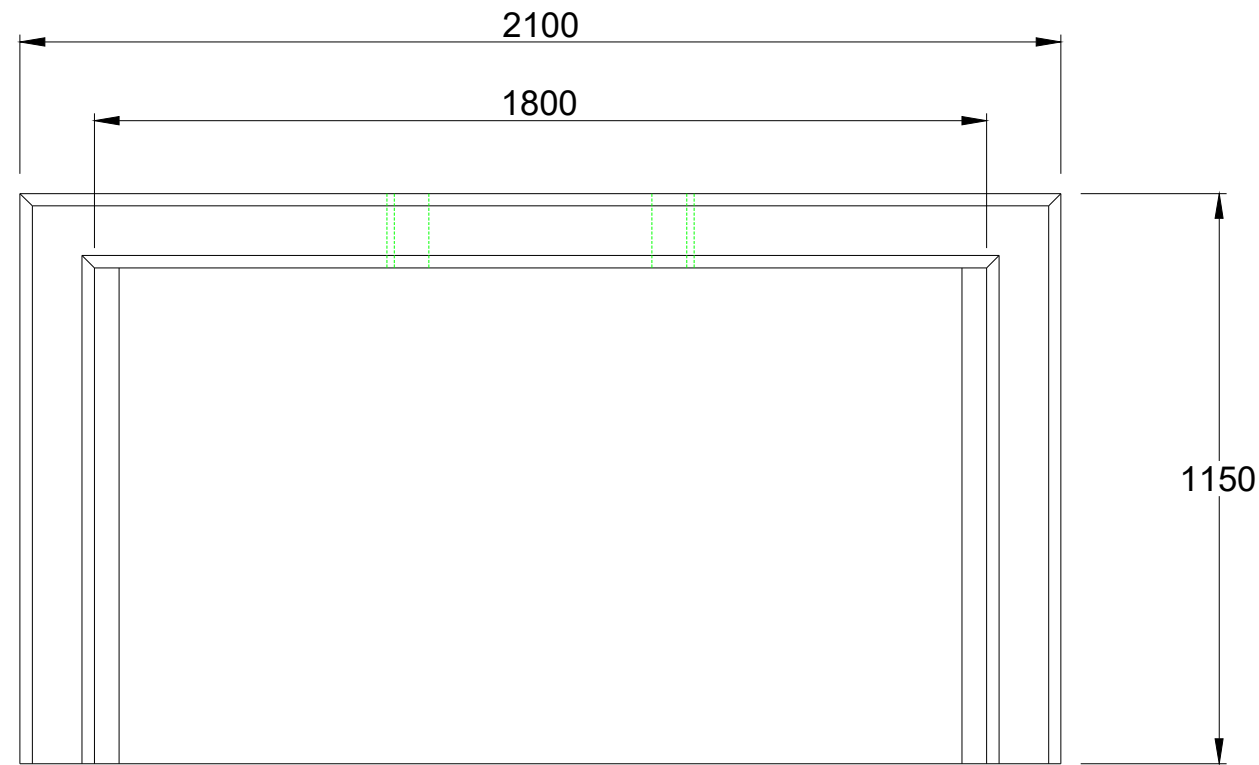
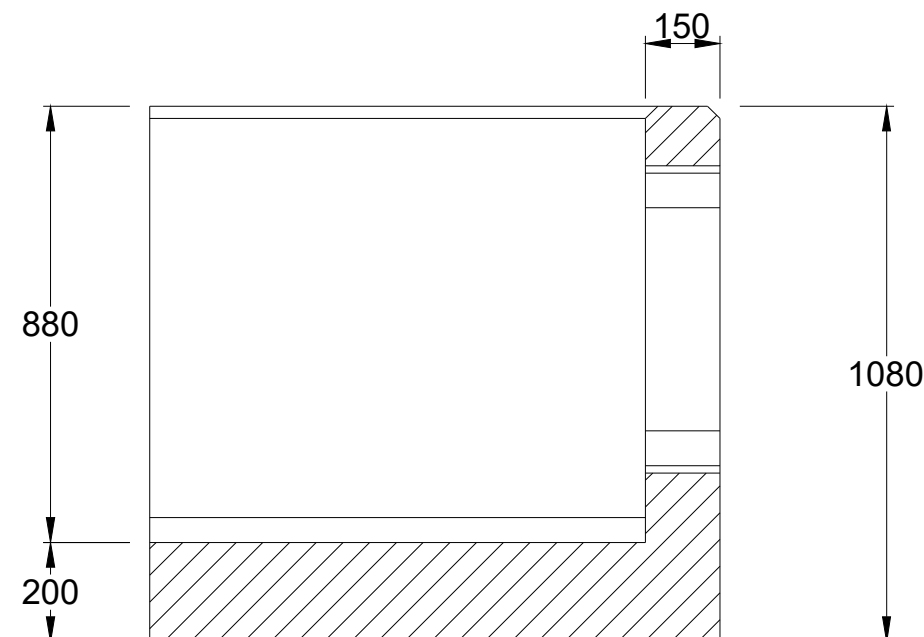
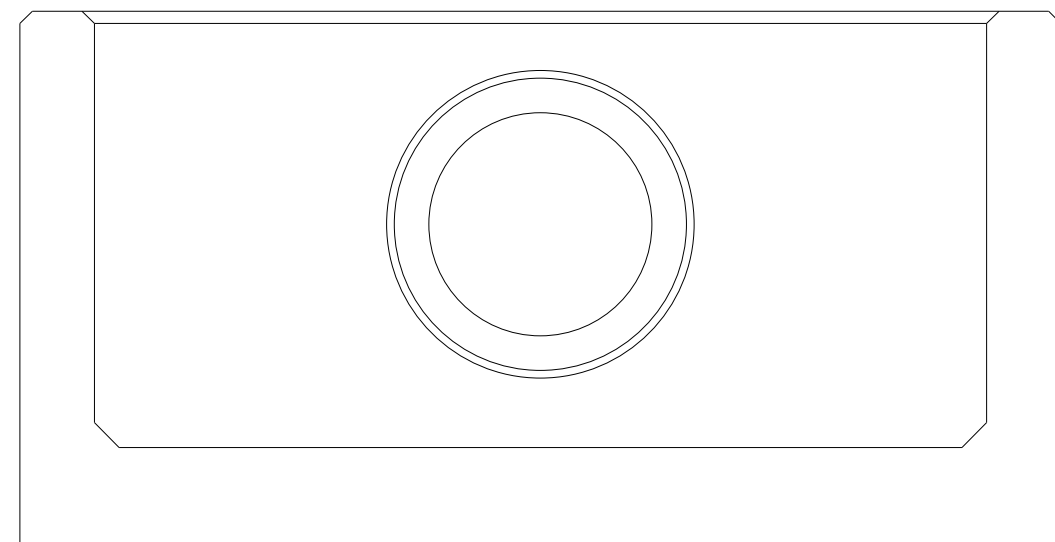
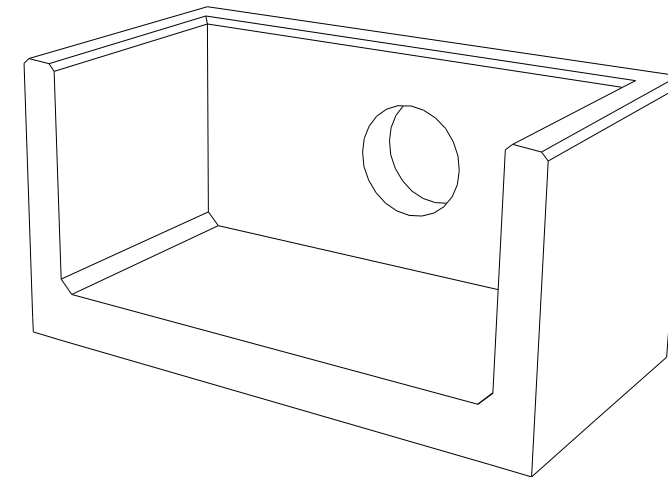


Opening in back wall cast to suit the outside diameter of the pipe at invert height required.



Note: Isometric drawing is for reference only, details may not accurately represent actual design - please see detailed views for technical information



NOTES:

- All dimensions in mm
- All measurements ± 1mm

Specification Information

- Opening in back wall cast to suit outside diameter of the pipework
- Invert level of pipe can be set to your specification

Headwall Installation

Units should be bedded on minimum 150mm thick well compacted Class 6N or 6K* well graded granular material with a 50mm topping of fine material (Class 6L*) to ensure units are level and stable.

*Manual of contract documents for Highway Works: Volume (MCHW1) specification for Highway Works, Series 600 (Nov 09).

Handling

- A. Weight of concrete is based on 2.4 tonne/m³+5% is recommended for sizing lifting equipment.
- B. All lifting points shall be used as specified below
- C. Unit to be lifted as per lifting diagram

Concrete

- A. Mix ref: Self-compacting DC4/DS4 Mix
- B. Lifting strength based on 2 cubes = 20N/mm²
- C. Characteristic 28 day cube strength = 50N/mm²
- D. Concrete provides Design Chemical Class 4 (DC4) to special Digest 1, Table F2.

