



# 0552 Metalwork - Fabricated

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# 00 Design Principles

## 0.01 Main considerations

It is a requirement to undertake the [00 PLANNING AND DESIGN/0001R - DESIGN REFERENCE](#) and [GLOSSARY OF TERMS](#) information into all aspects of design, detailing and delivery when developing the content here within. Clear demonstration of adherence to these requirements is part of the services and will be called upon at key points in the project and during at the discretion of the Department of Education (DoE).

## Specification

### 01 General

As per current NATSPEC.

### 02 Products

As per current NATSPEC.

### 03 Execution

As per current NATSPEC.

### 04 Selections

As per current NATSPEC except as follows:

#### 04.1 Pipe Bollards

Location:

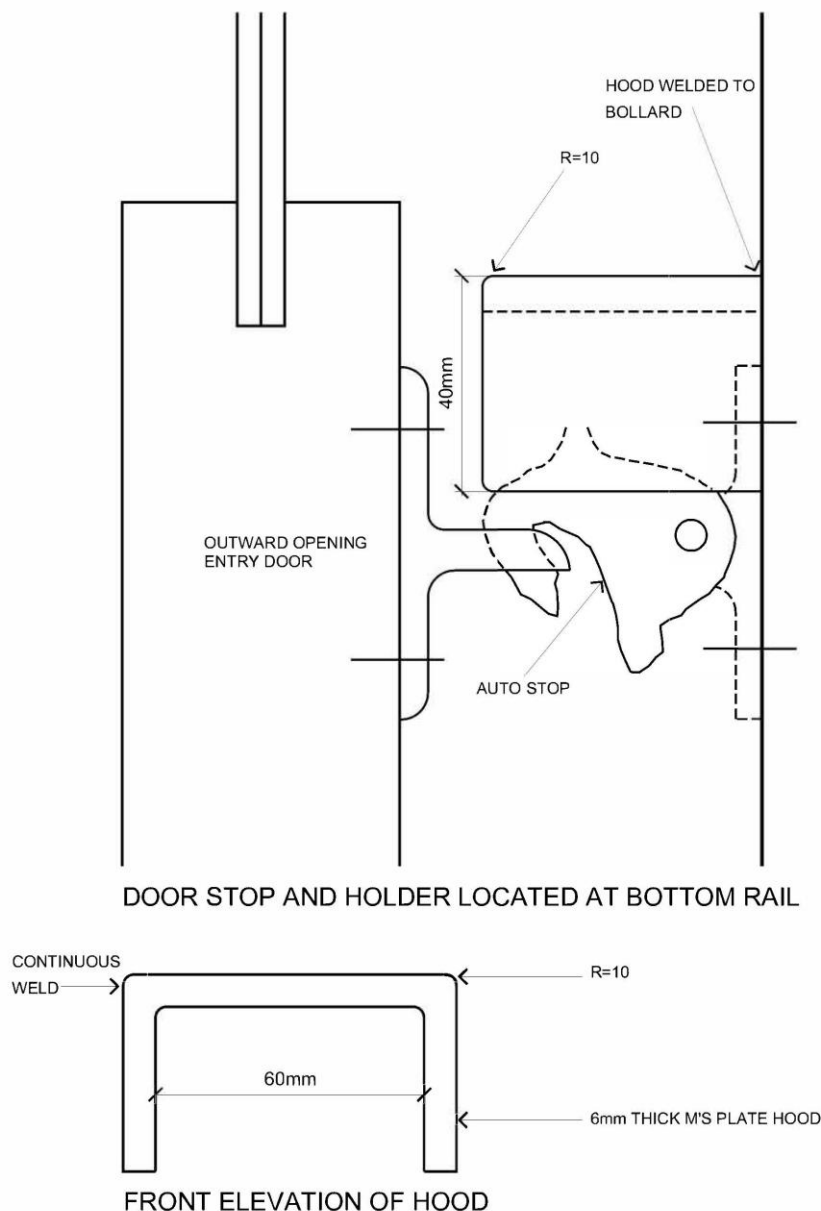
#### Construction

- General: Steel tubular section with welded plate capping, all hot dip galvanised after fabrication, and set in a concrete footing.
- Hot dip galvanising: To AS 4680
- Installation: Set 300 mm deep in concrete footing
- Pipe size: 125 mm nominal OD x 5.4 mm wall thickness Height: 900 mm from pavement level

- Capping: 6 mm thick mild steel plate
- Concrete footing: 300 x 300 x 450 mm deep

## 04.2 Door Autostop

GUIDE NOTE: Refer to EFSG drawing below and include into appropriate project drawing package and number. Do not use as a construction detail. Not to Scale (NTS)



**Figure 01: Hood for Bollard with Auto-Stop**

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## 04.3 Lockable Demountable Bollards

Location:

### General

- A proprietary lockable demountable metal tubular section bollard with a dome head capping.
- Tubular section: To AS 1163
  - Diameter: 115 mm OD (nominal)
  - Finish: Hot dip galvanised
- Head: Cast aluminium
- Height: 900 mm above ground level

### Demounting plate assembly

- A proprietary compatible surface demounting plate assembly complete with pin guide and heavy-duty pin with provision for padlock, all hot dip galvanised after fabrication (including pin).
- Hot dip galvanising: To AS 4680
- Height: 60 mm maximum
- Pin: 12.5 mm hole in pin to receive padlock
- Fixing holes: 2 (minimum), concealed
- Fixing: Surface fixed with fasteners through mounting holes in demounting plate
- Bollard sleeve: Fill with concrete, finish in dome shape

### Padlock

Refer to [04 ENCLOSURE/0455 DOOR HARDWARE](#)

## 04.4 Hose Reel Cabinets

### Construction

- Fabricate from 1.25mm sheet steel, with penetration for piping. Weld door hinges to frame. Mounting: To AS 1221
- Finish: Primer and 2 coats enamel.
- Colour: Enamel - Red

- 
- Sign: "FIRE HOSE" in white
  - Type:
  - Size: 1210mm x 840mm opening
  - Doors: Pressed 1.25mm steel sheet, fit with chrome plated handle
  - Fixing:

## 04.5 Hydrant Valve Cover

### General

- Select suitable item or design and construct the fire hydrant security cover to suit specific fire hydrant booster valve.
- The fire hydrant security cover must comply with all the necessary statutory authorities' requirements.

