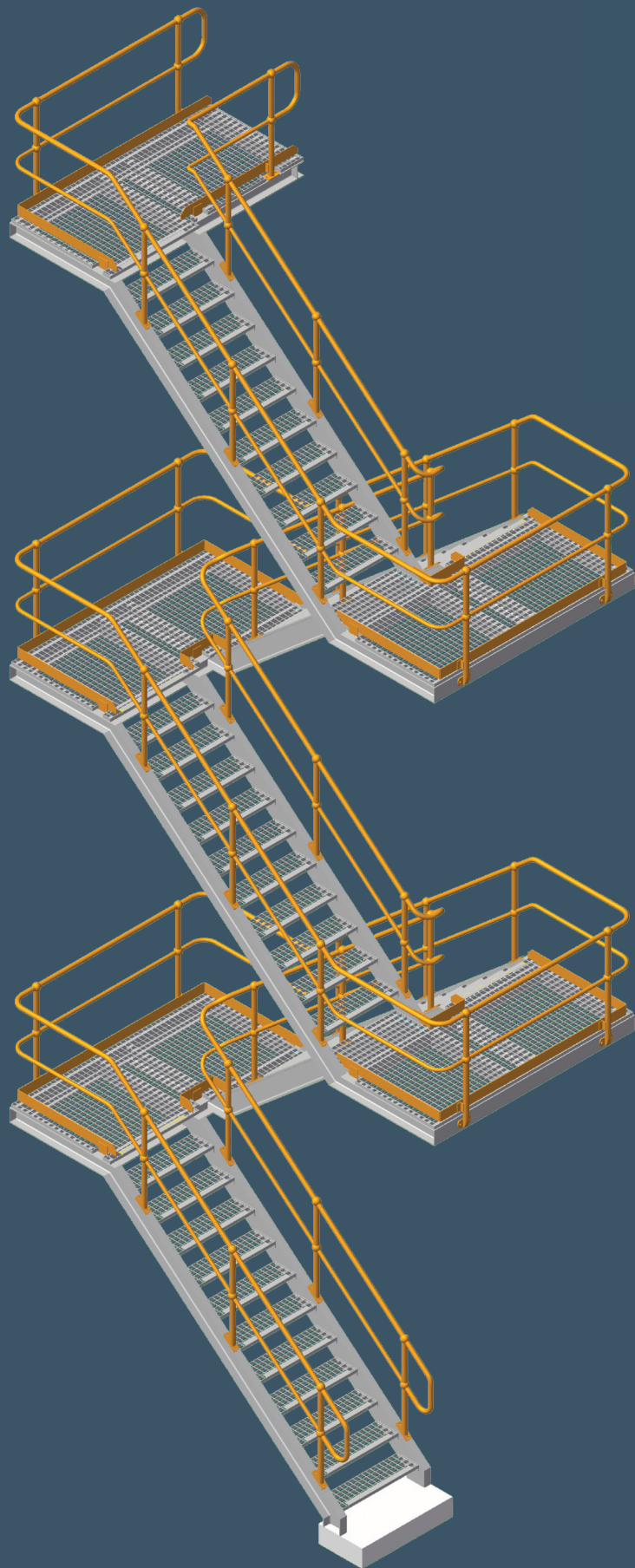




Handrail
Systems



Isometric View
Stair Tower

The Mentis Handrail System has been developed by taking long standing industry standards to a new quality level through an innovative approach towards manufacturing and fabrication.

Through the application of robotic welding technology, advanced manufacturing machinery methods and high standards in fabrication, Mentis Handrail is fabricated to a high quality standard at competitive pricing.

Mentis Handrail is fabricated to meet Australian Standards AS1657.

In cooperation with you, and with the fundamental drawing layouts and information as detailed in this brochure, we are able to partner with you in the manufacturing, fabrication and supply of a handrail system that can ultimately save you installation time on site.

One of the many ways in which this can be achieved, is through the fabrication of Mentis Handrail panels up to 7 meters long, with the option of these

- being supplied and meeting your, or your customers', surface treatment specifications
- strapped into manageable packs
- clearly identified with a unique numbering system (which corresponds to a handrail layout drawing, or general arrangement drawing, to provide the precise location of each panel to be installed)
- delivered to the required destination

Key factors in specifying the Mentis Handrail System are:

1. Material type - Mild Steel or Aluminium

2. Continuous - or Panelised Handrail panels.

Will each panel be a standalone section with closure bends or will all the panels be joined together on site to form a continuous rail?

3. Stanchion (Post) Type

What type of Stanchion is best suited to the relevant structure or application, to ensure that Health and Safety is not compromised.

4. Is Kickplate required? If so,...

What type of surface or floor is the Handrail to be mounted with, as this will affect the kickplate bracket height on the Stanchion/s.

5. Self Closing Gates

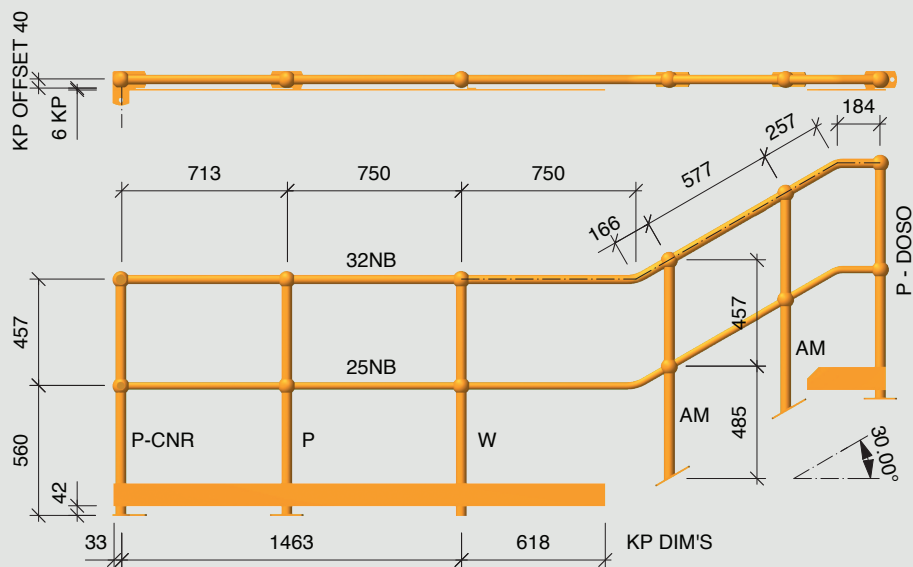
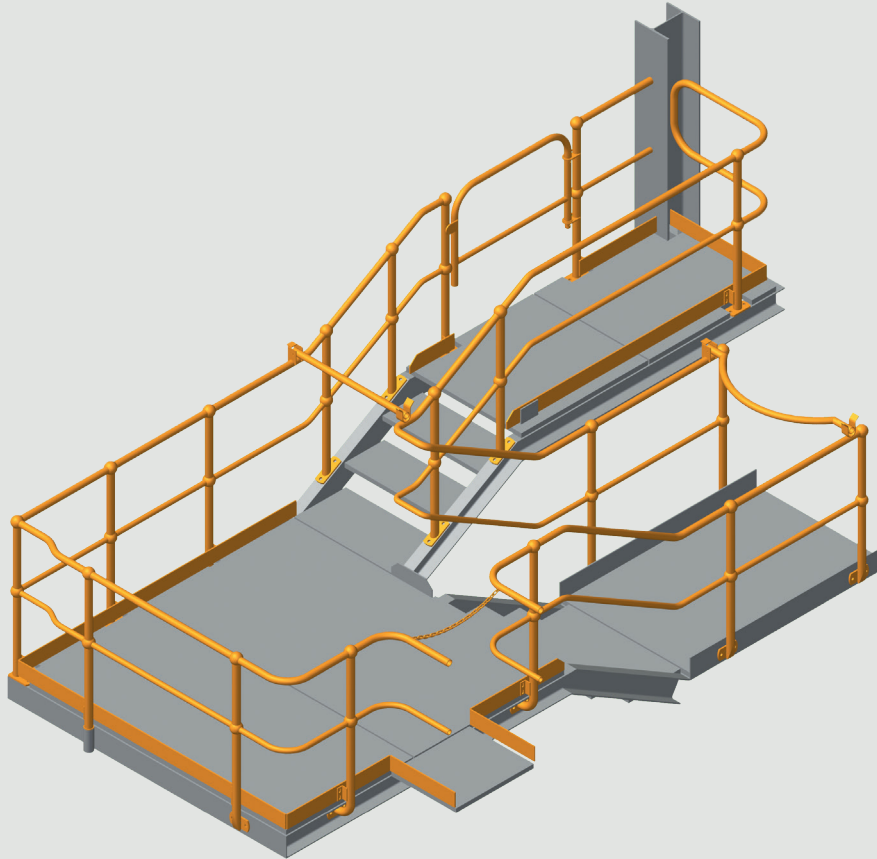
Are any openings in the handrail to be protected with Self Closing Gates? This can include ladder access openings as well.

6. Surface treatment options

Untreated, galvanised, painted, powder coated or, a combination of galvanised and painted.

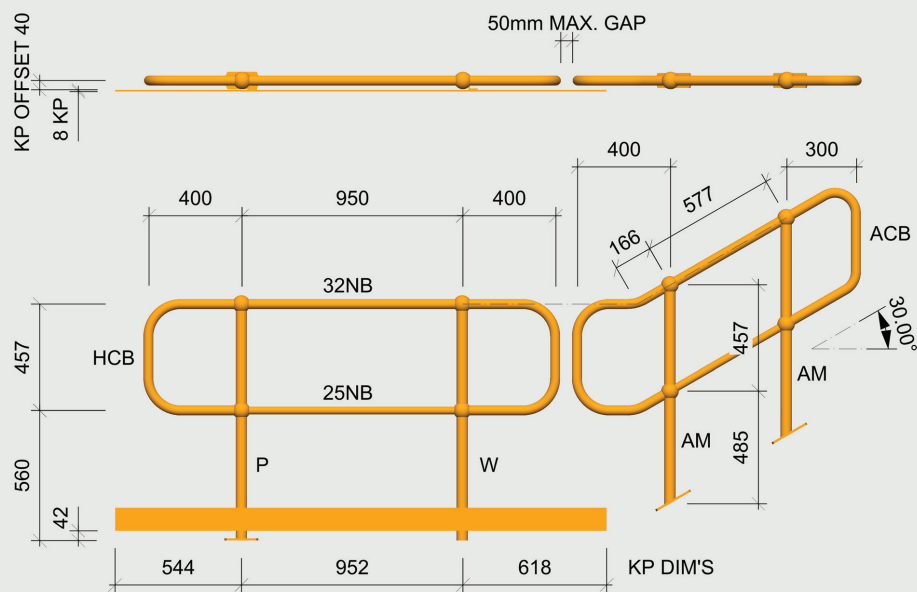
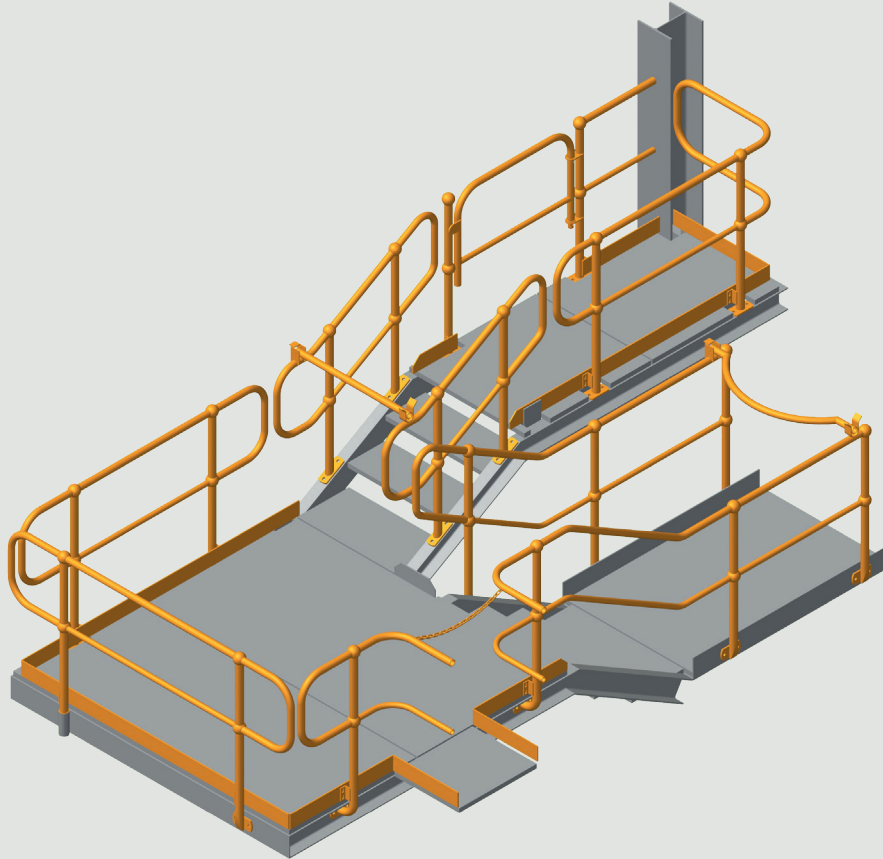
Throughout the following pages we detail options available in determining the appropriate Mentis Handrail System to be used.

