headwalls/silt traps installation guide

fpmccann

This guide is intended for use by persons responsible for the installation of the Headwalls & Silt Traps manufactured by FP McCann

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 3 sizes; small, medium and large. Table 1 below gives a summary of each size available. (See Appendix A for full headwall dimensions). Apron or flat gratings are also available for headwalls and are provided by FP McCann.

Headwall Range	Up to & including Pipe Sizes	Max Pipe O.D. mm	Approx. Weight (Kg)
HW Large 200	900	1080	4105
HW Large 100	900	1080	2766
HW Medium 150	450	590	1640
HW Medium 100	450	590	1235
HW Small 150	300	430	1213
HW Small 100	300	430	1090

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 Headwall. 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

1. 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. The units when off-loaded should be placed on 250mm skids as delivered and off-loaded to ensure no damage to the toe end. Units must be stored individually and not stacked.
2. Off-loading should take place at the nearest hard standing area to the point of installation.
3. 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; avoiding the necessity for operatives having to climb 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 used for jointing both halves.
4. 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 for any sign of damage, including cracked or chipped concrete, or damage that could affect the performance.

headwalls / silt traps installation guide

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)

5. All FP McCann products are stamped with the production date (this is a quality control procedure).

6. Any Headwalls/Silt Traps 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 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 9001:2008 with all constituent products subject to regular quality inspection. The headwalls are manufactured to structural classes XD2 and XD3/4 depending on actual unit and use required.

1. 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.

2. Excavate to formation level, place and compact a 300mm bed of 50mm clean drainage stone or similar free drainage aggregate.

3. 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.

4. 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.

5. Install the headwall onto the end of the pipeline.

6. 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.

3.0 Receipt and Handling of Easi-Headwalls on Site

1. 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. The units when off-loaded should be placed on 150mm skids as delivered and off-loaded to ensure no damage to the toe end. Units must be stored individually and not stacked.

2. Off-loading should take place at the nearest hard standing area to the point of installation.

3. 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; avoiding the necessity for operatives having to climb onto the trailer. Headwalls are also supplied with 3 lifting anchors cast into the reinforcing in the floor of the unit. Lifting loops are attached to these anchors and standard 3 legged chains are used to transport on site and fix into position.

4. 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 for any sign of damage, including cracked or chipped concrete, or damage that could affect the performance.

headwalls / silt traps installation guide

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. Headwall Wall thickness
c. Pipe Type and Diameter
d. Pipe Diameter
e. Production date
f. Site / Customer Ref
g. Customer Order No. (if applicable)

5. All FP McCann products are stamped with the production date (this is a quality control procedure).
6. Any Headwalls / Silt-traps 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 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 9001:2008 with all constituent products subject to regular quality inspection. The headwalls are manufactured to structural classes XD2 and XD3/4 depending on actual unit and use required.

1. 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.
2. Excavate to formation level, place and compact a 300mm bed of 50mm clean drainage stone or similar free drainage aggregate.
3. 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.
4. 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.
5. Install the headwall onto the end of the pipeline.
6. 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 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 out 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. Please use the figures below indicating the maximum sliding force resisted by the units as a guide only.

    - Small Headwall – 11.79 KN /unit
    - Medium Headwall – 15.39 KN / unit
    - Large Headwall – 30.13 KN / unit

fpmccann

Appendix A

Headwall Range	Accomodates Pipe Sizes	Max Pipe O.D. mm	Back wall height (external) mm	Front wall height (external) mm	Width at back wall (internal) mm	Width at front wall (internal) mm	Headwall Length (mm)	Standard Invert level (Variable)	Wall Thickness (mm)	Floor Thickness (mm)	Approx. Weight (Kg)
HW Large 200	900, 825, 750, 675, 600, 525	1080	1420	500	1220	1950	2150	100	200	162	4105
HW Large 100	900, 825, 750, 675, 600, 525	1080	1420	500	1220	1950	2050	100	100	162	2766
HWMedium 150	450, 375, 300	590	1150	500	700	1550	1370	100	150	162	1640
HW Medium 100	450, 375, 300	590	1150	500	700	1550	1320	100	100	162	1235
HW Small 150	300, 225, 160	430	810	300	520	1300	1320	100	150	162	1213
HW Small 100	300, 225, 160	430	810	300	520	1300	1320	100	100	162	1090

Note:
Weir walls and other special finishes can be added to any of the headwalls as part of a bespoke design package.
Headwalls are available with handrails and precast steps