

Specification Guide

Product Group: Manholes, Chambers & Tanks

Product Type: External Manholes (Adoptable) - BBA Approved

Specification: PX-EXT-MH-SP-01-BBA

External Infrastructure Manhole Chambers

Bespoke manhole chambers for all manholes and drainage services outside the external footprint of the building or structure, including foul water, surface/rain water & chemical trade effluent wastes (TEW).

The bespoke manholes will be factory constructed to provide a watertight seal against the ingress of ground water into the manhole, and egress of effluent and gaseous waste from the manhole into the surrounding environment and water table.

The manholes will be supplied to site as completed factory prefabricated units, manufactured to suit the consultant's general arrangement drawings. Each manhole will be numbered with an indelible marker to correspond with the drainage layout drawings.

Manhole Detail Drawings

CAD detail drawings of each manhole, based on consultants' design, will be submitted by Fiber Glass Systems for approval by the client. Drawing details will indicate manhole number, cover level, invert level, drain sizes and falls.

Thermoplastic Materials of Construction

Manholes and internal pipe work either;
Homopolymer Polypropylene Din 8077 & 8078. (PP-H)
High Density Polyethylene Din 8075 & 8074 (HDPE)
Our Chemical corrosion guide is available on request.
Our thermoplastic waste material is 100% recyclable.

Methods of Construction

Thermoplastic welding completed in accordance with BSEN13067- Plastics Welding Personnel, under the Certification Scheme for Welding and Inspection personnel (CSWIP). Approved by the Thermal Welders Institute (TWI).

British Standard Specifications

Rectangular Manholes and Circular Manholes will be fabricated in accordance to, BS EN13598-2:2009, BS7158:2001 and comply with BS EN752:2008, Building Regulations section H Table 11 & 12 and Sewers for Adoption 6th Edition Clause 5.2.31 Plastic Chambers and Rings.

Technical Certification

British Board of Agreement (BBA) Cert No. 02/3927
Water Research Commission (WRC) Cert No.PT/257/0806
British Board of Agreement (BBA) Environmental Profile Cert No. 11/EP1002

Branch Connections

The incoming drain connections and backdrops will be configured to suit the drainage system design drawings.

The spigot ends will be supplied as plain end or adapted to suit the connecting drainage system e.g. vitrified clay, PVC, cast iron, ductile iron, HDPE as required. Joint options – mechanical, push fit couplers, flanged or electrofusion.

Internal Benching

The manholes will be supplied complete with open channel barren bends as standard, or polypropylene bolted inspection covers with gasket seal as indicated on the design drawings.

Benching will be fabricated to a gradient of 1:10 to 1:30 as required and welded from the wall of the chamber to the through drain channel or inspection covers.

Manhole Access Steps/Ladders

Where required by the sewage undertaker, refer to Sewers for Adoption 6th table 2.3, FGS can install either manhole access steps or ladders to comply with each sewage undertaker's specific requirements.

Manhole steps will be bright yellow polypropylene steel core manhole steps to BSEN 13101:2002.

Plastic Encapsulated Manhole Steps WIS 4-33-01:1990.

Ladders will be either FRP or Stainless Steel to BS EN 14396:2004.

Access steps and ladders will be factory installed into the manhole with a welded water tight seal.

Factory Testing

The manholes will be tested at the factory, each branch connection will be fitted with an inflatable bag stopper and the manhole filled with water to confirm 100% water tightness or on larger manholes welds will be spark tested.

CDM Regulations 2007 - Confined Space Regulations 1997

Contrary to traditional manhole construction methods, our manholes eliminate the need for confined space working. By providing an alternative approach, foreseeable health and safety risks are reduced from the outset.

Installation and Loading

For manhole handling & installation refer to our Work Instruction WP34. The manhole chamber shafts and bases are designed to meet the stiffness requirements (as per BS EN13598-2, BS7158) for installation up to the specified invert depth – up to 1.2m for shallow inspection chambers and 6m for manholes.

The manholes can be used in areas subject to D400 or F900 loading provided the concrete surround and cover slab are appropriately designed contact us for specific BBA HAPAS certified manhole details.

The manhole and chamber shafts have a ring stiffness in excess of 2Kn.m² and satisfy the relevant clauses of BS EN 13598-2:2009.

Operation and Maintenance

When installed to our installation instructions the manholes will operate with minimum maintenance. Due to the nature of the thermoplastic construction materials, the units will resist the build of Fat's, Oil's & Grease (FOG). If rodding is required use polypropylene rods, alternatively the manholes can be pressure jetted to a maximum pressure of 180 bar 2600 psi in accordance with WRc jetting standard. If alterations are required to the manhole, FGS will be contacted to discuss the procedure.

Durability

When installed in accordance with our instructions the manhole product will have a life in excess of 60 years for circular chambers and 50 years for rectangular chambers.

Manhole Testing to BS EN13598-2:2009, BS7158:2001

The following tests have been passed by the BBA technical approval certification:

BS EN13598-2 Table 3 Structural integrity test.

BS EN13598-2 Table 2 Durability test.

BS EN13598-2 Table 3 Impact resistance.

BS EN13598-2 Satisfies the step irons pull out and deformation test Table 4.

BS7158 Clause 7.2 and Appendix A - Water tightness of manholes when full of water and when surrounded by water

BS7158 Clause 7.5 and Appendix E - Resistance to thermal cycling

BS7158 Clause 7.6 and Appendix F - Specific tangential initial stiffness (STIS)

BS7158 Clause 7.8 and Appendix I - Negative internal pressure test

BS7158 Clause 7.7 and Appendix G - Vertical load test class A15

BS 1247-2 1990 – Clause 7.3 Step iron pull out test when installed in a FGS manhole.

Specification Guide

Additional Testing

BS 1247-2:1990 – Clause 7.2 Step iron bending resistance test when installed within a FGS manhole.

BS EN 1277: 1996 Method 2 condition A - Positive high pressure 0.5 bar test on gasket within internal bolted inspection cover plate within FGS manhole.

Note: BS EN 1277:2003 low internal pressure leak tightness test 0.05 bar on gasket within internal bolted inspection cover plate is standard unless the positive high pressure test is specifically required.

Product Options Available: Manhole Shuttering System

Optional recycled HDPE shuttering can be supplied factory fabricated to circular manholes to accept the poured concrete surround. Plywood timber shuttering can be factory installed to rectangular manholes. (nominal 150mm minimum surround)

Manhole Top Formwork and Access Turret

Optional reinforced top formwork with access turret with a clear opening to suit manhole cover and frame, welded to manhole to accept insitu poured concrete cover slab.