Mentis Continuous Handrail is designed to be prefabricated and joined on site to form a continuous handrail. This reduces installation time and maintains the integrity of the surface treatment as much as possible. We will always split the handrail into panels at a stanchion which provides strength at the joint. If this is not achievable, all joints outside a ball will have a spigot welded inside the pipe to provide a strong connection between panels.



NOTE: DRAWN AS VIEWED FROM PLATFORM

Mentis Panelised Handrail is designed to eliminate site welding altogether, which in turn keeps the surface treatment completely in tack and makes for rapid installation. Gaps between panels should be a minimum of 25mm and a maximum of 50mm to conform to AS1657 and 10mm on the kickplate, if kickplate is required.



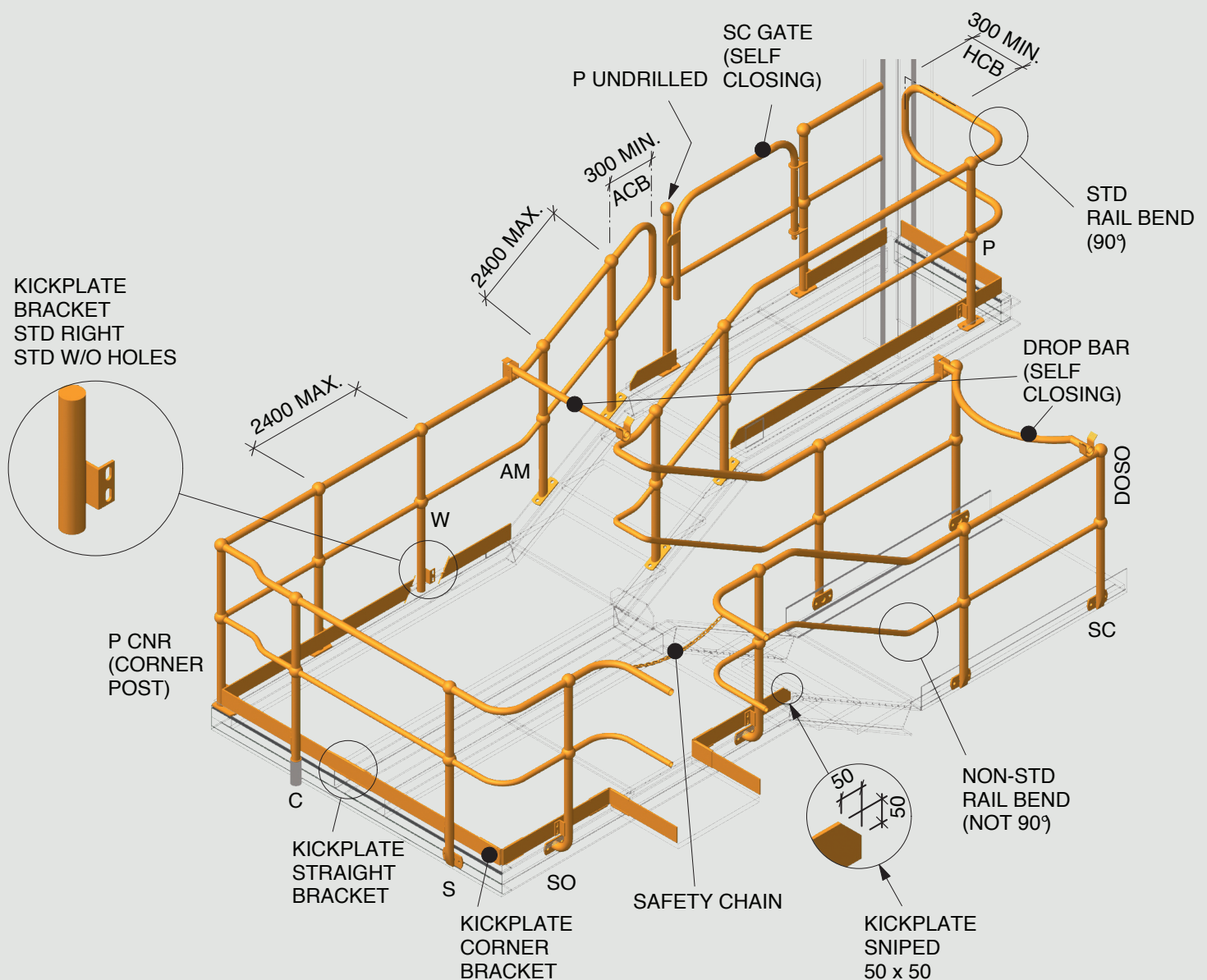
NOTE: DRAWN AS VIEWED FROM PLATFORM

Mentis Handrail Fabrication Standards

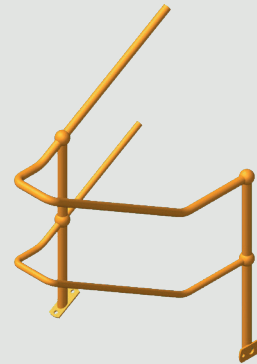
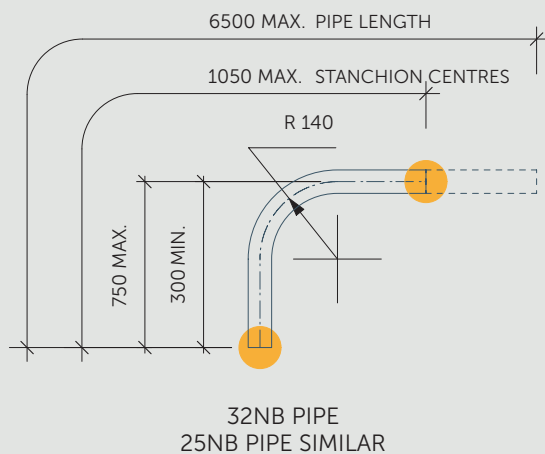
H4

As a standard, all ball to rail joints are seal-welded. This provides a quality join that will not allow moisture ingress, looks neat and is extra strong.

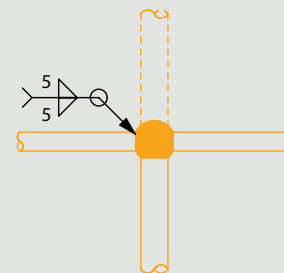
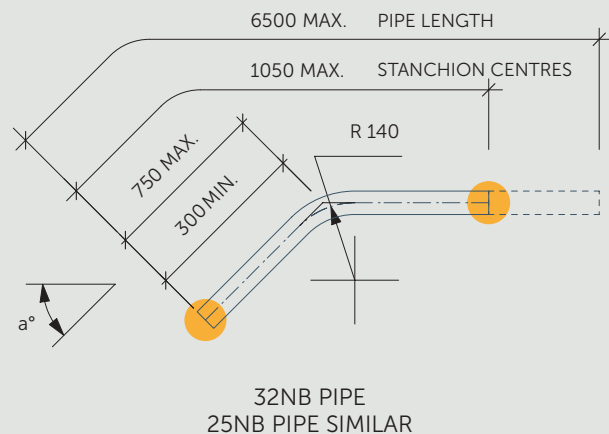
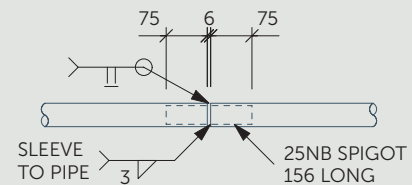
As standard, all Handrail joins are designed to occur at a Stanchion ball. If for any reason a join is outside a ball a spigot will be welded inside the pipe for strength.



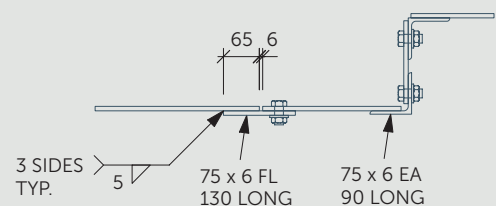
When fabricating Handrail we will endeavour to keep the handrail and kneerail to the optimal length. We are able to achieve this with our state of the art NC Bender, which can bend 6.5m long pipe to suit the required handrail panel including multiple bends. This reduces welding and spigot joining thereby providing a stronger and higher quality product.



EXAMPLE OF A CONTINUOUS PIPE WITH MULTIPLE BENDS

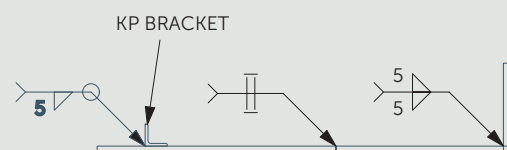


BALL TO RAIL JOINT TYP.



BOLTED OPTION (BY REQUEST ONLY)

As a standard, Kickplate is welded to the kickplate bracket on the stanchions and at all other joints where practical. As an option, kickplate can be bolted to the kickplate brackets on the stanchions and at other joints.



STANDARD OPTION

Mild Steel Stanchions

Pipe Size: 40NB 48.3OD

- Medium 3.2mm = Standard
- Heavy 4.0mm = Heavy Duty

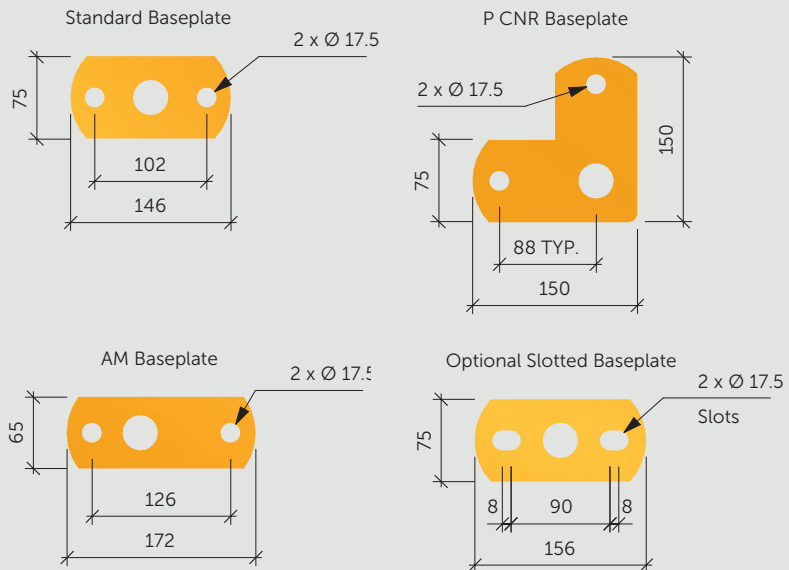
Ball Size: 75mm OD

Base Plates:

- All Base Plates (excluding AM & PC Type)
- Specification - 75mm x 146mm x 10mm
- Holes - 17.5mm dia at 102mm centres
- Round ends, no sharp edges.

AM Base Plates:

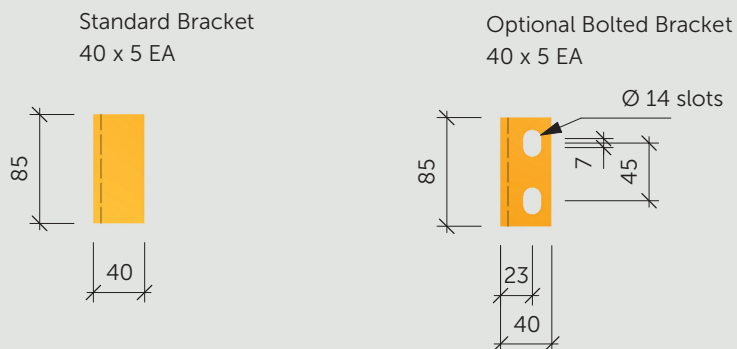
- Specification - 65mm x 172mm x 10mm
- Holes - 17.5mm diam. at 126 centres
- Round ends, no sharp edges.



