

# Multi-Discipline Supports Customisation Guide

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# MDS Customisation Guide

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# 1 Introduction

## 1.1 About this Guide

This manual is designed to give the administrator guidance on project setup and setting up and configuring the framework templates for the Multi-Discipline Supports (MDS) application.

Guidance is also provided on how to produce drawings from the design model using the MDS Area Based Automatic Drawing Production (ADP) application. A pre-requisite to using MDS-ADP is that the Area Based ADP application has been installed and configured by the administrator.

## 1.2 Overview of the MDS Application

The MDS application allows the user to create standard supports for the pipe work, cable racks, and HVAC model objects. The application is highly interactive, enabling the user to design supports with the minimum of effort. The MDS application is also highly configurable allowing the administrator to define project related defaults, to control the design of supports, and to determine the range and types of ancillary support components that can be used on the project.

The standard supports in this application are designed using structural sections and are template driven, so in essence the template reflects the Standard. A default set of structural templates based on British Standard Steelwork Sections is supplied with the application. All of the supplied templates may be configured by the office or project to adopt any relevant national or regional standard for steelwork sections. For further information see [Framework Template Administration](#).

Ancillaries are the items that are attached to the supported object such as a u-bolt, bolt-on shoe, anchor, and slip-unit. The ancillaries associated with the template reflect those available with, or, suitable for, the Standard. If the available templates do not reflect what you want to build, either ask your administrator to work with AVEVA Solutions to get your requirement designated as a new Standard (and hence a new template) or create as a special. A good example of a special would be the need to add an additional brace to an existing template. This would have to be designed as, or converted to, a special with the extra brace added in using the standard Beams and Columns application. Otherwise a new template/standard is required.

Vessel Supports are identified as template/standard driven.

Ancillaries for cable tray and HVAC, sometimes referred to as fixings, are deemed to be the responsibility of the relevant contractor and are not dealt with in this application.

## 1.3 Administrator's Role

The administrator is responsible for initial setup of the defaults associated with the MDS application (refer to the *Administrator Guide*) and setup of the structural steel sizes associated with the framemaker templates. The MDS application is supplied with a British Steel set of framework templates, which the administrator must modify to suit the specific requirements of the project.

## 1.4 MDS Catalogues and Specifications

The MDS application is supplied with a catalogue and specification. The range of bore and components in the catalogue are fixed and should be adequate for all projects. The catalogue supplied and associated 'MDS' specification must not be modified by the administrator or any other user.

## 2 Project Setup

### 2.1 Projects and Databases

#### 2.1.1 Supplied Projects

The MDS Application is supplied to all users of MDS with several projects, and are supplied along with any client-specific project. In the following example the client specific project is CCA (Client Catalogue A):

Project MDS	Contains all databases for use with the MDS application
Project MAS:	Standard MAS project is now customised for use with the MDS application. This point is supplied as part of the main AVEVA Plant/Marine software.
Project MDU:	Contains pre-created geometry and point sets, linked into the MDS catalogue and specification. This provides the MDS administrator with the ability to create a set of ancillary standards with their own geometry
Project CCA:	Client Catalogue A (only supplied where clients have additional development completed by AVEVA)
Project CPL, PSL and LIS:	If a manufacturer's interface is used for hanger design, then the /MDS/HANGERS database is not used, and one of these manufacturer's projects can be selected instead

#### 2.1.2 Supplied Databases

- **Project MDS**

Database Name	Db Number	Description
MDS/CATA	7320	Catalogues and specifications
MDS/DESISTDS	7321	For use with db no 7325
MDS/DRAFT	7322	DRAFT libraries/templates
MDS/DESITMPL-BS	7324	Framework templates for BS steel
MDS/DRAFTSTDS	7325	Standards in DRAFT format

Database Name	Db Number	Description
MDS/DESITMPL-PSL	7326	Hanger templates for Pipe Support Ltd
MDS/DESITMPL-GRI	7327	Hanger templates for Grinnell
MDS/PROP	7328	Properties database
MDS/DESITMPL-AISC	7329	Framework templates for AISC Steel
MDS/DESI-SPECIAL-TMPL-BS	7330	Project special framework templates for BS Steel
MDS/DESI-SPECIAL-TMPL-DIN	7331	Project special framework templates for DIN Steel
MDS/DESI-SPECIAL-TMPL-AISC	7332	Project special framework templates for AISC Steel
MDS/DESITMPL-PIHASA	7333	Framework templates for Pihasa
MDS/WELDS	7334	Weld templates DATASETS database
MDS/DESITMPL-DIN	7350	Framework templates for DIN Steel
MDS/MDSAPPDEFAULTS	7351	MDS Application Defaults database
MDS/DESITMPL-BS-ORI	7352	Orientated Framework templates for BS Steel
MDS/DESITMPL-AISC-ORI	7353	Orientated Framework templates for ASIC Steel
MDS/DESITMPL-DIN-ORI	7354	Orientated Framework templates for DIN Steel

- **Project MAS**

Database Name	Db Number	Description
MASTER/MDSDICT	7523	MDS LEXICON database

- **Project MDU**

Database Name	Db Number	Description
MDU/CATA	7355	MDS Catalogue for USER DEFINED Ancillaries



- **Project CCA**

Database Name	Db Number	Description
CCAMDS/CATA	As project	Client Catalogues and specifications
CCAMDS/DESISTDS	As project	For use with db CCAMDS/DRAFTSTDS
CCAMDS/DRAFT	As project	DRAFT libraries/templates
CCAMDS/LEXI	As project	LEXICON database
CCAMDS/DESITMPL-BS	As project	Framework templates for BS steel
CCAMDS/DRAFTSTDS	As project	Standards in DRAFT format
CCAMDS/DESITMPL-PSL	As project	Hanger templates for Pipe Support Ltd
CCAMDS/DESITMPL-GRI	As project	Hanger templates for Grinnell
CCAMDS/PROP	As project	Properties database
CCAMDS/DESITMPL-AISC	As project	Framework templates for AISC Steel

