



Drainage and Water Management





FP McCann is the UK's market leader in the manufacture, supply and delivery of precast concrete solutions. Our comprehensive precast concrete business extends to include:

Drainage and Water Management Solutions • Tunnel and Shaft Solutions • Rail Solutions
Power and Infrastructure Solutions • Walling Solutions • Fencing Solutions • Flooring Solutions
Architectural and Structural Solutions • Agricultural Solutions • Specialist Precast Solutions

Modern manufacturing plants at Alnwick (Northumberland), Byley (Cheshire), Cadeby (Warwickshire), Drakelow (Staffordshire), Ellistown (Leicestershire), Grantham (Lincolnshire), Lisnaskea (Northern Ireland), Littleport (Cambridgeshire), Lydney (Gloucestershire), Magherafelt (Northern Ireland), Telford (Shropshire) and Weston Underwood (Derbyshire) incorporate the latest computerised batching, distribution, casting, curing and handling systems and are operated by skilled and experienced workforces to ensure consistency of quality. Their geographical spread gives us an unrivalled ability to serve the construction industry throughout the UK and Ireland.

By applying the DFMA principles, FP McCann's design engineers are able to evaluate individual precast concrete products part by part, in addition to documenting the assembly process step by step. This allows them to generate the cost, part count and assembly time to provide a benchmark to measure its success and identify the parts and process improvement opportunities. In turn, this has allowed FP McCann to design and manufacture more cost-effective and efficient high-quality precast concrete products with less wastage and greater on-site recycling. As a result, increased productivity, combined with a reduction in production time and costs, allows FP McCann to be more competitive within the marketplace.

Drainage and Water Management

With one of the largest drainage and water management product ranges in the UK and Ireland, FP McCann has become the first choice for all of our customers.

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8 good reasons why you should use **concrete drainage**

1 Sustainability

Concrete pipes outperform other types of pipeline solutions in a number of the environmental impact categories such as human toxicity levels and chemical / hazardous waste generated. The CO2 emissions from concrete and cement production are relatively small compared to other building materials. Some 95 to 99% of ingredients used in the production of concrete pipes are sourced locally, so a considerable positive impact on the carbon footprint and fuel consumption associated with transporting these materials can be achieved.

2 Strength

Concrete is much more durable than any other kind of pipe. Hence, it can carry more load at any given time and gains strength over time. It cannot be weakened by heat, moisture, mould or pests, nor will it rust. Underground concrete pipes have the ability to resist chemical attacks and massive impacts such as jetting, so blockages will be cleared easily.

3 Quality

FP McCann's concrete pipes are manufactured in accordance with BS EN 1916 and BS 5911 and certified by Quality Assessment under the Kitemark Scheme and ISO 9001.

4 Whole Life Value

Due to the amazing structural properties and functional benefits, precast concrete pipes tend to attract lower insurance premiums than those built from other construction materials. The natural strength of precast concrete pipes enables recycled aggregate to be used as a bedding material, significantly reducing installation costs and the elimination of waste disposal costs.



5 Fire-resistance

Being naturally fire-resistant, concrete forms a highly effective barrier to fire spread and it does not emit any toxic fumes when affected by fire. It will not produce smoke or drip molten particles. Therefore, in the majority of applications, concrete can be described as virtually 'fireproof'. Concrete's inbuilt fire resistance not only maintains an airtight construction that stops smoke spreading, but also has the ability to maintain the pipe's strength during a fire.

6 Bedding performance

The superior strength of concrete pipes enables recycled aggregate to be used as a bedding material, reducing costs and environmental impact during installation. Since a full trench depth of granular material can actually be more expensive than the pipe, significant pipe bedding savings can be achieved when using a concrete pipe instead. FP McCann can advise on the optimum soil and ground conditions from geotechnical reports, to establish when this sustainable and cost-efficient solution can be deployed.

7 Chemical Resistance

Concrete pipes and manholes are resistant to sulphate and chemical attack. Concrete pipeline products with higher design chemical classes of DC3 and DC4 are capable of withstanding attack from the vast majority of aggressive ground environments in the UK.

8 Thermal mass and operational energy efficiency

Heavyweight materials such as concrete provide a high level of thermal mass, a useful property which helps regulate the temperature within structures. It also has good acoustic properties, which avoids the need for acoustic insulation for pipes.

Spigot and Socket Pipes

All of our spigot and socket pipes are manufactured and CE marked in accordance with European Standard BS EN 1916, the specification for unreinforced and reinforced concrete pipes (including jacking pipes) and fittings with flexible joints. They are also designed to meet BS 5911 for concrete pipes and ancillary products.



Standard Pipes

Nominal Size	DN	300	375	450	525	600	675	750	825	900	1050	1200	1350*	1500*	1800*	2100*	2400*
Internal Diameter	A	300	375	450	525	600	675	750	805	900	1050	1200	1350	1500	1800	2100	2380
Barrel Diameter	B	416	505	590	685	790	901	996	975	1080	1266	1460	1620	1800	2130	2460	2750
Socket Diameter	C	497	575	665	760	852	960	1060	1130	1235	1420	1590	1800	2010	2380	2650	2750
Effective Length	mm	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500
Approx. Weight	Kg.	450	590	730	975	1245	1820	2160	1690	2060	2760	3630	4290	5330	7300	9160	10070
Reinforced		N	N	N	N	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y
Approx. Pipes per load		62	50	40	30	22	15	13	17	13	10	8	6	5	4	3	2
Chamber Ring to suit		1200	1350	1500	1800	2400	2700	3000	3600								
MOL Availability		Y	Y	Y	Y	Y	N	N	N	N	N	N	N	N	N	N	N
Crushing Strengths	Kn/M	36	45	54	63	72	81	90	99	108	126	144	162	180	216	252	288
Nominal Joint Gap	mm	4	4	4	4	4	4	4	4	4	5	5	5	7	7	7	
Maximum Joint Gap	mm	34	34	34	34	34	34	34	34	34	34	36	36	36	41	41	
Maximum Deflection	* Degrees	2	2	2	2	2	2	1	1	1	1	1	0.5	0.5	0.5	0.5	-

* Easi-Lift Anchors Available

Pipe Lubricant

Pipes should only be joined using an FP McCann lubricant

Nominal size	DN	300	375	450	525	600	675	750	825	900	1050	1200	1350	1500	1800	2100
No. of joints per	Kg.	27	22	18	15	13	12	10	9	9	8	7	6	5	4	4

Sold in 2.5kg Tubs



Rocker Pipes

Nominal Size	DN	300	375	450	525	600	675	750	825	900	1050	1200	*1350	*1500	*1800	2100
Effective Length	mm	600	600	600	600	600	1000	1000	1250	1250	1250	1250	1250	1250	1250	1250
Approx. Weight	Kg.	145	180	220	300	365	800	950	1020	1020	1200	1605	2020	2755	4440	4620



Socket Butt Pipes

Nominal Size	DN	300	375	450	525	600	675	750	825	900	1050	1200	1350*	1500*	1800 *	2100*
Effective Length	mm	600	600	600	600	600	1250	1250	1250	1250	1250	1250	1250	1250	1250	1250
Approx. Weight	Kg.	145	174	230	270	370	960	1175	945	1105	1500	1930	2435	3100	4300	5400

* Easi-Lift Anchors Available



Spigot Butt Pipes

Nominal Size	DN	300	375	450	525	600	675	750	825	900	1050	1200	1350	1500	1800	2100
Effective Length	mm	600	600	600	600	600	1250	1250	1250	1250	1250	1250	1250	1250	1250	1250
Approx. Weight	Kg.	100	135	155	205	270	870	980	750	910	1170	1585	1850	2230	3005	3800



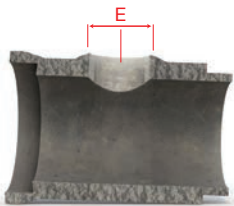
Two Piece Bends - 11.25°, 22.5° and 45°

Nominal Size	DN	300	375	450	525	600	675	750	900	1050	1200	1350	1500	1800
Internal Diameter	mm	300	375	450	525	600	675	750	900	1050	1200	1350	1500	1800
Approximate Weight	KG.	140	175	220	290	360	775	925	1140	1515	1955	2425	2965	4105



Three Piece Bends 90°

Nominal Size DN	DN	300	375	450	525	600	675	750	825	900	1050	1200	1350	1500	1800	2100
Internal Diameter	A	300	375	450	525	600	675	750	805	900	1050	1200	1350	1500	1800	2100
Approx. Weight	Kg.	430	260	390	520	530	850	1200	1900	2000	2600	3500	4200	5100	6800	7100



All junctions are to be fitted on their side. Junctions are not designed for vertical surface compaction and need to be surrounded in concrete.

Fastfit Junctions

Suitable to connect to Supersleeve pipe

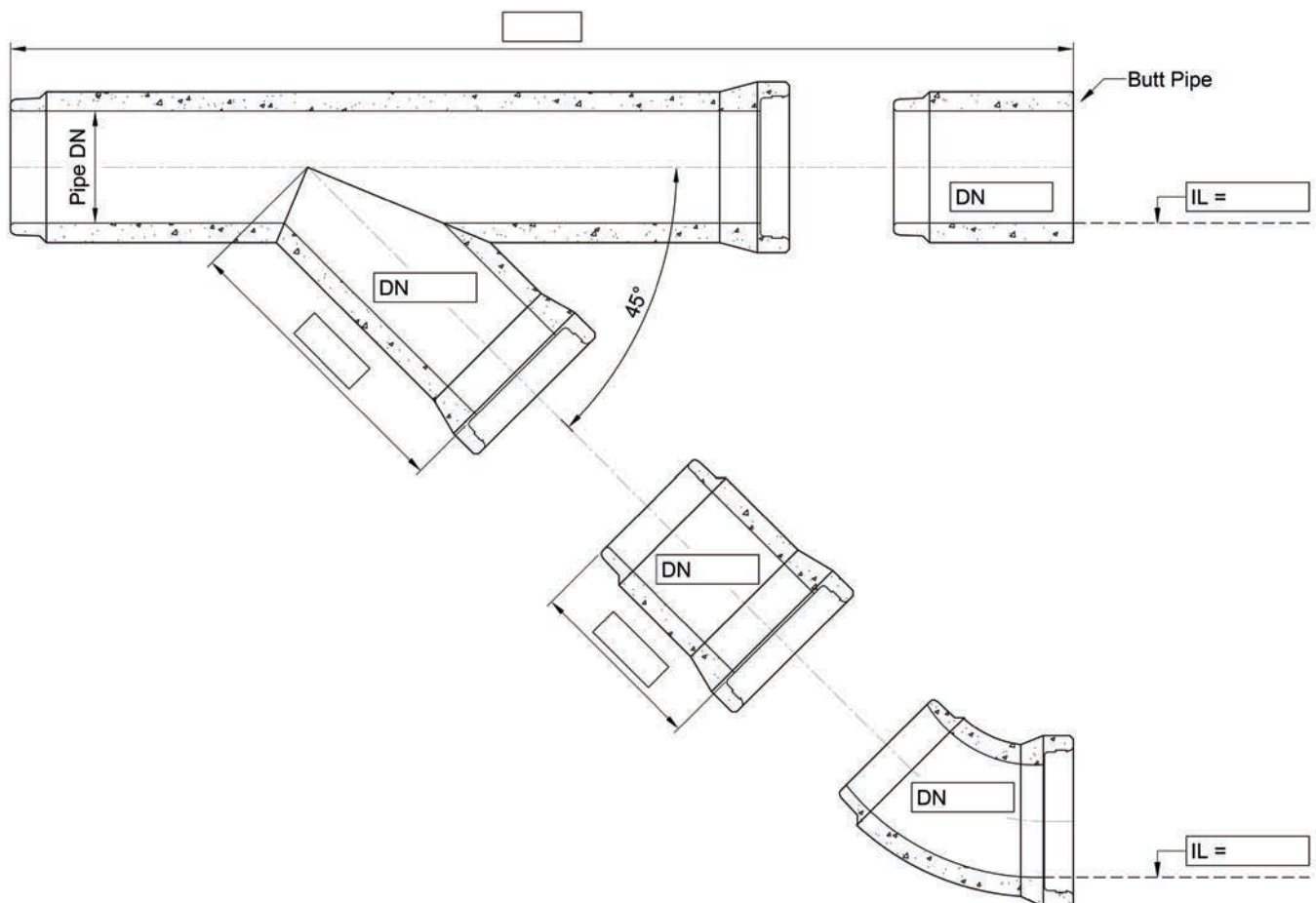
Nominal Size	DN	300	375	450	525	600	675	750	825	900	1050	1200	1350	1500	1800
Branch Size	E	150	150	150	150	150	150	150	150	150	150	150	150	150	150
Effective Length	mm	600	600	600	600	600	1000	1000	1250	1250	1250	1250	2500	2500	2500
Approx. Weight	Kg.	132	169	211	277	350	750	905	800	1140	1513	2427	4416	5120	7360

Convert to other pipe types





Oblique Tumbling Junction

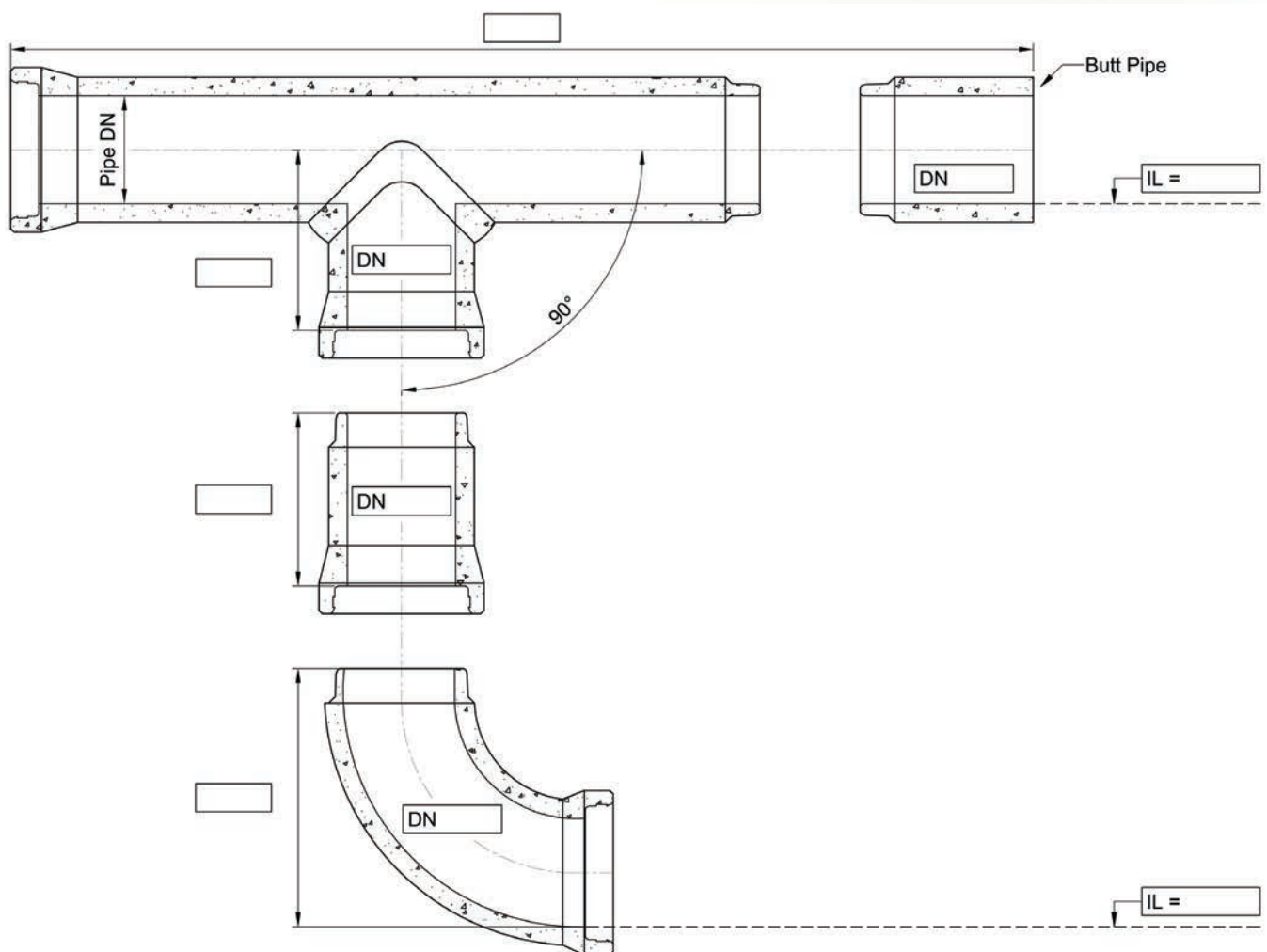


Instructions as to use

Please supply pipe diameter and invert levels only.
FP McCann will complete the remaining details
and return by email for customer approval.

All bends are
manufactured
to $\pm 4^\circ$ tolerance

Square Tumbling Junction



Instructions as to use

Please supply pipe diameter and invert levels only.
FP McCann will complete the remaining details
and return by email for customer approval.

