

ROMOLD DN1000 MANHOLE INSTALLATION INSTRUCTIONS



We would like to thank you for choosing the ROMOLD Manhole Chamber system.

With over 20 years of experience, and in excess of 1 million chamber components sold, ROMOLD is a world leader in the plastic manhole chamber industry. Attention to detail during development, design, and production, ensures that each product provides value in every aspect of its function.

We are sure that you will have a positive experience using ROMOLD product and look forward to working with you again on future projects.

Steve McDonald

Managing Director

Australasia Moulding Ltd

TABLE OF CONTENTS

Intent of Installation Instructions.....	3
Important safety instructions	3
Transport and storage.....	3
Quality Assurance.....	4
Product warranty.....	4
Liability for defects.....	4
Installation instructions.....	5
1. Setting the Base.....	5
Bedding	5
Reference Height.....	5
2. Assembling the Chamber	6
Base / Pipe Connection.....	6
Assembly of Manhole Elements	7
3. Backfill.....	8
Backfilling Materials	8
Backfilling and Compacting.....	8
Height Adjustment	9
Subsequent Pipe Connection to the Riser Element.....	10
Pipe Seal & Cup Saw Part Numbers	11
4. Finishing	12
Installation of the Cover.....	12
Installation Drawing	13
DN1000 Manhole Product Components	14
List of available Accessories.....	15
Appendix.....	16
Table of Materials & Compaction	16
Manhole Chamber Installation Quality Assurance Form.....	17

INTENT OF INSTALLATION INSTRUCTIONS

The ROMOLD DN1000 Manhole chamber is made from premium materials, using first-class manufacturing techniques, and includes design detail that will ensure an exceptional service life. The intention of these instructions is to clearly layout a process of installation that will ensure the product performs as intended for its full service life.

Step by step notes have been provided and in all cases the process has been considered to allow the use of common practices and to minimise the installation time.

It is important that these instructions are followed closely. Failure to install the product according to these instructions may result in the manufacturer's warranty being void.

IMPORTANT SAFETY INSTRUCTIONS

The ROMOLD DN1000 Manhole chamber is remarkable with regards to the weight of the product in comparison to traditional manhole chambers. The modular nature of the product further restricts the weight of individual components. This being said, to avoid strain related injuries always follow industry guidelines for safe lifting practices and avoid the temptation to lift more than is deemed acceptable.

When lifting components into confined spaces always ensure that the risk of injury due to impact or crush related actions is eliminated by staying clear of moving items.

The ROMOLD DN1000 Manhole chamber is designed to be assembled using no more than body weight forces. If you experience difficulties with any aspect of the installation please contact us to discuss appropriate methods for completing that process in a safe manner.

There is potential for trapped fumes in any sub-soil chamber. Confined space safety procedures should always be followed when entering chambers.

TRANSPORT AND STORAGE

It is strongly recommended that product is checked for completeness against order, and for damage at the time of delivery. If a shipment is damaged it must be signed as "damaged" on the delivery docket. If the driver is not willing to wait while this check takes place then it is recommended that a note is included on delivery docket stating, "subject to final inspection as driver would not wait". Any missing or damaged product should be reported to Australasia Moulding Ltd within 24 hours of delivery taking place.

ROMOLD DN1000 Manhole chamber elements should be stored on level ground. All supplied element seals must be stored packed, protected from frost and direct sunlight.

All components must be checked for damage or contamination before installation and if necessary cleaned or replaced. Damaged components may not be installed!

QUALITY ASSURANCE

Provided with the Installation Instructions is a Quality Assurance form. This document provides a means for those responsible for the installation to track the steps of the installation process and to communicate this compliance. It is recommended that this form is reviewed prior to the start of installation, and is used as a working document during the course of the process. Your regional Council may require this document to be completed and submitted as part of the process for asset ownership transfer.

You can find the Quality Assurance form in the appendix of this document.

PRODUCT WARRANTY

ROMOLD products are made in ISO9001 conditions using the best materials, practices and processes, with the intention of providing a quality product with world class performance. If any of your parts arrive in a state that does not meet with your expectations please contact us at your earliest convenience. We will endeavour to resolve your issue with the highest of priorities.