### Padlock

- Refer to 0455 - DOOR HARDWARE

## 04.6 Electrical Pit Cover Plate

Location: Main Switchroom

### Construction

- General: Fabricate mild steel frame, support channels, covers, lifting handles and hooks, weld and hot dip galvanize after fabrication. Frame: Weld from 50 x 50 x 6mm steel angle with hook rods and cast securely into perimeter of concrete pit.
- Support channels: Weld 75 x 50 x 10mm channels as intermediate supports.
- Perimeter finish strip: Weld a continuous 20mm wide x 10mm thick mild steel flat to the outside perimeter of frame level with floor finish.
- Covers: Provide chequer plate aluminium covers of suitable size and weight to enable one person to remove covers without difficulty. The covers are required to take the load of foot traffic only. Each cover is to have two "D" lifting handles. Bolt fix frame with allowances for covers to be removed for access to pit covers
- Handles: Provide 2 x 200mm "D" lifting handles bent out of 10mm diameter rod with 50mm studs at each end.
- Hooks: Fabricate from 6mm diameter rod 100mm long, bend last 18mm through 90deg.

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## 04.7 Chain Wire Mesh Wall and Gate

Location: Project Store - Type 1

### Construction

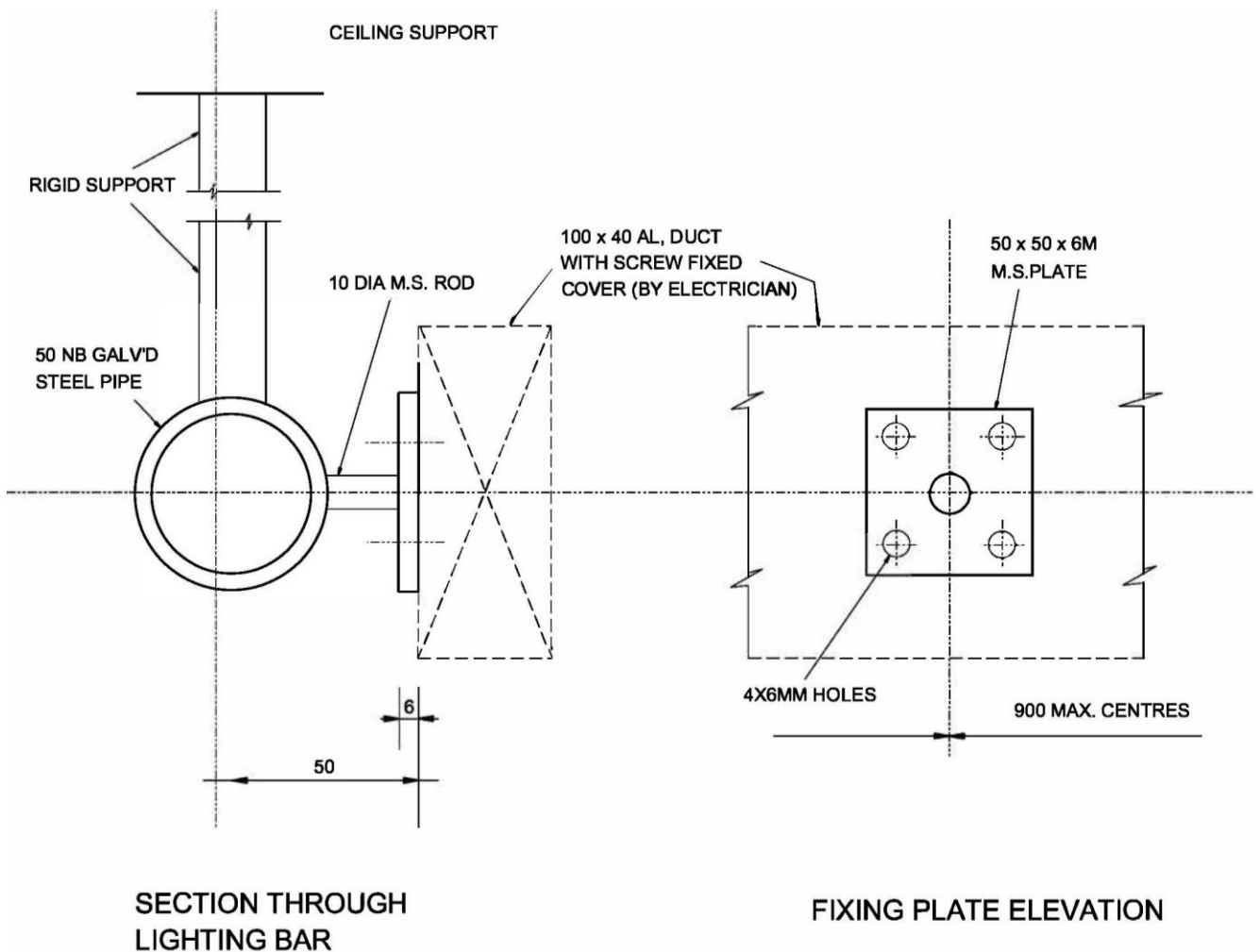
- Type: Galvanised tubular steel (pipe rail) frame with chain wire mesh barrier and gate.
- Standards: Generally to AS1725
- Pipe frame (chain wire mesh wall frame)
- Tubular steel pipe outer frame (minimum)
  - Vertical posts DN 40mm 48.3mm OD without joints
  - Horizontal rails DN 32mm 42.4mm OD without joints
- Tubular steel pipe inner frame (mid rail) (minimum)
  - DN 32mm 42.4mm OD
- Exposed pipe ends must have permanently fitted proprietary end caps.
- Securely fix to floor, and ceiling/soffit with proprietary corrosion resistant fixing plates and metal fasteners/anchors.
  - Galvanised base plates to AS1725 – Appendix F
- Galvanised chain link fabric: 50mm pitch mesh x 3.15mm
- Height: Full height of enclosure.
- Maximum spacings:
  - Bottom rails from finished floor level: 50mm
  - Top rails from finished ceiling/soffit level: 50mm
  - End posts: 50mm from walls
- Sliding single gate – Pipe frame
  - Outer frame: DN 25mm 33.7mm OD x 2.6mm thick.
  - Inner frame (mid rail): DN 20mm 26.9mm OD x 2.3mm thick.
  - Height: Full height of enclosure
  - Track: H/D galvanised steel or anodised extruded aluminium overhead sliding door track capable of allowing to gate to open the full width of opening. Carriage wheels to be steel rimmed ball-bearing, nylon tyred wheel.
  - Secure gate to track with anti-tampering fasteners.
- Locking: Weld hasp and staple (heavy duty) to gate at 1500mm from finished floor level on the entry side of the gate.