For Technical Assistance please contact:

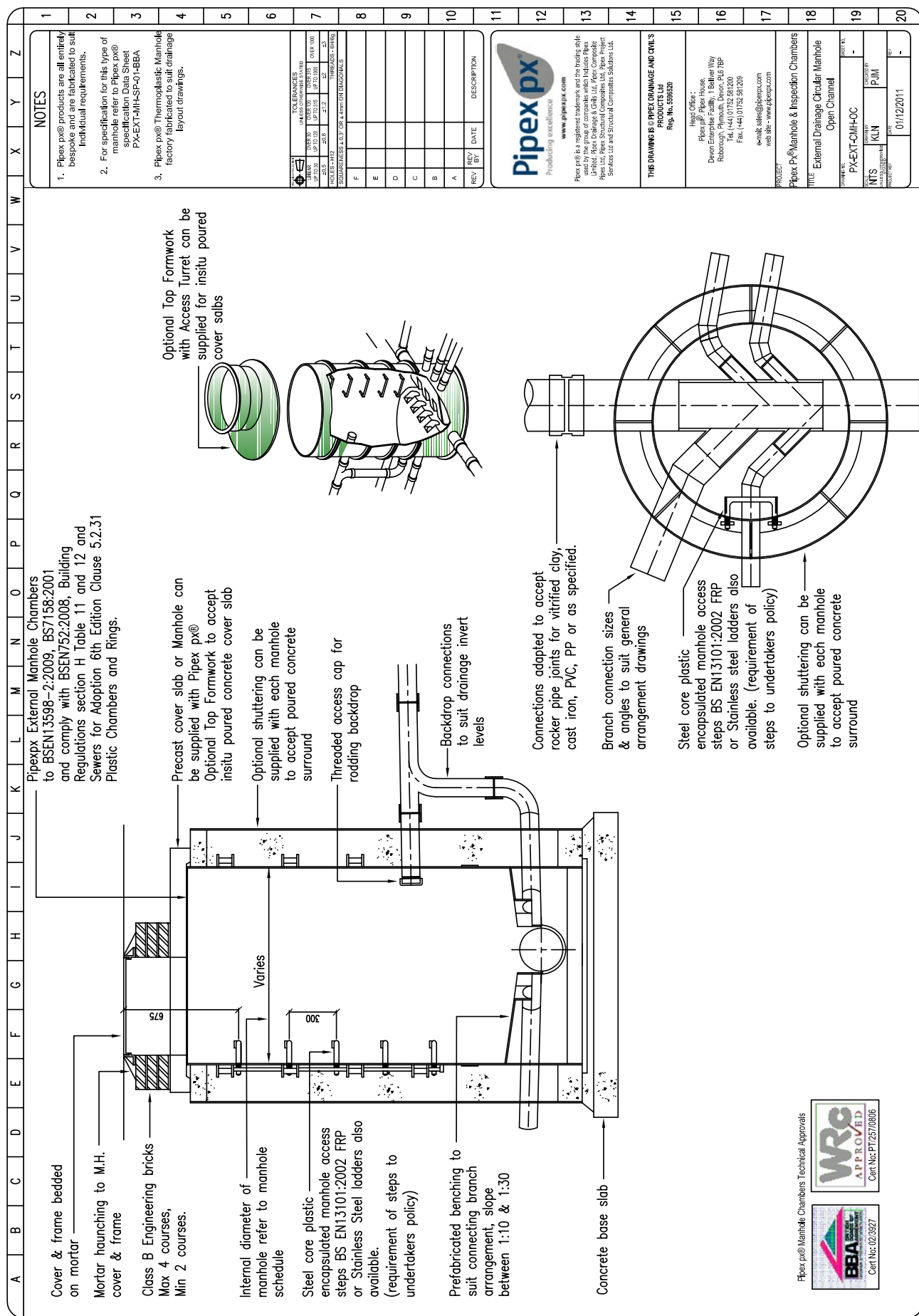
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National Oilwell Varco UK Limited (known as NOV Fiber Glass Systems UK) is registered in England, with registration number 00873028 and its registered office is Stonedale Road, Oldends Lane Industrial Estate, Stonehouse, Gloucestershire, GL10 3RQ. VAT GB 582 8958 76. NOV ledger number: 0972





REV	NO	DATE	DESCRIPTION
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TOLERANCES	
FINISHES	UNLESS OTHERWISE STATED
PIPEWORK	AS TO SIZE UP TO 100mm OVER 100mm
ROCKERS	AS TO SIZE UP TO 100mm OVER 100mm
RODDERS	AS TO SIZE UP TO 100mm OVER 100mm
THREADS	AS TO SIZE UP TO 100mm OVER 100mm
CONCRETE	AS TO SIZE UP TO 100mm OVER 100mm

PROJECT	
TITLE	Pipex PX® Manhole & Inspection Chambers
PROJECT NO.	External Drainage Circular Manhole Open Channel
DATE	01/12/2011

NOTES

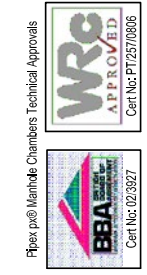
- Pipex px® products are all entirely bespoke and are fabricated to suit individual requirements.
- For specification for this type of manhole refer to Pipex px® specification Data Sheet PX-EXT-MH-SP-U-BBA
- Pipex px® Thermoplastic Manhole factory fabricated to suit drainage layout drawings.

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Reg. No. 099928

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Cover & frame
bedded on mortar
Mortar haunching
to M.H. cover &
frame

Class B Engineering
bricks Max 4 courses,
Min 2 courses.

Internal diameter of
manhole refer to
manhole schedule

Steel core plastic
encapsulated manhole
access steps BS
EN13101:2002 FRP or
Stainless Steel ladders
also available.
(requirement of steps to
undertakers policy)

Prefabricated
benching slope
between 1:10 & 1:30

Concrete base
slab

Optional Top Formwork with Access Turret can be supplied for insitu poured cover slabs

Precast cover slab or Manhole can be supplied with Pipex px® optional Top Formwork to accept insitu poured concrete cover slab

Optional shuttering can be supplied with each manhole to accept poured concrete surround

Threaded access cap for rodding backdrop

Backdrop connections to suit drainage invert levels

Depths up to 6m

Connections adapted to accept
rocker pipe joints for vitrified clay,
cast iron, PVC, PP or as specified.

Branch connection sizes
& angles to suit general
arrangement drawings

Steel core plastic
encapsulated manhole
access steps
EN13101:2002 FRP

Stainless Steel ladders
also available
(requirement of steps to
undertakers policy)

Optional shuttering can be
supplied with each manhole
to accept poured concrete
surround