- **Projects CPL, PSL and LIS**

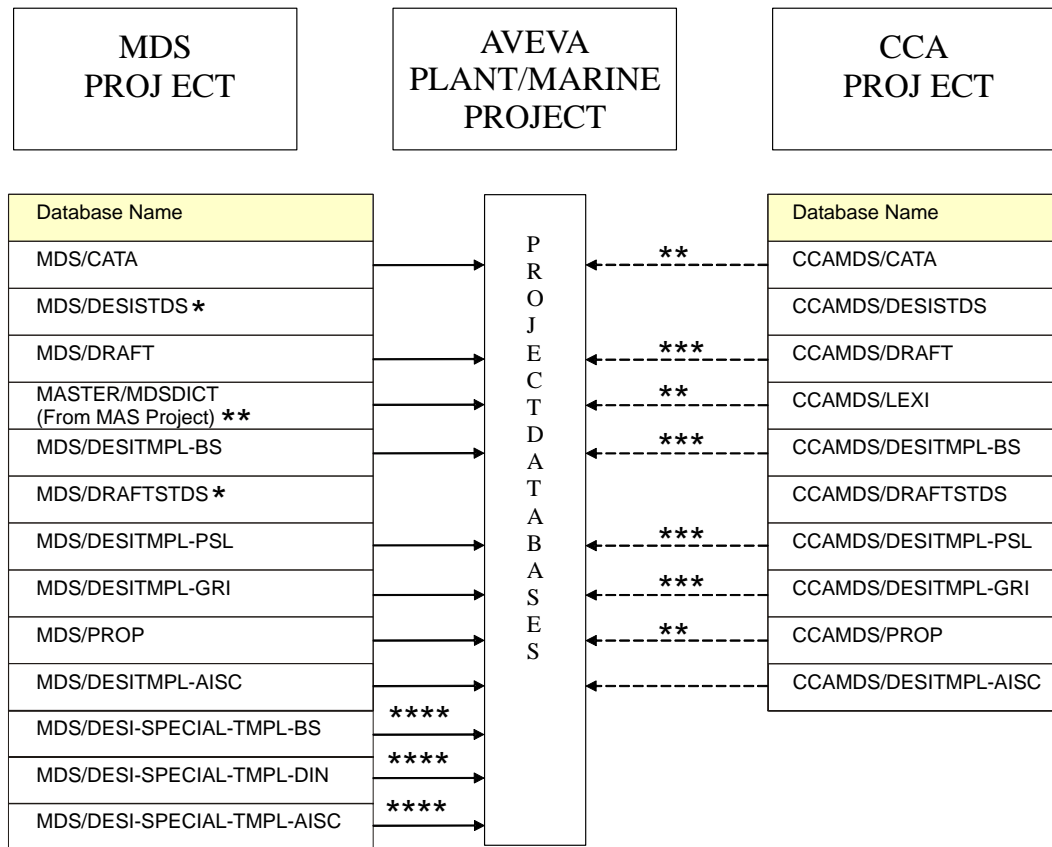
The following manufacturer's interfaces can be used instead of the standard MDS hanger interface:

- CPL - Witch Hanger from Carpenter & Paterson Ltd
- PSL - PS Designer from PSL
- LIS - LICAD from Lisega

## 2.2 Project Database Setup

### 2.2.1 Project Schema

The databases used by MDS are controlled centrally (foreign databases) from the MDS project along with any client project if supplied. The schema shown below reflects a project using this type of setup and shows the CCA project as a client supplied project.



- \* These databases are not required in the main project.
- \*\* Add these databases in addition to those supplied with the MDS project.
- \*\*\* Use these databases to replace those supplied with the MDS project.
- \*\*\*\* Copy one of these databases to the project where it can be used for project specials.

### 2.2.2 Project Defaults

Client projects, when issued, contain default settings contained in a single PARAGON database customised to the client's requirements. Use these defaults in preference to those supplied with the MDS project.

## 2.3 MDS Catalogue/Data Access Controls (DAC) Requirements

There are several catalogue requirements that need to be implemented into the project for MDS to function correctly as described in this section.

The introduction of trunnions made from branches need certain rules to be adhered to in the catalogue database as described in [In-Line Trunnions](#).

### 2.3.1 Elbows

The following diagram shows the catalogue requirement when MDS adds a trunnion to an elbow.

Minimum dac access for support user

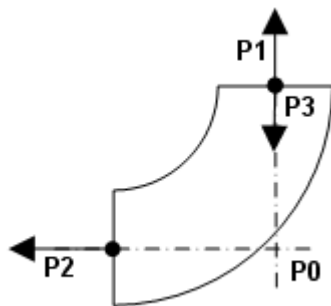
GTYP ELBO and BEND

Modify SPREF

Modify ARR

Modify LEA

Modify CREF



Ppoint P3 is at ppoint P1 but in opposite direction

Ppoint P3 assumes same bore as P1

MDS appware will flip component if required

MDS appware will reselect component if no branch exists and checks to see if P1 and P3 in same place and same bore.

Scanner will select new component from current spec.

### 2.3.2 Reducers

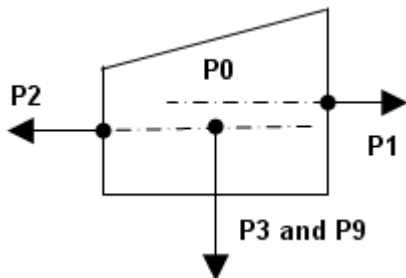
The following sketch shows the catalogue requirement when MDS adds a trunnion to a reducer.

Minimum dac access for support user

GTYP REDU (ECCENTRIC)

Modify SPREF

Modify CREF



Ppoint P3/P9 is at intersection of ppoint P0 and ppoint P2 but orientated down

P3 and P2 must be identical bore

MDS appware will reselect component if no branch exists and checks to see if P1 and P3 are the same bore

Scanner to select new component from current spec

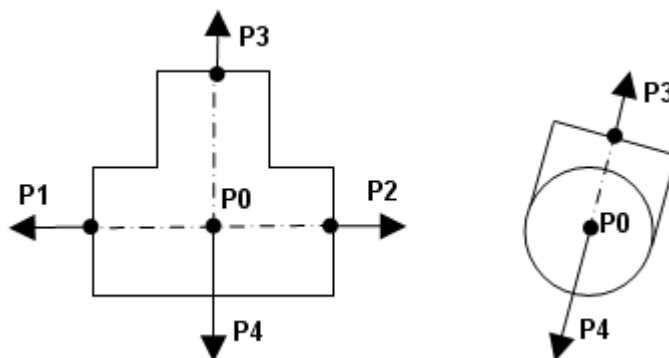
### 2.3.3 Tees

The following diagram shows the catalogue requirement when MDS adds a trunnion to a tee.

Minimum dac access for support user

GTYP TEE delete

GTYP CROSS create and modify



Reselect as cross scanner to select new component from current spec.

MDS will duplicate orientation of original tee.