Kickplate Brackets (KPB)

- Specification - 40mm x 40mm x 5mm
- Angle 85mm long
- Standard brackets have no holes
- Optional slots - 14mm diam @ 45mm centres

If required, kickplate brackets need to be specified when ordering each stanchion. Standard brackets are undrilled and suit welding of the kickplate. A bolted option is available on request. When specifying kickplate brackets, please note that it is important to clearly stipulate the kickplate height in relation to the stanchion baseplate (see page H12 for more information).



Rail and Kickplate Specification

- Handrail - 32mm NB (42.4mm OD)
Med. Gauge 3.2mm
 - Kneerail - 25mm NB (33.7mm OD)
Med. Gauge 3.2mm
 - Kickplate - 100mm x 6mm Flat Bar
or 100mm x 8mm Flat Bar
- Standard Stanchions are drilled to suit the rail specifications above. Special hole sizes are available on request.

Finish

Handrail can be supplied as raw NOPC (No Oil/Paint Coating) untreated steel. Galvanised to Australian Standard AS:4680-2006. Painted to your specification or a combination of both. Powder coated to any colour.

Stanchion Spacing

Mentis Handrail is manufactured to comply with Australian Standard AS1657 Table A3 of this standard recommends a maximum stanchion spacing of 2.4 metres for our Standard Range.

In the event that greater spacings may be required, while still conforming to A/NZS1657, please contact us for further information.

Stanchion Tolerance

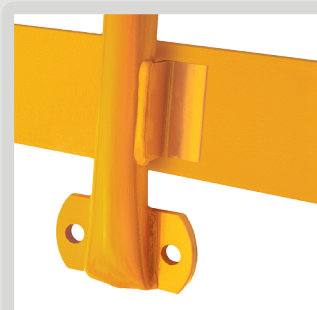
	Mild Steel
Base Plates	+/- 1mm
Ball Drilling	2 to 4mm Over Dia
Ball Hole Angle	+/- 1 Deg
Over All Height	+/- 2mm
Ball to Ball	+/- 1mm
Stanchion Lean	+/- Height/100mm

Standard Stanchions

Type	Gauge	Weight
P	3.2mm	4.75kg
PA	3.2mm	4.75kg
C	3.2mm	4.85kg
CA	3.2mm	4.85kg
W	3.2mm	3.85kg
WA-AMW	3.2mm	4.85kg
S	3.2mm	5.00kg
SO	3.2mm	5.00kg
SA-SC	3.2mm	4.85kg
SOA	3.2mm	5.30kg
AM	3.2mm	4.45kg
OB	3.2mm	3.85kg
OBA	3.2mm	3.85kg
OBP	3.2mm	1.60kg
OBS	3.2mm	2.00kg
OBH	3.2mm	1.30kg
IG	3.2mm	6.05kg
PC	3.2mm	4.85kg
WC	3.2mm	3.85kg
AR	3.2mm	4.75kg

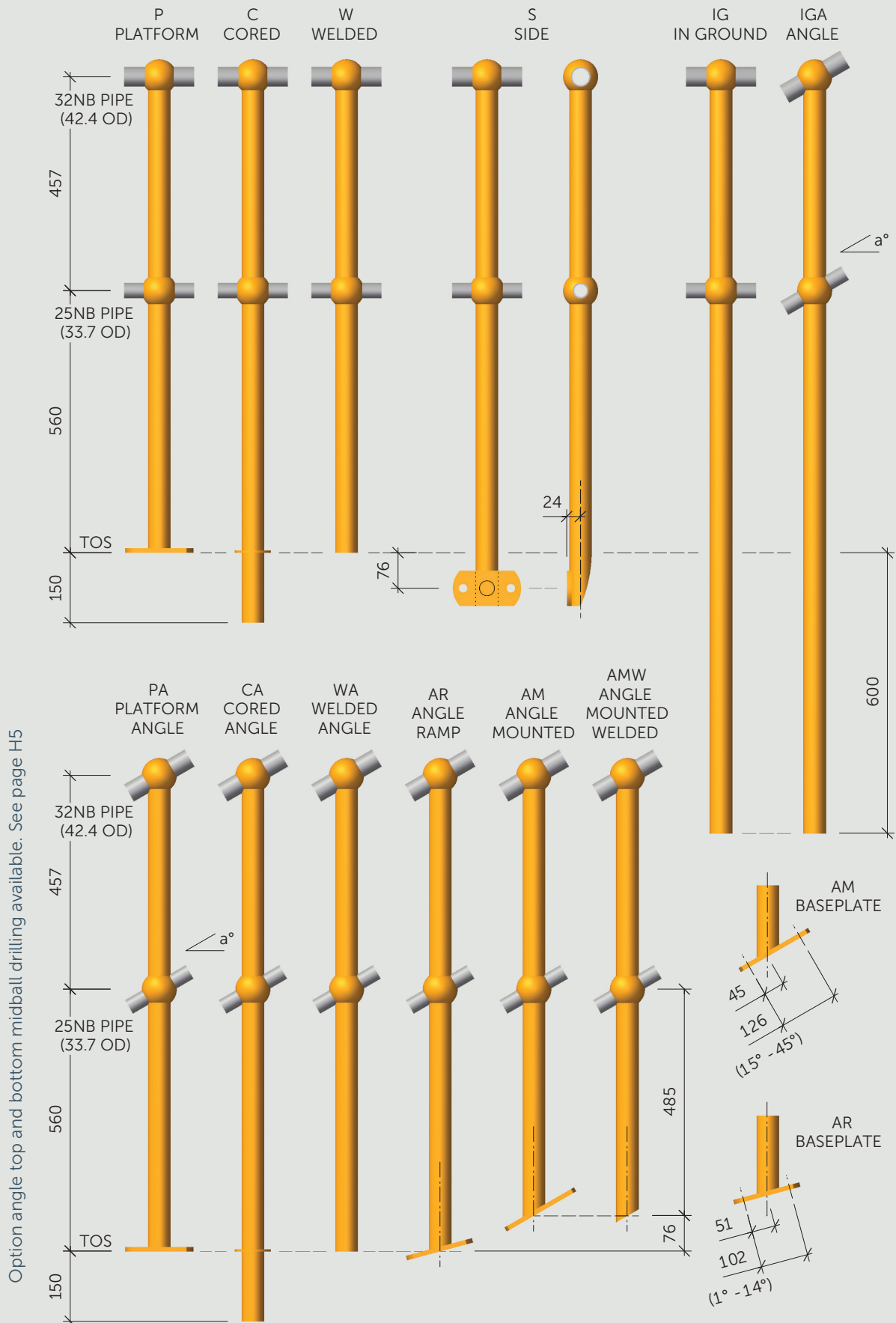
Heavy Duty Stanchions

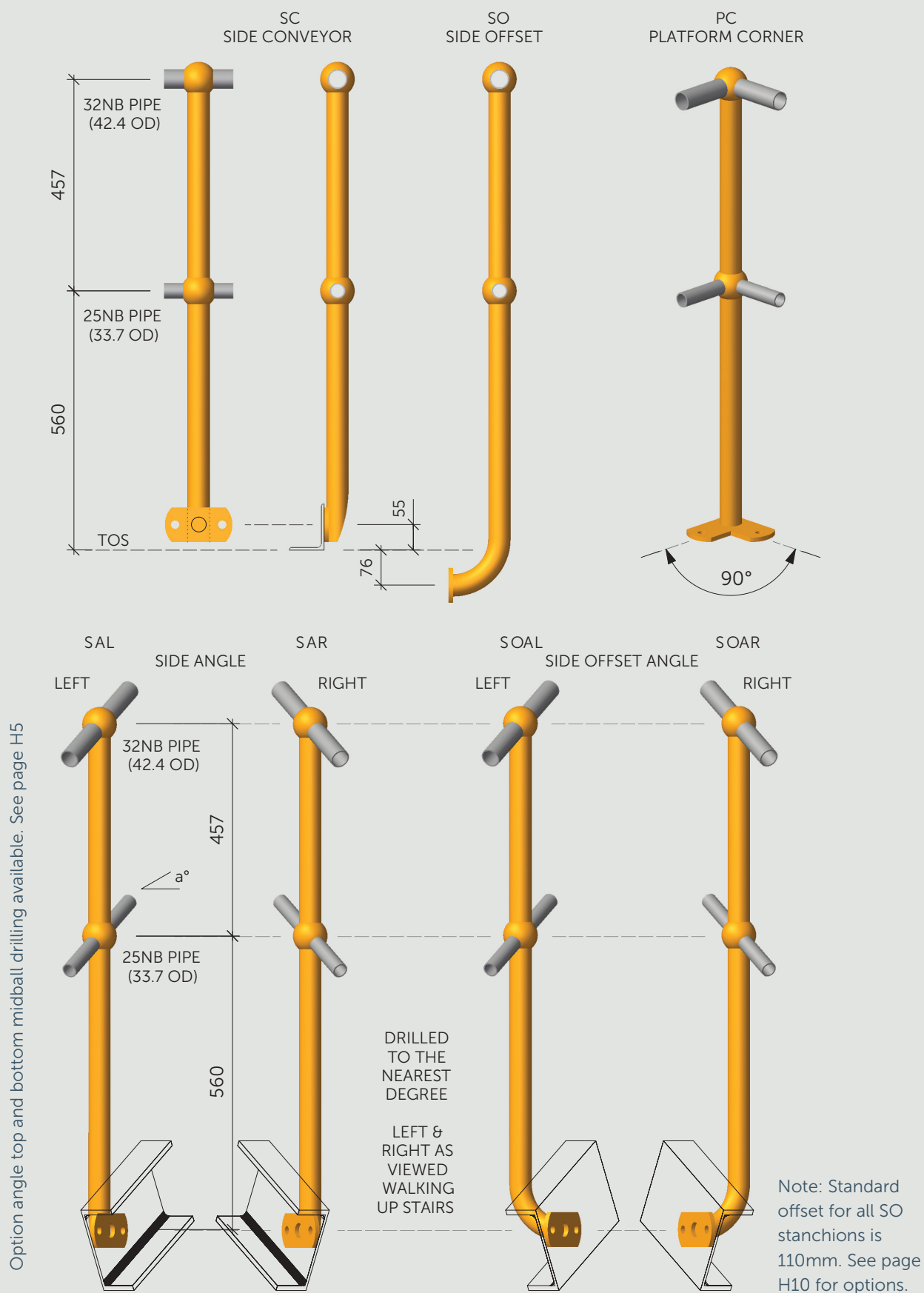
Type	Gauge	Weight
P	4.0mm	5.30kg
PA	4.0mm	5.30kg
C	4.0mm	5.40kg
CA	4.0mm	5.40kg
W	4.0mm	4.40kg
WA-AMW	4.0mm	4.40kg
S	4.0mm	5.60kg
SO	4.0mm	5.85kg
SA-SC	4.0mm	5.40kg
SOA	4.0mm	5.60kg
AM	4.0mm	5.00kg
OB	4.0mm	4.40kg
OBA	4.0mm	4.40kg
OBP	4.0mm	1.90kg
OBS	4.0mm	2.30kg
OBH	4.0mm	1.60kg
IG	4.0mm	7.10kg
PC	4.0mm	5.40kg
WC	4.0mm	4.40kg
AR	4.0mm	5.30kg