- Provide a welded framed access hand hole to permit operation of the lock from both sides. Supply 50 mm padlock.
- Refer to 0455 - DOOR HARDWARE.
- Reconditioning damaged galvanised surfaces: If possible complete fabrication before galvanising; otherwise apply a zinc-rich primer to affected joint surfaces.

## 04.8 Lighting Bar

GUIDE NOTE: Refer to EFSG drawing below and include into appropriate project drawing package and number. Do not use as a construction detail. Not to Scale (NTS)



**Figure 01: Lighting Bar**

Location: Refer to the Electrical drawings.

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## Construction

- Type: Galvanised steel tubular bar securely fixed to ceiling structure to ensure minimum deflection when fully loaded with stage spotlights.
- Galvanised tubular lighting bar
  - Size: 48.3 OD x 4.0mm thick.
- Provision for wiring
  - Provide wiring in duct to the socket.
  - Refer to 0951 – LIGHTING.

## 04.9 Ceiling Hook

Location:

### Construction

- Material: Stainless steel hook
- Fixing: Fix securely to ceiling structure or concrete soffit
- Performance: Capable of supporting the following weight:
  - Primary: 200kg (minimum)
  - Secondary 300kg (minimum)

## 04.10 Grab Rails

Location: Access Toilets, Access Showers, Ambulant Toilets, Moderate Unit Toilets and the like. Refer to drawings.

### Type

- Tubular metal rail, bent to shape as required, with pre drilled welded end flange plates.
- Lengths and dimensions: Refer to drawings.
- Number:
- Standards: All fittings and installation must comply with AS1428.1 and 2.
- Safety grip rails: Where rails are used in shower or bath areas provide safety grip rails with knurling on straight grip surfaces.
- Rails
  - Material: Satin finish stainless steel to AS 1449 - Type 304.
  - Fabrication: Fully welded joints, grind and polish smooth.

- Fixing
  - Securely fix to wall through pre-drilled holes in flange plates.
  - Screws/bolts to be stainless steel and supplied by the manufacturer including all accessories; fixed in accordance with the manufacturer's recommendations.

## 04.11 Drop Down Grab Rail

Location:

- Standards: All fittings and installation must comply with AS1428.1 and 2.
- Type
  - Without toilet paper dispenser: Proprietary stainless steel or anodised aluminium drop down rail with knurled safety grip or plastic hand grip, wall bumper, rubber stop and catch.
  - With toilet paper dispenser: Proprietary stainless steel or anodised aluminium drop down rail with a knurled safety grip or plastic hand grip complete with toilet paper dispenser, wall bumper, rubber stop and catch.

GUIDE NOTE: Refer to the EFSG and the drawings to determine the location of the toilet paper dispenser.

- Fixing
  - Securely fix to wall.
  - Fixing screws/bolts and accessories are to be supplied by the manufacturer and fixed in accordance with the manufacturer's recommendations

## 04.12 Backrest

Location: Access Toilets, Access Showers, Moderate Unit Toilets and the like. Refer to the drawings.

- Standards: All fittings and installation must comply with AS1428.1 and 2.

### Construction

- Type: Adjustable, vandal resistant backrest
- Frame and mounts: Satin finish stainless steel – Type 304
- Fixing plates: Mounted at approximately 560mm centres Backrest: Curved stainless steel
- Fixings: Concealed fixings in accordance with the manufacturer's recommendations

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## 04.13 Bracket for Drinking / Wash Trough

Location:

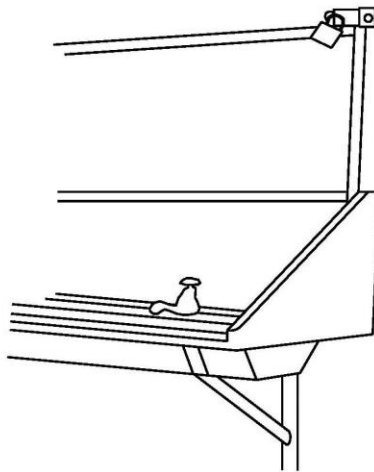
- Fabrication
  - Form brackets from mild steel bar comprising of welded members with pre-drilled holes for fastening to wall all as shown on drawing.
  - Hot dip galvanised after fabrication
  - Hot dip galvanising: To AS 4680
- Bracket
  - Material: 40 x 6mm thick MS bar.
  - Spacing: 1200mm maximum centres
- Fixing
  - Attach securely to building structure with fixings through pre-drilled holes in vertical member with bolts into expanding masonry anchors (metal – 10mm diam. minimum), coach screws or bolts into timber and bolts into metal.
  - All fasteners to be of metal compatible with the bracket and of equivalent corrosion resistance.

## 04.14 Drinking / Wash Trough Guard

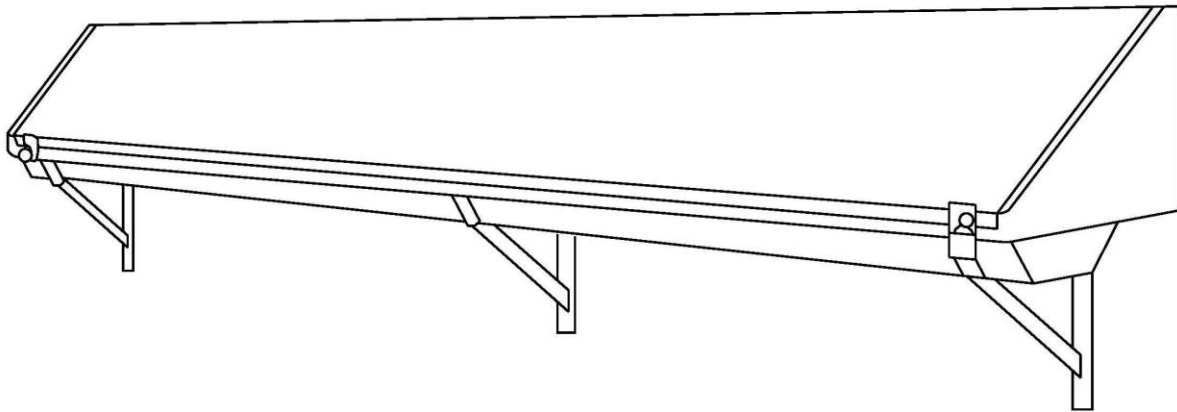
GUIDE NOTES: Drinking/wash trough guards are only to be installed on drinking and wash troughs located in external or non-lockable areas. Insert project specific locations.