MDS will handle direction of trunnion from P4

### 2.3.4 In-Line Trunnions

The following information shows the catalogue requirement when MDS adds an in-line trunnion:

Minimum dac access for support user

GTYP TEE create and modify

Scanner to select new component from current spec with SKEY TESO with equal bore

### 2.3.5 Reinforcing Pad Material

When MDS creates a reinforcing pad on a tube element, it will automatically set the MTOREF attribute to the SPREF of the LSTU to allocate material for the pad. Currently there is no method to set the required length apart from the MTOLENGTH attribute of the detail reference of the lstu spref. It is recommended that this attribute is set to the maximum length of a reinforcing pad so that the maximum length is ordered in all cases.

## 2.4 Configuration Checklist

### 2.4.1 Project Configuration

The table below contains all the steps an administrator needs to check when he attempts to configure the MDS application for a project's requirements.

Step	Description
1	<p>From within the PARAGON Application, select <b>Modify&gt;MDS Application Defaults</b> to display the MDS Admin Data form.</p> <p>Modify the defaults:</p> <p>DESIGN Application Defaults e.g. Clearance, Overlap, Pipe slope etc.</p> <p>Application Support Type e.g. FT03 not needed by project.</p> <p>Replacement Support Name e.g. FT09 displayed in DESIGN and DRAFT Application as PS132</p> <p>Support Descriptions e.g. Pedestal Support for Elbow required to be described as Duck Foot</p> <p>Available Support Ancillaries e.g. AT01 not allowed on Support Type FT08</p> <p>Modify the Hangers Configuration Description and Configuration name (optional).</p> <p>Remove configurations that are not used on the Project (optional). NOT RECOMMENDED.</p>
2	<p>From within the PARAGON Application, select <b>Modify&gt;MDS Ancillary Defaults</b> to display the MDS Ancillary Defaults form:</p> <p>Complete all dimensions (design parameters), weight, minimum and maximum values required by the project</p>
3	<p>Modify the project specification to match settings used in step 2. For example the pipe class 'CS' for carbon steel to match the :MDSPipeMat uda at specification level in the project.</p>
4	<p>From within the PARAGON Application, select <b>Modify&gt;MDS Application Defaults</b> to display the MDS Admin Data form. Modify the support zone identification (Zone ID) settings.</p>
5	<p>Modify DES-SUPP-NAMES* in the project default directory for: Auto naming files.</p>
6	<p>Structural Design Templates - Refer to the MDS <a href="#">Framework Template Administration</a> section for information on how to achieve this.</p>
7	<p>Hanger Design Templates - Check that the Template represents the configuration defined in the MDS Admin Data and MDS Hanger Data forms (Modify menu in PARAGON). Not required if using a MDS Hanger Manufacturer Interface.</p>
8	<p>Drawing Backing Sheets - To be modified/created to suit project requirements.</p>

Figure 2:1. Project configuration checklist

## 3 Framework Template Administration

### 3.1 Template Modification Rules

#### 3.1.1 Special Instructions

Clients may configure the MDS application Structural Design Templates to an alternative National Standard for Steelwork Sections to the British Standard supplied as default. This may be a different size from the same steelwork standard or a different size from a different standard.

Apply the following rules when replacing the default size to ensure the MDS application functions correctly:

- The origin of each template must remain in the same position when the steelwork size is modified. The example shown in this section has the origin on the back mark of the cross bar. Move the origin to align with the back when the size is changed. This ensures that the origin is placed in the correct position in relationship to the datum attachment when the framework is generated.
- DO NOT modify the position of the section starts and ends in relationship to the structure orientation.
- Use the naming convention described in [Framework Naming Conventions](#).
- There is a limit of twenty structural templates per support type. This limit is governed by the Pipe Support Specification 'MDS', which has eight attachment entries available for each template type.
- All structural sections defined as SCTN elements in the default templates will have a numerical value set against their design parameter attribute. For example, the default value for design parameter number 1 of SCTN 'MDS/FT01-1-BAR-1' is set to '1400'. This value is the maximum allowable length for this particular SCTN. The value is checked against the actual length of a SCTN element, named **<structurename>BAR-1**, and is created automatically during the creation of a Pipe Support by the MDS application. Clients may modify this attribute in their template database as part of their configuration.
- Where a template contains internal joints, it may be necessary to modify the specification reference to a handed joint when a mirror operation is performed. To do this, set the uda :MdsMirror to the spref required for a mirrored joint, when the joint is created in the template.

When a framework is created, the template is copied to the datum support (the first pipe identified will be the datum support) and then the framework is stretched and re-sized, depending on the method of creation used, i.e. Cursor, Dimensions or Clearance. Therefore the initial positioning and orientation of the sections within the structure are critical.

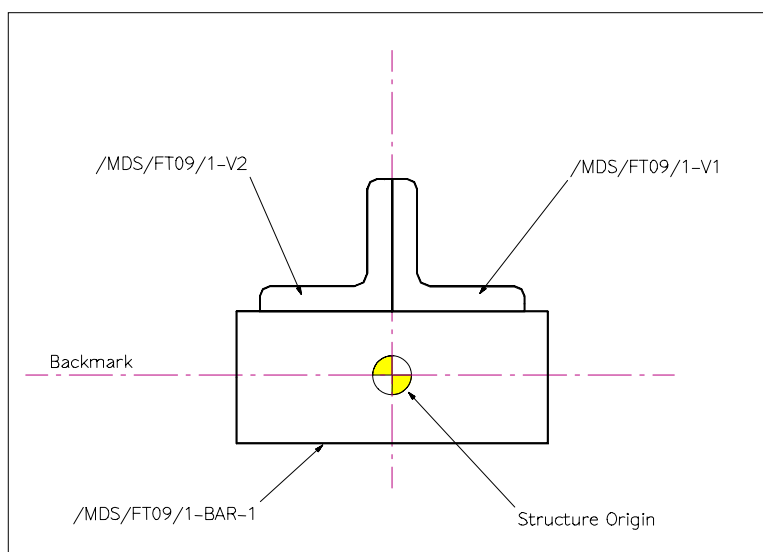
An example of replacing the default steelwork size is shown in [Framework Setup](#).