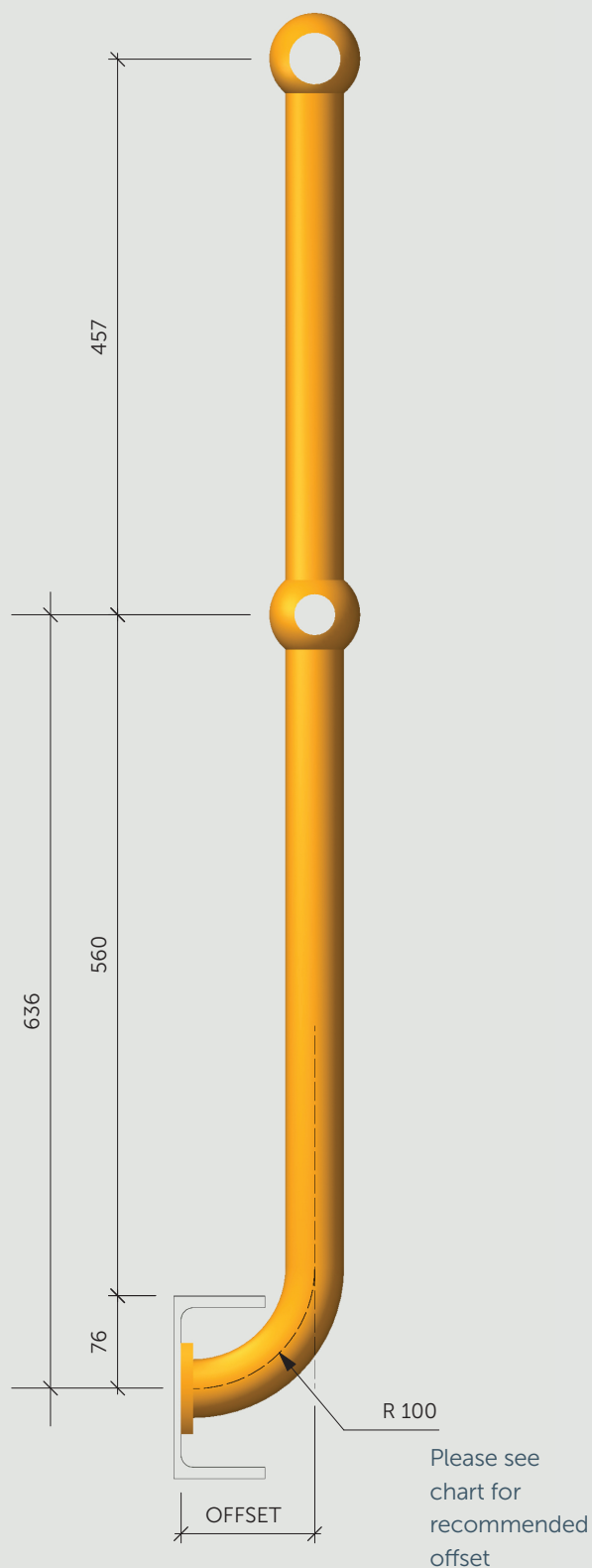


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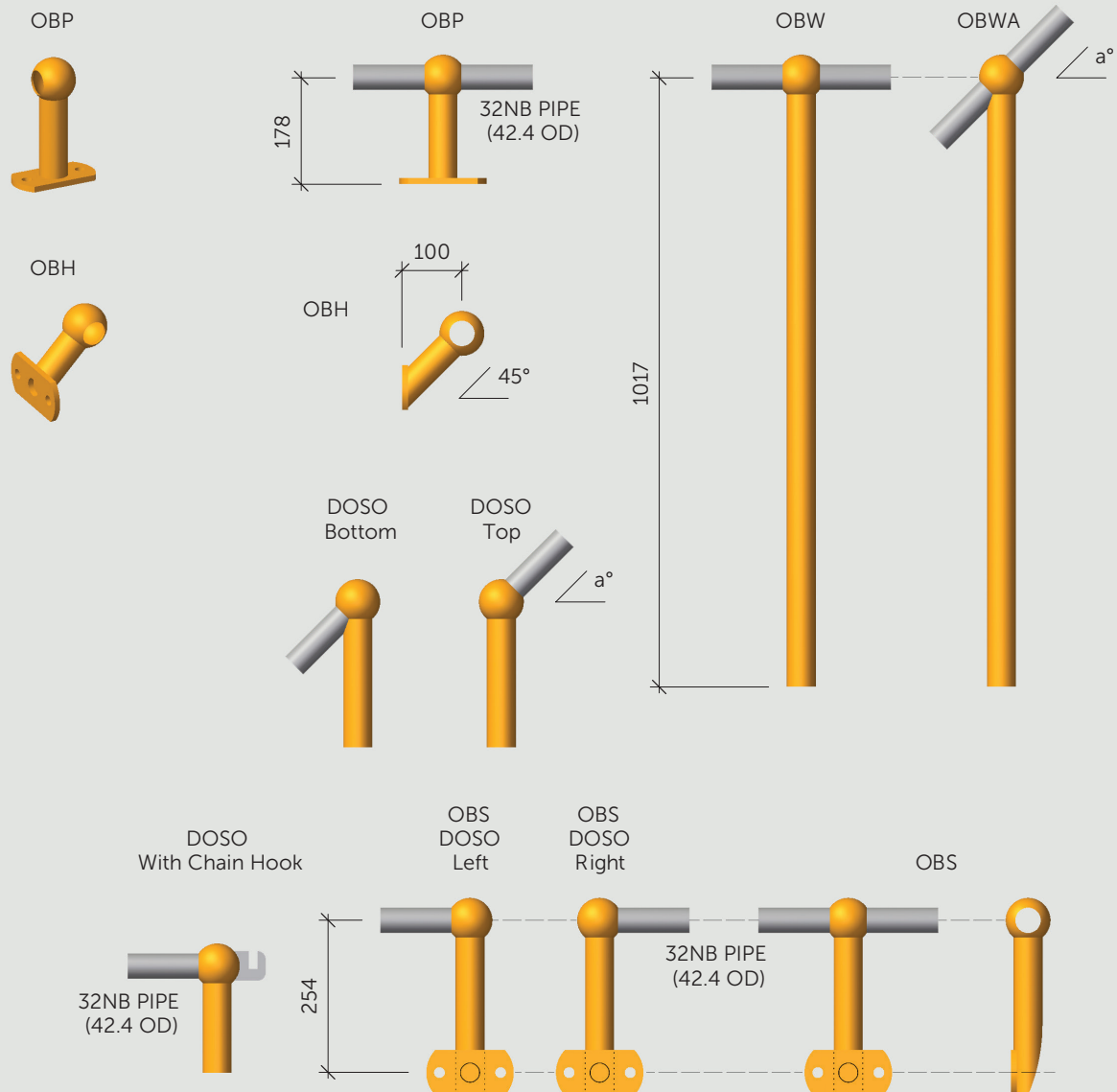






Description	SO Offset
150 PFC	110
180 PFC	110
200 PFC	110
230 PFC	110
250 PFC	125
300 PFC	115
380 PFC	135
150UB14	110
150UB18	110
180UB16.1	110
180UB18.1	110
180UB22.2	110
200UB18.2	110
200UB22.3	110
200UB25.4	110
200UB29.8	110
250UB25.7	110
250BU31.4	110
250UB37.3	110
310UB32	110
310UB40.4	120
310BU46.2	120
360UB44.7	120
360UB50.7	120
360UB59.7	125
410UB53.7	125
410UB59.7	125
460UB74.6	135
460UB82.1	135
530UB82	140
530UB92.4	140
610UB101	150
610UB113	150
610UB125	155

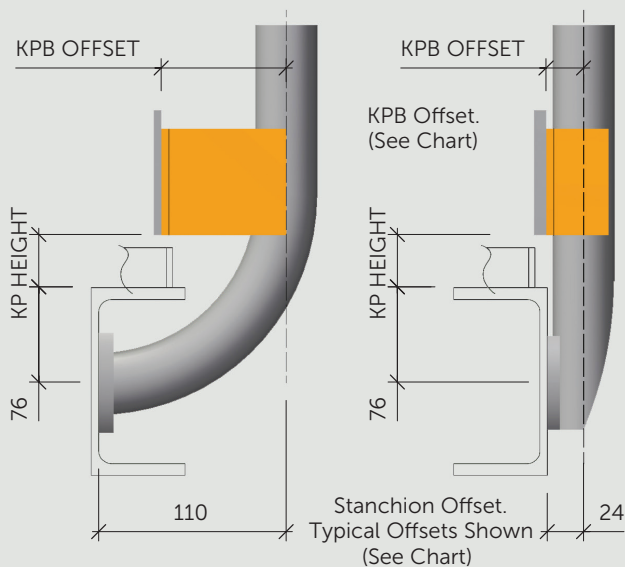
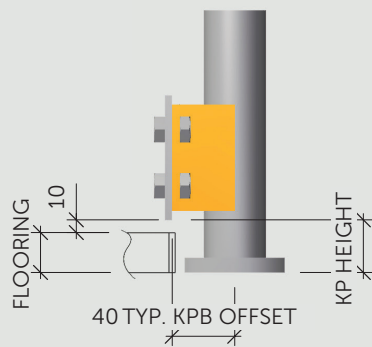
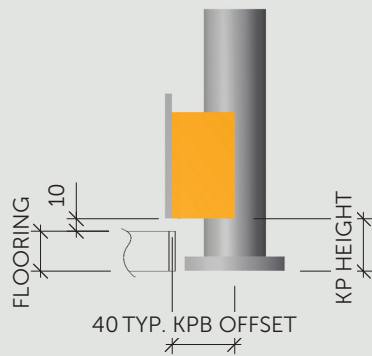
Standard stock items include SO stanchions with 110 offset. Any other offset is manufactured on request.



Definitions:

- OBH - One Ball Handrail
 - OBP - One Ball Platform
 - OBS - One Ball Side
 - OBW - One Ball Welded
 - OBWA - One Ball Welded Angle
 - DOSO - Drill One Side Only
- Any special stanchions can be made on request.

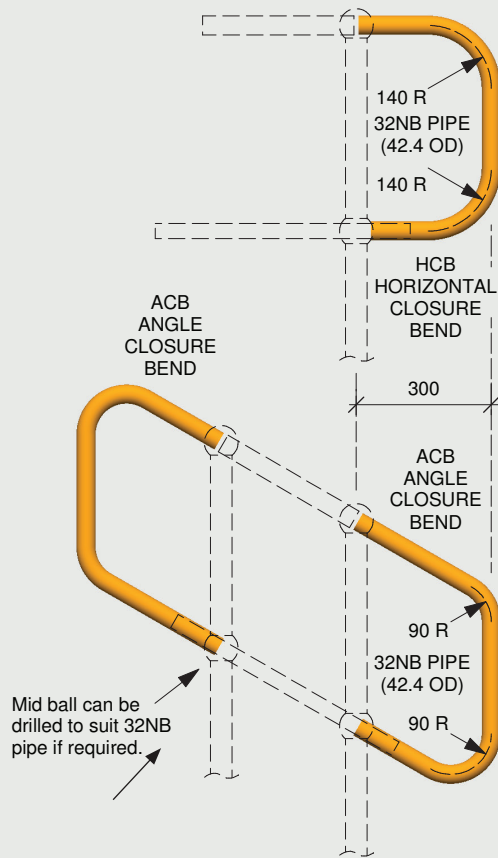




Description	SO Offset	KPB (min.) Offset	S Offset	KPB (min.) Offset
75 PFC	n/a	n/a	n/a at standard height	
100 PFC	n/a	n/a	24	29
125 PFC	n/a	n/a	24	29
150 PFC	110	55 (46)	24	29
180 PFC	110	55 (46)	24	29
200 PFC	110	55 (46)	24	29
230 PFC	110	55 (46)	24	29
250 PFC	125	55 (48)	24	29
300 PFC	115	55 (48)	24	29
380 PFC	135	55 (50)	24	29
150UB14	110	85 (85)		
150UB18	110	85 (80)		
180UB16.1	110	85 (73)		
180UB18.1	110	75 (72)		
180UB22.2	110	75 (73)		
200UB18.2	110	75 (68)		
200UB22.3	110	55 (51)		
200UB25.4	110	55 (51)		
200UB29.8	110	55 (51)		
250UB25.7	110	55 (55)		
250UB31.4	110	55 (45)		
250UB37.3	110	55 (45)		
310UB32	110	55 (43)		
310UB40.4	120	55 (46)		
310UB46.2	120	55 (45)		
360UB44.7	120	55 (43)		
360UB50.7	120	55 (43)		
360UB56.7	125	55 (48)		
410UB53.7	125	55 (45)		
410UB59.7	125	55 (45)		
460UB74.6	135	55 (50)		
460UB82.1	135	55 (50)		
530UB82	140	55 (45)		
530UB92.4	140	55 (46)		
610UB101	150	55 (46)		
610UB113	150	55 (47)		
610UB125	155	55 (51)		

Note

1. When ordering SO stanchions, KPB offset and KP height are to be specified. (Refer to table above)
2. Choose KPB offset based on Stanchion offset.



Horizontal Closure Bends

Horizontal closure bends are manufactured from 32NB pipe with a 3.2mm wall thickness. Standard 90° closure bends have a 140mm radius. Bends have 295/267mm legs at 457mm centres.