All bends are
manufactured
to $\pm 4^\circ$ tolerance

Pipe handling/ laying instructions



Recommended site work practice - open cut flexible jointed pipes

Handling & Storing Pipes

1. Time and place of off-loading should be agreed before the units arrive at site. The contractor should provide suitable equipment for off-loading, stacking and stringing out of pipes on-site.
2. Off-loading should take place at the nearest hard road to the point of installation. To ensure the safety of all personnel, units must be left in a stable position, well clear of the edge of the trench.
3. Pipes should be inspected before off-loading to ensure that materials delivered correspond with the order placed.
4. Pipes should be carefully checked during off-loading to ensure no units are damaged. Any discrepancies should be recorded on the delivery docket.
5. Where stacking is necessary, this should be done on level ground and the bottom layer of pipes securely chocked to prevent the stack from collapsing. Pipes should be supported under the barrel so that the socket is free of load and to prevent the jointing faces from getting damaged. They should preferably be stacked barrel to barrel with sockets hanging over alternative sides.
6. For safety reasons and to prevent damage to the lower layers of pipe in the stack, pipes should not be loaded or stacked in a greater number of layers than is shown in the table below.
7. Avoid damage when handling, especially to ends of concrete pipes. Never drag or roll pipes over the ground.

Note: FP McCann's spigot and socket pipes from DN1350 can be handled using our purpose designed Anchor System. Special lifting anchors can be cast into pipes at manufacture. A Universal Head Link (available from FP McCann) can then be hooked onto the exposed anchor heads to lift the pipe. Lifting anchors are fitted to order.

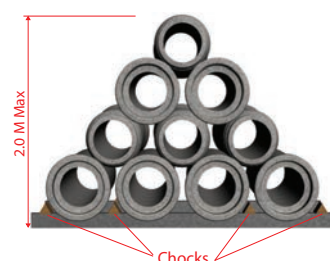
Laying Pipes

1. **Trench Excavation** The trench should be excavated to the line, gradient and width as indicated in the contract documents or as agreed with the engineer. The safety of the public and site personnel is of paramount importance and care should be taken to ensure personal safety at all times.
2. **Trench Width** Any increase in trench width above that specified could increase the load on the pipe, increasing the quantity of excavation and the bedding material required. A trench narrower than the specified width may impede the proper placing of bedding or backfill material, or the correct jointing of pipes.
3. **Formation** Uniform support along the pipeline is essential. Rock outcrops and soft zones, which can cause differential settlement, should be dug out and replaced with compacted specified backfill material. De-watering may be necessary during pipe laying and subsequent backfilling operations. The specified bedding material shall be placed as detailed in the contract specification, and trimmed to ensure uniform support of the pipe throughout the length of its barrel. Recesses should be prepared for the pipe sockets.
4. **Pipe Laying** Before being lowered into the trench, pipes and fittings should be inspected to ensure that they have not been damaged

during handling and storage on-site. Units should be lowered carefully into the trench using a recognised lifting tackle, such as the Easi-Lift mechanical pipe lifter.

5. **Jointing** Using our pipe jointing instruction guide, all pipe spigots must be fully lubricated with the pipe lube supplied, just prior to being lowered into the trench. Please note, pipes should only be jointed using a FP McCann lubricant. The socket of the laid pipe should, at this stage, be prepared by removing the polystyrene forming ring to leave a clean seal free from debris. The adjoining pipe should be lowered into position, as level as possible, centring the pipe spigot with the seal of the laid pipe so that the pipes are in line. On achieving this, apply pressure to the socket end of the adjoining pipe using a substantial piece of timber to protect the pipe from damage when pushing the pipe home.
6. **Testing** Acceptance tests on the completed pipeline give an indication of the level of control of workmanship and materials during construction.
7. **Visual Testing** Check for obstructions and debris within the pipe, the structural soundness of pipes, that joints are properly sealed and that the pipe invert is even. Note: pipes smaller than DN750 may be inspected from manholes or by means of TV cameras.
8. **Watertightness** The watertightness of a pipeline may be checked using a water or air test. Such tests will reveal the existence of cracked or porous pipes or faulty joints. These tests should be made during and after laying and before backfilling. The test method will be detailed in the contract specification or referenced to an appropriate code of practice. In certain circumstances (e.g. where the distance between manholes is great, or when site conditions are such that backfilling must take place immediately or when laying small diameter pipelines), it is recommended that the pipeline is tested at regular intervals (say every 3 pipes) during construction.
9. **Backfilling** This should take place after inspection and testing. The attention given to the backfill selection is of great importance. The placing and compaction of inappropriate backfill may cause damage to a new pipeline. The structural strength of the completed pipeline depends as much on good site workmanship as on the strength of individual pipes. Consequently, all backfill material must be selected and placed as detailed in the contract specification or recognised code of practice.

Note: For additional information on laying pipes, please refer to the CPISA website: concretepipes.co.uk/technicalguides/index.html



DN	No of layers
300 - 375	4
450 - 600	3
750 - 900	2
> 1050	1

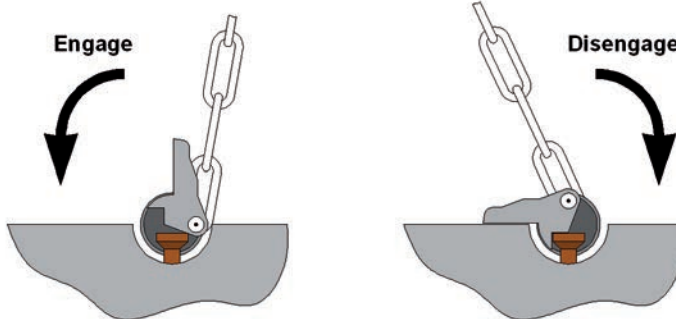


Anchor system

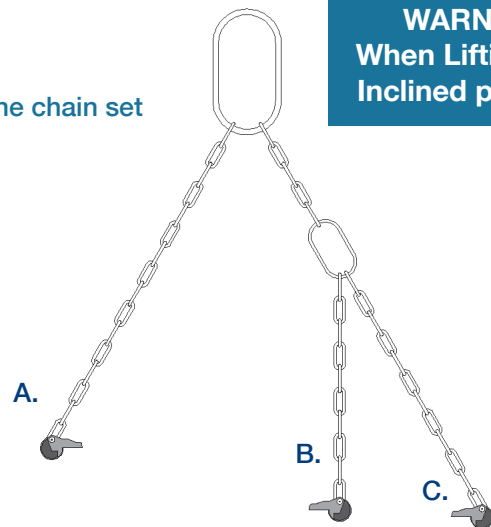
FP McCann's pipes from DN1350 should be handled using our purpose-designed anchor system. Special lifting anchors are cast into pipes at manufacture. A universal head link (available from FP McCann) can then be hooked onto the exposed anchor heads to lift the pipe.

Use the equal lengths (A & B) for lifting the pipe. Join the longer chain (C) onto the pipe already laid and place the shorter length (B) onto the hook. The pipe can then be jointed without moving the jib of the crane. www.fpmccann.co.uk/anchor-system

Engaging and disengaging the eye

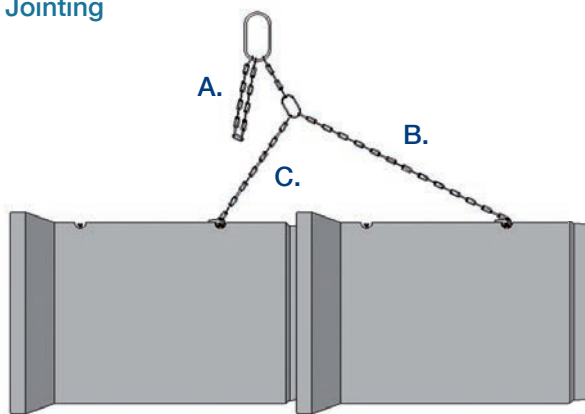


The chain set

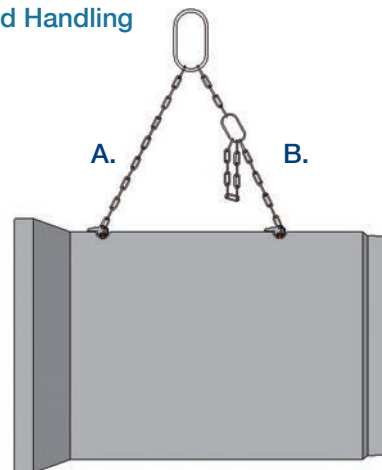


WARNING
When Lifting $\geq 45^\circ$
Inclined pull only

Joining



Lifting and Handling



Nominal size	DN	300	375	450	525	600	675	750	825	900	1050	1200	1350	1500	1800	2100	2400*
Anchor Availability		X	X	X	X	X	X	X	X	X	X	X	Y	Y	Y	Y	Y

Anchor system available from 1350mm diameter upwards (Available in DN1200 in NI only) / * Lift only not jointing

Notes:

- All dimensions are in mm.
- Weights in kg are based on a concrete density of 2500kg/m Δ .
- Where relevant, pipes are manufactured in accordance with BS EN 1916.
- Normal practice is to determine left or right branch laterals to the main line by looking up the flow i.e. from the socket end.
- Right hand or left hand junctions (viewed socket to spigot) should be specified when ordering reduced junctions in pipe diameters DN1350 and above.
- Lifting chains are not suitable for joining purposes in pipes of diameter DN2400. Joint in the traditional method.
- Do not install vertical junctions.**

Pipe jointing guide



1. Prior to assembly, inspect the pipes and ensure they are in good condition. The white protective strip in the socket helps to keep the sealing area free from dirt, mud and gravel etc.



2. Prior to assembly, clean the socket and spigot. Water and mud does not seriously affect the joint, but should be avoided. It is recommended that only a FP McCann lubricant is used. **Apply lubricant to the spigot end.** Take care that lubricant is evenly applied all around the spigot. It is important to lubricate the radius area, as shown by the arrow in the picture. Lubrication is easier with the pipe suspended. Dry jointing can result in severe damage to the seal and pipe.



3. The protective strip is removed prior to jointing. Grip the tab of blue tape and pull towards the pipe centre, not towards the inside or outside. Small parts of the strip can remain in the pipe without affecting the joint performance.

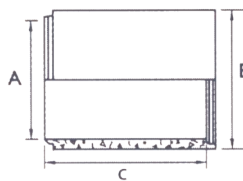


4. Centre the pipes and joint together. The socket design and wedge shaped seal provide a funnel action and help centre the pipes. As the integrated seal is fixed in position, it is not dislodged during assembly. Critical guiding of the spigot and monitoring the seal position is no longer necessary. It is advised that pipe joints are inspected directly after installation to ensure complete assembly, and that air tests are carried out at regular intervals using inflatable stoppers.

Important Jointing Information

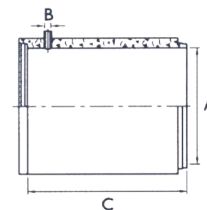
The integral pipe-seal jointing system used in FP McCann's drainage products requires the use of a FP McCann proprietary lubricant, which can be supplied with all pipeline orders from us. Failure to use the proprietary lubricant in accordance with the instructions provided by the pipe-seal manufacturer / FP McCann, may give rise to problems with pipe jointing and seal performance and invalidate any warranty, implied or otherwise. FP McCann accepts no responsibility whatsoever for problems or loss of performance arising from any such failure.

Pre-lubricated pipes



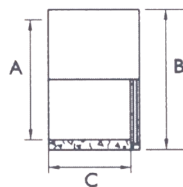
Standard Pipes (Wet-Cast Ex-Alnwick)

Nominal Size	DN	1800	2100	2400
Internal Diameter	A	1830	2076	2380
Barrel Diameter	B	2140	2410	2750
Effective Length	C	2500	2500	2500
Approx. Weight	Kg.	6525	7960	10070
Pipes per Load	Qty	4	3	2



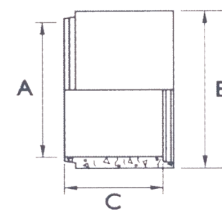
Right Angle (90°) Reduced Junction

Nominal Size	A	1800	2100	2400
Branch Supersleve	B	100	100	100
Branch Supersleve	B	150	150	150
Effective Length	C	2500	2500	2500
Approx. Weight	Kg.	6525	7960	10070



Spigot/Socket Butt Pipes

Nominal Size	DN	1800	2100	2400
Internal Diameter	A	1830	2076	2380
Barrel Diameter	B	2140	2410	2750
Effective Length	C	1250	1250	1250
Approx. Weight	Kg.	3370	4095	5195



Rocker Pipes (Wet-Cast Ex-Alnwick)

Nominal Size	DN	1800	2100	2400
Internal Diameter	A	1830	2076	2380
Barrel Diameter	B	2140	2410	2750
Effective Length	C	1250	1250	1250
Approx. Weight	Kg.	3310	4010	5040

Fastfits available 150mm Super sleeve made to order

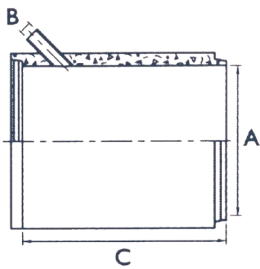
Note:

All junctions are to be fitted on their side. Junctions are not designed for vertical surface compaction.



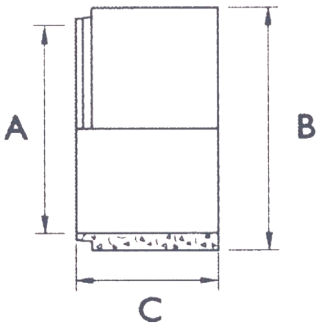
Oblique (45°) Reduced Junction (Wet-Cast Ex-Alnwick)

Nominal Size	A	1800	2100	2400
Branch Supersleve	B	100	100	100
Effective Length	C	2500	2500	2500
Approx. Weight	Kg.	6525	7960	10070



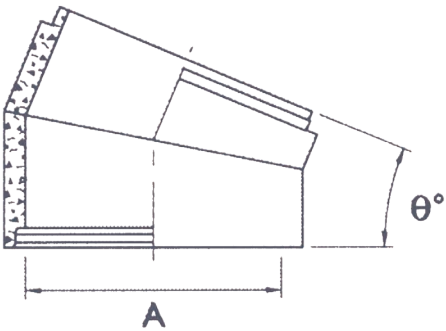
Spigot Butt Pipes

Nominal Size	DN	1800	2100	2400
Internal Diameter	A	1830	2076	2380
Barrel Diameter	B	2140	2410	2750
Effective Length	C	1250	1250	1250
Approx. Weight	Kg.	3020	3610	4670



Two Piece Bends (Wet-Cast Ex-Alnwick)

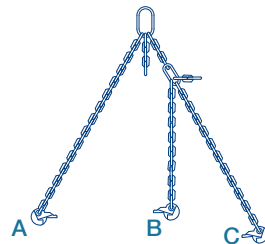
Nominal Size	DN	1800	2100	2400
Internal Diameter	A	1830	2076	2380
Angle θ°	11.25	3	3	3
Angle θ°	22.5	3	3	3
Angle θ°	45	3	3	3



Note:
All junctions are to be fitted on their side. Junctions are not designed for vertical surface compaction.

Pipe lifting instructions

Lifting Chains



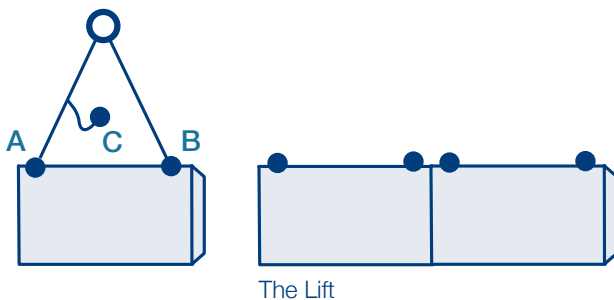
Nominal size	1800	2100	2400
Medium Duty Chain Set	3	3	X
Heavy Duty Chain Set	X	X	3*

*Only suitable for Lifting not Joining

Handling/Lifting Instructions

DN1800 to DN2400 pipes are designed and manufactured to incorporate FP McCann's jointing and lifting systems.

Lift System

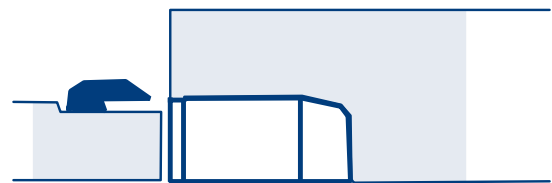


To lift the pipes, select the two short legs A and B on the chain set. Place the spherical coupling over the cast-in anchor and engage by turning the tail of the head link down to the concrete. The pipe can then be lifted as normal.

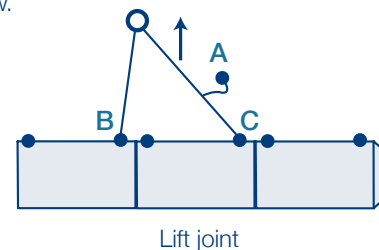
Never pass slings or other lifting appliances through the barrel and never lift more than one pipe at a time.

Jointing

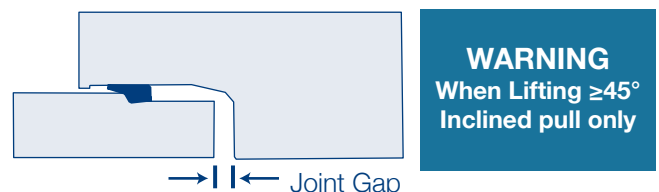
Ensure that the seal is of the correct size and is not damaged. Ensure pipe sockets and spigots are not damaged. Position the rubber ring on the end of the spigot end.



