

Wingwalls

Technical Guide D1.7

Hynds precast concrete one-piece wingwalls deliver improved inlet and outlet hydraulics for culverts, stormwater outfalls and erosion protection.



09.26 | DRAINAGE | D1.7 HYNDS WINGWALLS

Applications

Culvert inlets and outlets
Stormwater outfalls
Erosion protection

Product Attributes

High strength and durability
Designed to minimise mass and protect against erosion
Strategically placed lifting anchors make

installation safer and easier

Split version for multiple barrel option available
Extensive range of sizes available

Approvals/Standards

NZS 3109, Concrete Construction
NZS 3101:2006, Concrete Structures Standard

Sustainability

Available in Hynds LC[®] low carbon concrete
Verifiable Carbon Footprint data available
Climate-Resilient Infrastructure

Quality/Environment/Health & Safety

ISO 9001:2015, ISO 14001:2015 and ISO 45001:2018

Hynds precast concrete one-piece wingwalls deliver improved inlet and outlet hydraulics for culverts, stormwater outfalls and erosion protection.

Design Specifications

- Manufactured in 50 MPa concrete.
- Standard and marine options for use in tidal zones available on request.
- Preformed hole/soft spot provided to accept the pipe end.
- Design loading = 10kPa Live load Surcharge for standard -Wingwall units*
- Backslope = Level
- Seismic Allowance = No
- Design Life: 100yrs**
- Exposure classification:
 - Standard Units: Internal B2, External A2-B2 (varies)
 - Marine Units: C

Installation

- Wingwalls are fitted with strategically placed lifting anchors cast into the concrete, to allow for safe off-loading, and easy economical installation by the contractor.
- Wingwalls should be installed on compacted level hardfill with a suitable trench cut to accept the wingwall toe.
- A preformed hole/softspot is provided in the headwall to accept the pipe end.
- The contractor finishes installation by filling the gap between the headwall and the pipe with epoxy mortar.
- Refer to Figure 2 and Table 2 for the product dimensions and product range.

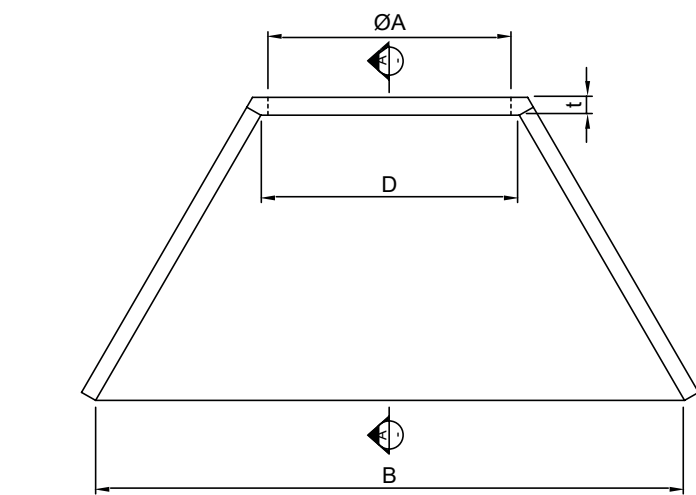
Wingwall Panels (2050 - 2550)

1. Precast side panels are supplied by Hynds.
2. Contractor to cast in-situ Headwall, Floor & Toe
3. Insitu reinforcement design and materials are not included.
4. Local consultant to design and inspect all in situ works on a project by project basis, to confirm suitability of application.

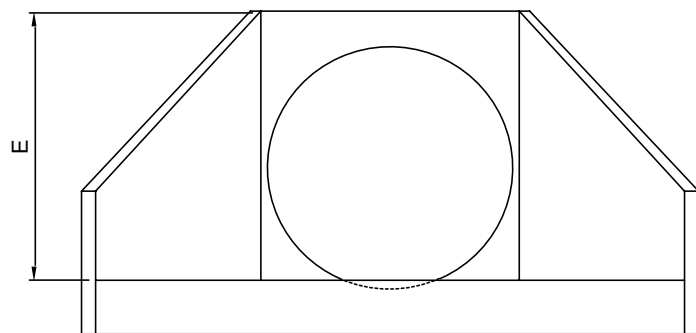
Split Wingwall Panels

1. Contractor to cast in-situ section (Headwall, Floor & Toe)
2. Insitu reinforcement design and materials are not included.
3. Local consultant to design and inspect all in situ works on a project by project basis, to confirm suitability of application.

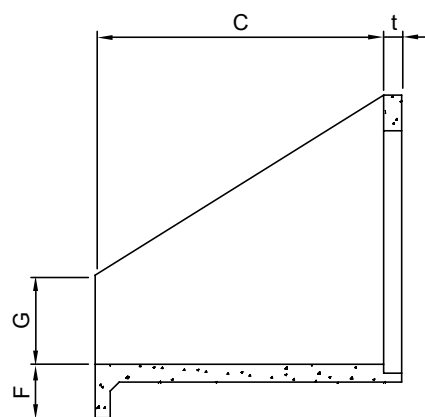
Made to order design can be requested if required, refer to your local Hynds Representative.



Plan
Scale: N.T.S.



Elevation



Section 'A-A'

FIG. 1 Product Dimensions

TABLE 1 One Piece Units

Product Code	Nomi- nal Dia (mm)	Wingwall Type	Ø A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	G (mm)	t (mm)	Mass (kg)	Lifting Anchor Load Group	Opening Type
WW0300N**	100- 300	Standard	390	1000	600	460	520	200	160	85	300	3x1.3	Soft spot
WW0300M	100- 300	Marine	390	1000	600	460	520	200	160	85	300	3x1.3	Soft spot
WW0600**	300- 600	Standard	790	2150	745	810	1000	250	390	85	875	3x1.3	Soft spot
WW0600TW	300- 600	Standard	790	2150	745	810	1000	250	390	135	1265	3x1.3	Soft spot
WW0600TW.M.FA*	300- 600	Marine	790	2150	745	810	1000	300	390	135	1265	3x1.3	Soft spot
WW0600.TYPE2**	300- 600	Standard - SI Only	700	2295	735	805	805	255	315	80	787	3x1.3	Soft spot
WW0750DBL	600- 750	Standard Double Wingwall	885	3085	1200	2385	1125	335	600	135	3320	4x2.5	Penetration
WW0900DBL	825- 900	Standard Double Wingwall	1070	3579	1450	2750	1292	335	650	135	4432	4x2.5	Penetration
WW1050	600- 1050	Standard	1225	3000	1000	1270	1675	345	600	100	2065	3x1.3	Soft spot
WW1050.SPLIT*	600- 1050	Standard - Split	1225	3000	1000	1270	1675	345	600	100	2065	3x1.3	Soft spot
WW1050DBL	975- 1050	Standard Double Wingwall	1250	4848	1000	3118	1675	345	600	135	3927	4x2.5	Penetration
WW1350	1200- 1350	Standard	1380/1540	4100	2400	1600	1975	425	750	125	6340	3x5.0	Penetration - smallest "Ø A" dimension
WW1350.M.DU	1200- 1350	Marine	1380/1540	4100	2400	1600	1975	425	750	135	6500	3x5.0	Penetration - smallest "Ø A" dimension
WW1350.SPLIT	1200- 1350	Split	1380/1540	4100	2400	1600	1975	425	750	125	6340	4x2.5	Penetration - smallest "Ø A" dimension
WW1800	1600- 1800	Standard	1727/1892/2040	4900	2400	2150	2265	450	750	150	8020	3x5.0	Penetration - smallest "Ø A" dimension
WW1800.M.DU	1600- 1800	Marine	1727/1892/2040	4900	2400	2150	2265	450	750	150	8020	3x5.0	Penetration - smallest "Ø A" dimension
WW1800.SPLIT	1600- 1800	Split	1727/1892/2040	4900	2400	2150	2265	450	750	150	8020	4x5.0	Penetration - smallest "Ø A" dimension

Notes:
The load group specifies the maximum lifting capacity or Working Load Limit (WLL) of the lifting clutch expressed in tonnes
Lifting anchors provided for installation purposes.
*5kPa for products with Nominated * on table 1
**50yrs products with Nominated ** on table 1

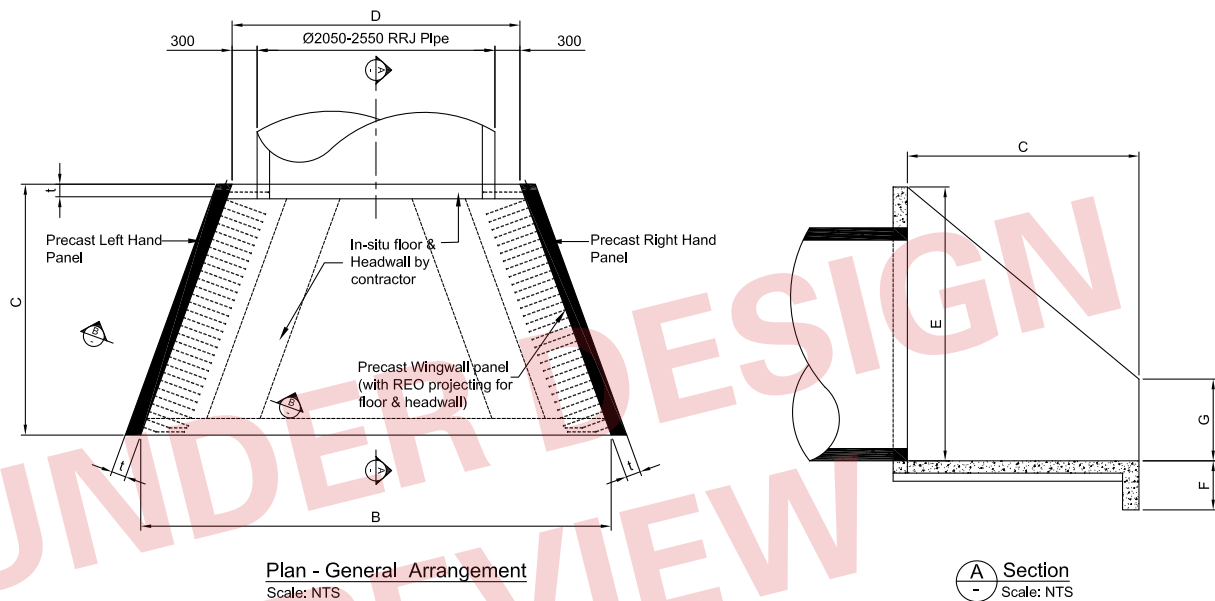


TABLE 2 Wingwall Panels

Product Code	Nomi- nal Dia (mm)	Wingwall Type	Ø A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	G (mm)	t (mm)	Mass (kg)	Lifting Anchor Load Group	Opening Type
WW2050L/ WW2050R	2050 -2100	Standard	Insitu	5169	3007	2980	2700	600	1000	150	2570 (Each)	2x2HPAWF	
WW2300L/ WW2300R	2300	Standard	Insitu	5419	3007	3230	3130	600	1000	175	3200 (Each)	2x7HPAWF	
WW2500L/ WW2500R	2500	Standard	Insitu	5639	3007	3450	3350	600	1000	175	3800 (Each)	2x2HPAWF	

Notes:

The load group specifies the maximum lifting capacity or Working Load Limit (WLL) of the lifting clutch expressed in tonnes

Lifting anchors provided for installation purposes.

*5kPa for products with Nominated * on table 1

**50yrs products with Nominated ** on table 1

Lifting and Handling

All Hynds Wingwalls feature certified concrete lifting anchor systems, designed and tested to guarantee safe and secure handling.

Hynds Pipe Systems has designed and manufactured Hynds Wingwalls with a minimum dynamic factor of 1.2. This dynamic factor requires that all the following conditions are observed when lifting, moving or placing the Wingwalls:

1. Lifting with mobile plant (*such as an excavator or similar*) where equipment is specifically exempt from the requirements of the PECPR Regulations 1999, subject to the conditions outlined in the New Zealand Gazette, No. 104, September 2015 and
2. Lifting, travelling and placing over rough or uneven ground where anchor failure is not anticipated to cause harm or injury, by adopting procedures such as:
 - a. Transporting the element as close as practical to ground level (300mm recommended)
 - b. Establishing and maintaining exclusion zones
 - c. Transporting only precast concrete elements that are unlikely to topple if they were to hit the ground
 - d. Inspecting lifting anchors both after transportation and before final lifting into place
3. All Hynds concrete lifting anchor systems are engineered in accordance with Haeussler specifications, ensuring full compatibility with Reid, Deha, CLS, and Ancon lifting clutches, as well as recess formers, across corresponding load ranges.

Refer to "Safe work with precast concrete - Handling, transportation and erection of precast concrete elements" published by Worksafe New Zealand (October 2018)

Shock loads resulting from travelling with suspended Wingwalls over rough terrain and uneven ground may exceed design, dynamic and safety factors of the lifting systems. It is essential that care is taken during lifting and transporting as additional stresses could result in anchor failure.

Multiple Barrels

- Multiple barrel wingwalls are easily constructed using special split wingwalls.
- Manufactured as a single unit with the same dimensions as the standard wingwalls, multiple barrel wingwalls incorporate special reinforcement and a pre-formed groove for splitting the wingwall on site.

Multiple Barrels Installation for Product Code WW1050.SPLIT

- Place the special split wingwall close to its final location.
- Split the wingwall into two halves – cutting the concrete using the pre-formed groove as a guide.
- Place each half on the outside of the outer barrels of the multi-barrel culvert (refer to Figure 3).
- Fit the reinforcement between the two precast halves (refer to Figure 4).
- Shutter and concrete the in-situ strip between the two precast halves.
- Remove shutters and clean up to complete the wingwall (refer to Figure 5).

Multiple Barrels Installation for Product Codes WW1350.SPLIT and WW1800.SPLIT

- Lift and place the special split wingwall with props (Figure 2) close to its final location by using spreader beam and four chains or four long chains. Refer to DWG. No. T3766-5 (for product code WW1050.SPLIT) and DWG. No. T3759-5 (for product code WW1800.SPLIT) for lifting details.
- Split the wingwall into two halves by cutting the concrete using the pre-formed groove as a guide. The props should not be removed during cutting.
- Lift split half unit with the props in place, using three legged long chains and place the split half unit on the outside of the outer barrels of the multi-barrel culvert. Refer to DWG. No. T3766-5 (for product code WW1050.SPLIT) and DWG. No. T3759-5 (for product code WW1800.SPLIT) for lifting details.
- Fit the reinforcement between the two precast halves (refer to Figure 4).
- Shutter and concrete the in-situ strip between two precast halves.
- Remove shutters, props and clean up to complete the wingwall (refer to Figure 5).
- Return props to nearest Hynds Branch.

Note: Contact your nearest Hynds sales branch for DWG. No. T3766-5 and DWG. No. T3759-5

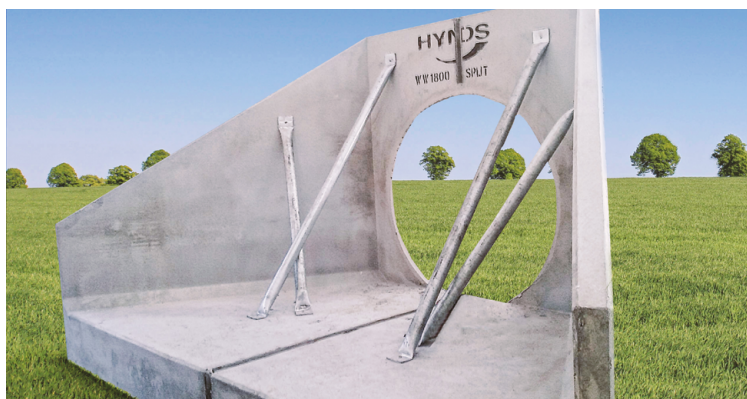


FIG. 2 Wingwall with Props



FIG. 3 Multi-Barrel Culvert Wingwalls



FIG. 4 In situ reinforced concrete



FIG. 5 Final Product

Branches Nationwide *Support Office & Technical Services 0800 93 7473*

Disclaimer: While every effort has been made to ensure that the information in this document is correct and accurate, users of Hynds product or information within this document must make their own assessment of suitability for their particular application. Product dimensions are nominal only, and should be verified if critical to a particular installation. No warranty is either expressed, implied, or statutory made by Hynds unless expressly stated in any sale and purchase agreement entered into between Hynds and the user.

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