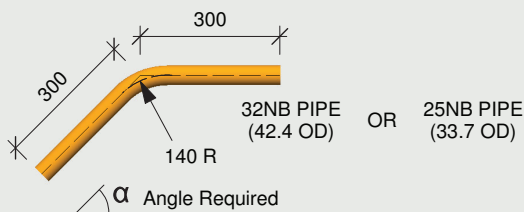
Horizontal Closure Bends can also be supplied with non-standard legs.



Angle Closure Bends

Angle closure bends are manufactured from 32NB pipe with a 3.2mm wall thickness, 90mm radius bend with 295/295mm legs at 457mm centres. Angle closure bends are made to order, with angle to be specified between 1° and 45°.

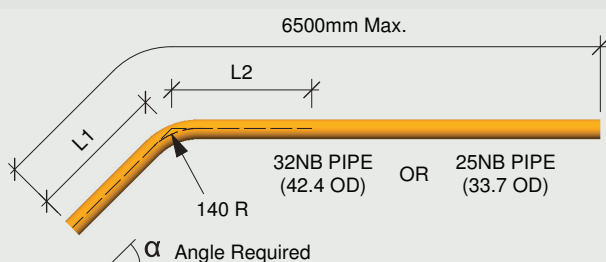
Standard Rail Bend



Standard Rail Bends

Standard bends are manufactured from 32NB and 25NB pipe with a 3.2mm wall thickness and have a 140mm radius with 300mm legs.

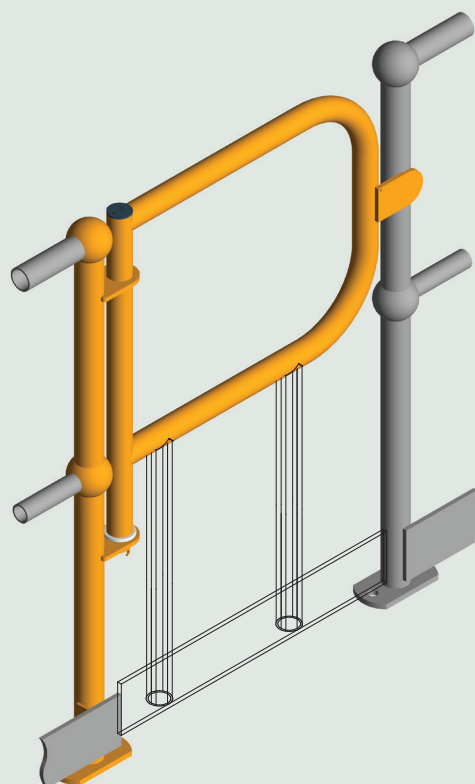
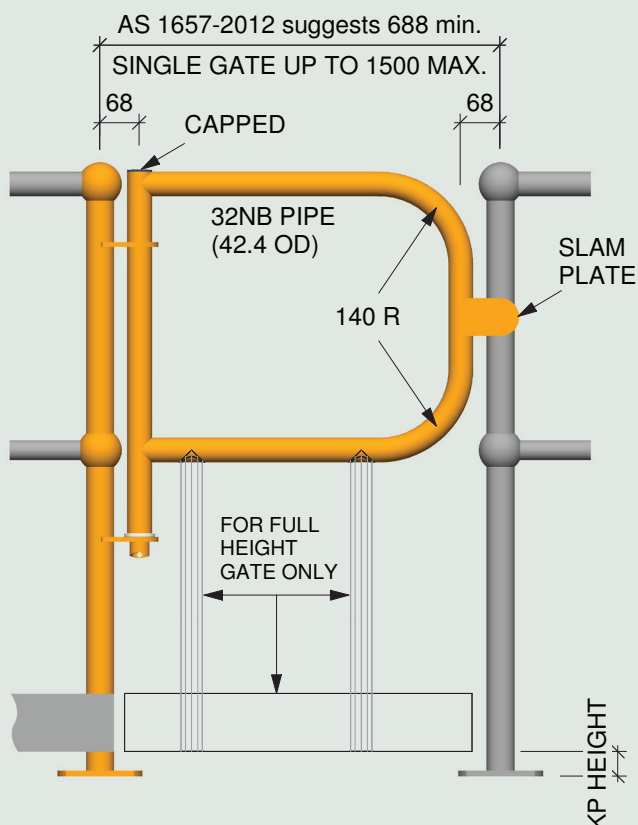
Non-Standard Rail Bend



Non-Standard Rail Bends

Non-standard rail bends have the same specification as standard rail bends, with any combined leg length up to 6500mm.

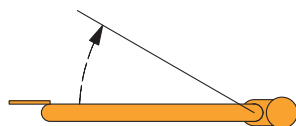
When ordering a non-standard rail bend the angle and leg lengths are to be specified.



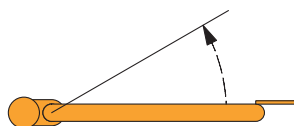
Important

When ordering Self Closing Gates (SC Gate), it is important to nominate the swing direction required. (Refer to diagrams below).

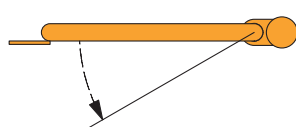
North West Swing
RH Spring



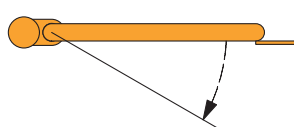
North East Swing
LH Spring



South West Swing
LH Spring



South East Swing
RH Spring



The Mentis self closing gate has been specially designed to overcome the problems of non closure experienced by other manufacturers.

Mentis has designed a custom spring which is three times longer and of thicker section than those used by other manufacturers. Current SC Gates in operation have proven to perform 45,000 swings without loss in closing force.

Another advantage of the Mentis SC Gates hinge mechanism is that the closing force can be easily adjusted on site, using a 30mm spanner.

In addition, nylon washers having a low co-efficiency of friction ensure long life and no unsightly rust stains. All components used in our SC Gates are either galvanised or made from stainless steel.

Bolting hinges are available to fit an SC gate to existing stanchions, without welding.

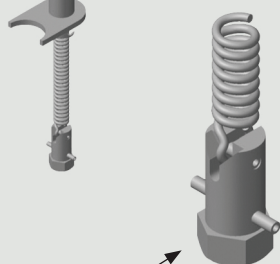
Self Closing Gate - Mild Steel - P Standard

H15

Photocopy this page and fill in the boxes to order SC Gates. This order form can also be download from our website, or contact us for a soft copy. NOTE: Put N/A in the clear height box if Kickplate is not required.

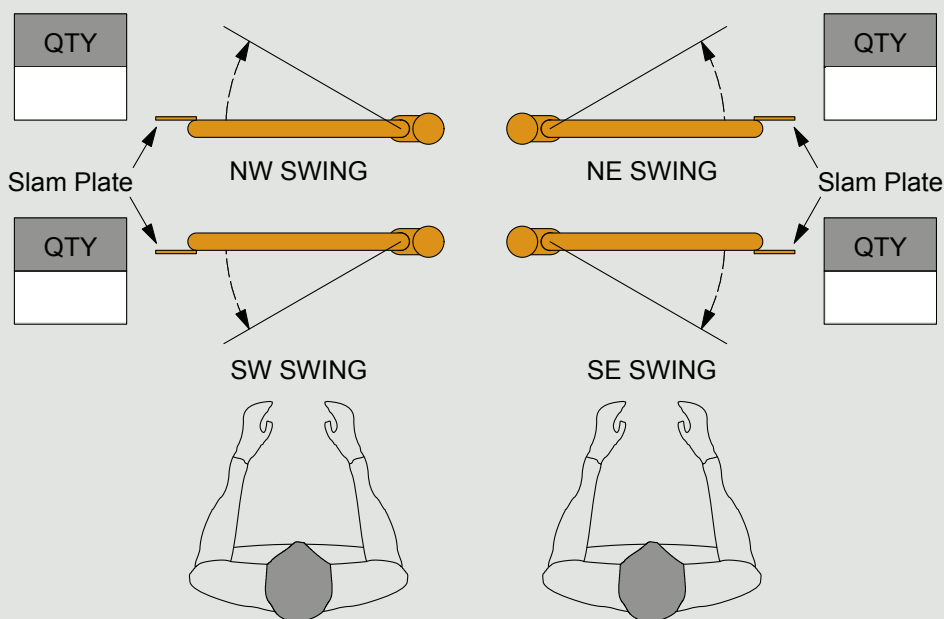
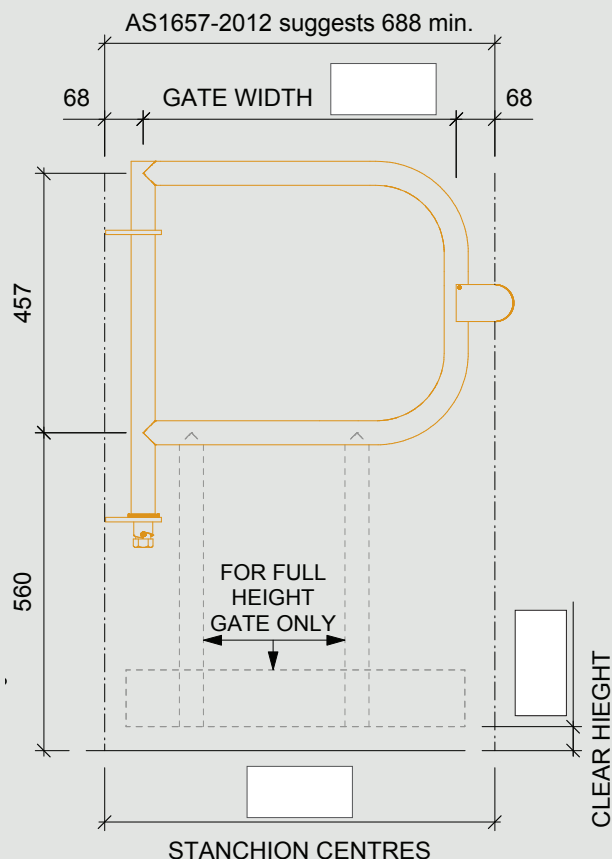
Gate Spring Features

Heavy duty extra long spring with heavy gauge wire.



Stainless steel spring nut which suits a 30mm socket or spanner for tensioning. WARNING: DO NOT OVER TENSION.

KP is on Slam Plate Side?
YES ☐ NO ☐

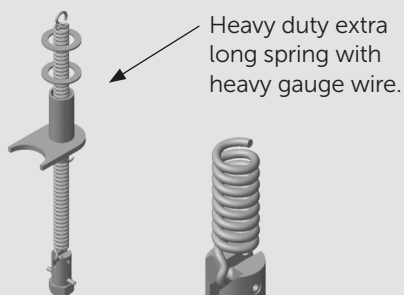


Self Closing Gate - Mild Steel - Other Option

H16

Photocopy this page and fill in the boxes to order SC Gates. This order form can also be download from our website, or contact us for a soft copy. NOTE: Put N/A in the clear height box if Kickplate is not required.

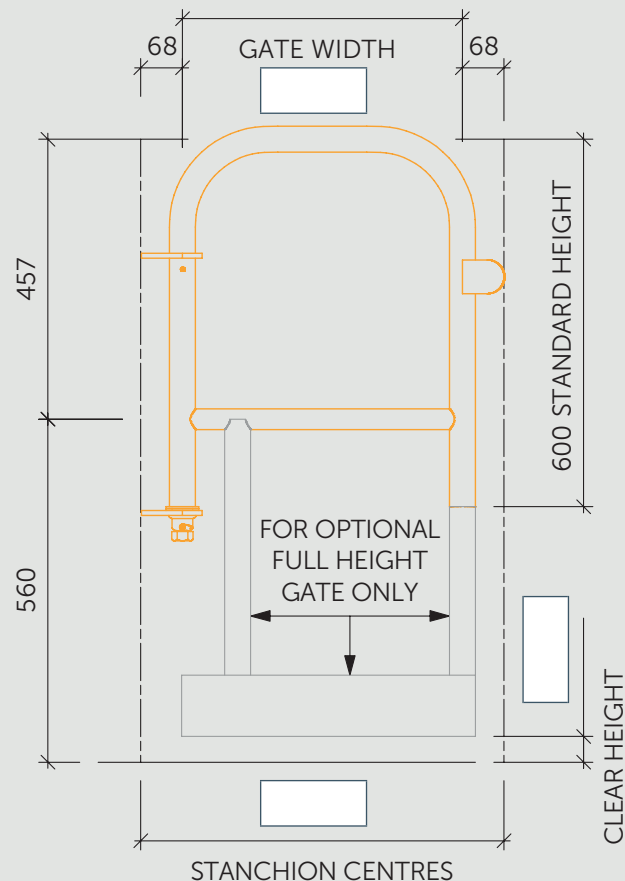
Gate Spring Features



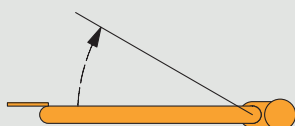
Heavy duty extra long spring with heavy gauge wire.