Do not use lubricants when jointing pre-lubricated pipes. Ensure each pipe to be laid is aligned with the laid pipeline and is fully supported along its length. Recommended method of joining pipes is shown below.



To joint the pipe using the chain system, attach the long leg A and the short leg B to the already laid pipe C. Take up the slack in the chains with the lifting pulley over the anchor of the laid pipe, and increase the upward force to joint the pipes. When jointed, ensure that there is no excessive slew or misalignment, this can easily be checked by reference to the joint gap.

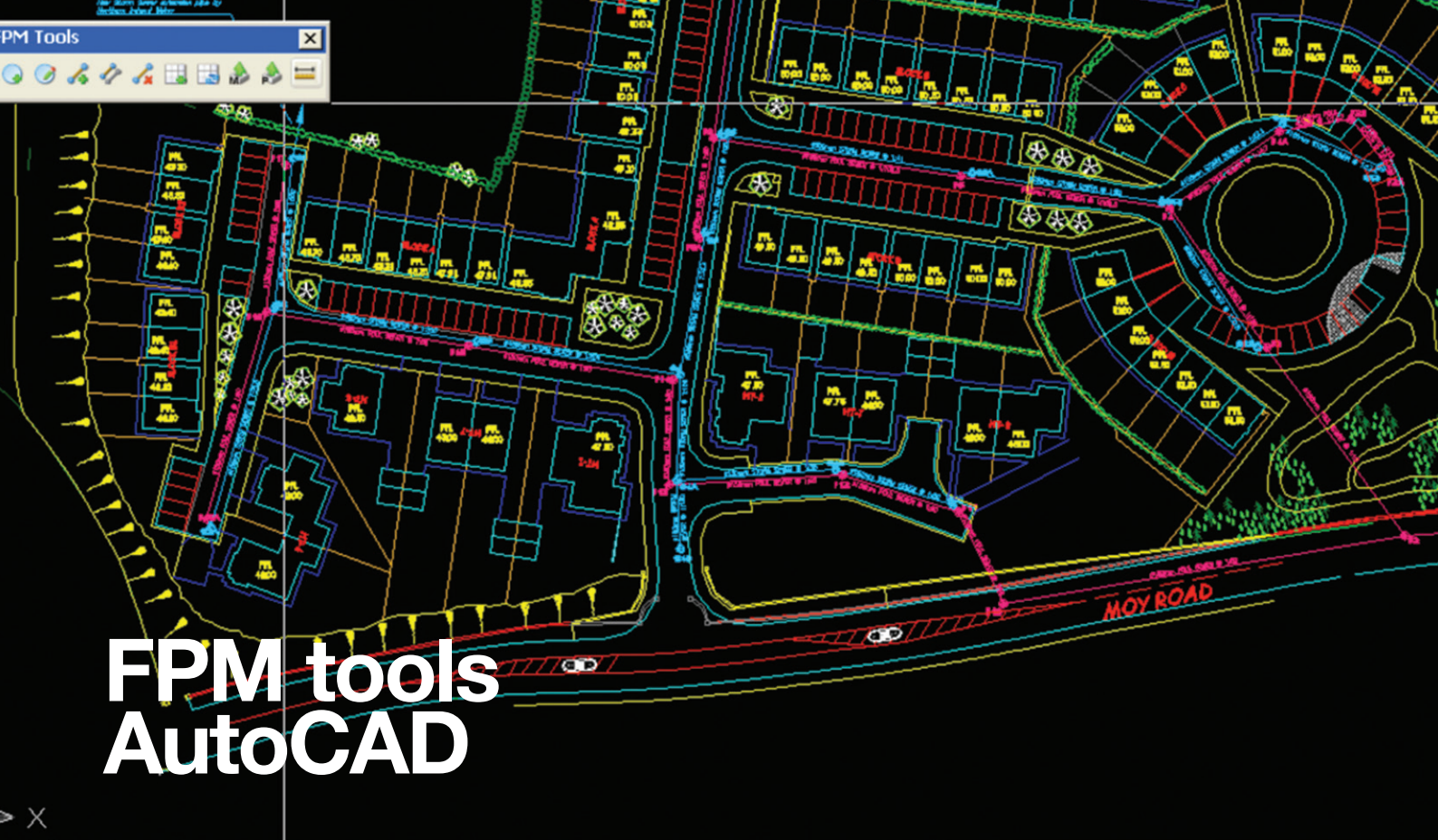


WARNING
When Lifting $\geq 45^\circ$
Inclined pull only

Notes:

All dimensions are in mm.

- Weights in kg are based on a concrete density of 2500kg/m Δ .
- Where relevant, pipes are manufactured in accordance with BS EN 1916.
- Normal practice is to determine left or right branch laterals to the main line by looking up the flow i.e. from the socket end.
- Right hand or left hand junctions (viewed socket to spigot) should be specified when ordering reduced junctions in pipe diameters DN1350 and above.
- Lifting chains are not suitable for joining purposes in pipes of diameter DN2400. Joint in the traditional method.
- Do not install vertical junctions.**



Designed for AutoCAD, the FPM AutoCAD toolbar is a set of commands to aid civil engineers, quantity surveyors and estimators in producing quick and accurate drainage take-offs.

It provides tabular data for the drainage layout and specifies the relevant FP McCann Easi-Bases automatically.

The FPM Tools toolbar is used to work through the drainage plan in sequence, specifying each manhole in turn. Manhole references, invert levels, cover levels, pipe types and pipe lengths are all recorded. When complete, a table is generated within the actual plan. This table can then be exported as a .csv file and opened in MS Excel or other similar supporting program.

The screen shot above shows the drainage table generated within AutoCAD and, to the right, the exported Excel table ready for the quantity surveyor / buyer / estimator to send out for pricing.

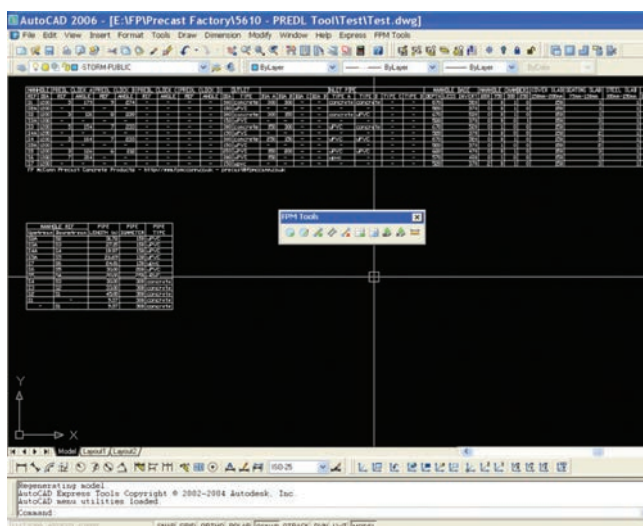
From within AutoCAD, the Manhole Edit tool can be used to assemble the manhole and pipe data at a particular manhole reference within the plan.

Subscribers to Micro Drainage's WinDes 2013.1 sustainable drainage software can incorporate Easi-Base into quick and accurate drainage scheduling, in accordance with the Predl clock notation.



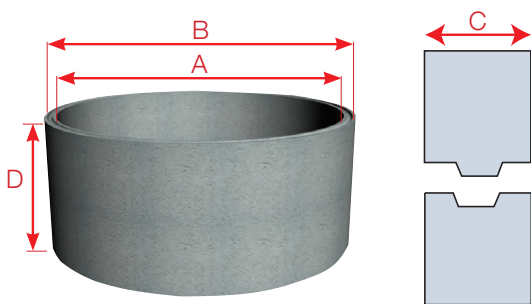
www.microdrainage.co.uk

Manhole Reference	Pipe Size	Pipe Length	Invert Level	Cover Level	Pipe Type
P1	150	10	100.00	105.00	UPVC
P2	150	10	100.00	105.00	UPVC
P3	150	10	100.00	105.00	UPVC
P4	150	10	100.00	105.00	UPVC
P5	150	10	100.00	105.00	UPVC
P6	150	10	100.00	105.00	UPVC
P7	150	10	100.00	105.00	UPVC
P8	150	10	100.00	105.00	UPVC
P9	150	10	100.00	105.00	UPVC
P10	150	10	100.00	105.00	UPVC



Manhole chambers

Manhole Chambers (Tongue & Groove Joint)



Tongue and Groove Joint Profile



Nominal Size (A) (DN)	Available Depth of Section (D)				Wall Thickness (C) mm	litres / meters	Barrel Diameter (B) mm	Approx. Weight Kg. (p/meter)	Approx. Products per load Qty. (meter)	Lifting Hole Qty/dia. (p/unit)
	250mm (±25mm)	500mm (±25mm)	750mm (±50mm)	1000mm (±50mm)						
900	✓	✓	✓	✓	70	656	1040	520	38	3x45mm dia
1050	✓	✓	✓	✓	80	894	1210	690	34	3x45mm dia
1200	✓	✓	✓	✓	90	1167	1380	880	26	3x45mm dia
1350		✓	✓	✓	95	1478	1540	1050	22	3x45mm dia
1500		✓	✓	✓	100	1824	1710	1300	16	3x45mm dia
1800		✓	✓	✓	115	2544	2030	1750	12	3x45mm dia
2100		✓	✓	✓	125	3464	2350	2040	10	4x50mm dia
2400		✓	✓	✓	140	4514	2680	2790	8	4x50mm dia
2700		✓	✓	✓	150	5725	3000	3370	8	4x50mm dia
3000		✓	✓	✓	210	7069	3420	5050	5	4x50mm dia
3600		✓	✓	✓	185	10179	3970	5400	5	3x RD30
4000			✓	✓	200	12566	4400	6800	4	4x RD36
MOL from 900-1500										Dia ± 5mm

Product Information

- FP McCann's manhole chamber rings are manufactured with tongue and groove joints and comply with BS EN 1917 / BS 5911-3
- Manhole chambers ex-Ellistown from DN2100 - DN3000 have 4 lifting points. Manholes less than DN2100 have 3 lifting points
- Manhole chambers ex-Magherafelt from DN900 -DN2700 have 3 lifting points. DN3000 have 4 lifting points
- DN3600 and DN4000 are outside of the scope of the British Standard (Non-Kitemark), but comply with all relevant provisions of the European Standard. DN4000 is supplied in two halves

WARNING
When Lifting ≥45°
Inclined pull only

Manhole soakaways



Manhole Soakaway Chambers

Nominal Size (DN)	No. of 75mm holes per Chamber			Wall Thickness mm	litres/ meters	Barrel Diameter mm	Approx Weight Kg. (p/metre)	Approx. Products per load Qty.
500mm	750mm	1000mm						
900	5	8	10	70	656	1040	520	46
1050	6	9	12	80	894	1210	690	34
1200	7	10	14	90	1167	1380	880	26
1350	8	11	15	95	1478	1540	1050	22
1500	8	13	17	100	1824	1710	1300	18
1800	10	15	20	115	2544	2030	1750	12
2100	12	18	24	125	3464	2350	2040	10
2400	14	20	27	140	4514	2680	2790	8
2700	15	23	31	150	5725	3000	3370	6
3000	17	25	34	210	7069	3420	5050	5
*3600	20	31	41	185	10179	3970	5400	5
*4000	23	34	45	200	12566	4400	6800	1.5

* DN3600/4000 - see page 31 Manhole Chambers / DN3600/4000 Manhole Soakaways made to order

Sealing Strip

Nominal Size (DN)	Sealant Size (metres)	No. of rolls p/joint (metres)	Rolls Required Quantity
900	20x20x4m	0.88	1
1050	20x20x4m	1.00	1
1200	20x40x4m	1.13	2
1350	20x40x4m	1.25	2
1500	20x40x4m	1.38	2
1800	20x40x4m	1.63	2
2100	20x40x4m	1.88	2
2400	20x40x4m	2.13	3
2700	20x40x4m	2.38	3
3000	12x120x6m	1.75	2
3600	12x120x6m	2.08	3
4000	12x120x6m	2.33	3

Please note this is a guideline based on sealant supplied by FP McCann only.

Recommended site work practice - manhole chambers



Handling & Installing Manholes

1. Time and place of off-loading should be agreed before the units arrive at site. The contractor should provide suitable equipment for off-loading. For safety reasons, all chamber sections are loaded and delivered chimney fashion.
2. Off-loading should take place at the nearest hard road to the point of installation. When off-loaded, units should never be stored on their side (on the roll) but always be laid in the 'as installed' upright position.
3. Carefully inspect units during off-loading to verify that products are undamaged and comply with order placed. Note any discrepancies on the delivery docket and advise accordingly.

Construction

To ensure that the manhole structure is vertical, accurate levelling of the formation or the in-situ concrete foundation is essential. Please note: the depths of each manhole can vary and are subject to tolerances; it is recommended that each unit installed has its depth measured prior to installation, to ascertain if the levelling requirements are satisfactorily met. Tongue and groove joints should be installed with the groove facing upward. Manhole sections fitted with double steps can be used at any depth. However, it is recommended that the deepest section of manhole units should be used whenever possible, in order to minimise the number of joints and costs. Precast cover slabs can be laid directly onto the shaft or chamber rings. To allow for any differential settlement between manhole and pipeline, a flexible joint incorporating short length rocker pipes should be constructed as close as possible to the outside of the manhole or the concrete surround, if used. Extra care must be taken to ensure that joints are properly made.

Jointing

Precast manhole components are provided with joints formed within the wall section. These are sealed with cement and sand mortar or with proprietary FP McCann mastic sealants. Precast concrete manhole units, well jointed, provide an adequate seal under normal conditions.

Reinstatement

An in-situ concrete surround to precast concrete manholes is not necessary because a well-constructed precast manhole is a strong, durable structure with its own inherent strength and would only require a surround for exceptional structural reasons. However,

under some specifications, a concrete surround is required where the depth from ground level to the base of the concrete chamber ring exceeds 4.5m. In this case, the surround should be of 150mm thickness. Backfilling should take place as each precast manhole section is placed. It must be brought up evenly and compacted around the manhole to prevent displacement.

Testing

It is generally unnecessary to apply water tests to manholes. In normal working conditions, manholes are not normally full of water. Prevention of infiltration is of more relevance than exfiltration. If infiltration does occur, it can be seen and remedied by sealing using an appropriate method.

Note: When handling precast products on site, it is recommended that the contractor has the correct lifting equipment in place and adheres to the relevant lifting guidelines and standards.

Refer to www.concretepipes.co.uk/technicalguides/index.php

Recommended Lifting Equipment

Nominal Size	Lifting Hole Qty/dia (p/Unit)	36mm Lifting Pin 3.5 t SWL	42mm Lifting Pin 3.5 t SWL	3 leg Lifting Chain 3.1t	4 leg Lifting Chain SWL 6.7 t
900	3x45mm dia	✓		✓	
1050	3x45mm dia	✓		✓	
1200	3x45mm dia	✓		✓	
1350	3x45mm dia	✓		✓	
1500	3x45mm dia	✓		✓	
1800	3x45mm dia	✓		✓	
2100	4x50mm dia		✓		✓
2400	4x50mm dia		✓		✓
2700	4x50mm dia		✓		✓
3000	4x50mm dia		✓		✓
3600	3 x RD30 (Loops)			✓	
4000	4 x RD36 (Loops)				✓

Dia + 5mm

DN4000 manhole chamber

The DN4000 manhole chamber sections can be used in a variety of applications such as:

- Water treatment plants
- Stormwater attenuation systems
- Storage tanks
- Catchpits

The DN4000 chamber ring is supplied with a standard tongue and groove joint, connecting bolts and butyl rubber sealant for jointing purposes. The units are designed for use with the FP McCann ladder system. Single units (half ring) are lifted using 3 no. threaded lifting loops connected into threaded lifting sockets that are cast into the units, all of which must be used. Assembled units (full ring) are then lifted using 4 threaded lifting loops.

The 4 metre chamber section comes as a two part unit, which allows for ease of transport and handling.



DN4000 Chamber section

Nominal Size DN	Section Depth	Wall thickness	Approx. weight of half section	Approx. weight of section when jointed
mm	mm	mm	kg	kg
4000	1000	200	3400	6800
4000	750	200	2550	5100

DN4000 Cover slab – 2 piece unit (Detail for standard 600 & 675 openings)

Heavy duty cover to suit chamber section DN	Effective thickness	Overall thickness	Overall diameter	Approx. weight of half section	Approx. weight of combined sections
mm	mm	mm	mm	kg	kg
4000	300	300	4500	6450	11700

Cover slabs are manufactured in two sections, supplied with standard openings. Standard cover slabs are designed to withstand 30 units of Type HB loading, applied in accordance with BS 5911. If required, cover slabs can be designed to withstand 45 units of Type HB loading. For special opening cover slabs, an engineering drawing and steel specification may be required in order to achieve the desired loading requirement.

Note: FP McCann will provide a technical installation sheet which must be adhered to when installing DN4000 manhole chambers. This is available online or from our sales team.

DN4000 lifting/handling & installation guide

1. Lifting

Single units (half ring) are lifted using 3 no. threaded lifting loops connected into threaded lifting sockets that are cast into the units, (all of which must be used). The chain angle should not be less than 60 degrees to the horizontal. In order to lift without tilt, the chain lengths will differ. Refer to the diagram opposite for explanation of minimum chain angle and lengths. Alternatively, a spreader beam may be used. Complete units (full ring) are lifted using 4 threaded lifting loops attached to threaded lifting sockets cast into the units. Refer to the diagram opposite for explanation of the location of the lifting sockets to be used. The chain angle should not be less than 60 degrees to the horizontal. Alternatively, a spreader beam may be used.