Boilted inspection
cover with
gasket seal

Handles

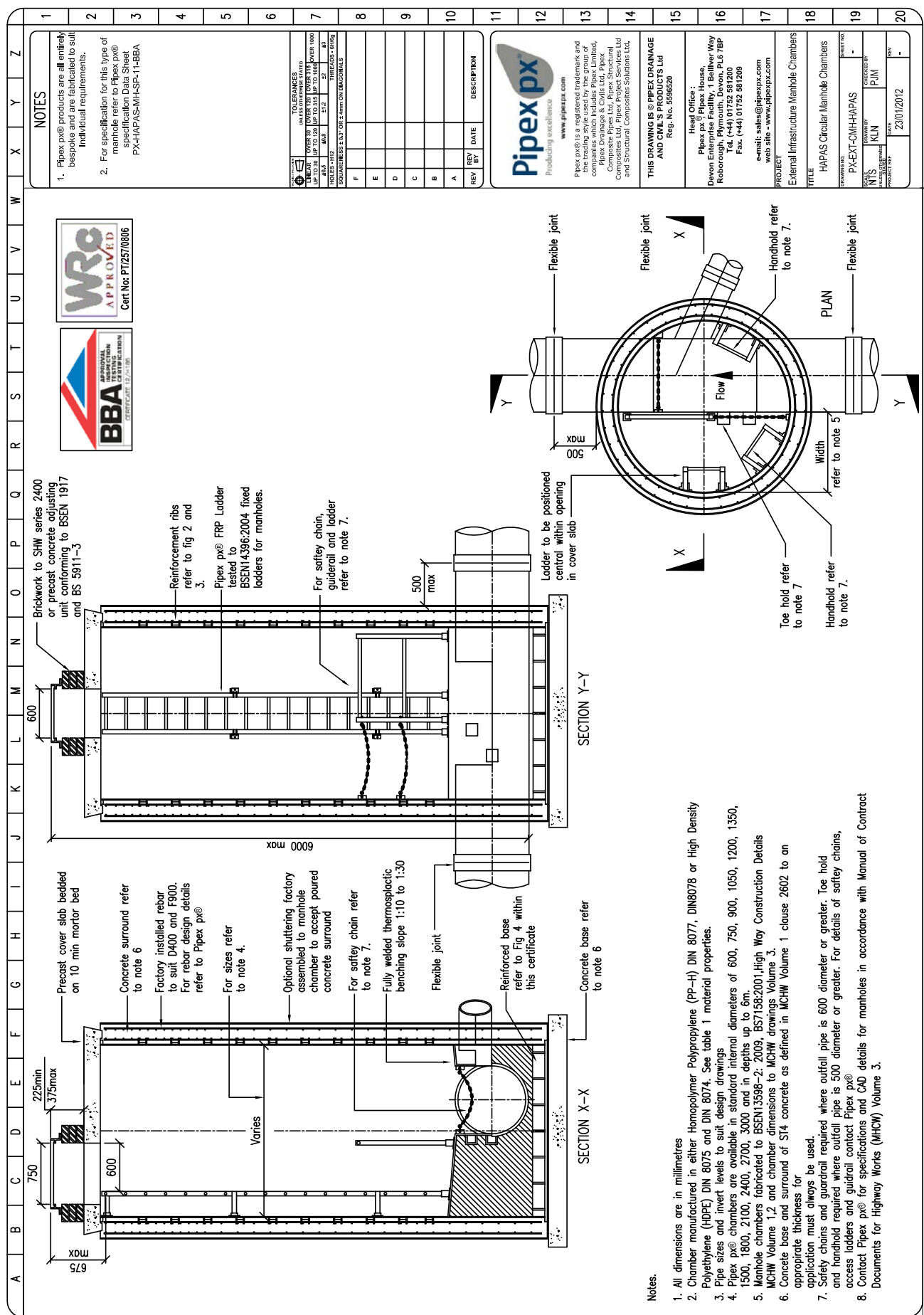
- ### NOTES
1. Pipex px® products are all entirely bespoke and are fabricated to suit individual requirements.
 2. For specification for this type of manhole refer to Pipex px® specification Data Sheet PX-EXT-MH-SP-01-HBA
 3. Pipex px® Thermoplastic Manhole factory fabricated to suit drainage layout drawings.

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e-mail: sales@pipex.com
web site: www.pipex.com

PROJECT:	PX-EXT-CM-H-AB
DATE:	01/12/2011
DESIGNER:	KLN
CHECKER:	PJN
SCALE:	-
PROJECT NO.:	-



Brickwork to SHW series 2400 or precast concrete adjusting unit conforming to BSEN 1917 and BS 5911-3

Reinforcement ribs refer to fig 2 and 3.

Pipex px® FRP Ladder tested to BSEN 14396:2004 fixed ladders for manholes.

For safety chain, guerdail and ladder refer to note 7.

500 max

Ladder to be positioned central within opening in cover slab

Precast cover slab bedded on 10 min mortar bed

Concrete surround refer to note 6

Factory installed rebar to suit D400 and F900. For rebar design details refer to Pipex px®

For sizes refer to note 4.

Optional shuttering factory assembled to manhole chamber to accept poured concrete surround

For safety chain refer to note 7.

Fully welded thermoplastic benching slope 1:10 to 1:30

Flexible joint

Reinforced base refer to Fig 4 within this certificate

Concrete base refer to note 6

225min

375max

750

600

Varies

6000 max

NOTES

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- For specification for this type of manhole refer to Pipex px® specification Data Sheet PX-HAPAS-MH-SP-1-BBA

TOLERANCES	
LENGTH	±0.5mm
WIDTH	±0.5mm
DEPTH	±0.5mm
DIAMETER	±0.5mm
THICKNESS	±0.5mm
ANGLE	±0.5mm
THREADS	±0.5mm
FINISH	±0.5mm

Producing excellence

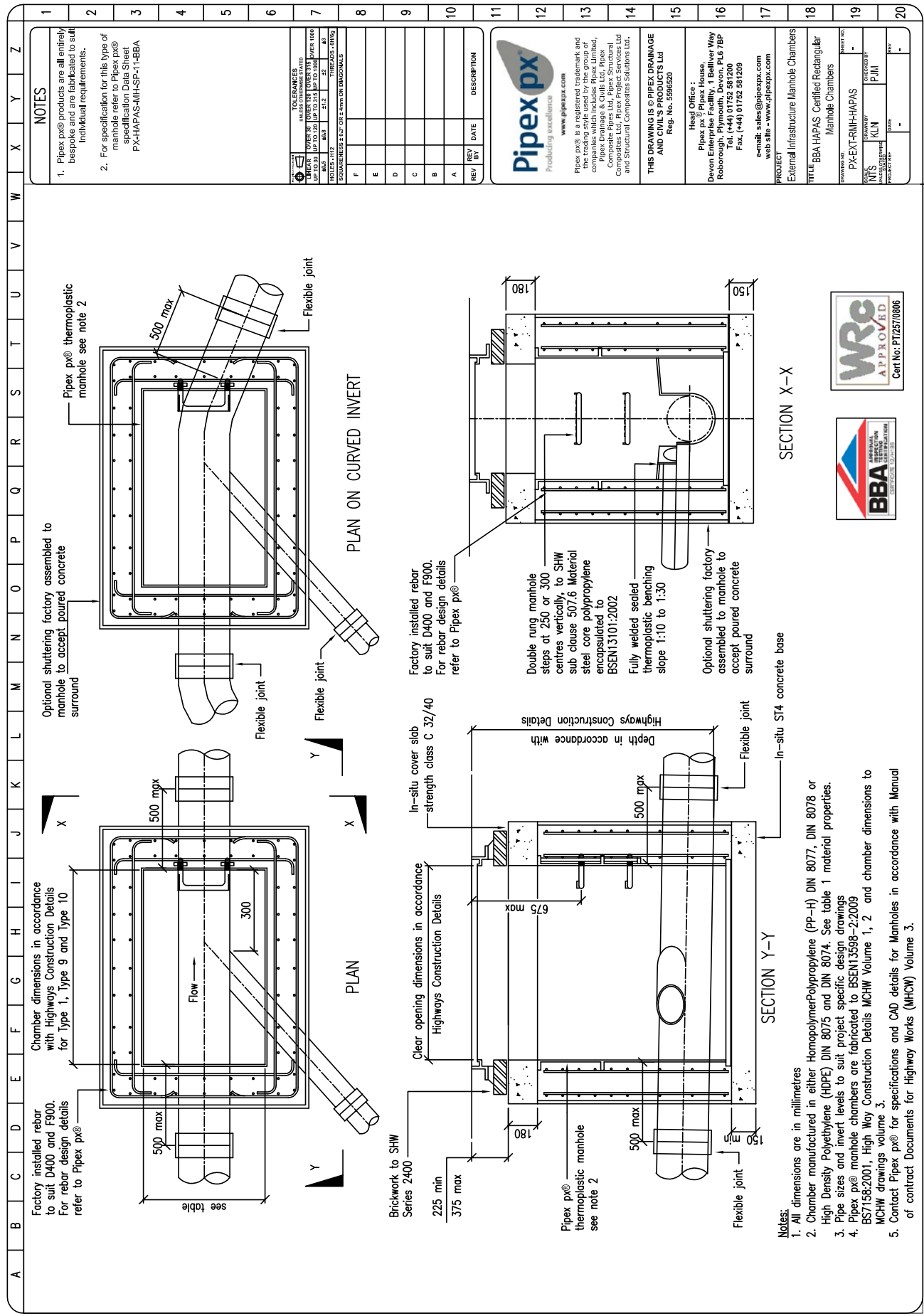
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PROJECT	External Infrastructure Manhole Chambers
TITLE	HAPAS Circular Manhole Chambers
DRAWING NO.	PX-EXT-CMH-HAPAS
SCALE	1:1
DATE	23/01/2012
REV	-