Reinforcement

- A. Reinforcement to BS EN 13369
- B. Scheduling, dimensioning, bending & cutting to BS8666
- C. Cage to be machine tied with steel wire

Manufacture

- A. Manufacture to BS EN 15258:2008 precast concrete products - Retaining wall elements, Factory Production Control certificate number: 0086-CPR-650448 & BS EN 13369
- B. Tolerances to BS EN 13369 clause 4.3.1.1
- C. Finishing:

Class	Top	Sides	Base	Rear of back wall
	A	A	A	Self - Levelled

- D. Marking: Units shall be indelibly marked to show:

- Mould reference code
- De-mould date
- Job reference number & unique product number
- Unit weight (kg)

Design

- A. Concrete design to EC2
- B. Althon have designed the concrete units only, the site conditions should be assessed for suitability by the scheme designer
- C. Units are designed to withstand a vertical live load surcharge of 10kN/m²
- D. Weight of soil = 18kN/m²
- E. Angle of internal friction = 30 Deg.
- F. Design Life: >120 years

*For products installed in aggressive environments, bitumen coating can be requested at additional cost

Min Cover	Cover Block Size (mm)	Min Cover Size (mm)	Max Cover Size (mm)
All Faces	55	50	63

Exposure Classification	Exposure induced by Carbonation	Corrosion induced by Chloride	Freeze/thaw	Chemical attack
All Faces	XC3/4	XD3	XF4	XA3

Fabrication Specification

- A. Manufacture IAW EN 1090-2 EXC CLASS 1
- B. Material grade is to be: BS EN 10025 S275
- C. Welding carried out IAW EN 1090-2 PARA 7.5.4 - 7.5.18
- D. All fillet and butt welds to have a minimum throat thickness of 6mm & joints to be fully welded where possible.
- E. Ensure vertical flats are fully welded both sides where possible.
- F. All sharp edges and burrs are to be removed.
- G. Remove all weld splatter.
- H. Holes by punching are permitted with reaming.
- I. Galvanising is carried out after fabrication to BS EN ISO 1461

Handrail Specification

- A. Kee Klamp®, Galvanised Size 8 Fittings
- B. Size 8 48.3mm OD 3.2mm Wall Thickness Galvanised Medium Duty Tube to BS EN 10255
- C. 360N/m Design Load at stated in BS 8118, BS 6180, BS 6399 & BS 7818, Civil Engineering Specification for the Water Industry (CESWI) 7th Edition Clause 2.60 Handrails & Balusters & The Engineering Equipment and Materials Users' Association (EEMUA) Publication 105 7th Edition Factory Stairways, Ladders and Handrails
- D. Other design loads available on request
- E. GRP/FRP Handrails also available

REV NO	DATE	DESCRIPTION
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DRAWING TITLE / PROJECT:

R18A 00 1150 Headwall

CLIENT:

SCALE:	PAPER:	SHEET NO:	DATE:
NTS	A3	01 OF 01	12.04.2023

HEADWALL WEIGHT:	TOE WEIGHT:
2460kg	N/A

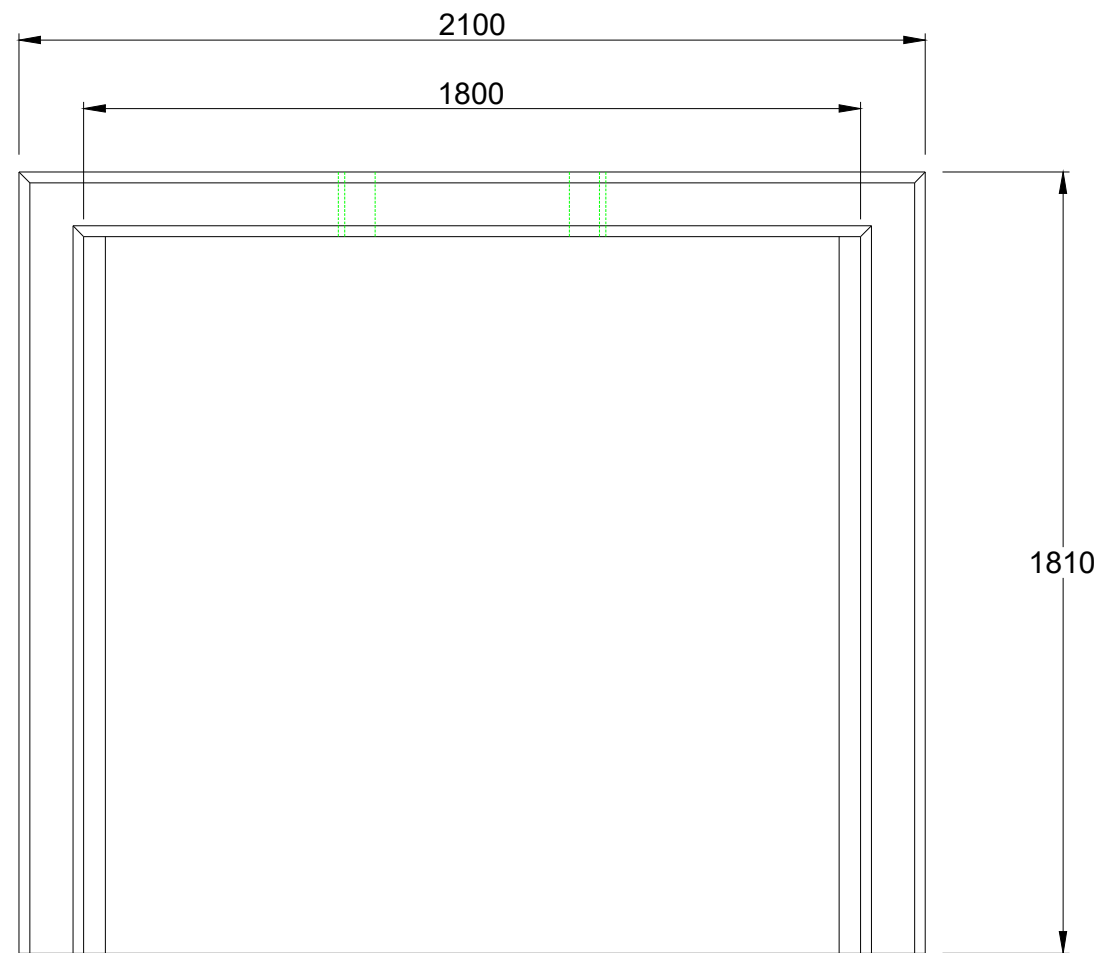
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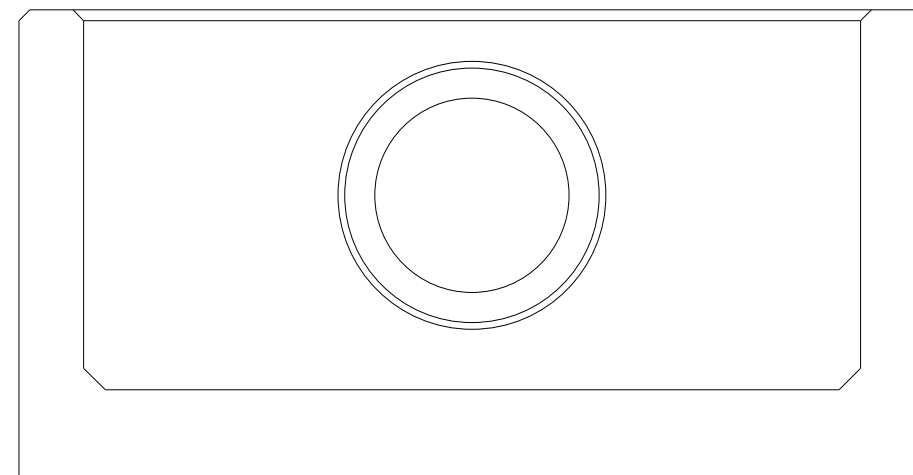
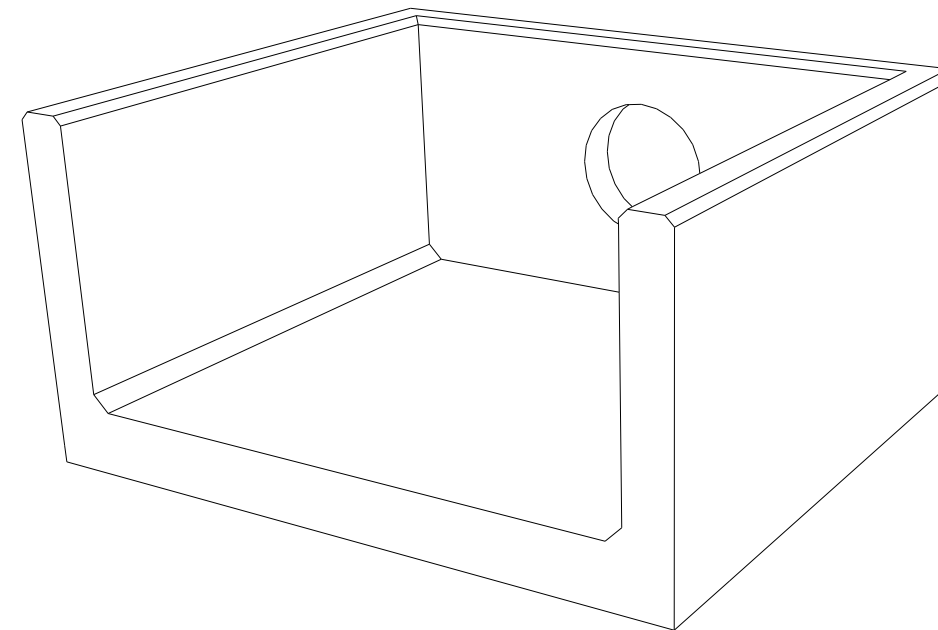


DO NOT SCALE DRAWING

Opening in back wall cast to suit the outside diameter of the pipe at invert height required.



Note: Isometric drawing is for reference only, details may not accurately represent actual design - please see detailed views for technical information



NOTES:

- All dimensions in mm
- All measurements ± 1 mm

Specification Information

- Opening in back wall cast to suit outside diameter of the pipework
- Invert level of pipe can be set to your specification

Headwall Installation

Units should be bedded on minimum 150mm thick well compacted Class 6N or 6K* well graded granular material with a 50mm topping of fine material (Class 6L*) to ensure units are level and stable.

*Manual of contract documents for Highway Works: Volume (MCHW1) specification for Highway Works, Series 600 (Nov 09).

Handling

- A. Weight of concrete is based on 2.4 tonne/m³+5% is recommended for sizing lifting equipment.
- B. All lifting points shall be used as specified below
- C. Unit to be lifted as per lifting diagram

Concrete

- A. Mix ref: Self-compacting DC4/DS4 Mix
- B. Lifting strength based on 2 cubes = 20N/mm²
- C. Characteristic 28 day cube strength = 50N/mm²
- D. Concrete provides Design Chemical Class 4 (DC4) to special Digest 1, Table F2.