Note: Using 3 chains to lift a full ring will put unnecessary stress on the concrete and may cause the concrete around the joint to crack.

Unit weight and identification of lifting points will be marked on each casting for information.

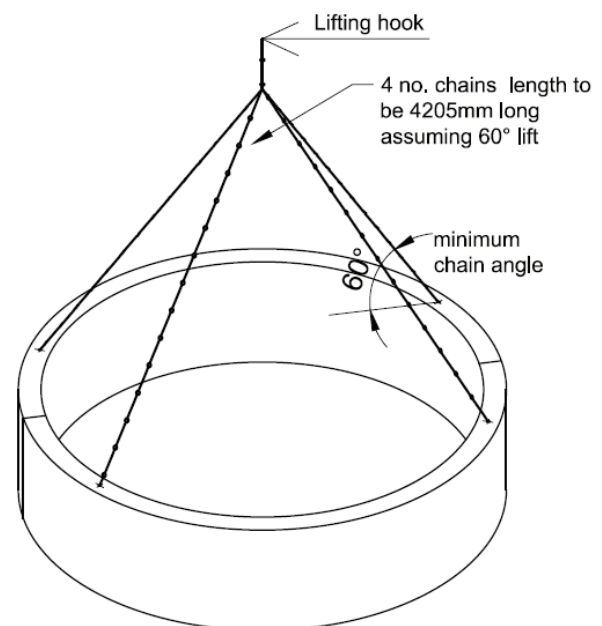
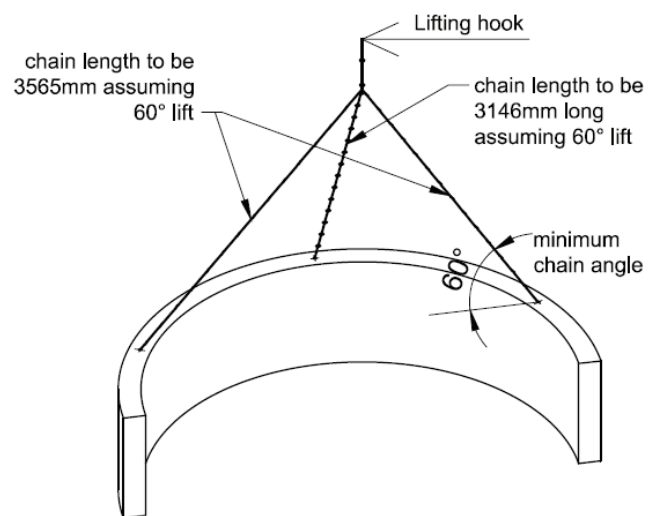
2. Handling & Installation

It is recommended that the two piece chamber ring is jointed before lifting into place:

- Place the two units on a level surface, ideally on 2 skids to reduce resistance when jointing and also to maintain a clean joint
- Place both halves side by side ensuring both are at the correct orientation i.e. with bolt holes in line with threaded sockets
- Insert the M24x200 threaded pins with the 60mm threaded side placed into the cast-in sockets
- Place a strip of bituminous sealant along the small recess of the vertical joint on both halves of the ring
- Once bolts and sealant are in position, the 2 halves of the unit must be pulled together using a ratchet system e.g. a chain block fixed to the cast-in M24x80 sockets on opposite ends of the units. (Do not use the wall end bolting system to pull the units together as this may crack the concrete and damage the joint)
- The completed ring can then be manoeuvred into place, as detailed above

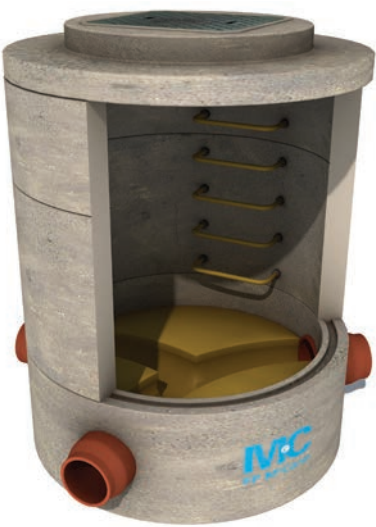
Half-rings can be lifted into final position and the chamber can be built up, a half unit at a time.

Please note it is the end-user's responsibility to ensure safe access and lifting procedures are followed at all times.

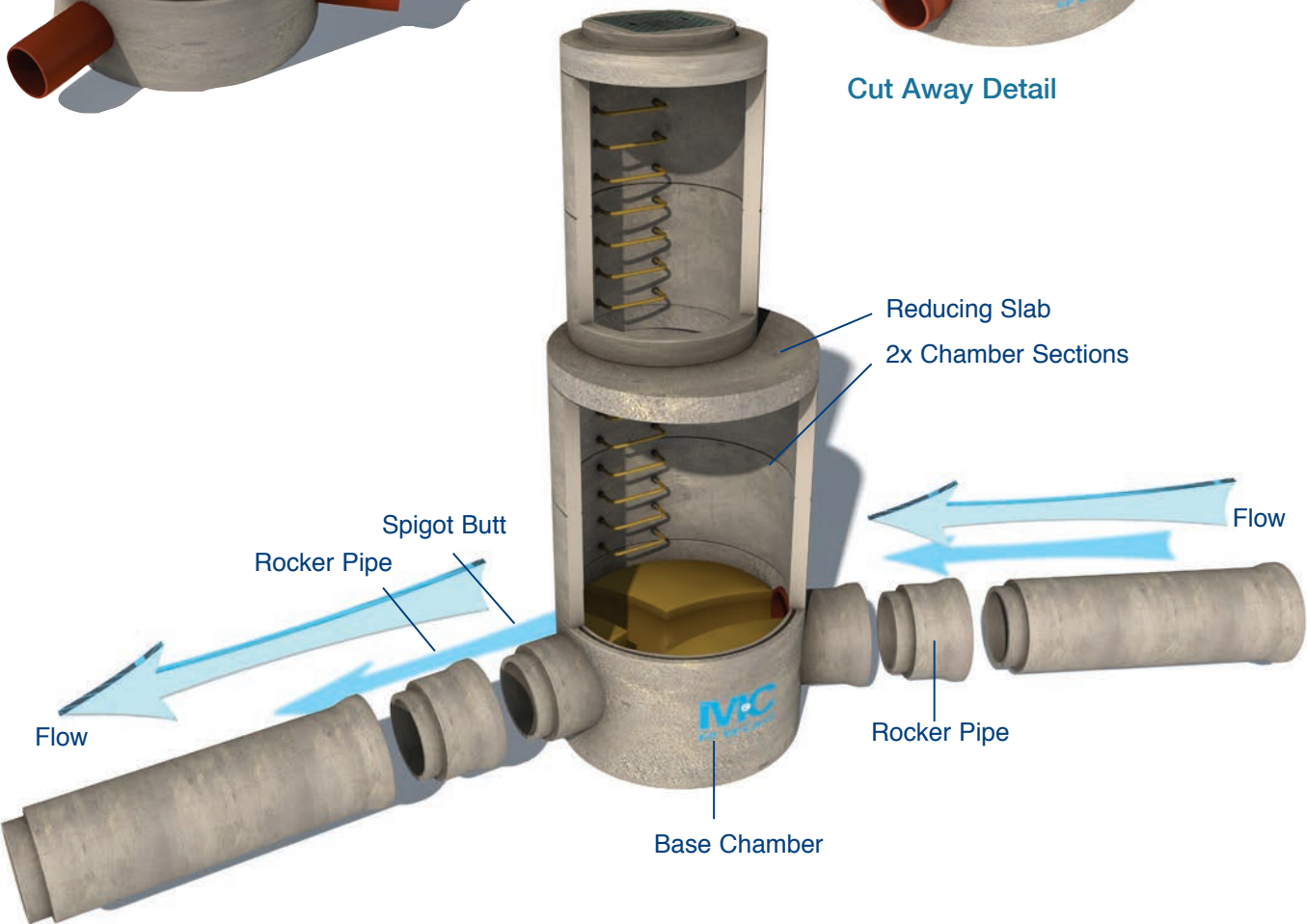


Manhole construction

Detail of manhole construction



Cut Away Detail



DN1200 Easi-Base

A prefabricated manhole base unit with integral benching, channels and connectors that provides an immediate and long-lasting watertight solution in the management of waste water.

Benefits of using the Easi-Base

- An extremely fast, efficient and economical method of constructing manhole bases on-site
- Accepted by main UK Water Authorities
- Significant health and safety benefits
- An immediate watertight structure, allowing other trades to instantly follow on
- Factory prefabrication provides a quality finish to channelling and benching, and enables accurate combinations and variations for entry/exit pipes
- Connects with any type of pipe and is compatible with the DN1200 130mm thick wide wall chamber ring
- Maintenance of channels and benches are aided by clean access for inspection
- Eliminates the risk of water pollution that is associated with traditional methods of manhole construction, such as concrete base formation integrity failures due to bad weather conditions, which results in groundwater being contaminated with polluted raw sewerage and clean groundwater infiltrating the already overloaded raw sewerage system of pipelines and treatment plants
- Easi-Bases are now accepted under 'Sewers for Adoptions' 7th edition
- An 80 year guaranteed base



The unique DN1200 Easi-Base utilises a polypropylene liner with prefabricated benching and channels. Pipe connection bells are pushed into the inlet and outlet points and the liner is then encased and embedded in concrete to provide its structural strength and integrity. The DN1200 Easi-Base is manufactured as a monolithic precast unit; it utilises the standard manhole tongue and groove joint and is ready for immediate use, in combination with either a standard 90mm thick manhole chamber or the new 130mm thick wide wall chamber ring.

The Easi-Base system connects with most type of pipe including:

- Single Wall uPVC
- Twin wall
- Concrete
- Clay

The DN1200 unit allows connection to channel diameters DN150 - DN300. FP McCann has developed a selection of adaptors to increase the range of pipe types accommodated.

Features

- The DN1200 Easi-Base is made to an internal diameter of 1200mm with a tongue and groove joint profile to match standard DN1200 manhole chamber rings
- Wall thickness is 150mm
- The base has a 150mm floor thickness with the outlet invert at approximately 150mm from ground level
- A 1% fall exists across the channel toward the outlet (1:100)
- A gradient of 1:10 is present at the benching with the run-off toward the channel
- The height of the DN1200 Easi-Base unit varies in accordance with the diameter of the main channel running through the unit. (Please refer to the table above for heights)

Quality

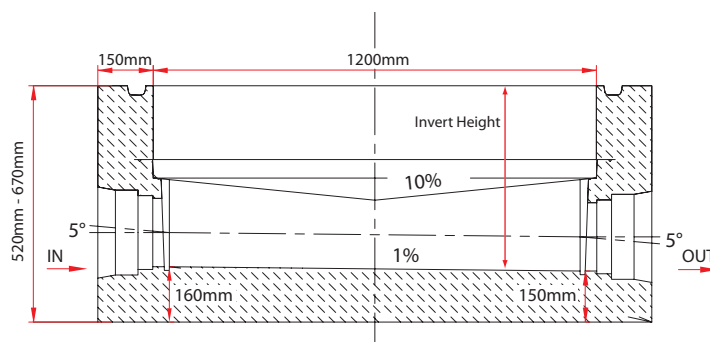
- Easi-Base is a Kitemark product, manufactured and tested to BS EN 1917
- WRc tested and approved
- Easi-Base is accepted for use by all major UK water companies



Channel Depth (mm)	Easi-Base Height (mm)	Invert to Base Top (mm)
150	520	370
*200	570	420
225	620	470
*250	620	470
300	670	520

* NI Only

Unit weights vary between 1.5 tonnes and 2.5 tonnes depending on channel diameters and channel configuration.



Sealant

DN1200	12mm x 120mm x 4.2m
DN1500	12mm x 120mm x 5.2m
DN1800	12mm x 120mm x 6.0m

DN1500 DN1800 Easi-Bases

FP McCann's DN1500 and DN1800 Easi-Bases complement our existing manhole ranges and are produced as monolithic units, utilising standard manhole tongue and groove joints for connection with standard manhole chambers. These units are produced wholly from concrete and provide a variety of connection orientations using the Predl Clock System. They can accommodate concrete, clay, twinwall and uPVC pipes.

Our bespoke DN1500 and DN1800 Easi-Bases are manufactured to order. The table below gives the dimensions associated with each size, including the overall height of the unit, the invert level for each different pipe diameter and the combination of pipe diameters accommodated. All Easi-Bases are made level to soffit, (i.e. level-benching).



Easi-Base Chamber Heights & Weights (all sizes in mm)				
Easi Base Diameter	Internal Channel Diameter	Invert Level (for take off)	Finished Height Base Unit	Easi-Base Weight Tonnes
DN1200	150	370	520	1.62
DN1200	225	470	620	2.2
DN1200	300	520	670	2.2
DN1500	150	470	750	3.5
DN1500	225	545	750	3.5
DN1500	300	600	750	3.5
DN1500	375	705	1000	4.6
DN1500	450	810	1000	4.4
DN1500	525	920	1250	4.7
DN1500	600	1000	1250	4.75
DN1800	150	470	750	6
DN1800	225	545	750	6
DN1800	300	600	750	6
DN1800	375	705	1000	6.5
DN1800	450	810	1000	6.5
DN1800	525	920	1250	7
DN1800	600	1000	1250	6.5
DN1800	675	1150	1400	8
DN1800	750	1200	1500	7.75
DN1800	825	1300	1500	7.5
DN1800	900	1300	1500	6.75

DN2100 contact a member of our sales team for details.



Easi-Base order form



Order Details

Merchant:

Merchant Contact:.....

Contractor:

Contact Name:

Contact Tel:

Job Details / Address:

Order your Easi-Base unit using the PREDL Clock diagram. The outlet is 'P' with inlets available in any combination from 1-9. Any angles from 90°-270° are available. Angles outside the parameters 90°-270° are available upon request, however, are subject to disclaimer.

Use the table below to place your order. Please consider the example at the bottom of the table when placing your order. One form is required per manhole base.

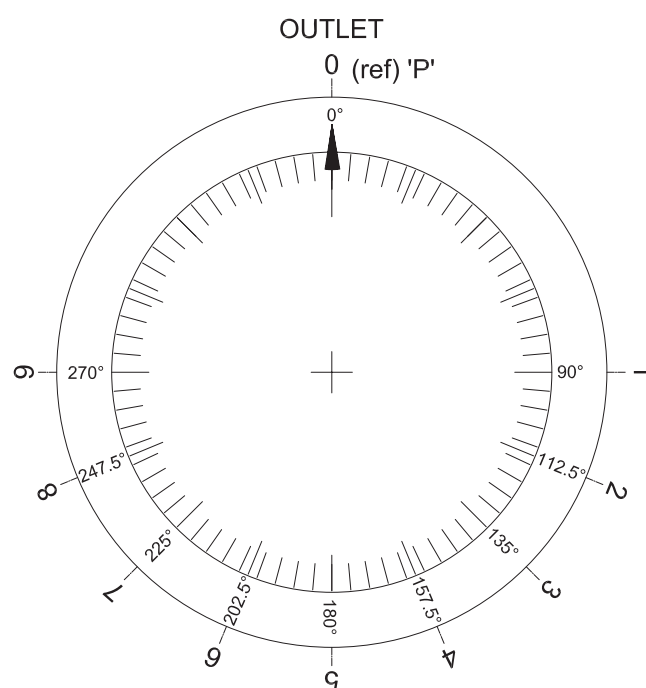
We can offer a bespoke take-off service on all manholes upon placement of order.

Notes

1. One form required per manhole base.
2. It is essential the pipe type is given correctly to ensure the correct pipe adaptor to base is used.
3. Please confirm Cover Slab opening size required.

Manhole Ref:

Site Ref:



	Outlet	Inlet 1	Inlet 2	Inlet 3	Inlet 4	Quantity
PREDEL Ref.	P					
Angle	0°					
Pipe Size						
Pipe Type						
Add. Info.						
EXAMPLE - P 5 1 9						
PREDEL Ref.	P	5	1	9	-	10
Angle	0°	180°	90° Right	90° Left	-	
Pipe Size	315mm	315mm	150mm	150mm	-	
Pipe Type	Wavin Twinwall	Wavin Twinwall	Naylor Clay	Naylor Clay	-	
Add. Info.						