NOTES

1. Pipex px® products are all entirely bespoke and are fabricated to suit individual requirements.
2. For specification for this type of manhole refer to Pipex px® specification Data Sheet PX-HAPAS-MH-SP-11-BBA

TOLERANCES UNLESS OTHERWISE STATED	
LENGTHS	±0.5
DIAMETERS	±0.2
SPACINGS	±0.5
ANGLES	±0.5
POSITIONS	±0.5
UP TO 30	±0.1
30 TO 100	±0.15
100 TO 300	±0.2
300 TO 1000	±0.3
OVER 1000	±0.5
HOLES - HTD	H7
HOLES - STD	H9
THREADS - BRG	6H/7g6
THREADS - SHW	6H/7g6
THREADS - BRG	6H/7g6
THREADS - SHW	6H/7g6

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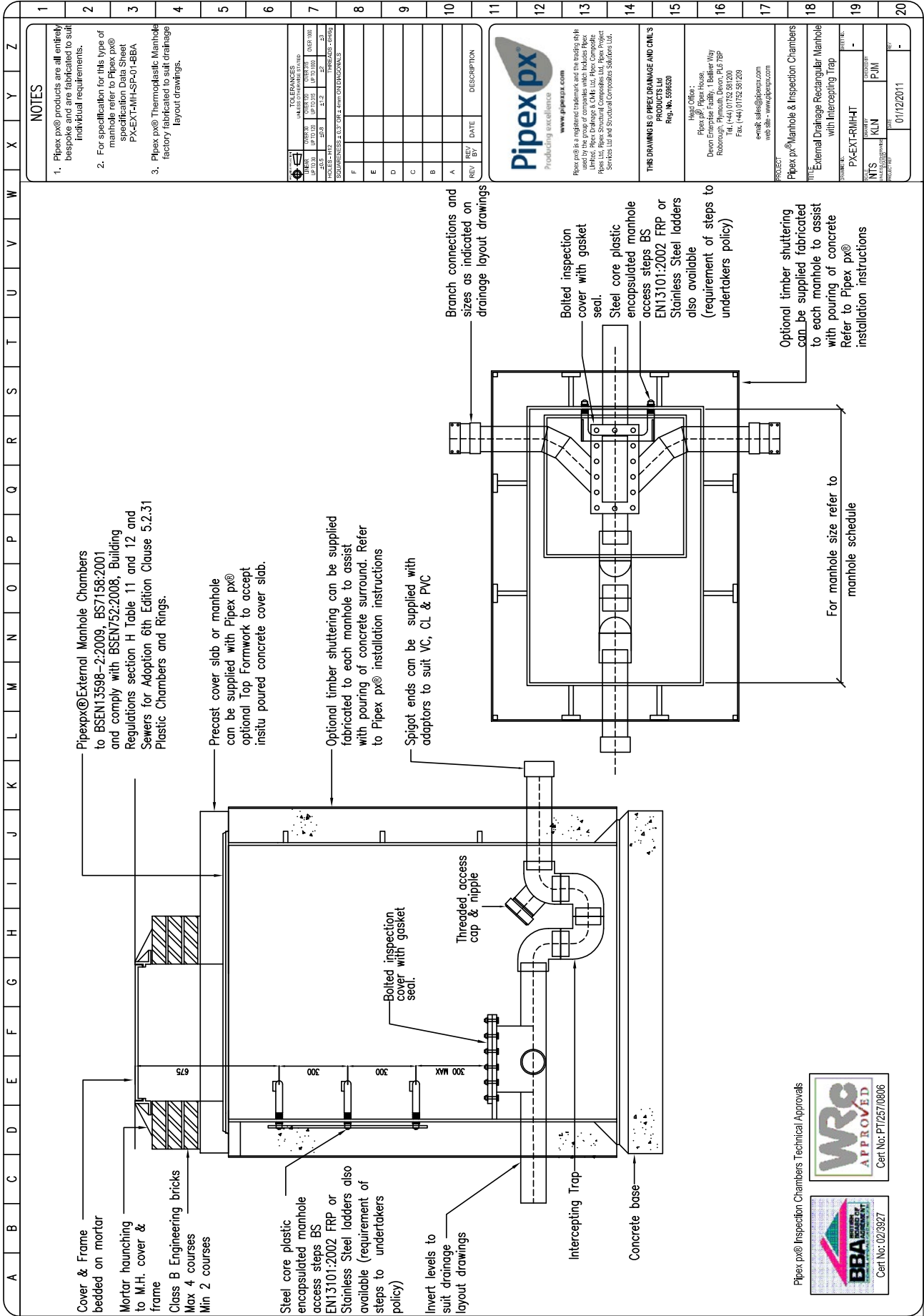
PROJECT External Infrastructure Manhole Chambers	
TITLE BBA HAPAS: Certified Rectangular Manhole Chambers	
DRAWING NO. PX-EXT-RMH-HAPAS	SHEET NO. -
DATE -	ISSUED BY PJ/J
DESIGNED BY KLN	PROJECT REF -



SECTION X-X

SECTION Y-Y

- Notes:**
1. All dimensions are in millimetres
 2. Chamber manufactured in either Homopolymer Polypropylene (PP-H) DIN 8077, DIN 8078 or High Density Polyethylene (HDPE) DIN 8075 and DIN 8074. See table 1 material properties.
 3. Pipe sizes and invert levels to suit project specific design drawings
 4. Pipex px® manhole chambers are fabricated to BSEN15588-2:2009
 5. Contact Pipex px® for specifications and CAD details for Manholes in accordance with Manual of contract Documents for Highway Works (MHCW) Volume 3.