Stainless steel spring nut which suits a 30mm socket or spanner for tensioning. WARNING: DO NOT OVER TENSION.

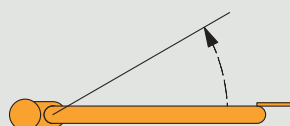
KP is on Slam Plate Side?
YES ☐ NO ☐



QTY
<input type="text"/>



NW SWING

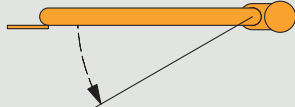


NE SWING

Slam Plate top

QTY
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QTY
<input type="text"/>

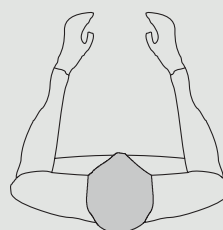
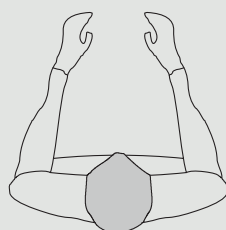


SW SWING



SE SWING

QTY
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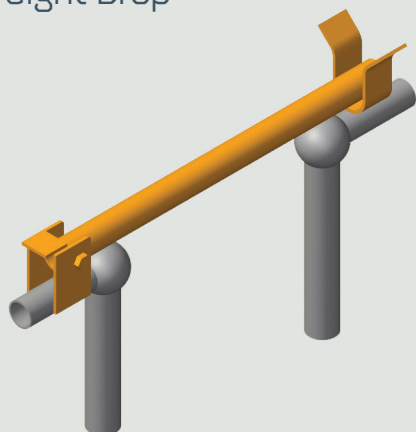
Mentis
AUSTRALIA

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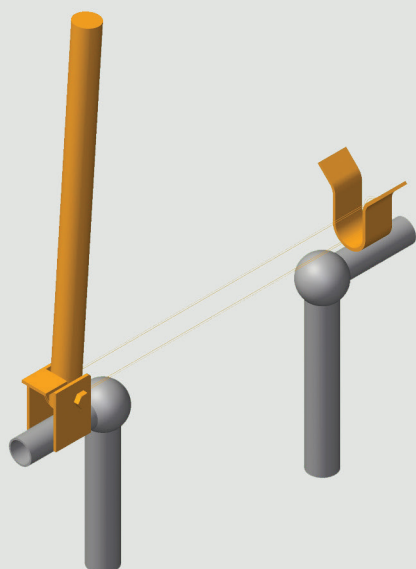
Self Closing Drop (SCD) Bars are a cost effective alternative to SC Gates, particularly in areas where space is limited. SCD Bars can be used in both one ball and standard two rail handrail applications. Designed for areas that are rarely used, for example maintenance platforms, they offer some protection at an opening in the handrail system.

Drop Bars are generally supplied as a loose component and can then be welded on site ensuring that the final position is accurate.

Straight Drop

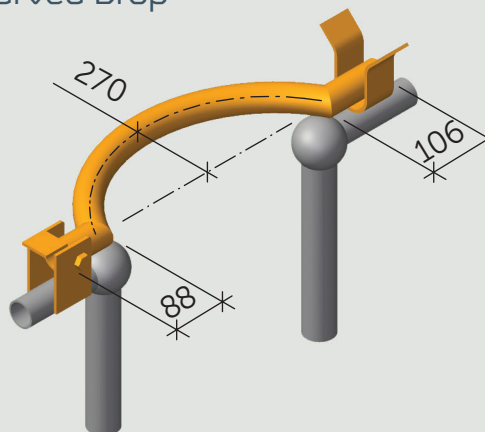


CLOSED

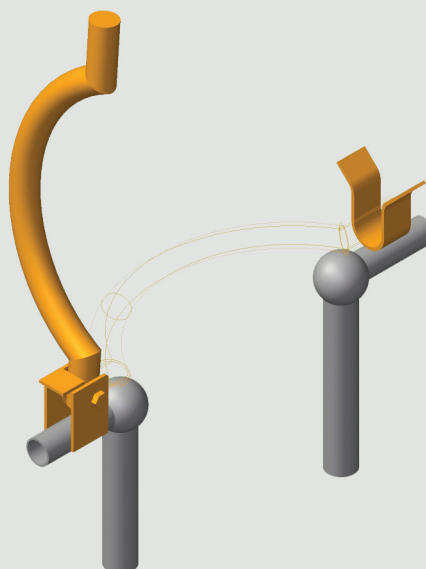


OPEN

Curved Drop



CLOSED



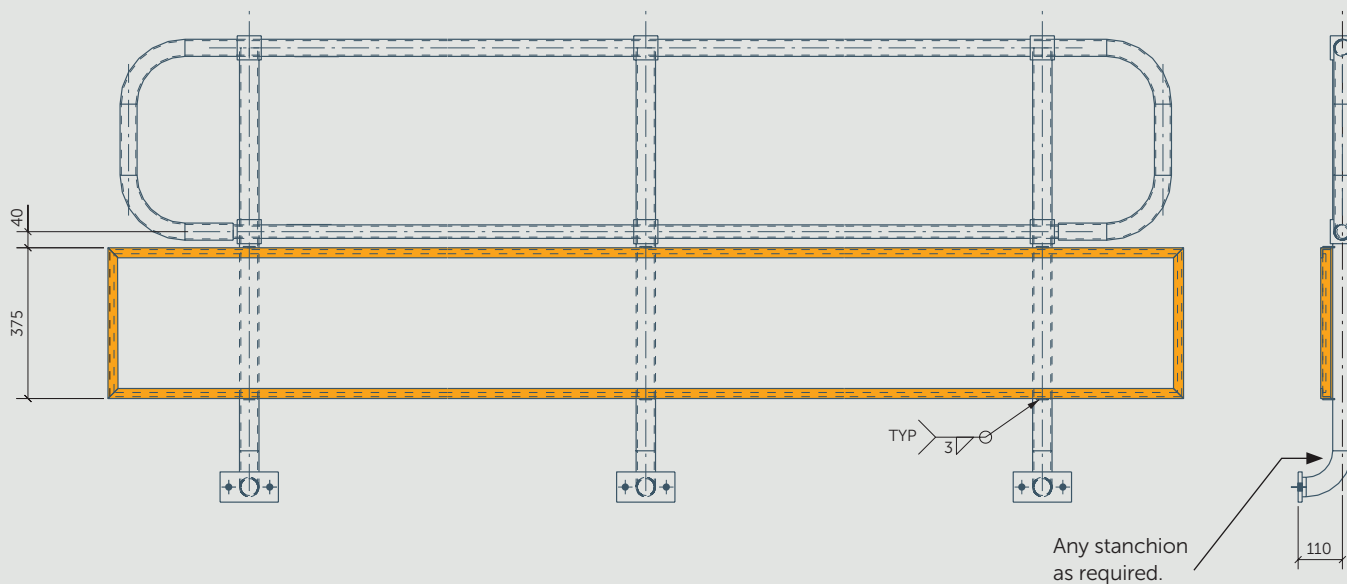
OPEN

All SCD Bars are manufactured from 32NB pipe.

When ordering SCD Bars, please ensure that Stanchion centres are specified.

Mentex Handrail applications would be used in areas that require additional safety and therefore combine mesh screen guards and handrail in one. Mentex Handrail is standard handrail with expanded metal screens from the knee rail down.

Example of a Mentex Handrail panel



The expanded metal is welded into a steel angle frame. This frame is then welded to the stanchions with cleats.

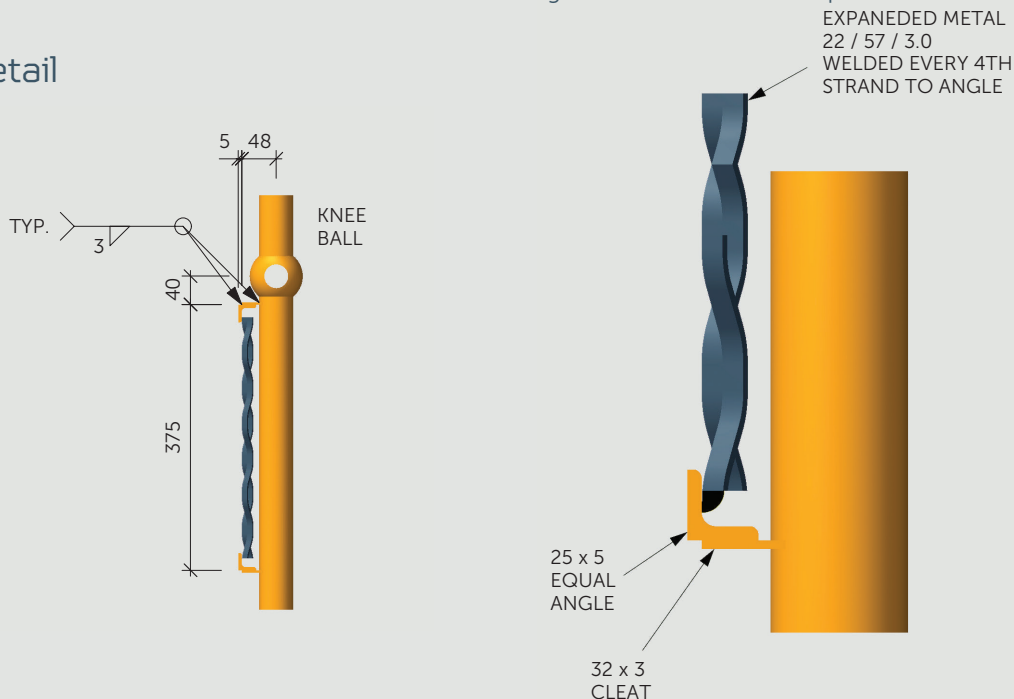
Standard Expanded Metal

- Short Way Mesh 22mm
- Long Way Mesh 57mm
- 3.0mm material thickness

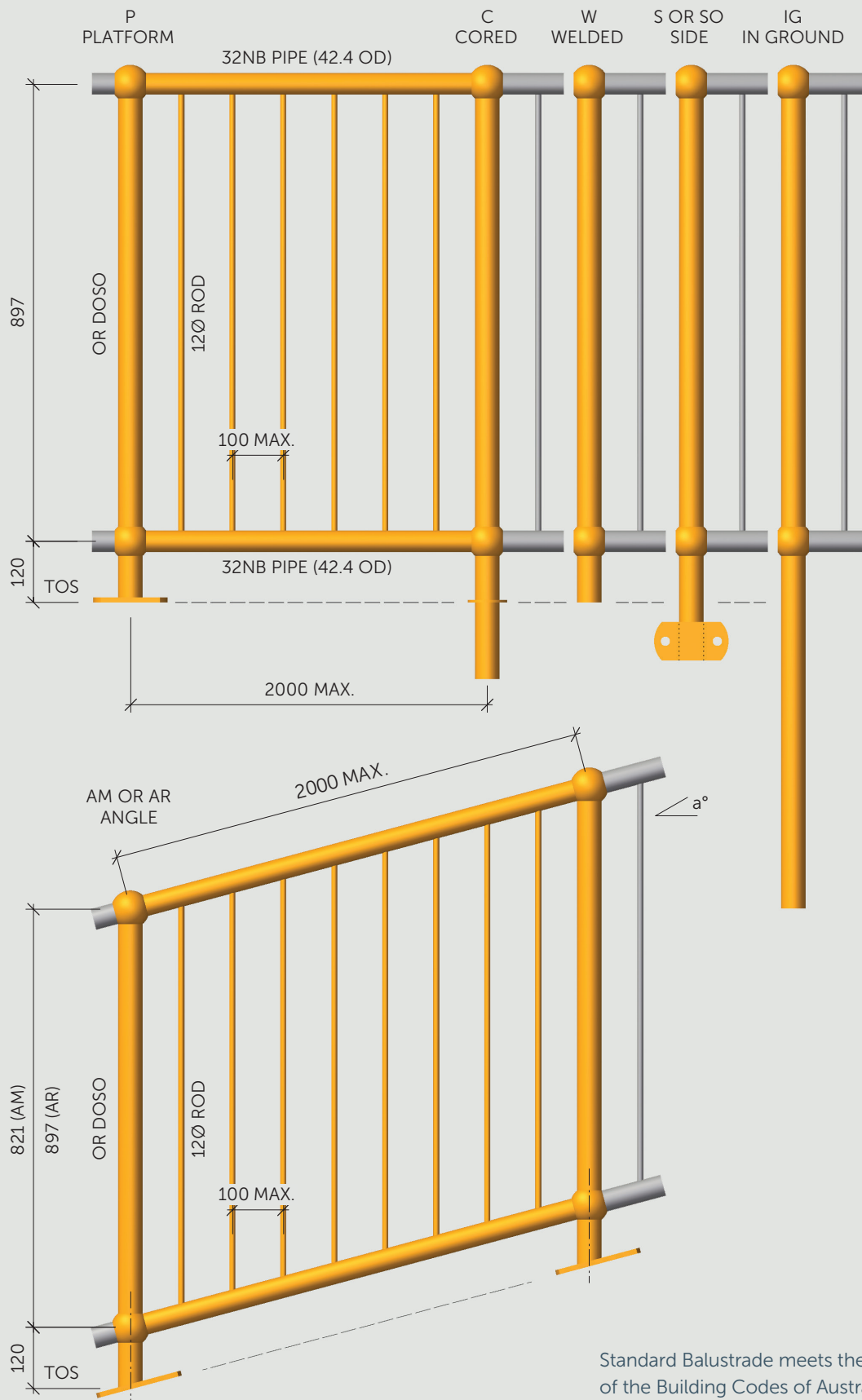
Non-standard

- 50 x 50 x 4.0 wire mesh
- Other infill material available on request
- Other angle frames available on request