Wide wall manhole chambers



FP McCann's precast concrete wide wall manholes have been designed with a tongue and groove dimension to accommodate the use of bituminous sealant. FP McCann's approved sealant should be used at all times. The sealant requirement for wide wall manholes is 12mm x 120mm x 6m. When placing the sealing strip into position during installation, the ends of the strips must be overlapped by a minimum of 30mm and cut at an angle of 60 degree. The cut ends must then be pressed together. Full installation guidelines can be provided upon request or obtained from our website: fpmccann.co.uk



DN1200, DN1500 and DN1800mm Wide Wall Manhole Chambers

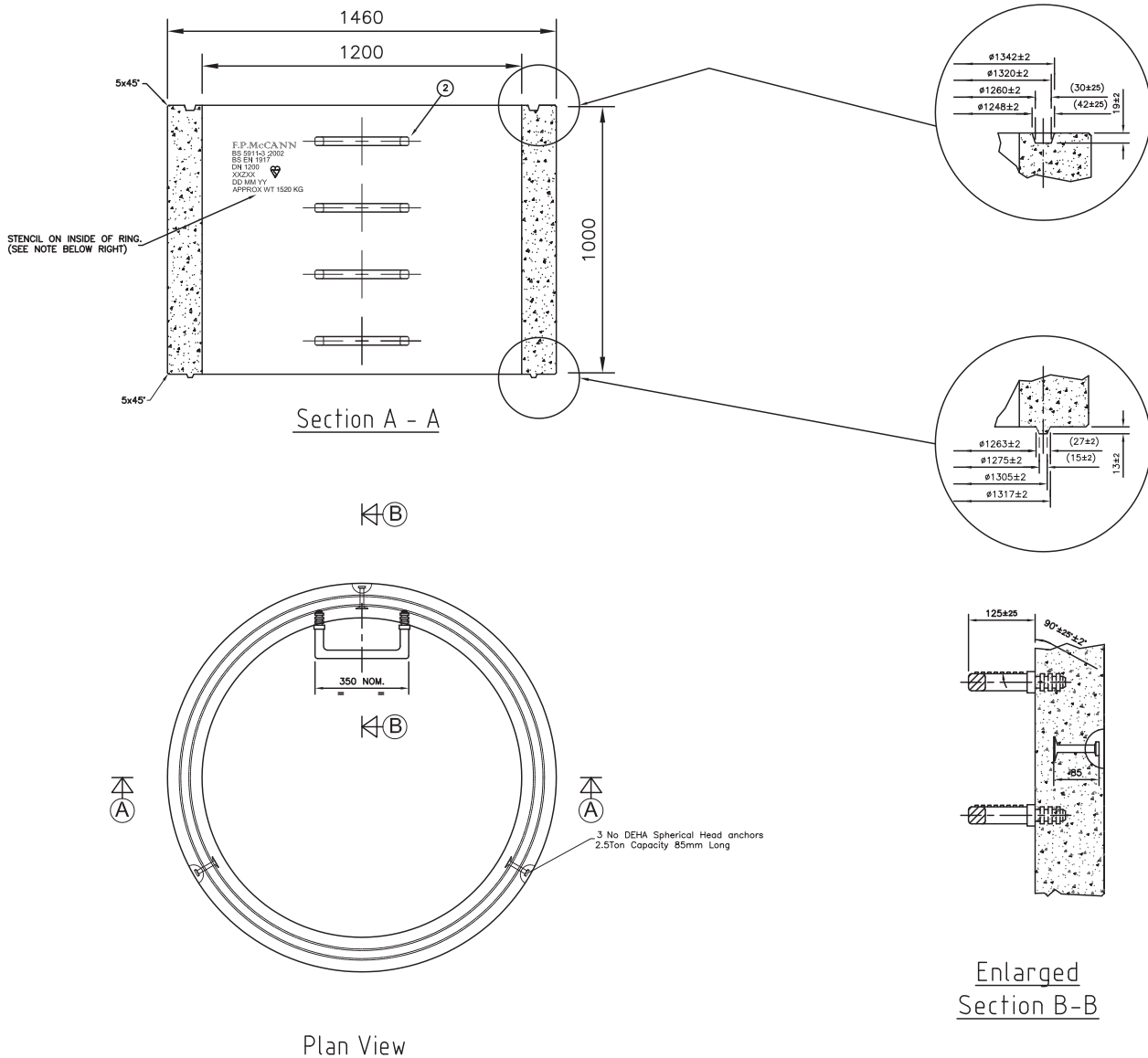
A 130mm thick wide wall chamber, in combination with the Easi-Base unit, provides a sealed watertight manhole system. This robust design means that the requirement for a concrete surround is eliminated.

Advantages

- Quick and easy installation
- Watertight structure
- Safe anchor lifting system (spherical head lifting system)
- Greater cost savings associated with using precast concrete over a traditional system
- No concrete back fill required, in accordance with 'Sewers for Adoption' 7th edition
- More environmentally friendly than a traditional system, almost 40% less carbon omitted during the concrete casting process
- Significant reduction in health and safety risks associated with using precast concrete

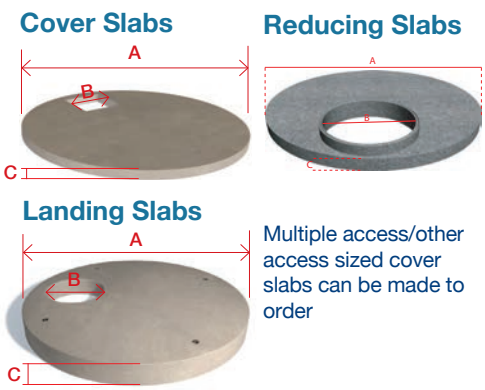


Wide wall manhole chambers dimensions



Nominal Size (DN)	Available Depth of Section				Wall Thickness mm	Barrel Diameter mm	Approx Weight Kg. (p/ meter)	Approx. Products per load Qty.(meter)	Lifting Point Qty/dia (p/Unit)	36mm Lift- ing Pin 0.75 t SWL	42mm Lift- ing Pin 3.5 t SWL	3 leg Lifting Chain SWL 3.1t
	1000mm (±50mm)	750mm (±50mm)	500mm (±25mm)	250mm (±25mm)								
1200	✓	✓	✓	✓	130	1460	1520	16	3x45mm dia	Lifting clutches. F P McCann supply recommended and approved lifting clutches.		✓
1500	✓	✓	✓		130	1760	1645	14	3x45mm dia			✓
1800	✓	✓	✓		130	2060	1970	12	3x45mm dia			✓

Manhole Cover Slabs and accessories



Shaft or Chamber Nominal Size DN (mm)	Outside Diameter (A)	Slab Thickness (C)	STANDARD COVER SLABS			STANDARD REDUCING SLABS		
			Opening Configuration B		Approximate Weight (KG)	Opening Diameter B (mm)	Effective Depth (mm)	Approximate Weight (KG)
			Size (mm)	Location				
900	1080	150	600x600 675x675	CENTRAL	215			
1050	1240	150	600x600 675x675 750x750	ECCENTRIC CENTRAL	315			
1200	1450	150	600x600 675x675 750x600	ECCENTRIC	455	900	200	385
1350	1580	170	600x600 675x675 750x600 1200x675	ECCENTRIC CENTRAL	650	1050 1200	200 200	695 550
1500	1740	175	600x600 675x675 750x600 1200x675	ECCENTRIC CENTRAL	980	900 1050 1200	200 200 200	981 835 680
1800	2070	175	600x600 675x675 750x600 1200x675	ECCENTRIC	1460	900 1050 1200	200 200 200	1495 1350 1220
2100	2380	200	600x600 675x675 750x600 1200x675	ECCENTRIC	2180	900 1050 1200	200 200 200	2130 2690 2540
2400	2710	200	600x600 675x675 750x600 1200x675	ECCENTRIC	2800	900 1050 1200	200 200 200	2815 2690 2540
2700	3030	230	600x600 675x675 750x600 1200x675	ECCENTRIC	3750	900 1050 1200	200 200 250	3695 3550 3410
3000	3420	200	600x600 675x675 750x600 1200x675	ECCENTRIC	4970	900 1050 1200	200 200 200	4970 4970 4970
*3600 Two Piece	4000	300	600x600 675x675 750x600 1200x675	ECCENTRIC	9250	Covers to suit Manholes greater than or equal to 1.5m deep cover level to pipe soffit. *3600mm and 4000mm diameter cover slabs come in a 2 piece unit		
*4000 Two Piece	4500	300	600x600 675x675 750x600 1200x675	ECCENTRIC	11700			

Chamber Section (DN)	Outside Diameter (A)	Opening Diameter (B)	Slab Thickness (C)	Approx. Weight (Kg.)
1200	1440	900	200	514
1500	1730	900	200	826
1800	2050	900	200	1292
2100	2375	900	200	2030
2400	2705	900	200	2600
2700	3025	900	200	3880
3000	3330	900	200	4500

Note:
 Cover Slab sizes 900-3000 are manufactured in accordance with BS 5911-3. DN3600 and 4000 cover slabs are generally designed in accordance with BS EN 1992-1-1, (for 30 units of Type HB loading, can also be designed to withstand 45 units of Type HB loading).
 * Weights for DN3600 and DN4000 are estimated weights based on solid slabs.

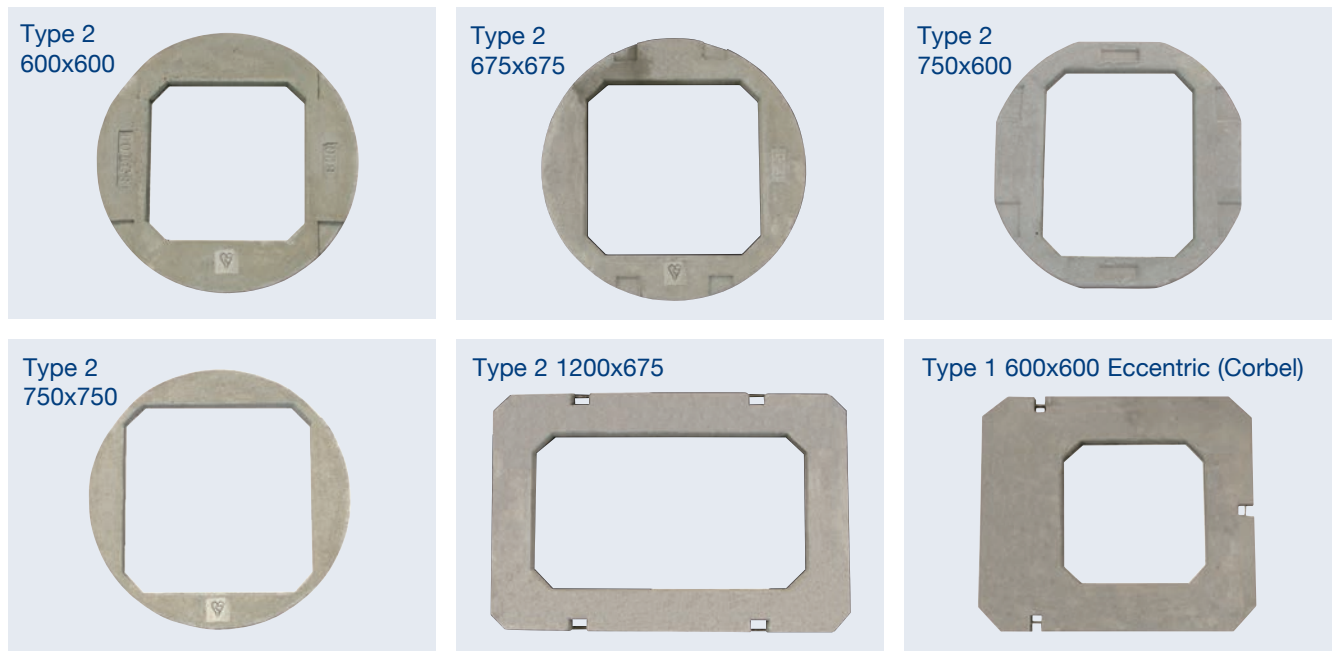
Adjusting Units and Corbel Slabs

Manhole Type	Diameter	Opening Size	Nq per Pack	Thickness	Weight
Type 2	1050	600 x 600	15	65	70
Type 2	1050	675 x 675	15	65	55
Type 2	1050	750 x 600	15	65	60
Type 2	1050	750 x 750	10	65	45
Type 2	1575 x 1050	1200 x 675	6	75	160
Type 1	1175 x 1025	600 x 600	10	65	125

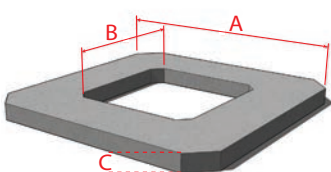
Note: A 600 x 600 eccentric corbel slab is also available when using a ladder BS EN 1917 and BS 5911

FP McCann manufactures a full range of adjusting units and corbel slabs that have the following advantages:

- Designed as seating for manhole cover
- Eliminates laying engineering bricks on-site
- Quicker to lay, ensuring reduced labour costs
- 65mm thick – similar to brickwork
- Sits on top of the manhole cover slab
- Eliminates brickwork vertical joint weakspots
- Quality product produced by vibration process
- Comprehensive strength similar to Class B.Eng bricks



Lothian Slab



Size (A) (mm)	Slab Thickness (C) (mm)	Openings (B) (mm)	Approx. Weight (Kg.)
*1125x1125	75	600x600/ 675x675 /750x600	140
*1125x1125	150	600x600/ 675x675 /750x600	290

*Scotland & Northern Ireland Only

Easi-Safe fall arrest system

Award-winning safety solution for manhole construction

Clients, consultant engineers, contractors and suppliers all have a duty to mitigate hazards on-site, whenever reasonably practicable. One such hazard identified is the risk of operatives falling through manhole openings, particularly during the construction process and also in follow-up maintenance work.

Working with partners Severn Trent Water, engineer Grontmij and contractor to the water sector, Morgan Sindall plc, FP McCann has designed an award-winning safety solution. Easi-Safe is a temporary or permanent fall arrest system that allows for safe working around the manhole opening prior to the fitting of the ironwork.

In the construction of a manhole, operatives often work unprotected from the opening at surface level when the final stages of completion occur. This includes the final brickwork up to the manhole frame and the mortar bedding of the frame itself.

With most standard cover slabs, the access point for man entry is open and it is left to the contractor to cover on-site. In many site situations, these openings remain for a number of days while phases of work are completed. Easi-Safe immediately addresses this problem. The future production of all standard access cover slabs will incorporate the optional protective grid, which will remain in the slab even when the final D400 steel cover and frame are set in place at surface level.

The galvanised mild steel grid is available in four standard sizes:

- 610mm x 610mm
- 675mm x 675mm
- 750mm x 600mm
- 1200mm x 675mm

The Easi-Safe grid is seated on load-bearing corners cast into a standard range of manhole cover slabs. As a temporary fall arrest system, once the construction of the manhole is complete, the grid can be removed prior to the fitting of the ironwork. Alternatively, Easi-Safe can be a permanent fixture, left in place beneath the manhole lid. The spacing between the bars allows for ease of inspection and jetting of the manhole base during maintenance work.



House Inspection chambers

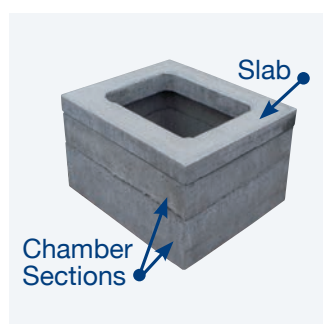
FP McCann's precast concrete inspection chambers are available in four common sizes: 600 x 450, 750 x 600, 1000 x 675 and 1200 x 750. Manufactured in accordance with BS EN 1917 / BS5911, each section has a tongue and groove joint and can be sealed with a sand and cement mortar or bitumen sealant in the same fashion as a circular manhole and chamber ring.

To complete the chamber, FP McCann has a range of covers and ground level components. FP McCann's frame (also known as a surround) and lid combination is designed to sit flush with the top course, such as tarmac or concrete surfacing or in grassy areas.

The lid itself features an anti-slip chequered finish and recessed lifting points to allow removal from the frame by use of standard lifting eyes.

Chamber Size	Cover
600x450	Frame and lid places straight on top of unit
750x600	Below surface slab with 600x450 access, allowing use of frame and lid
1000x675	Below surface slab with 600x450 access, allowing use of frame and lid
1200x750	Light or heavy duty below surface slab with 600x600 access, allowing use of standard steel access hole cover

Description Units (mm)	Weight per unit Kg**	No of units per pallet	Wall/Slab thickness(mm)
600 x 450 x 150 section	40	12	40
600 x 450 x 225 section	65	8	40
600 x 450 x 300 section	85	6	40
600 x 450 x 100 frame	45	8	100
600 x 450 x 55 lid	50	16	55
750 x 600 x 150 section	60	6	55
750 x 600 x 250 section	100	4	55
750 x 600 x 70 cover slab (600x450 access)	75	8	70*
1000 x 675 x 150 section	94	6	60
1000 x 675 x 250 section	130	4	60
1000 x 675 x 76 cover slab (600x450 access)	130	8	75*
1200 x 750 x 150 section	120	6	75
1200 x 750 x 250 section	200	4	75
1200 x 750 x 80 cover slab (600x600 access)	185	6	80*



HIC cover slabs can be provided to meet both main road and light road requirements.