NOTES

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2. For specification for this type of manhole refer to Pipex px® specification Data Sheet PX-EXT-RMH-SP-01-BBA
3. Pipex px® Thermoplastic Manhole factory replicated to suit drainage layout drawings.

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OVERSEAS	01752 361200
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WEBSITE	www.pipex.com

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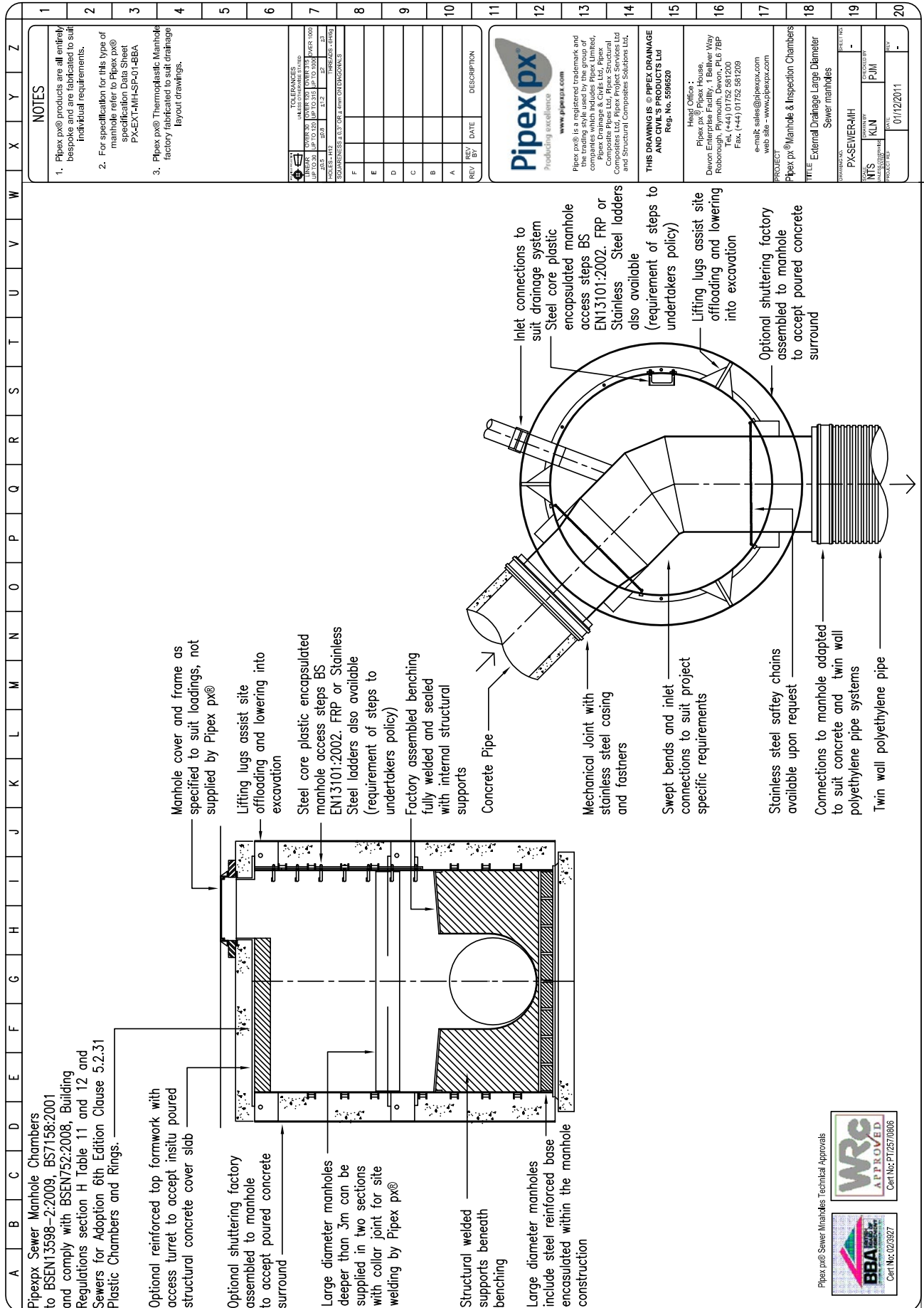
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PROJECT	PPex px® Manhole & Inspection Chambers
DESCRIPTION	External Drainage Rectangular Manhole with Intercepting Trap
FORMER NO.	PX-EXT-RMH-IT
DATE OF ISSUE	KLJN
PROJECT FILE	01/12/2011



Pipex px Sewer Manhole Chambers to BSEN13598-2:2009, BS7158:2001 and comply with BSEN752:2008, Building Regulations section H Table 11 and 12 and Sewers for Adoption 6th Edition Clause 5.2.31 Plastic Chambers and Rings.

Optional reinforced top formwork with access turret to accept insitu poured structural concrete cover slab

Optional shuttering factory assembled to manhole to accept poured concrete surround

Large diameter manholes deeper than 3m can be supplied in two sections with collar joint for site welding by Pipex px®

Structural welded supports beneath benching

Large diameter manholes include steel reinforced base encapsulated within the manhole construction

Manhole cover and frame as specified to suit loadings, not supplied by Pipex px®

Lifting lugs assist site offloading and lowering into excavation

Steel core plastic encapsulated manhole access steps BS EN13101:2002, FRP or Stainless Steel ladders also available (requirement of steps to undertakers policy)

Factory assembled benching fully welded and sealed with internal structural supports

Concrete Pipe

Mechanical Joint with stainless steel casing and fasteners

Swept bends and inlet connections to suit project specific requirements

Stainless steel safety chains available upon request

Connections to manhole adapted to suit concrete and twin wall polyethylene pipe systems

Twin wall polyethylene pipe

Inlet connections to suit drainage system

Steel core plastic encapsulated manhole access steps BS EN13101:2002, FRP or Stainless Steel ladders also available (requirement of steps to undertakers policy)

Lifting lugs assist site offloading and lowering into excavation

Optional shuttering factory assembled to manhole to accept poured concrete surround

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TOLERANCES

UNIT	VALUES OF DIMENSIONS IN mm
UP TO 30	±0.25
UP TO 100	±0.35
UP TO 300	±0.50
UP TO 1000	±0.75

FINISHES - RINGS

SIZE	FINISH
150	1.2
225	1.2
300	1.2
375	1.2
450	1.2
525	1.2
600	1.2
675	1.2
750	1.2
825	1.2
900	1.2
975	1.2
1050	1.2

CONNECTIONS TO S.W. - FROM OTHER PRODUCTS

NOTES

- Pipex px® products are all entirely bespoke and are fabricated to suit individual requirements.
- For specification for this type of manhole refer to Pipex px® specification data sheet PX-EN-1111-SP-01-BBA
- Pipex px® Thermoplastic Manhole factory fabricated to suit drainage layout drawings.