Reinforcement

- A. Reinforcement to BS EN 13369
- B. Scheduling, dimensioning, bending & cutting to BS8666
- C. Cage to be machine tied with steel wire

Manufacture

- A. Manufacture to BS EN 15258:2008 precast concrete products - Retaining wall elements, Factory Production Control certificate number: 0086-CPR-650448 & BS EN 13369
- B. Tolerances to BS EN 13369 clause 4.3.1.1
- C. Finishing:

Class	Top	Sides	Base	Rear of back wall
	A	A	A	Self - Levelled

- D. Marking: Units shall be indelibly marked to show:

- Mould reference code
- De-mould date
- Job reference number & unique product number
- Unit weight (kg)

Design

- A. Concrete design to EC2
- B. Althon have designed the concrete units only, the site conditions should be assessed for suitability by the scheme designer
- C. Units are designed to withstand a vertical live load surcharge of 10kN/m²
- D. Weight of soil = 18kN/m²
- E. Angle of internal friction = 30 Deg.
- F. Design Life: >120 years

*For products installed in aggressive environments, bitumen coating can be requested at additional cost

Min Cover	Cover Block Size (mm)	Min Cover Size (mm)	Max Cover Size (mm)
All Faces	55	50	63

Exposure Classification	Exposure induced by Carbonation	Corrosion induced by Chloride	Freeze/thaw attack	Chemical attack
All Faces	XC3/4	XD3	XF4	XA3

Fabrication Specification

- A. Manufacture IAW EN 1090-2 EXC CLASS 1
- B. Material grade is to be: BS EN 10025 S275
- C. Welding carried out IAW EN 1090-2 PARA 7.5.4 - 7.5.18
- D. All fillet and butt welds to have a minimum throat thickness of 6mm & joints to be fully welded where possible.
- E. Ensure vertical flats are fully welded both sides where possible.
- F. All sharp edges and burrs are to be removed.
- G. Remove all weld splatter.
- H. Holes by punching are permitted with reaming.
- I. Galvanising is carried out after fabrication to BS EN ISO 1461

Handrail Specification

- A. Kee Klamp®, Galvanised Size 8 Fittings
- B. Size 8 48.3mm OD 3.2mm Wall Thickness Galvanised Medium Duty Tube to BS EN 10255
- C. 360N/m Design Load at stated in BS 8118, BS 6180, BS 6399 & BS 7818, Civil Engineering Specification for the Water Industry (CESWI) 7th Edition Clause 2.60 Handrails & Balusters & The Engineering Equipment and Materials Users' Association (EEMUA) Publication 105 7th Edition Factory Stairways, Ladders and Handrails
- D. Other design loads available on request
- E. GRP/FRP Handrails also available

REV NO	DATE	DESCRIPTION
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DRAWING TITLE / PROJECT:

R18A 00 1810 Headwall

CLIENT:

SCALE:	PAPER:	SHEET NO:	DATE:
NTS	A3	01 OF 01	12.04.2023

HEADWALL WEIGHT:	TOE WEIGHT:
3545kg	N/A

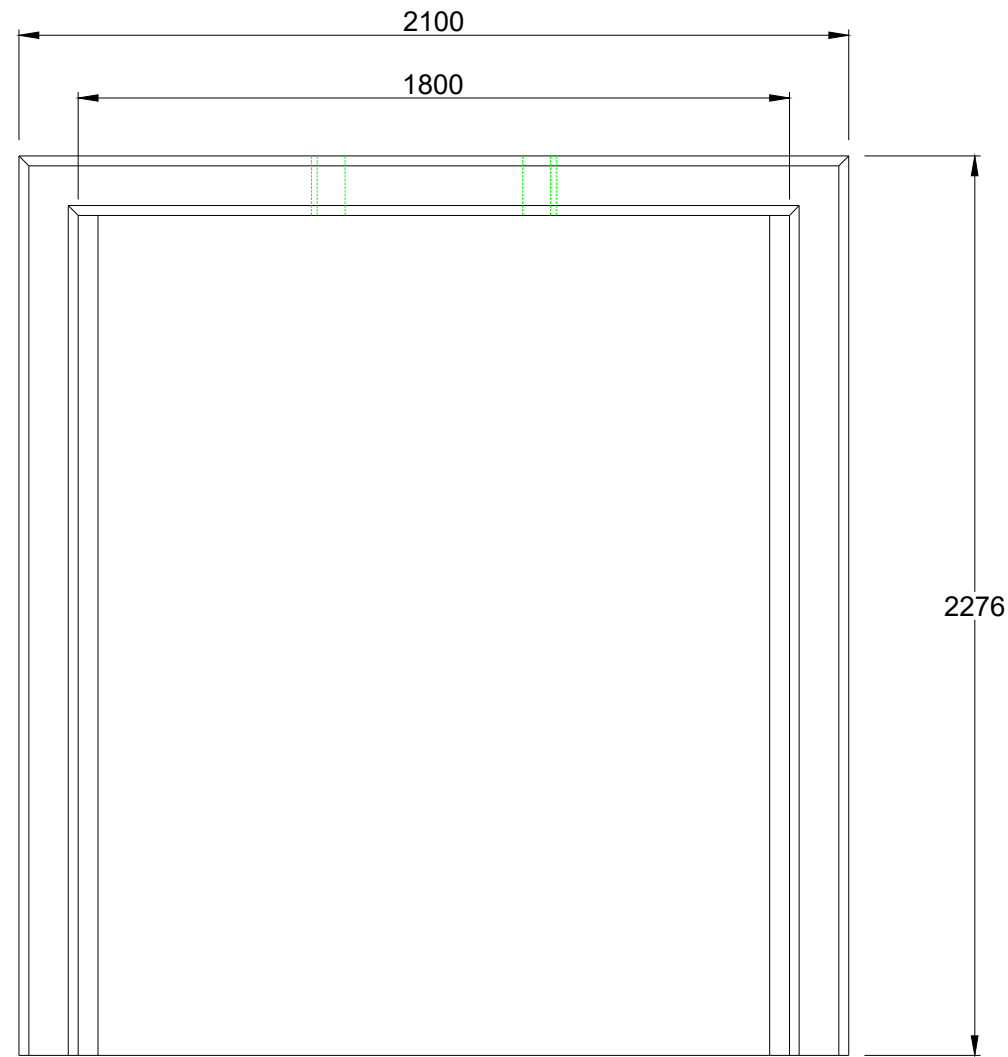
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N/A	N/A	JW

DRAWING No:

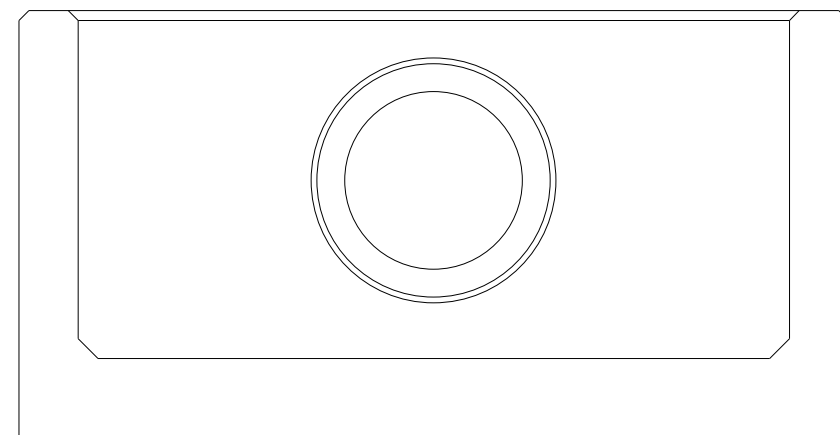
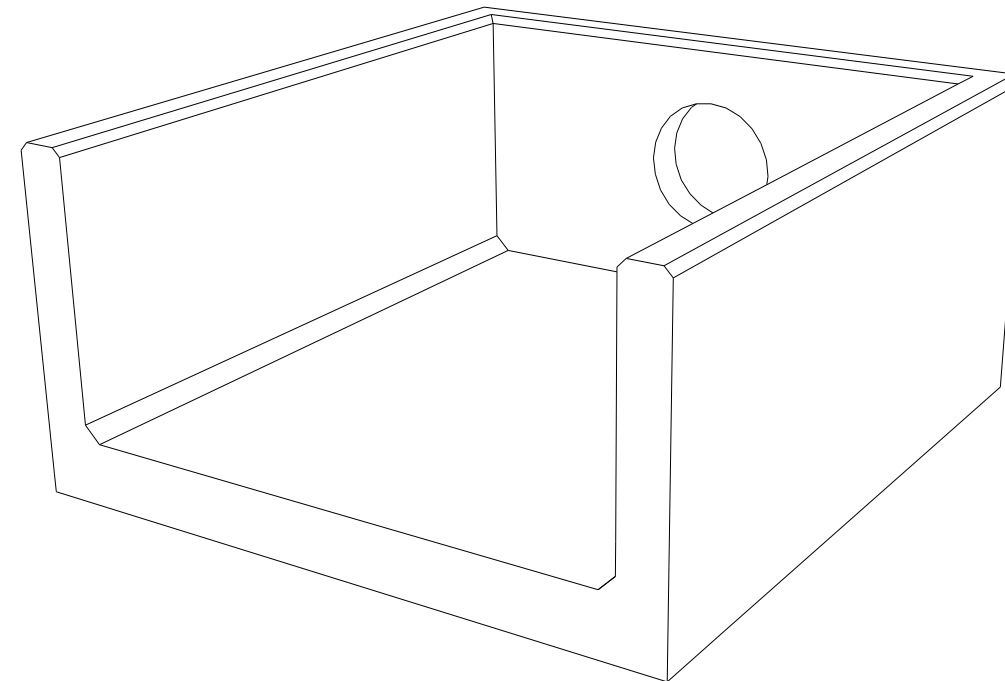
DO NOT SCALE DRAWING



Opening in back wall cast to suit the outside diameter of the pipe at invert height required.



Note: Isometric drawing is for reference only, details may not accurately represent actual design - please see detailed views for technical information



NOTES:

- All dimensions in mm
- All measurements ± 1 mm

Specification Information

- Opening in back wall cast to suit outside diameter of the pipework
- Invert level of pipe can be set to your specification

Headwall Installation

Units should be bedded on minimum 150mm thick well compacted Class 6N or 6K* well graded granular material with a 50mm topping of fine material (Class 6L*) to ensure units are level and stable.