The drinking/wash trough guard described below is based on a trough guard unit designed especially for use in schools. Other proprietary wash / drinking troughs guards that comply with the Educational Facilities Standards and Guidelines drawing and specification requirements below may also be acceptable.

Refer to EFSG drawing below and include into appropriate project drawing package and number. Do not use as a construction detail. Not to Scale (NTS)



LOCKS IN OPEN POSITION



LOCKS IN CLOSED POSITION

**Figure 02: Wash Trough Guard**

Location:

### Description

- Proprietary stainless guard to suit drinking trough. The guard must have a sloping face (approx. 45 deg) and be capable of being locked (padlocked) in the open and closed position.
  - The locking lugs/brackets are to be installed at both ends of each guard.
  - Lugs/brackets must not protrude beyond the trough perimeter when the guard is in a locked open position.
  - Holes in the trough for attaching padlocks to secure trough guard in the closed position are not permitted.

- Remove all sharp projections.
- Radius rounding finish to all corners.
- Return folds to remove all exposed leading edges. Sharp edges are not acceptable.
- Padlocks: Refer to 0455 - DOOR HARDWARE for padlocks and master keying
- Length: The maximum length 2400mm. If longer lengths required provide multiple trough guards of equal length. (Eg. 3000 mm length = 2 x 1500 mm long trough guards).
  - For trough guards over 1600 mm long provide a 1.6 mm stainless steel angle stiffener to inside front of lid.
- Fittings: All lugs and wall fittings must be compatible with the guard.
- Stainless Steel:
  - Grade: 304
  - Gauge: 1.6mm
  - Finish: 2B

GUIDE NOTE: Refer to Figure 03.

- Drawing: Refer to drawing.
- Fixing: Fix securely to wall with non-corrosive fasteners and expanding masonry anchors (metal) for masonry walls.

## 04.15 Art Trough Bench (Type 2)

Location:

### Description

- Bench top support
  - Legs (front only): 31.8 x 31.8 x 1.2mm stainless SHS.
  - Spacings: 750mm intervals (maximum)
  - Fixing plates: Weld stainless steel fixing plates to the tops of all legs
  - Adjustable feet: Provide adjustable stainless steel to all legs
  - Installation: Securely fix to floor and to underside of bench top through pre-drilled holes
- Wall support: Provide an angle for the full length securely fixed to wall to support bench top.

- Angle:
  - Aluminium (nominal): 50 x 50 x 2mm
  - Galvanised steel (nominal): 50 x 50 x 1.6mm
- Bench top

Refer to [05 INTERIOR/055 FIXTURES](#), [08 HYDRAULIC/0812 TAPWARE](#) and [08 HYDRAULIC/0811 SANITARY FIXTURES](#)

## 04.16 Tool Pegs

Location:

### Description

- Fabrication: Use 32mm nominal diameter galvanised steel tubes cap and bend one end.
- Installation: Build open end of Tool Peg into brickwork projecting 225mm.

## 04.17 Shelf Brackets for Shelving

Location:

### Description

- Fabrication: Form brackets from mild steel angle comprising of welded pre-drilled vertical and horizontal members with protruding ends splayed at 45 degrees. Hot dip galvanise after fabrication.
- Bracket: 30 x 30 x 5mm M.S. angle Size: 200 x 200mm
- Spacing: 500mm maximum centres
- Fixing: Fix securely to wall and underside of shelf through pre-drilled holes with galvanised fasteners and anchors

## 04.18 Frames from Steel Pipe – Separating Frames

Location:

### Description

- Fabrication: Mild steel bent tubular frame with 75 x 6 mm plate fixed to front face and welded pre-drilled fixing flanges. Hot dip galvanise after fabrication.
- Frame: Size: 900 mm high x 325 mm from wall Diameter: 40 mm N.B

- 
- Protective finish: Hot dipped galvanised Flanges: 100 x 100 x 10 mm M.S. plate
  - Centres: 600 mm
  - Fixing: Bolt each flange securely into masonry wall and concrete floor with three 10 mm diameter masonry anchors. Plate fixed to front face of frame with M8 x 65 mm galv. Bolts

## 04.19 Hooks for Hoses (Frames from Steel Pipe)

Location:

### Description

- Fabrication: Two M.S. pipes bent and welded to M.S. plate with capping on open end of pipes hose supports. Pre-drill fixing holes weld all together and hot dip galvanise after fabrication.
- Wall Plate: 6mm thick M.S. 250mm x 300mm drilled to receive four 10mm fixing bolts.
- Hose Supports: 40mm NB M.S. pipe bent upwards at a radius of 100mm. Provide capping on open end of pipes.
- Number: Two.
- Length: 300mm measured from the inside edge of the pipe upturn to outside edge of plate. i.e. 300mm clear space for hose storage.
- Spacings: 150mm centres fixed 50mm from edge of plate to centre of pipe and 150mm from top of plate to top of hose support pipe bracket.
- Protective finish: Heavy galvanizing.
- Installation: Fix securely to wall.
- Drawing: Refer to drawing Number.

## 04.20 Rack Modules for Lengths of Metal

Location:

### Description

- Fabrication: Form brackets from mild steel angles comprising of vertical and horizontal members. Horizontal members equally spaced at a max. of 200mm with angle cleats and front plates. Front plates having a 30mm high lip. Pre-drill fixing holes, Weld all together and hot dip galvanise after fabrication.
- Brackets: Number required: 5.



- 
- Vertical Member: 50 x 50 x 6mm, Height: 2050mm.
  - Horizontal Members: 50 x 50 x 6mm, Length: 290mm, Number required: 10.
  - Front Plates: 85 x 75 x 6mm M.S. to each horizontal arm.
  - Cleats: 30 x 30 x 6 x 40mm long at 80mm maximum centres commencing from free end of horizontal arm.
  - Installation: Fix securely through vertical member into wall with compatible, non-corrosive metal anchors at 200mm centres.