## 3.2 Framework Setup

### 3.2.1 Replacing the Default Steelwork Section Size

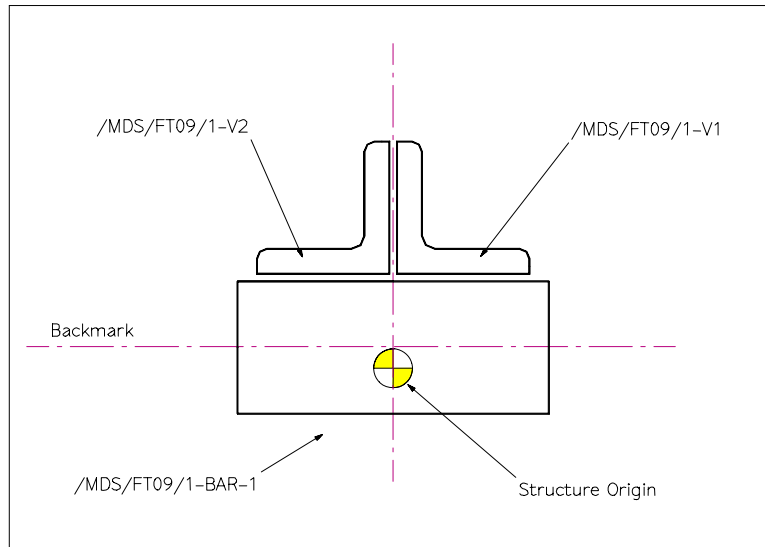
The MDS application is supplied with a default set of frameworks based on British Steelwork standards. The project can modify the steelwork sizes and the following example explains how the administrator makes the alternatives available. In the example, support types FT09 option 1, which uses 60x60x8 angle British Steel Standard is changed to 2x2x3/8 AISC Standard.

1. Enter the application with write access to the project MDS framework template database.
2. Enter the Design module and load the applicationware.
3. Navigate to the FT09 template structure /MDS/FT09/1. This is the first available size for the FT09 standard, by default, of four available.
4. Unlock the structure.
5. Set the limits of the structure and add it to the drawlist and look down. The following view should be displayed on the screen. Additional text and symbols have been added for clarification.

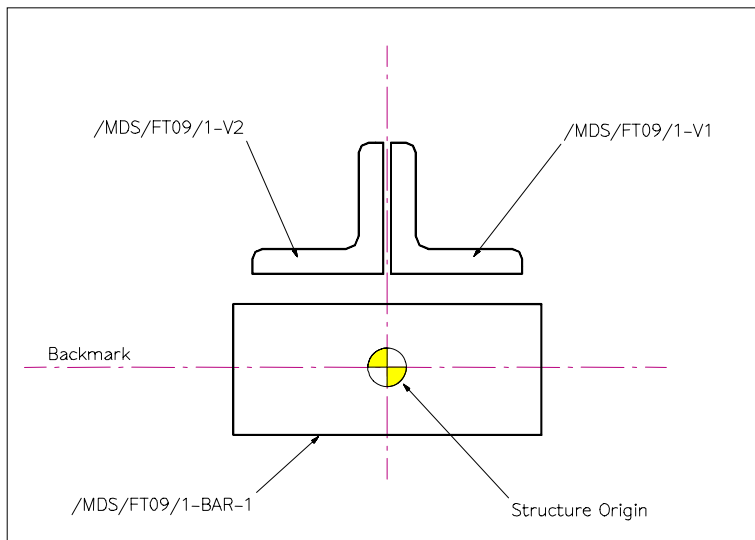


6. Enter the Beams & Columns Steelwork application and select **Modify>Section>Specification**. Navigate to each section in turn and set the SPREF to /AISC-SPEC/L2x2x3/8thk. After this has been completed the following view should be displayed on the screen.

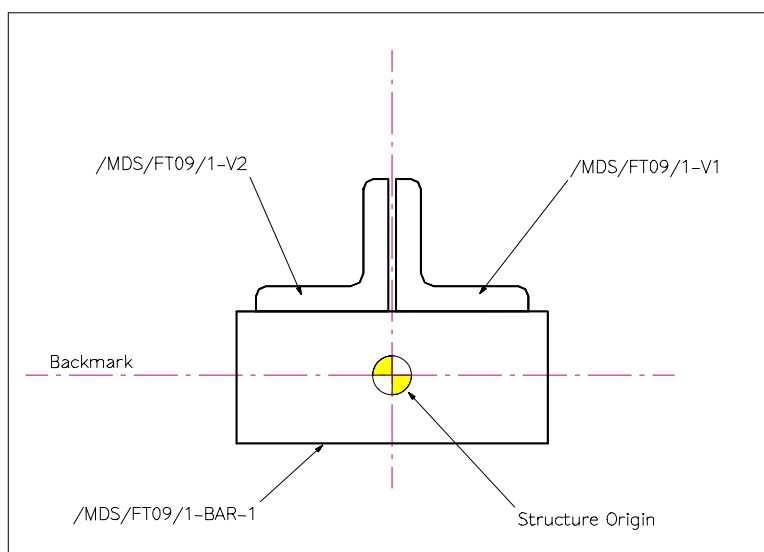




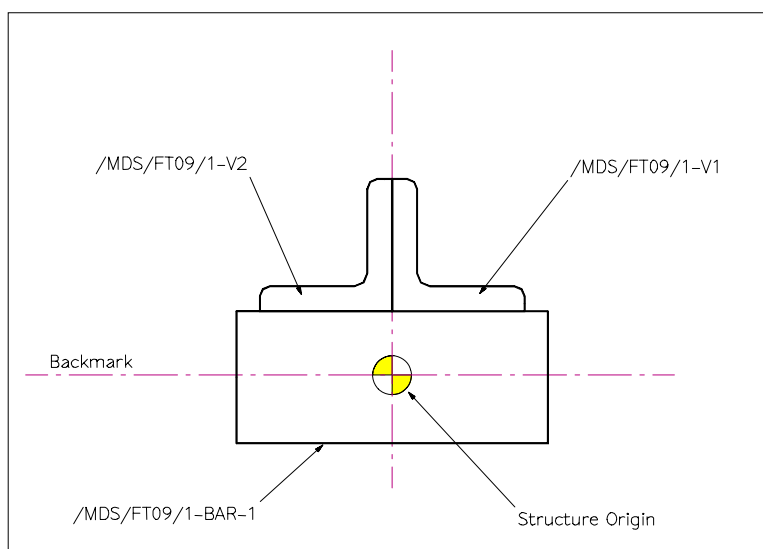
7. Note that the sections now have gaps between each other and the back mark of the cross member /MDS/FT09/1-BAR-1 has moved off the origin of the structure. Move the cross bar so that the back mark returns to the structure origin.
8. Navigate to the cross bar /MDS/FT09/1-BAR-1 and slide the section so that the back mark returns to the structure origin. After this has been completed, the following view should be displayed on the screen.