* Effective thickness

** Approximate weights

Gullies and Slabs range



Gullies

Dimensions (mm)			Nominal Weight (kg)	Approx. Capacity (litres)	No Per Load
Diameter Internal	Depth	Outlet			
375	750	150	180	51	66
375	900	150	200	67	66
450	750	150	215	71	60
450	900	150	255	95	60
450	1050	150	270	118	60
450	1200	150	280	142	60

Benefits of the Gully

- The seal has been cast-in, thus preventing loss or damage on-site
- An integral seal and rodding eye for universal sealing characteristics
- The rodding eye closure has been recessed into the concrete to help eliminate dislodgment
- Reduced thickness, giving reduced weight and a smaller footprint for better vehicle utilisation
- Improved system that helps prevent any discharge of oil
- The gully is fully universal suiting all plastic and clay drainage products from 160mm to 186mm diameter
- Does not lose shape
- Does not float (self weight inhibits flotation)

Gully Cover Slabs

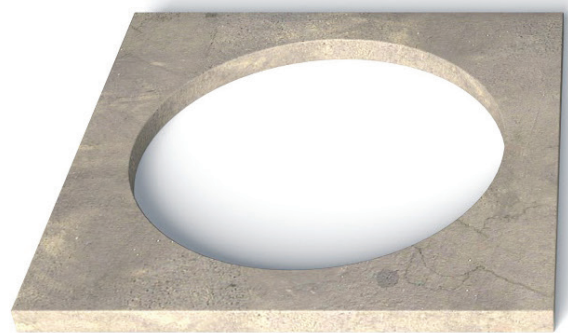
	Standard	Horseshoe
Length	750	600
Width	650	650
Thickness	100	100
Weight	70kg	58kg
Hole Size	450	450
Qty/Pack	12	12

The Gully Cover Slab is designed as seating for a gully grate

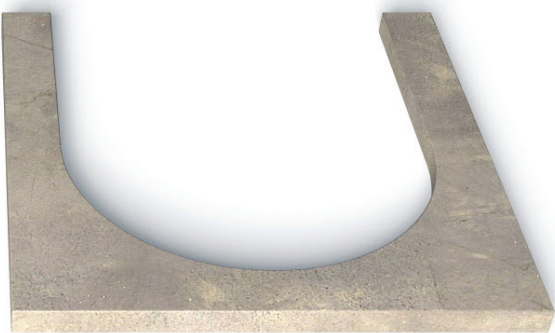
Benefits of the Gully Cover Slabs

- Quicker to lay, ensuring reduced labour costs
- Use on top of 450mm diameter gully
- Eliminates laying engineering bricks on-site
- Sits flush to kerb for enhanced stability
- 100mm thick single piece unit
- Eliminates brickwork vertical joint 'weakspots'
- Greater stability than brickwork
- Quality product produced by vibration process
- Compressive strength similar to Class B.Eng. bricks

Standard Gully Cover



Horseshoe Gully Cover



Note: Gullies and Gully cover slabs manufactured in accordance with BS 5911-6

Catchpit



Catchpit

The catchpit effectively provides a sealed sump manhole, a monolithic precast concrete unit fitted with connector seals, which can be used to connect to the following types of pipe: uPVC, twinwall, clay, ductile iron and concrete. The catchpit is designed to accommodate pipe sizes DN150 to DN450. The catchpit is designed in line with highway specification.

4-way units with orientations at 90 degrees can be produced up to DN300 only; beyond DN300 4-way orientations are not available. DN450 inlets must be cored on-site.

Benefits of using the Catchpit unit

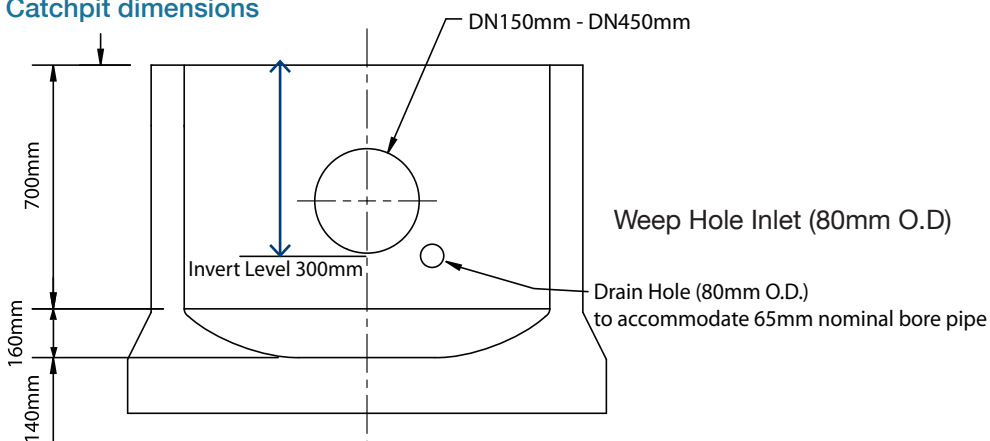
- Creates an immediate watertight structure
- Prefabricated off-site (minimising on-site labour and costs)
- Quick and efficient to install
- Accommodates connection to all types of pipe used in road and manhole construction
- Safety benefits gained in the construction of manholes as the pre-formed sump and connect seals eliminate on-site construction, thus greatly reducing labour activity within the manhole
- Quality is greatly increased as construction is within the factory environment and complies with BS EN1917 and BS 5911
- Eliminates material wastage associated with current in-situ method
- Yields environmental benefits such as lower carbon footprint, less concrete used on-site and less excavated material removed from site



Catchpit weight 1.38 tonnes.



Catchpit dimensions



Note: Weep hole is optional, please specify when ordering.

Note: Standard unit will have an invert level of 300mm for inlet and outlet pipes. If a non-standard invert level is required, please specify when ordering.

Pipes should only be connected to the Catchpit using an FP McCann approved lubricant

DN1050 Highways Agency Catchpit

Highways Agency Compliant EPDM flexible seal DN1050 CatchPit

With its flexible rubber pipe connector seals, precast concrete catchpits can be utilised on a single lane carriageway, replacing the requirement to cast a base sump in-situ and construct the catchpit from a standard DN1050 manhole ring.

The innovative EPDM 40 flexible rubber seal at the connection points can accommodate pipe sizes DN150 to DN300, including DN225. This negates the need to saw cut openings in the concrete wall and the use of wet mortar trades to seal the pipe surround.

Catchpits are supplied with factory fitted pre-marked EPDM 40 rubber blanks. The unique rubber blank/seal has preformed cutting grooves around the three DN entry sizes indicated. This allows for accurate cutting out to pipe diameter requirement. There is no similar system available on the market. Once pipes are fitted into the seal, up to 45 degrees of pipe deflection is permitted without breaking the seal.

Significant savings in time eliminates the need for follow-up finishing gangs. Reduced safety risks because the operative time in excavation is minimal and no power tools are required to cut concrete. Indirect cost benefits arise from saving up to 26 hours of labour time, related to the curing of wet trades on a traditional build.

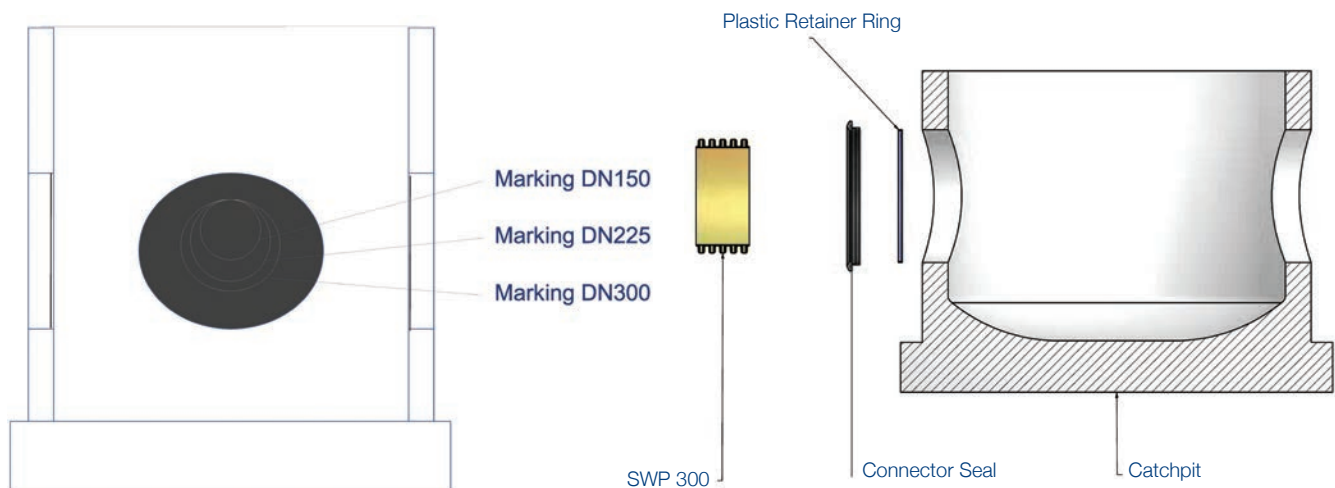
FP McCann's catchpit products are manufactured under BSI Kitemark approval to comply with BS EN 1917 and BS 5911, and are therefore fully compliant to HA's MCHW specification.



Can be used in straight through, 90° connection or straight through with a cross drain.



Once pipe is fitted to the connector, up to 45° of deflection is possible without breaking the seal.



Headwalls



Bespoke extra large precast concrete headwall

FP McCann designs and manufactures a wide range of headwalls designed to connect pipe work discharging into open water courses.

Headwall Range	Accommodates Pipe Sizes up to	Max Pipe O.D. mm	Back wall height (external) mm	Front wall height (external) mm	Width at back wall (internal) mm	Width at front wall (internal) mm	Headwall Length (mm)	Standard Invert level (Variable)	Wall Thickness (mm)	Floor Thickness (mm)	Approx. Weight (Kg)
*HW XXL	2100	2450	3090	1600	2659	3507	2560	100	250	250	Part A 8500 Part B 8500
*HW XL	1500	1800	2415	900	2027	2857	2060	100	250	250	Part A 4750 Part B 4750
HW Large 200	900	1080	1420	660	1250	1945	2152	100	200	150	4100
HW Large 100	900	1080	1420	660	1250	1945	2052	100	100	150	2700
HW Medium 150	450	590	1150	670	702	1562	1380	100	150	150	1600
HW Medium 100	450	590	1150	670	702	1562	1330	100	100	150	1200
HW Small 150	300	410	810	530	525	1305	1360	100	150	150	1200
HW Small 100	300	410	810	530	525	1305	1310	100	100	150	1100

Advantages

- Prefabricated off-site (minimising on-site labour, costs and time)
- Quick and efficient to install (overcoming installation time limitations due to tides etc.)
- Accessories such as flap valves and handrails, available upon request
- Durable, long-lasting and low maintenance
- No on-site shuttering required
- Comes complete with lifting hooks
- No part-load charges for ready-mix concrete
- Prevents soil erosion
- The headwalls are designed and manufactured in accordance with BS EN 1992

Notes: * XL and XXL headwalls are manufactured in 2 parts, dimensions provided represent completed unit. Weir walls and other special finishes can be added to any of the headwalls as part of a bespoke design package. Headwalls are available with handrails and precast steps.

Wall thickness is directly proportional to the approximate weights.

Headwalls have a 2 or 3 point lifting system incorporated, depending on the size. FP McCann can supply all lifters with product at no additional cost. Invert levels are variable, subject to customer requirement. PDF drawings are available to download.

WARNING
When Lifting $\geq 45^\circ$
Inclined pull only

Flat base headwall with an oversized backwash plinth (toe) bolted on site.



Easi-Flow chamber

The FP McCann Easi-Flow chamber combines an integral base and side walls with provision for inlet and outlet connections. It can be used in a number of applications, including:

- As a silt-trap
- As a valve chamber
- As a flow rate controller (requires installation of a vortex valve unit, sold separately)

Sizes available

Easi-Flow chambers are available between DN1200 - DN3000. Bespoke larger units can be manufactured to client specification.

Flow rate control

FP McCann can supply a hydro-valve vortex flow control device. The hydro-valve is designed to limit stormwater outflow to a specific discharge rate. Sizes are available between 1 – 80 l/s, depending on head height. The unit is self-activating with no need for an external power source and comes with a certified flow rate.

The hydro-valve is a device for controlling stormwater flow caused by a hydraulic effect without requiring moving parts. At low flow rates, water entering through the inlet passes through the vortex chamber to the outlet with no restriction. As flow rate increases, water enters through the inlet with enough energy to create a vortex in the chamber, which results in a considerable pressure drop between the inlet and the outlet, restricting the flow to the



allowable discharge. The hydro-valve therefore operates automatically with no moving parts and no external power source. A typical application of this valve is to control the flow from stormwater attenuation tanks by preventing downstream flooding during periods of heavy rainfall.

The hydro-valves are custom-designed to achieve a specified design flow rate at a given head height. They are manufactured under an ISO 9001 quality assurance system and are available in sizes compatible with the FP McCann Easi-Flow chamber range.

Hydro-valve customised specification

- No moving parts
- Self-activating
- Self-cleansing
- Manual by-pass
- Easy installation
- 3-6 times greater orifice CSA
- Hydraulic data available

For more information on hydro-valves, contact a member of the technical sales team.

*FP McCann advise you not to complete the manhole construction until the JFC flow control device has been positioned correctly inside.



Valve chamber

FP McCann designs and manufactures a bespoke range of reinforced valve chambers capable of housing any size and type of valve/pump. Valve chambers consist of a precast concrete sealed sump manhole with factory-fitted saddles to house the pump, and are used in the management of water, oils and chemicals.

Benefits

- Immediate watertight structure
- Reduced installation time/costs
- Accommodates connection to all types of pipe, including concrete, metallic, HDPE and clay
- Pump is raised off the ground and sits on a pre-formed concrete stool
- Easy and clean access for operation and inspection



Chamber Diameter	1200 - 3000mm
Chamber Height	900mm
Stool	Bespoke to project requirements
Pipe Size	150 - 375mm
Inlets / Outlets	Will vary to accommodate pipe size
Cover Slab Thickness	Will vary in accordance with chamber diameter
Base Thickness	250mm

Add-a-step™

modular manhole ladder



ADD-A-STEP™ modular ladders are designed to allow easy access to chambers and are approved for use in potable water, waste water, highly corrosive and general construction applications. They are a cheaper, safer and a more user-friendly alternative to traditional stainless steel ladders.

The ADD-A-STEP™ modular ladder system is designed to provide a product that can be supplied off-the-shelf for next day delivery. Each module of the ADD-A-STEP™ ladder consists of two stiles, one rung and two retaining clips. Each stile measures 360mm long, 80mm wide and 32mm thick maximum dimension. The ladder width outside the stiles (upright) is 435mm.

The ADD-A-STEP™ ladder has 30mm diameter rungs at 300mm centre spacing and the width or foot space inside the stiles is 375mm. Two types of wall brackets are supplied as standard, one for circular and one for square chambers. The ladder can be assembled on-site using the number of modules to achieve any length and can be trimmed to length using a standard hand saw without the need for expensive cutting equipment.

Assembled in minutes

Stainless Steel Pull-ups available to suit ex stock



Benefits

The modular design allows for more economical transportation than fully assembled ladders. The ADD-A-STEP™ ladder requires no maintenance other than occasional cleaning with a pressure hose, if desired. The ladder has excellent insulation properties so it can be used in applications where electrical cables are present. Constructed from polybutylene (PBT), which is UV tolerant, it is a non-corrosive and a fully recyclable material; it can easily be cut on-site with no harmful shards or dust given off.

The ADD-A-STEP™ ladder helps to reduce potential health and safety risks. At approximately 5kg per linear metre, the ladder is significantly lighter than galvanized or stainless steel alternatives and its yellow colour gives it high visibility properties, making it clearly visible when the manhole cover is raised. It is also a cheaper and more user-friendly alternative to traditional stainless steel manhole ladders. The ADD-A-STEP™ system is fully compliant and tested to BS EN 14396, and is the only CE marked modular ladder system in the UK.



Plastic encapsulated ladders and rungs

A system that gives the user benefits of a durable plastic encapsulated ladder without the need to specify an exact length or fit on-site. In addition, a single specification can be used for all depths of access.

Product Specifications

BS EN 13101	Plastic Encapsulated Steps
WIS 4-33-01: 1990	Polypropylene Encapsulated Steps

Applications

Concrete manholes and inspection chambers.
Renovation of existing structures.

Materials

The plastic encapsulated ladder is made from high impact virgin polypropylene copolymer plastic with a bright yellow coating. If the ladder is to be subject to prolonged exposure to daylight then black or UV stabilised material should be specified. It is reinforced with structural steel.

Performance

Pull out load:	7.5kN minimum when fitted in accordance with manufacturers instructions
Deflection under load:	5mm maximum at 2.5kN
Permanent Set:	0 mm at 2.5kN
Impact:	20kg weight from 1 metre, no cracking
Chemical Resistance:	At least pH2 to 12
Integrity of plastic:	2M ohm at 500 volts DC
Thickness of plastic:	3mm minimum
Minimum cross section:	25mm diameter

Advantages

- Excellent corrosion resistance
- Visibility
- No sharp edges
- Eliminates need to specify exact length or fit on-site
- Steel reinforcement gives predictable deflection under load without causing brittle failure



Handhold entry pole system

The handhold entry pole system is suitable for aiding maintenance engineers in the initial entry into a manhole from the surface level. Once fitted, the entry pole is a permanent fixture within the manhole, which is stored in the lowered position beneath the level of the cover. When required, the entry pole can be easily extended by simply hooking the easy-to-reach loop located at the top of the pole, pulling the handle upwards and twisting, locking into position. The handhold then provides a stable support to aid the entrance of the manhole, as well as a clear visual indication of the location of the manhole, when open. This helps prevent injury of other people in the area. Once the engineer has used the entry pole to aid their return to the surface, the pole is simply twisted to unlock it from the raised position and lowered back into the manhole, ready for the next time it is needed.