## 04.21 Rack Modules for Lengths of Timber

Location:

### Description

- Fabrication: Form brackets from mild steel angles comprising a vertical fixing member and horizontal carrying members. Horizontal members equally spaced at 300mm maximum centres with front plates having a 30mm high lip. Pre-drill fixing holes and hot dip galvanize after fabrication.
- Brackets: Number required: As shown on drawings.
- Vertical Member: 50 x 50 x 6mm Height: 2150mm.
- Horizontal Members: 50 x 50 x 6mm Length: 500mm Number required: 7.
- Front Plates: 85mm x 75mm x 6mm M.S.
- Installation: Fix securely through vertical members into wall at 300mm centres.

## 04.22 Rack for Tool Storage

Location:

### Description

- Fabrication: Form mild steel angle and rod weld, pre-drill and galvanise prior to mounting with masonry anchors.
- Rack: Height above floor: 1800mm, Length: 3500mm.
- Wall angle: 50 x 50 x 6mm
- Rods: 18mm diameter x 225mm long bent up to 25mm radius
- Installation: With bent ends facing up weld from each end of angle 7 rods at 150mm maximum centres and 3 rods equally spaced in between. Fix horizontally with seven 10 mm diameter equally spaced masonry anchors.

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## 04.23 Irrigation Pipe Racks

Location:

### Description

- Fabrication: Form brackets from mild steel angles comprising of a vertical member and three horizontal members spaced at 450mm with front plates having a 30mm high lip. Pre-drill fixing holes, weld all together and hot dip galvanise after fabrication.
- Racks: Wall angle: 50 x 50 x 6mm M.S. angle.
- Pipe support: 50 x 50 x 6mm M.S. angle.
- Top of bottom support to be 550mm from finished floor level.
- Length: 300mm.
- Front Plates: 85 x 75 x 6mm M.S. angle. with 10mm radius rounding to all edges.
- Installation: Mount three rack assemblies at 1500mm max. centres fixing securely with four equally spaced 10mm diam. masonry anchors.

## 04.24 Shelving – Animals and Plants

Location:

### Description

- Fabrication: Form shelving frame from M.S. angles comprising of a vertical member and a horizontal member with M.S. bearing plates welded on each member to enable solid bearing and fixing to wall and floor. Prepare horizontal angle to receive either timber batten finished top or floor grating finished top all as detailed. Pre-drill fixing holes, weld all together and hot dip galvanise after fabrication.
- Vertical Member: 50 x 50 x 6mm M.S. angle.
- Height: 900mm.
- Horizontal Member: 50 x 50 x 6mm M.S. angle.
- Length: 600mm (From wall to outside edge of frame).
- Spacings: Shelving frame 600mm centres.
- Floor Bearing Plate: 80 x 50 x 8mm M.S. plate.
- Wall Bearing Plate: 100 x 50 x 6mm M.S. plate.
- Timber Batten Finished Top: Refer to 0551 – JOINERY.

- 
- Floor Grating Finished Top: Provide grating as detailed and spot weld to frame. (Ensure all spot-welding locations are treated with approved anti-corrosive treatment immediately after welding).
  - Installation: Rest bearing plate of vertical member on finished floor and fix securely with M12 x 75mm masonry anchors into concrete floor. Rest bearing plate of horizontal member on finished wall and fix securely to wall.

## 04.25 Support Frame for Bench

Location: Support Unit – Practical Activities Area

### Description

- Fabrication: Form frame from mild steel angles comprising of vertical members and a horizontal frame for supporting bench top and trough as shown on drawing. Pre-drill members, weld together and hot dip galvanise after fabrication.
- Vertical Members: 50 x 50 x 5mm.
- Horizontal Frame: 50 x 50 x 5mm.
- Height: 750mm (Top of bench to finished floor level).
- Installation: Fix securely through vertical members to wall at 150mm centres.

## 04.26 Plant Soaking Shelf

Location:

### Description

- Fabrication: Form shelving frame from mild steel RHS comprising of vertical and horizontal members. Provide pre-drilled M.S. bearing plates welded on each horizontal member and adjustable foot inserts to each vertical member, all as shown on drawings. Pre-drill fixing holes, weld all together and hot dip galvanise after fabrication.
- Hot dip galvanising: To AS 4680.
- Provide Exterior use plywood Bond Type "A" support platform for trough as shown on drawings. Vertical Member: 35 x 35 x 2.5 mm M.S. RHS.
- Height: 800 mm (Finished floor level to top of platform). Allow 1:100 fall in platform towards outlet. Horizontal Member: 35 x 35 x 2.5 mm M.S. RHS.
- Spacings: Shelving frame 600 mm max. centres.
- Feet: Adjustable "knock-in" type stainless steel foot inserts (for adjusting frame to provide fall in trough).
- Wall Bearing Plate: 80 x 50 x 6 mm M.S. plate.

- Installation: Securely fix horizontal members through bearing plates to finished wall.
- Fix trough support platform to frame with galv. screws through pre-drilled holes in horizontal steel members.
- Stainless steel angled fixing lugs on each end of trough are to be screw fixed to RHS frame through plywood platform with stainless steel screws suitable for metal fastening.
- Plant Soaking Trough: Refer to 0811 - SANITARY FIXTURES.

## 04.27 Support Brackets for Bench (M34 and M36)

Location: Support Unit – Practical Activities Size 2

### Description

- Fabrication: Form brackets from mild steel angle comprising of welded pre-drilled vertical and horizontal members with protruding angle ends splayed at 45 degrees. Hot dip galvanised after fabrication
- Bracket: 50 x 50 x 5mm MS angle.
- Size: 540 x 540mm
- Spacings: 600mm maximum centres.
- Fixings: Fix securely to wall and underside of bench top through pre-drilled fixing holes with galvanised fasteners and anchors.

## 04.28 Frame Fabrication for Bench Tops

GUIDE NOTE: PA trough/bench supplied. Include appropriate project drawing reference number below.

Location:

Drawing reference:

Bench top support frame – PA trough/top M79 and SK40, Bench top M81, Craft Sink/top M75 and SK50

Bench top support frame members (nominal): 38 x 25 x 1.6mm RHS

- Extent: Perimeter and at sides with intermediate cross supports spaced at 810mm maximum centres (nominal) to coincide with bench leg spacings.

- Pre-drill back member of frame (i.e. frame member against wall) at 600mm (nominal) centres or stud centres (if applicable) to allow for secure fixing to frame or wall.
- Weld pre-drilled bench top fixing lugs at 600mm maximum centres flush with top of frame.
  - Lugs: 20 x 20 x 3mm MS angle pre-drilled for 8 gauge screws.
- Seal all exposed ends.
- Weld all joints.
- Finish: all joints to be ground smooth, radius edges/corners on all members, powder coated low gloss black

Bench top frame legs (nominal): 50 x 50 x 1.6mm SHS at 810mm maximum centres (nominal)

- Weld all joints.
- Finish: all joints to be ground smooth, radius edges/corners on all members, powder coated low gloss black.

Floor fixing lug

- Weld floor fixing lug to each member to enable fixing to floor. Pre-drill fixing holes, weld all together and hot dip galvanise after fabrication.
- Floor fixing lugs: 80 x 50 x 8mm MS plate.

Fixing

- Screw fix member of frame to wall with compatible anti corrosive screws. For masonry wall use proprietary expandable metal anchors.

## 04.29 Rack for Weights

Location:

### Description

- Fabrication: Four mild steel bar brackets with three horizontal legs each, projecting 250mm with end plate having a 20mm high lip upstand. Mitre cut vertical flanges, pre-drill fixing holes, weld all together and hot dip galvanize after fabrication.
- Bar Brackets: 50 x 50 x 6mm angle.
- Legs: 50 x 50 x 6mm angle.
- End Plates: 85 x 70 x 6mm M.S. plate with 15mm radius edges.
- Fixing: Fix each bracket securely to the wall with galvanised 12 mm masonry anchors.

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## 04.30 Bar Bracket High Jump

Location:

### Description

- Fabrication: Bent out of galvanised mild steel flat and pre-drilled prior to fixing.
- Height: 1400mm
- Maximum centres: 1750mm
- Bar bracket: Bent 150mm fixing leg, 100mm horizontal and 75mm upstand.
  - Width: 25mm
  - Thickness: 6mm
- Fixing: 2 x 8mm diameter galvanised bolts into masonry anchors

## 04.31 Cover Panel to Stoves

GUIDE NOTE: Include list of locations where cover panel to stoves are required. Refer to Educational Facilities Standards and Guidelines (EFSG) and Supplements.

Location:

### Description

- Where ovens are located back to back provide a metal capping strip with turned down flanges to the top of the stove upstands and down the sides to 90mm above floor.
- Material: Stainless Steel
- Width: 203mm
- Thickness: 1.2mm
- Fabrication: Turn down flanges, 6 mm on all edges, neatly form and solder joints, buff edges to remove sharp projections.

## 04.32 Master Control Box

Location:

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## Description

- A mild steel non-lockable galvanised Laboratory Master Control Box built into brickwork where shown on the Drawings.
- Size: 600 x 710 x 160 mm
- Steel Thickness: 1.6 mm
- Finish: Baked Enamel

## 04.33 Seating Bench, Steel Brackets

Location: Change Rooms

## Description

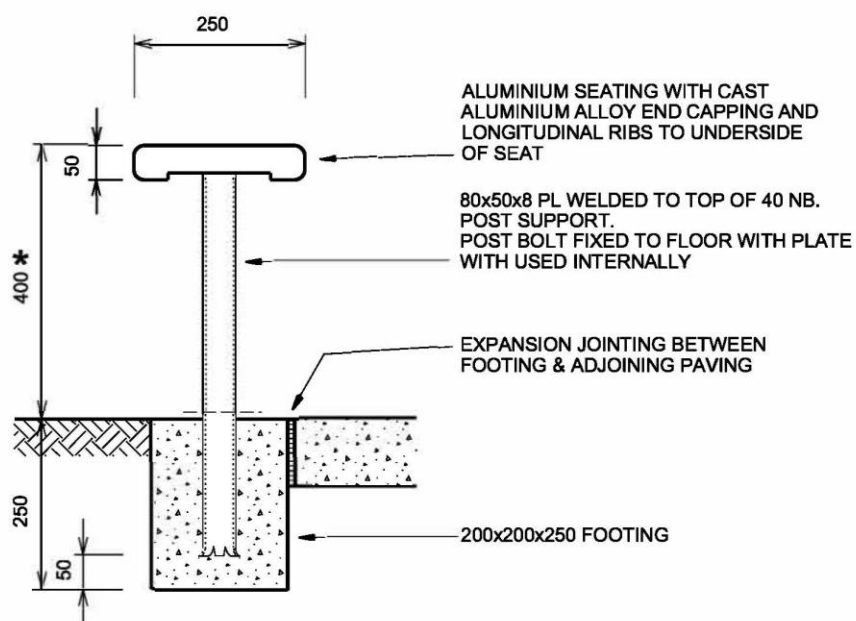
- Fabrication: Form brackets from mild steel angle comprising of vertical and horizontal members with fixing plates on ends of both members as shown on drawings. Pre-drill horizontal member and fixing plates, weld all together and hot dip galvanise after fabrication.
- Size:
- Spacing: 600mm maximum centres.
- Fixing: Fix securely to wall and floor through pre-drilled cleats.

## 04.34 Seats

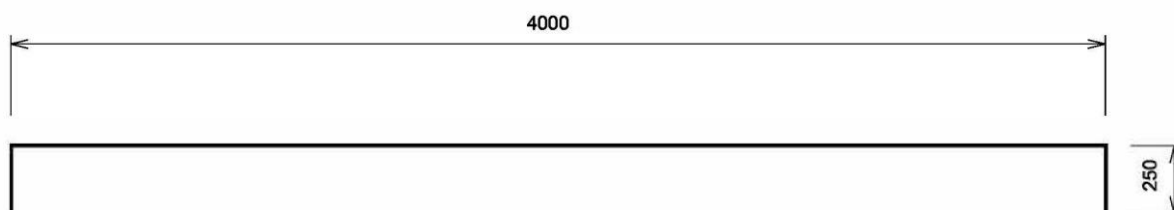
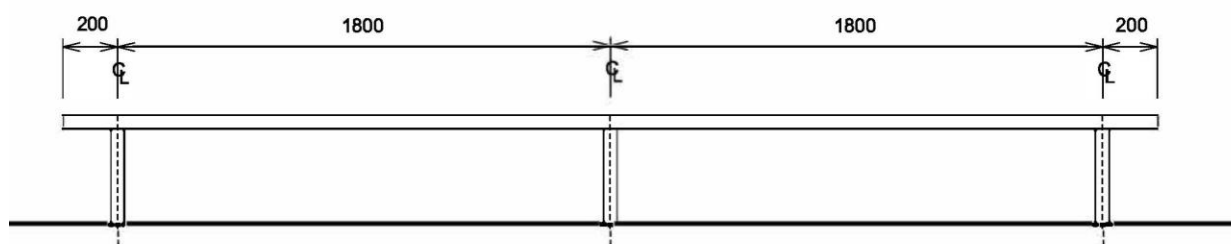
GUIDE NOTE: Refer to the drawing below. Include appropriate project drawing number.