*Manual of contract documents for Highway Works: Volume (MCHW1) specification for Highway Works, Series 600 (Nov 09).

Handling

- A. Weight of concrete is based on 2.4 tonne/m³+5% is recommended for sizing lifting equipment.
- B. All lifting points shall be used as specified below
- C. Unit to be lifted as per lifting diagram

Concrete

- A. Mix ref: Self-compacting DC4/DS4 Mix
- B. Lifting strength based on 2 cubes = 20N/mm²
- C. Characteristic 28 day cube strength = 50N/mm²
- D. Concrete provides Design Chemical Class 4 (DC4) to special Digest 1, Table F2.

Reinforcement

- A. Reinforcement to BS EN 13369
- B. Scheduling, dimensioning, bending & cutting to BS8666
- C. Cage to be machine tied with steel wire

Manufacture

- A. Manufacture to BS EN 15258:2008 precast concrete products - Retaining wall elements, Factory Production Control certificate number: 0086-CPR-650448 & BS EN 13369
- B. Tolerances to BS EN 13369 clause 4.3.1.1
- C. Finishing:

Class	Top	Sides	Base	Rear of back wall
	A	A	A	Self - Levelled

- D. Marking: Units shall be indelibly marked to show:

- Mould reference code
- De-mould date
- Job reference number & unique product number
- Unit weight (kg)

Design

- A. Concrete design to EC2
- B. Althon have designed the concrete units only, the site conditions should be assessed for suitability by the scheme designer
- C. Units are designed to withstand a vertical live load surcharge of 10kN/m²
- D. Weight of soil = 18kN/m³
- E. Angle of internal friction = 30 Deg.
- F. Design Life: >120 years

*For products installed in aggressive environments, bitumen coating can be requested at additional cost

Min Cover	Cover Block Size (mm)	Min Cover Size (mm)	Max Cover Size (mm)
All Faces	55	50	63

Exposure Classification	Exposure induced by Carbonation	Corrosion induced by Chloride	Freeze/thaw attack	Chemical attack
All Faces	XC3/4	XD3	XF4	XA3

Fabrication Specification

- A. Manufacture IAW EN 1090-2 EXC CLASS 1
- B. Material grade is to be: BS EN 10025 S275
- C. Welding carried out IAW EN 1090-2 PARA 7.5.4 - 7.5.18
- D. All fillet and butt welds to have a minimum throat thickness of 6mm & joints to be fully welded where possible.
- E. Ensure vertical flats are fully welded both sides where possible.
- F. All sharp edges and burrs are to be removed.
- G. Remove all weld splatter.
- H. Holes by punching are permitted with reaming.
- I. Galvanising is carried out after fabrication to BS EN ISO 1461

Handrail Specification

- A. Kee Klamp®, Galvanised Size 8 Fittings
- B. Size 8 48.3mm OD 3.2mm Wall Thickness Galvanised Medium Duty Tube to BS EN 10255
- C. 360N/m Design Load at stated in BS 8118, BS 6180, BS 6399 & BS 7818, Civil Engineering Specification for the Water Industry (CESWI) 7th Edition Clause 2.60 Handrails & Balusters & The Engineering Equipment and Materials Users' Association (EEMUA) Publication 105 7th Edition Factory Stairways, Ladders and Handrails
- D. Other design loads available on request
- E. GRP/FRP Handrails also available

REV NO	DATE	DESCRIPTION
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DRAWING TITLE / PROJECT:

R18A 00 2270 Headwall

CLIENT:

SCALE:	PAPER:	SHEET NO:	DATE:
NTS	A3	01 OF 01	12.04.2023

HEADWALL WEIGHT:	TOE WEIGHT:
4310kg	N/A

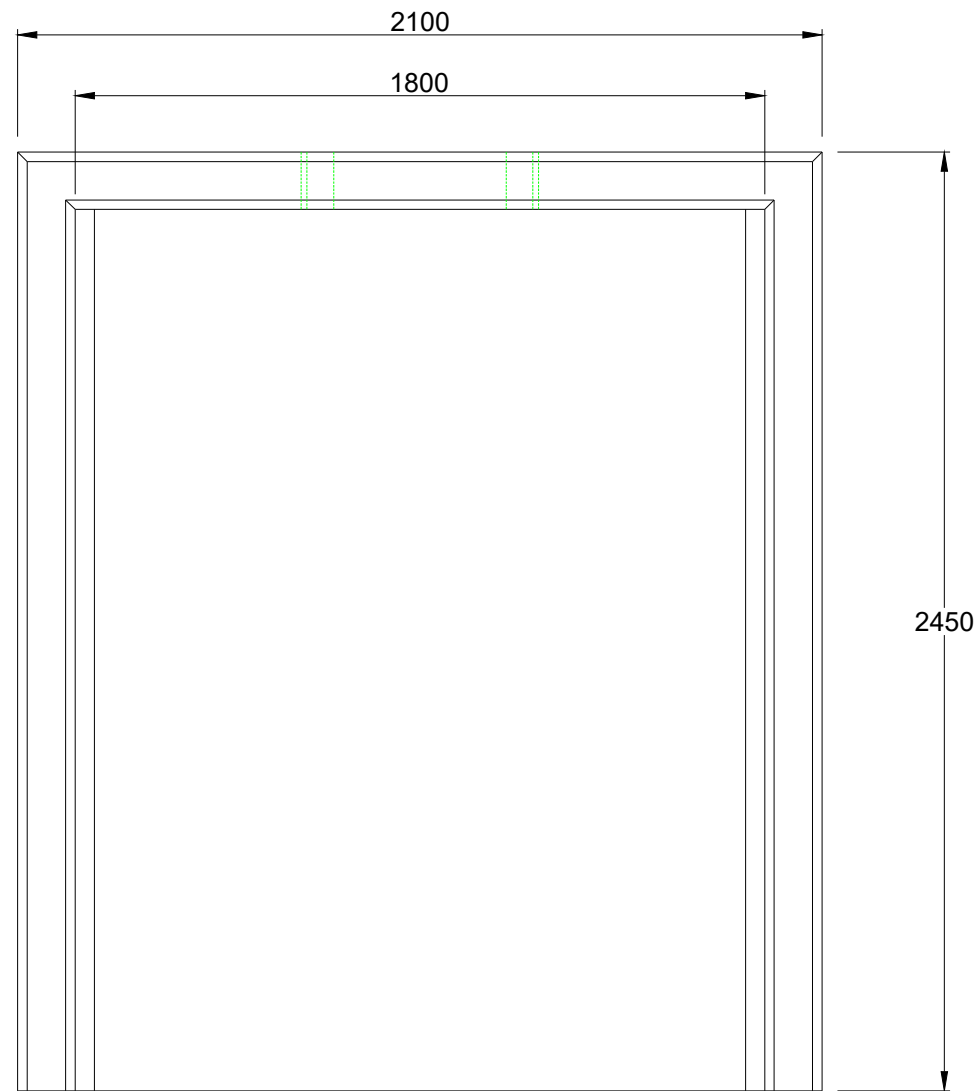
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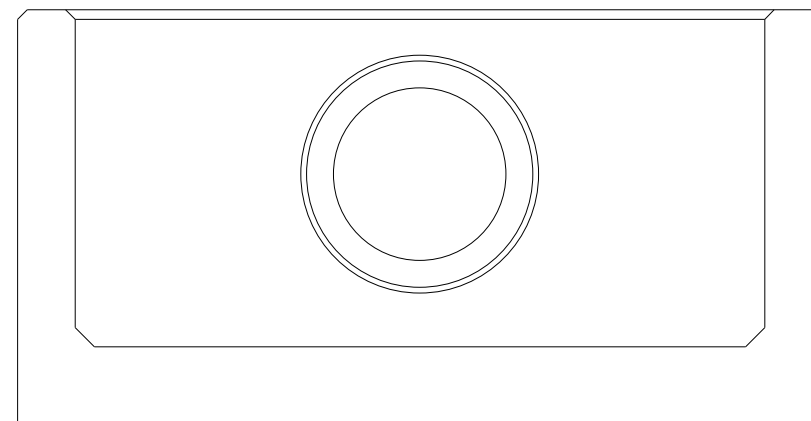
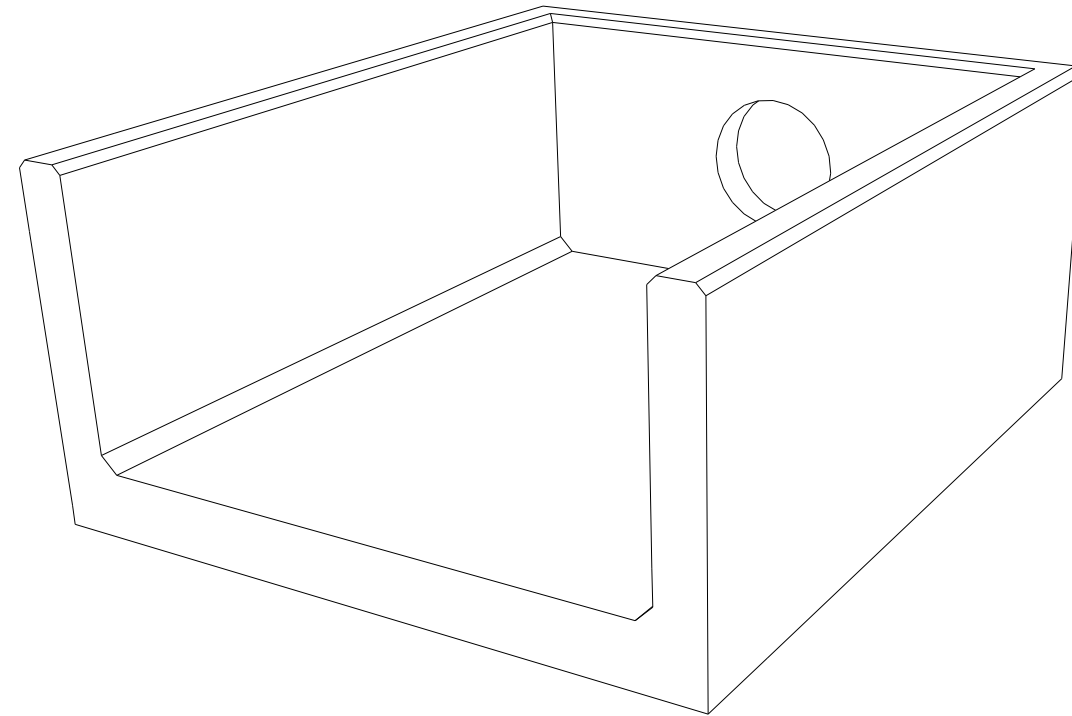


DO NOT SCALE DRAWING

Opening in back wall cast to suit the outside diameter of the pipe at invert height required.