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e-mail: sales@pipexpx.com
web site - www.pipexpx.com

PROJECT
Pipex px® Manhole & Inspection Chambers

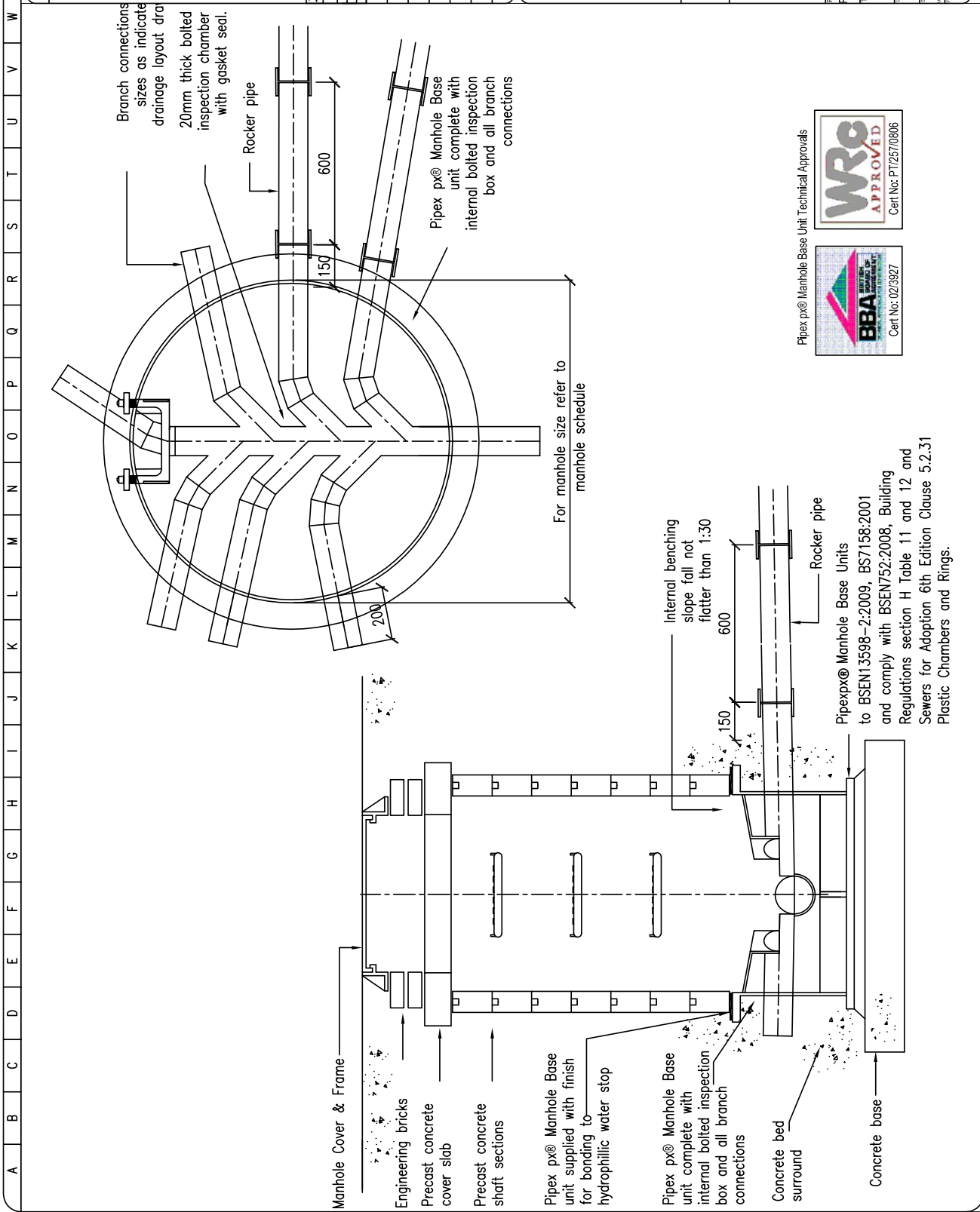
TITLE
External Drainage Large Diameter Sewer manholes

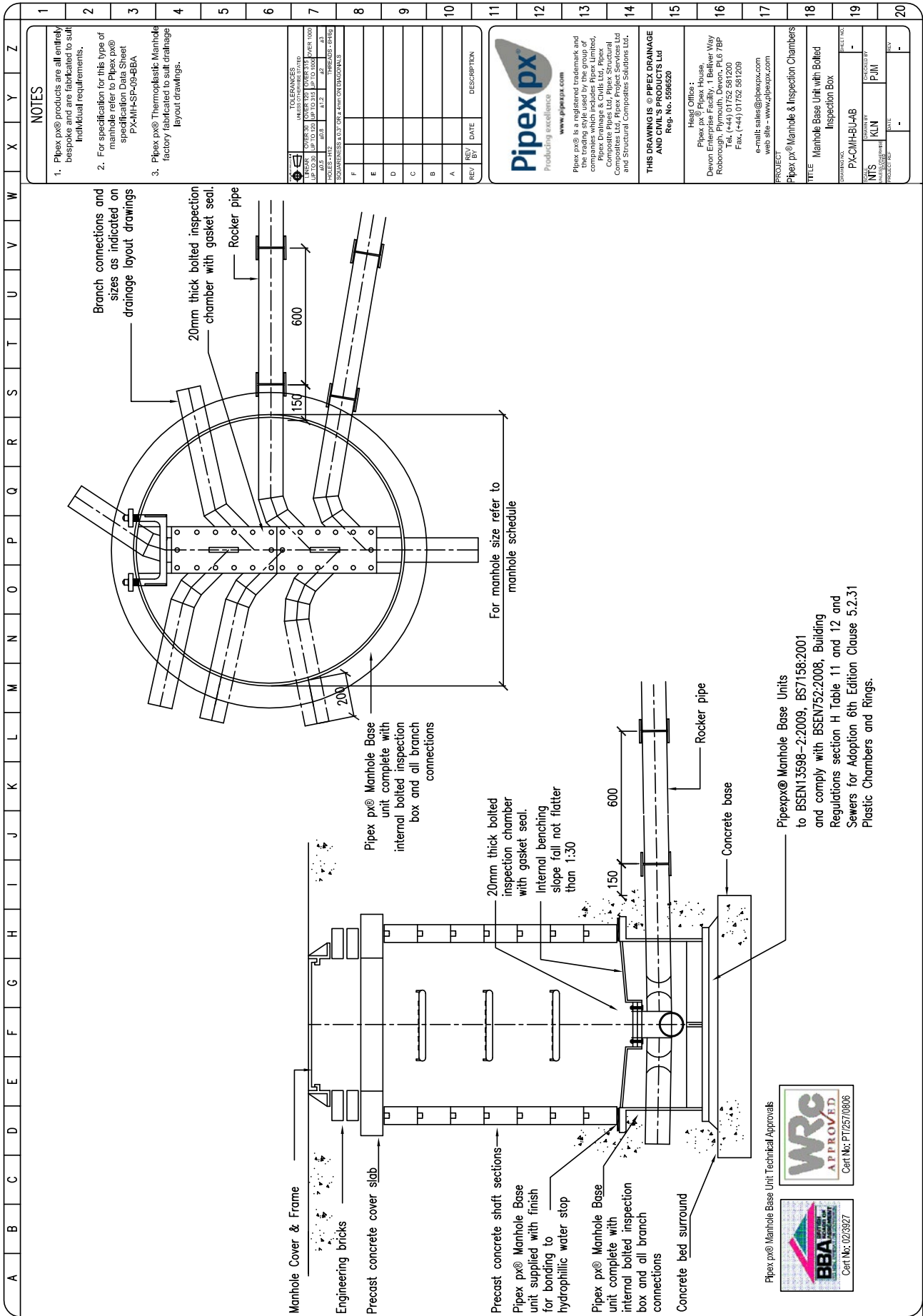
DATE
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REV

