Precast Concrete Solutions

Headwalls

Drainage & Water Management

v.2.0

fpmccann.co.uk

FP McCann is the UK's market leader in the manufacture, supply and delivery of precast concrete solutions. Our comprehensive precast concrete business extends to include:

Drainage and Water Management Solutions • Tunnel and Shaft Solutions
Rail Solutions • Power and Infrastructure Solutions • Walling Solutions
Fencing Solutions • Modular Building Solutions • Agricultural Solutions
Flooring Solutions • Specialist Precast Solutions

Modern manufacturing plants at Alnwick (Northumberland), Byley (Cheshire), Cadeby (Warwickshire), Drakelow (Staffordshire), Ellistown (Leicestershire), Grantham (Lincolnshire), Lisnaskea (Northern Ireland), Littleport (Cambridgeshire), Lydney (Gloucestershire), Magherafelt (Northern Ireland), Telford (Shropshire) and Weston Underwood (Derbyshire) incorporate the latest computerised batching, distribution, casting, curing and handling systems and are operated by skilled and experienced workforces to ensure consistency of quality. Their geographical spread gives us an unrivalled ability to serve the construction industry throughout the UK and Ireland.

Introduction

FP McCann's precast concrete headwalls provide an ideal end connection point to outfall pipes into open watercourses such as rivers, culverts, collection and balancing ponds. They are a very efficient alternative to intrusive shuttering of soil embankments and costly on-site formwork with ready-mixed concrete, making them particularly suitable for use in hard to reach locations and in environmentally sensitive areas.

Where time constraints exist such as in tidal flow situations, concrete headwalls can be quickly positioned, secured and backfilled, providing immediate stability around the point of water discharge.

The FP McCann headwall range can accommodate pipe sizes from DN150 to DN2100 and is suitable for usage with box culverts. Additionally, accessories such as flap valves, penstocks, silt traps, handrails and safety grating can be built in as part of the specification.

A front weir wall can be fabricated onto any of the standard headwall range on request and installation is quick and easy.

Benefits

- **Headwalls are designed to EC2 and manufactured to BS EN 13369. (Full design calculations available to illustrate design assumptions).**
- **Prefabricated off-site**
- **Speedy and efficient to install**
- **Durable, long-lasting and low maintenance**
- **No on-site shuttering or formwork required**
- **Provides immediate stability and reduces soil erosion**
- **Valve and safety accessories available**
- **Cost-effective solution**
- **Significantly reduces the potential for floating debris to block the watercourse**
- **Installation with 2 or 3 lifting anchors**
- **Flap valves and grates available**
- **Reduces carbon footprint as no need to bring in lorries to site to pour in-situ**
- **The extended toe unit is available for all sizes making the entire headwall range compliant with Sewers for Adoption (SFA) and Sewers for Scotland**
- **The headwalls are considered to accord with the requirements indicated in Fig. C.5 (Typical Details) of Sewers for Adoption**

Key Site Safety Benefits

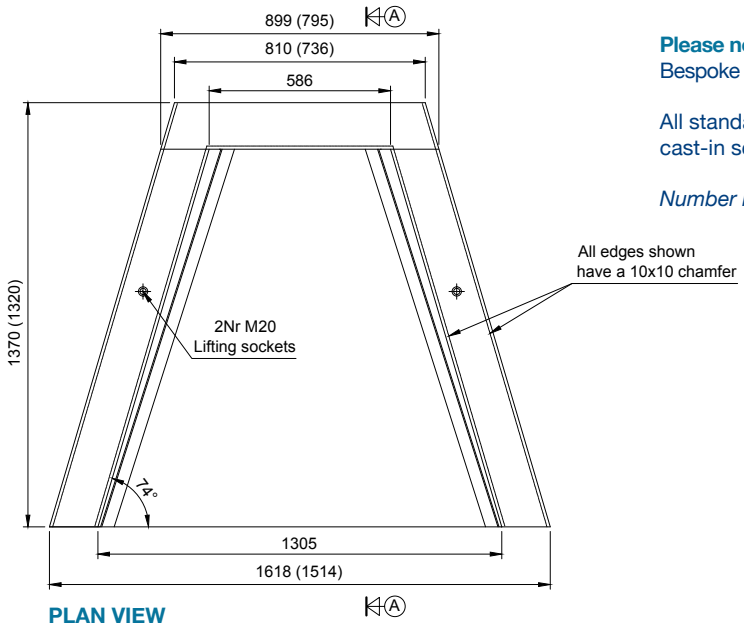
Safety hand rails can be used with our full range of headwalls. Health and safety risks are minimised because the construction work takes place off-site and installation is quick and easy.

Headwall Range - Quick Reference Guide

Headwall Range	Up to & including Pipe Sizes	Max Pipe O.D. mm	Page No.
HW Small 100	300	450	4
HW Small 150	300	450	4
HW Medium 100	450	630	5
HW Medium 150	450	630	5
HW Large 100	900	1130	6
HW Large 200	900	1130	6
HW XL-T1	1500	1800	7
HW XL-T2	1050	1350	8
HW XL-T3	675	950	9
HW XL-T4	375	550	10
HW XXL-T1	2100	2450	11
HW XXL-T2	1500	1800	12
HW XXL-T3	1050	1350	13
HW XXL-T4	525	800	14

Small
headwall

Pipe size: up to 300mm

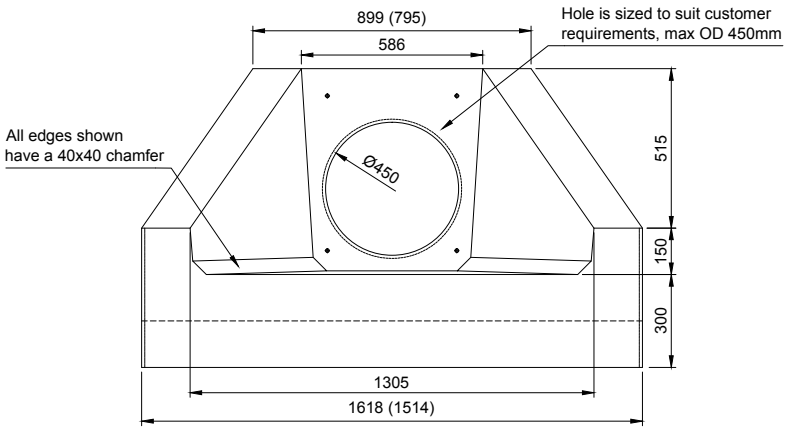


PLAN VIEW

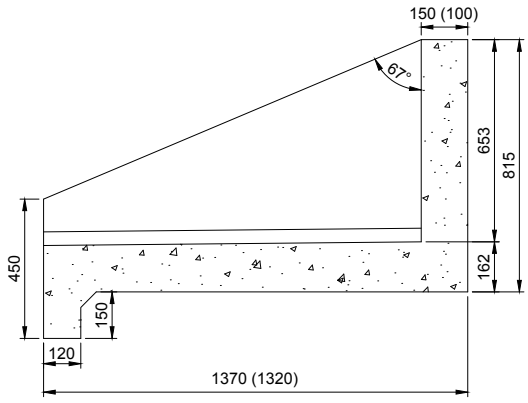
Please note:
Bespoke grates and handrails are available upon request.

All standard headwalls are supplied complete with toe and 2 or 3 cast-in screw thread sockets and lifting loops.

Number in brackets relates to small headwall with 100mm wall.



FRONT ELEVATION

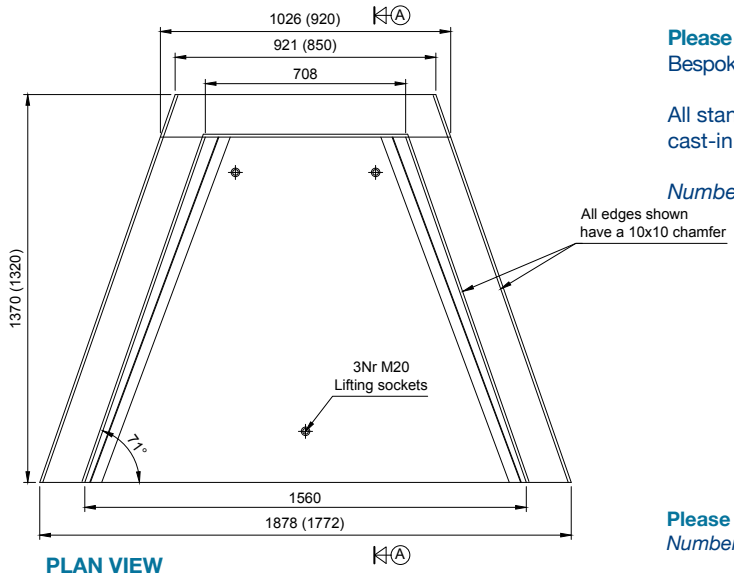


SECTION A-A

Headwall Range	Up to and including Pipe Sizes	Max Pipe O.D.	Back Wall Height (external)	Front Wall Height (external)	Backwall Width (internal)	Front Wall Width (internal)	Headwall Length	Standard invert level (variable)	Wall Thickness	Floor Thickness	Approx. weight kg
HW Small 100	300	450	815	450	586	1305	1320	100	100	162	1100
HW Small 150	300	450	815	450	586	1305	1370	100	150	162	1390

Medium
headwall

Pipe size: up to 450mm



PLAN VIEW

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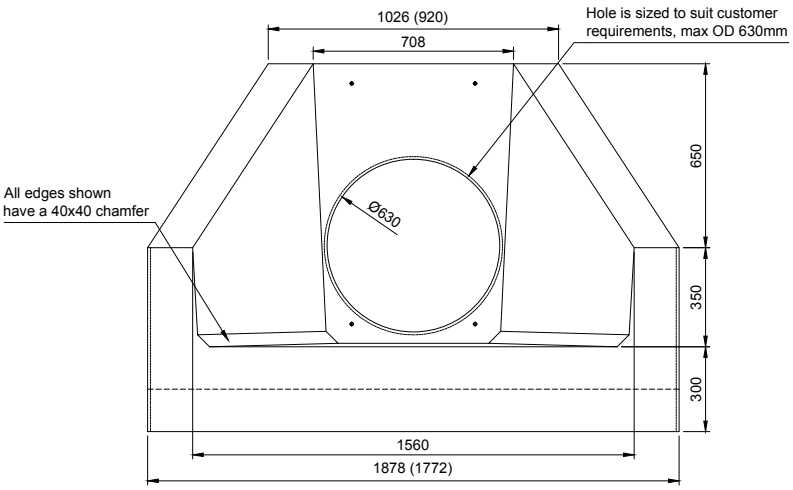
Number in brackets relates to small headwall with 100mm wall.

Please note:
Number in brackets relates to medium headwall with 100mm wall.