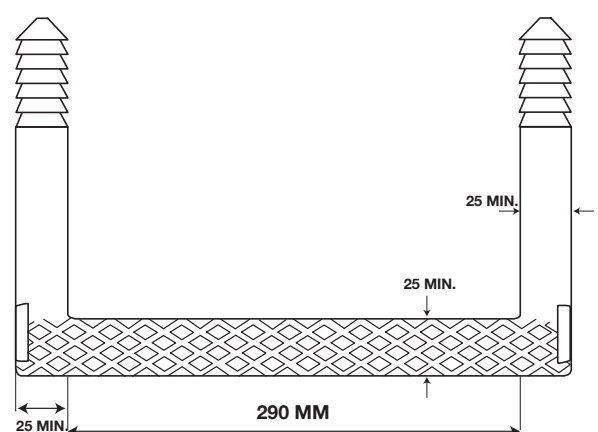
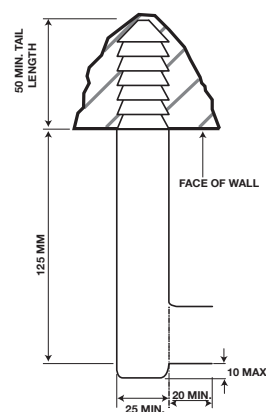
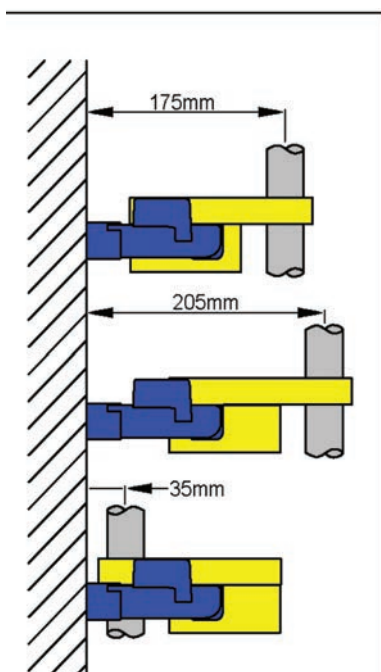


Specification

The handhold has a pole length of 1200mm and can be assembled to give three different distances from the pole to the wall. This is designed to accommodate different cover positions.

Advantages

- Helps the user find the first step safely
- Creates visual aid to indicate location of manhole to other people in the area
- Easy to fit
- Easy to raise and lower
- High strength for ultimate safety
- Low cost
- Can be fitted to any Caswick step
- Two projections for round or flat walled manholes



Easi-Storm stormwater management system

The production of water impermeable surfaces in construction is inevitable. This includes roof areas on buildings, car parks, loading bays and road pavements. The provision of these surfaces interrupts the natural drainage process, creating increased stormwater run-off in respect of both volume and flow rate.

In many cases, this increase in stormwater flow and volume is a problem as the local sewer or watercourse does not have the sufficient capacity to cope. This problem could be alleviated by an increase in the size of the stormwater sewer or watercourse, thus providing the capacity within the drainage system to cope with the increased surface water. This, however, may be expensive, cause major infrastructure disruption, and can often be completely unfeasible.

Legislation under Planning Policy Statement 25 and Building Regulations approved Document H3 for flood risk assessment (SuDS), has created the need for planners and developers to design and install effective stormwater management systems.

The types of systems that can be employed to overcome these issues are well documented and varied. Quite often, they can be very technically demanding in their operation, maintenance and construction. The selection of a system will depend on site constraints, position, expected loading, geographical limitations and inevitably cost.

The Easi-Storm system offers a complete solution to the stormwater attenuation problem and utilises a tried, tested and approved method of stormwater storage. FP McCann can provide the complete package of design, product specification and supply of products and installation advice.

Features

- **Available in a range of sizes**
- **Can use and combine a number of techniques and products such as pipes, culverts, tanks, manifold systems and soakaways**
- **A complete solution with all connections**
- **Established and familiar products**
- **Can be laid in short lengths**
- **The system can be adapted to load-bearing and non-load bearing applications**
- **120 year design life**
- **Adoptable by water companies**

- **Manufactured in accordance with a BSI accredited quality management system conforming to ISO 9001**
- **Available straight from stock**

Structural

The inherent structural strength of concrete is well documented and can be designed to meet the severest of loading criteria. Easi-Storm systems can be tailored to suit low load situations, for example, when the tank is to be situated below verges or gardens.

Benefits

- **System can be designed specifically to suit the application**
- **Quick construction using a standard joint**
- **No need for fabrication on-site or external specialist contractors**
- **Straightforward installation using known techniques, no need to retrain**
- **Can be installed under roads and car parks**
- **Can cope with construction plant loading**
- **Flotation is not a concern – no need for geotechnical anchors when located below the water table**
- **Long term solution**

Design

The design of the system can be tailored to suit most structural and hydraulic criteria.

Relevant Legislation/ Information

- **Planning Policy Statement 25 (PPS25) December 2009**
Department of Communities and Local Government (DCLG)
- **Future Water February 2008, Department for Environment, Food and Rural Affairs (DEFRA)**
- **The Pitt Review, Learning Lessons from the 2007 floods by Sir Michael Pitt**
- **The Code for Sustainable Homes February 2008, Department for Communities and Local Government (DCLG)**
- **The SuDS Manual 2007, CIRIA C697**
- **Sustainable drainage systems - Hydraulic, structural and water quality advice 2004, CIRIA C609**
- **Flood and Water Management Act 2010**

FP McCann stormwater management systems can be designed to suit a wide range of construction projects and drainage schemes. Precast concrete attenuation components include products such as side entry manholes, stop end bends and spigot and socket end wall pipes. These products can either be engineered into an on-line sewer pipe system or utilised off-line as single or multiple stormwater holding tanks. All FP McCann storm attenuation products comply with the requirements set out within 'Sewers for Adoption 7th Edition' and are made from Kite marked precast concrete components, which comply with the relevant Standards: BS EN 1916 / BS 5911-1 and Manholes BS EN 1917.

Examples

Spigot and Socket Tank End Wall Pipes (Adaptor/Fitting - BS EN 1916)

- Consists of a standard 2500mm long Easi-Flex pipe with a cast-in end wall. Inlet/outlet holes are generally cored into the wall

Side Entry Manholes (Junction - BS EN 1916)

- Entry shafts factory-fitted to pipes 900mm diameter and above
- Ideal for use in restrictive locations where conventional manhole build is not possible
- Can be supplied in left or right hand configuration. Access steps can be fitted, if required
- Can be used in conjunction with an end wall pipe
- Additional chamber sections or a reducing slab can be used to build height

Stop End Bends (Bend - BS EN 1916)

- Tank end access for pipes 900mm diameter and above
- Access steps fitted, if required
- Drainage inlet/outlet holes cored, as requested
- Additional chamber sections or a reducing slab can be used to build height

Side Entry Manhole with Bend (Junction/Bend - BS EN 1916)

- 2500mm long Easi-Flex standard pipe with cast-in bend
- Entry shaft fitted to pipes 900mm diameter and above

Mid Entry Manholes (Junction/Bend BS EN 1916)

- Standard pipe with a sealed manhole joint, complete with fitted slab
- Manhole joint and slab factory-fitted to pipes 1200mm and above
- Access to the tank via winch or removable ladder. Reduced access via slab, available on request
- Additional chamber sections or a reducing slab can be used to build height

End Entry Manholes (Junction - BS EN 1916)

- Standard pipe with a sealed manhole joint, fitted slab and cast-in end wall
- Manhole joint and slab factory-fitted to pipes 1500mm diameter and above
- Drainage inlet/outlet holes cored, as requested
- Access steps factory-fitted, if required

Key Benefits of FP McCann Storm Management Systems

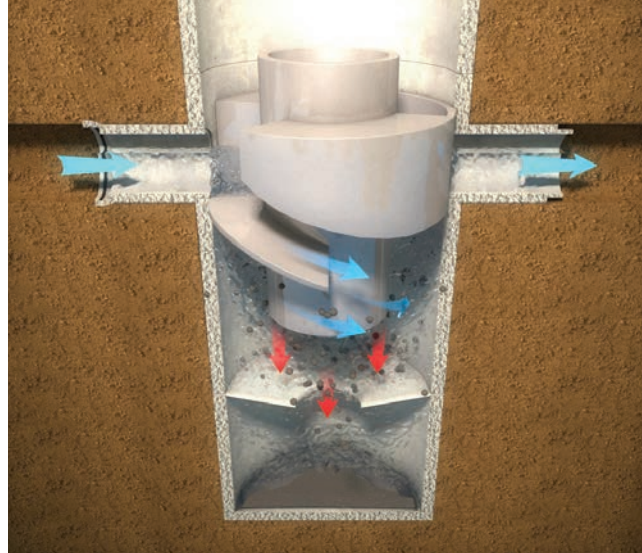
1. Flexibility of design - adaptable to meet client requirements
2. Products can be used in space restrictive on-line sewer systems, providing the required storage volume
3. Reduction in construction times
4. Quality assured and kite marked products used
5. Sustainable systems with design life in excess of 100 years
6. Site safety benefits related to reduction of man hours spent in excavation
7. Ease of access for maintenance
8. Can be linked to other SuDS related systems such as rainwater capture and re-use

Note

Concrete haunching should be used to provide local stiffening to the concrete pipes with manhole entries. Use a minimum 150mm thickness surround to the pipe, extending to a height of 300mm above the pipe, in order to support the shaft joint.



Hydrodynamic separator



FP McCann has designed and developed a new range of hydrodynamic separators for the treatment of urban catchment stormwater run-off. The hydrodynamic separator provides a cost-effective solution for designers, engineers and contractors involved in the provision of Sustainable urban Drainage Systems (SuDS). The unit has no moving parts, requires no power and is constructed within standard precast reinforced concrete chamber rings. All internal flow components are manufactured in GRP, ensuring long life performance.

Independent Testing

FP McCann's hydrodynamic separator (1200mm diameter model) has been independently tested by WRc at their research and development centre and achieved excellent total solids and hydrocarbon removal at design flow rates.

Total solid removal rates ranging from 85% to 92% have been recorded. The system is also effective in the removal of hydrocarbons, litter and other stormwater debris.

The hydrodynamic separator has demonstrated high level removal rates when design flows were exceeded. A summary of the WRc test results are available from FP McCann, on request.

Operation

The hydrodynamic separator is specifically designed to remove suspended solids, hydrocarbons and floatable debris from the

stormwater run-off. Water and pollutants enter the system via the inlet pipe and launder channel arrangement. Low energy vortex flow patterns allow the floatables to gather and solids to settle to the bottom of the treatment chamber for subsequent removal. Re-suspension of the solids is minimised by the provision of a GRP baffle plate, positioned above the solids storage sump. Floatable debris is retained within the hydrodynamic separator, allowing easy access for suction cleansing. Stormwater surges in excess of the maximum flow rate, overflow the weir, bypass the treatment zone and is directly discharged through the outlet pipe. This helps to minimize the effects of scour within the treatment compartment and optimises the performance of the hydrodynamic separator.

Benefits

- WRc tested and easy to install and maintain
- Effectively removes and treats wide flow range
- Complies with SuDS legislation
- Cost-effective downstream defense mechanism

Applications

- Housing developments
- Highway drainage projects
- Commercial/Industrial sites
- Leisure facilities
- Existing surface water sewer discharges
- Pre-treatment for pond and wetland areas
- Sustainable Urban Drainage Schemes (SuDS)

Selection Chart

Part Number	PRE EHS/1050	PRE EHS/1200	PRE EHS/1500	PRE EHS/1800	PRE EHS/2100
Chamber Diameter (mm)	1050	1200	1500	1800	2100
Treatment Flow Rate (l/sec)	15	25	35	50	75
Maximum Flow Rate (l/sec)	25	35	50	100	150
Inlet Pipe Diameter (mm)	≤225	≤300	≤375	≤450	≤525
Outlet Pipe Diameter (mm)	≤225	≤300	≤375	≤450	≤525
Sediment Storage Sump (m3)	0.75	0.85	2.50	3.00	3.2

Easi-Rain harvesting chambers

The FP McCann Easi-Rain harvesting chamber is a bespoke range of precast water storage chambers that are compatible with water harvesting systems for residential, industrial/commercial and agricultural installations. Capturing rainwater for re-use offers significant cost savings for the user and benefits the environment by increasing water resources and further enhancing water amenity. Easi-Rain complies with Environment Agency SuDS (Sustainable Urban Drainage System) directives.

The basic concept of harvesting rainwater is simple - rainwater is mostly collected from the roofs of buildings - it flows through gutters and downspouts and is then filtered and collected by a storage tank. From the tank, it can be recirculated or treated to produce a better quality of recycled water.



Volume Capacity of Storage Chambers

Internal Diameter (x1000mm)	Litres	Weight kg
DN1800	1200	1800
DN1800	1500	1900
DN2400	3000	5900
DN2400	5000	7250
DN2400	7000	8700





Box Culverts

Designed and manufactured in accordance with all current design specifications and relevant standards, FP McCann's box culverts are available in span sizes from 1000mm to 5400mm and internal heights from 500mm to 3600mm, dependent on the final mould configuration adopted. A bespoke CAD design service is also available where non-standard unit sizes can be accommodated, along with any other internal features requested by the client.

Using a modern production facility at Telford, Shropshire, FP McCann's experienced engineers and detailing team have the flexibility to quickly respond to meet any design criteria and deliver nationally to just-in-time requirements.

Supplied in either single or multiple runs, the use of precast concrete box sections in civil engineering projects is wide-ranging, from their use for directing watercourses to the provision of attenuation tanks and underpasses. FP McCann is a member of the Box Culvert Association (BCA) and their products comply with all relevant standards, as set out in accordance with ISO 9001 and ISO 14001.

Structural strength and long life performance

Our durable box culvert system meets the design life requirements for buried structures. Minimum maintenance is required.

Ease of installation

FP McCann's box culverts can be easily positioned in shallow or deep fill installations.

Flexible sizes and internal features

Our box culverts can be manufactured in a range of sizes and accommodate features such as dry weather flow channels, mammal ledges and dual cell configuration units, plus tapered and skewed units, if required.

Additional Features

End walls, access points, vent holes, inlets, outlets, rungs, angles and splayed ends can all be added to any culvert, as per requirement. Starter bars and sockets can be added to facilitate any additional casting on-site, which may be required as part of the finished work.

Box Culvert Applications

- Attenuation and storage tanks
- Water course diversion
- Open channels
- Road crossings
- Pedestrian and vehicle subways
- Shafts
- Service tunnels and ducts
- Conveyor protection

Types of Box Culverts



Box Culvert
Association



Typical Culvert

Units are available in internal span sizes from 1000mm to 5400mm and internal heights from 500mm to 3600mm, with unit lengths to a maximum of 2000mm, dependent on final mould configuration.



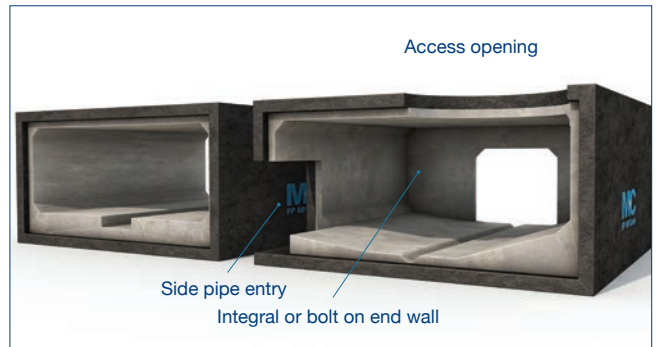
Mammal Ledges

Cast-in mammal ledges allow access through the culvert to wildlife without the requirement for extra site provisions.



Channels

Half round (or equivalent) channels can be cast into the floor of the units at any position, with a choice of equivalent half round diameters.



Specials

Bespoke units accommodating a variety of features can be manufactured to the customers' design requirements.



Benching

Combined with either a channel or cast as a "vee", benching improves self-cleansing flow rates.