Australasia Moulding Ltd warrants that the Products will be free from defects in design, workmanship and materials, for a period of 3 months from the date of EXW delivery.

The above warranty liability is limited to shipment of good products that are required to replace defective products during the warranty period. Products required in order to replace defective items under warranty within the warranty period, shall be shipped charge-free, pending review of the defect by Australasia Moulding Ltd. Should Australasia Moulding Ltd so demand, the defective products that are replaced shall be put at the disposal of Australasia Moulding Ltd.

LIABILITY FOR DEFECTS

Liability for defects is precluded if the installation instructions are not complied with, unless the customer is able to provide evidence that they are not responsible. This also applies if installation parameters are not maintained post original installation. The installation instructions must be ensured permanently.

INSTALLATION INSTRUCTIONS

The installation of the ROMOLD DN1000 Manhole chamber is a simple process that can be broken down into the following steps:

1. Setting the Base
2. Assembling the chamber
3. Backfill
4. Finishing

Included in the appendix of this document is a table which sets out the type of materials suitable for bedding and backfill, and recommended compaction targets. It is recommended that this table is referenced in parallel to the following instructions.

1. SETTING THE BASE

Bedding

A minimum 100mm thickness of compacted bedding material is required below the base.

Ensure the bedding is level and flat.



Reference Height

Note that the height from the base surface of the Base component and the outlet pipe invert is 190mm for pre-benched Bases regardless of the pipe diameter.

2. ASSEMBLING THE CHAMBER

Base / Pipe Connection

The base shall be positioned on the prepared support area according to the connecting pipes.

The flow direction through the Base is indicated with an arrow on the sockets and channel.



The Base should be checked with a spirit level to ensure that it is sitting level on the bedding.

On pre-benched manhole chambers, all pipe connections are designed as sockets. The sockets are designed for PVC pipes conforming to AS/NZS1254 and AS/NZS1260. For the connection of other pipe materials PVC shorts and couplers should be used. (Note: changing material or using special couplers consider creating clearance in the bedding).

The standard grade through ROMOLD pre-benched chambers is 0.5%. This equates to 5mm of fall between inlet and outlet sockets.

The integrated seals in the sockets should be inspected for damage or contamination. Cleaning may be required prior to inserting the pipes.

The leading edge of the pipe should be chamfered to aid insertion. Prior to insertion it is good practice to mark a reference line on the pipe equivalent to the insertion depth.

Apply sufficient lubricant to the pipe and socket seal, and insert the pipe up to the dead stop in the socket.



For all sockets horizontal angles of $\pm 3.75^\circ$ or gradient changes up to 6.5% are possible. Direction and gradient changes at the same time will reduce the indicated maximum values accordingly.

Assembly of Manhole Elements

ROMOLD manhole elements are connected and sealed using an Element Seal. This seal is slipped onto the rib on the Manhole Base or Riser element, and then sandwiched with the Riser or Cone elements.

Prior to assembly thoroughly clean the Element Seal and apply sufficient lubricant. Check and clean the slot in the upper element as required.



Align all manhole elements according vertical marks on the outside of the Riser and Cone elements to ensure the alignment of the ladder.

To prevent an air-spring effect, a vent must be created using the 2mm cord provided (or similar). This should be laid over the seal in four positions prior to assembly, and removed once the elements are connected.

Modest body-weight forces are all that are required to compress the upper element over the seal.

Elements will be in the home position when no further downwards movement is detected and no air can be heard escaping through the vents.



3. BACKFILL

Backfilling Materials

It is important to ensure that non-cohesive, well-graded (all sizes of material), compressible materials are used for backfilling. The maximum particle size of rounded gravel material shall not exceed 32 mm, and 20 mm if broken material is used.

An AP20 material with a grading envelope which is heavy on fines (see TNZ M/4 spec) is considered to be ideal.

Backfilling and Compacting

Compacted backfill around the chamber is an important component of the assembly. It not only provides ballast to the chamber, but also protects the chamber from external loads.

The width for backfilling around the manhole must be at any point at least 40 cm. When installing the manholes in areas with high groundwater, for lift retention reasons, a backfilling width of at least 50 cm is to be maintained all around.