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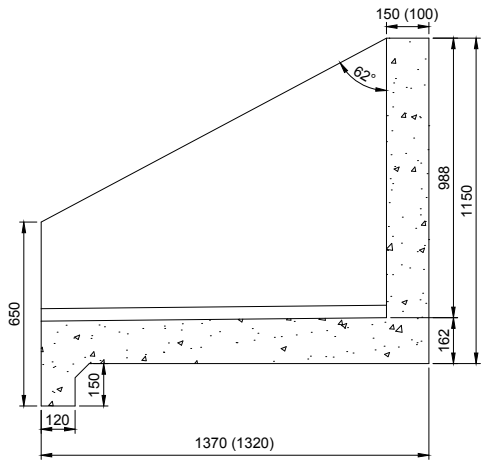
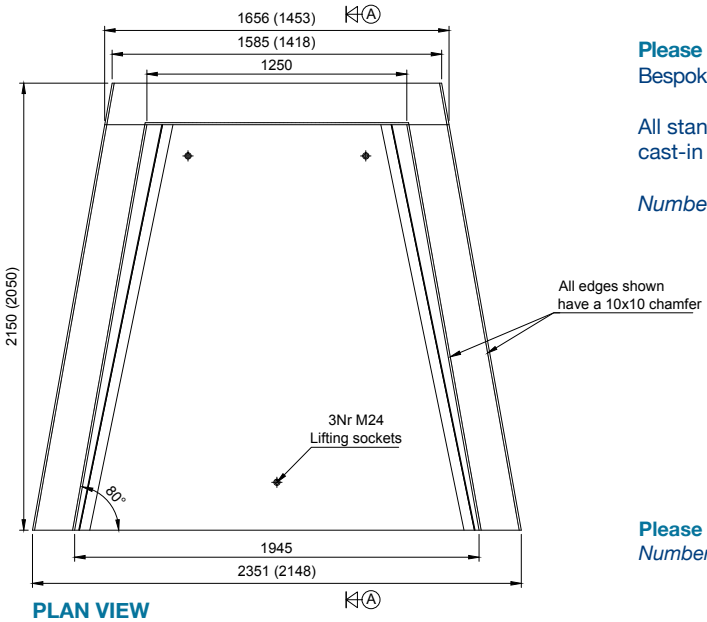


SECTION A-A

Headwall Range	Up to and including Pipe Sizes	Max Pipe O.D.	Back Wall Height (external)	Front Wall Height (external)	Backwall Width (internal)	Front Wall Width (internal)	Headwall Length	Standard invert level (variable)	Wall Thickness	Floor Thickness	Approx. weight kg
HW Med 100	450	630	1150	650	708	1560	1320	100	100	162	1540
HW Med 150	450	630	1150	650	708	1560	1370	100	150	162	2020

Large
headwall

Pipe size: up to 900mm



PLAN VIEW

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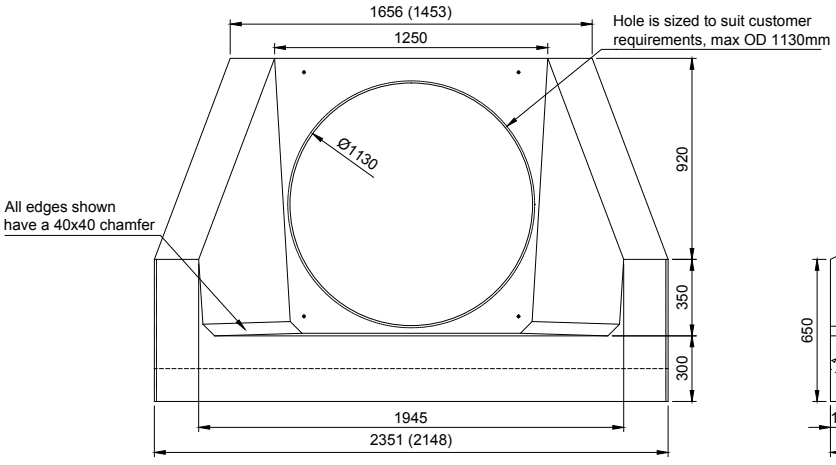
Bespoke grates and handrails are available upon request.

All standard headwalls are supplied complete with toe and 2 or 3 cast-in screw thread sockets and lifting loops.

Number in brackets relates to small headwall with 100mm wall.

Please note:
Number in brackets relates to large headwall with 100mm wall.



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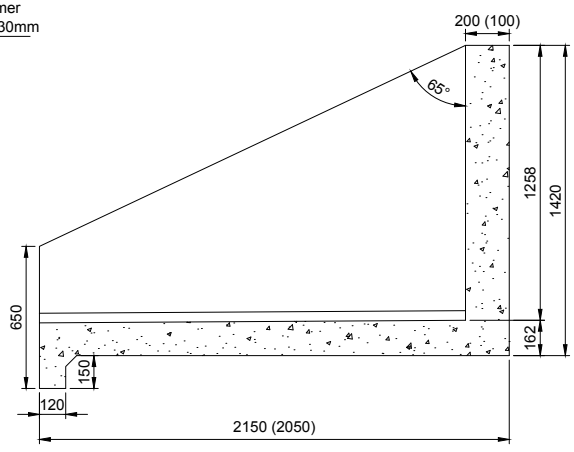
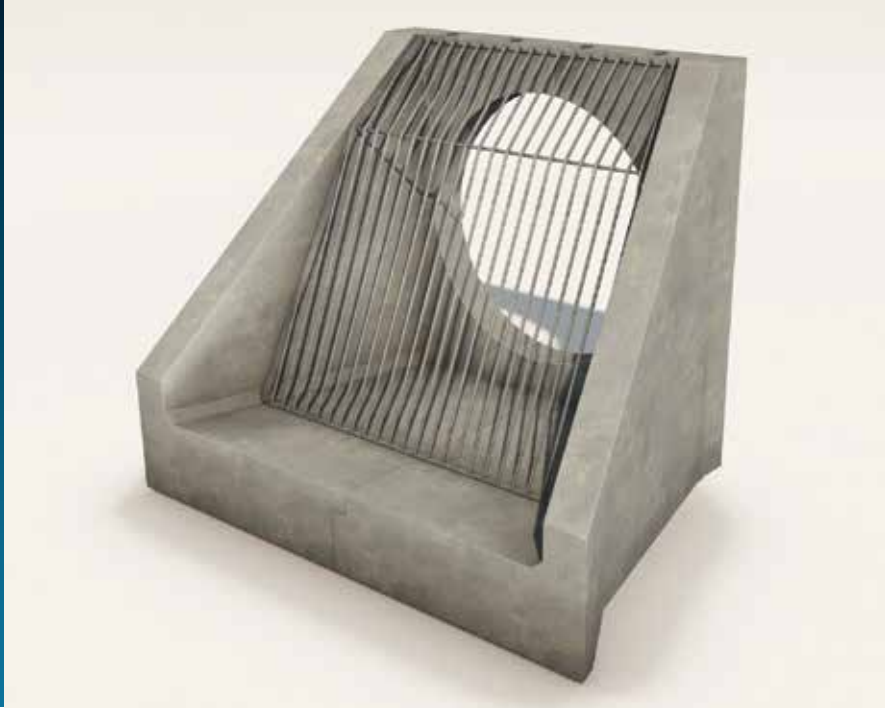


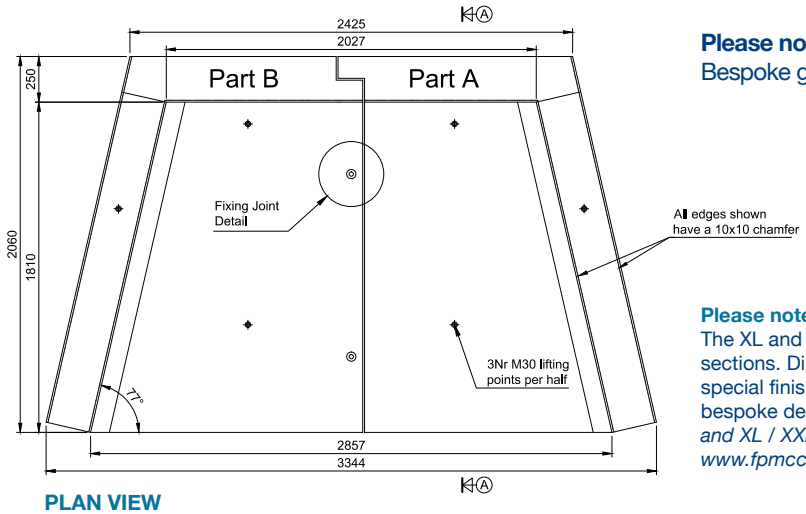
SECTION A-A

Headwall Range	Up to and including Pipe Sizes	Max Pipe O.D.	Back Wall Height (external)	Front Wall Height (external)	Backwall Width (internal)	Front Wall Width (internal)	Headwall Length	Standard invert level (variable)	Wall Thickness	Floor Thickness	Approx. weight kg
HW Large 100	900	1130	1420	650	1250	1945	2050	100	100	162	3020
HW Large 200	900	1130	1420	650	1250	1945	2150	100	200	162	4740

XL-T1
headwall

Pipe size: up to 1500mm

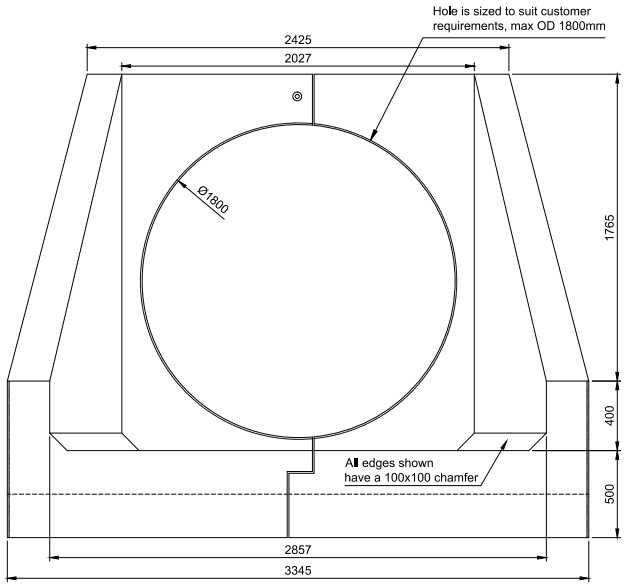




PLAN VIEW

Please note:
Bespoke grates and handrails are available upon request.

Please note:
The XL and XXL headwalls are manufactured and delivered in 2 sections. Dimensions represent a complete unit. Weir walls and other special finishes can be added to any of the headwalls as part of a bespoke design package. *Installation guides for standard Headwalls and XL / XXL Headwalls are available on our website: www.fpmccann.co.uk/headwalls*



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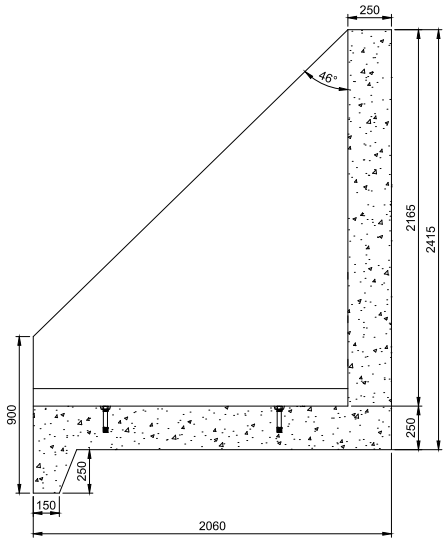
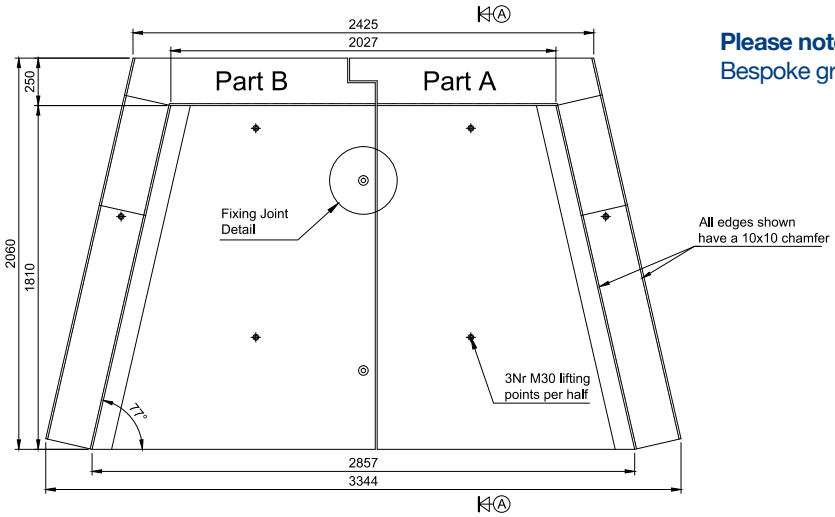