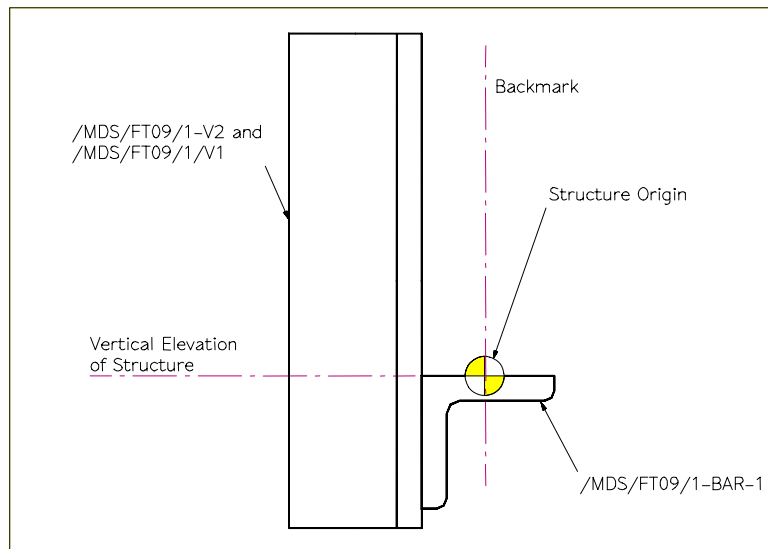
9. Slide the two remaining vertical members so that they are flush with the cross member. Navigate to each vertical member in turn and type 'MOVE S CLEAR 0 INF SCTN 1'. Section 1 in this case being the cross bar. After this has been completed, the following view should be displayed on the screen.



10. Slide the two vertical members and make them flush with each other and the intersection point the origin of the structure. Navigate to vertical member /MDS/FT09/1-V1 and type the following two lines 'PIN 1 AT STRU' and 'MOVE W CLEAR 0 INF PIN 1'. Navigate to the second vertical member /MDS/FT09/1-V2 and type the following two lines 'MOVE E CLEAR 0 INF PIN 1' and 'PIN 1 OFF'. After this has been completed, the following view should be displayed on the screen.



11. Look east to make sure the cross bar has not moved in the vertical direction. The face of the section must be flush with the origin of the structure, as shown below. If this is the case, the modification of the template is complete and it can be used on the project to create a framework using AISC steelwork.



### 3.2.2 Modifying the Design Template's Minimum/Maximum Lengths

All structural sections defined in the Design Template Database have their design parameter set to the maximum usable length. The MDS application issues a warning to the user when the Support Integrity Checker is actioned at the end of each creation or modification process. This check is only a warning and the user is allowed to complete the support. The warning indicates to the user that either the support is stressed or the steelwork size needs increasing.

It is also possible to define a minimum length by setting design parameter 2. For example, if the design parameters of a section are set to 1000 100, the maximum length is 1000 and the minimum length is 100.

### 3.2.3 Creating Template Internal Joints

Create template internal joints using standard structural connections. If a joint needs to be 'handed' for mirrored frameworks, use the uda :MdsMirror at the catalogue join element to store the joint reference.

### 3.2.4 Modifying the Appearance of Joints and Fittings on the MDS ADP Drawing

If you do not want a template joint or fitting to appear on the MDS ADP drawing, set the SJOI or FITT function attribute to DUMMY. Joints and fittings are then ignored on the drawing material list and are not tagged in the graphical views. Use this attribute when a joint, which has no physical properties, is used to cut-out a section.

## 3.3 Naming Conventions

### 3.3.1 Framework Naming Conventions

Ensure each framework conforms to the following naming conventions. This enables the MDS application to navigate to the appropriate element and customise the application for both the DESIGN and DRAFT stages of support production. Failure to apply these naming conventions may cause the applications to fail to produce supports.

Type	Name format	Example
SITE	/MDS/TEMPLATES	N/A
ZONE(S)	/MDS/FRAMES/{frameworktype}	/MDS/FRAMES/FT09
STRU	/MDS/{frameworktype}/{option}	/MDS/FT09/1
FRMW	/MDS/{frameworktype}/{option}-FRMW1	/MDS/FT09/1-FRMW1
SCTN	CROSSBAR	
	/MDS/{frameworktype}/{option}-BAR-1	/MDS/FT09/1-BAR-1
	VERTICAL MEMBERS (if needed)	
	/MDS/{frameworktype}/{option}-V1 or V2	/MDS/FT09/1-V1
	SUBS	
	/MDS/{frameworktype}/{option}-SUBS1	/MDS/FT01/1-SUBS1
	SNODS	
	/MDS/{frameworktype}/{option}-V1/S1 or /V2/S1	/MDS/FT09/1-V1/S1
	SJOI	
	/MDS/{frameworktype}/{option}-V1/S1/IJOINT1	/MDS/FT09/1-V1/S1/IJOINT1

There are two zones for each of these framework types: FT03, FT04, FT14, FT15, FT18, and FT19. Each one is supplied with the suffix -HORI or -VERT e.g. /MDS/FRAMES/FT03-HORI.

The suffix allows the orientation of members within the structure to be different when used with vertical or horizontal lines.

## 3.4 Available Templates

### 3.4.1 Extending the Number of Steelwork Framework Types Available

The supplied set of templates contain, typically, four options for each framework. To extend this number, create extra structures using the naming convention in [Framework Naming Conventions](#). To reduce the number of framework types, delete unwanted structures from the design template database. The supplied specification will handle up to twenty options per framework type.

## 3.5 Template Options

### 3.5.1 Availability of Cross Bars

Each standard has the ability to add up to a maximum of six cross bars. In some circumstances the office or project standard may not want a particular standard to allow cross bar creation. Control this by setting the :Mdsbars attribute at the template zone level. Use a 'true' setting to allow cross bar creation and 'false' to prevent it.

### 3.5.2 Creation of Standard in the Horizontal or Vertical Plane

Some standards allow the creation of a support in the horizontal or vertical plane. In some circumstances the office or project standard may not allow both. Control this by setting the :MdsHV attribute at the template zone level.

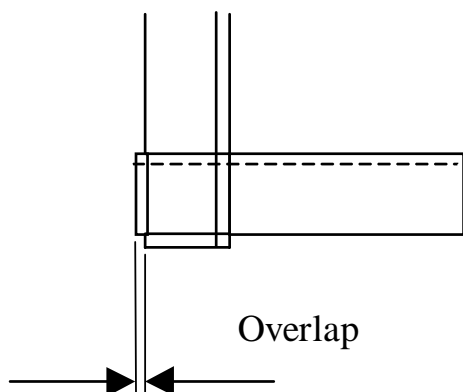
:MdsHV	Description
BOTH	Allows creation in the horizontal and vertical plane
HORI	Allows creation in the horizontal plane only
VERT	Allows creation on the vertical plane only

### 3.5.3 Maximum Section Lengths

At each section within the template, design parameter 1 is set to the maximum length allowed. The support integrity checker monitors this value against the actual length and issues a message to the user when the support has been completed. If the :MdsCheck attribute is set to true, the user is not allowed to complete the support without making the section length less than the maximum allowed. If the :MdsCheck attribute is set to false, a warning is issued and the support is completed.

### 3.5.4 Cross Bar Overlap Override

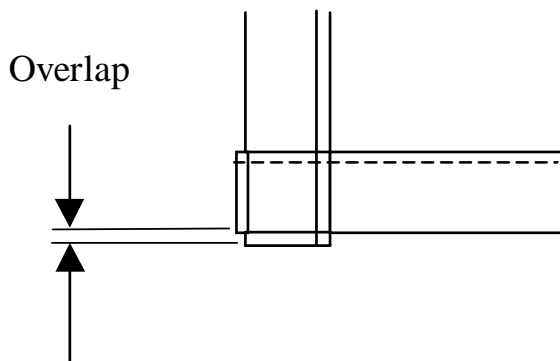
When a support is created, it uses the application overlap default, obtained from the application default form, to overlap the steelwork for welding. This can be overridden on each individual cross bar by setting the :MdsOlap attribute at the SCTN element. If the uda :MdsOlap is set to OVERLAP, the application uses the setting in the uda :MdsOnum as the overlap value required.



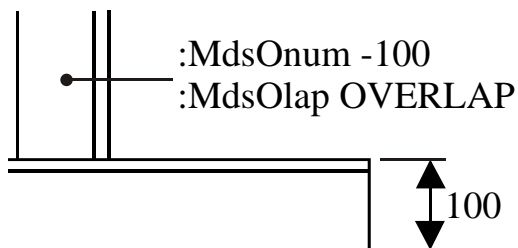
### 3.5.5 Vertical Section Overlap

The vertical SCTN is extended past the cross bar by the application overlap value, as shown below left, in order to weld the SCTNs together. In some circumstances the vertical member may need to be flush with the top of the cross bar. To achieve this, set the uda :MdsOlap value at the vertical SCTN to OVERLAP and the uda :MdsOnum value to -100 (if the cross bar depth is 100).

The following example is the standard/default configuration with the :MdsOlap unset <default>.



The example below assumes a common template SCTN size of 100x100x8 angle. The vertical SCTN uda :MdsOlap value is set to OVERLAP and the :MdsOnum value is set to -100, (the depth of the cross bar being 100).



### 3.5.6 Maximum Allowable Bore Sizes

Each MDS framework has the functionality to control the minimum and maximum pipe bore allowed for the template. This is achieved by setting the :MdsMaxBore and :MdsMinBore uda. For example, if the first template for FT09 is 60x06x8 angle and you set the :MdsMaxBore to 100 and the :MdsMinBore to 50, the user will not be allowed to add a pipe to the support which is less than 50 or greater than 100.

The MDS framework can also be configured to set the minimum and maximum pipe bores using the dimensional values. This is achieved by setting the :MdsRange uda. For example, if the uda is set to '1,0,610,80', it means that dimension 1 can be between 0 and 610 with a maximum bore of 80. If it is set to '(1/2/3),0,610,80\1/2),0,305,80\3,0,305,80', it means that dimension 1, 2, and 3 has a maximum length of 610 up to 80 bore, dimension 1 and 2 has a maximum length of 305 up to 80 bore, and dimension 3 has a maximum length of 305 up to 80 bore. The largest bore will be used in the check when more than one bore exists on a framework.

## 3.6 Automatic Steelwork Orientation

MDS can automatically orientate the support structure steel members of a framework type support, dependant on the orientation of identified stiffeners. The correct orientation is achieved by utilising appropriate templates. Each standard template has four alternatives as depicted in the example below for an FT08 support frame.

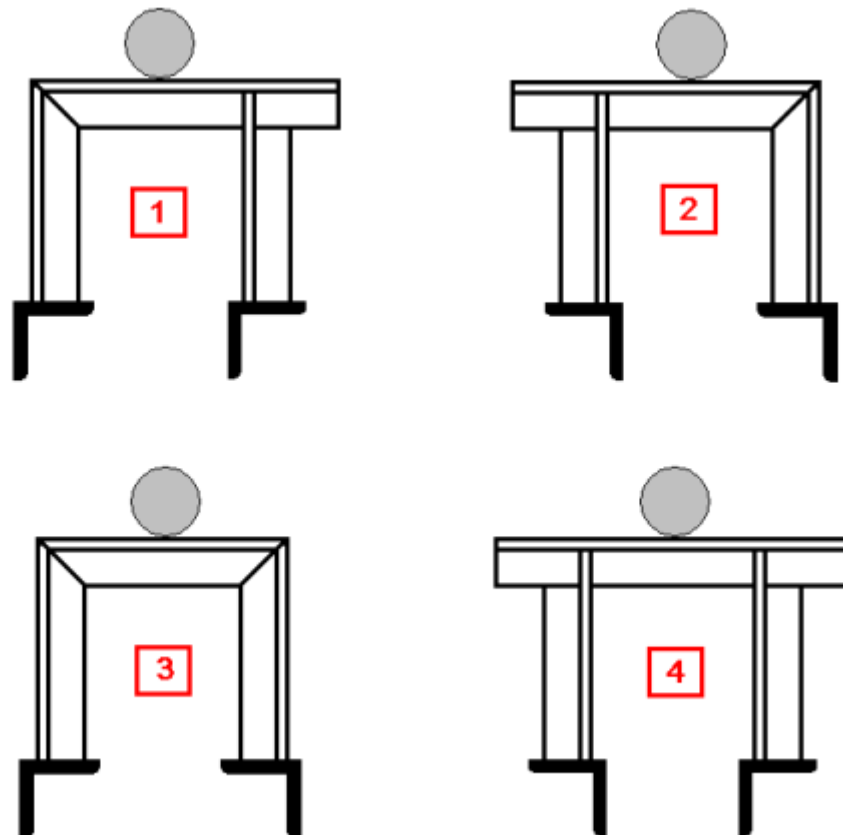


Figure 3.1. Example of Steelwork Orientation

The alternative templates are named in the form

```
{standard_template_name}/{suffix}
```

where *suffix*, is a configuration code based on the orientation of the stiffeners e.g. /MSDS/FT08/1/1, /MDS/FT08/1/2, etc.

