Iron or Mini Brace
127 = Head
128 = No Name
129 = No Name
130 = No Name
131 = No Name
132 = No Name
133 = Sill
134 = Jam Stud
135 = Critical Stud
136 = No Name
137 = No Name
138 = No Name
139 = Ply Brace
140 = No Name
142 = Shower Stud
148 = Ribbon Plate

3.1.3 *Pryda (200 - >299)*

No types defined yet.

3.1.4 *ArgosMWF (300 - >399)*

301 = Bottom Plate
302 = Top Plate
303 = Very Top Plate
304 = End Stud
305 = Stud
306 = King Stud

307 = Jack Stud
308 = Header
309 = Opening Top Plate
310 = Opening Side
311 = Opening Sill
312 = Cripple Below
313 = Cripple Above
314 = Horizontal Block
315 = Shim
317 = End Shim
323 = Vertical Backer
331 = Wind Brace

3.1.5 MultiNailMWF (400 -> 499)

401 = Top Plate
402 = Bottom Plate
403 = Std Stud
404 = Jamb Stud
405 = Support Stud
406 = Pack Stud
407 = Lintel
408 = Head Trimmer
409 = Sill
410 = Under or Over
411 = Noggin
412 = Block
413 = Critical Stud
414 = Ribbon plate

3.1.6 SolidBuilderMWF (500 -> 599 or alphanumeric 2 character)

501 or bp = Bottom Plate
502 or tp = Top Plate
503 or vt = Very Top Plate
504 or st = Stud
505 or le = Left End Stud
506 or re = Right End Stud
507 or cr = Cripple
508 or hd = Header
509 or sl = Sill
510 or tr = Trimmer
511 or ks = King Stud

512 or ps = Post
513 or lb = Blocking
514 or bk = Channel Block
515 or ch = Channel
516 or bs = Step Stud

3.2 Format of the MemberRoles.ini file

The MemberRoles.ini file must appear in the application path of the MangoTech Automation Software and can be used to provide member roles for display to the machine operator. The data file requires a section that identifies the reader of the data and a list of member roles to extract according to a given key value. The file may have content as follows:

```
[HAY/HFS]
16=PLY BRACE
17=BLOCK
18=NOGGIN
...
```

```
[Pryda]
1=COMPONENT
```

```
[Argos Systems]
1=Bottom Plate
2=Top Plate
3=Very Top Plate
4=End Stud
5=Stud
...
```

```
[Multinail FrameSource]
1=Top Plate
2=Bottom Plate
3=Std Stud
4=Jamb Stud
5=Support Stud
...
```

```
[SolidBuilder]
bp=Bottom Plate
tp=Top Plate
vt=Very Top Plate
st=Stud
```

le=Left End Stud
re=Right End Stud
cr=Cripple
hd=Header

...

[BuildersCAD]

1=VTP
2=TOP PLT
3=BOTTOM PLATE

...

44=1/2 4x8 INSUL BOARD
45=IN SHEATH 4
46=IN SHEATH 5
47=IN SHEATH 6
48=IN SHEATH 7
49=IN SHEATH 8

[WallCAD]

1=Top Plate
2=Very Top Plate
3=Bottom Plate
4=Very Bottom Plate

...

[100]

115=Brace
116=Block
117=Nogging
118=Over Stud

...

[300]

301=Bottom Chord
302=Top Chord
303=Very Top Chord

...

[400]

401=Top Chord
402=Bottom Chord
403=Stud
404=Jamb Stud
405=Support Stud
406=Pack Stud

FINAL

407=Lintel
408=Head
409=Sill
410=Under Over
411=Nogging
412=Block
413=Critical Stud
414=Ribbon Plate

...

[500]

501=Bottom Shord
502=Top Chord

...

[General]

BP=Bottom Plate
VT=Vert Top Plate
BP=Bottom Plate
ST=STUD
WB=WEB
WG=WEDGE
SL=Sill
HD=Head
LB=Block
KS=King Stud
LE=Left End Stud
RE=Right End Stud
CR=Cripple
TR=Trimmer
PS=Post
BK=Channel Block
CH=Channel
BS=Step Stud

[TRS200]

T=Top Chord
TC=Top Chord
TT=Very Top Chord
ST=Component
OS=King Stud
CS=Component Stud

...

[TRS300]

T=Top Chord
TC=Top Chord

...

[TPS41]

TC=Top Chord

BC=Bottom Chord

WEB=Web

TURBO=Turb-O-Web

...

STUDC=Critical Stud

BRACE=Bracing

POSI=Posi-Strut

3.3 Abbreviations

MWF : Mango Wall Format

CRLF : Carriage-return plus Line Feed sequence

3.4 Units of Measurement

mm : metric millimeter

inch : imperial inch.

degree : angular position in the positive x and y Cartesian coordinate system.

3.5 Definitions

There are no peculiar definitions to note.

4 Appendix B: Sample File

The listing below is a sample of a file containing four panels that form a box when assembled.

1.0, Job12345, WallMaker Int, WallBuilder, 3.2, MM

This is some sort of customer data

This is some more customer data

PNL, 1, 2, Front Wall, 5000, 2500, 2, 4, 1, House Wall Job 12345

MEM, 1, 1, P, Top Plate, 5000, 90, 35, 5100 / 35x90, Grade, Species, Print This, 90, 0, 2535, 0, 2570, 5000, 2570, 5000, 2535

MER, 1, -90, 2535, 5090, 2535, 5090, 2570, -90, 2570

LBL, 1, ---, 500, 90, ---, 1000, 90, ---, 2500, 90, ---, 4965, 90, Truss 6, 4985, 90

MEM, 2, 3, P, Bottom Plate, 5000, 90, 35, 5100 / 35x90, Grade, Species, Print This, 90, 0, 0, 0, 35, 5000, 35, 5000, 0

MER, 2, -90, 0, 5090, 0, 5090, 35, -90, 35

MEM, 3, 6, P, Left End Stud, 2500, 90, 35, 2700 / 35x90, Grade, Species, Print This, 90, 0, 35, 0, 2535, 35, 2535, 35, 35

MEM, 4, 6, P, Right End Stud, 2500, 90, 35, 2700 / 35x90, Grade, Species, Print This, 90, 4965, 35, 4965, 2535, 5000, 2535, 5000, 35

PNL, 2, 2, Left Side Wall, 5000, 2500, 3, 1, 1, House Wall Job 12345

MEM, 5, 1, P, Top Plate, 5000, 90, 35, 5100 / 35x90, Grade, Species, Print This, 90, 0, 2535, 0, 2570, 5000, 2570, 5000, 2535

MEM, 6, 3, P, Bottom Plate, 5000, 90, 35, 5100 / 35x90, Grade, Species, Print This, 90, 0, 0, 0, 35, 5000, 35, 5000, 0

MEM, 7, 6, P, Left End Stud, 2500, 90, 35, 2700 / 35x90, Grade, Species, Print This, 90, 0, 35, 0, 2535, 35, 2535, 35, 35

MEM, 8, 6, P, Right End Stud, 2500, 90, 35, 2700 / 35x90, Grade, Species, Print This, 90, 4965, 35, 4965, 2535, 5000, 2535, 5000, 35

PNL, 3, 2, Rear Wall, 5000, 2500, 4, 2, 1, House Wall Job 12345

MEM, 9, 1, P, Top Plate, 5000, 90, 35, 5100 / 35x90, Grade, Species, Print This, 90, 0, 2535, 0, 2570, 5000, 2570, 5000, 2535

LBL, 9, Truss 6, 15, 90, ---, 35, 90, ---, 2500, 90, ---, 4000, 90, ---, 4500, 90

MEM, 10, 3, P, Bottom Plate, 5000, 90, 35, 5100 / 35x90, Grade, Species, Print This, 90, 0, 0, 0, 35, 5000, 35, 5000, 0

MEM, 11, 6, P, Left End Stud, 2500, 90, 35, 2700 / 35x90, Grade, Species, Print This, 90, 0, 35, 0, 2535, 35, 2535, 35, 35

MEM, 12, 6, P, Right End Stud, 2500, 90, 35, 2700 / 35x90, Grade, Species, Print This, 90, 4965, 35, 4965, 2535, 5000, 2535, 5000, 35

PNL, 4, 2, Right Side Wall, 5000, 2500, 3, 1, 1, House Wall Job 12345

MEM, 13, 1, P, Top Plate, 5000, 90, 35, 5100 / 35x90, Grade, Species, Print This, 90, 0, 2535, 0, 2570, 5000, 2570, 5000, 2535

MEM, 14, 3, P, Bottom Plate, 5000, 90, 35, 5100 / 35x90, Grade, Species, Print This, 90, 0, 0, 0, 35, 5000, 35, 5000, 0

MEM, 15, 6, P, Left End Stud, 2500, 90, 35, 2700 / 35x90, Grade, Species, Print This, 90, 0, 35, 0, 2535, 35, 2535, 35, 35

MEM, 16, 6, P, Right End Stud, 2500, 90, 35, 2700 / 35x90, Grade, Species, Print This, 90, 4965, 35, 4965, 2535, 5000, 2535, 5000, 35

NOTE: MEM 1 in PNL 1 has front and rear face definitions (MEM + MER) to demonstrate description of angled top and bottom plates for angled walls.

5 Appendix C: Issues List

TBD – any open requirements or issues that remain to be resolved for this specification, including TBDs, pending decisions, information that is needed, conflicts awaiting resolution, implied limitations etc.

1. Labeling information is not assigned to a face of the timber used and is only specified for a single face. By default it shall be applied on the widest face of the timber using the datum - minimum X and Y – as the reference.
2. Do writers and readers of the MWF file want to specify face specific labeling?
3. Trenching requirements shall be derived from the data written to the file and the spatial relationships between the members. The touch points of members based upon the X, Y and Z data shall be used to determine trench positions and depths.
4. Do writers and readers of the MWF file want to specify face specific trenching data?
5. Nailing data shall be derived from the data written to the file and the spatial relationships between the members. The touch points of members based upon the X, Y and Z data shall be used to determine the nailing positions.
6. When used for cutting members the data implies a need to lay each member onto a face projected through the panel (typically one of the wide faces). The given X, Y data must be translated from the front face with consideration given to touch points from other members.
7. Although labeling data is included the methods for applying those labels are undefined. In-line printing appears to be a requirement – markings can be applied by hand with the assistance of automated positioning.
8. A definition for timber orientation and face identification may need to be established in future. For example, define the front or viewed face as the default (top-face or 0) and use a right or left-hand screw rule (palm down) to determine the face ordering.
9. To better describe cutting requirements of members the defined MEM / MEB / LBL structures may be rearranged to describe articles that can be affected via a particular member face. Consider additional member-article records (MEA) describing face-based articles for processing.
10. Consider breaking the MEM record into an MEF (member-front) and MER (member-rear) to initiate face specific data. Future definitions may include MET (member-top) and MEB (member-bottom)