Pipex Manhole Base Units

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20																																																																																																																																																																																						
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Pipex px® Thermoplastic Manhole factory fabricated to suit drainage layout drawings.										<table border="1"> <tr> <th colspan="2">TOLERANCES</th> </tr> <tr> <td>UNLESS OTHERWISE STATED</td> <td></td> </tr> <tr> <td>FINISHES - H12</td> <td>±0.5</td> </tr> <tr> <td>FINISHES - H13</td> <td>±0.5</td> </tr> <tr> <td>FINISHES - H14</td> <td>±0.5</td> </tr> <tr> <td>FINISHES - H15</td> <td>±0.5</td> </tr> <tr> <td>FINISHES - H16</td> <td>±0.5</td> </tr> <tr> <td>FINISHES - H17</td> <td>±0.5</td> </tr> <tr> <td>FINISHES - H18</td> <td>±0.5</td> </tr> <tr> <td>FINISHES - H19</td> <td>±0.5</td> </tr> <tr> <td>FINISHES - H20</td> <td>±0.5</td> </tr> <tr> <td>FINISHES - H21</td> <td>±0.5</td> </tr> <tr> <td>FINISHES - H22</td> <td>±0.5</td> </tr> <tr> <td>FINISHES - H23</td> <td>±0.5</td> </tr> <tr> <td>FINISHES - H24</td> <td>±0.5</td> </tr> <tr> <td>FINISHES - H25</td> <td>±0.5</td> </tr> <tr> <td>FINISHES - H26</td> <td>±0.5</td> </tr> <tr> <td>FINISHES - H27</td> <td>±0.5</td> </tr> <tr> <td>FINISHES - 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NOTES

1. Pipex px® products are all entirely bespoke and are fabricated to suit individual requirements.
2. For specification for this type of manhole refer to Pipex px® specification Data Sheet PX-MH-SP-09-BBA
3. Pipex px® Thermoplastic Manhole factory fabricated to suit drainage layout drawings.

REV	BY	DATE	DESCRIPTION
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Producing excellence
www.pipexpx.com

Pipex px® is a registered trademark and the trading style used by the group of companies which includes Pipex Limited, Pipex Structures Ltd, Pipex Structural Composites Ltd, Pipex Project Services Ltd and Structural Composites Solutions Ltd.

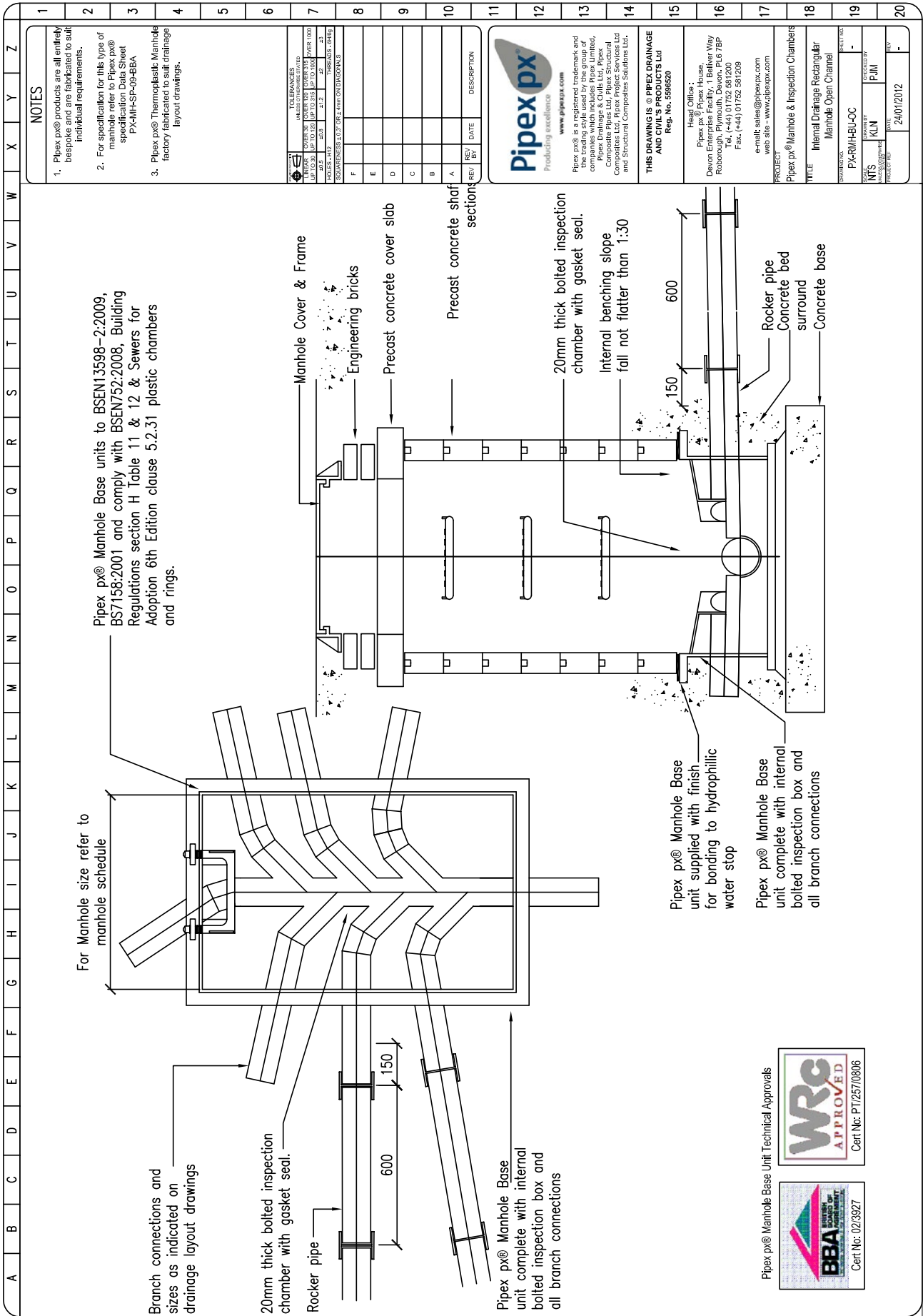
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Fax. (+44) 01752 581209
e-mail: sales@pipexpx.com
web site: www.pipexpx.com

PROJECT	Pipex px® Manhole & Inspection Chambers
TITLE	Manhole Base Unit with Bolted Inspection Box
DRAWING NO.	PX-CMH-BU-AB
SCALE	-
DATE	-
REV	-



Pipex px® Manhole Base Units to BSEN13598-2:2009, BS7158:2001 and comply with BSEN752:2008, Building Regulations section H Table 11 and 12 and Sewers for Adoption 6th Edition Clause 5.2.31 Plastic Chambers and Rings.