SECTION A-A

Headwall Range	Up to and including Pipe Sizes	Max Pipe O.D.	Back Wall Height (external)	Front Wall Height (external)	Backwall Width (internal)	Front Wall Width (internal)	Headwall Length	Standard invert level (variable)	Wall Thickness	Floor Thickness	Approx. weight kg
HW XL-T1	1500	1800	2415	900	2027	2857	2060	100	250	250	Part A 4725 Part B 4725

XL-T2
headwall

Pipe size: up to 1050mm



PLAN VIEW

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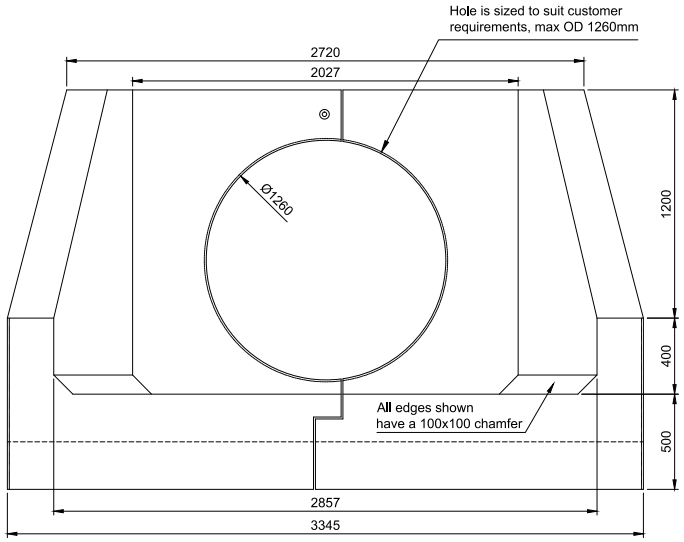

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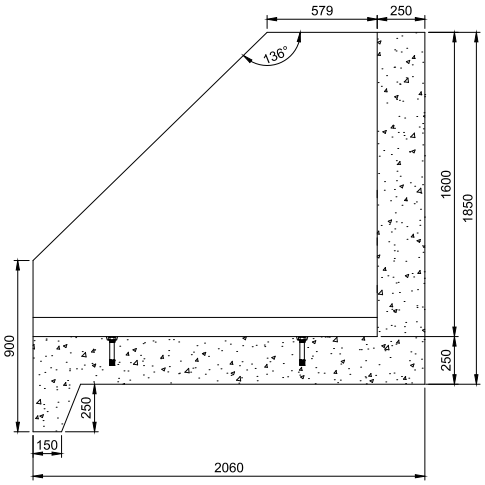

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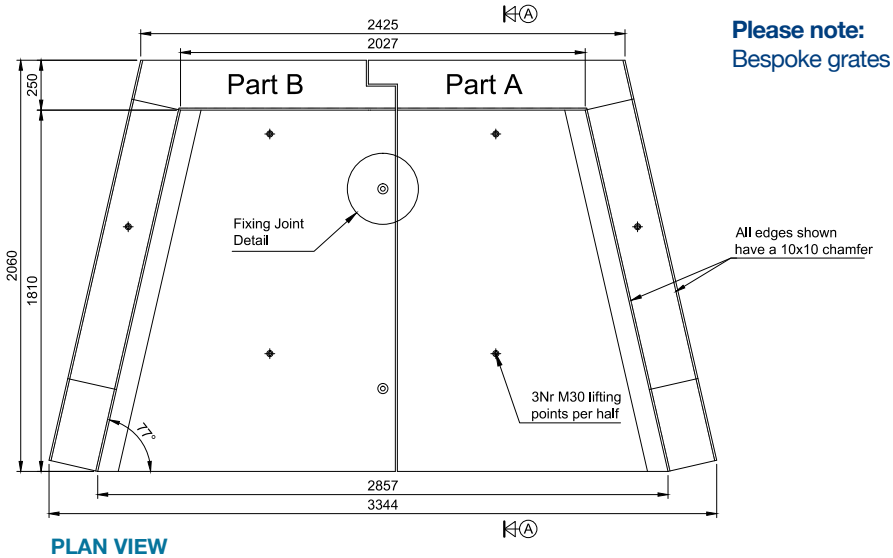
Headwall Range	Up to and including Pipe Sizes	Max Pipe O.D.	Back Wall Height (external)	Front Wall Height (external)	Backwall Width (internal)	Front Wall Width (internal)	Headwall Length	Standard invert level (variable)	Wall Thickness	Floor Thickness	Approx. weight kg
HW XL-T2	1050	1260	1850	900	2027	2857	2060	100	250	250	Part A 4095 Part B 4095

XL-T3
headwall

Pipe size: up to 675mm



PLAN VIEW

Please note:
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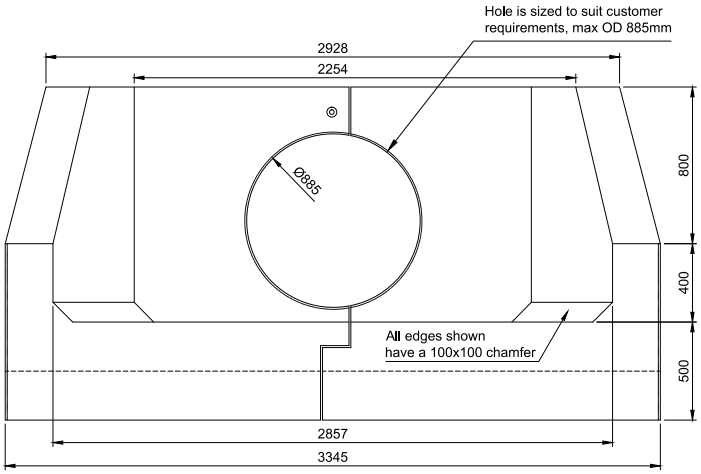

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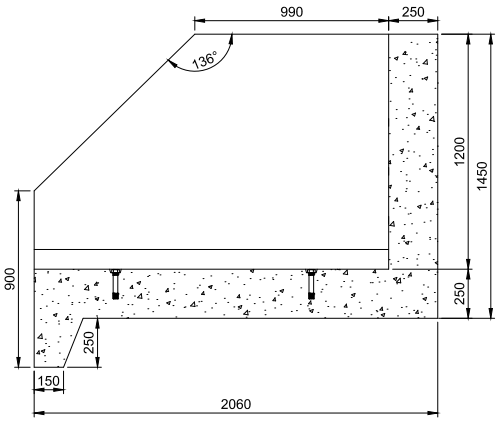

SECTION A-A

Headwall Range	Up to and including Pipe Sizes	Max Pipe O.D.	Back Wall Height (external)	Front Wall Height (external)	Backwall Width (internal)	Front Wall Width (internal)	Headwall Length	Standard invert level (variable)	Wall Thickness	Floor Thickness	Approx. weight kg
HW XL-T3	675	885	1450	900	2027	2857	2060	100	250	250	Part A 3465 Part B 3465

XL-T4
headwall

Pipe size: up to 375mm

Please note:
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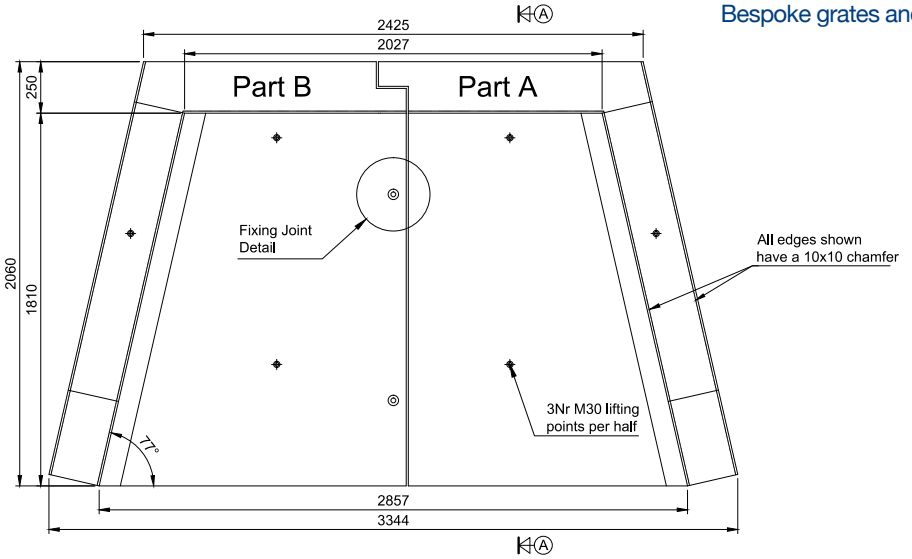
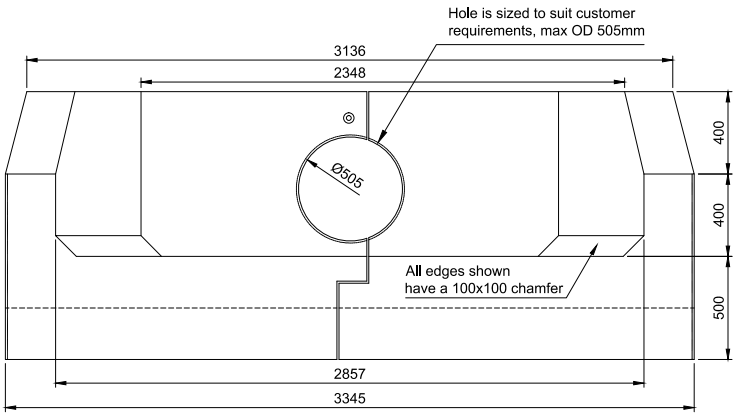
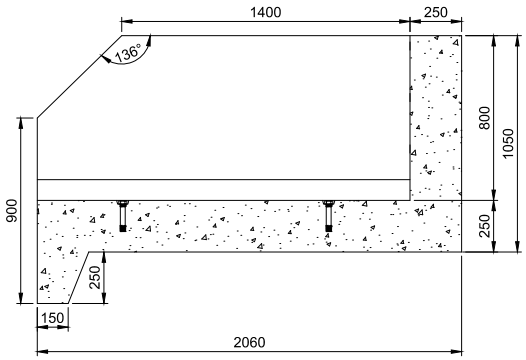