Only the templates that are built up from angle profiles have oriented alternatives.

The user-defined attribute (uda) :MdsTmpOri is included in the MDS project MASTER/MDS/DICT, which is used to store the orientation of stiffeners as an integer. This uda is available at STRU level and the default value is "0".

## 3.7 Project Special Templates

### 3.7.1 Philosophy

MDS project special templates allow users to create an MDS special support with some SCTN members, very quickly, and if necessary to complete the design of the MDS support in the standard Beams & Columns application.

Users who have write access to the project special discipline zones owned by the site /MDS/SPECIALS can create their own MDS Project Special structural templates.

The origin of an MDS support structure is always at the P9 of the DATUM at the current MDS support being created. The copied members of a project special template are positioned relative to the MDS support structure origin position.

### 3.7.2 Storage Areas

It is mandatory that MDS project special templates zones are stored in a site named /MDS/SPECIALS.

Three zones are required to store the project special structure templates. Name them as follows to enable the MDS application to recognise the appropriate discipline templates:

- /MDS/SPECIALS/PIPE, the PIPING template zone.
- /MDS/SPECIALS/HVAC, the HVAC template zone.
- /MDS/SPECIALS/TRAY, the Cable Tray template zone.

In the MDS DESIGN application, if a discipline zone exists, e.g. /MDS/SPECIALS/PIPE, the STRU elements are displayed in the Select Project Special form. Otherwise the user is informed that the zone /MDS/SPECIALS/PIPE does not exist, and the Copy Project Special operation is aborted. If the zone exists but there are no STRU elements, an empty list is displayed in the form.

### 3.7.3 Filter Settings at a Piping or Tray Project Special Template

The uda :MdsHv setting at the STRU element of the project special template is the only filtering mechanism available. It can be set to HORI, VERT, or BOTH. The settings are self explanatory and are relative to the orientation of the current pipe or tray being supported by the MDS special support.

The list of piping and cable tray project special templates displayed, and available to the user, is the same list as the STRU members that currently exist in the appropriate discipline template zone. It is filtered according to the settings of the uda :MdsHv at the structural template, and the orientation of the pipe or tray being supported.



The selected structural template is copied into the MDS special support being created without any modifications to the design of its members. None of the attributes at the project special STRU template or any of its members are used by the MDS application for either of these disciplines. They are not required and should not be set.

The project special templates members in the piping and cable tray disciplines are copied exactly into the MDS special support and positioned relative to the MDS special support origin currently being created. There is no automatic modification of the positions and length of the template members when they are copied into the MDS support.

### 3.7.4 Filter and Build Settings at an HVAC Project Special Template

- HVAC Structure Template**

The list of HVAC templates, for the HVAC STRT element to be supported, is filtered on the settings of two uda's. They are :MdsHv (described in [Filter Settings at a Piping or Tray Project Special Template](#)) and :MdsRange and are both attributes of the STRU template.

The second filter control, :MdsRange, is implemented for HVAC templates only. It controls whether insulation exists on the HVAC STRT element being supported. The settings are shown in the table below:

Setting	Action
0	Restrict the STRU template to support only HVAC STRT elements that are uninsulated.
1	Restrict the STRU template to support only HVAC STRT elements that are insulated.
2, any other value, or left unset	Allow the STRU template to support HVAC STRT elements that are either uninsulated or insulated.

Having set the udas at the STRU templates, consider also :MdsCheck. Set this uda at the time the template is selected and/or built from the list displayed in the Select Project Special form. The options are shown in the table below:

Setting	Action
true	Include the insulation thickness of the HVAC STRT element in the design and build calculations of the STRU template members copied to the current MDS HVAC Special Support.
false (default setting)	Exclude the insulation thickness of the HVAC STRT element in the design and build calculations of the STRU template members copied to the current MDS HVAC Special Support

- HVAC Structure Template Members**

The positions and lengths of HVAC STRU template members are automatically modified by the settings of two uda's, :MdsConfigA and :MdsConfigB, i.e. the types SCTN, SUBS, EXTR and VERT.

Each of the MDS HVAC Project Special Support templates is built on a base HVAC STRT duct size of 500mm wide x 500mm high ([Figure 3:2.](#)) and is modified by the uda's

mentioned above. The build action takes place when either the template is selected or the OK button is clicked and is controlled by the Build toggle setting on the form.

### Example

The STRU /MDS/SPECIALS/HVAC/1 contains an FRMW with seven SCTN members. The uda settings for SCTNS 1 and 6 only are shown below and provide the template [Figure 3:3](#).

SCTN 1 = /MDS/SPECIALS/HVAC/1-BAR-1

:MDSConfigA false,,,true,0.5,true,0.5

:MDSConfigB unset

SCTN 6 = /MDS/SPECIALS/HVAC/1-V1

:MDSConfigA true,W,0.5,WIDTH,\true,1

:MDSConfigB unset

In [Figure 3:2](#), the MDS Project Special Structural Template /MDS/SPECIALS/HVAC/1 is configured to suit the DEFAULT 500mm wide x 500mm high HVAC ducting size.

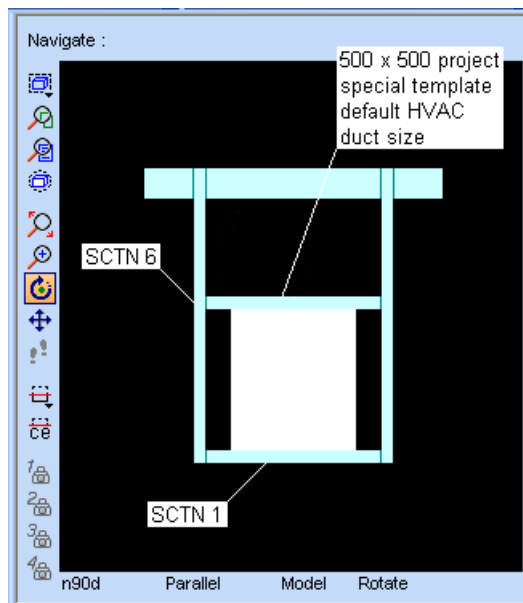


Figure 3:2. Default size (500mm)

In [Figure 3:3](#), the MDS Project Special Support is copied from the template /MDS/SPECIALS/HVAC/1 and automatically adjusted to suit the actual 500mm wide x 300mm high HVAC ducting size.