Note: Isometric drawing is for reference only, details may not accurately represent actual design - please see detailed views for technical information



NOTES:

- All dimensions in mm
- All measurements ± 1mm

Specification Information

- Opening in back wall cast to suit outside diameter of the pipework
- Invert level of pipe can be set to your specification

Headwall Installation

Units should be bedded on minimum 150mm thick well compacted Class 6N or 6K* well graded granular material with a 50mm topping of fine material (Class 6L*) to ensure units are level and stable.

*Manual of contract documents for Highway Works: Volume (MCHW1) specification for Highway Works, Series 600 (Nov 09).

Handling

- A. Weight of concrete is based on 2.4 tonne/m³+5% is recommended for sizing lifting equipment.
- B. All lifting points shall be used as specified below
- C. Unit to be lifted as per lifting diagram

Concrete

- A. Mix ref: Self-compacting DC4/DS4 Mix
- B. Lifting strength based on 2 cubes = 20N/mm²
- C. Characteristic 28 day cube strength = 50N/mm²
- D. Concrete provides Design Chemical Class 4 (DC4) to special Digest 1, Table F2.

Reinforcement

- A. Reinforcement to BS EN 13369
- B. Scheduling, dimensioning, bending & cutting to BS8666
- C. Cage to be machine tied with steel wire

Manufacture

- A. Manufacture to BS EN 15258:2008 precast concrete products - Retaining wall elements, Factory Production Control certificate number: 0086-CPR-650448 & BS EN 13369
- B. Tolerances to BS EN 13369 clause 4.3.1.1
- C. Finishing:

Class	Top	Sides	Base	Rear of back wall
	A	A	A	Self - Levelled

- D. Marking: Units shall be indelibly marked to show:

- Mould reference code
- De-mould date
- Job reference number & unique product number
- Unit weight (kg)

Design

- A. Concrete design to EC2
- B. Althon have designed the concrete units only, the site conditions should be assessed for suitability by the scheme designer
- C. Units are designed to withstand a vertical live load surcharge of 10kN/m²
- D. Weight of soil = 18kN/m³
- E. Angle of internal friction = 30 Deg.
- F. Design Life: >120 years

*For products installed in aggressive environments, bitumen coating can be requested at additional cost

Min Cover	Cover Block Size (mm)	Min Cover Size (mm)	Max Cover Size (mm)
All Faces	55	50	63

Exposure Classification	Exposure induced by Carbonation	Corrosion induced by Chloride	Freeze/thaw	Chemical attack
All Faces	XC3/4	XD3	XF4	XA3

Fabrication Specification

- A. Manufacture IAW EN 1090-2 EXC CLASS 1
- B. Material grade is to be: BS EN 10025 S275
- C. Welding carried out IAW EN 1090-2 PARA 7.5.4 - 7.5.18
- D. All fillet and butt welds to have a minimum throat thickness of 6mm & joints to be fully welded where possible.
- E. Ensure vertical flats are fully welded both sides where possible.
- F. All sharp edges and burrs are to be removed.
- G. Remove all weld splatter.
- H. Holes by punching are permitted with reaming.
- I. Galvanising is carried out after fabrication to BS EN ISO 1461

Handrail Specification

- A. Kee Klamp®, Galvanised Size 8 Fittings
- B. Size 8 48.3mm OD 3.2mm Wall Thickness Galvanised Medium Duty Tube to BS EN 10255
- C. 360N/m Design Load at stated in BS 8118, BS 6180, BS 6399 & BS 7818, Civil Engineering Specification for the Water Industry (CESWI) 7th Edition Clause 2.60 Handrails & Balusters & The Engineering Equipment and Materials Users' Association (EEMUA) Publication 105 7th Edition Factory Stairways, Ladders and Handrails
- D. Other design loads available on request
- E. GRP/FRP Handrails also available

REV NO	DATE	DESCRIPTION
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DRAWING TITLE / PROJECT:

R18A 00 2450 Headwall

CLIENT:

SCALE:	PAPER:	SHEET NO:	DATE:
NTS	A3	01 OF 01	12.04.2023

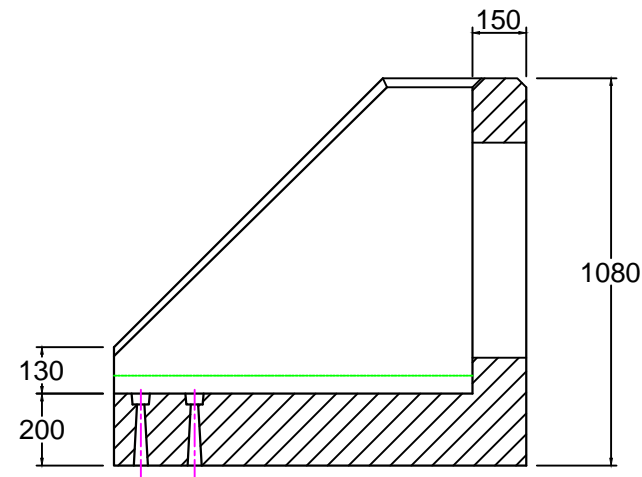
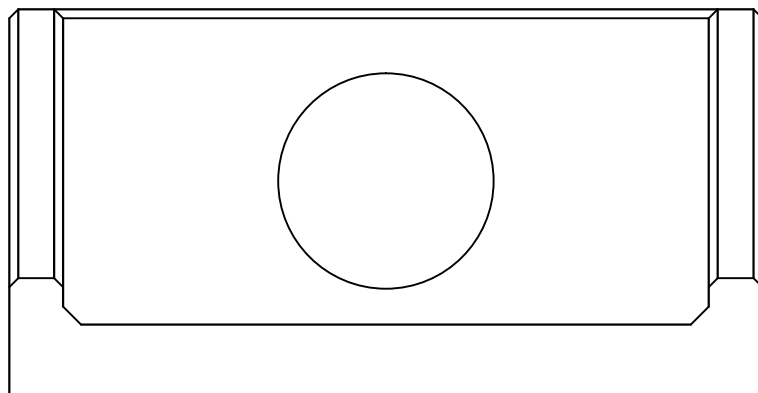
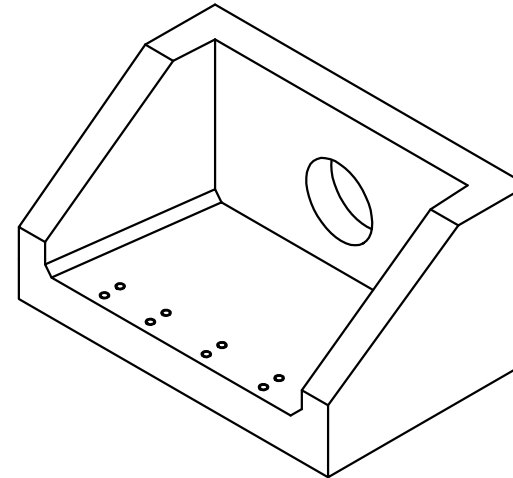
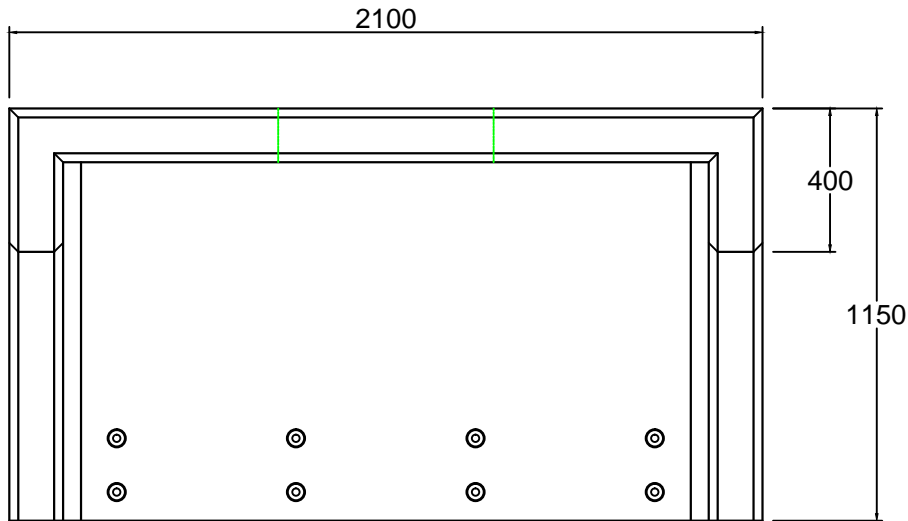
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4596kg	N/A

MISC WEIGHT:	GRATING WEIGHT:	DRAWN BY:
N/A	N/A	JW

DRAWING No:

DO NOT SCALE DRAWING





NOTES:

- All dimensions in mm
- All measurements ± 1 mm

Specification Information

- Opening in back wall cast to suit outside diameter of the pipework
- Invert level of pipe can be set to your specification

Headwall Installation

Units should be bedded on minimum 200mm thick well compacted Class 6A* selected well graded granular material.

*Manual of contract documents for Highway Works: Volume 1 (MCHW1) specification for Highway Works, Series 600 (Nov.09). Sit the headwall level or with a slight fall 1:50 from pipe to spill mouth.