GUIDE NOTE: Allow 250mm/ Student H.S. and P.S. Standard length 4 metres.

Refer to EFSG drawing below and include into appropriate project drawing package and number. Do not use as a construction detail. Not to Scale (NTS)



SECTION TYPICAL



**Figure 03: Seating**

Location:



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## Description

- A complete proprietary system including hot dipped galvanised or heavy-duty aluminium seat supports, fixings and anodised aluminium seating complete with end capping as shown on drawings.
- Aluminium Seating: Extruded aluminium seat with minimum No. 2 x longitudinal flanged ribs as part of the extrusion. Longitudinal ribs must be continuous for the entire length of seat and provide secure fastening to the seat support.
  - Nominal wall thickness: 2.5mm
  - Extruded aluminium alloy end capping
- Assembly: Attach seat support to the seat's longitudinal flanged ribs with special compatible fasteners capable of providing a secure joint between seat and support.
- Fastening system must be either a proprietary securing system that requires a mechanical device or a special security key to remove the seat. The seat must be capable of being removed by an authorised person without destroying the seat support.
- Security Key: If a security key is used to fix seat to seat support, hand two security keys to the Principal's Authorised Person / Principal's Representative on completion.
- End Capping: Cast aluminium with minimum 5 No. pop rivets for each end cap (3 pop rivets at top and 2 at bottom). The manufacturer's name to be embossed on all end caps
- Finish (Seats): Clear etched and anodised
  - Thickness (minimum):15 microns
- Finish (Seat support): Hot dipped galvanised to AS 4680 after fabrication.
- Installation carried out by:
  - Manufacturer/supplier of proprietary aluminium seating. OR
  - Approved installer of manufacturer/supplier of proprietary aluminium seating.
- Footings: Set seat support bracket posts in concrete footings minimum 200 x 200 x 250mm deep. Increase footing sizes as required for specific site conditions.
- Above ground fixing to concrete securely fixed with a minimum of 2 non-corrosive compatible masonry anchors or stainless-steel fixing spikes through pre-drilled holes in 160 x 80 x 10mm (minimum) flat bottom plate. Bottom plate to be fully welded to the support post.
- Fixing method must capable of preventing unwarranted removal of bracket.
- Drawing reference: Refer to EFSG – DRAWING SD603/5

## 04.35 Aluminium Picnic Setting

Location:

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## Description

- Complete proprietary system including aluminium seating and table tops with galvanised steel or aluminium frames.

GUIDE NOTE: Size may be reduced to suit specific area.

- Length (nominal): 2000 mm.
- Height (nominal): Table top: 735 mm, Seat: 420 mm.
- Frame: Hot dipped galvanised tubular steel or aluminium Diameter (nominal): 37mm (ID)
- Wall thickness (nominal): 2mm
- Fixing: Provisions for permanent fixing
- Seating and table tops: Extruded aluminium alloy complete end capping.
  - Wall thickness (nominal): 2.55 mm
- Assembly: Attach to frame by using vandal resistant fastening system. The fastening system must be either a proprietary securing system or fixing system that requires a mechanical device to remove the seat and tops. The seat and tops must be capable of being removed without destroying the frame. If security bolts requiring a security key are used to fix seat and table tops to support, hand two security keys to the Principal's Authorised Person / Principal's Representative on completion of installation.
- End capping: Cast aluminium. Minimum 5 No. pop rivets for each end cap (3 top and 2 bottom)
- Finish (seats and table tops): Clear etched and anodised.
  - Thickness: 15 microns
- Installation: Fix securely to concrete with non-corrosive compatible masonry anchors or stainless-steel fixing spikes in locations nominated on drawing/s.
- Fixing method must capable of preventing unwarranted removal of assembly.

## 04.36 Bicycle Enclosure

GUIDE NOTE: Generally, allow 1 bicycle storage position for every 20 students.

GUIDE NOTE: Include location where bicycle enclosure is required.

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#### Location:

- Standards: AS 2890.3
- Compound: Bicycle parking facility to AS 2890.3 – Facility Class 2 (Refer Appendix B Typical Bicycle Parking Facilities – B3 Class 2 - B3.2).
  - Modular design to fit proprietary compact security bicycle racks.
  - Racks to be positioned on both sides of the compound.
  - Each module must allow access to bicycle racks in accordance with AS 2890.3 – B 3 Class 2 Parking Facilities – B3.2.
- Steel frames (posts, rails)
  - Hot dipped galvanised to AS 4680
  - Concrete keying: If the compound support posts are to be set into concrete footings, provide an effective means for the posts to key into the concrete (e.g. dimple, deformed or horizontal bar passing through or welded to post)
  - Anchorage: If the compound support posts are to be anchored to an existing concrete slab, provide pre-drilled steel flanges to the bottom of each post for secure fixing with expanding masonry anchors. The posts must have the pre-drilled flanges welded to them prior to hot dip galvanising.
- Weld mesh panels: Hot dipped galvanised to perimeter of compound including door.
- Door: Security steel frame door, hot dipped galvanised.
- Lock: Hardened steel lock shoot bolt. Must be capable of being securely locked by padlock in a closed position.

#### \*Roofing

GUIDE NOTE: Delete roofing if not required (see below).

- If roofing is required include the following in the specification description:
- Preformed continuous corrugated metal sheet roofing system complete with all necessary fasteners, accessories, trims all in accordance with AS 1562.1. AS 2180 & AS 3566.
- Installation: To HB 39 Code of Common Practice for Steel Roofing
- (Include appropriate category for location. Refer to AS 2728. Either category 3 or 4.)
- Finish: To AS 2728. Category:
- Colour: Refer to Colour Schedule

#### Footings/ Anchorage

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GUIDE NOTE: Footings or anchorage will depend on specific site conditions and type floor (base) finish. Check with engineer to determine appropriate method of securing compound support posts.

GUIDE NOTE: The bicycle rack described below is based on 1 type. Other proprietary Bicycle Racks that comply with the specification requirements described below may also be acceptable.