NOTES

1. Pipex px® products are all entirely bespoke and are fabricated to suit individual requirements.
2. For specification for this type of manhole refer to Pipex px® Specification Data Sheet PX-MH-SP-09-BBA
3. Pipex px® Thermoplastic Manhole factory fabricated to suit drainage layout drawings.

TOLERANCES	
UNLESS OTHERWISE STATED	
FINISHES	UNLESS OTHERWISE STATED
±0.5	±0.5
±0.2	±0.2
±0.1	±0.1
±0.05	±0.05
±0.02	±0.02
±0.01	±0.01
±0.005	±0.005
±0.002	±0.002
±0.001	±0.001
±0.0005	±0.0005
±0.0002	±0.0002
±0.0001	±0.0001
±0.00005	±0.00005
±0.00002	±0.00002
±0.00001	±0.00001

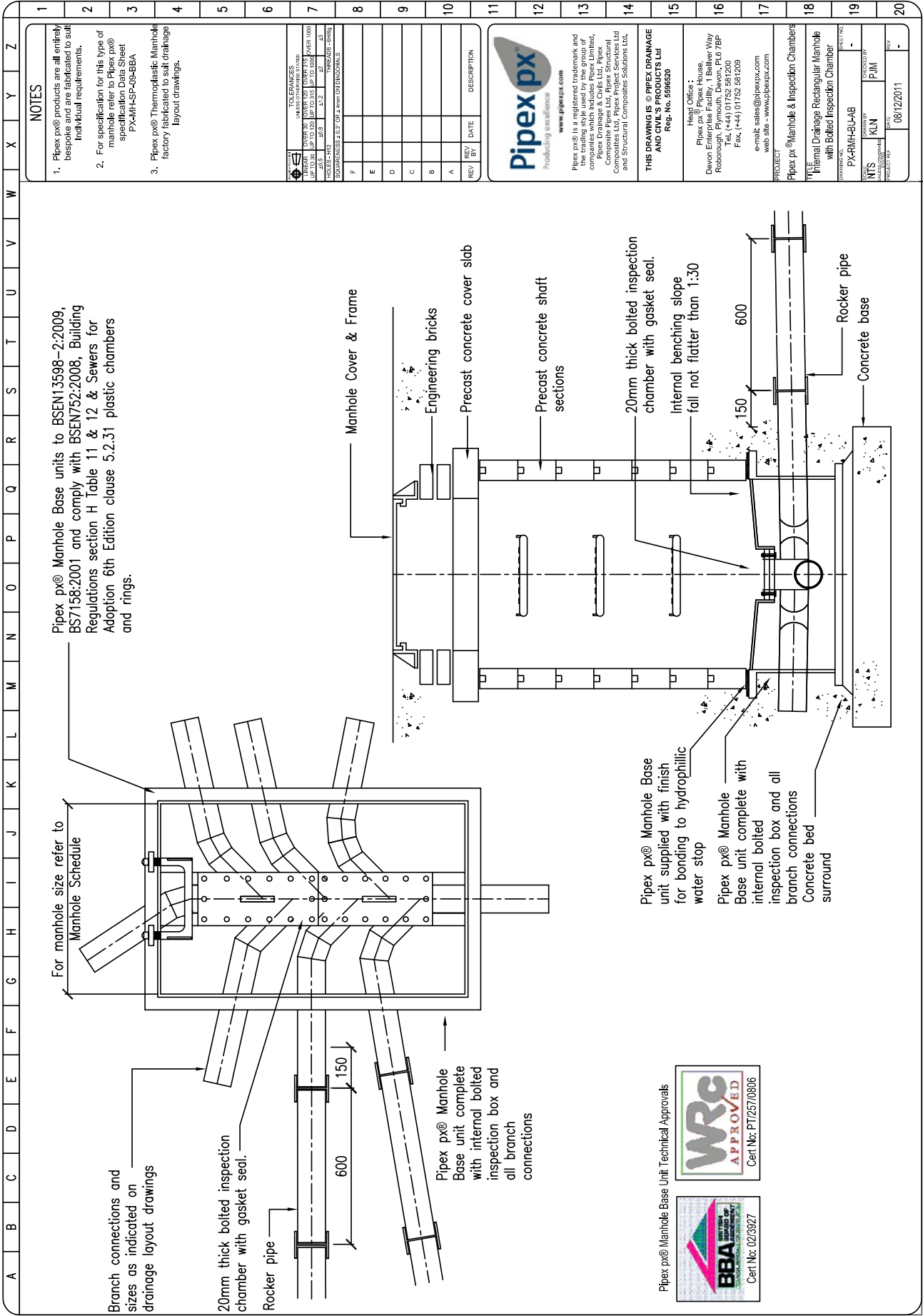
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Producing excellence
www.pipexpx.com

Pipex px® is a registered trademark and the trading style used by the group of companies which includes Pipex Limited, Pipex Structures Limited, Pipex Structural Composites Ltd, Pipex Project Services Ltd and Structural Composites Solutions Ltd.

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web site: www.pipexpx.com

PROJECT	Pipex px® Manhole & Inspection Chambers
TITLE	Internal Drainage Rectangular Manhole Open Chamber
DRAWING NO.	PX-RMH-BU-00
SCALE	1:1
DATE	24/01/2012
DESIGNED BY	KLIN
CHECKED BY	FJMI
PROJECT NO.	-
SHEET NO.	-



Pipex px® Manhole Base units to BSEN13598--2:2009, BS7158:2001 and comply with BSEN752:2008, Building Regulations section H Table 11 & 12 & Sewers for Adoption 6th Edition clause 5.2.31 plastic chambers and rings.

For manhole size refer to Manhole Schedule

Branch connections and sizes as indicated on drainage layout drawings

20mm thick bolted inspection chamber with gasket seal.

Rocker pipe

Pipex px® Manhole Base unit complete with internal bolted inspection box and all branch connections

Pipex px® Manhole Base unit supplied with finish for bonding to hydrophilic water stop

Pipex px® Manhole Base unit complete with internal bolted inspection box and all branch connections
Concrete bed surround

NOTES

- Pipex px® products are all entirely bespoke and are fabricated to suit individual requirements.
- For specification for this type of manhole refer to Pipex px® specification Data Sheet PX-MH-SP-09-BBA
- Pipex px® Thermoplastic Manhole factory fabricated to suit drainage layout drawings.

REFERENCES	
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PROJECT: Pipex px® Manhole & Inspection Chambers	
TITLE: Internal Drainage Rectangular Manhole with Bolted Inspection Chamber	
PROJECT NO:	PX-MH-01-04-B
SCALE:	1:1
DATE:	08/12/2011
REV:	-
DESIGNED BY:	KLN
CHECKED BY:	PJM
APPROVED BY:	-
PROJECT REF:	-

Pipex px® Manhole Base Unit Technical Approvals