

Spillway Headwall Handling & Installation Instructions

Handling

Ensure that adequate capacity craneage is available on site to off-load and install the headwalls into position (see table 1 below for approximate sizes and weights).

Marshalls' headwalls are cast as a monolithic precast unit and are installed as delivered so that no turning operations are required on site. The headwalls should be offloaded/lifted into place using the lifting anchors cast into the units in conjunction with a three/four-way hook and chain set (length/rating depending on the size/weight of unit – see table 1 below for details).



Fig 1 – Typical Marshalls Civils & Drainage Headwall Lifting

Headwall Size	External Width Front (mm)	External Width Rear (mm)	External Depth (mm)	External Height at Rear (mm)	No. of lifting points	Minimum chain leg length (mm)	Max Weights (t)
S20	1436	650	1315	700	3	1300	1.05
S40	1621	800	1370	850	3	1300	1.33
S40 XH	1621	800	1370	1310	3	1300	1.74
S60	2213	1100	1850	1200	3	1500	2.75
S60 XH	2213	1100	1850	1735	3	1500	3.42
S90	2349	1448	2150	1500	3	1800	3.81
S135	3463	2020	2285	2085	4	1800	7.23

Table 1 – Typical headwall size details

Store the headwalls carefully on a firm level base/on timber bearers at a location near to the installation point with care to avoid any damage, particularly to the toe end. Always move the headwalls by lifting, never drag the units.

Lifting and storage of toe units are similar, but only two lifting points are installed.

Remember to:

- **Ensure current test certificates are available for all lifting attachments.**
- **Use all lifting points provided in their intended manner.**
- **Ensure lifting chains or slings are of equal length and are not twisted.**
- **Ensure included angle between the chains or slings at the crane hook is never greater than 60 degrees.**
- **Ensure complete safety of all operatives and the surrounding workforce.**

Bedding

Before laying bedding, ensure the final position of the headwall is excavated to the required formation level with sufficient excavation to house the toe (particularly when toe extensions are used) along the front of the excavation. Line the excavation with geotextile then a minimum of 200mm well graded granular material, compacted particularly around the back of the toe, then a 50mm blinding layer of sharp sand.

In adverse ground conditions it may be necessary to use a minimum of 75mm thick concrete bed with a 50mm thick granular overlay (headwalls should not be laid on bare concrete). Ultimately, the bedding should ensure that any irregularities are levelled out to create a uniform support for the headwall to be laid on, without effecting the jointing to pipework.

If surrounding soil is likely to be relocated into the backfill, then the bedding should be wrapped in a geosynthetic material.



Fig 2 – Typical Marshalls Civils & Drainage Headwall Toe Lifting

Toe Size	Depths (mm)	Width (mm)	Length (mm)	Max Weights (t)
S20	500, 750, 1000	550	1436	1.9
S40	500, 750, 1000	550	1621	2.12
S60	500, 750, 1000	550	2213	2.8
S90	500, 750, 1000	550	2349	3.0
S135	500, 750, 1000	550	3463	4.5

Table 2 – Headwall Toe details

Laying

Check that the correct headwall has been delivered by cross referencing the compatibility of the pipe connection diameter and the hole in the headwall. Straight cored holes should measure wider than the diameter of the connecting pipe to allow for placement and grouting. Likewise, the outer rebate of a formed and stepped hole should also measure wider than the diameter of the connecting pipe, while the inner hole should be the same diameter as the inner diameter of the pipe. (See table 3 below).

Headwall Size	Nominal Inlet/Outlet Size	Approximate Weight (t)
S20	100	1.06
	150	1.06
	225	1.05
S40	225	1.37
	300	1.35
	375	1.33
S60	450	2.81
	525	2.78
	600	2.75
S90	750	3.91
	825	3.86
	900	3.81
S135	900	6.96
	1050	6.86
	1200	6.75
	1350	6.62

Typical pipe size openings for each headwall size, more pipe size openings available on request

Table 3 – Headwall pipe sizes and typical weights

When satisfied, use suitably rated three/four leg hook and chain (or sling) set to lower the headwall onto the prepared bed, carefully aligning the headwall over the end of the pipeline (where applicable).

Jointing

Depending on the type of connection to be made to the headwall, the pipe should either be flush with the front face of the back wall for a straight through hole connection or flush with the inner rebate of the stepped connection so the internal diameter of the pipe and the front facing hole are concentric. Both styles require the filling of the void created between the circumference of the pipe and hole, with sand cement mortar or a high strength non-shrink grout or similar.

Backfilling

Backfilling should commence as soon as possible after the headwall has been laid. Selected backfill material (typically similar to surrounding soil, free from large lumps, roots, rubbish or building rubble).

The pipe section should be backfilled first, then around the headwall while compacting well at the front of the toe.

Compacting should be in layers of maximum 200mm, working evenly on each side of the headwall. It may be necessary to provide protection in front of the toe, please refer to engineers' recommendation.

Repeat the entire operation for subsequent units or opposite ends as required.



Fig 3 – Typical Marshalls Civils & Drainage Headwall Unit



Fig 4 – Typical Marshalls Civils & Drainage Installed Outfall Headwall Unit