#### Bicycle Rack

- Standard: To AS 2890.3 Security Compact Bicycle Rack
- Compact style bicycle rack capable of taking a minimum of 6 bikes with tyre widths up to Security rails (minimum): 30mm NB x 3.2mm to AS 3679
- Base frame: (minimum): 45 x 45 x 3.2mm angle to AS 3679 Finish: Hot dipped galvanised
- Security class: Class 2 if located in secure compound otherwise class 3

### 04.37 Exercise Rail

Location:

#### Description

- Tubular metal rail bent twice with two welded intermediate wall brackets and pre-drilled end flange plates welded to brackets and curved end mounts.
- Nominal size: 25mm I.D. Material: Stainless steel Size: 2000mm
- Height: From Finished floor level: 750mm
- Fixing: Securely fix to wall through pre-drilled holes in flange plates.

### 04.38 Exercise Bar (Barre)

Location:

#### Description

- Fabrication: Fabricate from mild steel comprising of vertical and horizontal members with fixed foot plates. Weld altogether as shown on drawings.
- Vertical Member: 50 x 8 mm MS flat with radius edges
- Horizontal Member (Tube): 40 mm NB x 4 mm MS tube.
- Horizontal Rail Support:

- "T" Bracket: 32 x 8 mm MS flat with radius edges and 32 x 6 mm MS flat with radius edges pre-drilled for receiving timber rail.
- Floor Plate: 50 x 106 x 8 mm MS flat pre-drilled for fixing to floor.
- End Support Brackets: 6 mm thick MS flat 90 degree angled bracket with radius edges. Bracket to be rounded to finish flush and seal the ends of the horizontal member (tube). Pre-drill holes for fixing assembly to wall.
- Installation: Fix securely to floor through pre-drilled holes in floor plates and at each end of mirror assembly through pre-drilled holes in end support brackets.
- Timber Rail: Refer to 0551 - JOINERY

## 04.39 Hanging Lines for Art Works

Location:

### Description

- Stainless steel wire rope is to be supported by eye bolts complete with a turn buckle and all necessary accessories for securing and terminating wire rope.
- Wire rope: stainless steel, nylon coated.
  - Diameter: 1 mm (minimum)
- Eye bolts: Stainless steel
  - Diameter: 8 mm (nominal).
  - Fixing: Bolt securely to masonry wall or wall frame.

GUIDE NOTE: Include intermediate eye bolts where possible. (E.g. where runs close to ceiling).

- Intermediate eye bolts: Stainless steel
  - Diameter: 8 mm (nominal)
  - Spacings: 2400 mm (between support eye bolts)
  - Fixing: Bolt securely to ceiling frame or soffit
- Turnbuckle: Stainless steel
  - Type: Eye and eye
  - Nominal size: 8 mm (nominal)
- Height from floor: 2360 mm

## 04.40 Hanging Lines for Prints

Location: Darkroom

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## Description

- Stainless steel wire rope is to be supported by galvanised angle brackets drilled and complete with all necessary accessories for securing and terminating wire rope.
- Wire rope: Stainless steel, nylon coated.
  - Diameter: 1 mm (minimum)
  - Rows: 3 evenly spaced (200mm nominal)
- Brackets: Galvanised steel
  - Fixing: Bolt/screw fix securely to masonry wall or wall frame.
- Height from floor: 1800mm

### 04.41 Demonstration Mirror

Location:

## Description

- Fabrication: Form support frame for demonstration mirror from M.S. angle comprising of horizontal, vertical and 35 degree raking members spaced at 1000mm centres. Mirror to be held in position on support frame by mirror framing angle bolted top and bottom to each raking member of the support frame as detailed. Cut flanges, pre-drill fixing holes, weld all together and hot dip galvanise after fabrication.
- Support Frame: 40 x 40 x 6mm M.S. angle.
- Height: 2700mm - (Ceiling line).
- Mirror Assembly: Plastic mirror fixed to backing of 12mm HMR particle board. Support mirror securely with MS framing angle.
  - M12 Bolts and washers to support mirror framing.
  - 15 NB Ferrule for each mirror bolt assembly.
- Finishing: All metal framing hot dip galvanised.
- Ceiling fixing: Refer to structural engineer's drawings.
- Mirror: Refer to 0461 - GLAZING

### 04.42 Stainless Steel Mirror

Location:

## Description

- Mirror finished PVC coated bright annealed stainless steel 304 grade, 0.9 mm thickness, Mirror to be folded on all sides, corners welded and buffed, backed with 12 mm thick glue fixed plywood and screw fixed directly to tiled finish/brickwork.
- Size: 575 mm x 575 mm for Pupil Toilets.
- Height, floor to bottom:
  - 850 mm for Primary
  - 1100 mm for Secondary

**Table 01: Fixing schedule**

Type	Location	Number: Each space
Stainless Steel	Pupil Toilets Up to 2 WC's for girls or boys Up to 5 WC's for girls or boys equivalent	2 (Butted) 4 (In one group butted together or in two groups of butted pairs).
	Up to 10 WC's for girls or boys	6 (Butted together in one or two groups).
Stainless Steel	Shower/Change Size 1	2
	Shower/Change Size 2	1

## 04.43 Towel Rail

Location:

## Description

- Type: Tubular metal rail bent twice with end flange plates.
- Rail
  - Size: 750mm long (nominal) x 25mm OD.
  - Material: Satin finish stainless steel to AS 1449 - Type 304.
  - Fabrication: Fully weld, grind and polish smooth.

GUIDE NOTE: Rail length may vary to suit specific installations.

- Fixing: Securely fix to wall with stainless steel fasteners.
- Height from finished floor level: Refer to [08 HYDRAULIC/0811 SANITARY FIXTURES](#).

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## 04.44 Ventilators, Enclosures / Cupboards

GUIDE NOTE: Refer to [05 INTERIOR/0551 JOINERY](#) for cupboards enclosing gas services.

Location: Enclosures/cupboards containing gas services

### Description

- Permanently open type metal ventilators/grilles to provide sufficient ventilation for enclosed areas/cupboards where there is a risk of gas build.
- Type: Stainless steel – Satin finish, Brass – Satin finish, chrome OR Aluminium – Clear anodised.
- Position
  - Minimum: One side at the top and bottom
  - Preference (If practicable): Both sides top and bottom to form cross ventilation.
- Fixing: Permanently fixed with adhesive and a minimum of 4 screws per ventilator.