Material: Reinforced concrete

Keel Klamp Specification Information

- Galvanised steel keel klamp handrail
 - 1100mm high above back wall
- GRP / FRP hand rails also available

REV NO:	DATE:	DESCRIPTION:
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DRAWING TITLE:

R18A 01 1150 Headwall

CLIENT:

SCALE:	PAPER:	DATE:
NTS	A4	14 - 11 - 17

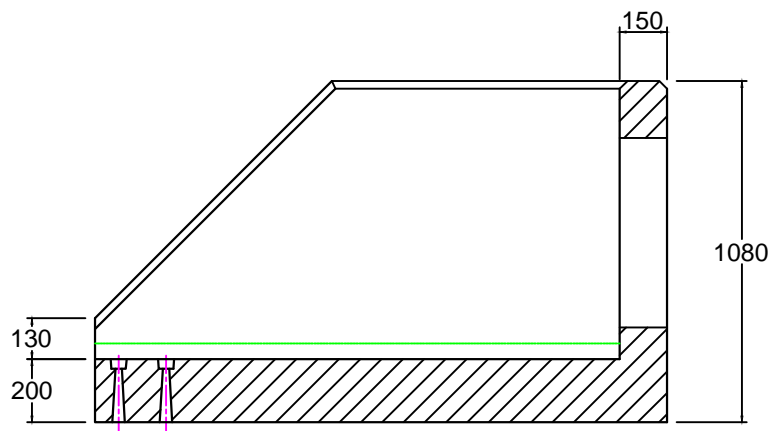
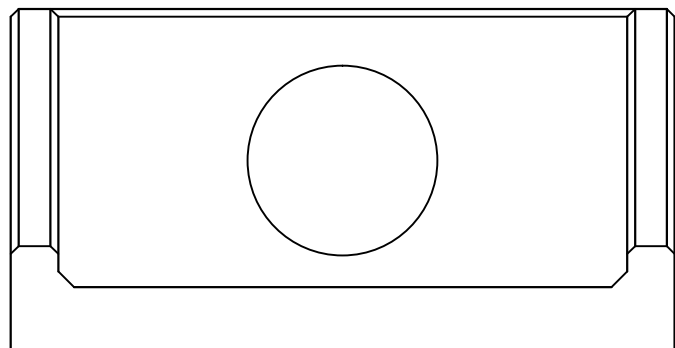
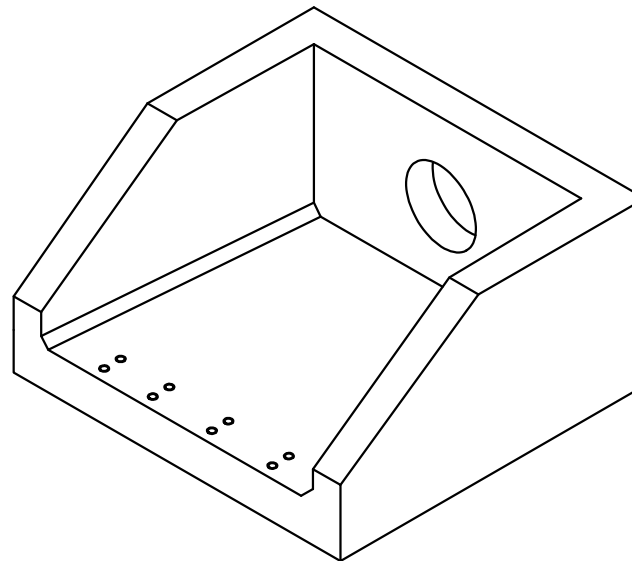
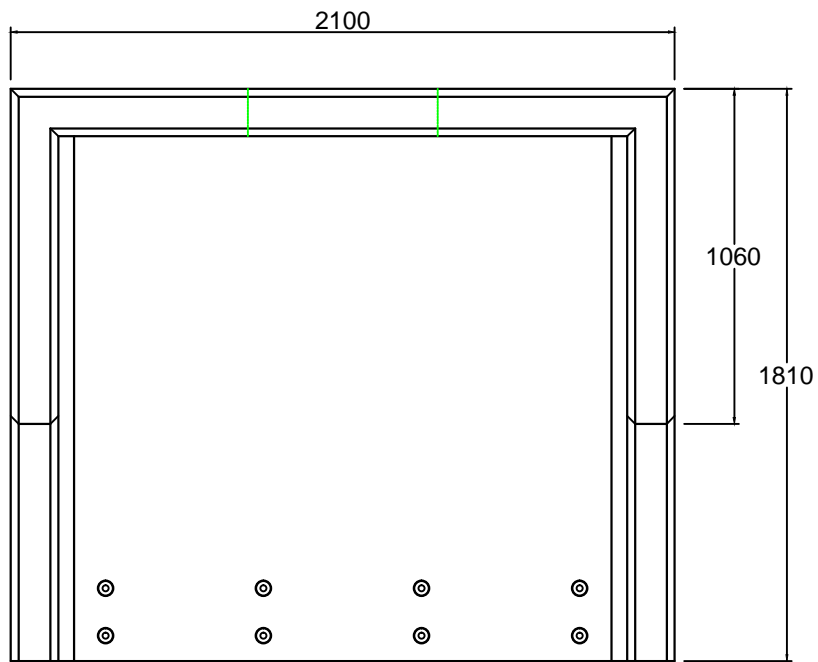
SHEET NO:	WEIGHT:
01 OF 01	2250kg

PRODUCT NAME:

R18A 01 1150

DRAWING No:

DO NOT SCALE DRAWING



NOTES:

- All dimensions in mm
- All measurements ± 1 mm

Specification Information

- Opening in back wall cast to suit outside diameter of the pipework
- Invert level of pipe can be set to your specification

Headwall Installation

Units should be bedded on minimum 200mm thick well compacted Class 6A* selected well graded granular material.

*Manual of contract documents for Highway Works: Volume 1 (MCHW1) specification for Highway Works, Series 600 (Nov.09).

Sit the headwall level or with a slight fall 1:50 from pipe to spill mouth.

Material: Reinforced concrete

Kee Klamp Specification Information

- Galvanised steel kee klamp handrail
 - 1100mm high above back wall
- GRP / FRP hand rails also available

REV NO:	DATE:	DESCRIPTION:
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DRAWING TITLE:

R18A 01 1810 Headwall

CLIENT:

SCALE:	PAPER:	DATE:
NTS	A4	14 - 11 - 17

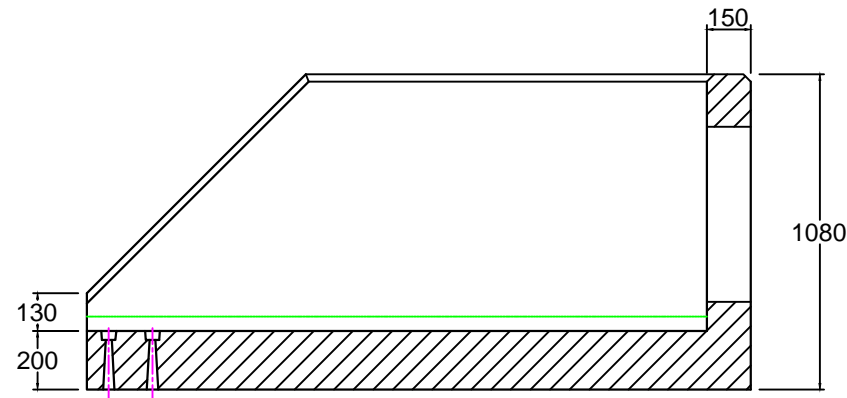
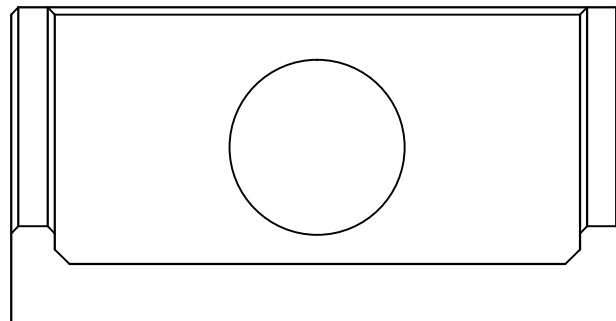
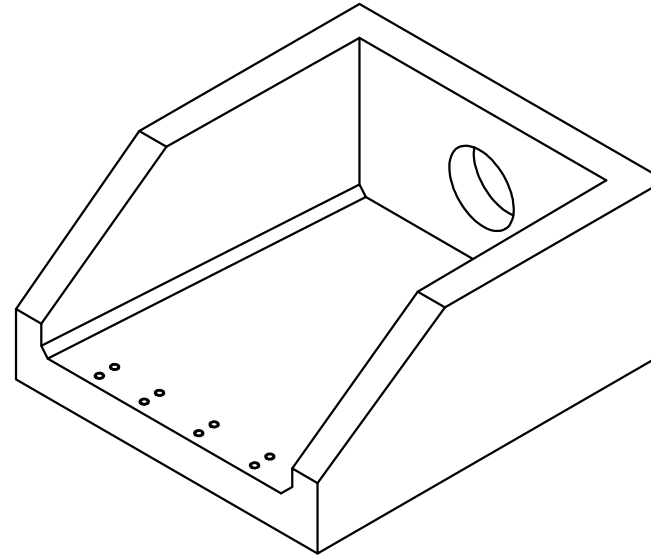
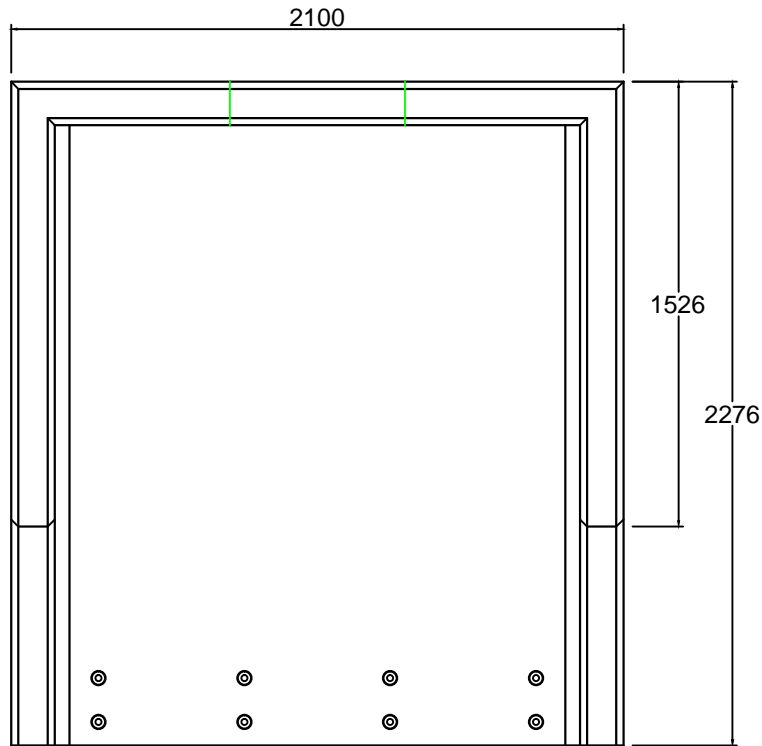
SHEET NO:	WEIGHT:
01 OF 01	3330kg