The area under and beside the pipe connection to the manhole needs to be carefully packed e.g. with a narrow hand rammer, with a minimum of 20 – 30 blows on each side. This will reduce risk of pipe or socket distortion and potential for leaks. Avoid over-compaction directly above the sockets.

The backfilling material is to be inserted carefully and in layers of 150 – 250 mm layer thickness and compacted with a medium vibrating stamper (wacker compactor) of approx. 50kg. The number of compacting passes required per layer depends on the backfilling material.

A minimum degree of compaction of MDD = 95 % according to AS1289 is to be established for the entire depths of the manhole.

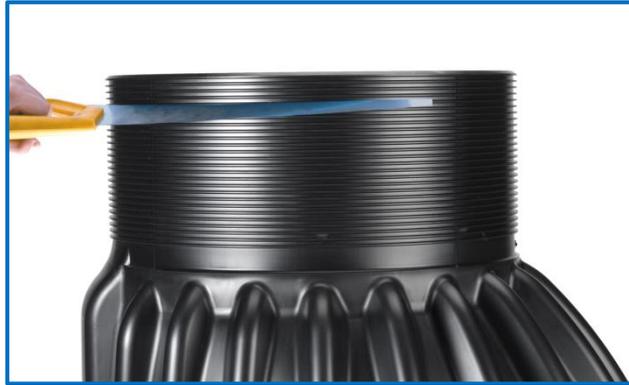


Installation Tip

Before pouring down the backfilling material, attach the Cone element (without seal) to the Base or the Riser and use a ROMOLD-PE construction-site cover (yellow) or a steel plate on the Cone for covering. Backfilling material can then be poured directly onto the lid, allowing even distribution around the manhole, whilst protecting the manhole from contamination. The Cone can then be removed and the next element assembled.

Height Adjustment

The height of the chamber assembly can be shortened by cutting the neck of the Cone element. ROMOLD DN1000 Manholes can be shortened to a maximum of 250mm. The cutting is to be done with a saw using the ribs on the neck of the Cone as a cutting guide. The ribs are arranged at an even distance of 1cm. The resulting cut should be deburred to smooth the edge.



Subsequent Pipe Connection to the Riser Element

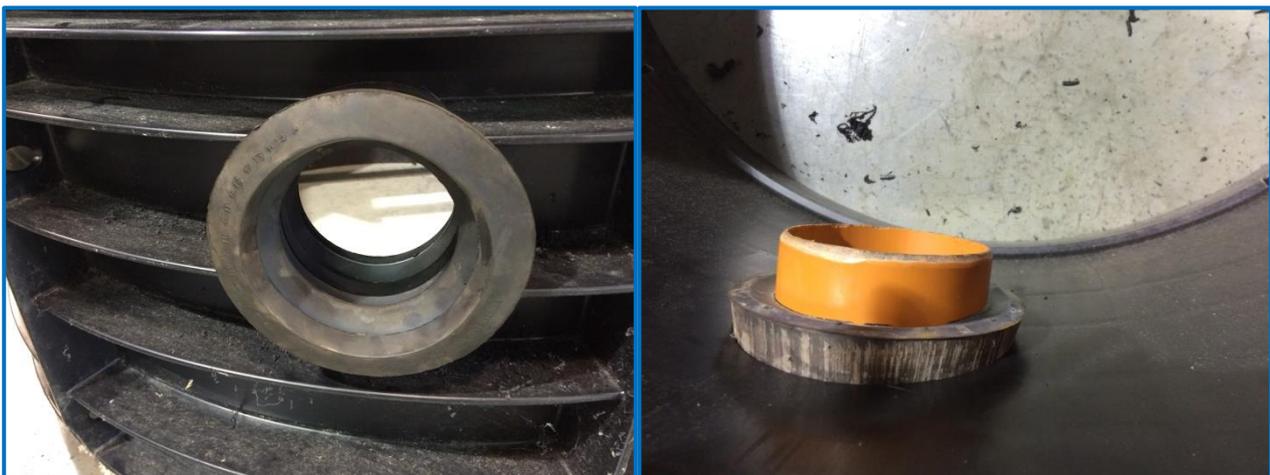
Pipe connections can be made into the Riser element. Specific seals are available for DN100, DN150 and DN175 pipe.

Using an electric hand drill with a ROMOLD cup saw, drill at the desired position through the wall of the Riser. Drilling in the area of a connecting element is not allowed.

De-burr the hole and insert the seal from the outside without using lubricant. The collar of the seal should rest up against the ribs on the outside of the manhole. Lubricate the spigot end of the pipe as well as the inside of the seal before inserting the pipe. A slight overlap on the inside surface should be created.

Care should be taken to position the lateral pipe connection such that the hole drilled does not interfere with the element seal.

Note: ROMOLD cup saws are made specifically to provide the correct diameter hole for the ROMOLD lateral pipe seal. Please do not attempt to use any other make of cup saw for this purpose.



Pipe Seal & Cup Saw Part Numbers

Part Number	Description of Component
I SB ISR 110	Lateral pipe seal for DN100 PVC pipe
CS-I 110/140	ROMOLD cup saw for I SB ISR 110 seal
I SB ISR 160	Lateral pipe seal for DN150 PVC pipe
CS-I 160/188	ROMOLD cup saw for I SB ISR 160 seal
I SB ISR 200	Lateral pipe seal for DN175 PVC pipe
CS-I 200/228	ROMOLD cup saw for I SB ISR 200 seal

Please contact us for more information: 0800 287 668

4. FINISHING

Installation of the Cover

The concrete Load Distribution Ring (LDR) conducts the traffic loads into the road foundation, decoupling it from the Manhole. It is important to ensure there is no direct load contact between LDR and the Manhole. An overlap of around 40mm should be allowed for between the neck of the Cone element and the LDR. If necessary a ROMOLD DN625 Element Seal can be used to create a water resistant seal between the LDR and the Manhole.

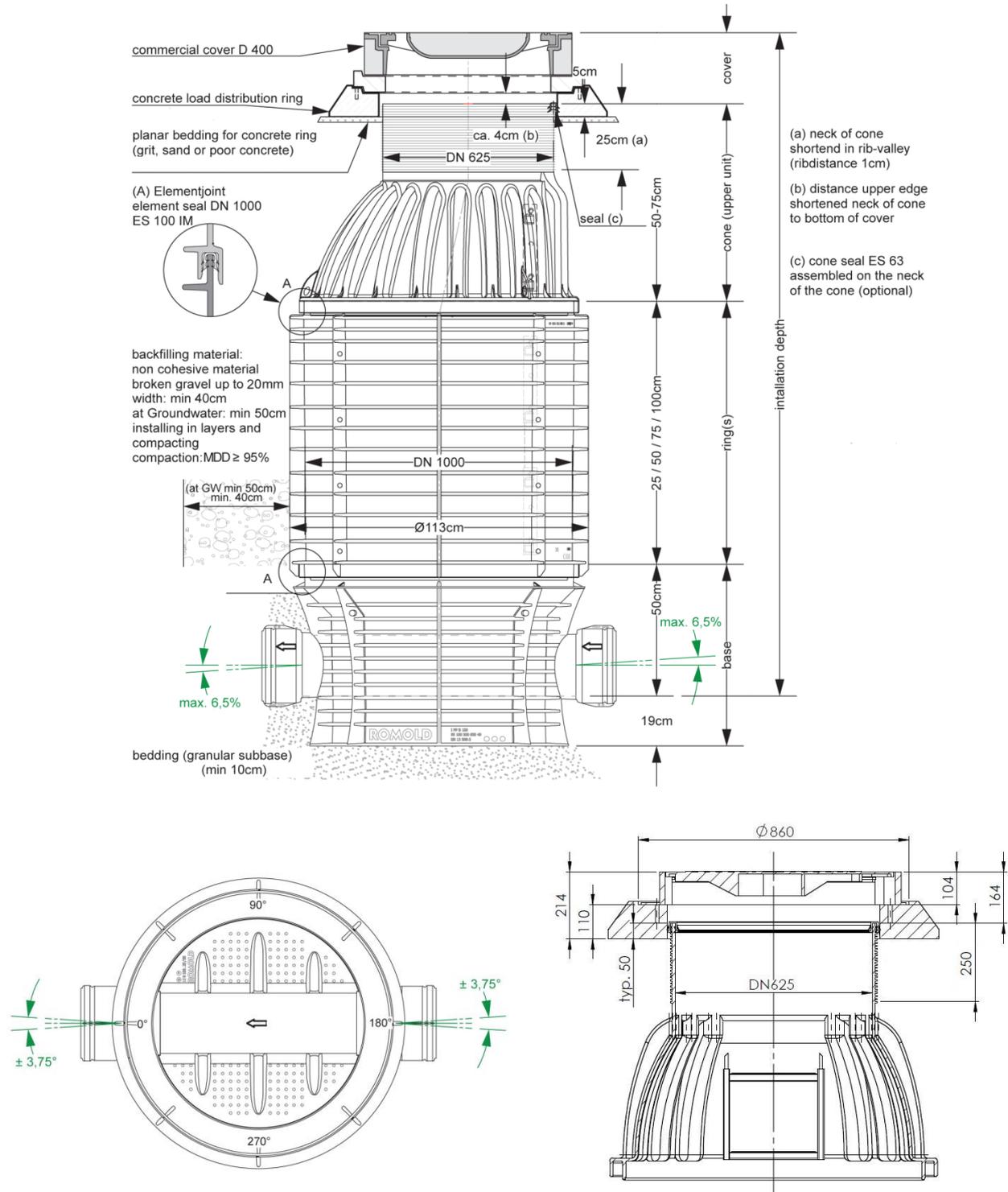


Below the LDR the bedding must be planar and free of point loads (consider using grit, sand or concrete dust). For class D applications, this should be prepared according to the design requirements for the road base course.

The cover & frame can be mounted directly to the Load Distribution Ring using standard practices.

For ductile iron covers from Saint-Gobain PAM, M12 threaded inserts are included in the LDR which can be used to bolt down the cover.

INSTALLATION DRAWING



The standard grade through ROMOLD pre-benched chambers is 0.5%. This equates to 5mm of fall between inlet and outlet sockets.

DN1000 MANHOLE PRODUCT COMPONENTS

<p>Cone Element:</p>	
<p>Riser Element:</p>	
<p>Base:</p>	
<p>Element Seal:</p>	
<p>Concrete Load Distribution Ring:</p>	
<p>Lateral Seal:</p>	
<p>ROMOLD Cup saw:</p>	

LIST OF AVAILABLE ACCESSORIES

Part Number	Description of Component
ES 63	DN625 Element Seal (for use as seal between Cone neck and LDR)
I SB ISR 110	Lateral pipe seal for DN100 PVC pipe
CS-I 110/140	ROMOLD cup saw for I SB ISR 110 seal
I SB ISR 160	Lateral pipe seal for DN150 PVC pipe
CS-I 160/188	ROMOLD cup saw for I SB ISR 160 seal
I SB ISR 200	Lateral pipe seal for DN175 PVC pipe
CS-I 200/228	ROMOLD cup saw for I SB ISR 200 seal
PVC-Winkel 150/15	PVC rubber jointed elbow for DN150 PVC pipe - 15° bend
PVC-Winkel 200/15	PVC rubber jointed elbow for DN175 PVC pipe - 15° bend
PVC-Winkel 250/15	PVC rubber jointed elbow for DN225 PVC pipe - 15° bend
PVC-Winkel 300/15	PVC rubber jointed elbow for DN300 PVC pipe - 15° bend
PVC-Winkel 400/15	PVC rubber jointed elbow for DN375 PVC pipe - 15° bend
LGH 63 RAL1033	Yellow PE DN625 site cover for temporary use on job site
LGH 63 DD	Black PE DN625 water tight cover with EPDM seals (non-rated)
PDRD XXXX	Plastic compensation rings DN625, height 40, 60, 80, 100 & 120mm
FIS 0600 00	Active-carbon filter system for odour control at manhole cover

Also available from ROMOLD are DN625 Maintenance Chambers, Plastic Road Gullies, Electrical Chambers, Energy Compensating Chambers, and Pump Chambers.

Australasia Moulding Ltd is proud to be a merchant for the following brands and products:

Saint Gobain PAM – Ductile iron Manhole Covers & Grates

SAB – Electrofusion Couplings

Norma – Vario Universal Gravity Pipe Couplers

Fernco – Couplers

Proline – Class B Rated Plastic Manhole Covers

Please enquire for more information about any of these products: 0800 287 668

APPENDIX

Table of Materials & Compaction

Layer	Property	Instruction
Sub grade	Compaction	The cleared ground should be free of any loose material and compacted. Minimum CBR of 5% is recommended.
Bedding	Material	It is important to ensure that non-cohesive, well-graded (all sizes of material), compressible materials are used for backfilling. The maximum particle size of rounded gravel material shall not exceed 32mm, and 20mm if broken material is used. In trafficable loading areas, compacted bedding of AP7 material should be applied to 100mm minimum depth.
	Compaction	Bedding should be compacted to the minimum standard dry density ratios, AS1289, 95%.
Backfill	Material	It is important to ensure that non-cohesive, well-graded (all sizes of material), compressible materials are used for backfilling. The maximum particle size of rounded gravel material shall not exceed 32mm, and 20mm if broken material is used. An AP20 material according to the TNZ M/4 spec (heavy on fines) is considered to be ideal. Larger sized broken materials shall not be used due to the risk of damage to the chamber during compaction.
	Layer Depth	Compacted in 150 – 250mm layers.
	Compaction	Compact around pipe sockets using a 15 to 20kg hand rammer or “wacker” with a minimum of 20 – 30 blows per side. For the remainder of the installation backfill shall be compacted to the minimum standard dry ratios, AS1289, 95%.
	Compaction method	Compacted with a medium vibrating stamper (wacker rammer) approx. 50kg. The number of required compacting passes per layer depends on the backfilling material and layer depth.
Surface of Bedding	Material	We recommend using small grit, sand or poor concrete for easier bedding of the concrete load distribution ring.
	Tensile	As per pavement design requirements.

Notes: This specification is provided for ideal conditions. In unsuitable ground, or if you have any doubts about the conditions, then refer to a qualified engineer for specific design.

Where there is a possibility of migration of fines between the native soil and the embedment zone, or free-draining material is used as embedment material, a geotextile filter fabric may be used to envelope the embedment material.

Applying excessive compaction at a higher trench level in the hope that the desired compaction is achieved in the critical zones may not only fail to reach the required compaction but could also damage the product.

Manhole Chamber Installation Quality Assurance Form

Company

Name: _____

Address: _____

Person Responsible for Installation

Name: _____

Email: _____

Mobile Number: _____

Office Number: _____

Project

Date of Installation: _____

Location: _____

Local Authority: _____

Product Description

Manhole Type: _____

Base Type: _____

Depth to Invert: _____

Cover Type: _____

Manhole installed in roadway or trafficable situation: YES / NO

Concrete Load Distribution Ring Used: YES / NO

Installation Process Steps (initial if completed)

1. Sub grade compacted to minimum CBR 5%: _____

2. AP20 or AP7 bedding material used: _____

3. Minimum bedding depth of 100mm applied: _____

4. Bedding material compacted: _____

 Compaction measurement from NDM or Clegg Hammer: _____

5. Grade of inlet pipe(s): _____

6. Grade of outlet pipe: _____

7. Number of additional pipe connections using ROMOLD seals: _____

8. Element Seals used between chamber elements: _____

9. AP20 backfill material used: _____

 Or describe backfill material used: _____

10. Backfill material applied to width of 400mm from chamber wall (or 500mm for installations in areas of high ground water): _____

11. Typical layer depth prior to compaction: _____

12. Backfill material compacted: _____

 Compaction measurement from NDM or Clegg Hammer: _____

Sign if form is to be supplied to the local authority

Person responsible for the installation

Name: _____

Position: _____

Signature: _____

Date: _____

Representative of local authority

Name: _____

Position: _____

Signature: _____

Date: _____