PLAN VIEW



FRONT ELEVATION

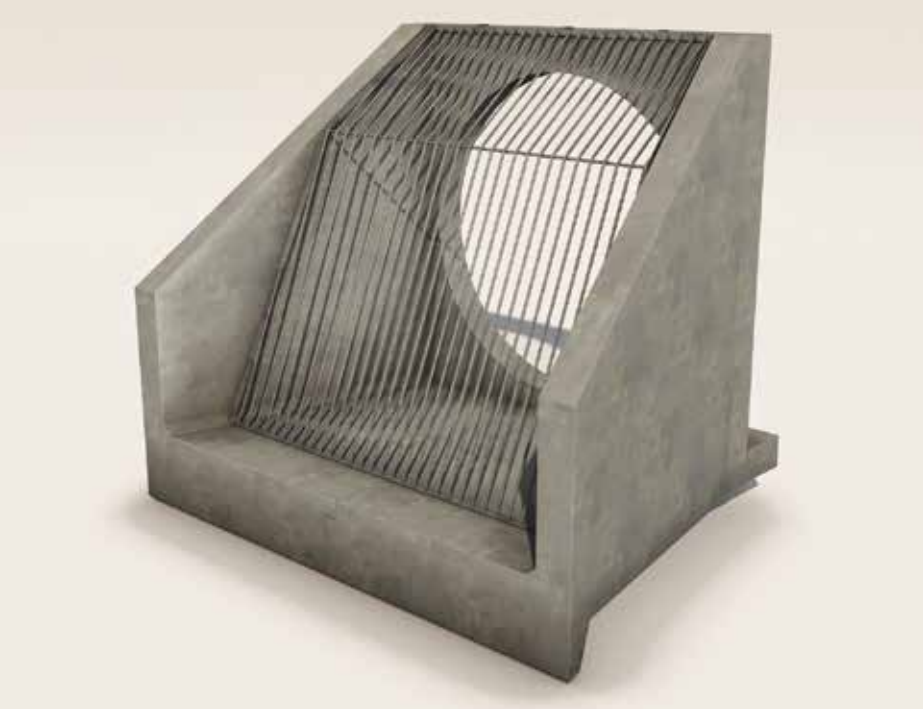


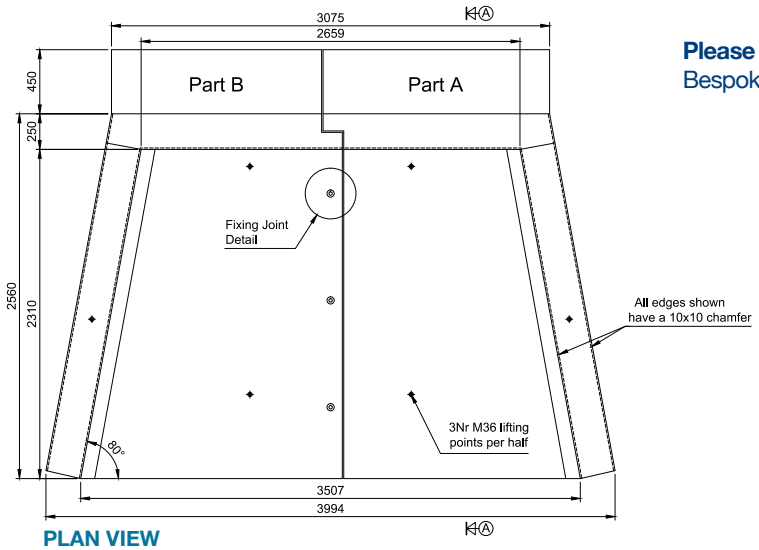
SECTION A-A

Headwall Range	Up to and including Pipe Sizes	Max Pipe O.D.	Back Wall Height (external)	Front Wall Height (external)	Backwall Width (internal)	Front Wall Width (internal)	Headwall Length	Standard invert level (variable)	Wall Thickness	Floor Thickness	Approx. weight kg
HW XL-T4	375	505	1050	900	2027	2857	2060	100	250	250	Part A 2646 Part B 2646

XXL T1
headwall

Pipe size: up to 2100mm





PLAN VIEW

Please note:
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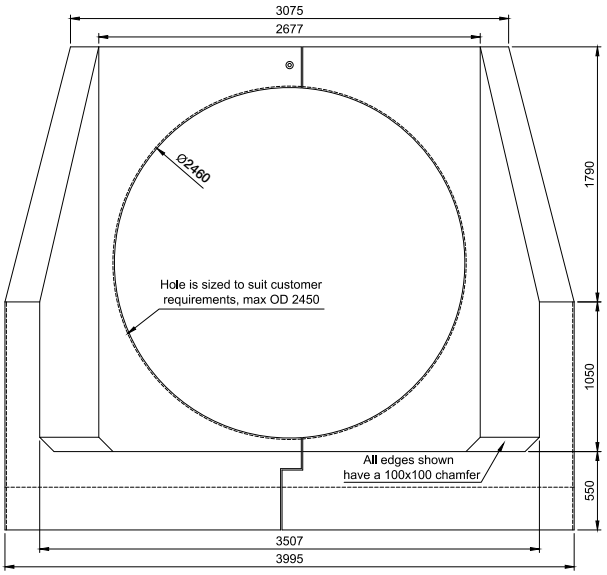

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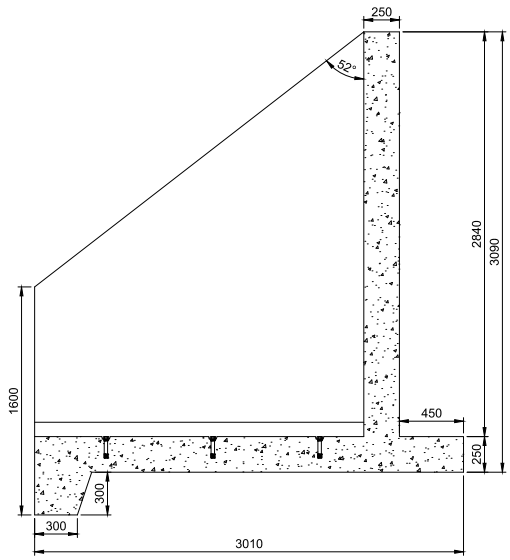
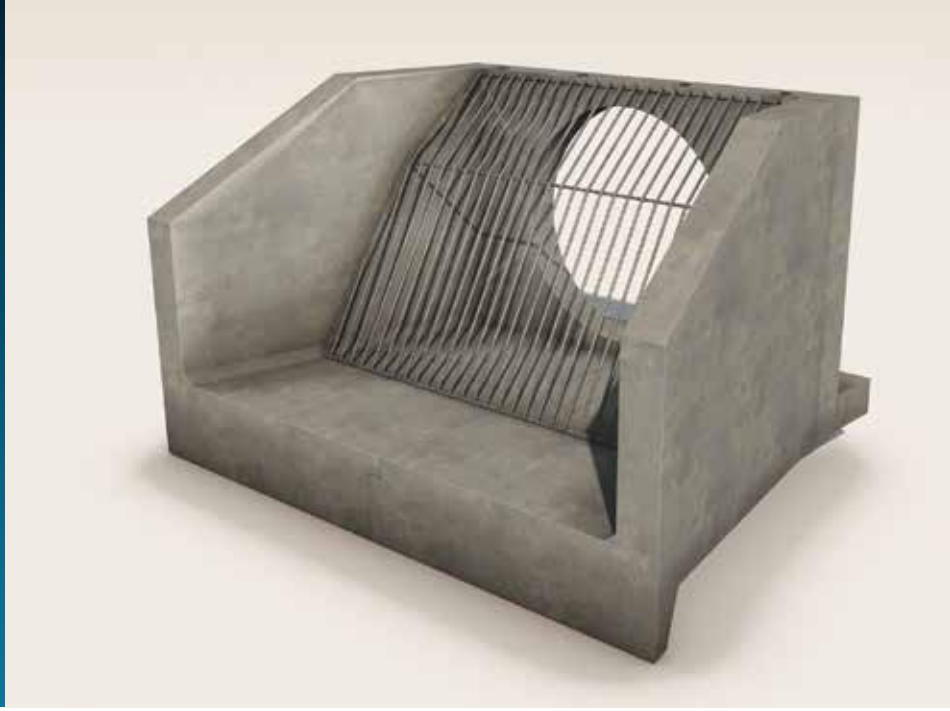


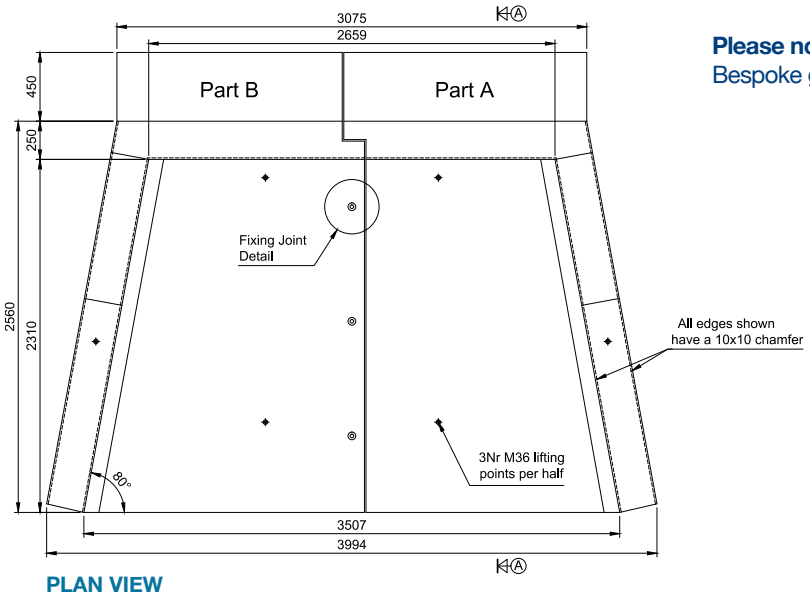
SECTION A-A

Headwall Range	Up to and including Pipe Sizes	Max Pipe O.D.	Back Wall Height (external)	Front Wall Height (external)	Backwall Width (internal)	Front Wall Width (internal)	Headwall Length	Standard invert level (variable)	Wall Thickness	Floor Thickness	Approx. weight kg
HW XXL-T1	2100	2460	3090	1600	2659	3507	3010	100	250	250	Part A 10,150 Part B 10,150

XXL-T2
headwall

Pipe size: up to 1500mm





PLAN VIEW

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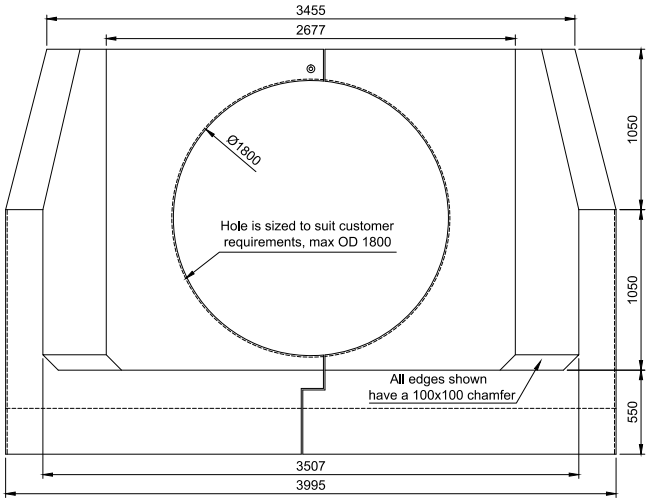