Box Culvert dimensions



Internal Dimensions

(Based on flat invert culvert units)

Key: Flow area m² / Discharge rate m³/sec

		Width mm (internal span)															
Internal height mm		1000	1200	1500	1800	2100	2400	2700	3000	3300	3600	3900	4200	4500	4800	5100	5400
	500	0.46 0.40	0.56 0.51	0.71 0.67	0.86 0.84	1.01 1.00	-	-	-	-	-	-	-	-	-	-	-
	600	0.56 0.53	0.68 0.67	0.86 0.89	1.04 1.11	1.22 1.33	-	-	-	-	-	-	-	-	-	-	-
	650	0.61 0.60	0.74 0.76	0.93 1.00	1.13 1.25	1.32 1.50	1.52 1.75	1.71 2.00	-	-	-	-	-	-	-	-	-
	800	0.76 0.81	0.92 1.03	1.13 1.33	1.37 1.67	1.61 2.01	1.85 2.36	2.09 2.71	2.33 3.06	2.57 3.42	2.81 3.77	3.05 4.12	-	-	-	-	-
	1000	0.96 1.10	1.16 1.40	1.43 1.84	1.73 2.32	2.03 2.80	2.33 3.29	2.63 3.79	2.93 4.29	3.23 4.79	3.53 5.30	3.83 5.80	4.13 6.30	4.43 6.81	4.73 7.32	-	-
	1200	-	1.37 1.76	1.73 2.37	2.09 3.00	2.45 3.64	2.81 4.29	3.17 4.95	3.53 5.61	3.89 6.28	4.25 6.95	4.61 7.62	4.97 8.29	5.33 8.97	5.69 9.64	6.05 10.32	6.41 11.00
	1500	-	-	2.18 3.21	2.63 4.09	3.08 4.98	3.53 5.89	3.98 6.81	4.43 7.74	4.88 8.68	5.33 9.62	5.78 10.57	6.23 11.52	6.68 12.48	7.13 13.44	7.58 14.40	8.03 15.37
	1800	-	-	-	3.17 5.21	3.71 6.38	4.25 7.57	4.79 8.78	5.33 10.00	5.87 11.24	6.41 12.48	6.95 13.74	7.49 15.00	8.03 16.27	8.57 17.54	9.11 18.82	9.65 20.10
	2100	-	-	-	-	4.34 7.83	4.97 9.31	5.60 10.83	6.23 12.36	6.86 13.92	7.49 15.49	8.12 17.07	8.75 18.67	9.38 20.27	10.01 21.89	10.64 23.50	11.27 25.13
	2400	-	-	-	-	-	5.69 11.11	6.41 12.94	7.13 14.81	7.85 16.70	8.57 18.62	9.29 20.55	10.01 22.50	10.73 24.46	11.45 26.44	12.17 28.42	12.89 30.41
	2700	-	-	-	-	-	-	7.22 15.11	8.03 17.32	8.84 19.57	9.65 21.84	10.46 24.14	11.27 26.46	12.08 28.80	12.89 31.16	13.70 33.53	14.51 35.91
	3000	-	-	-	-	-	-	-	8.93 19.89	9.83 22.50	10.73 25.15	11.63 27.83	12.53 30.54	13.43 33.27	14.33 36.03	15.23 38.80	16.13 41.59
	3300	-	-	-	-	-	-	-	-	10.82 25.49	11.81 28.52	12.80 31.60	13.79 34.71	14.78 37.86	15.77 41.03	16.76 44.22	17.75 47.43
	3600	-	-	-	-	-	-	-	-	-	12.89 31.96	13.97 35.44	15.05 38.97	16.13 42.53	17.21 46.13	18.29 49.76	19.37 53.42

Please note: These figures are a guide only and will be dependent on the mould configuration used in manufacture. Discharge rates are calculated using Colebrooke-White equation for a fully wetted perimeter under uniform flow conditions and assuming a flat invert culvert unit. The assumed laying gradient (s) is 1:1000 with a roughness co-efficient (k) of 0.3. Where different values may be required, please contact the office number below to discuss your specific requirements.

Installation Guidelines

For installation and jointing details, refer to the Box Culvert Association's 'Guide to Site Practice' which can be downloaded from the BCA's website, www.boxculvert.org.uk

Design Criteria

Design loading criteria is generally specified by the scheme engineer and ideally should include, as a minimum, the information below:

- Internal span
- Internal height
- Metres required
- Number of runs
- Minimum depth of fill over the culvert unit
- Maximum depth of fill over the culvert unit
- Culvert usage
- Surface loading conditions : green field, highway etc
- Invert type

Exposure conditions should be specified and, where available, design codes provided. Further design requirements may be required for inlet/outlet points, access holes and end walls.



Mechanical concrete pipe lifter

Fit a Pipe Lifter to your excavator and you can lay concrete pipes in around half the time with less cost and less hassle – but with greater safety.

Safer. No operative needed on vehicle during off-loading or in trench during pipe laying.

Easier. Simple to use. No special equipment & minimal training required.

Faster. Around 50% saving on installation time.

Cheaper. Fewer operatives plus greater productivity.

The Concrete Pipe Lifter makes light work of the installation of waste water pipelines. Within seconds, it can be attached to your excavator using a quick-hitch coupling. There are no hydraulic links or additional energy requirements.

There is no need for anyone to stand on the bed of the vehicle during off-loading (the biggest cause of accidents during pipe laying). There's no need for anyone to stand in the trench during installation and there are no slings or chains to trap hands and fingers. The whole operation is around 50% faster and you can reduce the size of your pipe laying team, so costs are lower too.

The Concrete Pipe Lifter is suitable for standard UK specification BS EN1916 concrete pipes from DN300 to DN1200.

The Manhole Lifter is a companion device that makes lifting manhole rings a safe and easy, one-man operation. It eliminates the risk of vehicle falls during off-loading. There are two versions available for precast concrete manhole rings from DN900 to DN1800 and from DN2100 to DN3000. It's capable of lifting rings from 250 mm to 1000 mm deep.

Find out more visit

www.concretepipes.co.uk/page/pipe-laying-lifting

To buy or rent the Pipe Lifter, contact CPSA's supply partners

MGF: 01942 402700 / www.mgf.ltd.uk

Mabey Hire: 0845 7413040 / www.mabeyhire.co.uk

AgriMac: 028 7778 1522 / www.agrimachinery.co.uk



Know your lifters



All of the precast concrete drainage products manufactured by FP McCann feature a lifting system to allow safe off-loading and installation in an efficient manner. Each system is suited to each type of product. The information below will allow you to determine what lifting attachments are required. This list is not exhaustive and may be subject to change. Please contact FP McCann's technical department if you are unsure about any aspect of lifting. Please be aware that it is the contractor's responsibility to ensure all lifts are safe and compliant with legal requirements.

If you do not have the correct lifting equipment, please contact our sales department who will be happy to assist. **Please ensure you have ordered lifting equipment to arrive on-site, ready for when your load is delivered!**

Unless otherwise stated, FP McCann will only supply the eyes or attachments. Correct chains will need to be sourced by the contractor. Unless otherwise specified, access to the trailer will be required to insert the attachments.

Product	Lifters Required		Notes
900 to 1800 Standard Chamber Rings and Soak-away	3No M24 Lifting Eye Pins inserted into holes through the ring wall.		Eyes should be on the INSIDE of the ring.
2100 to 3000 Standard Chamber Rings and Soak-away	4No M30 Lifting Eye Pins inserted into holes through the ring wall.		Eyes should be on the INSIDE of the ring.
3600 Standard Chamber Rings	3No RD30 Lifting Loops screwed into the top face of the ring		Please be aware that the loops are not intended for prolonged use.
4000 Standard Chamber Rings (2 part)	4No RD36 Lifting Loops screwed into the top face of the ring		Please be aware that the loops are not intended for prolonged use. Instructions for handling are shown on the product itself.
1200 to 1800 Wide-Wall Chamber Rings	3No 5t Spherical Head Clutch		Attach to the OUTSIDE of the ring.
300 to 1200 Standard Pipes and Fittings	Pipe Grab (below) or Slings		Slings are <u>not</u> supplied by FP McCann. DO NOT USE HOOKS! These can damage the pipes and can be dangerous!
1350 to 2100 Standard Pipes and Fittings	10t Spherical Head Clutch and Chain Sling Set		Clutches and chains allow safe lift and easy installation of units.
2400 Standard Pipes and Fittings	20t Spherical Head Clutch and Chain Sling Set		12-20 tonne shackle 2 leg lifting chain only
All Diameters of Standard Cover Slabs	None		Chain Hooks can be attached directly to all of our standard slabs without further equipment required.

MECHANICAL GRABS - The Quicker, Easier and Safer Option for handling Rings and Pipes.

These attachments connect to site plant and allow off-loading and installation without any need for access to the trailer bed. Mechanical grabs are available for pipe diameters **DN300 to 1200** and for ring diameters of **DN900 to 3000**. For further information, contact your sales representative.

Easi-bases, Head Walls and flow control chambers come supplied with the correct lifters ready for use. Catchpits should be handled with a mechanical grab. All lifters supplied by FP McCann come with appropriate certification and are ready for use. Lifters should be incorporated into the contractors lifting equipment inspection regime under LOLER regulations or disposed of after use.

Safe lifting of thin-section precast chamber ring sections

When lifting chamber ring sections with lifting eyes, it is important that the eyes are passed from the inside of the ring and the nut is attached to the outside of the ring to secure the pin. Hooks must be attached to the eyes on the inside of the chamber and lifted in a safe and controlled manner.

Lifting with the pins installed in any other way is dangerous and should not be attempted in any circumstances.

Lifting with the eyes on the outside is NOT safe and can crush the concrete section. When using lifting eye bolts with the nut not attached, the ring can become damaged or the eyes can pull out of the concrete.

Please be aware that precast concrete rings are fragile. They have thin walls and are not reinforced, and can be easily broken when handled incorrectly.



Eyes passed through from the outside with hooks connected to the outer face of the ring. Pins can come loose if nuts not applied or the self-locking mechanism has not engaged and the concrete can be crushed by the chains.



Eyes passed through from the inside with the plate and nut applied to the thread on the outside, or self-locking mechanism engaged. Hooks are connected to the inside of the ring to allow for a safe lift with straight chains.

For safe lifting in situations when access to the product is restricted (i.e. when stacked high or on a trailer bed, a mechanical grab should be employed). Wide wall chamber rings are lifted via a different method (see page opposite).

Bespoke chamber components such as Easi-Bases and Flow Control Chambers will feature a separate handling method. Reference should be made to appropriate drawings or handling information.

Wide Wall Manhole Chamber lifted using wire lifting loops



drainage
& water
manage-
ment

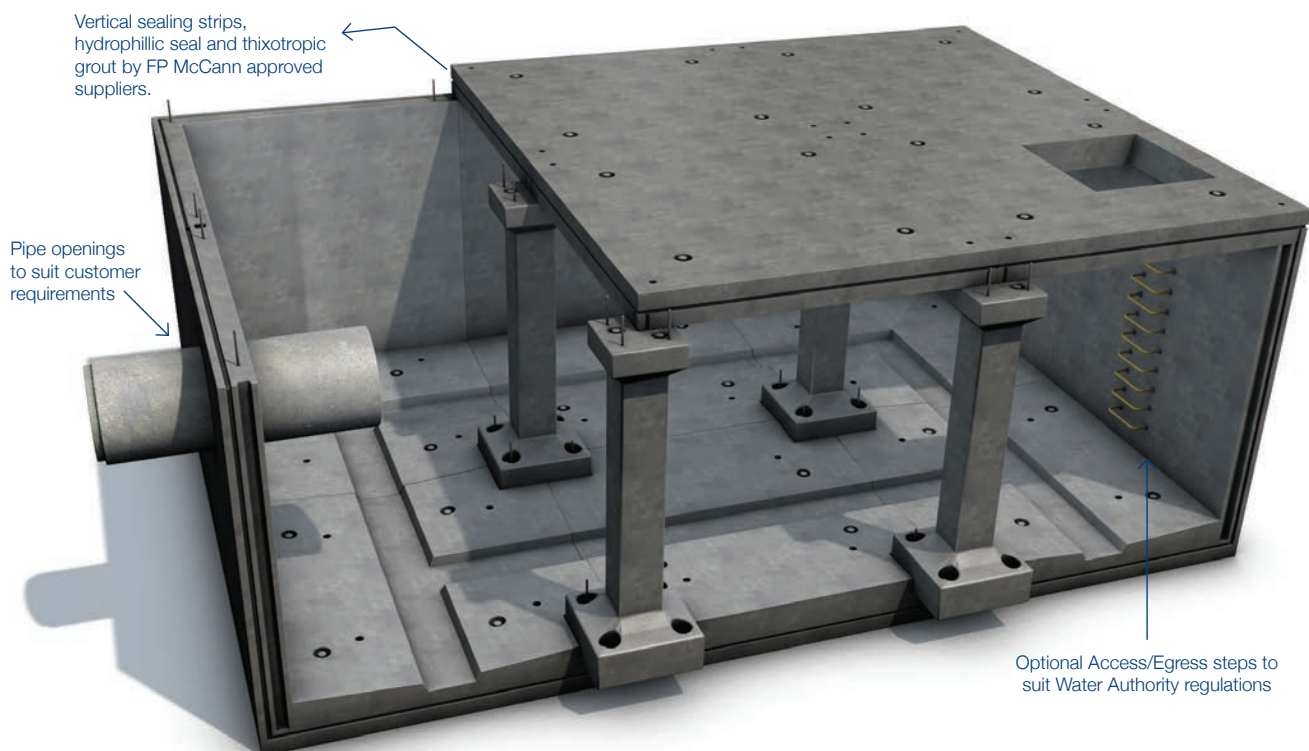
FIP McCann
DN1200 W.W. 13 S 15

Please note: Wide Wall Manhole Chambers are manufactured with 3 x 45mm diameter lifting points to facilitate the safe anchor lifting system (spherical head lifting system).

Introducing... StormStore



StormStore (storm and waste water management system) provides a multifunctional, durable solution for the detention, retention, infiltration, harvesting and treatment of water, comprising of a combination of standardised precast concrete elements, designed to solve your storm and waste water management needs.



Detention

StormStore provides a cost-effective solution for site applications where stormwater needs to be detained and allowed to discharge at a controlled rate.

Retention

StormStore retention systems are ideal for applications where the goal is to retain rainwater or stormwater for some type of harvest and reuse applications.

Infiltration

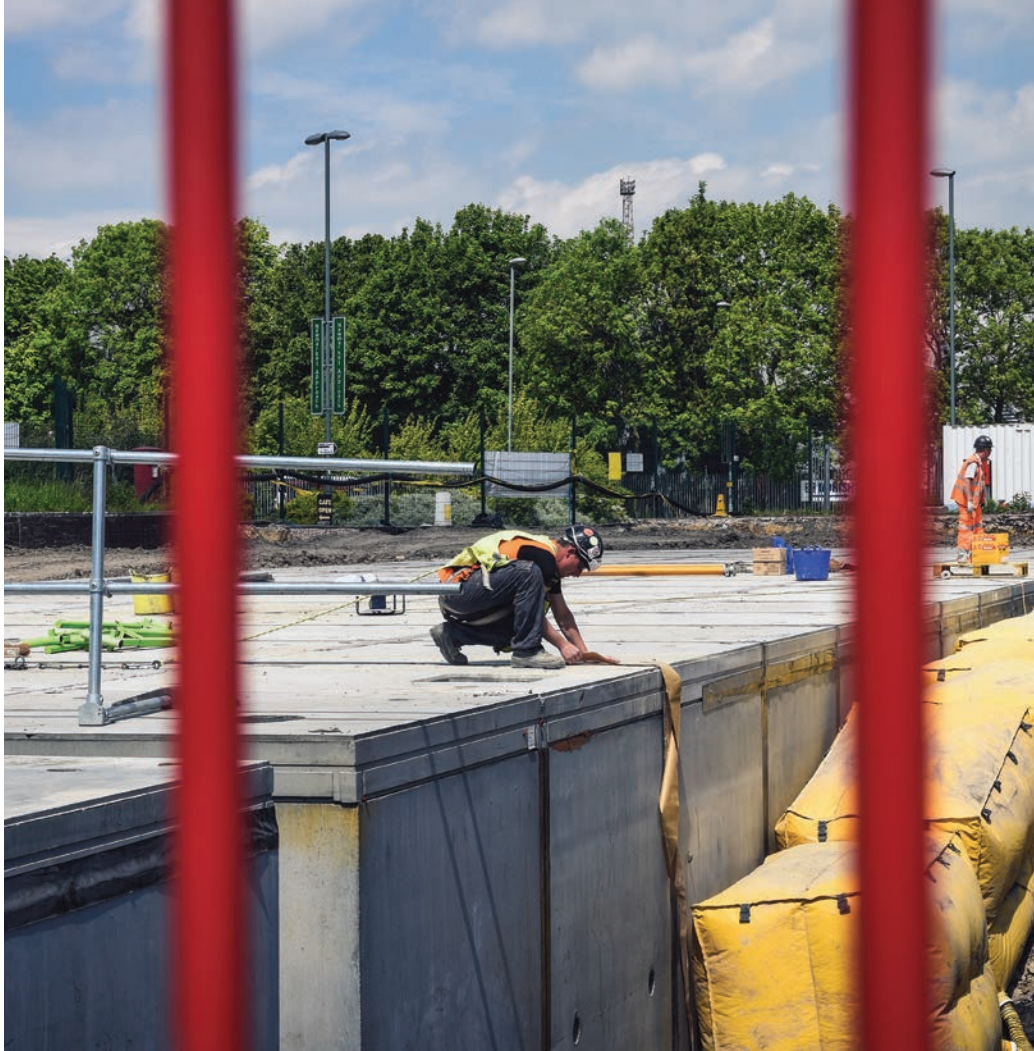
Eliminate the issues created with discharging stormwater off-site by using a StormStore to infiltrate stormwater into the soil for natural treatment and to replenish local aquifers.

Harvesting

Water harvesting is the collection, storage, cleaning and recycling of stormwater to replace or reduce the consumption of municipal potable water.

Treatment

Stormwater treatment options such as pre-treatment, post-treatment and oil water separators are available as stand-alone systems, as well as integration with StormStore.



Site:
Cross Green Industrial Estate,
Leeds

Contractor:
Clugston Construction Ltd.

Client:
Leeds County Council

Products Supplied:
Bespoke Precast Modular
Storage Tank



**Ellistown Office:**

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T 01530 240000

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precast@fpmccann.co.uk

Magherafelt Office:

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Drainage and Water Management Solutions

Ellistown 01530 240000 Magherafelt 028 7954 9026

Tunnel and Shaft Solutions

Cadeby 01455 290780

Rail Solutions

Cadeby 01455 290780

Power and Infrastructure Solutions

Cadeby 01455 290780

Walling Solutions

Lydney 01594 847500

Fencing Solutions

Cadeby 01455 290780

Agricultural Solutions

Lydney 01594 847500 Magherafelt 028 7954 9026

Architectural and Structural Solutions

Grantham 01476 562277 Byley 01606 843500

Flooring Solutions

Weston Underwood 01335 361269

Specialist Precast Solutions

Littleport 01353 861416

fpmccann.co.uk