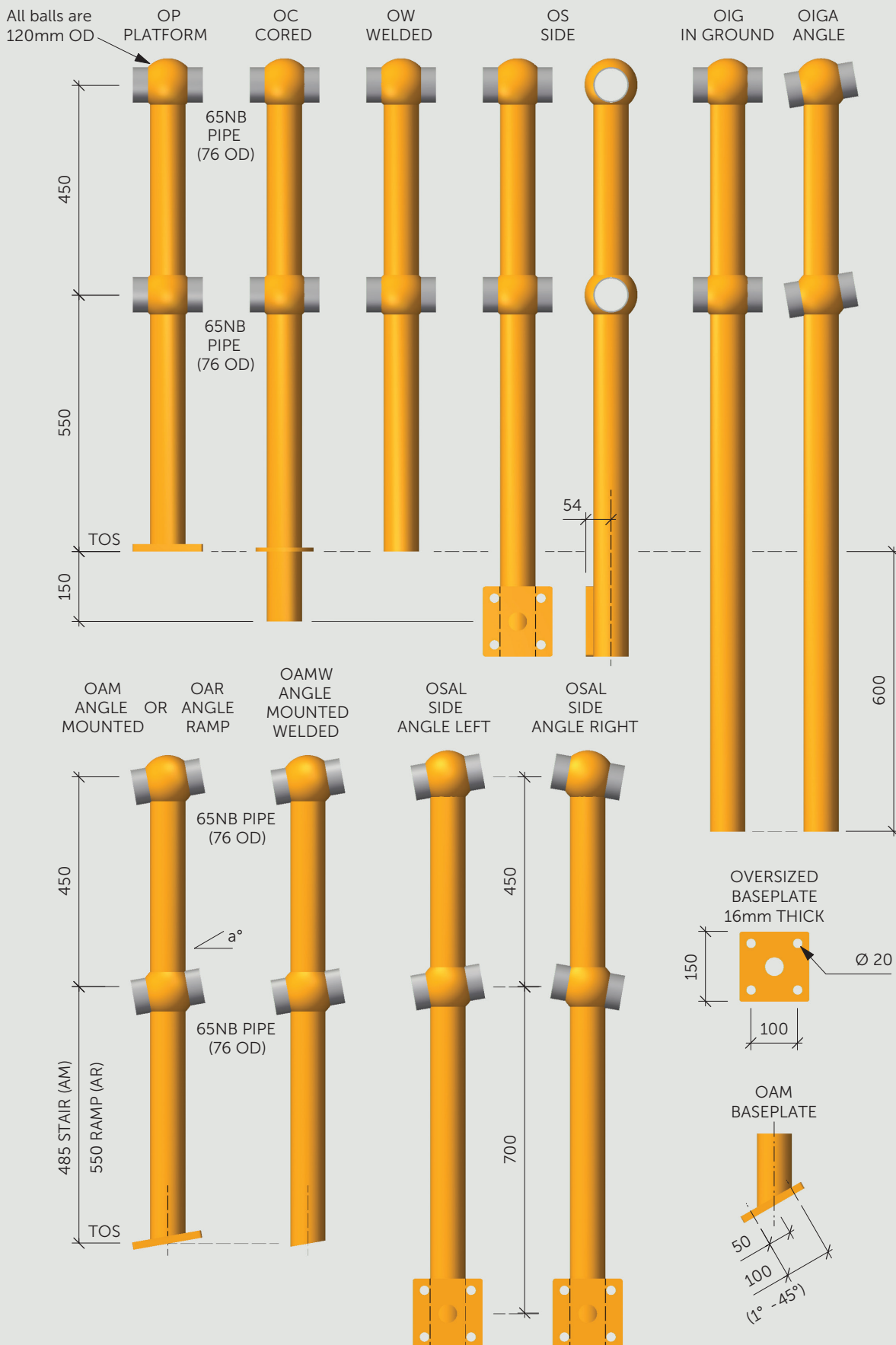
Screen Detail

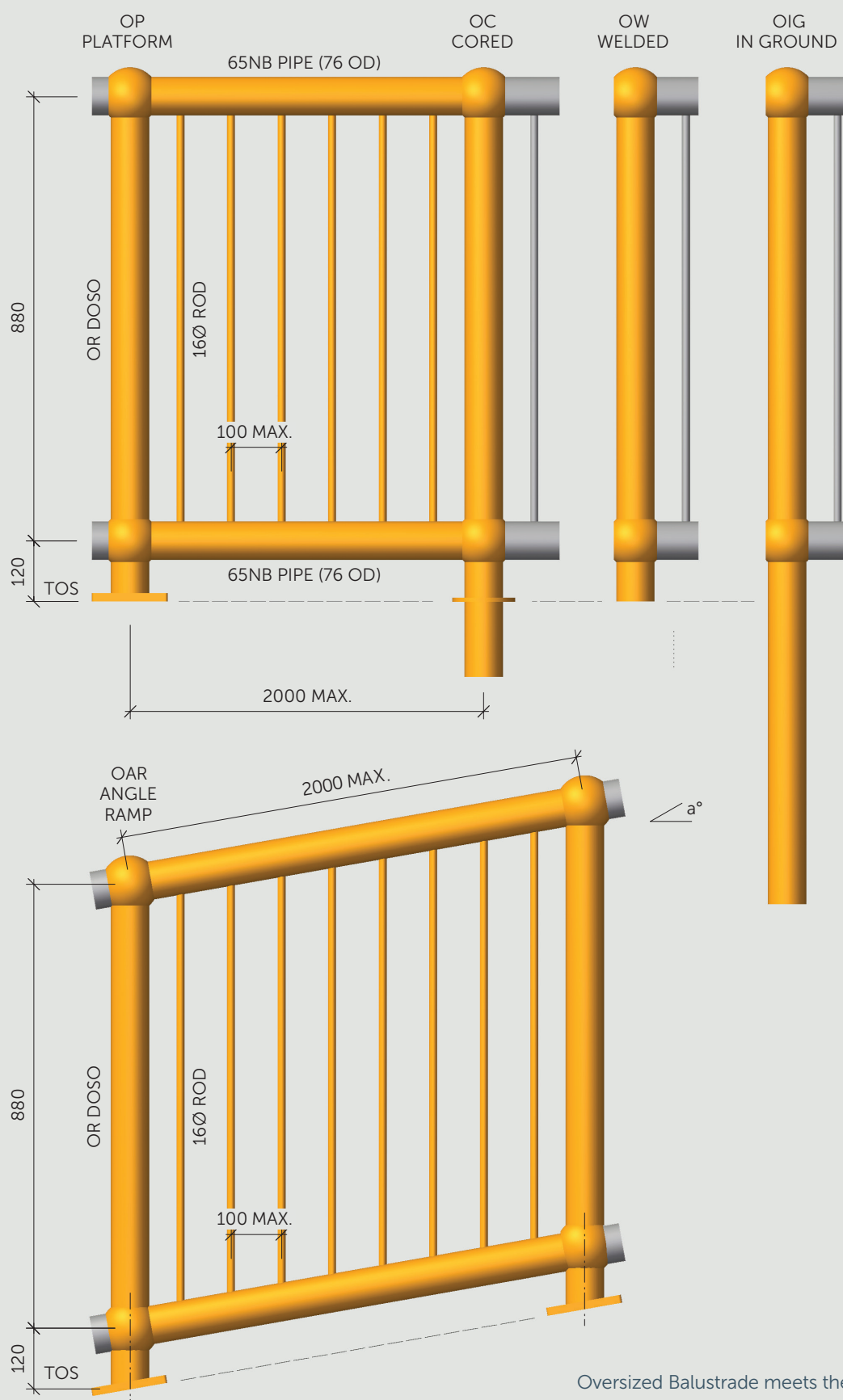


Please enquire with us as to your specific requirements and we can provide a complete solution, tailored to your needs.



Standard Balustrade meets the requirements of the Building Codes of Australia (BCA).





Oversized Balustrade meets the requirements of the Building Codes of Australia (BCA).

Aluminium Steel Stanchions

Pipe Size: 49.8 OD 4.0mm 6106 T6

Ball Size: 75mm OD

Base Plates:

- All Base Plates other than AM and PC Type.
- Specification - 80mm x 146mm x 12mm.
- Holes - 17.5mm dia at 102mm centres.
- Round ends, no sharp edges.

Type AM Base Plates:

- Specification - 80mm x 172mm x 12mm
- Holes - 17.5mm diam. at 126 centres
- Round ends, no sharp edges

Kickplate Brackets

- Specification - 50mm x 50mm x 6mm
- Angle 85mm long
- Standard brackets have no holes
- Optional holes - 14mm diam @ 45mm centres
- See page H23 for more details

Rail and Kickplate Specification

- Handrail - 45.8mm OD x 3.5mm 6060 T5
- Kneerail - 39.8mm OD x 3mm 6060 T5
- Kickplate - 100mm x 10mm Flat Bar 6106 T5

Standard Stanchions are drilled to suit the rail specifications above.

Special hole sizes are available on request.

Finish

Aluminium handrail is supplied as mill finish untreated aluminium or painted to your specification.