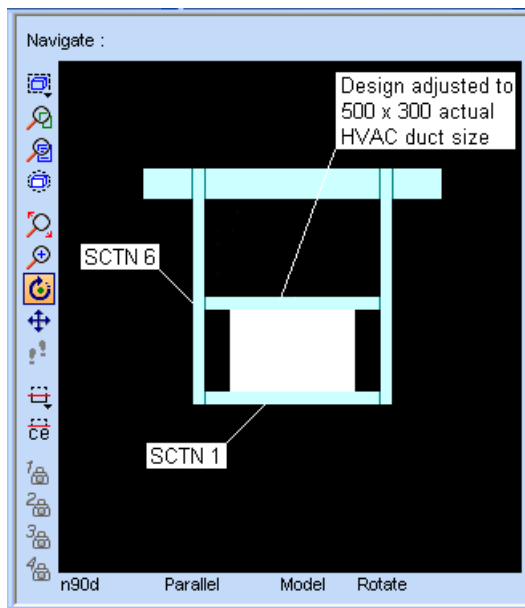


Figure 3.3. Automatic adjustment to 300mm

Now let us consider the uda settings for SCTN 1 = /MDS/SPECIALS/HVAC/1-BAR-1 and interpret what they mean.

:MDSConfigA false,,,true,0.5true,0.5

<see below>      1      2      3

The values in this attribute are delimited into three values by the backslash '\' character and further delimited by the comma ',' character.

1. false,,, [a,b,c,d]
  1. false = Element will NOT be repositioned
  2. <blank> = a) above is 'false', so not applicable
  3. <blank> = a) above is 'false', so not applicable
  4. <blank> = a) above is 'false', so not applicable
2. true,0.5 [a,b]
  1. true = Element POSS (SCTN start position) needs to be repositioned
  2. 0.5 = ½ (half) the difference between the default size of the HVAC duct (500mm) and the actual size of the HVAC duct (500mm)
3. true,0.5 [a,b]
  1. true = Element POSE (SCTN end position) needs to be repositioned
  2. 0.5 = ½ (half) the difference between the default size of the HVAC duct (500mm) and the actual size of the HVAC duct (300mm)

:MDSConfigB unset

No action will be taken as the uda value is unset.

This uda can only be set with values of a similar type to those attributed to :MDSConfigA when the element needs to be moved in more than one direction.

Now let us consider the uda settings for SCTN 6 = /MDS/SPECIALS/HVAC/1-V1 and interpret what they mean.

:MDSConfigA true,W,0.5,WIDTH\ ,true,1

<see below>                      4                      5      6

4. true,W,0.5,WIDTH [a,b,c,d]

1. true = Element will be repositioned
2. W = The direction in which the element will be moved
3. 0.5 = Move the element 0.5 x WIDTH <value in d) below> difference between the ACTUAL width and the DEFAULT width of the HVAC STRT
4. WIDTH = WIDTH or HEIGHT of HVAC STRT element to be considered in c) above

5. , [a,b]

1. <blank> = not applicable
2. <blank> = not applicable

6. true,1 [a,b]

1. true = Element POSE (SCTN end position) needs to be repositioned
2. 1 = 1 x difference between the default size of the HVAC duct (500mm) and the actual size of the HVAC duct (300mm)

:MDSConfigB unset

No action will be taken as the uda value is unset.

This uda can only be set with values of a similar type to those attributed to :MDSConfigA when the element needs to be moved in more than one direction.

**Note:** At this release the udas :MDSConfigA and :MDSConfigB are only considered when copying an MDS HVAC Project Special Template.

## 4 MDS Automatic Drawing Production

This section describes how the administrator can configure the Area Based ADP for use on an MDS project. For information on using MDS ADP, refer to the *MDS Automatic Drawing Production User Guide*.

**Note:** The ABA Defaults can also be changed by the MDS user.

### 4.1 ABA Defaults

1. Start the Plant/Marine application and load the DRAFT module.
2. Select **Draft>Auto Drawing Production...** from the main menu
3. From the ADP top menu bar, click on **Settings** and select **Area Based ADP Defaults...** from the drop down menu ([Figure 4.1.: Draft Settings menu](#)).

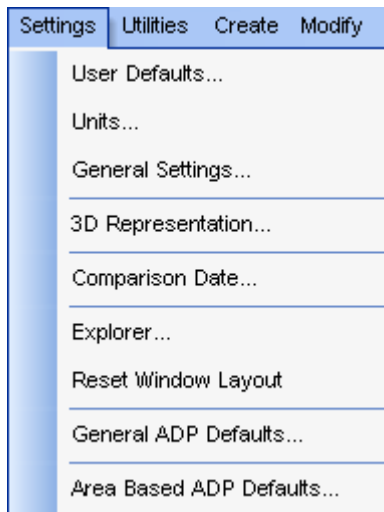


Figure 4.1. Draft Settings menu

This brings up the ABA Defaults form ([Figure 4.2.: ABA Defaults form](#)).

Hierarchy Positioning		
Library	/Aba/graphical_reports_library	LIBY
Template	/MDS-Drawing-Templates	LIBY,DRTMLB
Area	/MDS-ABA-Area-Library	LIBY
Classification	/PROJ/ABA/CLASS	DLLB
Keyplans	/Aba/keyplans_library	SHL
Symbols	/Aba/symbols_library	SYLB
Labelling	/Aba/tag_rule_library	TRLB
Tasks	/PROJ/ABA/TASK	TASKLB

Figure 4.2. ABA Defaults form

Use the ABA Defaults form for the following tasks:

- Defining the ABA data structure
- Modifying the ABA data structure
- Setting file locations of log files and batch files
- Settings for the Batch User configuration
- Input of text (data) files and supplied template data files

Your project has probably been organised in such a way that different disciplines have different ABA Libraries; the one for MDS-ABA is shown below:

%MDDDFLT%/DRA-MDS-ABA-DEFAULTS

You will see that MDS-ABA uses the Standard ABA Libraries where available, but has specific MDS Area and Template Libraries.

In general to select a different defaults file to that initially loaded, enter the name of the file in the **Defaults File** text box and press the **Return** key. The values held in the defaults file will appear on the form. Alternatively, click the **Defaults File** button which enables you to browse to and select the required ABA defaults file.

As you loaded this new defaults file, the name was stored. When you re-enter the ABA application at the next session, this defaults file will be the one opened initially.

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