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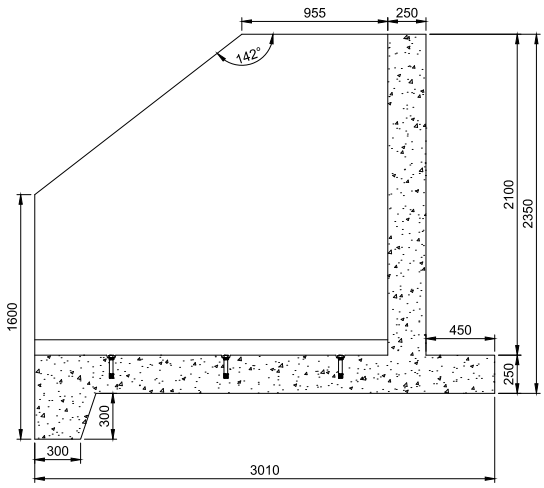
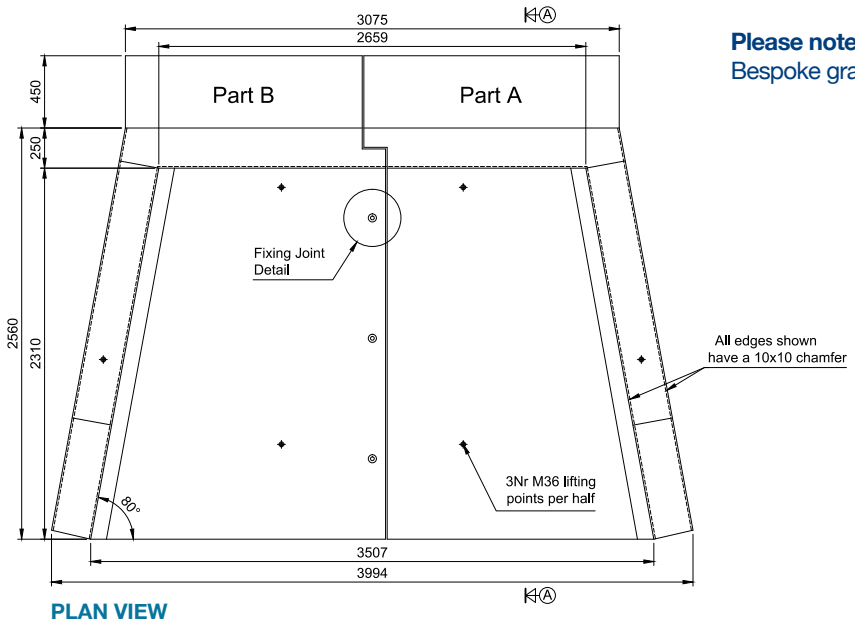


SECTION A-A

Headwall Range	Up to and including Pipe Sizes	Max Pipe O.D.	Back Wall Height (external)	Front Wall Height (external)	Backwall Width (internal)	Front Wall Width (internal)	Headwall Length	Standard invert level (variable)	Wall Thickness	Floor Thickness	Approx. weight kg
HW XXL-T2	1500	1800	2350	1600	2659	3507	3010	100	250	250	Part A 9205 Part B 9205

XXL-T3
headwall

Pipe size: up to 1050mm



PLAN VIEW

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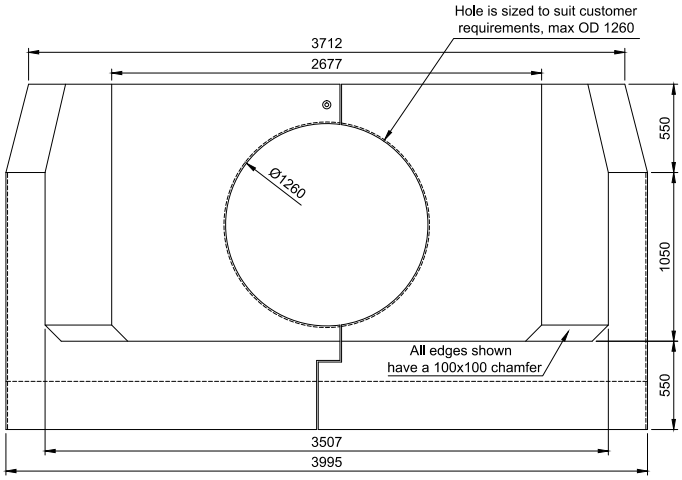

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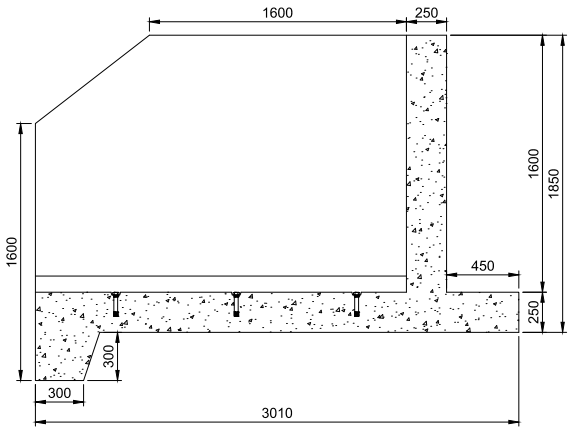
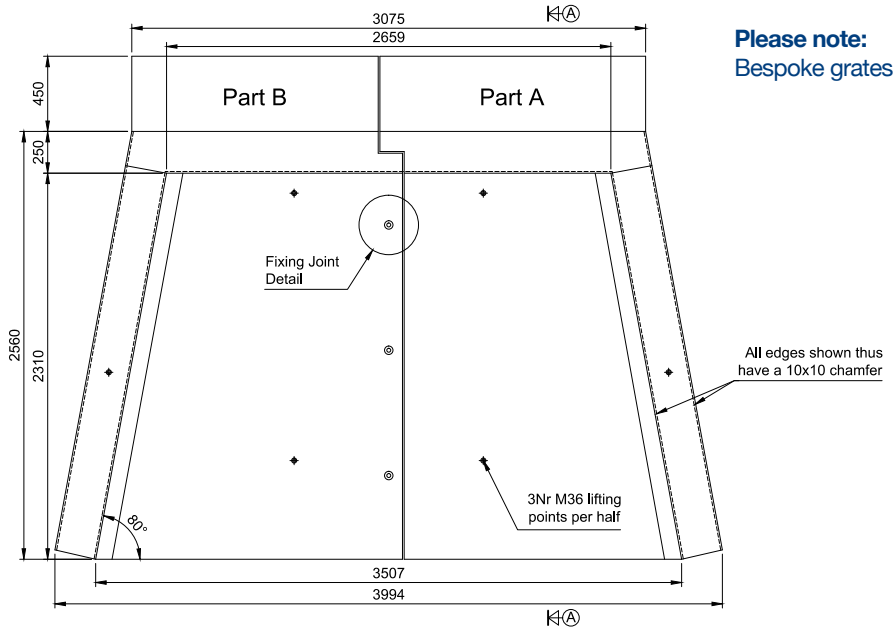


SECTION A-A

Headwall Range	Up to and including Pipe Sizes	Max Pipe O.D.	Back Wall Height (external)	Front Wall Height (external)	Backwall Width (internal)	Front Wall Width (internal)	Headwall Length	Standard invert level (variable)	Wall Thickness	Floor Thickness	Approx. weight kg
HW XXL-T3	1050	1260	1850	1600	2659	3507	3010	100	250	250	Part A 8421 Part B 8421

XXL-T4
headwall

Pipe size: up to 525mm



PLAN VIEW

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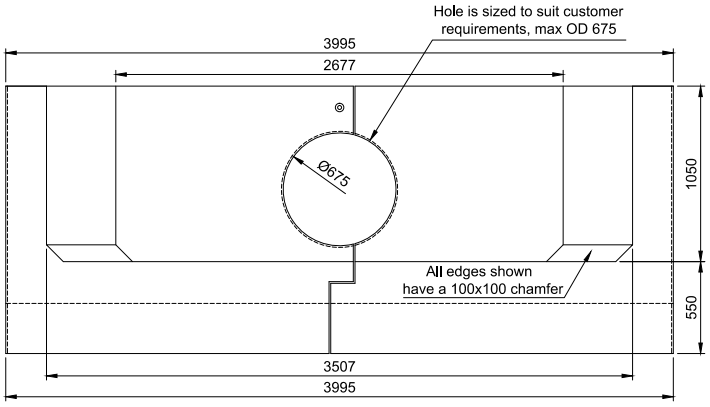
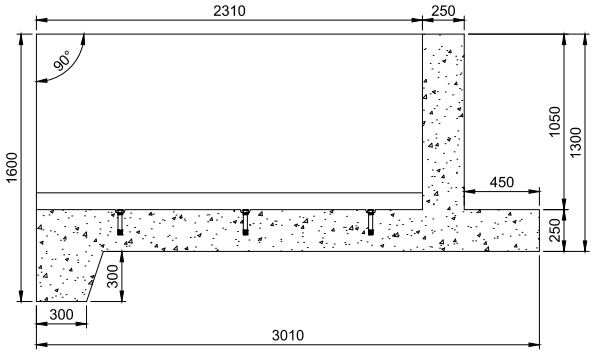


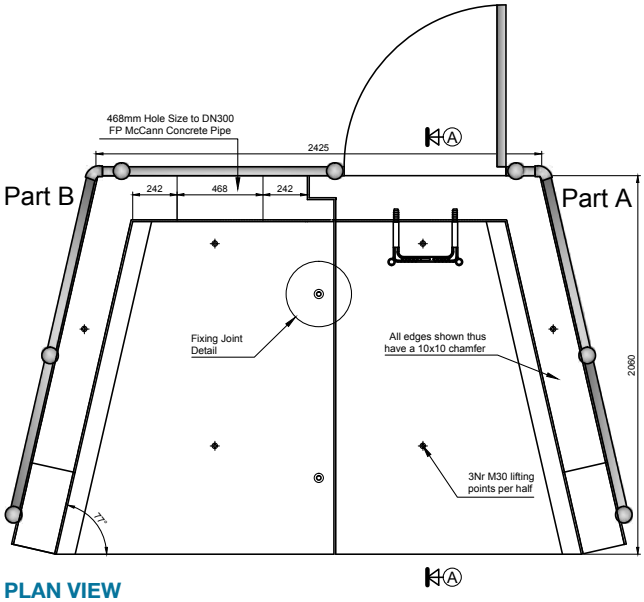
FRONT ELEVATION



SECTION A-A

Headwall Range	Up to and including Pipe Sizes	Max Pipe O.D.	Back Wall Height (external)	Front Wall Height (external)	Backwall Width (internal)	Front Wall Width (internal)	Headwall Length	Standard invert level (variable)	Wall Thickness	Floor Thickness	Approx. weight kg
HW XXL-T4	525	675	1300	1600	2659	3507	3010	100	250	250	Part A 6915 Part B 6915

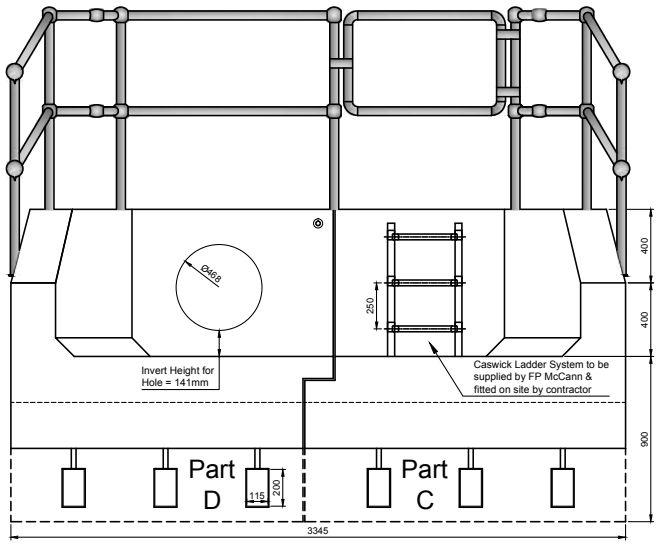
Bespoke example 1
headwall



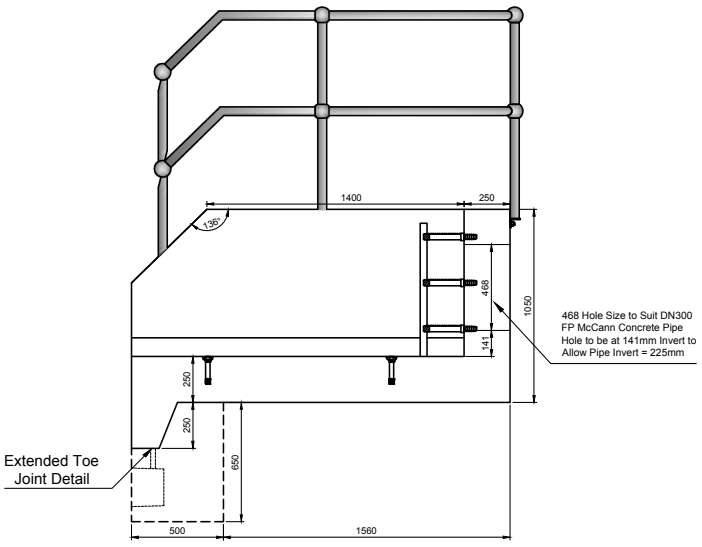
PLAN VIEW

Please note:
Bespoke grates and handrails are available upon request.

XL T4 Headwall
468mm hole to suit 300 pipe
Extended Toe
Ladder
Handrail with access

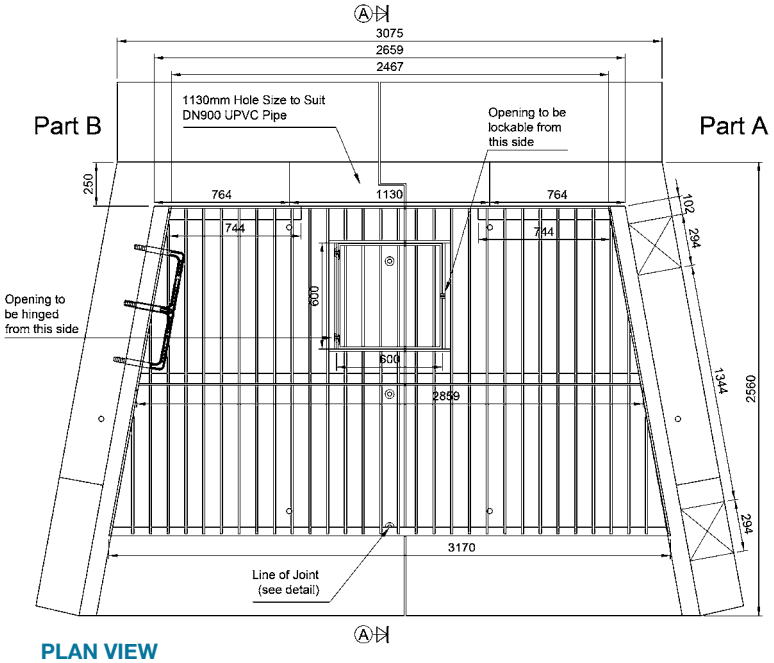


FRONT ELEVATION



SECTION A-A

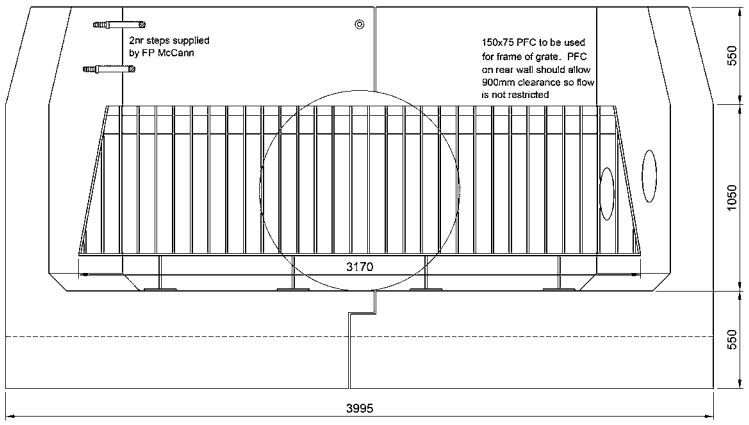
Bespoke example 2
headwall



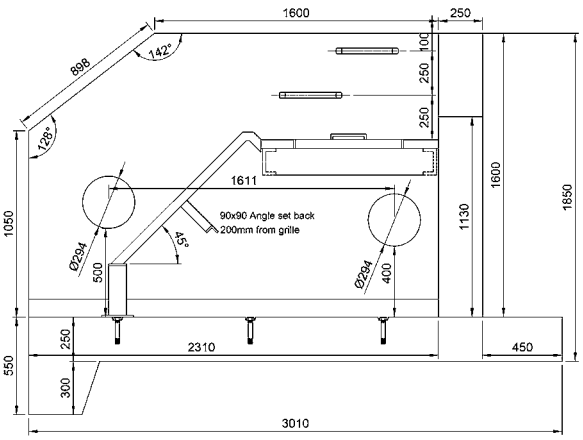
PLAN VIEW

XXL T3 Headwall
1130mm hole to suit 900 pipe
Special Grate with hinged access Ladders

Please note:
Bespoke grates and handrails are available upon request.

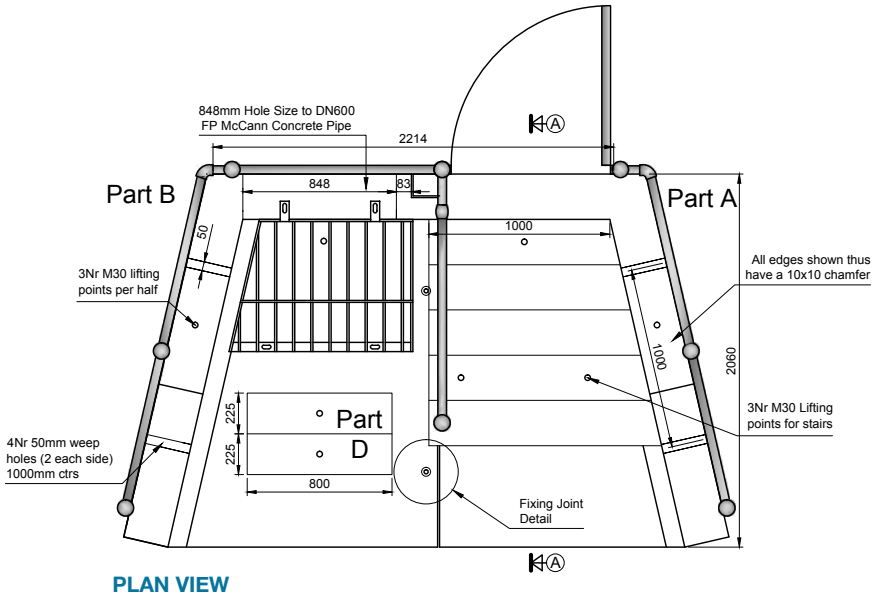


FRONT ELEVATION



SECTION A-A

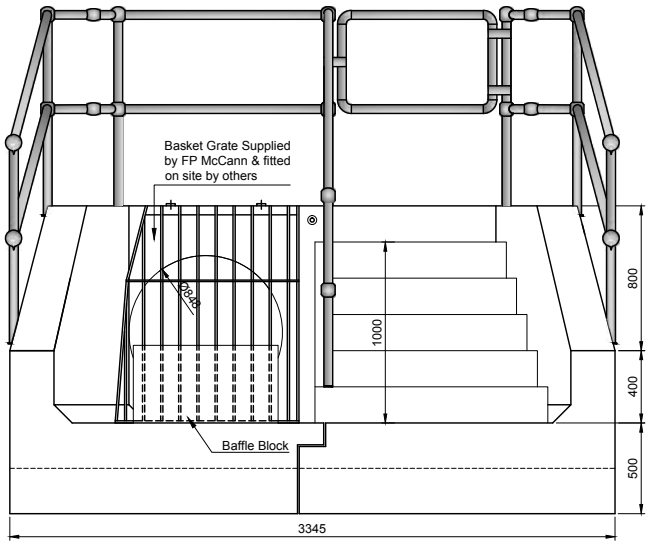
Bespoke example 3
headwall



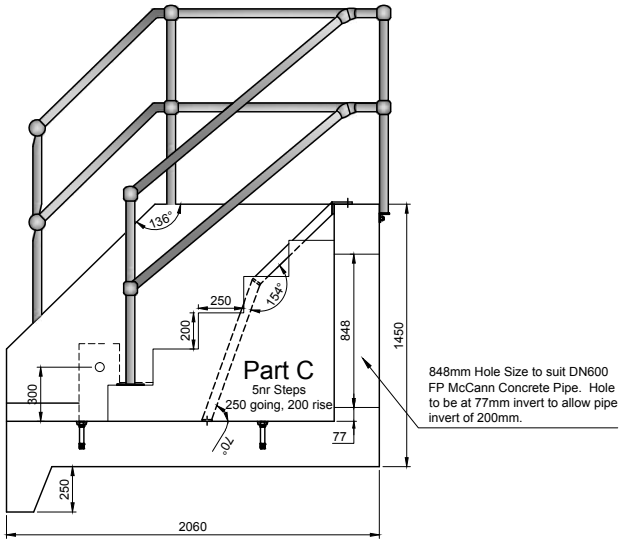
PLAN VIEW

XL T3 Headwall
848mm hole to suit 600 pipe
Stairs
Baffle Block
Handrail
Basket Grate

Please note:
Bespoke grates and handrails are available upon request.



FRONT ELEVATION



SECTION A-A

Accessories

Please note:
Bespoke grates and handrails are available upon request.

Typical Front Wall Grate

Typical Basket Grate

Typical Handrail

Installation Guide

1.0 Introduction
- This document describes the recommended procedure for the installation of FP McCann headwalls – the reinforced precast concrete headwall unit used in drainage outfalls.
- The precast concrete headwall is available in 11 standard sizes: small, medium, large, XL T1-4 and XXL T1-4; the latter two sizes are available with two piece extended toes, if required. Table 1 (overleaf) gives a summary of each size available. Gratings, handrails, baffle blocks, weir walls, stairs and ladders are also available for headwalls and are provided by FP McCann.

2.0 Disclaimer
- This document is produced by FP McCann as a 'recommended guideline document to the industry'.
- Its purpose is to aid contractors in the installation of the FP McCann precast concrete headwalls and headwalls with two piece extended toes. It is the responsibility of the contractor to ensure that the precast concrete headwall is carried out in accordance with the design specifications for the site.
- It is the responsibility of the contractor to install the precast concrete headwall safely in accordance with site conditions.

3.0 Receipt and Handling of Headwalls on Site
- Time and place of off-loading should be agreed before units arrive at site. For safety, all units are delivered in the upright position as installed. During delivery and off-loading, the units should be placed on 250mm skids to ensure no damage to the toe end. Units must be stored individually and not stacked.
- Off-loading should take place at the nearest hard standing area to the point of installation. An additional area for connecting the extended toe to the headwall is recommended.
- Off-loading must be carried out using appropriate lifting equipment. It is recommended that telescopic handlers, or equivalent, with forklift toes are used to off-load on-site; to prevent operatives from climbing onto the trailer. Each headwall section is supplied with 3 lifting anchors cast into the reinforcing in the floor and wall of the unit. Lifting loops are attached to these anchors and 3 legged adjustable chains (1 leg shortened) are used to transport on site, fix into position and for jointing both halves. Each extended toe section has 2 cast-in anchors with 2 equal chains used to transport and joint.
- Carefully inspect units during off-loading to verify that products are undamaged and comply with order placed. Two types of check are required:

Visual: Inspect the headwall and/or extended toe for any sign of damage, including cracked or chipped concrete, or damage that could affect the performance.

Design: Check that the item received is the one ordered. Headwalls are a standard FP McCann product and are labelled with the following information:

a. Headwall Size
b. Pipe Type
c. Pipe Diameter
d. Production date
e. Site / Customer Ref
f. Customer Order No. (if applicable)

- All FP McCann products are stamped with the production date (this is a quality control procedure).
- Any Headwalls/Silt Traps/Extended Toes rejected should be labelled and stored separately with the discrepancies for each noted on the delivery docket and reported for further action.

4.0 Installation of Small, Medium and Large Precast Concrete Headwalls and Silt-Traps

The headwall is manufactured as a monolithic precast unit. FP McCann operates a quality management system accredited to ISO 9001 with all constituent products subject to regular quality inspection. The headwalls are manufactured to exposure classes XD1 and XC3/4, depending on actual unit and use required.

- Cut and install the last section of pipe that the headwall will cover. Ensure that the pipe is fully fitted, leaving either the first (or last) section of pipe free from backfill to attach to the headwall.
- Excavate to formation level, place and compact a 300mm bed of 50mm clean drainage stone or similar free drainage aggregate.
- Check that the correct headwall has been brought to the installation point. Cross reference and check pipe connection diameter to that of the headwall. The movement of the headwall on-site must be undertaken in a manner that is safe and will not cause any damage to the unit in any way– the use of the cast-in lifting anchors fitted with loops and connected to equal length 3 legged chains is recommended.
- Place the headwall unit onto the bedded surface. It is essential that the headwall is positioned in the centre of the hole. Placing a shim at the bottom of the pipe to centre in position is recommended.
- Install the headwall onto the end of the pipeline.
- Using the appropriate grout or an epoxy resin, fill in the void between the reinforced concrete headwall and the pipe. This will ensure a firm fit. Backfill the pipe section between the headwall and embankment. It is recommended that 300mm surround of 50mm or similar free drainage aggregate is used to surround the headwall to ensure good groundwater drainage.

5.0 Installation of XL & XXL Precast Concrete Headwall

The headwall is manufactured as a 2 piece precast concrete unit to be joined on-site by others upon installation. FP McCann operates a Quality Management System accredited to ISO 9001 with all constituent products subject to regular quality inspection. The headwalls are manufactured to exposure classes XD1 and XC3/4, depending on actual unit and use required.

- Cut and install the last section of pipe that the headwall will cover. Ensure that the pipe is fully fitted, leaving a section of pipe free from backfill to accept the headwall.
- Excavate to formation level; this should be approx 750mm below the floor level of the headwall. Place and compact approx. 300mm bed of 50mm clean drainage stone or similar free drainage aggregate (compacted in 100mm layers), then place approx. 200mm of lean mix concrete, ensuring a level surface.
- Check that the correct headwall has been brought to the installation point. Cross reference and check pipe connection diameter to that of the headwall. The movement of the headwall on-site must be undertaken in a manner that is safe and will not cause any damage to the unit in any way – the use of the cast-in lifting anchors fitted with loops and connected to a standard set of 3 legged adjustable chains (1 leg shortened) is recommended.
- Place Part A of the headwall unit onto the bedded surface. It is essential that the headwall is positioned in the centre of the pipe and is levelled. Placing a shim at the bottom of the pipe to position is recommended.
- Clean the receiving jointing groove of Part A and place a 20mm bed of construction adhesive mortar (supplied with the units) onto the groove, ensuring a uniform bed.
- Clean the corresponding jointing surface of Part B and lift into position. Clean all excess mortar that is forced out when both halves are jointed. Using the appropriate grout or an epoxy resin, fill in the void between the reinforced concrete headwall and the pipe. This will ensure a firm fit. Backfill the pipe section between the head wall and embankment. It is recommended that 300mm bed of 50mm or similar clean drainage aggregate is used to surround the headwall to ensure good groundwater drainage.

6.0 Installation of Precast Concrete Headwalls with Extended Toes

The headwall is manufactured as a 2 piece precast concrete unit; the extended toe is a secondary unit to be connected to each half before installation. FP McCann operates a quality management system accredited to ISO 9001 with all constituent products subject to regular quality inspection. The headwalls are manufactured to exposure classes XD1 and XC3/4,depending on actual unit and use required.

- Cut and install the last section of pipe that the headwall will cover. Ensure that the pipe is fully fitted, leaving a section of pipe free from backfill to accept the headwall.

Installation Guide

- Excavate to formation level; this should be approx 750mm below the floor level of the headwall. Place and compact approx. 300mm bed of 50mm clean drainage stone or similar free drainage aggregate (compacted in 100mm layers), then place approx. 200mm of lean mix concrete ensuring a level surface.
- Check that the correct headwall has been brought to the installation point. Cross reference and check pipe connection diameter to that of the headwall. The movement of the headwall on-site must be undertaken in a manner that is safe and will not cause any damage to the unit in any way – the use of the cast in lifting anchors fitted with loops and connected to a standard set of 3 legged adjustable chains is recommended for the headwall pieces. Two legged chains required for extended toe. Lifting anchors are designed for a vertical lift only with a maximum lift angle of 60°.
- Place extended toe for headwall unit on a hard standing level surface (ensuring that it is the correct toe for the headwall unit). Lower the headwall unit onto the toe to allow it to rest lightly on it. Then secure the threaded pins through the joint locations in the toes, starting with the side nearest the headwall joint and finishing with the middle pin(s). Ensure pins are secured tightly and fit nuts provided to the threaded end on the toe. Use sikadur 31, or similar approved, as per joint detail between the headwall and the extended toe.
- Place this half of the headwall unit & extended toe onto the bedded surface. It is essential that the headwall is positioned in the centre of the pipe and is levelled. Placing a shim at the bottom of the pipe to position it is recommended.
- Repeat stage 4 & 5 for other headwall half and extended toe.
- Clean the receiving jointing groove of Part A and install the fixing bolts (supplied with the units), then place a 20mm bed of construction adhesive mortar (supplied with the units) onto the groove, ensuring a uniform bed.
- Clean the corresponding jointing surface of Part B and lift into position, taking care to lower the unit into position vertically, ensuring that the fixing bolts enter the fixing sockets fully.
- The retaining nuts should then be screwed onto both fixing bolts and tightened fully, connecting both pieces of the unit together. Clean away any excess mortar that is forced out when both halves are jointed.
- Using the appropriate grout or an epoxy resin, fill in the void between the reinforced concrete headwall and the pipe. This will ensure a firm fit. Backfill the pipe section between the headwall and embankment. It is recommended that 300mm bed of 50mm or similar clean drainage aggregate is used to surround the headwall to ensure good groundwater drainage.

7.0 Bespoke Solutions

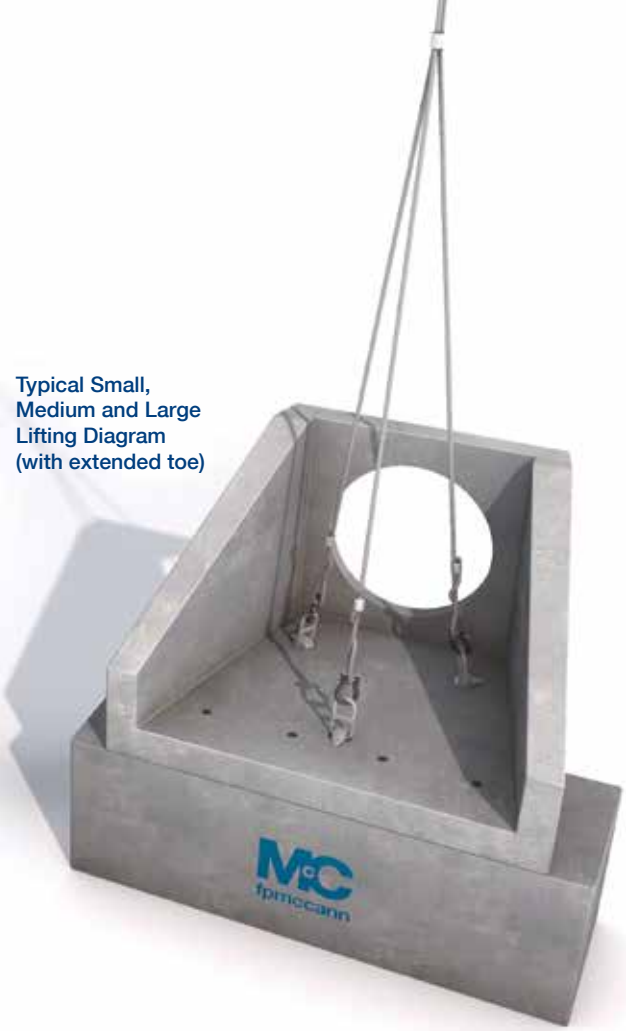
- FP McCann understands that situations will arise when our standard headwall will not meet the specific design requirements of a particular contract and, if so, we will adapt our standard headwall to best suit your requirements.
- Where headwalls are installed in poor ground conditions there may be a need for an additional concrete toe to reduce the effect of sliding.

Headwall Range	Up to & including Pipe Sizes	Max Pipe O.D. mm	Approx. Weight (Kg)
HW Small 100	300	450	1100
HW Small 150	300	450	1390
HW Medium 100	450	630	1540
HW Medium 150	450	630	2020
HW Large 100	900	1130	3020
HW Large 200	900	1130	4740
HW XL-T1	1500	1800	Part A 4725 Part B 4725
HW XL-T2	1050	1260	Part A 4095 Part B 4095
HW XL-T3	675	885	Part A 3465 Part B 3465
HW XL-T4	375	505	Part A 2646 Part B 2646
HW XXL-T1	2100	2460	Part A 10,150 Part B 10,150
HW XXL-T2	1500	1800	Part A 9205 Part B 9205
HW XXL-T3	1050	1260	Part A 8421 Part B 8421
HW XXL-T4	525	675	Part A 6915 Part B 6915

Table 1
Headwall Range - Quick Reference Guide

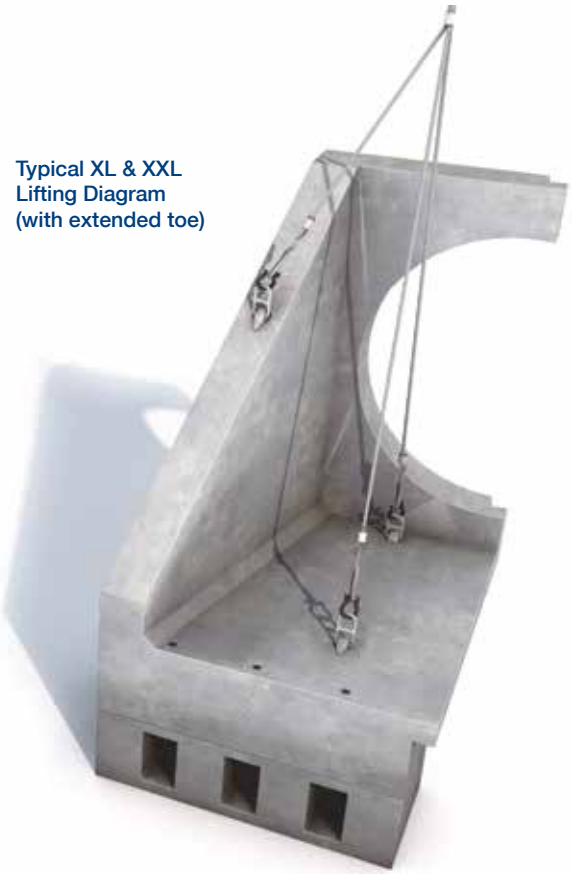
Typical Small, Medium and Large Lifting Diagram (with standard toe)

Typical Small, Medium and Large Lifting Diagram (with extended toe)



Typical XL & XXL Lifting Diagram (with standard toe)

Typical XL & XXL Lifting Diagram (with extended toe)

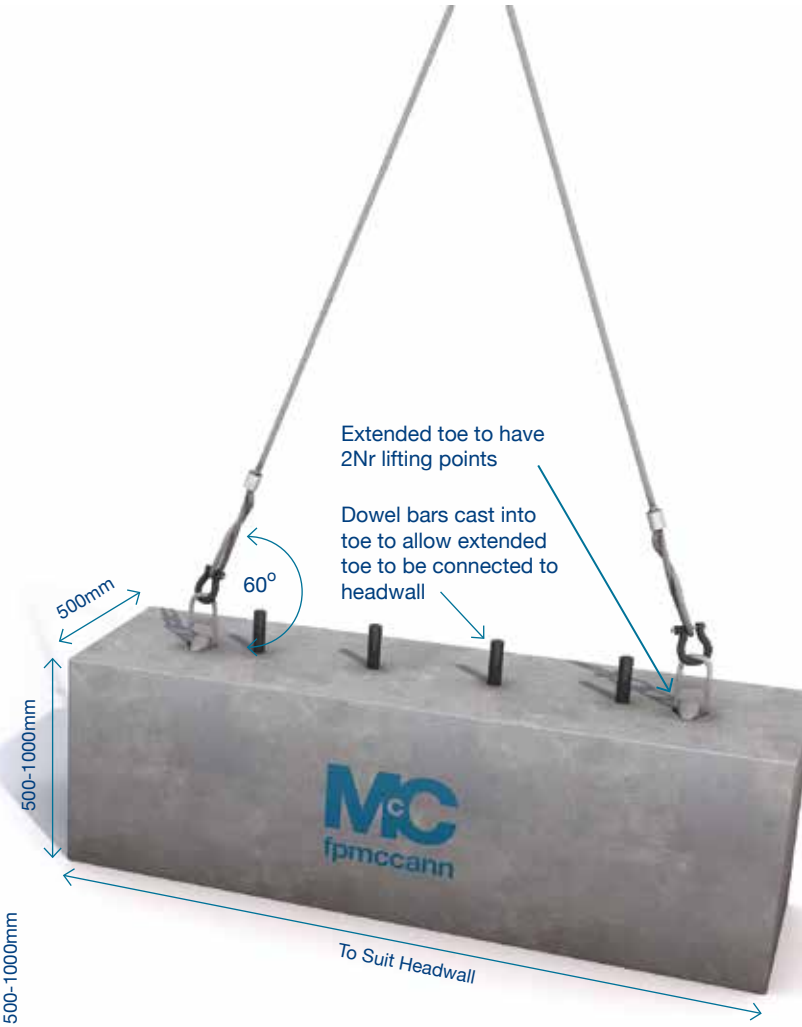


Lifting Diagrams

Extended Toes

Typical Small, Medium & Large Extended Toe

Precast headwall will be cast without a toe and with connection points to allow extended toe to be connected to headwall. The extended toe and headwall will arrive as separate components which must be joined and made good on site by others.

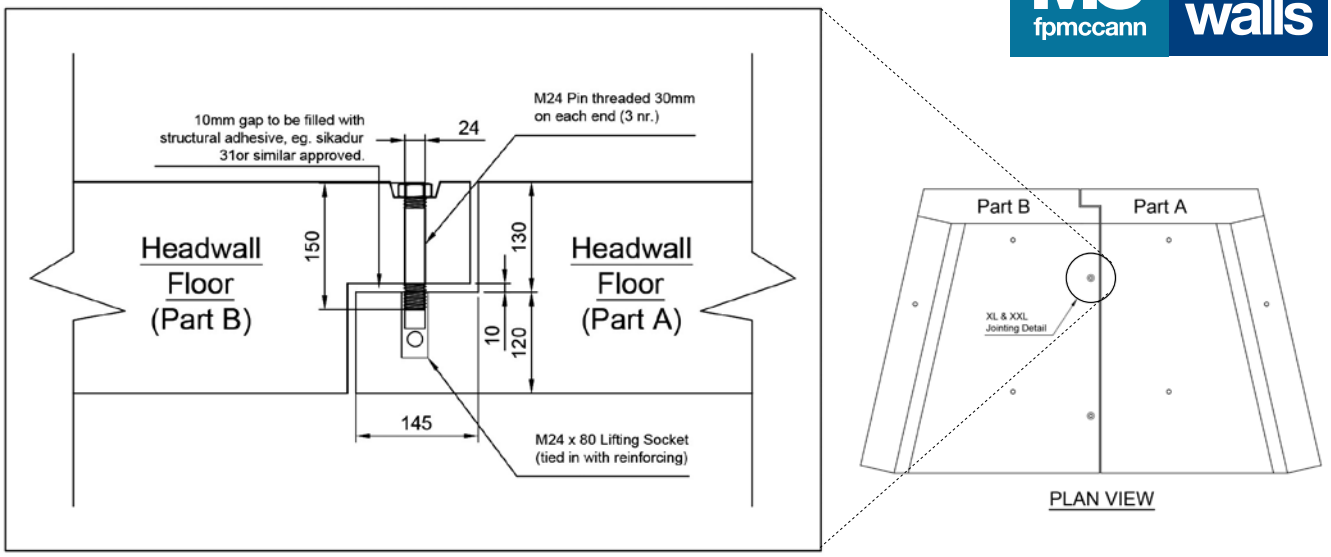


210x125mm holes to allow extended toe to be connected to headwall. Void filled on site by others

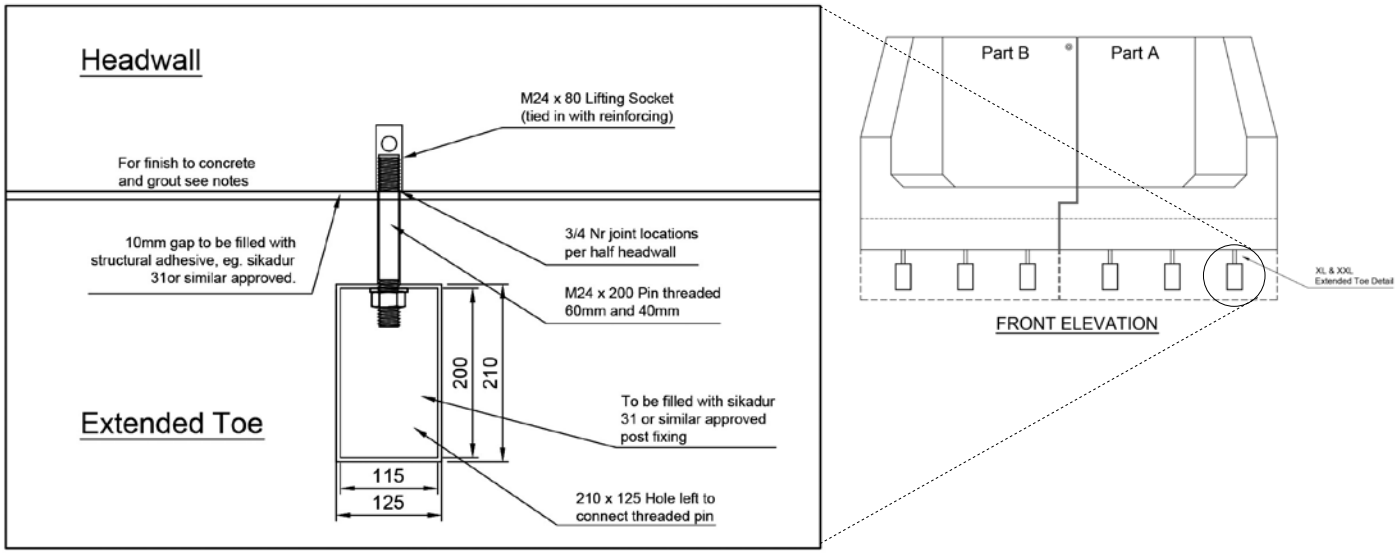
Typical XL & XXL Extended Toe

Extended toe will be cast to suit the existing toe on the precast headwall. 210x125mm holes at the front of the extended toe to allow it to be connected to the existing precast headwall. The precast headwall and extended toe will arrive to site as 4 separate components which must be joined and made good on site by others

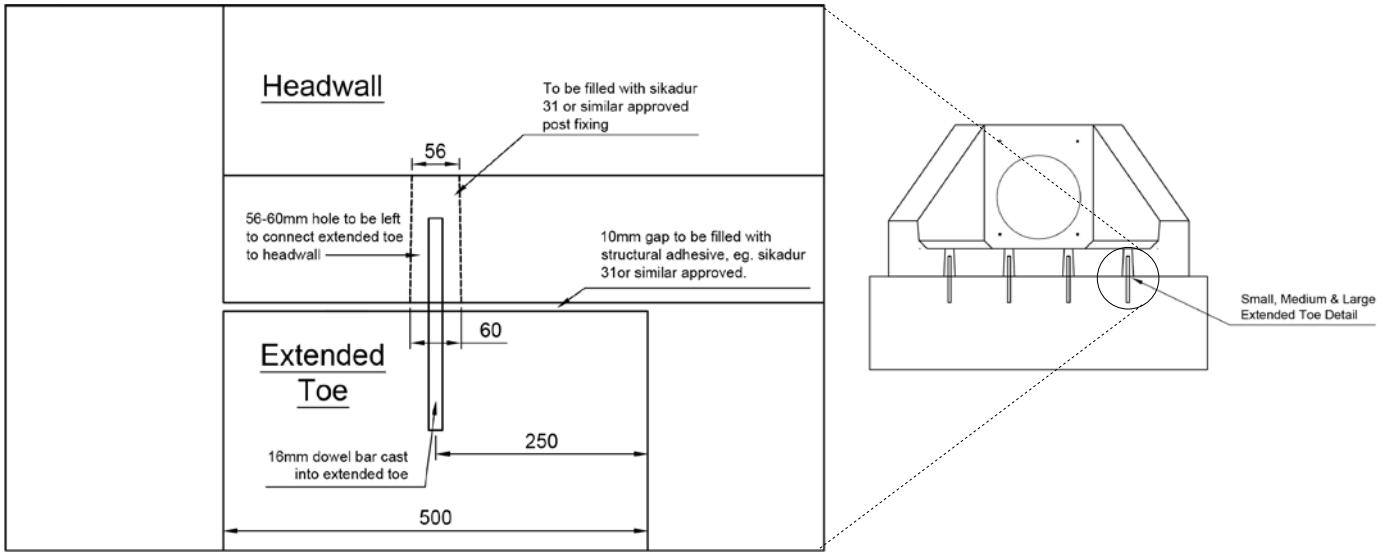
Jointing Details



XL & XXL Jointing Detail



XL & XXL Extended Toe Detail



Small, Medium & Large Extended Toe Detail

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Ellistown
Leicestershire
LE67 1ET

T 01530 240000
F 01530 240013
precast@fpmccann.co.uk

Magherafelt Office:
16-18 Quarry Road
Knockloughrim
Magherafelt
BT45 8NR

T 028 7954 9026
F 028 7954 9993
precast@fpmccann.co.uk

Drainage and Water Management Solutions
Ellistown 01530 240000 Magherafelt 028 7954 9026

Tunnel and Shaft Solutions
Cadeby 01455 290780

Rail Solutions
Cadeby 01455 290780

Power and Infrastructure Solutions
Cadeby 01455 290780

Walling Solutions
Grantham 01476 562277 Lydney 01594 847500

Fencing Solutions
Cadeby 01455 290780

Agricultural Solutions
Lydney 01594 847500 Magherafelt 028 7954 9026

Modular Building Solutions
Grantham 01476 562277 Byley 01606 843500

Flooring Solutions
Weston Underwood 01335 361269

Specialist Precast Solutions
Littleport 01353 861416

fpmccann.co.uk