Stanchion Spacing

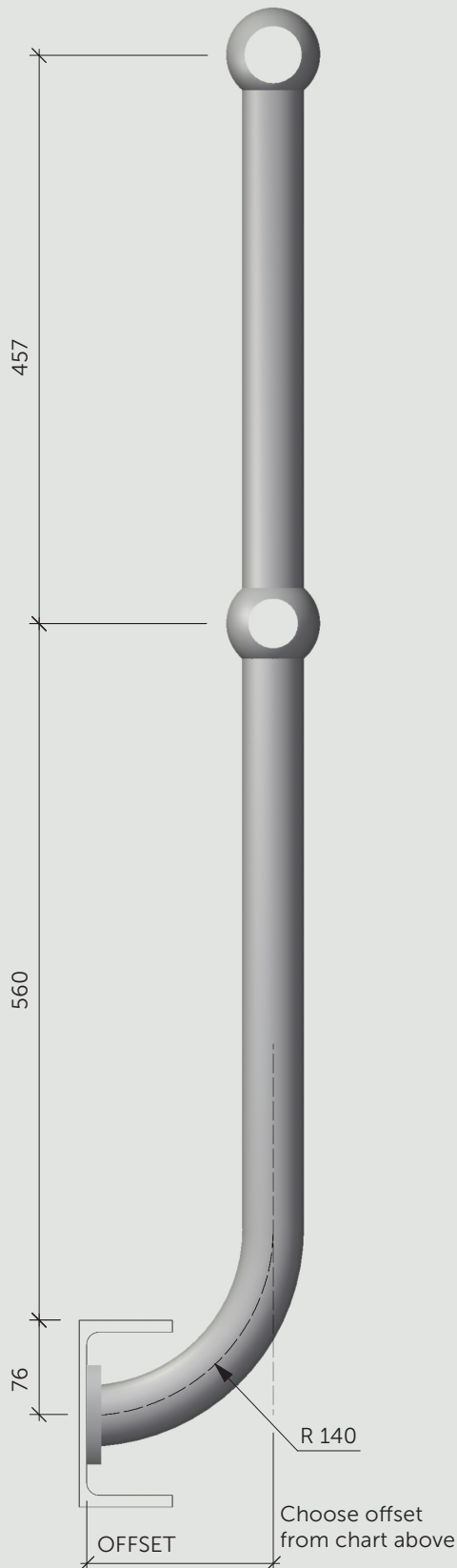
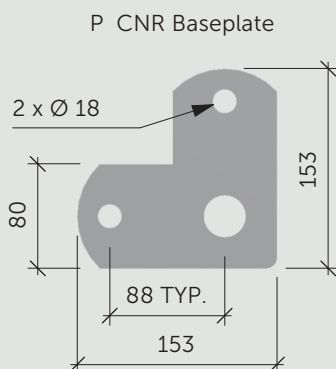
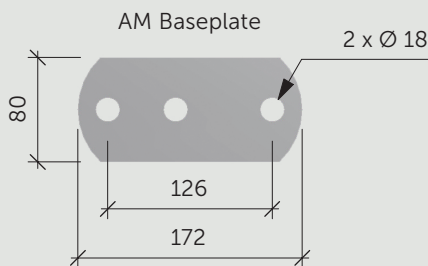
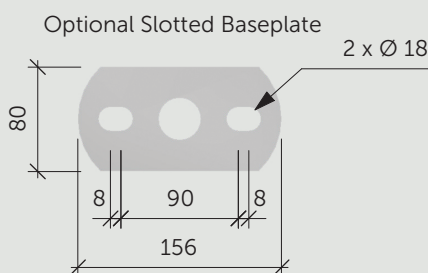
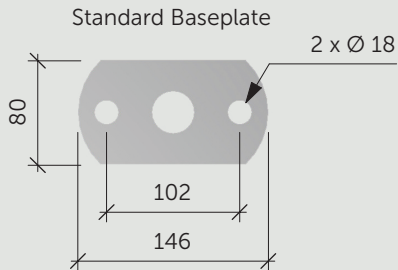
Aluminium handrail stanchion spacing should not exceed 1.8m centres for all stanchions except SO type. SO stanchions are recommended not to exceed 1.6m centres.

Standard Stanchions

Type	Gauge	Weight
P	4.0mm	2.1kg
PA	4.0mm	2.1kg
C	4.0mm	2.1kg
CA	4.0mm	2.1kg
W	4.0mm	1.7kg
WA-AMW	4.0mm	1.7kg
S	4.0mm	2.2kg
SO	4.0mm	2.6kg
SA-SC	4.0mm	2.1kg
SOA	4.0mm	2.6kg
AM	4.0mm	2.0kg
OB	4.0mm	0.9kg
OBA	4.0mm	0.9kg
OBP	4.0mm	0.9kg
OBS	4.0mm	0.9kg
OBH	4.0mm	0.9kg
SHS	4.0mm	0.9kg
IG	4.0mm	2.7kg

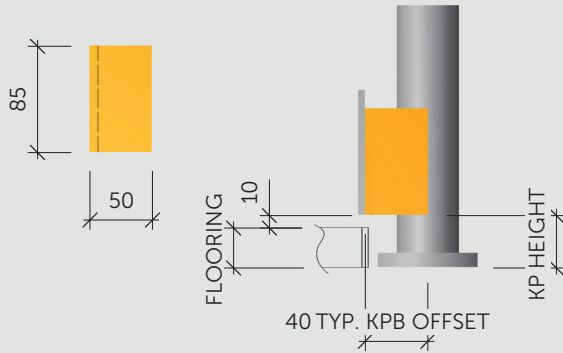
Baseplates

All baseplates are 12mm thick.

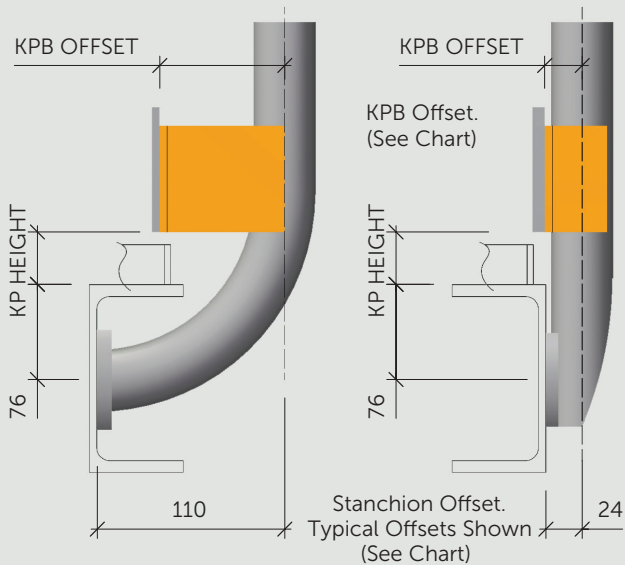
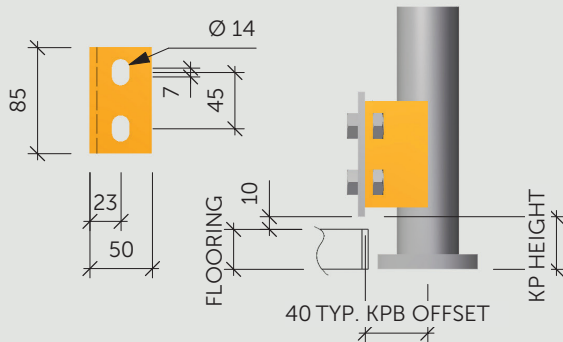


Description	SO Offset
150 PFC	150
180 PFC	150
200 PFC	150
230 PFC	150
250 PFC	150
300 PFC	150
380 PFC	160
150UB14	150
150UB18	150
180UB16.1	150
180UB18.1	150
180UB22.2	150
200UB18.2	150
200UB22.3	150
200UB25.4	150
200UB29.8	150
250UB25.7	150
250BU31.4	150
250UB37.3	150
310UB32	150
310UB40.4	150
310BU46.2	150
360UB44.7	150
360UB50.7	150
360UB59.7	150
410UB53.7	150
410UB59.7	150
460UB74.6	160
460UB82.1	160
530UB82	170
530UB92.4	170
610UB101	180
610UB113	180
610UB125	180

Standard Bracket
50 x 6 EA



Optional Bolted Bracket
50 x 6 EA



Steel	SO Offset	KPB (min) Offset	S Offset	KPB (min) Offset
75 PFC	n/a	n/a	n/a at standard height	
100 PFC	n/a	n/a	29	40
125 PFC	n/a	n/a	29	40
150 PFC	150	100 (83)	29	40
180 PFC	150	100 (83)	29	40
200 PFC	150	100 (83)	29	40
230 PFC	150	100 (84)	29	40
250 PFC	150	80 (70)	29	40
300 PFC	150	80 (70)	29	40
380 PFC	160	80 (72)	29	40
150UB14	150	120 (117)		
150UB18	150	120 (118)		
180UB16.1	150	120 (109)		
180UB18.1	150	120 (110)		
180UB22.2	150	120 (110)		
200UB18.2	150	120 (105)		
200UB22.3	150	100 (88)		
200UB25.4	150	100 (88)		
200UB29.8	150	100 (88)		
250UB25.7	150	100 (93)		
250UB31.4	150	100 (82)		
250UB37.3	150	100 (82)		
310UB32	150	80 (80)		
310UB40.4	150	80 (73)		
310UB46.2	150	80 (72)		
360UB44.7	150	80 (70)		
360UB50.7	150	80 (70)		
360UB56.7	150	80 (70)		
410UB53.7	150	80 (67)		
410UB59.7	150	80 (67)		
460UB74.6	160	80 (72)		
460UB82.1	160	80 (71)		
530UB82	170	80 (72)		
530UB92.4	170	80 (73)		
610UB101	180	80 (73)		
610UB113	180	80 (74)		
610UB125	180	80 (73)		

Note

1. KPB offset and KP height are to be specified when ordering or supplying.
2. Choose KPB offset based on Stanchion offset.



Parker Point Dam



Locomotive Service Pit

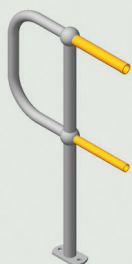


Mundaring Streetscape



Mundaring Streetscape

Glossary



Handrail

Top rail, typically 32NB.
Refer to page H6.

Kneerail

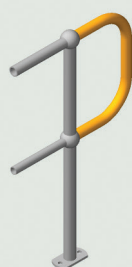
Mid-height rail, typically 25NB.
Refer to page H6.



DTSO

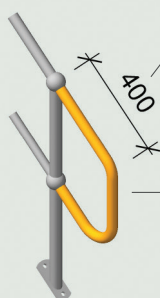
DTSO/DBSO

Ball's of angled stanchion drilled on top / bottom side only.
Refer to page H11.



Horizontal Closure Bend (HCB)

32NB double bend used at the end of an horizontal handrail panel, often referred to as a return. Using 140mm radius bends.
Refer to page H13.



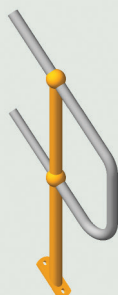
Raking Dimension

When measuring angled panels, to show aligned dimension, rather than linear.

Angle Closure Bend (ACB)

32NB double bend used at the end of an angled handrail panel, often referred to as an angle return.
Refer to page H13.

BOTTOM DRILL



Top Drill / Bottom Drill

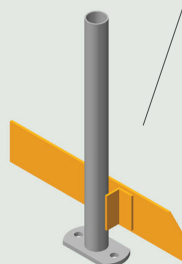
Kneerail ball of angle stanchion to have 32NB drilled to one side to accommodate 32NB angle closure bend.
Refer to page H13.



DLSO

DLSO / DRSO

Ball's of stanchion drilled on left / right side only.
Refer to page H11.



Kickplate Bracket (KPB)

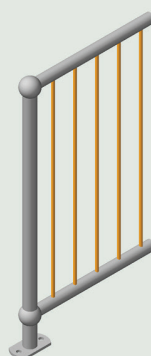
Bracket welded to stanchion to attach kickplate by either welding or bolting on.
Refer to page H6.

Snipe

Chamfer cut in kickplate ends to eliminate sharp corners.

Kickplate

Flatbar, typically 100x6mm, fixed to stanchion, conforming to Australian Standards maximum 10mm above finished floor level. Often referred to as Kick Board or Toe Board.
Refer to page H6.

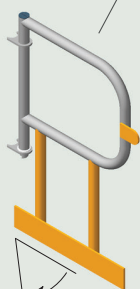


Baluster

Solid rod used for infill on balustrade panels.
Refer to page H18.

Full height gate

Self closing gate that extends to the floor to allow for kickplate to be attached.
Refer to page H14.



Slam Plate

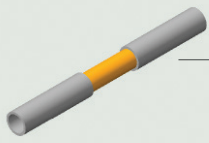
Plate welded to self closing gate to stop swing at closing position. often referred to as bash plate of striker plate.
Refer to page H14.

SE SWING

Gate Swing Direction

Direction of self closing gates swing from hinge side, as viewed from top.
Refer to page H14.

Glossary

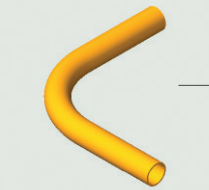


Splice Joint

Join in panels / pipe where it is not possible within the ball of a stanchion using an internal spigot pipe.

Guardrail

Complete fabricated Guardrail often simply referred to as handrail.



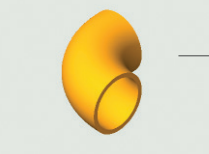
Rail bends

Mentis standard pipe bends, using 140mm radius, with 300mm to each leg.

Refer to page H13.

Vent Holes

Vent holes are used on stanchions and pipe to allow adequate flow while dipping during the galvanising process.



Elbow - Short Radius / Long Radius (SRE / LRE)

Small radius elbows at 90° used where space is limited.

25NB SRE - 25.4mm radius

32NB SRE - 31.8mm radius

25NB LRE - 38.1mm radius

32NB LRE - 47.8mm radius

Untreated / Black

Raw mild steel.

Pre-Galvanised

Items that are made from a galvanised material or hot dip galvanised prior to fabrication or sale.

Hot Dip Galvanised (HDG)

Post fabrication process of treating raw steel to protect against corrosion.