PRODUCT NAME:

R18A 01 1810

DRAWING No:

DO NOT SCALE DRAWING



NOTES:

- All dimensions in mm
- All measurements ± 1 mm

Specification Information

- Opening in back wall cast to suit outside diameter of the pipework
- Invert level of pipe can be set to your specification

Headwall Installation

Units should be bedded on minimum 200mm thick well compacted Class 6A* selected well graded granular material.

*Manual of contract documents for Highway Works: Volume 1 (MCHW1) specification for Highway Works, Series 600 (Nov.09).

Sit the headwall level or with a slight fall 1:50 from pipe to spill mouth.

Material: Reinforced concrete

Keel Klamp Specification Information

- Galvanised steel keel klamp handrail
 - 1100mm high above back wall
- GRP / FRP hand rails also available

REV NO:	DATE:	DESCRIPTION:
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ADDRESS: ALTHON LIMITED
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 EMAIL: sales@althon.co.uk
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DRAWING TITLE:

R18A 01 2270 Headwall

CLIENT:

SCALE:	PAPER:	DATE:
NTS	A4	14 - 11 - 17

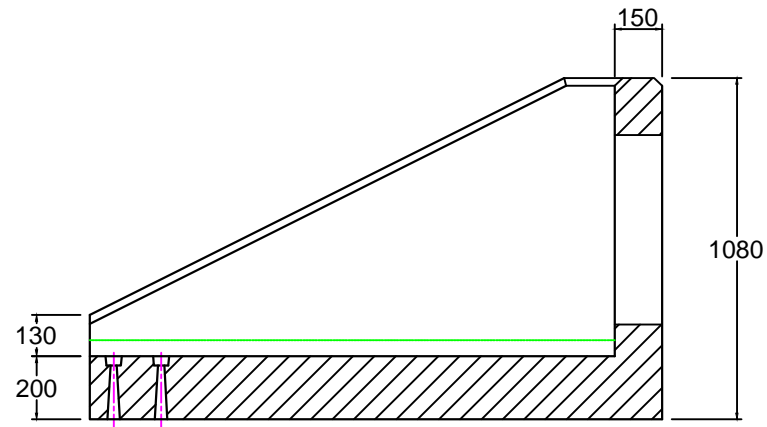
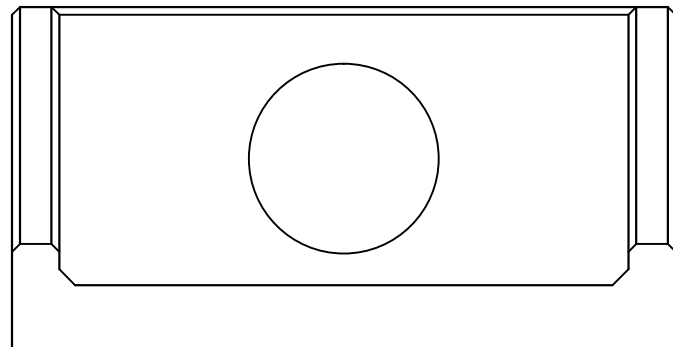
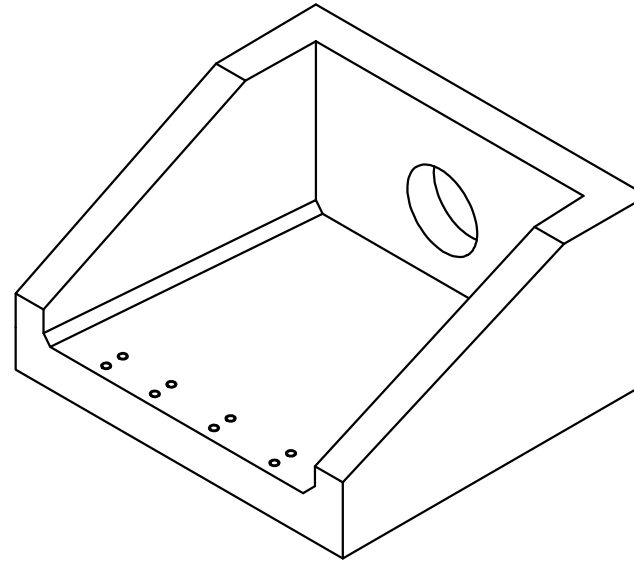
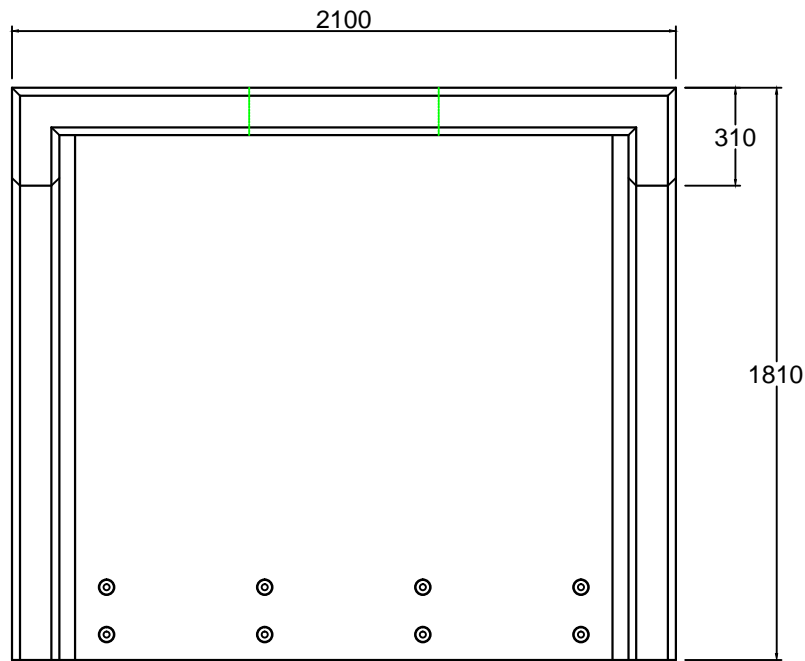
SHEET NO:	WEIGHT:
01 OF 01	4100kg

PRODUCT NAME:

R18A 01 2270

DRAWING No:

DO NOT SCALE DRAWING



NOTES:

- All dimensions in mm
- All measurements ± 1 mm

Specification Information

- Opening in back wall cast to suit outside diameter of the pipework
- Invert level of pipe can be set to your specification

Headwall Installation

Units should be bedded on minimum 200mm thick well compacted Class 6A* selected well graded granular material.

*Manual of contract documents for Highway Works: Volume 1 (MCHW1) specification for Highway Works, Series 600 (Nov.09).

Sit the headwall level or with a slight fall 1:50 from pipe to spill mouth.

Material: Reinforced concrete

Keel Klamp Specification Information

- Galvanised steel keel klamp handrail
 - 1100mm high above back wall
- GRP / FRP hand rails also available

REV NO:	DATE:	DESCRIPTION:
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DRAWING TITLE:

R18A 05 1810 Headwall

CLIENT:

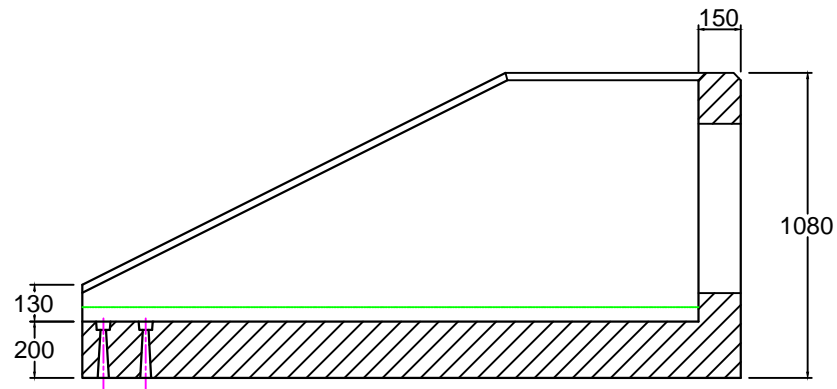
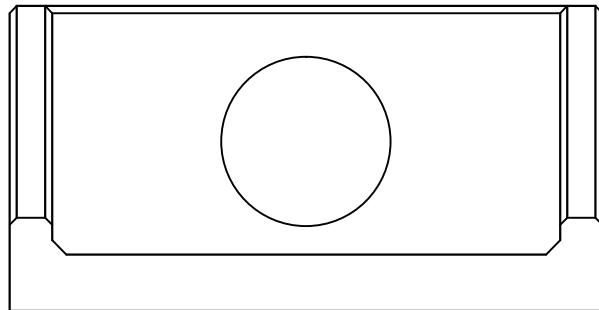
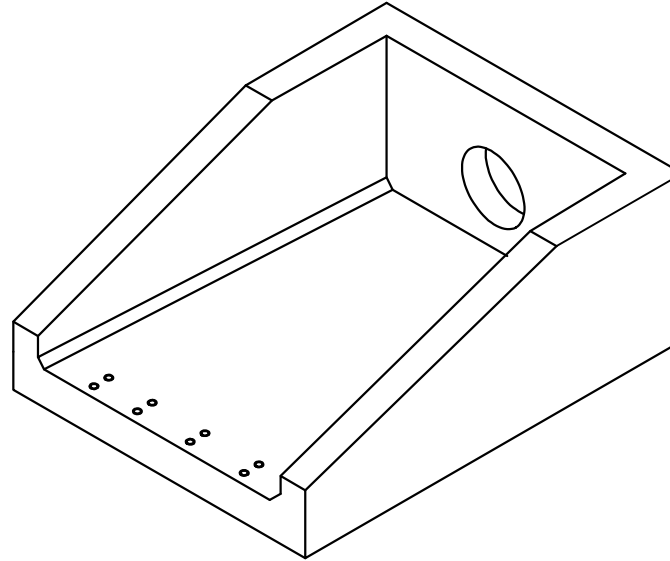
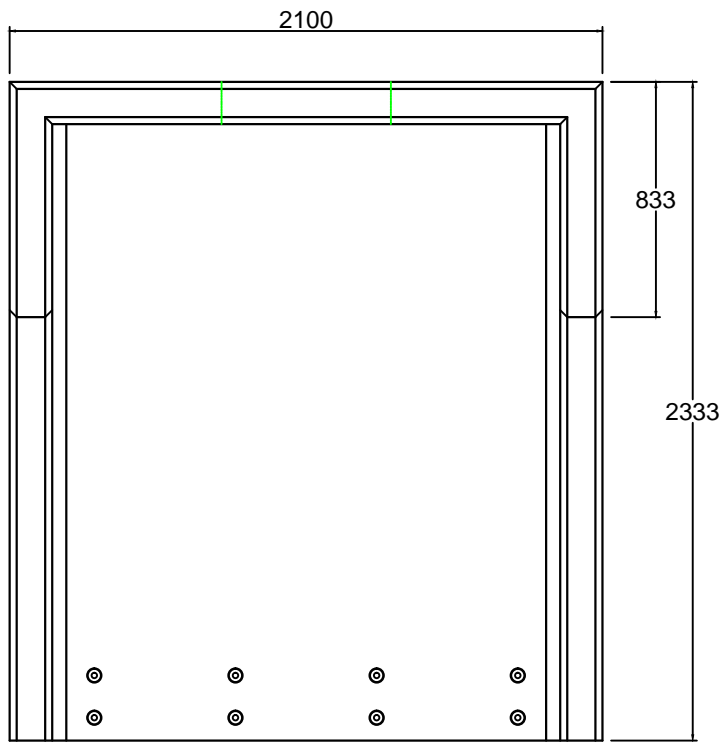
SCALE:	PAPER:	DATE:
NTS	A4	14 - 11 - 17

SHEET NO:	WEIGHT:
01 OF 01	3120kg

PRODUCT NAME:
R18A 05 1810

DRAWING No:

DO NOT SCALE DRAWING



NOTES:

- All dimensions in mm
- All measurements ± 1 mm

Specification Information

- Opening in back wall cast to suit outside diameter of the pipework
- Invert level of pipe can be set to your specification

Headwall Installation

Units should be bedded on minimum 200mm thick well compacted Class 6A* selected well graded granular material.

*Manual of contract documents for Highway Works: Volume 1 (MCHW1) specification for Highway Works, Series 600 (Nov.09).

Sit the headwall level or with a slight fall 1:50 from pipe to spill mouth.

Material: Reinforced concrete

Keel Klamp Specification Information

- Galvanised steel keel klamp handrail
 - 1100mm high above back wall
- GRP / FRP hand rails also available

REV NO:	DATE:	DESCRIPTION:



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DRAWING TITLE:

R18A 05 2330 Headwall

CLIENT:

SCALE:	PAPER:	DATE:
NTS	A4	14 - 11 - 17

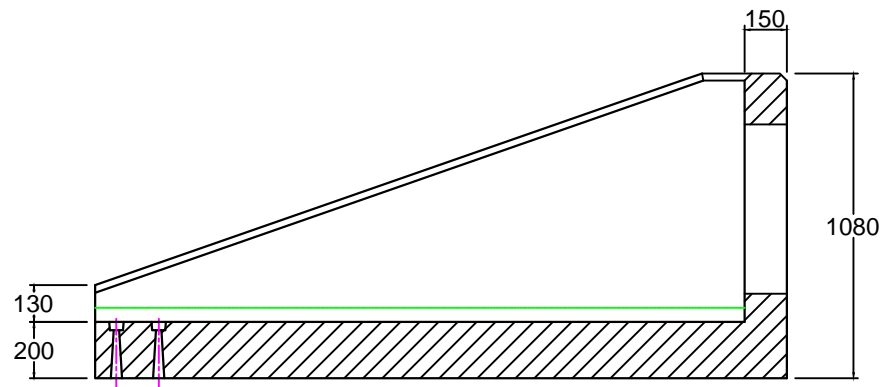
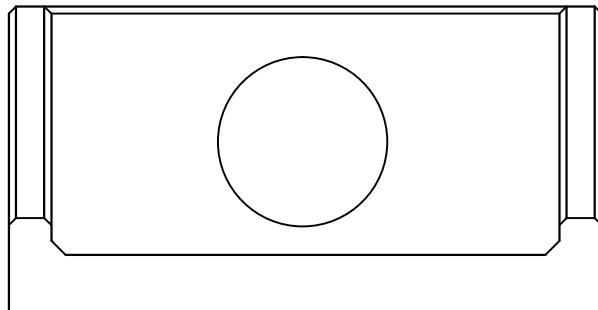
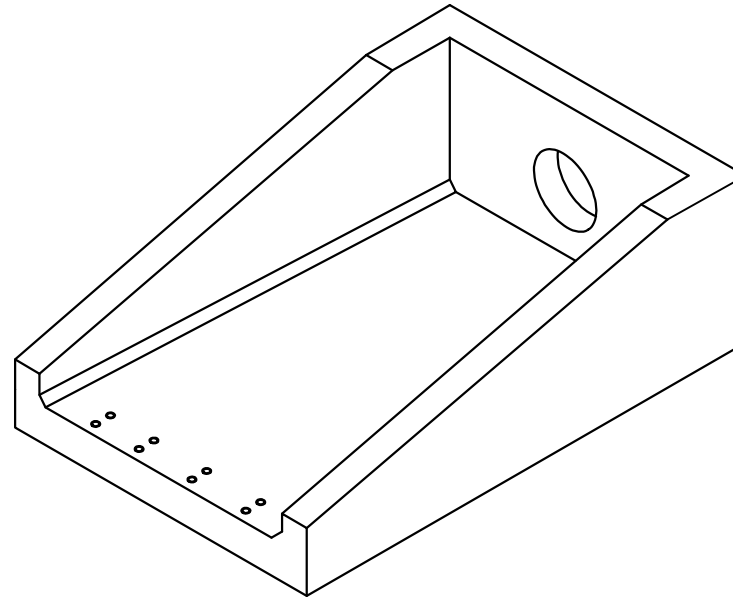
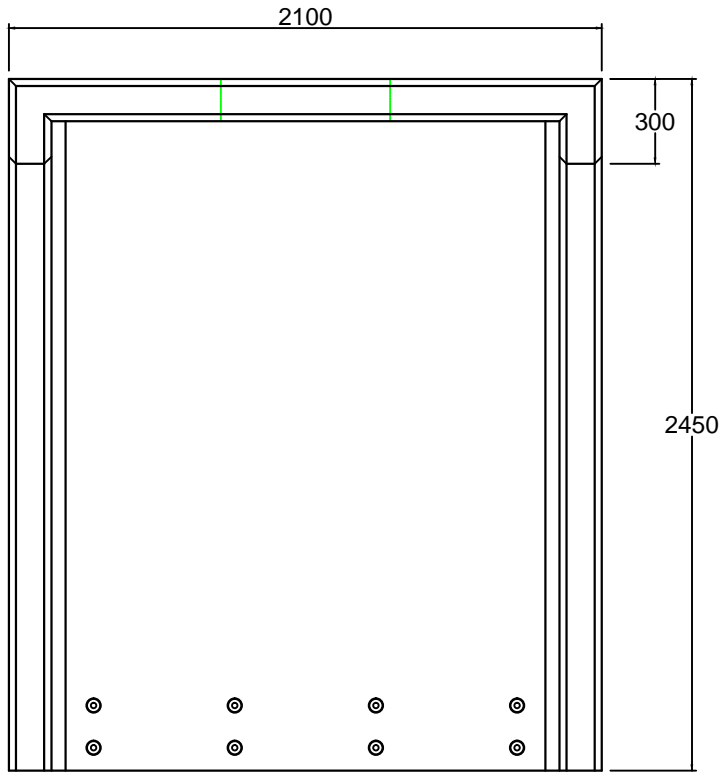
SHEET NO:	WEIGHT:
01 OF 01	3950kg

PRODUCT NAME:

R18A 05 2330

DRAWING No:

DO NOT SCALE DRAWING



DO NOT SCALE DRAWING

NOTES:

- All dimensions in mm
- All measurements \pm 1mm

Specification Information

- Opening in back wall cast to suit outside diameter of the pipework
- Invert level of pipe can be set to your specification

Headwall Installation

Units should be bedded on minimum 200mm thick well compacted Class 6A* selected well graded granular material.

*Manual of contract documents for Highway Works: Volume 1 (MCHW1) specification for Highway Works, Series 600 (Nov.09).

Sit the headwall level or with a slight fall 1:50 from pipe to spill mouth.

Material: Reinforced concrete

Kee Klamp Specification Information

- Galvanised steel kee klamp handrail
 - 1100mm high above back wall
- GRP / FRP hand rails also available

REV NO:	DATE:	DESCRIPTION:
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DRAWING TITLE:

R18A 10 2450 Headwall

CLIENT:

SCALE:	PAPER:	DATE:
NTS	A4	14 - 11 - 17

SHEET NO:	WEIGHT:
01 OF 01	4000kg

PRODUCT NAME:

R18A 10 2450

DRAWING No: