



CRAWLEY DOWN ROAD, FELBRIDGE

SUDS AND SURFACE WATER MAINTENANCE PLAN

The site has been designed in accordance with Sustainable Drainage Systems (SuDS) techniques. An extract from the SuDS Manual (CIRIA C753) states “Sedimentation is one of the primary removal mechanisms in SUDS. Most pollution in runoff is attached to sediment particles and therefore removal of sediment results in a significant reduction in pollutant loads”. In order to remove sedimentation, the surface water drainage design utilises deep seal trapped gullies throughout, along with catchpit manholes and bio - retention areas and forebays within the attenuation basin

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I) Explanation of the Surface Water Drainage System

The Principle of SuDS has been adopted for the whole of the site, calculations have been carried out using Site3D with a storm return period of 100 years and an allowance of 40% for climate change and 10% allowance for urban creep. Generally, roof water drains direct to the domestic drainage system within each curtilage and from there will be directed to the below ground surface water network. Hardstanding areas and access roads and drives drain to trapped gullies of which of these systems outfall to the surface water drainage system within the site. The site drains to an attenuation basin which outfalls into to the existing ditch further downstream at a restricted discharge rate. The attenuation basin provides temporary storage of the surface water by slowing down the flows at key manholes through the use of Hydrobrake flow controls, which are located inside of these manholes. During peak storm events the water levels in the basin will rise temporarily and after the rainfall event will drop back down. The basins has a bioretention area which will remain wet. The basin also features a forebay to provide additional sediment control and is lined.

2) Operating and Maintenance Responsibility

Barratt David Wilson Homes (BDW) are responsible for maintaining the surface water drainage systems on this site during the construction period. The management company will be appointed by BDW and during the construction period will have BDW as the sole directors. Upon handover and occupation, this will be handed over to residents who will take over as Directors for the domestic drainage. The Management Company will then appoint a managing agent who will ensure that the SuDS are maintained as set out in this document. The transfer of the management company from BDW to the residents will only complete upon completion of the site and during the construction stage, the management of the land will remain under Barratt Redrow's control

An OFWAT regulated sewerage authority will adopt and maintain the public surface and foul water sewers which run beneath the main roads of the site. Major components of the drainage system will be replaced as required by the sewerage authority as part of their respective asset management plan.

Emergency Contact Information: Telephone number:

3) Maintenance Schedule for Catchpits, Control Chambers, Flow Control Devices and Gullies

Hydro-Brake Flow Control Maintenance

Normally, little maintenance is required as there are no moving parts within the Flow Control. The Flow Control is fitted with a pivoting by pass door, which allows the manhole to be drained down should blockage occur. This is operated by a steel tensile rope attached to a pull handle located beneath the cover of the manhole- refer to the hydro international Technical specification sheet appended which indicates this arrangement. It is recommended that each unit be inspected monthly for three months and thereafter at six monthly intervals with hose down if required. All flow controls are typically manufactured from grade 304 Stainless Steel which has an estimated life span in excess of the design life of drainage systems. Also Refer to the Hydro International Maintenance and safety Sheet

Maintenance Schedule	Required Action	Recommended Frequency
Regular maintenance	Inspect and identify any areas that are not operating correctly. If required, take remedial action.	Monthly for 3 months, then six monthly
	Debris removal from catchment surface (where may cause risks to performance)	Monthly
	Remove sediment and oil deposits from all trapped gullies.	Annually, or as required.
Remedial actions	Repair/rehabilitation of inlets, outlets, overflows and vents.	As required
Monitoring	Inspect/check all inlets, outlets, vents and overflows to ensure that they are in good condition and operating as designed.	Annually and after large storms

4) Maintenance Schedule for Attenuation Basins & Bio-Retention Areas

Maintenance Schedule	Required Action	Recommended Frequency
Regular maintenance	Litter and debris removal.	Monthly
	Grass cutting – for spillways and access routes.	Monthly (during growing season), or as required.
	Grass cutting – meadow grass in and around basin.	Half yearly (spring before nesting season, and autumn).
	Manage other vegetation and remove nuisance plants.	Monthly (at start, then as required).
	Tidy all dead growth before start of growing season.	Annually.
	Remove sediment from inlets, outlet and forebay.	Annually (or as required).
Occasional maintenance	Check for poor vegetation growth due to lack of sunlight or leaf dropping litter and cut back adjacent vegetation where possible/	Annually
	Re-seed areas of poor vegetation growth. Alter plant types to better suit conditions, if required	Annually, or if bare soil is exposed over 10% or more of the basin/swale treatment area
	Prune and trim trees and remove cuttings.	2 years (or as required).
Remedial actions	Repair of erosion or other damage by re-turfing or reseeded.	As required
	Re-level uneven surfaces and reinstate design levels.	As required.
	Repair/rehabilitation of inlets, outlets and overflows.	As required.

	Remove and dispose of oils or petrol residues using safe standard practices	As required
Monitoring	Inspect inlets, outlets and overflows for blockages, and clear if required.	Monthly/ after large storms.
	Inspect banksides, structures, pipework etc. for evidence of physical damage.	Monthly/ after large storms.
	Inspect inlets and facility surface for silt accumulation. Establish appropriate silt removal frequencies.	Half yearly.
	Check flow control device and other mechanical devices.	Half yearly.

5) Maintenance Schedule for Althon Grilles to Headwalls

Maintenance Schedule	Required Action	Recommended Frequency
Regular maintenance	Litter and debris removal	Monthly (or as required).
Occasional maintenance	Check moving parts and locks. Oil and ensure free moving. Replace when necessary.	Six monthly
Remedial actions	Remove build-up of sediment.	As required.
Monitoring	Inspect inlets and facility surface for silt accumulation. Establish appropriate silt removal frequencies.	

This schedule is also to be read in conjunction with the Althon Maintenance specification document appended to this manual.

6) Maintenance Schedule for solid wall pipes and manholes

Maintenance Schedule	Required Action	Recommended Frequency
Regular maintenance	Inspect and identify any areas that are not operating correctly. If required, take remedial action.	Monthly for 3 months, then six monthly.
	Debris removal from catchment surface (where may cause risks to performance).	Monthly.
	Inspect chambers and manholes for evidence of pipes operating correctly and take remedial action if necessary, to include jetting of pipework.	Monthly for 3 months, then annually.

7) Maintenance Schedule for existing watercourse and headwalls

Maintenance Schedule	Required Action	Recommended Frequency
Regular maintenance	Litter and debris removal.	Monthly.
	Grass cutting – to retain grass height within specified design range. Close cut around outlet & structure. 100 – 150mm generally.	Monthly (during growing season) or as required
	Manage other vegetation and remove nuisance plants.	Monthly (at start, then as required).
	Tidy all dead growth before start of growing season.	Annually.
	Remove sediment from inlets and outlets.	Annually (or as required).
Occasional	Check for poor vegetation growth due to lack of sunlight or leaf dropping	Annually.

maintenance	litter and cut back adjacent vegetation where possible.	
	Re-seed areas of poor vegetation growth. Alter plant types to better suit conditions, if required.	Annually, or if bare soil is exposed over 10% or more of the treatment area.
	Prune and trim trees and remove cuttings.	2 years (or as required).
Remedial actions	Repair of erosion or other damage by re-turfing or reseeded.	As required.
	Re-level uneven surfaces and reinstate design levels.	As required.
	Repair/rehabilitation of inlets, outlets and overflows.	As required.
	Remove and dispose of oils or petrol residues using safe standard practices.	As required.
Monitoring	Inspect inlets, outlets and overflows for blockages, and clear if required.	Monthly/ after large storms.
	Inspect banksides, structures, pipework etc. for evidence of physical damage.	Monthly/ after large storms.
	Inspect inlets and facility surface for silt accumulation. Establish appropriate silt removal frequencies.	Half yearly.

This schedule should be read in conjunction with the Althon SFA10 Maintenance documents appended to this manual.

8) Reasons for Maintenance

Surface water contains variable amounts of sediment which settles out at certain locations and could cause blockages if left. Road gullies also trap oil and prevent it entering the surface water sewer system

9) Management and Maintenance

Some of the proposed drainage system is to be adopted by IWNL (S104 agreement has received technical approval). Therefore, the maintenance responsibility of those parts of the system will remain with them. IWNL has confirmed that they will be carrying out maintenance in accordance with the requirements of the DCG. The parts of the system not adopted will be maintained either by the assigned management company or individual property owner. Drainage infrastructure which serves a single plot will be the sole responsibility of the owner/occupier of the associated plot. Any other parts of the drainage system i.e. the basins and shared (serving more than a single plot and/or being outside of any individual plot's curtilage) unadopted infrastructure will be the responsibility of the management company. The watercourse within the site's boundary will be maintained by the assigned management company in-line with the landowner's legal obligations under the Land Drainage Act 1991/2010. Any additional maintenance activities beyond this will be the responsibility of the management company, to be appointed by the developer upon completion of the development.

10) Funding

The funding of the maintenance will be the responsibility of the end users as follows:

- Adopted parts of the system will be maintained by IWNL, annual fees will be paid to IWNL by the owners/occupiers of the plots.
- Shared non-adopted infrastructure will be maintained by the management company and annual fees will be paid to the management company by the owners/occupiers of the plots.
- Private parts of the system will be the responsibility of individual plot owners who will be responsible for funding their own drainage system

11) Record Keeping

Records shall be kept of maintenance undertaken which will help establish a long-term maintenance regime. It is recommended that a record of maintenance carried out is kept, which should include the following information:

DATE OF MAINTENANCE:				
LOCATION	MAINTENANCE CARRIED OUT	SILT DEPTH	NOTES/FAULTS	DATE OF NEXT INSPECTION

APPENDIX (A)



December 2014

Maintenance of Headwalls, Silt Traps & Chambers.

With respect to the maintenance of any exposed surfaces of concrete components, only routine (Annual) cleaning **may** be necessary with a Power Washer and possibly some mild detergent to any exposed surfaces to maintain appearance; however all sites are unique and environmental impact of cleaning should be taken into account. Where cleaning is required and environmental conditions prevent mild detergent, using clean water and a power washer/stiff brush should suffice. Concrete units are often expected to “weather” and some coverage will help them to blend into their environment.

If damage to the structure of any pre-cast concrete components occurs we recommend their replacement not repair. If there is minor damage to corners during their normal life by grass cutting equipment etc. then repair with an epoxy compound such as 'Mason Mate 0868PR380 Polyester Resin'.

To dispose of any Pre-Cast concrete components the preferred method is to recycle the material by crushing and grading, but if the quantity is too small to be cost effective then disposal in conventional landfill is acceptable as all the concrete components are inert with regard to having any environmental impact.

Maintenance of Galvanised Grates & Handrails.

Annual/bi-annual visual checks are basic recommendations. If gratings are in a water course subject to a higher level of debris/weed, then more regular checks may be required. Clearing of debris/weeds from the grate will ensure no disruption to the flow, or backing up of the water course. Handrails should also only require a visual inspection – annually or at the same time as the headwall & grates.

SFA10 Headwall Range

Up to 750mm Pipework
800mm - 1520mm Backwall Height

300 and 500mm Thick Toe

Althon Sewers for Adoption precast headwalls should be used when a concrete headwall is part of a Section 104 Agreement and the sewers are to be adopted once completed by the local Water Company. The materials used and installation must comply with the 'Sewers for Adoption' guidelines. Althon SFA precast concrete headwalls offer a cost effective alternative to in-situ structures for connecting pipework discharging into open watercourses.

There are four sizes of Sewers for Adoption concrete headwalls available catering for pipe sizes up to and including 1500mm. Each size of SFA precast concrete headwall comes with three depths of toe and four back wall heights offering wing wall profiles to suit most applications.

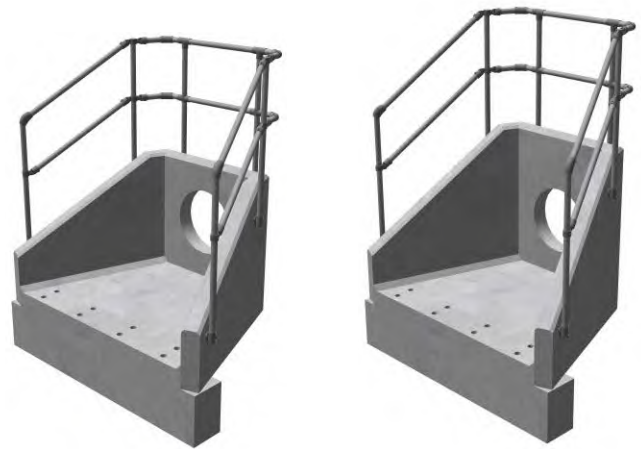
Althon Sewers for Adoption precast concrete headwalls are cast to suit the diameter and type of pipe being used and can be provided with fixings cast in at the time of manufacture to accommodate gratings, trash screens, flap valves, penstocks, ladders, Kee Klamp® handrails and flow and depth monitoring equipment.

Our Sewers for Adoption compliant precast headwalls are available with toe extensions either 300 or 500mm thick with depths ranging from 450 to 1000mm. We also manufacture Sewers for Adoption compliant outfall safety grilles to suit our concrete headwalls.



SFA10 A
800mm Backwall

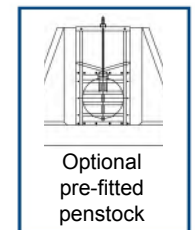
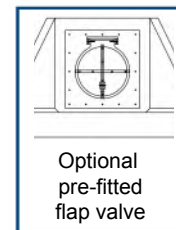
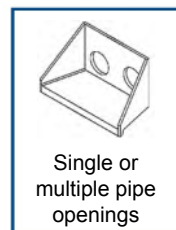
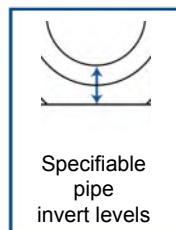
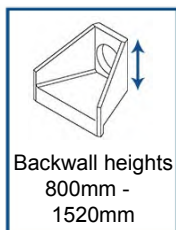
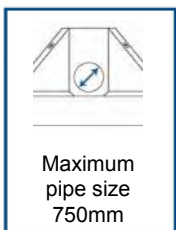
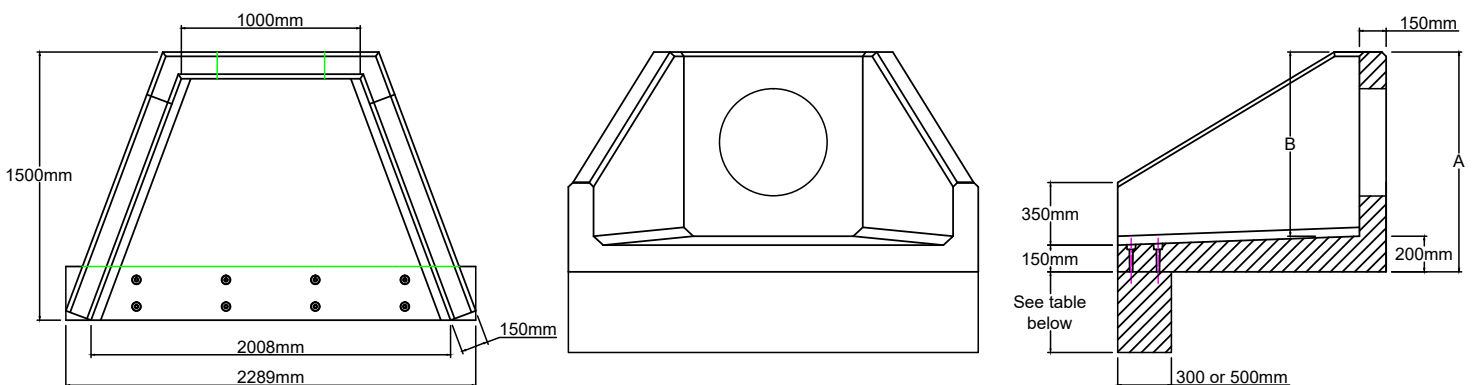
SFA10 B
1040mm Backwall



SFA10 C
1230mm Backwall

SFA10 D
1520mm Backwall

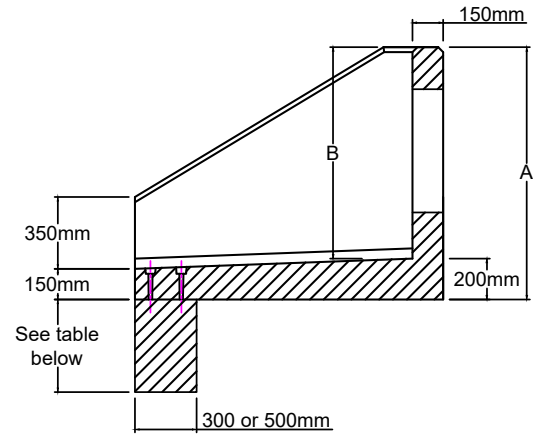
Optional Kee Klamp handrail



SFA10 Headwall Range

Up to 750mm Pipework
800mm - 1520mm Backwall Height

300mm Thick Toe



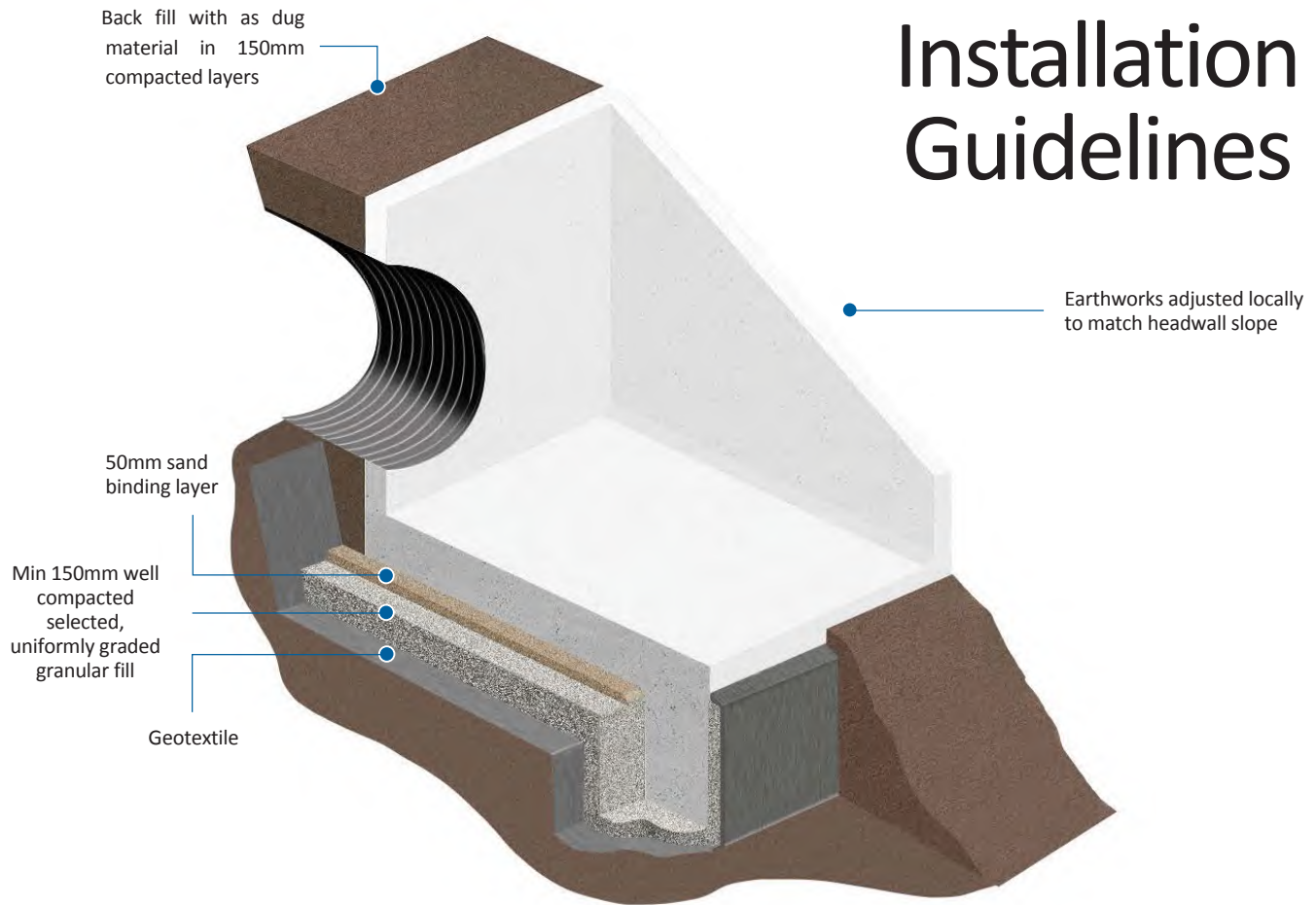
Headwall Ref	Back Wall Height A	Back Wall Height B	Wing Wall Profile	Weight	Weight with Toe			Max Pipe Opening	Max Pipe Opening	Max Pipe Opening	Max Pipe Opening	Max Pipe Opening	Max Pipe Opening
					450mm	700mm	1000mm	Invert Level with Apron		100mm Invert Level		225mm Invert Level	
								TW / Clay	Concrete	TW / Clay	Concrete	TW / Clay	Concrete
	mm	mm		kg	kg	kg	kg	mm	mm	mm	mm	mm	mm
SFA10A	800	600	1:4	1882	2636	3042	3542	400	375	300	300	150	N/A
SFA10B	1040	840	1:2	2124	2878	3284	3784	600	600	500	450	450	375
SFA10C	1230	1030	1:1.5	2315	3069	3475	3975	750	675	600	600	600	525
SFA10D	1520	1320	1:1	2607	3361	3767	5267	750	675	750	675	750	675

500mm Thick Toe

Headwall Ref	Back Wall Height A	Back Wall Height B	Wing Wall Profile	Weight	Weight with Toe			Max Pipe Opening	Max Pipe Opening	Max Pipe Opening	Max Pipe Opening	Max Pipe Opening	Max Pipe Opening
					500mm	750mm	1000mm	Invert Level with Apron		100mm Invert Level		225mm Invert Level	
								TW / Clay	Concrete	TW / Clay	Concrete	TW / Clay	Concrete
	mm	mm		kg	kg	kg	kg	mm	mm	mm	mm	mm	mm
SFA10A	800	600	1:4	1882	3262	3952	4642	400	375	300	300	150	N/A
SFA10B	1040	840	1:2	2124	3504	4194	4884	600	600	500	450	450	375
SFA10C	1230	1030	1:1.5	2315	3695	4385	5075	750	675	600	600	600	525
SFA10D	1520	1320	1:1	2607	3987	4677	5367	750	675	750	675	750	675

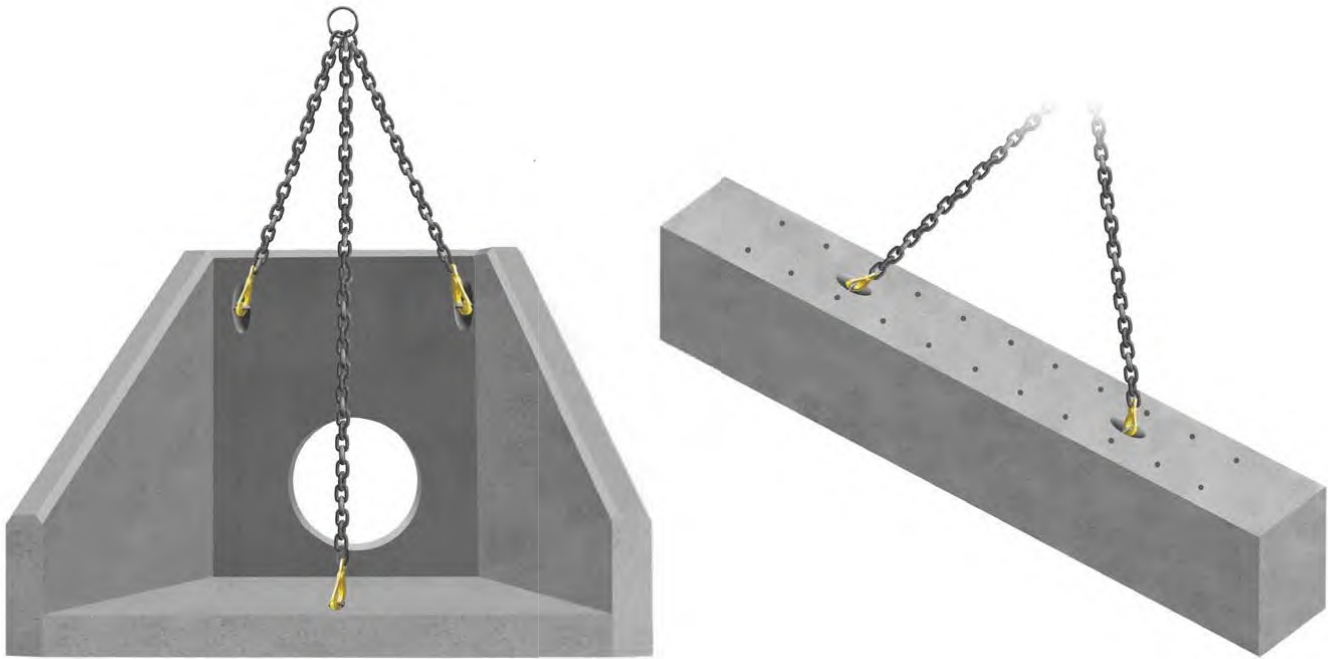
Note - Approximate headwall weights are based on a headwall with no hole cast in

Installation Guidelines



- 1 Ensure that first or last spigot/butt or socket/butt pipe that is to be fitted to the Headwall is in position and free from backfill.
- 2 Dig out the bank of the watercourse to take the size of the headwall making sure that the Headwall will not protrude into the path of the water flow. The angle of the excavation to the rear of the Headwall should be roughly the same as the existing bank profile.
- 3 Dig out sufficient size trench to take the toe along the front of the foundation.
- 4 Line toe foundation with Geotextile then place selected, uniformly graded granular fill in the base and compact well. Lift Toe into position and level then fill around the toe with selected, uniformly graded granular fill and compact well. Insert supplied threaded rod into the sockets cast into the top of the toe.
- 5 Line the base of the rest of excavation with Geotextile then place a minimum bed of 150mm Class 6N or 6K* well graded granular Material on the base & compact well, especially around the back of the toe, then a 50mm topping of fine material (Class 6L*) to ensure units are level and stable. Lift Headwall into position, over the end of the pipe & locate over threaded rod protruding from the toe and level. Place washer over threaded rod in recess in Headwall apron and tighten nut. Fill recess with high strength non-shrink grout.
- 6 The pipe should be flush with the front of the back wall if fitting grating or flap valve, or protruding by 50mm if not.
- 7 Shim the pipe until it is central within the opening then fill void with sand cement mortar or high strength non-shrink grout.
- 8 If flap valve or grating is supplied, this will need to be removed before the pipe is inserted and sealed into place. Then reinstall using stainless steel fixing bolts into cast in sockets. (When bolting flap valves against headwall, use a good quality sealant but do not over tighten bolts or distortion may occur resulting in the valve not seating correctly.
- 9 Backfill pipe section first then backfill all around Headwall with as dug material. Make good at front of toe with as dug material ensuring river bank is returned to its original profile. It may be necessary to provide protection in front of the toe, please refer to engineers' recommendation.

*Manual of Contract Documents for Highway Works: Volume 1 (MCHW1), Specification for Highway Works, Series 600 (Nov 09)



Rapid-Lift Lifting Anchors

All Althon SFA Headwalls and Toes are fitted with Rapid-Lift lifting anchors. The Althon Rapid-Lift system allows the SFA Headwalls & Toes to be offloaded, transported and located in their final position without the need for any specialised lifting equipment. Standard lifting hooks and chains can be used with the three lifting points (two lifting points on Toes). The minimum chain leg length for all units is 1500mm.

Althon Precast Concrete SFA Headwall Safety Sheet

Althon Limited manufacture pre-cast concrete SFA Headwalls using :-

6 - 14mm aggregate • 0/4mm Sharp sand • Portland cement BS EN 197-1- Cem 1 52.5 • Cryso Fluid Premia 205 Varit Superplasticiser

When units have been manufactured and cured they are in a chemically inert state. But the following information should be considered.

- It is advisable to wear toe cap safety footwear when handling any concrete products. Please refer to your company Safety Policy for specific details on manual handling.
- When cutting with masonry grinding discs or drilling with masonry drill bits it is necessary to wear eye protection and a dust mask. It is also recommended to wear ear protection during either of these two processes.
- Due to some units having sharp edges it is advisable to wear protective gloves when handling Althon products.
- When fitting or removing some of the larger accessories it is necessary to use a mechanical system to prevent risk of back injury.

Maintenance of SFA Headwalls

With respect to the maintenance of any exposed surfaces of concrete components, only routine (Annual) cleaning may be necessary with a Power Washer and possibly some mild detergent to any exposed surfaces to maintain appearance; however all sites are unique and environmental impact of cleaning should be taken into account. Where cleaning is required and environmental conditions prevent mild detergent, using clean water and a power washer/stiff brush should suffice. Concrete units are often expected to “weather” and some coverage will help them to blend into their environment.

If damage to the structure of any pre-cast concrete components occurs we recommend their replacement not repair. If there is minor damage to corners during their normal life by grass cutting equipment etc. then repair with an epoxy compound such as ‘Mason Mate 0868PR380 Polyester Resin’.

To dispose of any Pre-Cast concrete components the preferred method is to recycle the material by crushing and grading, but if the quantity is too small to be cost effective then disposal in conventional landfill is acceptable as all the concrete components are inert with regard to having any environmental impact.

Maintenance of Galvanised Grates & Handrails.

Annual/bi-annual visual checks are basic recommendations. If gratings are in a water course subject to a higher level of debris/weed, then more regular checks may be required. Clearing of debris/weeds from the grate will ensure no disruption to the flow, or backing up of the water course. Handrails should also only require a visual inspection – annually or at the same time as the headwall & grates.

APPENDIX (B)



HYDRO-BRAKE® FLOW CONTROL

MAINTENANCE AND SAFETY DATA SHEET

MAINTENANCE

Normally, little maintenance is required as there are no moving parts within the Hydro-Brake® Flow Control. Experience has shown that if blockages occur they do so at the intake, and the cause on such occasions has been due to a lack of attention to engineering detail such as approach velocities being too low, inadequate benching, or the use of units below the minimum recommended size. Hydro-Brake® Flow Controls are fitted with a pivoting by-pass door, which allows the manhole chamber to be drained down should blockages occur. The smaller type conical units, below the minimum recommended size, are also supplied with roding facilities or vortex suppressor pipes as standard.

Following installation of the Hydro-Brake® Flow Control it is vitally important that any extraneous material i.e. Building materials are removed from the unit and the chamber. After the system is made live, and assuming that the chamber design is satisfactory, it is recommended that each unit be inspected monthly for three months and thereafter at six monthly intervals with hose down if required. If problems are experienced please do not hesitate to contact the company so that an investigation may be made.

Hydro-Brake® Flow Controls are typically manufactured from grade 304 Stainless Steel which has an estimated life span in excess of the design life of drainage systems.

COSHH

Hydro-Brake® Flow Controls are manufactured from Stainless Steel, which is not regarded as hazardous to health and exhibits no chemical hazard when used under normal circumstances for the stated applications.

MANUAL HANDLING

The handling of Hydro-Brake® Flow Controls should be in accordance with current legislation and regulations:

- The Health and Safety at Work Act 1972.
- The Management of Health and Safety at Work Regulations 1992.
- The Manual Handling Operations Regulations 1992.

All published and printed by the Health and Safety Executive.

Technical Specification

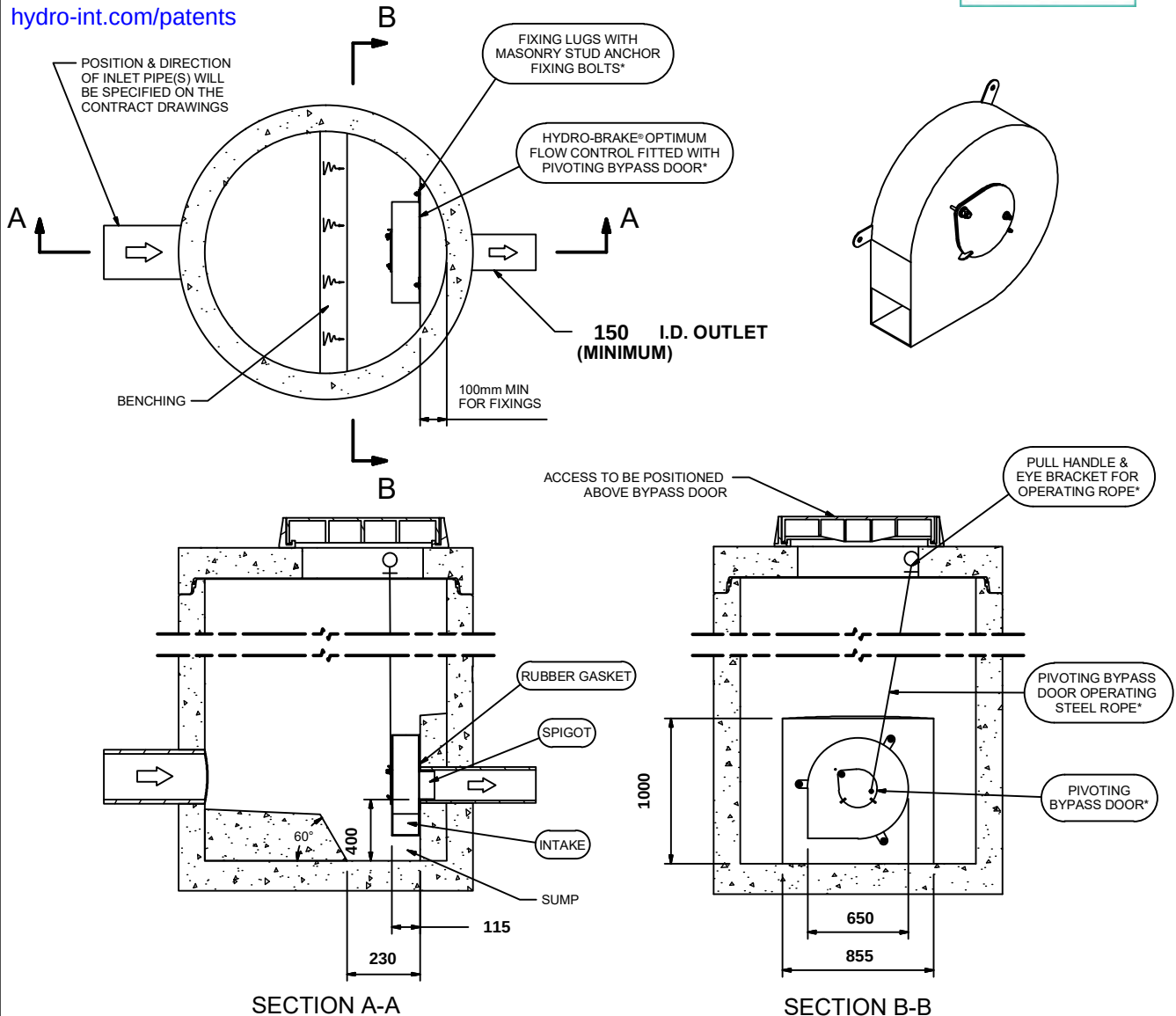
Control Point	Head (m)	Flow (l/s)
Primary Design	1.710	6.300
Flush-Flo™	0.470	6.022
Kick-Flo®	0.955	4.801
Mean Flow		5.370

Hydro-Brake® Optimum Flow Control including:

- 3 mm grade 304L stainless steel
- Integral stainless steel pivoting by-pass door allowing clear line of sight through to outlet, c/w stainless steel operating rope
- Beed blasted finish to maximise corrosion resistance
- Stainless steel fixings
- Rubber gasket to seal outlet
- Indicative Weight: 20 kg



hydro-int.com/patents



IMPORTANT:

○ LIMIT OF HYDRO INTERNATIONAL SUPPLY

THE DEVICE WILL BE HANDED TO SUIT SITE CONDITIONS
FOR SITE SPECIFIC DETAILS AND MINIMUM CHAMBER SIZE REFER TO HYDRO INTERNATIONAL
ALL CIVIL AND INSTALLATION WORK BY OTHERS

* WHERE SUPPLIED

HYDRO-BRAKE® FLOW CONTROL & HYDRO-BRAKE® OPTIMUM FLOW CONTROL ARE REGISTERED TRADEMARKS FOR FLOW CONTROLS DESIGNED AND MANUFACTURED EXCLUSIVELY BY HYDRO INTERNATIONAL

THIS DESIGN LAYOUT IS FOR ILLUSTRATIVE PURPOSES ONLY. NOT TO SCALE.

DESIGN ADVICE



The head/flow characteristics of this SHE-0107-6300-1710-6300 Hydro-Brake® Optimum Flow Control are unique. Dynamic hydraulic modelling evaluates the full head/flow characteristic curve.
The use of any other flow control will invalidate any design based on this data and could constitute a flood risk.

Hydro
International®

DATE 19/07/2023 07:38

SITE Felbridge

DESIGNER Meagan Weedon

REF 5086 Ph1

SHE-0107-6300-1710-6300

Hydro-Brake® Optimum

Technical Specification

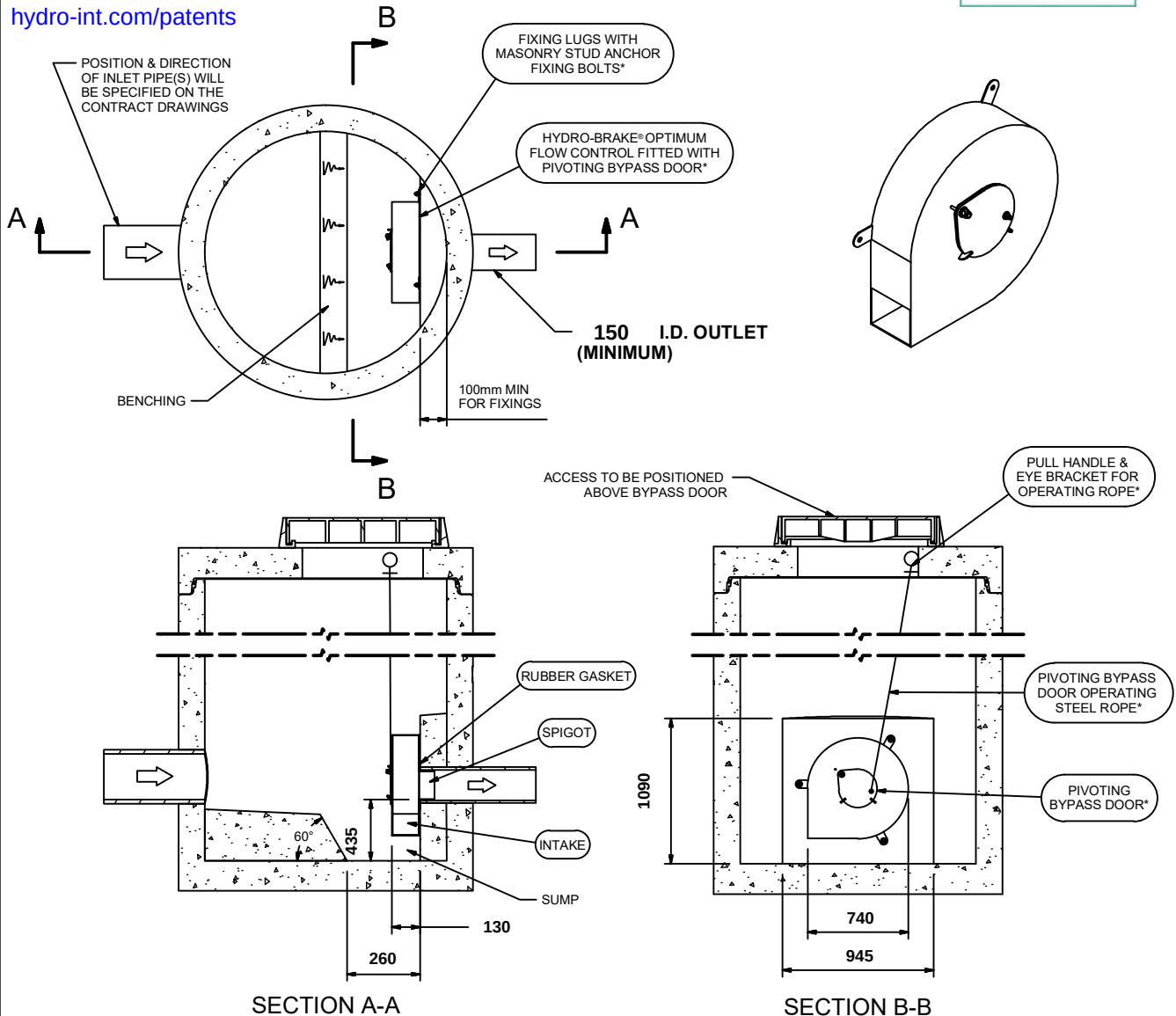
Control Point	Head (m)	Flow (l/s)
Primary Design	3.178	10.900
Flush-Flo™	0.534	8.336
Kick-Flo®	1.095	6.605
Mean Flow		8.347

Hydro-Brake® Optimum Flow Control including:

- 5 mm grade 304L stainless steel
- Integral stainless steel pivoting by-pass door allowing clear line of sight through to outlet, c/w stainless steel operating rope
- Beed blasted finish to maximise corrosion resistance
- Stainless steel fixings
- Rubber gasket to seal outlet
- Indicative Weight: 50 kg



hydro-int.com/patents



IMPORTANT:

○ LIMIT OF HYDRO INTERNATIONAL SUPPLY

THE DEVICE WILL BE HANDED TO SUIT SITE CONDITIONS
FOR SITE SPECIFIC DETAILS AND MINIMUM CHAMBER SIZE REFER TO HYDRO INTERNATIONAL
ALL CIVIL AND INSTALLATION WORK BY OTHERS

* WHERE SUPPLIED

HYDRO-BRAKE® FLOW CONTROL & HYDRO-BRAKE® OPTIMUM FLOW CONTROL ARE REGISTERED TRADEMARKS FOR FLOW CONTROLS DESIGNED AND MANUFACTURED EXCLUSIVELY BY HYDRO INTERNATIONAL

THIS DESIGN LAYOUT IS FOR ILLUSTRATIVE PURPOSES ONLY. NOT TO SCALE.

**DESIGN
ADVICE**



The head/flow characteristics of this SHE-0122-1090-3178-1090 Hydro-Brake® Optimum Flow Control are unique. Dynamic hydraulic modelling evaluates the full head/flow characteristic curve.
The use of any other flow control will invalidate any design based on this data and could constitute a flood risk.

Hydro
International®

DATE 19/07/2023 08:35

SITE Felbridge

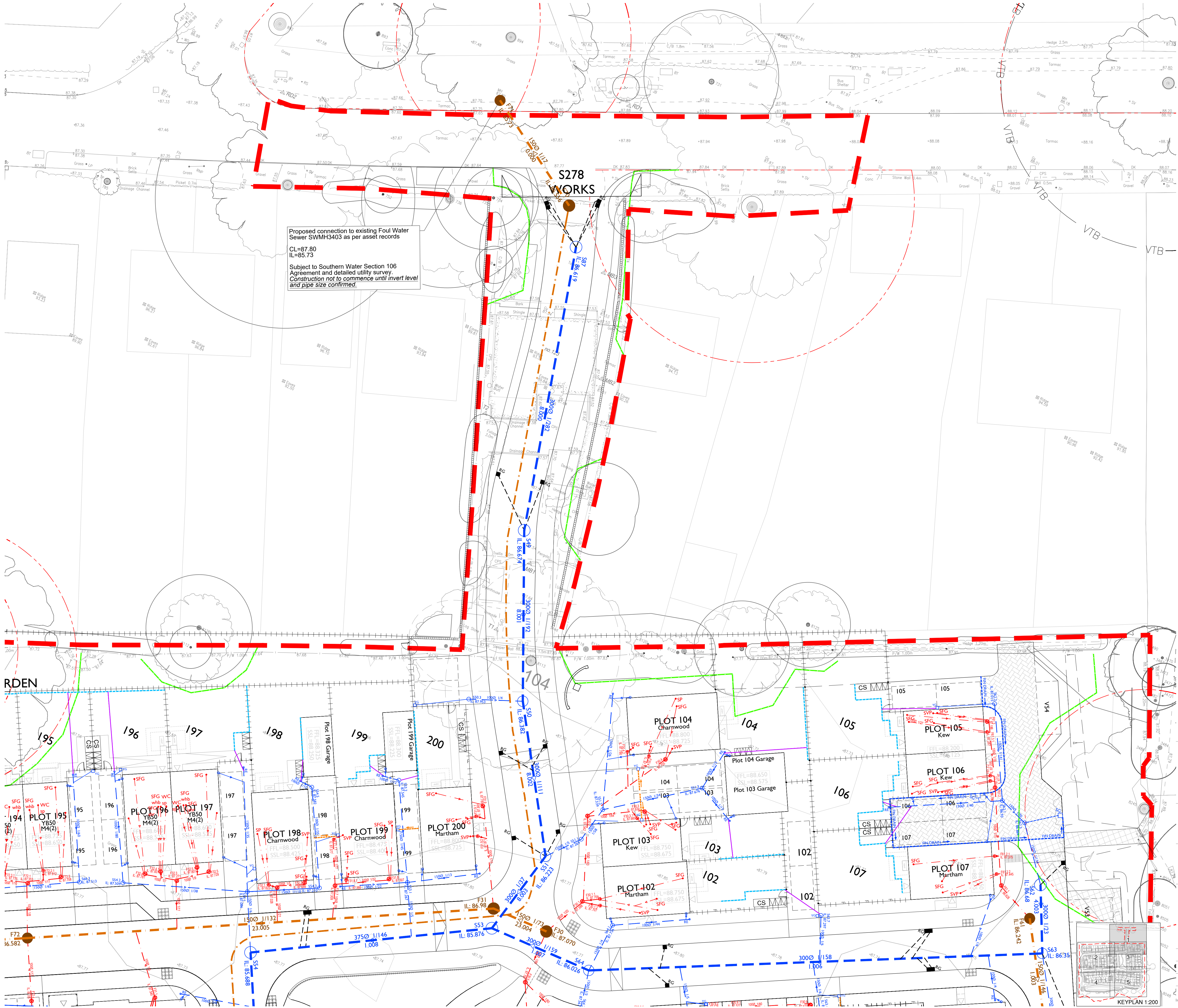
DESIGNER Meagan Weedon

REF 5086 Ph2

SHE-0122-1090-3178-1090

Hydro-Brake® Optimum

APPENDIX (C)



NOTES

- All dimensions are in metres unless stated otherwise.
- Do not scale from this drawing. Only written dimensions are to be used.
- FPA & SVP house drainage is to be constructed in accordance with the Building Regulations & BS891 Fig. 9.
- Drains are to be constructed using flexible corrugated polypropylene (PP) pipe to BS EN 205-1991 'Super Strength' specification (eg. Hephworth Superdren or equivalent) or uPVC drainage.
- Location of sewers & lateral drains to be in accordance with the SSG Appendix C Design and Construction Guidance Approved v3 dated November 2023 and the specific requirements of WNV.
- Building of drain trenches adjacent to dwelling or other structures to be in accordance with BS891 Fig. 9.
- Cover levels indicated on the Drainage Schedule are nominal & may be adjusted to suit finished ground levels as necessary.
- Generally Inspection chamber covers should be Grade D400 in trafficked areas Grade B125 in parking areas and occasional traffic and A15 in pedestrian only areas.
- Rainwater downpipes to be connected direct to drain using an appropriate adaptor & removable section of downpipe to permit rodding access.
- The positions of SVPs, sub stacks, WC outlets, Back water valves etc. & rainwater downpipes are to be accurately located from the house type working drawings.
- Generally FV drains are to be laid to falls of 1 in 40, sub in 100mm diameter pipes. SVP pipes are to be 100mm diameter when serving 2 or more RWPP connections. FV pipes are to be 100mm diameter when serving 10 dwellings or more unless stated otherwise, or where a schedule is provided.
- 100mm FV Drains are to be laid to minimum fall of 1 in 80 and 150mm FV Drains are to be laid to minimum fall of 1 in 100.
- Gullies situated in areas accessible to wheeled vehicles to be of suitable construction for road traffic areas.
- Where land drains are identified on the Architect's details, connect into nearest SW system.
- Where catchpits have been shown in rear gardens connecting to land drains, 400mm PPC catchpits to be used.
- This drawing should be read in conjunction with the Architect's and Structural Engineer's design drawings and specifications.
- Site layout and auxiliary drawings reviewed in DWG format from Barratt Southern Counties on 02.05.25.
- Sub-structure plans have been provided for WNV's reference. (CPT's date received 20.05.25).
- Drainage layout to be read in conjunction with the Architect's design details, Figures & Drainage Layouts (CIV-431 to CIV-435) Section 104 Drainage Layouts.
- (BCH) Surface Water Sewer and Foul Water Sewer Hydraulic Schedules CIV-431 and CIV-435 Section 104 Drainage Construction Details CIV-431 to CIV-435 and Domestic.
- Where backlogs are less than 1.0m for domestic drainage, backlogs to be accommodated with internal backing.
- Surface water from parking areas is to be discharged into adaptable lighting and into area.
- All footpath slabs shall have a crosstie to drain surface water into adjoining gardens.
- Domestic drainage has been designed in accordance with the Building Regulations guidance which requires the high flow lateral connecting to the main channel of inspection chambers.
- Foul drainage inspection chamber internal connection layout is as per Polypropylene guidance outlined in BDW services brief for civil engineers.
- All future ground drainage, parking bays, etc. to be designed to all surface water runoff away from SWB works. If not achievable, full-width ACO drainage to be installed.
- ANY VARIANCE OR DISCREPANCY MUST BE REPORTED BACK TO PER BEFORE WORK BEGINS.

KEY

Site Boundary

Section 278 Works
(under separate Design Pack)

FFL = Plot/Garage Finished Floor Level
SSL = Plot/Garage Structural Slab Level

Adoptable Surface Water Sewers (WNV)

Adoptable Foul Water Sewers (WNV)

Adoptable Pumping Foul Water Man (WNV)

Adoptable PCC Headwalls (WNV)

Adoptable (West Sussex Highways) Road Gully & 1500 Connection

Private Road Gully & Connection

Private Surface Water Domestic Drainage

Private Foul Water Domestic Drainage

House connection via 300mm dia. shallow access chamber not more than 400mm deep (Based on floor make-up of 75mm screed, 225mm insulation & 150mm beam & slab).

In the event that conditions on-site result in maximum depth of 400mm being exceeded, then Type D chambers to be used.

Internal Foul Connections

Soil Vent Pipe
Soil Pipe
Soil Floor Gully
Water Closet Pipe
Rooding Eye

'Aco' Channel (showing connecting pipe) or equivalent

Threshold Drain

Yard Gully and Connection

Filter Drain (showing connecting pipe) with final 1.0m section of 100mm perforated UPVC pipe laid to nominal fall.

Basin perimeter Filter Drain refer to DWG CIV-1-430 for detail

French drain with sump gully connection for permeable paving areas

Timber VRS with Pedestrian Rail

400mm High Kew Kulling at Attenuation Basin

Life Ring & Deep Water Signs at Attenuation Basin

Area of 'No Dig' Road / Parking Bay / Footpath & Footway Construction

Permeable Paved Construction

6m Existing Surface Water Easement

Concrete Dish Channel (with nominal fall towards gully)

Root Protection Area

Tree Protection Fencing

Any proposed works within Root Protection Areas are subject to supervision and approval by the Arboriculturalist.

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Rev Note

Scale @ A1:
0 5 10 15 20 25m
Scale 1:500

Project: Crawley Down Road, Felbridge

Title: Domestic Drainage Layout Sheet 1

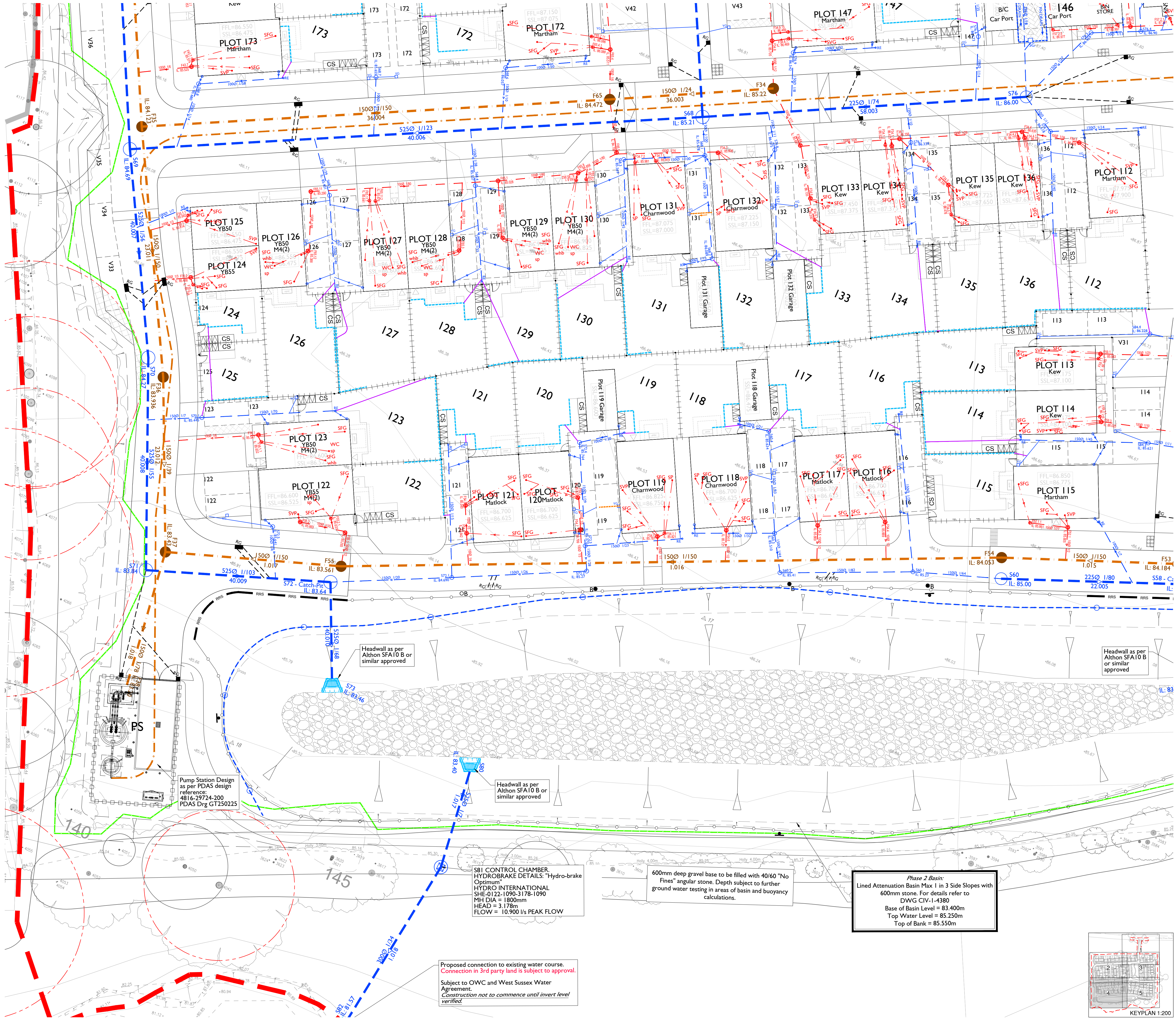
Client: BARRATT HOMES

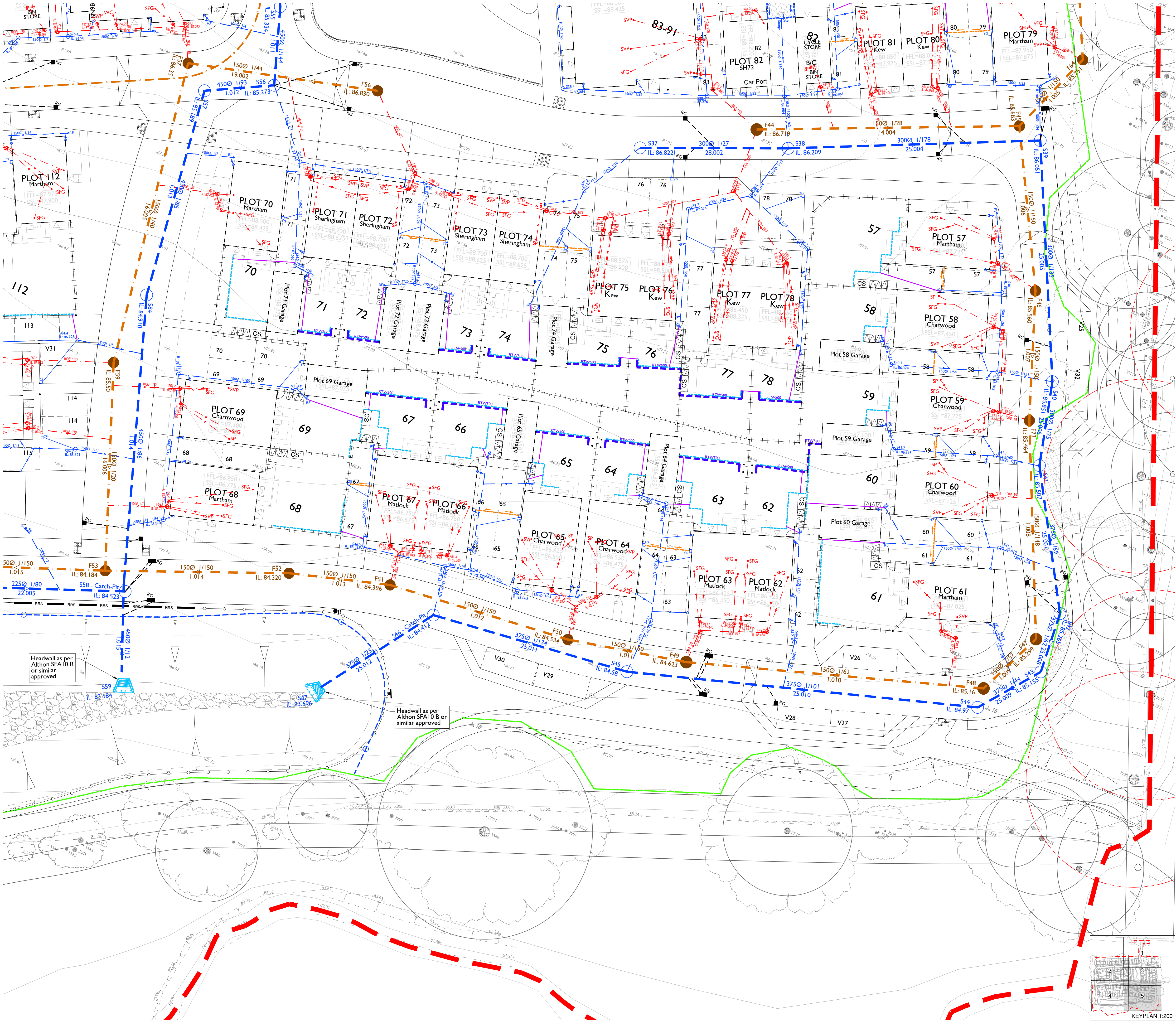
Infra Engineering Practice Limited - Connors House, 34 Guilford Road, Baginbun, Surrey GU19 5JN - Telephone 01274 450039 - www.IEP.co.uk

Date: JUNE 2025
Checked by: JC
Org No: CIV-4351

Drawn by: AD
Authorised by: TRS
Rev:

KEYPLAN 1:200





NOTES

- All dimensions are in metres unless stated otherwise.
- Do not scale from this drawing. Only written dimensions are to be used.
- FPA & SVP house drainage is to be constructed in accordance with the Building Regulations & BS EN 251-191 'Super Strength' specification (ie Hagerman Superstrength or equivalent) or UPVC drainage.
- Drawings are to be constructed using British Standard metric units.
- General notes to be observed in connection with the design and construction of the works are as follows:
- Location of sewers & lateral drains to be in accordance with the SSG Appendix C Design and Construction Guidance Approved v2.3 dated November 2023 and the specific requirements of WNW.
- Building of drain trenches adjacent to dwelling or other structure to be in accordance with BS891:Fig. 9.
- Cover levels indicated on the Drainage Schedule are nominal & may be adjusted to suit finished ground levels as necessary.
- Generally inspection chamber covers should be Grade D400 in carpark areas Grade B125 in parking areas and occasional traffic and A15 to pedestrian only areas.
- Rainwater downpipes to be connected direct to drain using appropriate adaptor & removable section of downpipe to permit rodding access.
- The positions of SVPs, sub stacks, WC outlets, Back-sight gullies etc. & rainwater downpipes are to be accurately located from the house type working drawings.
- Generally FV pipes are to be laid to falls of 1 in 40, sub in 100mm diameter pipes. SVP pipes are to be 100mm diameter when serving 2 or more RWP connections. FV pipes are to be 100mm diameter when serving 10 dwellings or more unless stated otherwise, or where a schedule is provided.
- 100mm FV Pipes are to be laid to falls of 1 in 40, sub in 100mm diameter pipes. SVP pipes are to be 100mm diameter when serving 2 or more RWP connections.
- Gullies situated in areas accessible to wheeled vehicles to be of suitable construction for road traffic areas.
- Where land drains are identified on the Architect's details, connect to nearest DW system.
- Where catchpits have been shown in rear gardens connecting to land drains, 400mm PPC catchpits to be used.
- This drawing should be read in conjunction with the Architect's and Structural Engineer's design drawings and specifications.
- All lengths shall have a crossfall to drain surface water into adjoining gardens.
- Domestic drainage has been designed to Building Regulations guidance which requires the high flow lateral connecting to the main channel of inspection chambers.
- Foul drainage inspection chamber internal connection layout is as per Polyphase diagram in BS EN 1831:2015 for civil engineers.
- All future ground downpipes, surface drains, etc. to be designed to all surface water runoff away from SVP works. If not achievable, full-width ACO drainage to be installed.
- ANY VARIANCE OR DISCREPANCY MUST BE REPORTED BACK TO THE DESIGNER BEFORE WORK BEGINS.

TYPE	DEPTH RANGE	DESCRIPTION	LOCATION	CODE	COVER GRADE
D	0.00m to 0.15m	100mm diameter Plastic or light metal (PVC or EN 12401) in areas subject to vehicle loading. 100mm diameter Plastic or light metal (PVC or EN 12401) in areas subject to vehicle loading. 100mm diameter Plastic or light metal (PVC or EN 12401) in areas subject to vehicle loading.	RE	A D G	D400 B125 A15

KEY

Site Boundary

Section 278 Works (under separate Design Pack)

FFL = Plot/Garage Finished Floor Level
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Adoptable Surface Water Sewers (WWS)

Adoptable Foul Water Sewers (WWS)

Adoptable Pumping Foul Water Main (WWS)

Adoptable PCC Headwalls (WWS)

Adoptable (West Sussex Highways) Road Gully & 1500mm Connection

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Private Surface Water Domestic Drainage

Private Foul Water Domestic Drainage

House connection via 300mm dia. shallow access chamber not more than 400mm deep (Based on floor make-up of 75mm screed, 225mm insulation & 150mm beam & slab).

In the event that conditions on site result in a maximum depth of 400mm being exceeded, then Type D chambers to be used.

Internal Foul Connections

Soil Vent Pipe
Soil Pipe
Soil Floor Gully
Water Closet Pipe
Rooding Eye

'Aso' Channel (showing connecting pipe) or equivalent

Threshold Drain

Yard Gully and Connection

Filter Drain (showing connecting pipe) with final 1.0m section of 100mm perforated UPVC pipe laid to nominal fall.

Basin perimeter Filter Drain refer to DWG CIV-1-4380 for detail

French drain with sump gully connection for permeable paving areas

Timber VRS with Pedestrian Rail

400mm High Kevlar Railing at Attenuation Basin

Life Ring & Deep Water Sign at Attenuation Basin

Area of 'No Dig' Road / Parking Bay / Footpath & Footway Construction

Permeable Block Paved Construction

6m Existing Surface Water Easement

Concrete Drain Channel (with nominal fall towards gully)

Root Protection Area

Tree Protection Fencing

Any proposed works within Root Protection Areas are subject to supervision and approval by the Arboriculturalist.

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Rev Note

Scale @ A1:
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Scale 1:500

Project: Crawley Down Road, Felbridge

Title: Domestic Drainage Layout Sheet 5

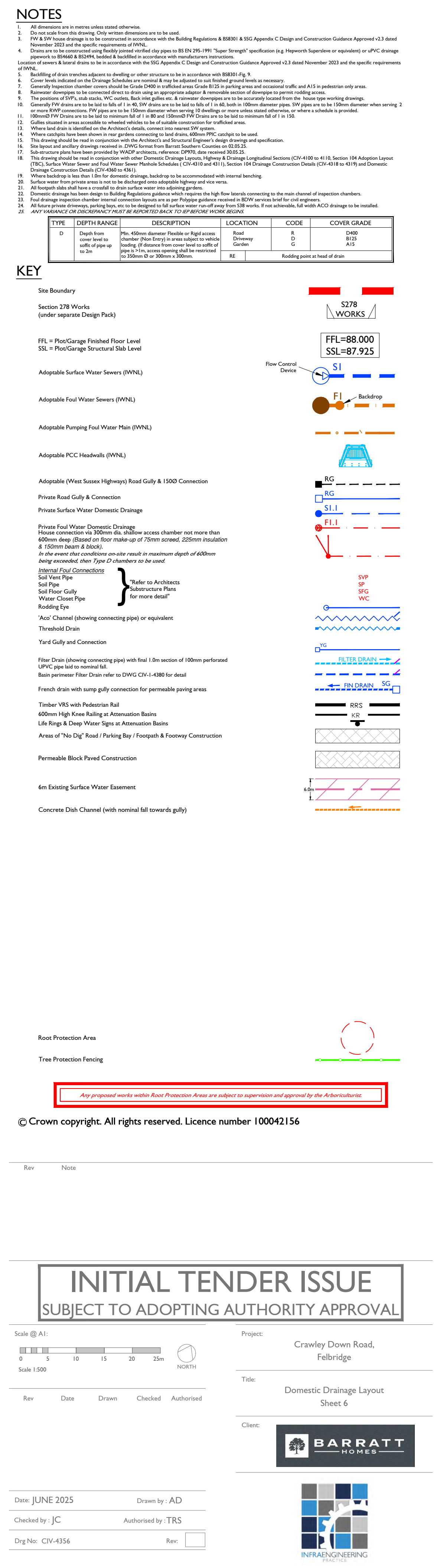
Client: BARRATT HOMES

Date: JUNE 2025
Checked by: JC
Drg No: CIV-4555

Drawn by: AD
Authorised by: TRS
Rev:

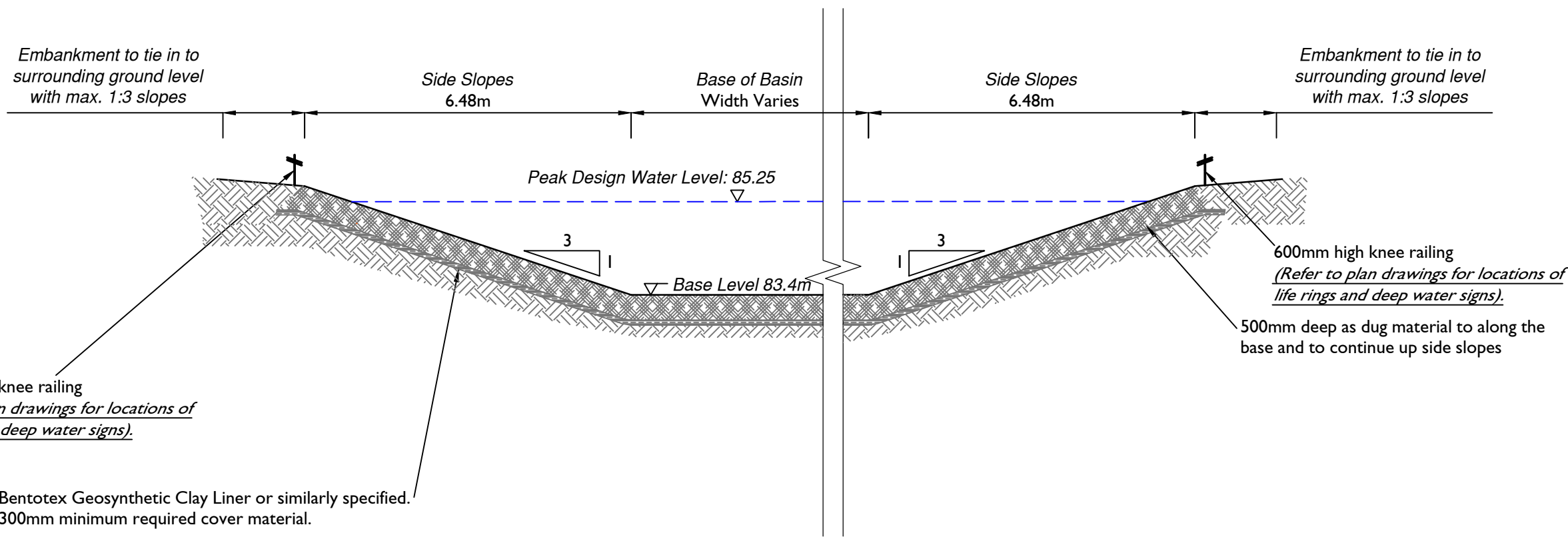
INITIAL TENDER ISSUE
SUBJECT TO ADOPTING AUTHORITY APPROVAL

KEY PLAN 1:200

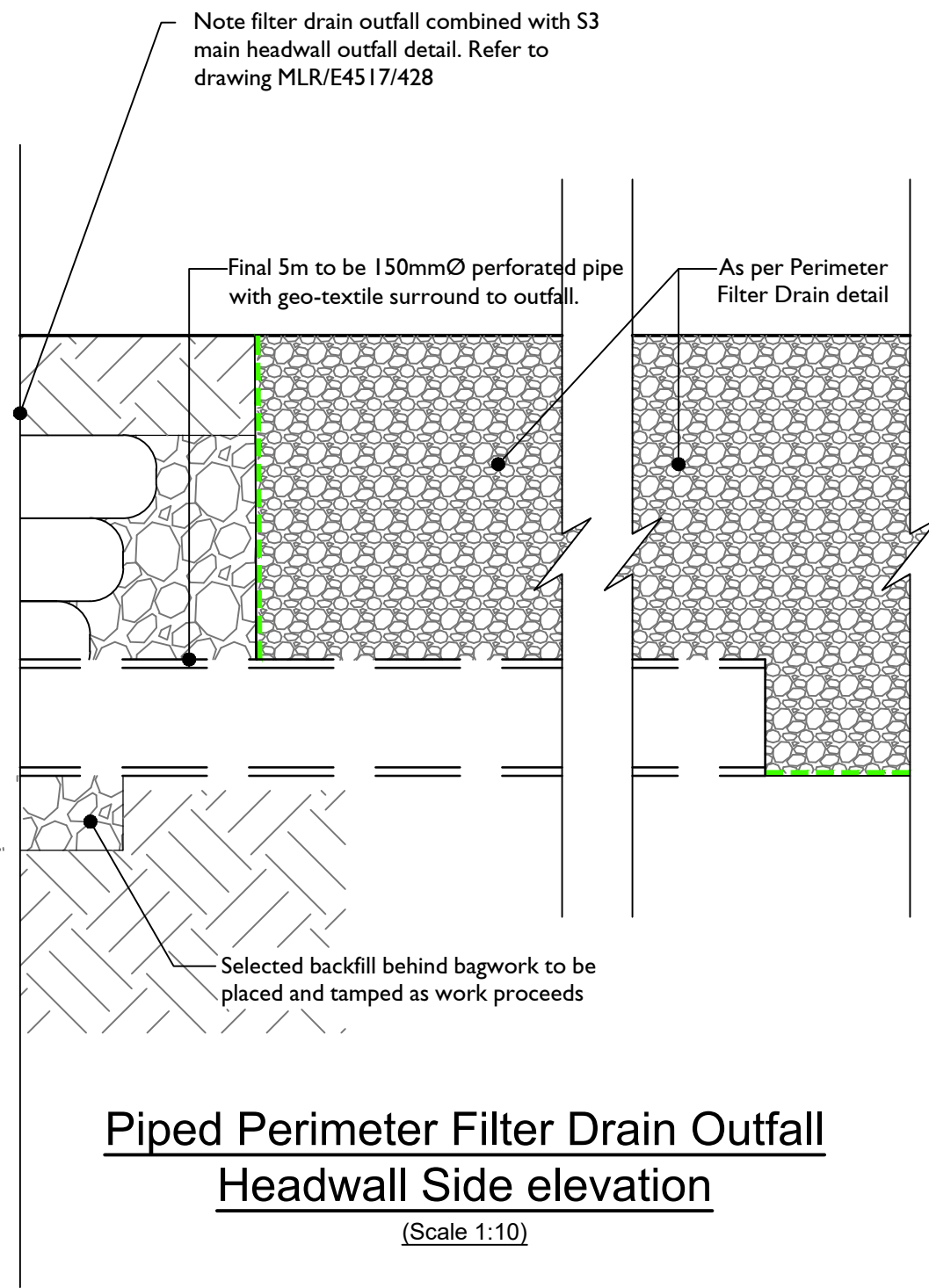


MH No.	MANHOLE DIMENSION (mm)	MANHOLE TYPE	COVER LEVEL (m)	INVERT LEVEL (m)	DEPTH TO SOFFIT (m)	EASTING (m)	NORTHING (m)
S37	13500	Type C	88.322	86.822	1.200	536373.009	139261.425
S38	12000	Type B	88.059	86.209	1.550	536388.155	139267.936
S39	13500	Type C	87.686	86.051	1.335	536413.544	139279.899
S40	13500	Type C	87.237	85.851	1.086	536425.466	139255.805
S41	13500	Type C	87.111	85.507	1.229	536427.855	139246.671
S42	13500	Type C	86.924	85.265	1.284	536436.506	139232.467
S43	13500	Type C	86.826	85.155	1.296	536437.135	139225.668
S44	13500	Type C	86.704	84.970	1.359	536432.257	139219.242
S45	13500	Type C	86.287	84.580	1.332	536394.869	139207.355
S46	13500	Type B	86.552	84.412	1.765	536372.597	139204.559
S47	---	HEADWALL	85.550	83.696	1.479	536364.081	139190.777
S49	13500	Type B	88.502	86.482	1.719	536315.452	139363.331
S50	12000	Type B	88.751	86.382	2.069	536322.980	139345.573
S51	12000	Type B	88.739	86.223	2.216	536332.299	139330.551
S53	13500	Type B	88.607	85.876	2.356	536329.971	139320.694
S54	13500	Type B	88.317	85.688	2.254	536306.083	139307.345
S55	13500	Type B	88.212	85.334	2.428	536330.023	139259.913
S56	13500	Type B	88.381	85.273	2.658	536332.883	139251.606
S57	13500	Type B	88.220	85.189	2.581	536326.011	139247.963
S58	13500	Type C	86.415	84.523	1.442	536340.097	139193.327
S59	---	HEADWALL	85.550	83.584	1.516	536344.304	139182.992
S60	13500	Type C	86.662	85.000	1.437	536319.691	139185.202
S62	13500	Type C	88.207	86.680	1.227	536384.806	139349.820
S63	12000	Type B	88.203	86.350	1.553	536388.076	139342.800
S64	12000	Type B	88.524	86.026	2.198	536341.896	139320.678
S66	13500	Type C	88.487	87.011	1.176	536279.355	139293.302
S67	13500	Type C	88.120	86.260	1.410	536240.716	139274.393
S68	15000	Type C	87.084	85.210	1.349	536268.610	139219.227
S69	15000	Type C	86.517	84.690	1.302	536211.428	139190.495
S70	15000	Type B	86.423	84.270	1.628	536222.567	139169.970
S71	15000	Type B	86.318	83.840	1.953	536231.768	139148.105
S72	15000	Type B	86.431	83.640	2.266	536251.188	139155.070
S73	---	HEADWALL	85.550	83.460	1.565	536256.404	139143.922
S74	13500	Type C	88.205	86.465	1.440	536225.904	139267.181
S76	13500	Type C	87.632	86.000	1.407	536300.838	139235.653
S78	13500	Type C	87.824	86.574	0.950	536196.921	139252.442
S79	13500	Type C	87.364	85.930	1.134	536191.108	139231.234
S80	---	HEADWALL	85.550	83.400	1.625	536272.021	139143.025
S81	15000	Type B	85.550	82.372	2.878	536274.359	139135.952
S82	13500	Type C	82.020	81.570	0.150	536272.068	139108.990
S84	13500	Type B	87.533	84.910	2.173	536326.154	139224.551
S85	13500	Type B	87.943	85.497	2.071	536323.378	139272.962
S86	13500	Type C	87.547	85.819	1.278	536254.031	139248.059
S87	13500	Type C	87.920	86.619	1.001	536308.100	139394.975

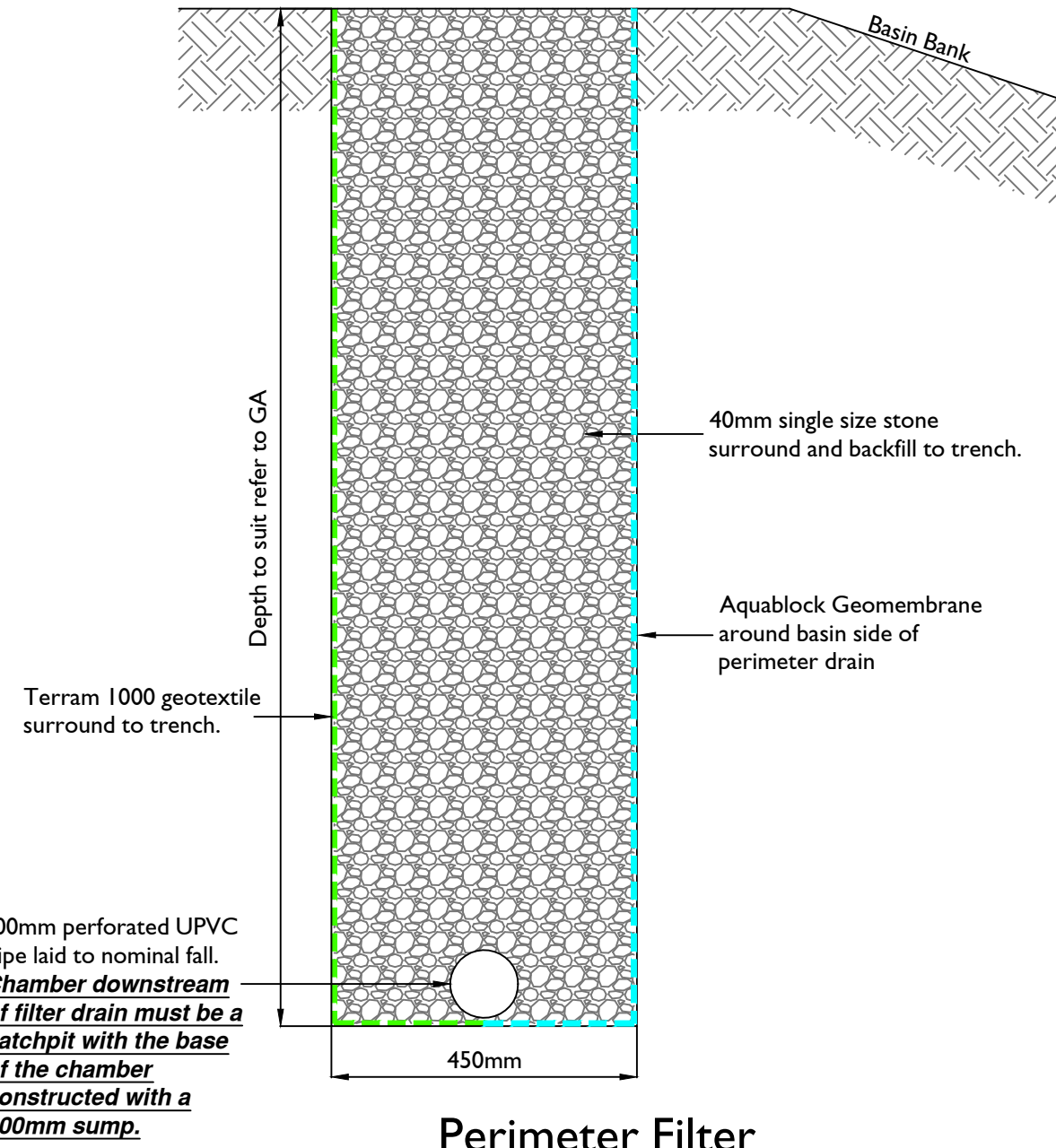
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	COVER 86.059m DIAMETER 1200mm Type B	I N V E R T E	A B C D E	86.209m 86.358m 86.358m		COVER 86.751m DIAMETER 1200mm Type B	I N V E R T E	A B C D E	86.382m 86.382m 86.582m		COVER 86.203m DIAMETER 1200mm Type B	I N V E R T E	A B C D E	86.35m 86.35m		COVER 86.632m DIAMETER 1350mm Type C	I N V E R T E	A B C D E	86.00m 86.125m 86.075m 86.075m
	COVER 87.666m DIAMETER 1350mm Type C	I N V E R T E	A B C D E	86.051m 86.051m 86.201m		COVER 86.739m DIAMETER 1200mm Type B	I N V E R T E	A B C D E	86.223m 86.423m 86.223m		COVER 86.524m DIAMETER 1200mm Type B	I N V E R T E	A B C D E	86.026m 86.026m 86.158m 86.226m		COVER 87.624m DIAMETER 1350mm Type C	I N V E R T E	A B C D E	86.574m 86.574m 86.624m
	COVER 87.237m DIAMETER 1350mm Type C	I N V E R T E	A B C D E	85.851m 85.851m 86.051m		COVER 86.607m DIAMETER 1350mm Type B	I N V E R T E	A B C D E	85.951m 85.951m		COVER 86.487m DIAMETER 1350mm Type C	I N V E R T E	A B C D E	87.011m 87.211m 87.161m		COVER 87.364m DIAMETER 1350mm Type C	I N V E R T E	A B C D E	85.93m
	COVER 87.111m DIAMETER 1350mm Type C	I N V E R T E	A B C D E	85.507m 85.782m 85.582m		COVER 86.317m DIAMETER 1350mm Type B	I N V E R T E	A B C D E	85.688m 85.913m		COVER 86.120m DIAMETER 1350mm Type C	I N V E R T E	A B C D E	86.260m 86.410m 86.410m 86.645m		COVER 85.55m DIAMETER --- HEADWALL	I N V E R T E	A B C D E	83.40m 83.40m 83.40m
	COVER 86.924m DIAMETER 1350mm Type C	I N V E R T E	A B C D E	85.265m 85.265m		COVER 86.212m DIAMETER 1350mm Type B	I N V E R T E	A B C D E	85.334m 85.408m		COVER 87.048m DIAMETER 1500mm Type C	I N V E R T E	A B C D E	85.21m 85.285m 85.51m 86.635m		COVER 85.55m DIAMETER 1500mm Type B	I N V E R T E	A B C D E	82.372m 82.372m
	COVER 86.826m DIAMETER 1350mm Type C	I N V E R T E	A B C D E	85.155m 85.155m		COVER 86.381m DIAMETER 1350mm Type B	I N V E R T E	A B C D E	85.273m 85.573m 85.273m		COVER 86.517m DIAMETER 1500mm Type C	I N V E R T E	A B C D E	84.69m 84.915m 84.69m		COVER 82.02m DIAMETER 1350mm Type C	I N V E R T E	A B C D E	81.57m 82.02m
	COVER 86.704m DIAMETER 1350mm Type C	I N V E R T E	A B C D E	84.97m 84.97m		COVER 86.220m DIAMETER 1350mm Type B	I N V E R T E	A B C D E	85.189m 85.189m		COVER 86.423m DIAMETER 1500mm Type B	I N V E R T E	A B C D E	84.27m 84.27m		COVER 87.533m DIAMETER 1350mm Type B	I N V E R T E	A B C D E	84.910m 84.910m
	COVER 86.287m DIAMETER 1350mm Type C	I N V E R T E	A B C D E	84.58m 84.58m 84.805m		COVER 86.415m DIAMETER 1350mm Type C	I N V E R T E	A B C D E	84.523m 84.524m 84.724m		COVER 86.318m DIAMETER 1500mm Type B	I N V E R T E	A B C D E	83.84m 83.84m		COVER 87.943m DIAMETER 1350mm Type B	I N V E R T E	A B C D E	85.497m 85.497m 85.772m
	COVER 86.552m DIAMETER 1350mm Type B	I N V E R T E	A B C D E	84.412m 84.412m 84.687m		COVER 85.55m DIAMETER --- HEADWALL	I N V E R T E	A B C D E	85.58m 85.58m		COVER 86.431m DIAMETER 1500mm Type B	I N V E R T E	A B C D E	83.64m 84.015m 83.64m		COVER 87.547m DIAMETER 1350mm Type C	I N V E R T E	A B C D E	85.819m 85.819m 86.168m 85.947m
	COVER 85.55m DIAMETER --- HEADWALL	I N V E R T E	A B C D E	83.696m 83.696m		COVER 86.662m DIAMETER 1350mm Type C	I N V E R T E	A B C D E	85.00m 85.075m		COVER 85.55m DIAMETER --- HEADWALL	I N V E R T E	A B C D E	83.46m 83.46m		COVER 87.920m DIAMETER 1350mm Type C	I N V E R T E	A B C D E	86.619m



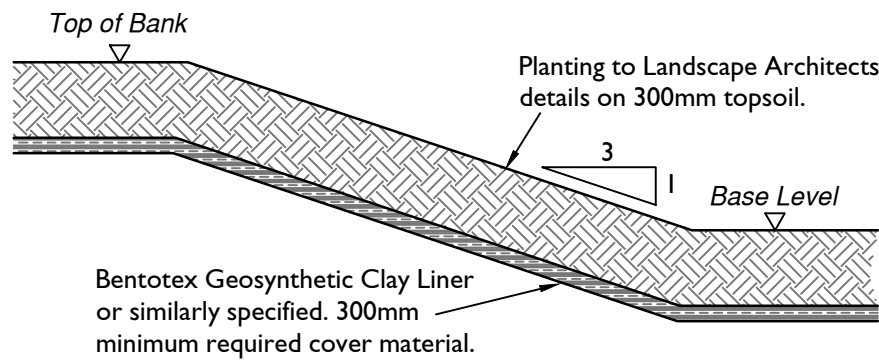
Section A-A
Typical Cross Section Through Basin
Not to Scale



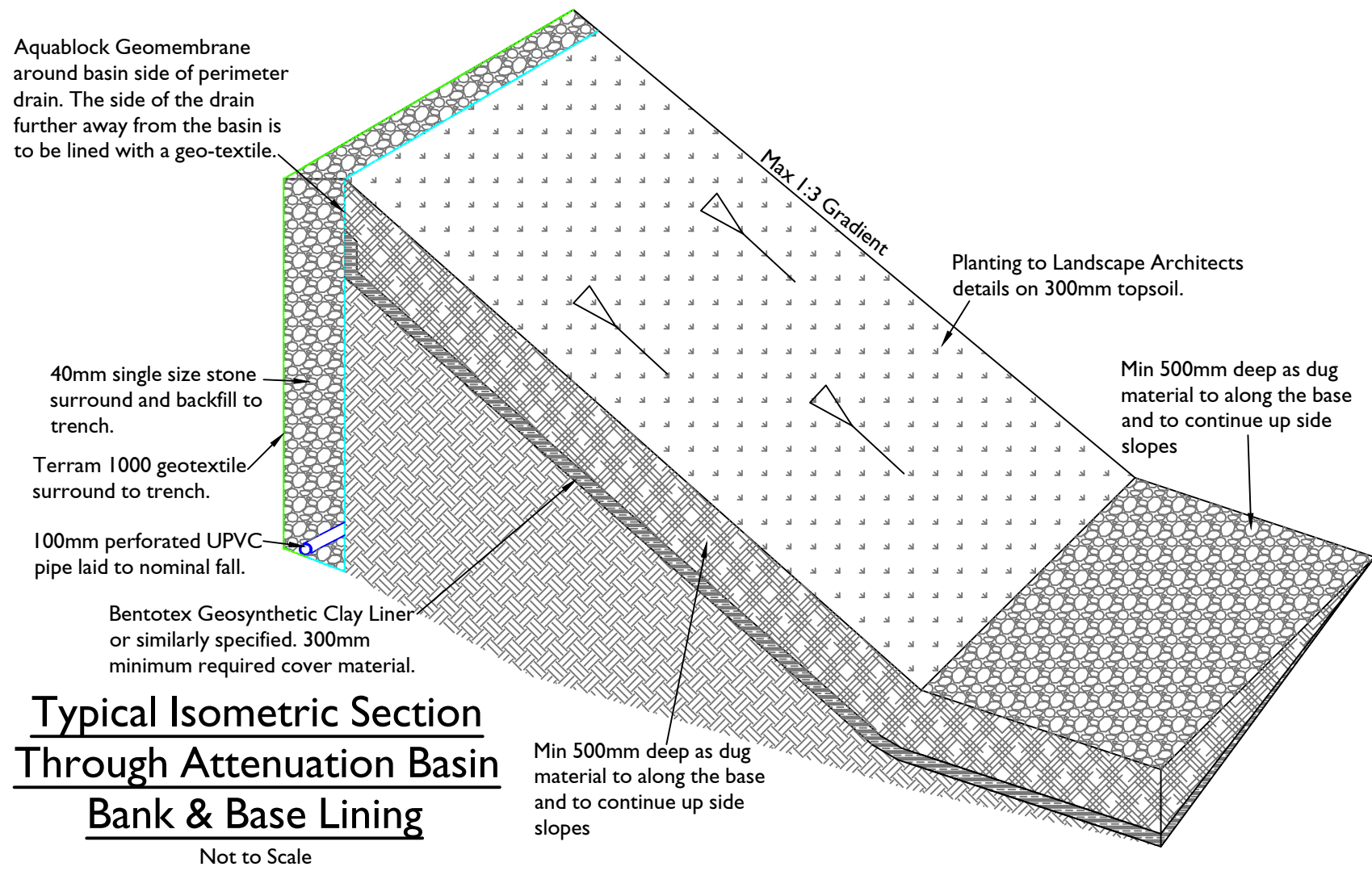
Piped Perimeter Filter Drain Outfall
Headwall Side elevation
(Scale 1:10)



Perimeter Filter
Drain Typical Detail
(Scale 1:10)



Typical Attenuation Basin
Bank & Base Lining Detail
Not to Scale



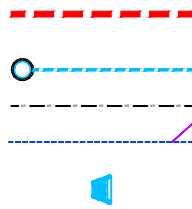
Typical Isometric Section
Through Attenuation Basin
Bank & Base Lining
Not to Scale

NOTES

- All dimensions are in metres unless stated otherwise.
- Do not scale from this drawing. Only written dimensions are to be used.
- FV & SW house drainage is to be constructed in accordance with the Building Regulations & BS8301 & SSG Appendix C Design and Construction Guidance Approved v2.2 dated 29 June 2022 and the specific requirements of ICOSA.
- This drawing should be read in conjunction with the Architect's and Structural Engineer's design drawings and specification.
- Site layout, substructures and all ancillary drawings received in .DWG format from Barratt Southern Counties on 02.05.25.
- This drawing should be read in conjunction with Highways & Drainage Long Sections (CIV-4100 to 4108), Surface Water Sewer Manhole Schedules (CIV-4310 to 4311), Section 104 Construction Details (CIV-4318 to 4319) and Domestic Drainage Layouts (CIV-4351 to 4355).
- ANY VARIANCE OR DISCREPANCY MUST BE REPORTED BACK TO IEP BEFORE WORK BEGINS.

KEY

- Site Boundary
- Adoptable Surface Water Sewers
- Knee Railing
- Basin perimeter Filter Drain.
- Precast Concrete Headwall
(Althon or equivalent approved)



Note: Incoming pipes require trash screen, outgoing pipes require safety grille.

**SUBJECT TO PLANNING
APPROVAL**

CDM NOTES

- RISK OF FALL.** Due to the risk of fall down the basin with 1:3 side slopes, a proposed mitigation of this risk is the use of 1100mm high post and rail fencing.

CDM NOTES

- EXISTING SERVICES.** Depth of existing services must be determined prior to works commencing. The contractor is responsible for establishing underground services in accordance with HSE Guidance note HS (G) 47. Any services which would be within the proposed construction layers must be lowered to below the sub-base.

INITIAL TENDER ISSUE
SUBJECT TO ADOPTING AUTHORITY APPROVAL

Rev

Note

Scale @ A1:

Scale 1:100

0 1 2 3 4 5m

NORTH

Rev

Date

Drawn

Checked

Authorised

Project:

Crawley Down Road,
Felbridge

Title:

Attenuation Basin Details
Sheet 1

Client:



Date: JUNE 2025

Drawn by: AD

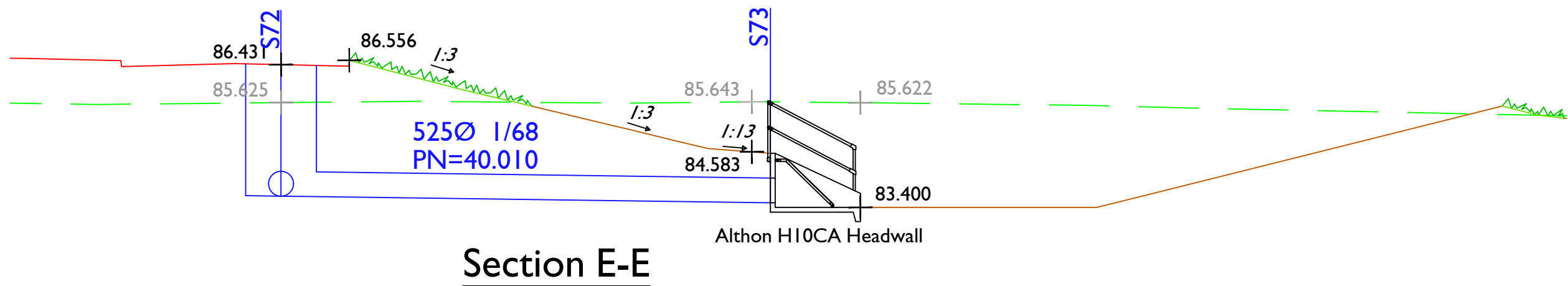
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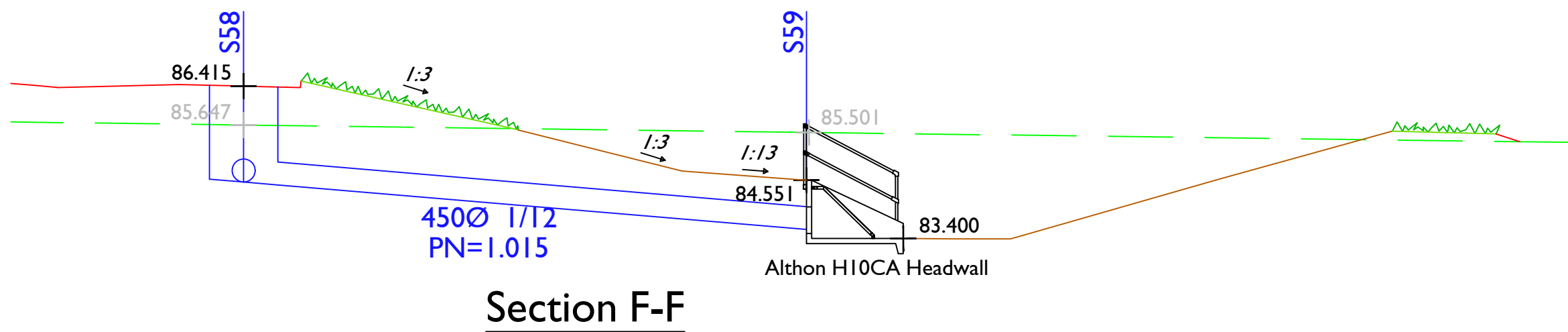
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Rev:

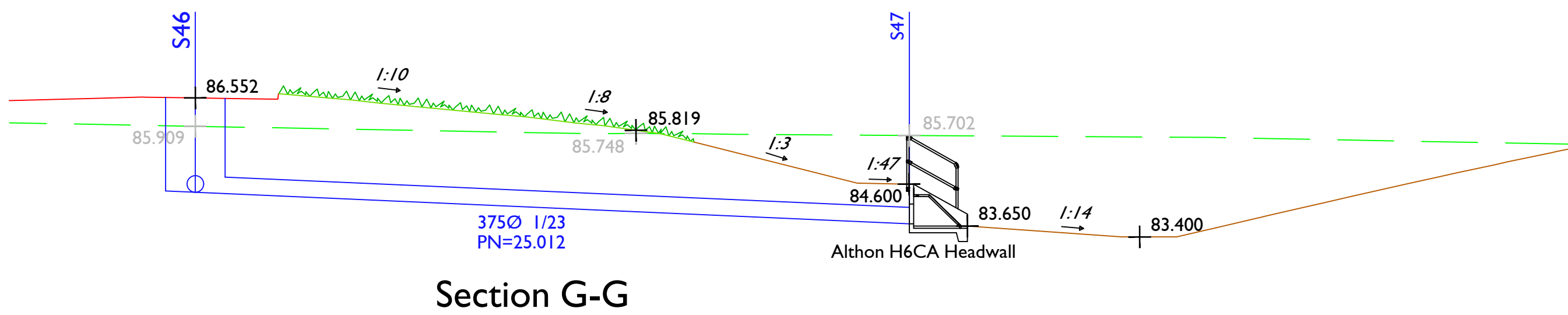




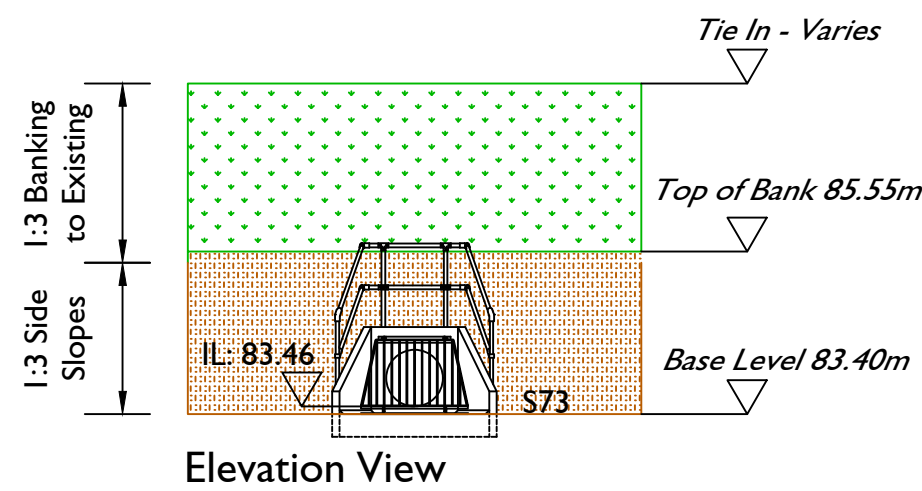
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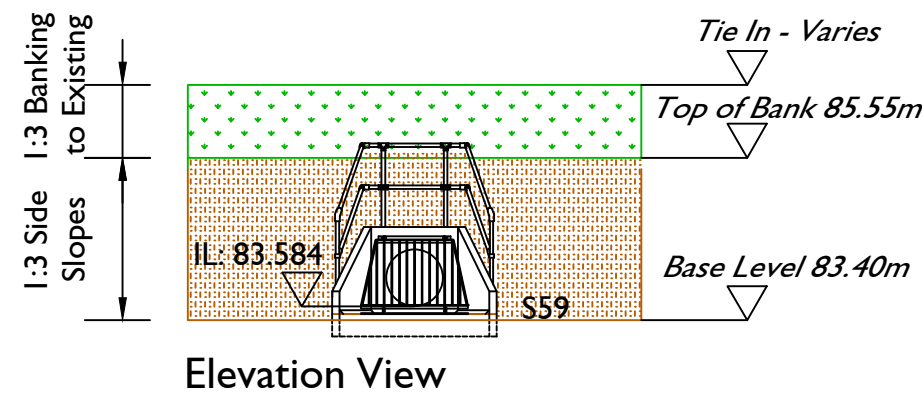
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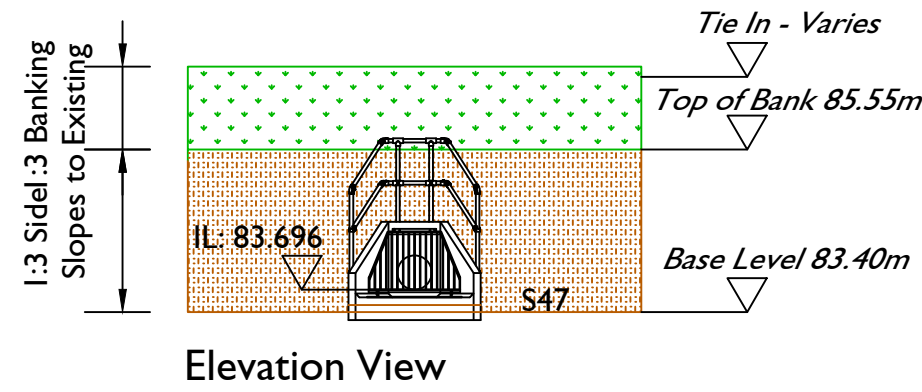
Section G-G



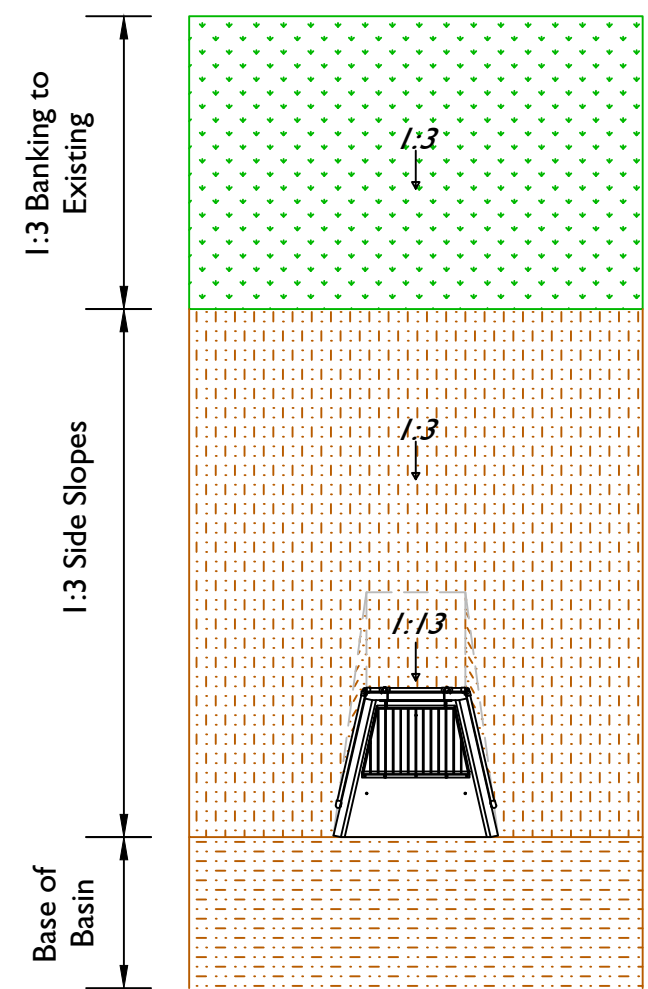
Elevation View



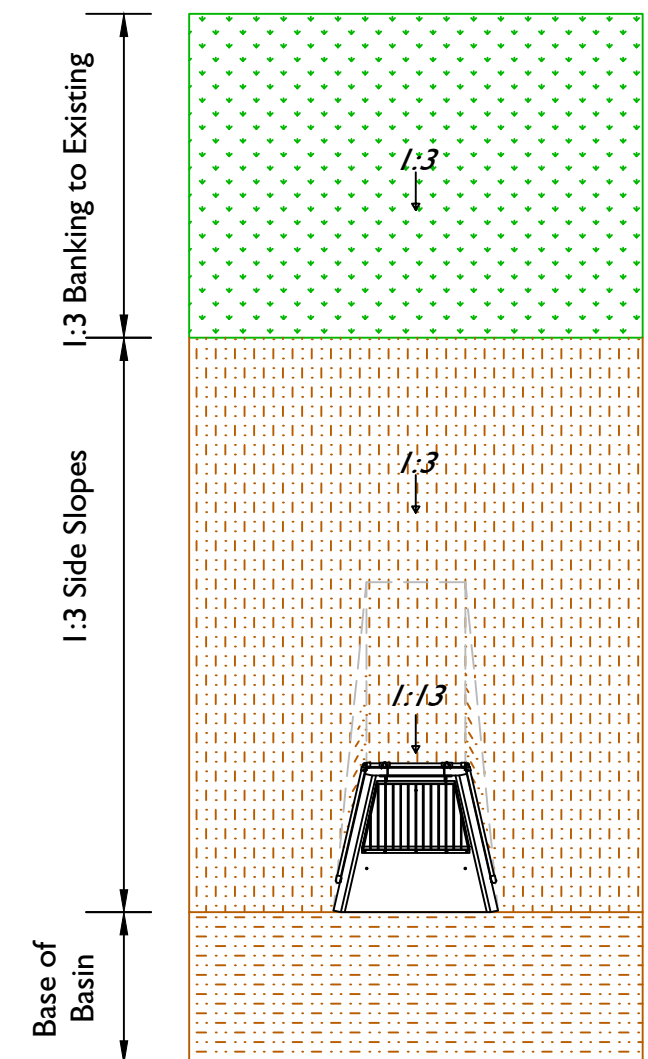
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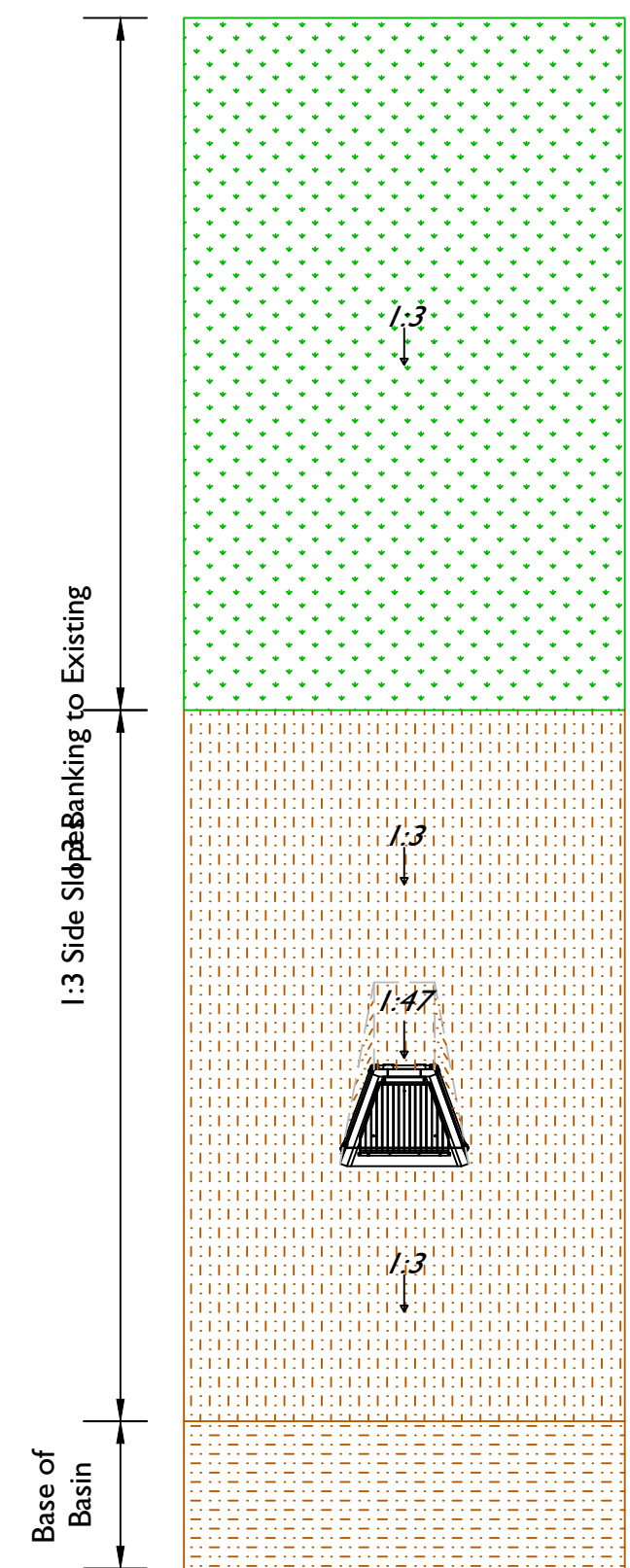
Elevation View



Plan View



Plan View



Plan View

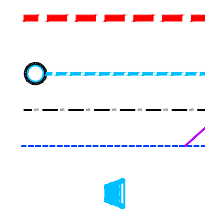
NOTES

1. All dimensions are in metres unless stated otherwise.
2. Do not scale from this drawing. Only written dimensions are to be used.
3. FV & SW house drainage is to be constructed in accordance with the Building Regulations & BS8301 & SSG Appendix C Design and Construction Guidance Approved v2.2 dated 29 June 2022 and the specific requirements of ICOSA.
4. This drawing should be read in conjunction with the Architect's and Structural Engineer's design drawings and specification.
5. Site layout, substructures and all ancillary drawings received in .DWG format from Barratt Southern Counties on 02.05.25.
6. This drawing should be read in conjunction with Highways & Drainage Long Sections (CIV-4100 to 4108), Surface Water Sewer Manhole Schedules (CIV-4310 to 4311), Section 104 Construction Details (CIV-4318 to 4319) and Domestic Drainage Layouts (CIV-4351 to 4355).
7. **ANY VARIANCE OR DISCREPANCY MUST BE REPORTED BACK TO IEP BEFORE WORK BEGINS.**

KEY

- Site Boundary
- Adoptable Surface Water Sewers
- Knee Railing
- Basin perimeter Filter Drain.
- Precast Concrete Headwall
(Althon or equivalent approved)

Note: Incoming pipes require trash screen, outgoing pipes require safety grille.



**SUBJECT TO PLANNING
APPROVAL**

CDM NOTES

1. **RISK OF FALL:** Due to the risk of fall down the basin with 1:3 side slopes, a proposed mitigation of this risk is the use of 1100mm high post and rail fencing.

CDM NOTES

1. **EXISTING SERVICES:** Depth of existing services must be determined prior to works commencing. The contractor is responsible for establishing underground services in accordance with HSE Guidance note HS (G) 47. Any services which would be within the proposed construction layers must be lowered to below the sub-base.

Rev Note

INITIAL TENDER ISSUE
SUBJECT TO ADOPTING AUTHORITY APPROVAL

Scale @ A1:



Scale 1:100

Rev Date Drawn Checked Authorised

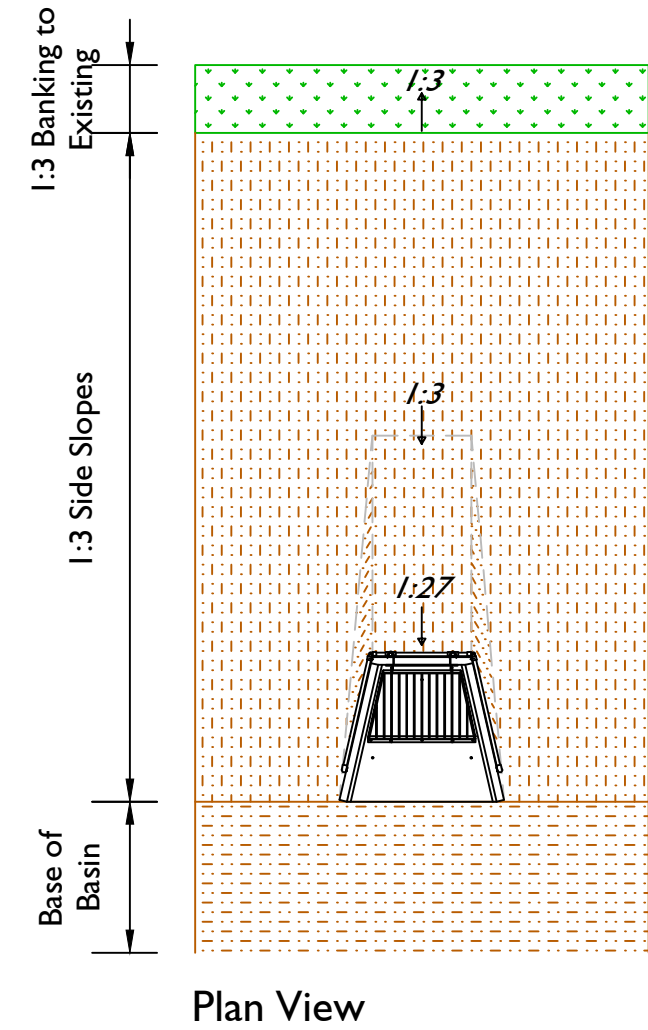
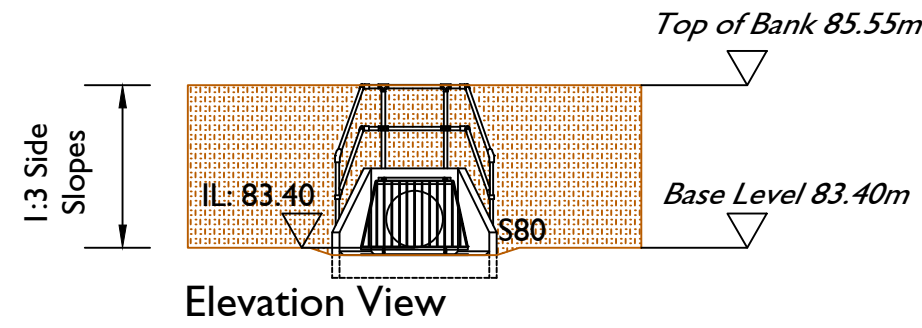
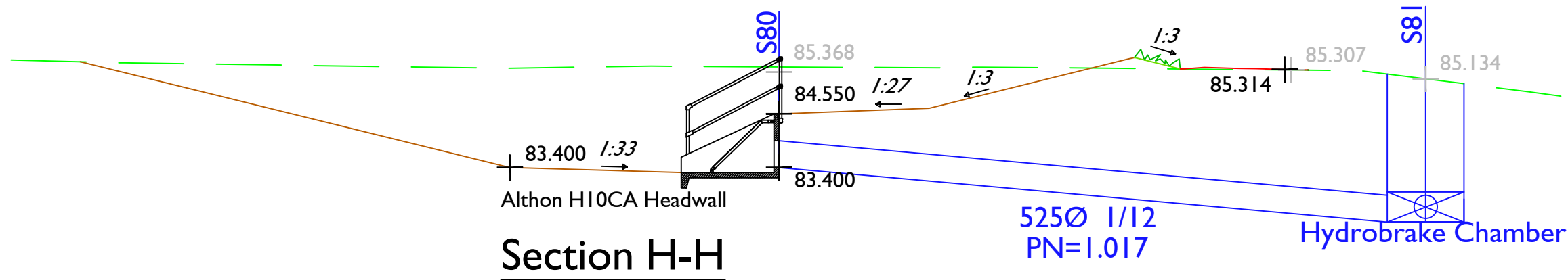
Client:

Project: Crawley Down Road, Felbridge

Title: Attenuation Basin Details

Sheet 2

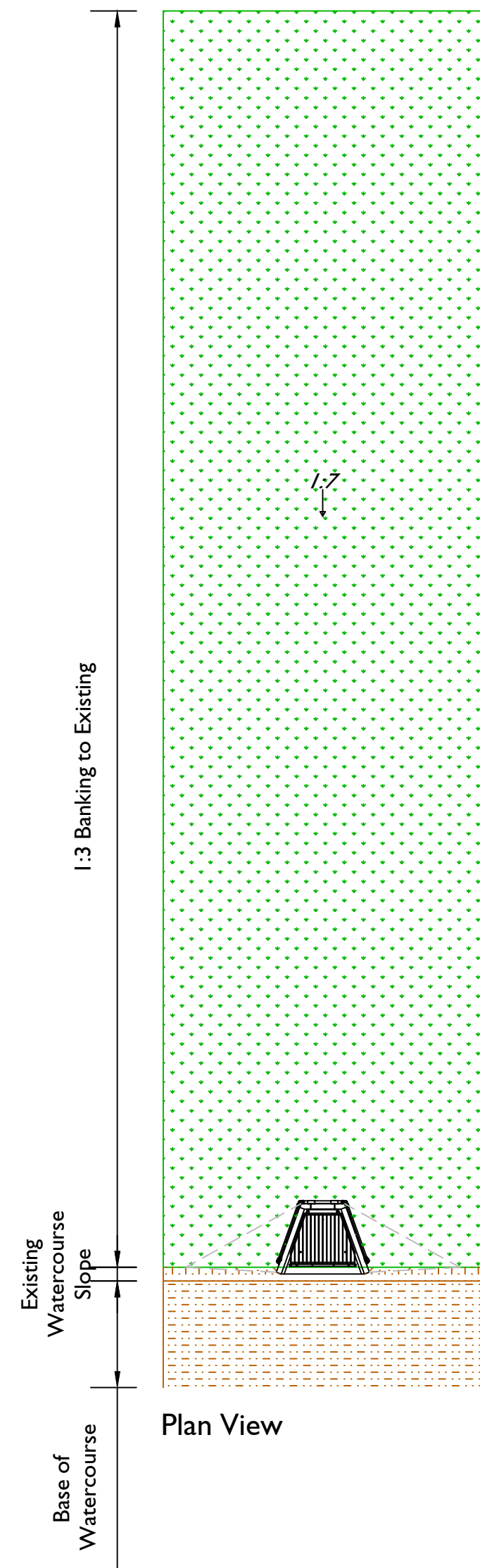
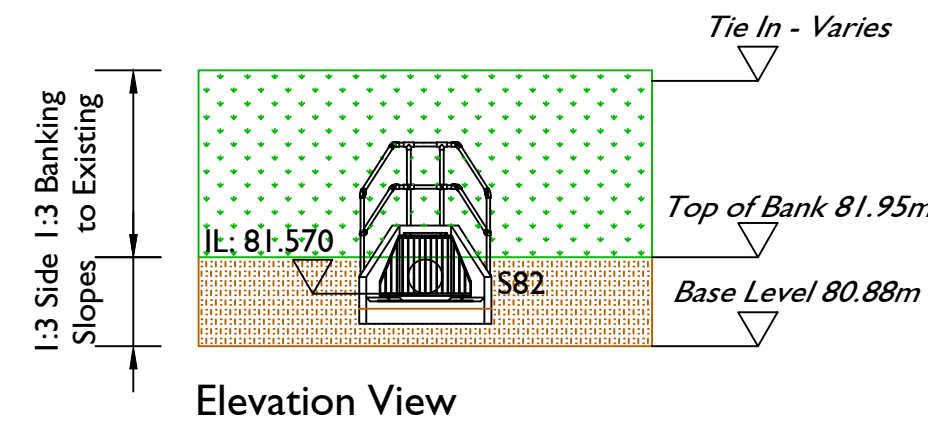
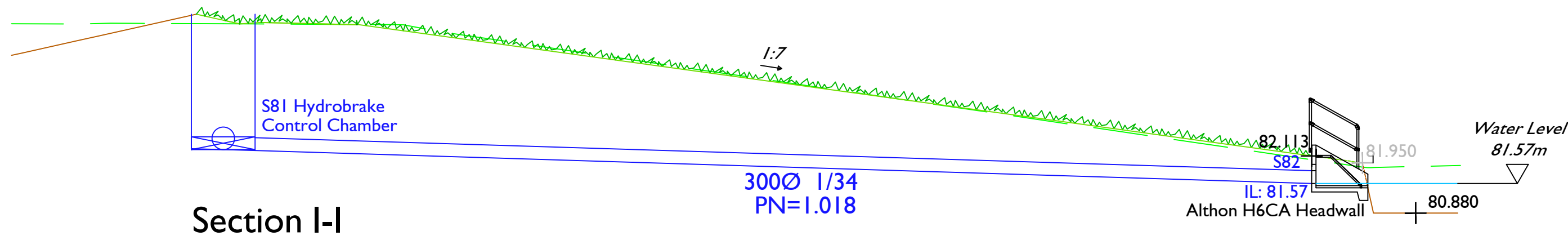




- NOTES**
1. All dimensions are in metres unless stated otherwise.
 2. Do not scale from this drawing. Only written dimensions are to be used.
 3. FV & SW house drainage is to be constructed in accordance with the Building Regulations & BS8301 & SSG Appendix C Design and Construction Guidance Approved v2.2 dated 29 June 2022 and the specific requirements of ICOSA.
 4. This drawing should be read in conjunction with the Architect's and Structural Engineer's design drawings and specification.
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 6. This drawing should be read in conjunction with Highways & Drainage Long Sections (CIV-4100 to 4108), Surface Water Sewer Manhole Schedules (CIV-4310 to 4311), Section 104 Construction Details (CIV-4318 to 4319) and Domestic Drainage Layouts (CIV-4351 to 4355).
 7. **ANY VARIANCE OR DISCREPANCY MUST BE REPORTED BACK TO IEP BEFORE WORK BEGINS.**

KEY

Site Boundary
Adoptable Surface Water Sewers
Knee Railing
Basin perimeter Filter Drain.
Precast Concrete Headwall
(Althon or equivalent approved)
Note: Incoming pipes require trash screen, outgoing pipes require safety grille.



SUBJECT TO PLANNING APPROVAL

CDM NOTES

1. **RISK OF FALL.** Due to the risk of fall down the basin with 1:3 side slopes, a proposed mitigation of this risk is the use of 1100mm high post and rail fencing.

CDM NOTES

1. **EXISTING SERVICES.** Depth of existing services must be determined prior to works commencing. The contractor is responsible for establishing underground services in accordance with HSE Guidance note HS (G) 47. Any services which would be within the proposed construction layers must be lowered to below the sub-base.

Rev	Note

INITIAL TENDER ISSUE
SUBJECT TO ADOPTING AUTHORITY APPROVAL

Scale @ A1:
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Scale 1:100

Project: Crawley Down Road, Felbridge

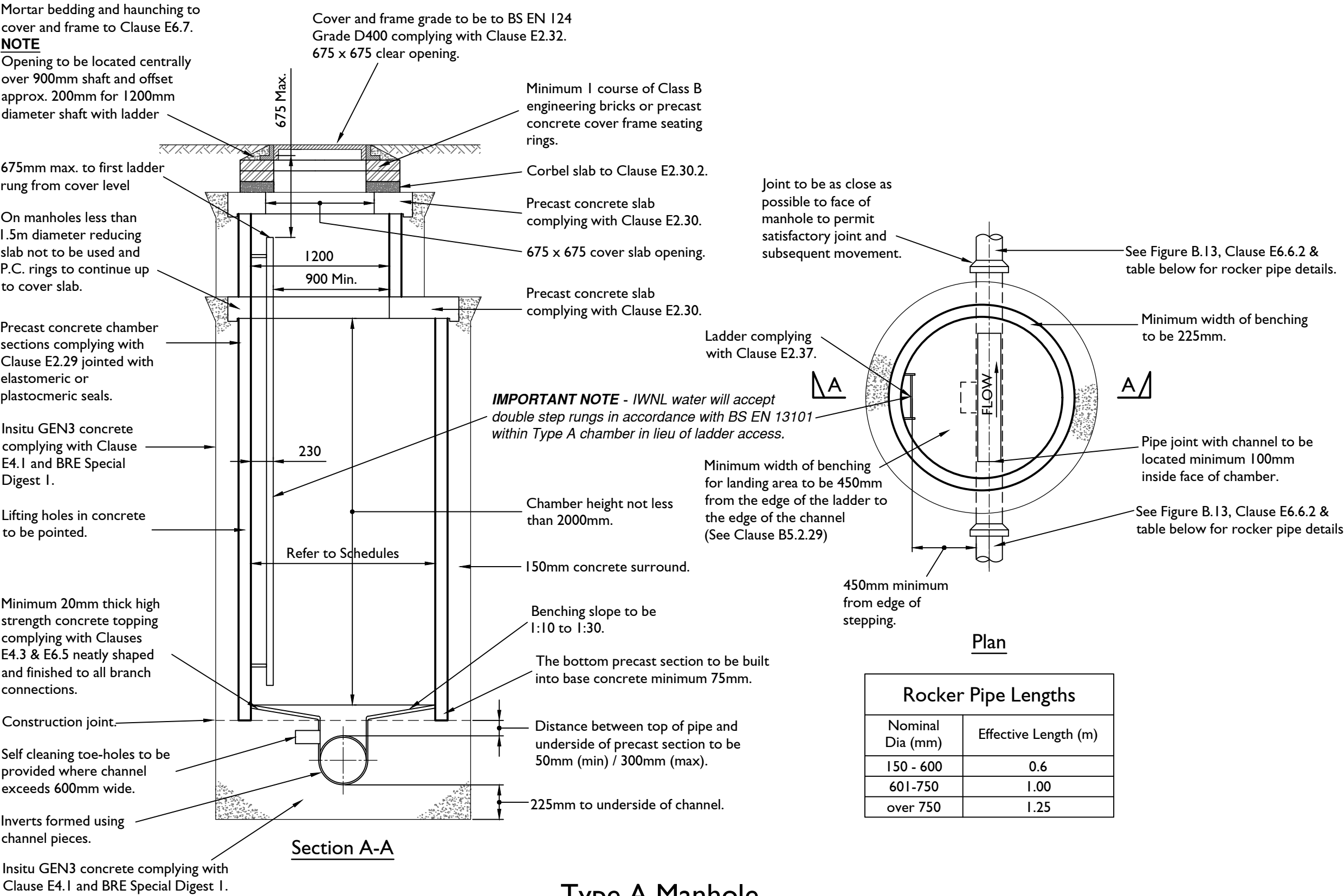
Title: Attenuation Basin Details
Sheet 3

Client: **BARRATT HOMES**

Date: JUNE 2025
Checked by: JC
Drg No: CIV-4382

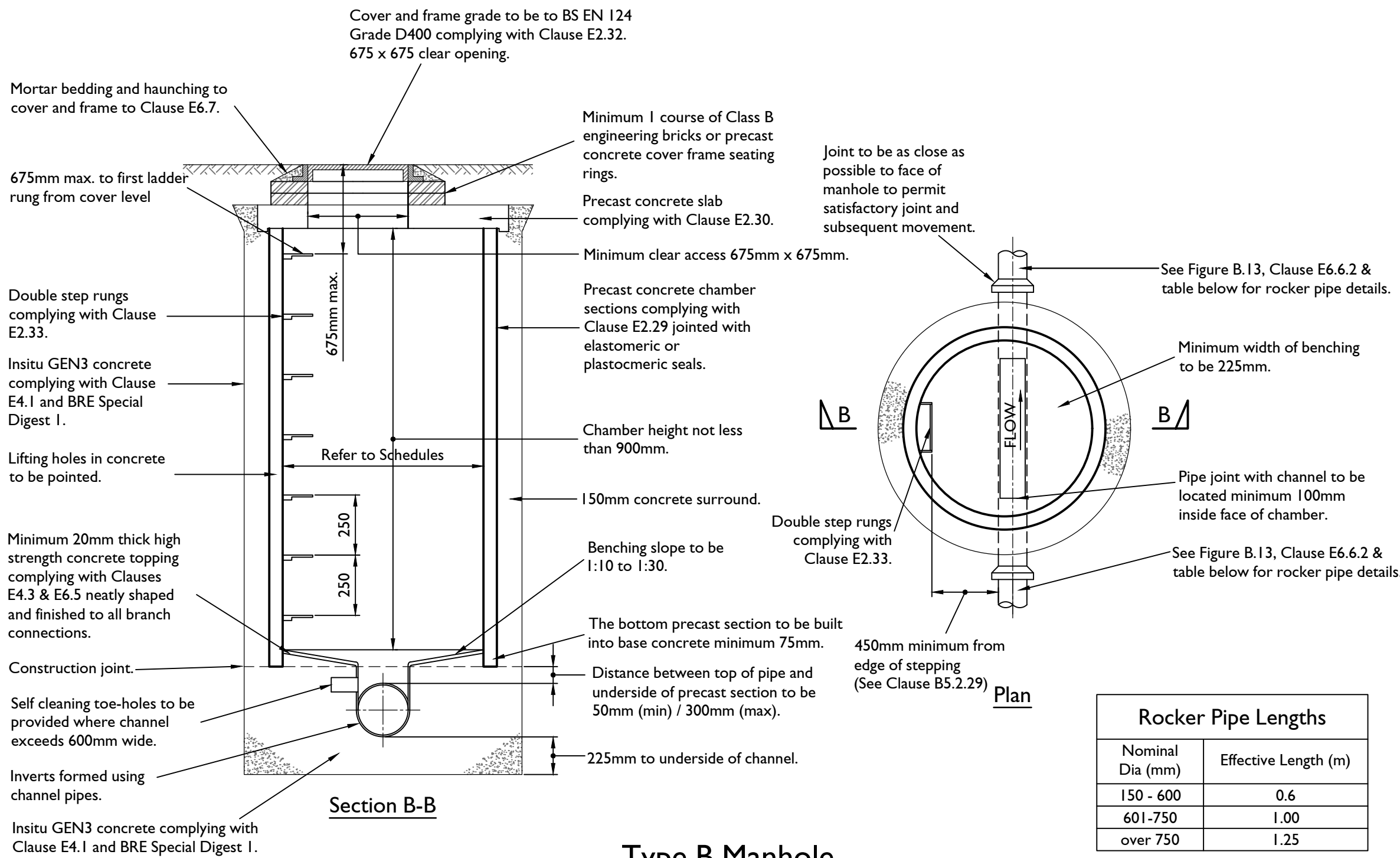
Drawn by: AD
Authorised by: TRS
Rev:

INFRAENGINEERING



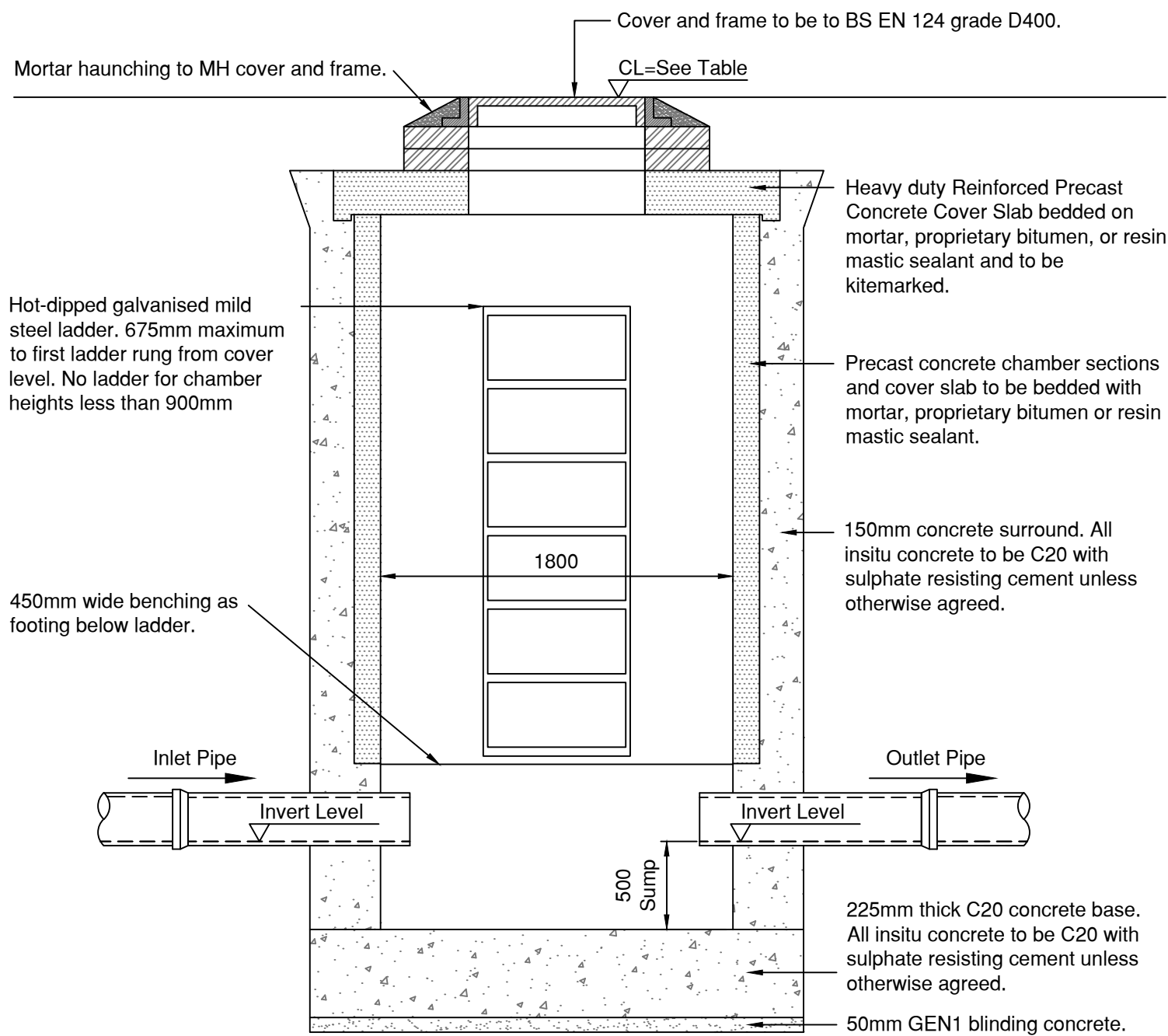
Type A Manhole

Depth from cover level to soffit of pipe 3.0m to 6.0m
Based on Figure B5 - SSG Appendix C Design and Construction Guidance v2.2

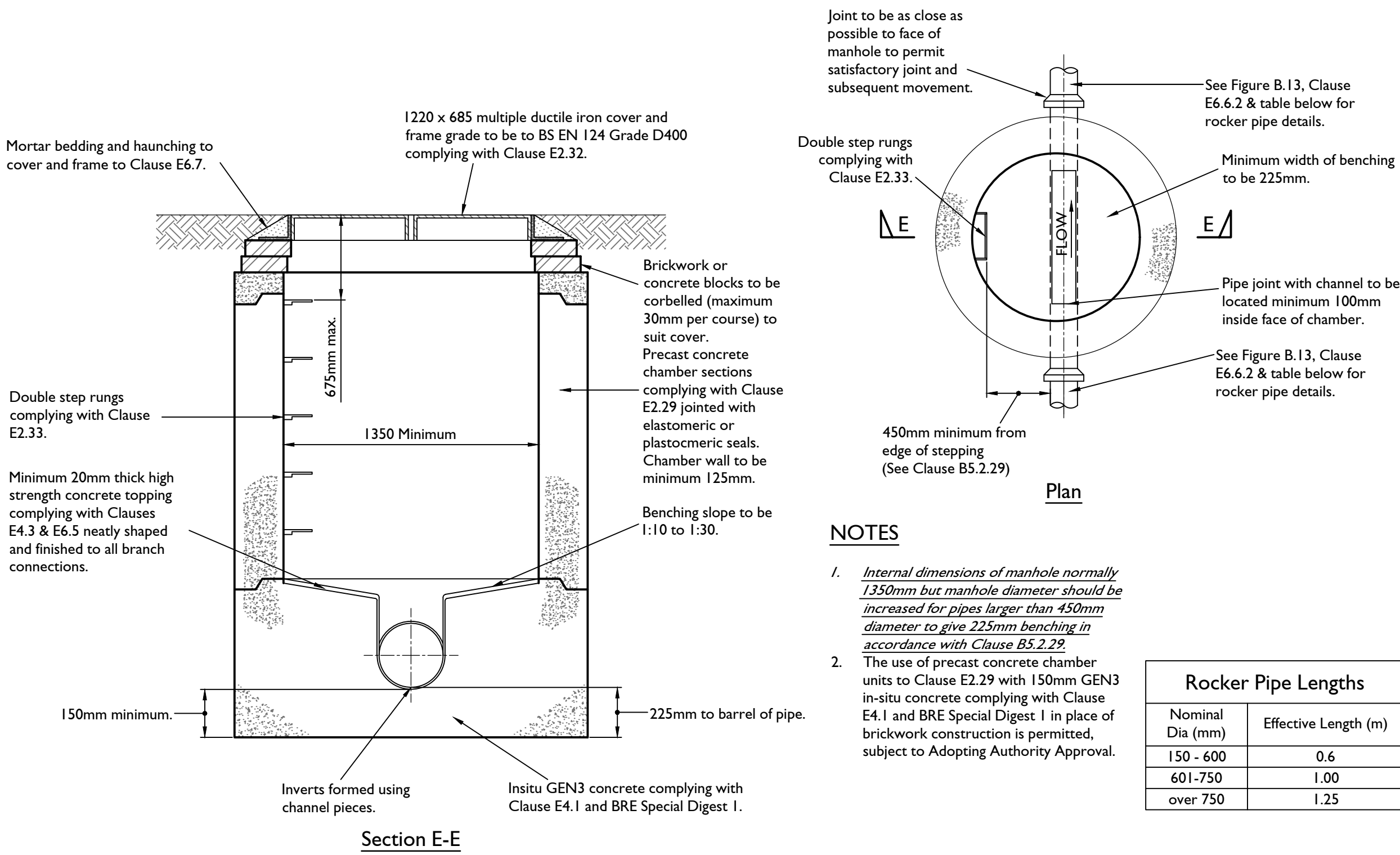


Type B Manhole

Depth from cover level to soffit of pipe 1.5m to 3.0m
Based on Figure B10 - SSG Appendix C Design and Construction Guidance v2.2



Typical Catchpit Construction Detail



Type C Manhole

Depth from cover level to soffit of pipe less than 1.5m
Based on Figure B15 - SSG Appendix C Design and Construction Guidance v2.2
(Maximum sewer diameter of 450mm)

NOTES

- This drawing should be read in conjunction with other Section 104 Drainage Construction Details, Foul and Surface Water Water Sewer Longitudinal Sections (CIV-4100 to 4110), Section 104 Drainage Layout (CIV-4391), Foul Water Sewer and Surface Water Sewer Manhole Schedules (CIV-4310 to 4311), Domestic Drainage Layouts (CIV-4351 to 4355).
- All dimensions are in millimetres unless stated otherwise.
- Do not scale from this drawing. Only written dimensions are to be used.
- 100mm & 150mm diameter pipework to be extra strength vitrified clay to BS EN 295 or BS 65 on Class S bed & surround.
- 225mm diameter pipework to be extra strength vitrified clay to BS EN 295 or BS 65 or concrete Class M to BS5911 on Class S bed & surround.
- 300mm diameter and greater pipework to be concrete Class M to BS5911 on Class B bed.
- All construction to be in accordance with SSG Appendix C Design and Construction Guidance Approved v2.3 dated November 2023 and the specific requirements of IWNL Water.
- Refer to geotechnical report for sulphate resisting class and ACEC class.
- Outgoing pipes greater than 600mm diameter should be fitted with guard bars, safety chains [to BS EN 818-3] or other safety devices in accordance with the IWNL Water safety policy.
- In the event that Barratt Homes and the on-site contractor have a preference as a business to use plastic pipes instead, then confirmation from the supplier should be obtained that the guarantee of the product is not affected considering the ground reports. They must comply with the following requirements for plastic pipes:
 - SSG Appendix C Design and Construction Guidance Version 2.3 dated November 2023 Clauses E2.21, E2.22 & SN8;
 - Solid Wall PVC-U to BS EN 1401;
 - Spiral Wound Welded HDPE to EN 13476 Parts 1 & 2;
 - Structure-wall Thermoplastic to EN 13476 Parts 1 & 3;
 - Polypropylene to BS EN 1852.

**SUBJECT TO PLANNING
APPROVAL**

CDM NOTES

- EXISTING SERVICES: Depth of existing services must be determined prior to works commencing. The contractor is responsible for establishing underground services in accordance with HSE Guidance note HS (G) 47. Any services which would be within the proposed construction layers must be lowered to below the sub-base.

INITIAL TENDER ISSUE
SUBJECT TO ADOPTING AUTHORITY APPROVAL

Scale @ A1:

Not to Scale

Rev Date Drawn Checked Authorised

Project:

Crawley Down Road,
Felbridge

Title:

S104 Drainage Construction Details
Sheet 1

Client:



Date: JUNE 2025

Drawn by: AD

Checked by: JC

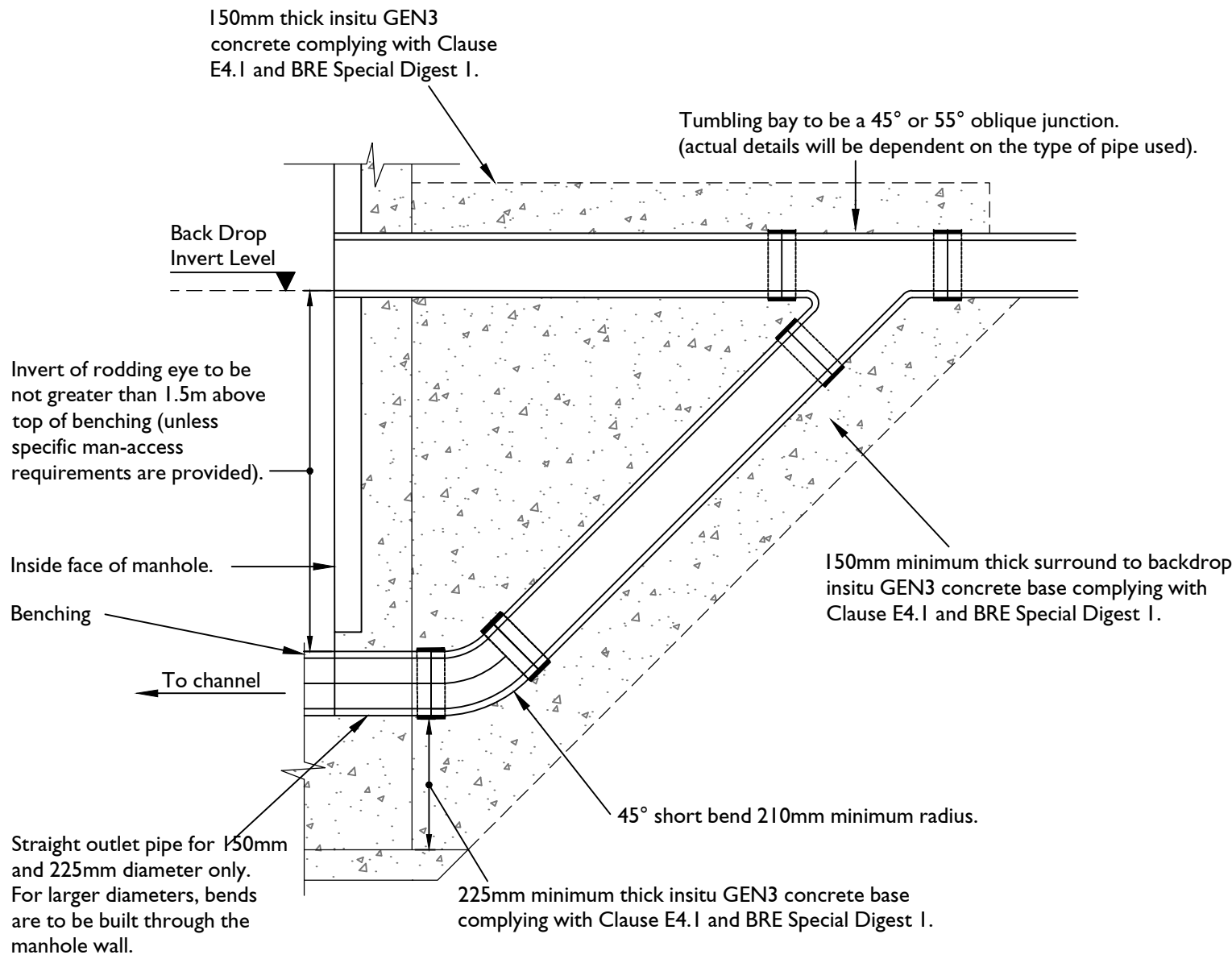
Authorised by: TRS

Org No: CIV-4318

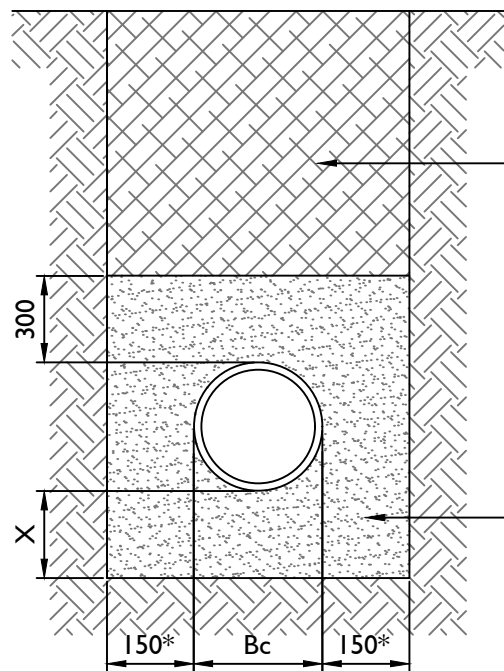
Rev:

NOTES

1. This drawing should be read in conjunction with other Section 104 Drainage Construction Details, Foul and Surface Water Water Sewer Longitudinal Sections (CIV-4100 to 4110), Section 104 Drainage Layout (CIV-4391), Foul Water Sewer and Surface Water Sewer Manhole Schedules (CIV-4310 to 4311), Domestic Drainage Layouts (CIV-4351 to 4355).
2. All dimensions are in millimetres unless stated otherwise.
3. Do not scale from this drawing. Only written dimensions are to be used.
4. 100mm & 150mm diameter pipework to be extra strength vitrified clay to BS EN 295 or BS 65 on Class S bed & surround.
5. 225mm diameter pipework to be extra strength vitrified clay to BS EN 295 or BS 65 or concrete Class M to BS5911 on Class S bed & surround.
6. 300mm diameter and greater pipework to be concrete Class M to BS5911 on Class B bed.
7. All construction to be in accordance with SSG Appendix C Design and Construction Guidance Approved v2.3 dated November 2023 and the specific requirements of IWNL Water.
8. Refer to geotechnical report for sulphate resisting class and ACEC class.
9. Outgoing pipes greater than 600mm diameter should be fitted with guard bars, safety chains [to BS EN 818-3] or other safety devices in accordance with the IWNL Water safety policy.
10. In the event that Barratt Homes and the on-site contractor have a preference as a business to use plastic pipes instead, then confirmation from the supplier should be obtained that the guarantee of the product is not affected considering the ground reports. They must comply with the following requirements for plastic pipes:
 - SSG Appendix C Design and Construction Guidance Version 2.3 dated November 2023 Clauses E2.21, E2.22 & SN8;
 - Solid Wall PVC-U to BS EN 1401;
 - Spiral Wound Welded HDPE to EN 13476 Parts 1 & 2;
 - Structure-wall Thermoplastic to EN 13476 Parts 1 & 3;
 - Polypropylene to BS EN 1852.



Backdrop Construction Detail
45° External Backdrop Preferred Style Where Space Permits
Based on Figure B16 - SSG Appendix C Design and Construction Guidance v2.2



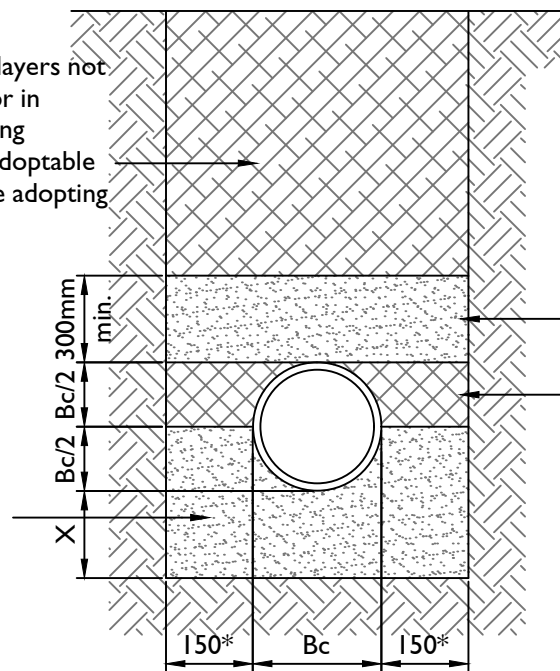
Class S Surround

* = 150mm for pipe diameters up to 300mmØ and 200mm for larger pipes.

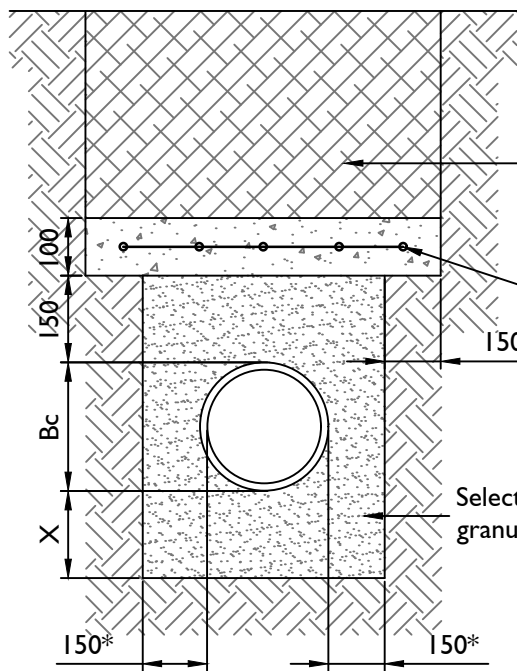
Bc = outside dia. of pipe X= 100mm min. for pipes 100mmØ or less, 150mm min for larger pipes or 200mm for trenches in rock.

Concrete to be Grade C16/20 placed in one operation. Where pipes with flexible joints are used, concrete protection shall be interrupted over its full cross section at each joint by a shaped compressible filler.

Concrete to sulphate resisting class DS-I of Table C2 of BRE Special Digest 1:SD1 Part C (2005) ACEC class AC-I-s



Class B Haunch

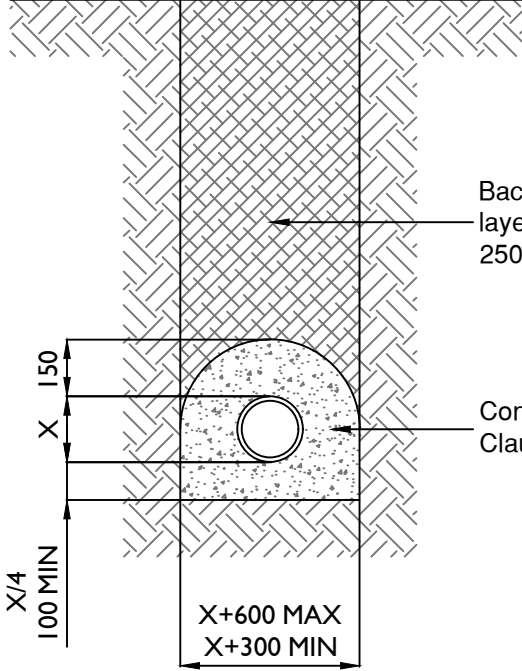


Reinforced Concrete Slab

(Use subject to Adopting Authority's Preference)

To be provided where the minimum depth of pipe cover to the crown of gravity pipes is less than:

- domestic driveways, parking areas and yards with height restrictions to prevent entry by vehicles with a gross weight in excess of 7.5 tonnes, 0.5m;
- domestic driveways, parking areas and narrow streets without footways (e.g., mews developments) with limited access for vehicles with a gross weight in excess of 7.5 tonnes, 0.9m;
- other highways and parking areas with unrestricted access to vehicles with a gross vehicle weight in excess of 7.5 tonnes, 1.2m.



Type Z Bed Detail

(For use on private drainage only)

1. All dimensions are in millimetres.
2. Dimension 'X' is the external diameter of the pipe.
3. The minimum or maximum width of the trench applies on and below a line 300mm above the outside top of the pipe. Above the 300mm line the trench backfill material shall be described as Clause 505 of SHW.
4. The concrete bed or surround may extend to the sides of the trench or be of minimum width. Class 8 material is to be used to fill any voids so formed.
5. For Type Z trench the concrete cover may be formed to a radius batter or horizontal surface. Minimum cover of concrete shall be 150.

SUBJECT TO PLANNING
APPROVAL

CDM NOTES

1. EXISTING SERVICES: Depth of existing services must be determined prior to works commencing. The contractor is responsible for establishing underground services in accordance with HSE Guidance note HS (G) 47. Any services which would be within the proposed construction layers must be lowered to below the sub-base.

CHAMBER DIAMETERS		CRITICAL PIPE LENGTHS		BEDDING MATERIAL SIZE		
PIPE SIZE mm	CHAMBER DIAMETER mm	(for entering and leaving manholes) First joint as close as practicable		NOMINAL DIAMETER mm	SINGLE SIZE mm	GRADED mm
< 375	1200	150 to 600 601 to 750 750 and over	0.6 1.00 1.25	100 to 125	10	-
375-450	1350			150 to 200	10 or 14	14 to 5
500-700	1500			225 to 300	10,14 or 20	14 to 5 or 20 to 5
750-900	1800			375 to 500	14 or 20	14 to 5 or 20 to 5
> 900	Pipe Diameter + 900			>500	14,20 or 40	14 to 5 or 20 to 5 or 40 to 5
VITRIFIED CLAY PIPES to be to extra strength to BS EN 295 or BS65 size as shown on section drawing. Refer also to Clauses E2.18.1 & E2.18.2.						
CONCRETE PIPES to be to BS5911 Class of pipe and size as shown on section drawing. Refer also to Clauses E2.9.2, E2.29, E2.19.1 & E2.19.3.						

Pipe Bedding Details

Rev Note

INITIAL TENDER ISSUE
SUBJECT TO ADOPTING AUTHORITY APPROVAL

Scale @ A1:

Not to Scale

Rev Date Drawn Checked Authorised

Project:

Crawley Down Road,
Felbridge

Title:

S104 Drainage Construction Details
Sheet 2

Client:



Date: JUNE 2025

Drawn by: AD

Checked by: JC

Authorised by: TRS

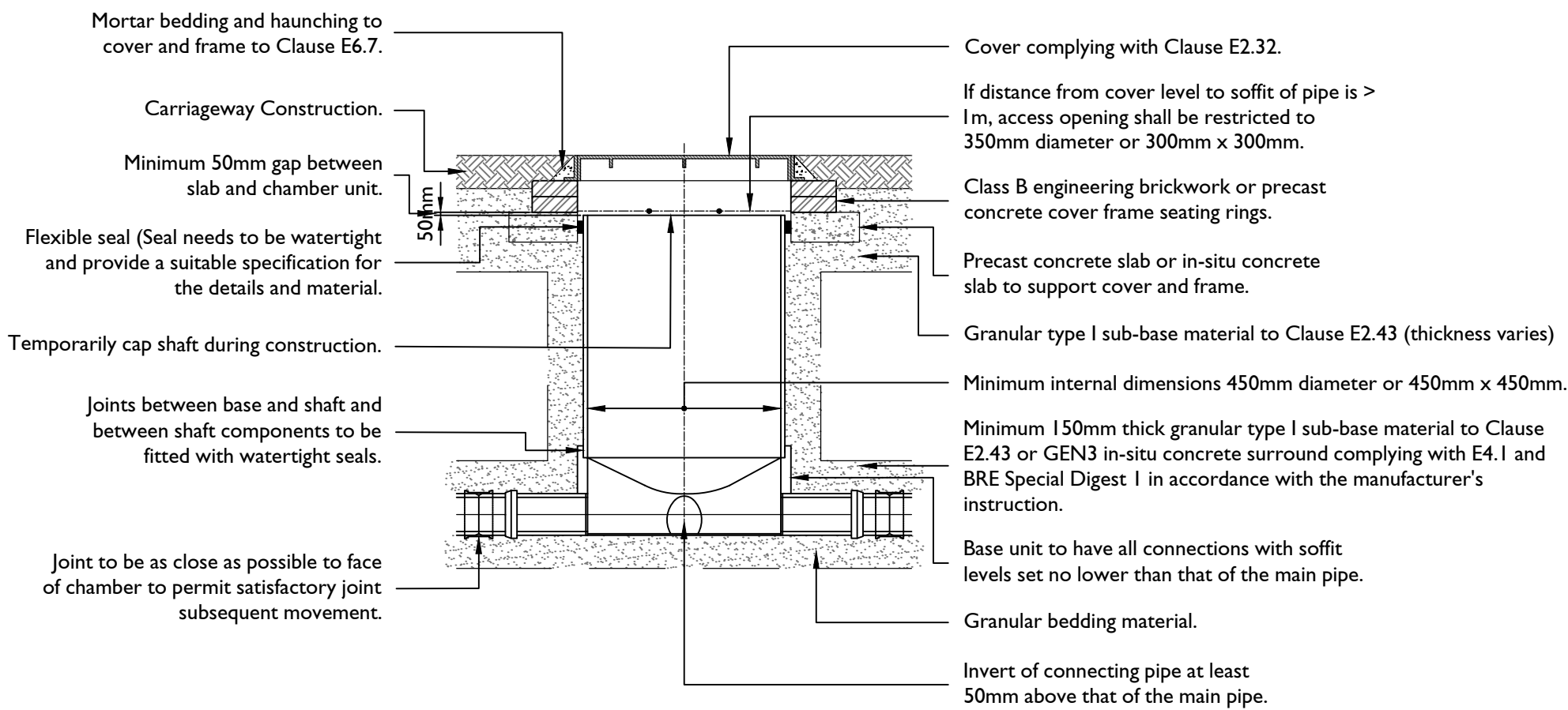
Org No: CIV-4319

Rev:

NOTE:- WHERE SCHEDULE INDICATES CATCHPIT,

BASE OF CHAMBER TO BE CONSTRUCTED

500mm SUMP IN PLACE OF BENCHED BASE

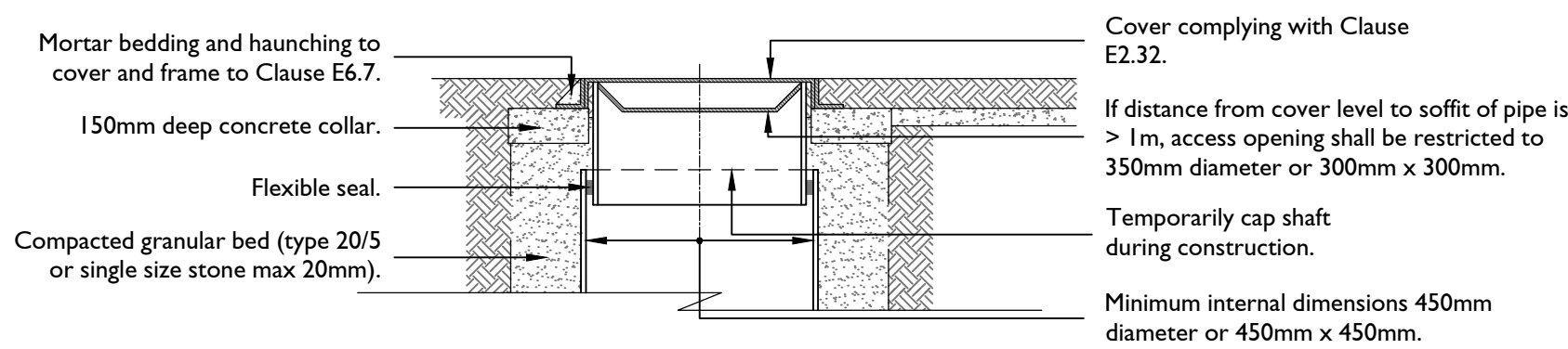


Typical Inspection Chamber Detail - Type D

Based on Figure B18 - SSG Appendix C Design and Constructio Guidance v2.2.

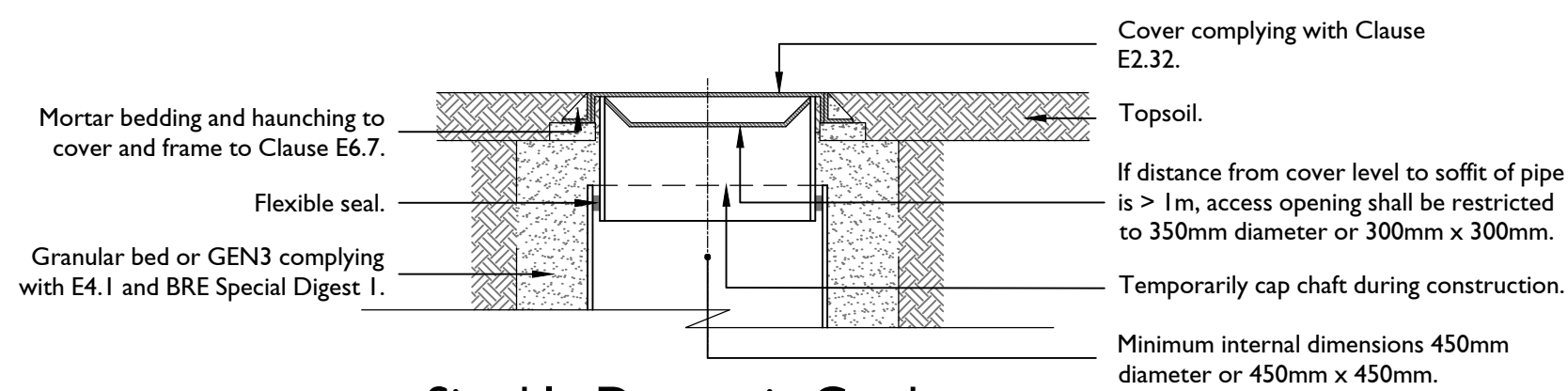
Depth from cover level to soffit of pipe up to 3m

Flexible material construction for use in areas subject to vehicle loading



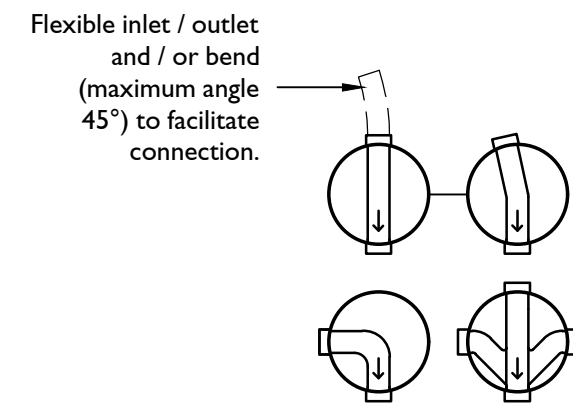
Sited In Domestic Driveways Or Footways

Based on Figure B19 - SSG Appendix C Design and Construction Guidance v2.2



Sited In Domestic Gardens

Based on Figure B19 - SSG Appendix C Design and Construction Guidance v2.2



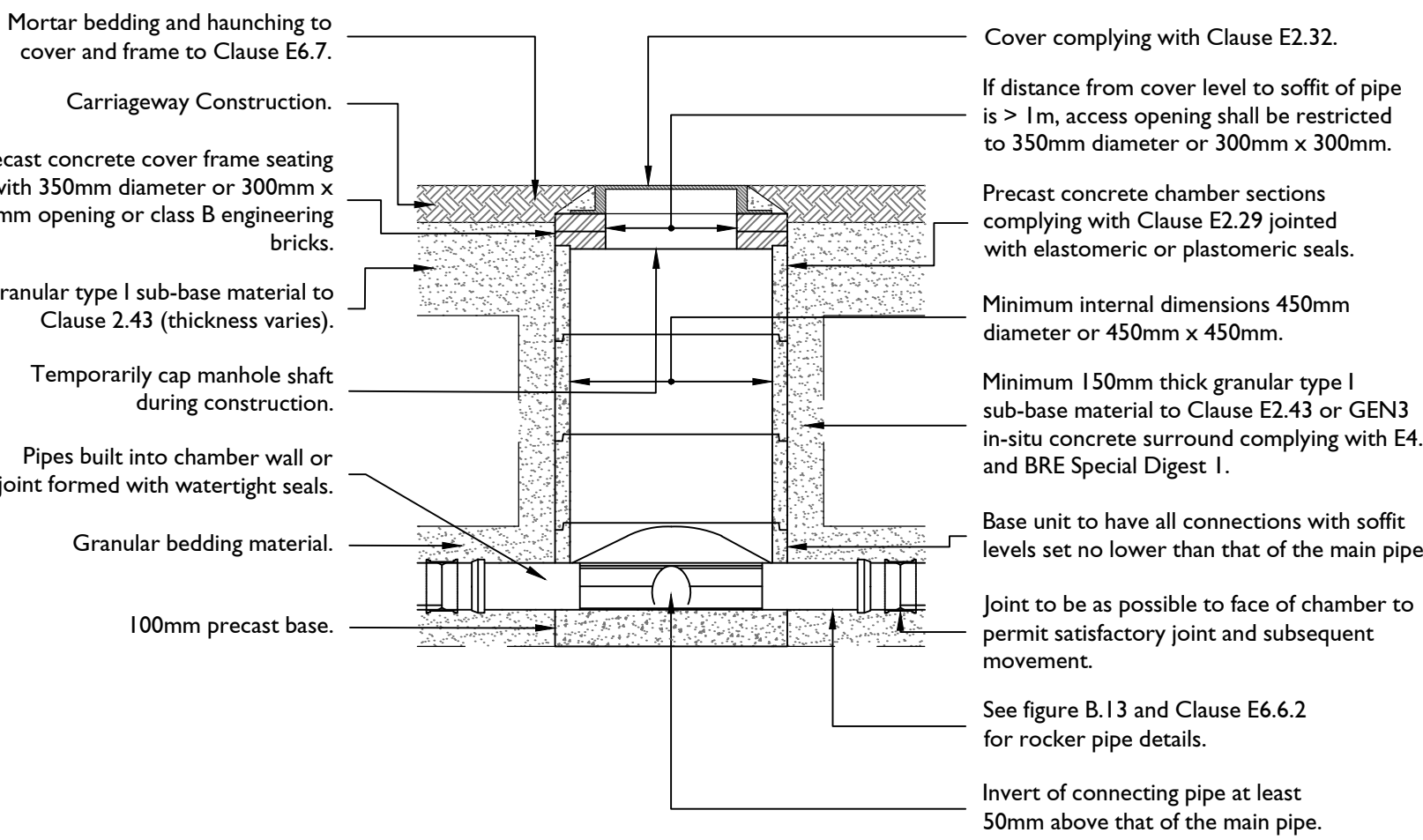
Where chambers are positioned on 90° corners, always use the main channel by fitting a 45° bend on the inlet and outlet.

Typical Base Layouts For Type D Chambers

Based on Figure B22 - SSG Appendix C Design and Construction Guidance v2.2

- 100 Granular bedding material
- 101 Compacted backfill - As-dug or granular bedding material
- 108 Class B engineering brickwork, concrete blocks 4 courses maximum or 2 courses minimum, or precast concrete cover frame seating rings
- 114 Grade C light duty oval cover, sealing ring and rodding eye in 100mm in-situ concrete surround set level with finished ground level. Where located in areas subjected to vehicle loading, cover to be Hepworth square rodding point product code SRPSJ1, concrete surround to be increased to 150mm and laid below surface course.
- 115 Pipe cut to required length.
- 116 Concrete bed and surround will be required where inspection chambers are installed in soft landscaped areas subjected to heavy construction traffic.
- 117 45 degree bend.
- 118 Oblique 45 degree junction.
- 119 PVCu rainwater down pipe. (CSS)
- 120 Rest bend, for use up to two storey only.

- 121 100mm bed of selected as dug or granular material; if ground conditions unstable (Site Control to confirm) use 100mm bed of GEN 4 Designated Mix in-situ concrete.
- 122 Short radius 90 degree bend.
- 123 Square hopper with back inlet and alloy grid or sealing plate.
- 124 Cement mortar joint/infill.
- 125 Minimum 150mm thick GEN 4 concrete surround.
- 126 Rubber plug.
- 127 Catchment bucket.
- 128 Round or square road gully with grating and frame to BS EN 124, Grade B as detailed on drainage layout and schedules, set in 1:3 cement and sand mortar centrally over gully chamber.
- 129 Round or square gully grid; black cast iron to drives with a bituminous surface and alloy finish elsewhere.
- 130 Minimum 100mm thick GEN4 concrete surround.

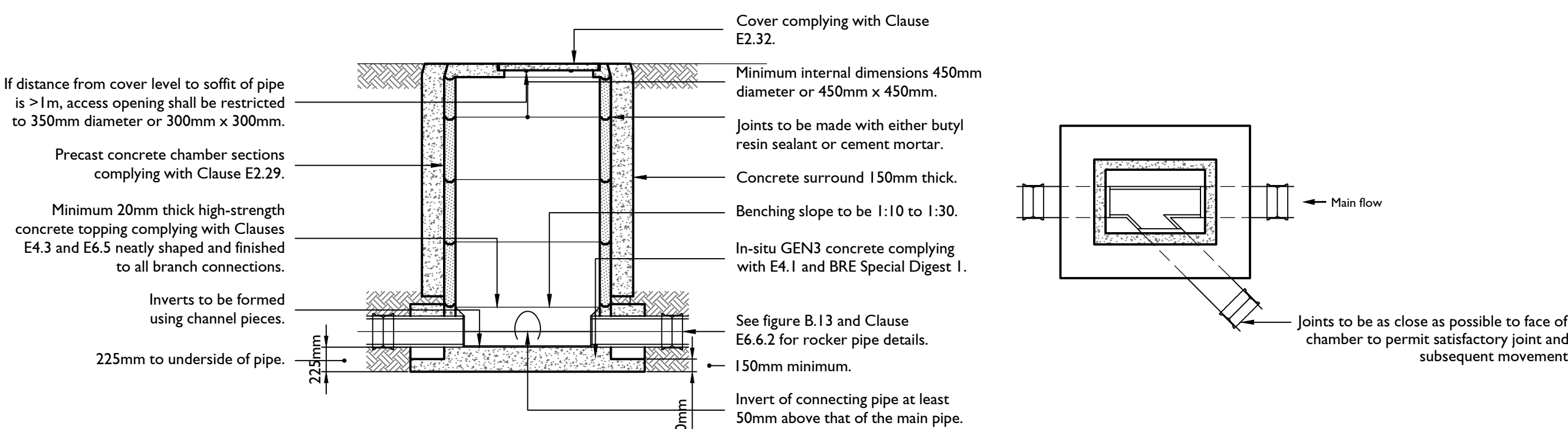


Typical Inspection Chamber Detail - Type D

Based on Figure B20 - SSG Appendix C Design and Construction Guidance v2.2.

Depth from cover level to soffit of pipe up to 3m

Rigid material construction for use in areas subject to vehicle loading

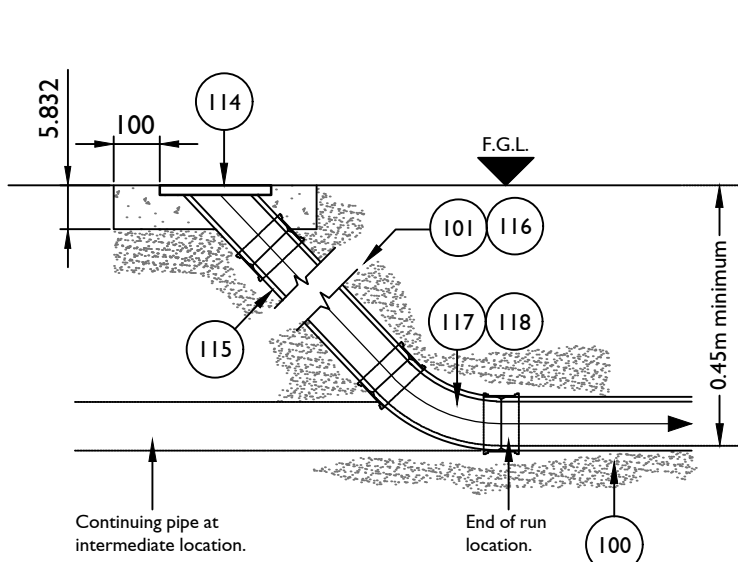


Typical Inspection Chamber Detail - Type D

Based on Figure B21 - SSG Appendix C Design and Construction Guidance v2.2.

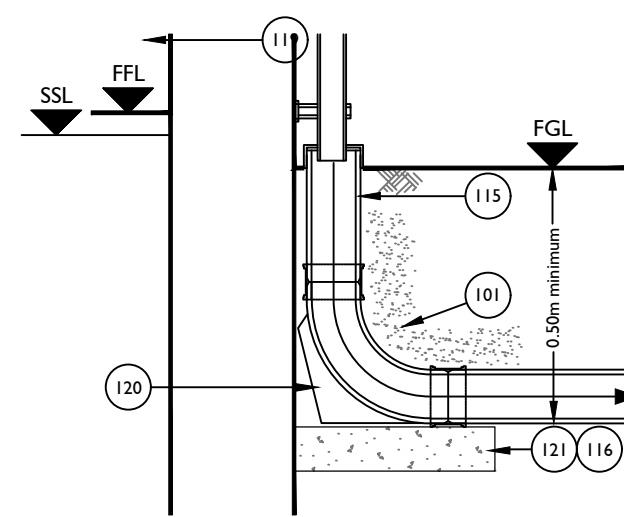
Depth from cover level to soffit of pipe up to 3m

Rigid material construction for use in areas subject to vehicle loading or landscaped areas

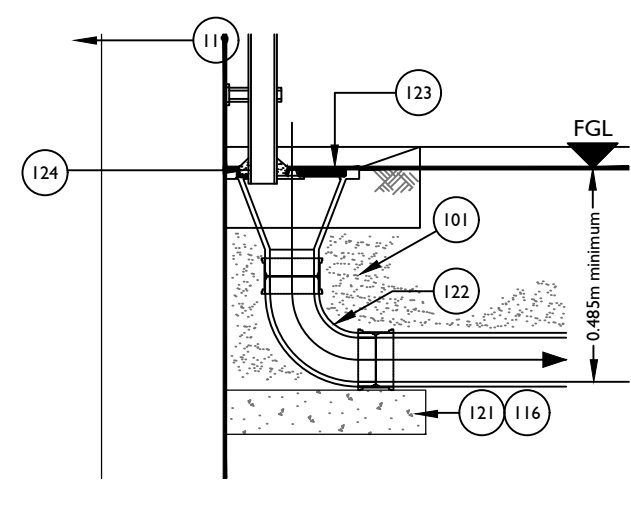


Rodding Point

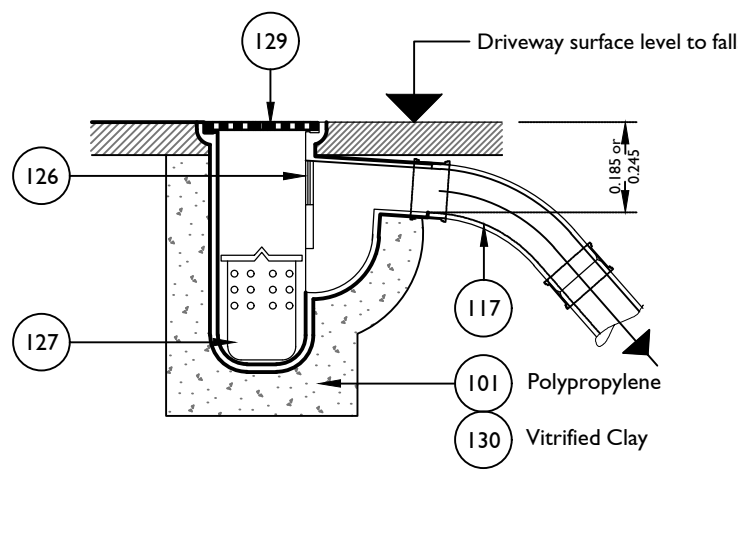
100 or 150mm dia. connections.



Direct Rainwater Connection

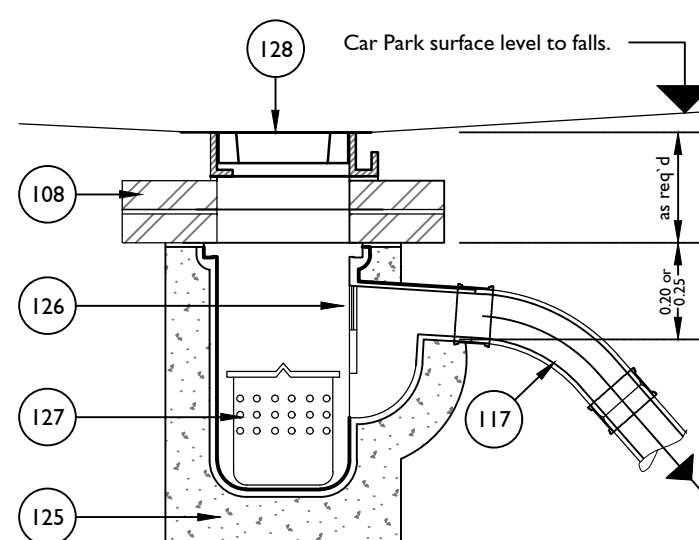


Direct Rainwater Connection through Gully



Private Drive Gully

Round or square polypropylene or vitrified clay gully. 300mm diameter x 600mm invert depth. 100 or 150mm dia. connection.



Private Car Park Gully

Round or square polypropylene or vitrified clay gully. 300mm diameter x 600mm invert depth. 100 or 150mm dia. connection.

NOTES

- This drawing should be read in conjunction with other Domestic Drainage Construction Details, Foul & Surface Water Sewer Longitudinal Sections (CIV-4100 to 4110), Foul & Surface Water Sewer Manhole Schedules (CIV-4310 to 4311) and Domestic Drainage Layouts (CIV-4351 to 4355).
- All dimensions are in millimetres unless stated otherwise.
- Do not scale from this drawing. Only written dimensions are to be used.
- All construction to be in accordance with SSG Appendix C Design and Construction Guidance Version 2.3 dated November 2023 and the specific requirements of IWNL Water.
- Refer to geotechnical report for sulphate resisting class and ACEC class.
- In-situ concrete generally to be GEN 4 Designated Mix.
- In-situ reinforced concrete to be RC 35 Designated Mix only when specified.
- All in-situ concrete to be thoroughly compacted.
- All covers to be stamped "FW" or "SW", as appropriate.
- For Manufacturer and specification of pipes and fittings refer to drainage layout and schedule.
- Drainage pipes and fittings to be Hepworth vitrified clay and PVCu or Wavin Osma PVCu or other equivalent approved. Refer to drainage layout and schedules for details of manufacturer and specification.

12. *Outgoing pipes greater than 600mm diameter should be fitted with guard bars, safety chains [to BS EN 818-3] or other safety devices in accordance with the IWNL Water safety policy.*

DEPTH OF PIPE COVER

The minimum depth of pipe cover to the crown of gravity pipes without protection should be as follows:

- domestic gardens and pathways without any possibility of vehicular access, 0.35m;
- domestic driveways, parking areas and yards with height restrictions to prevent entry by vehicles with a gross weight in excess of 7.5 tonnes, 0.5m;
- domestic driveways, parking areas and narrow streets without footways (e.g. mews developments) with limited access for vehicles with a gross weight in excess of 7.5 tonnes, 0.9m;
- agricultural land and public open space, 0.9m;
- other highways and parking areas with unrestricted access to vehicles with a gross vehicle weight in excess of 7.5 tonnes, 1.2m.

SUBJECT TO PLANNING APPROVAL

CDM NOTES

- EXISTING SERVICES:** Depth of existing services must be determined prior to works commencing. The contractor is responsible for establishing underground services in accordance with HSE Guidance note HS (G) 47. Any services which would be within the proposed construction layers must be lowered to below the sub-base.

Rev Note

INITIAL TENDER ISSUE
SUBJECT TO ADOPTING AUTHORITY APPROVAL

Scale @ A1:

Not to Scale

Rev Date Drawn Checked Authorised

Project: Crawley Down Road, Felbridge

Title: Domestic Drainage Construction Details Sheet 1

Client: BARRATT HOMES

Date: JUNE 2025

Drawn by: AD

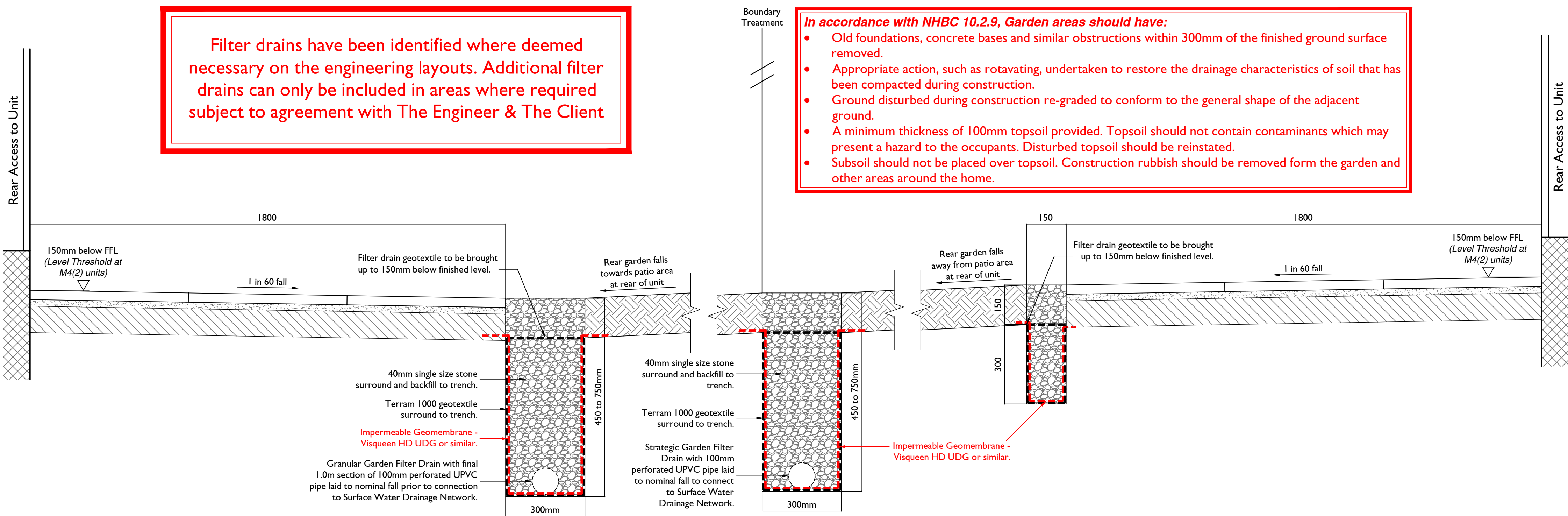
Checked by: JC

Authorised by: TRS

Drng No: CIV-4360

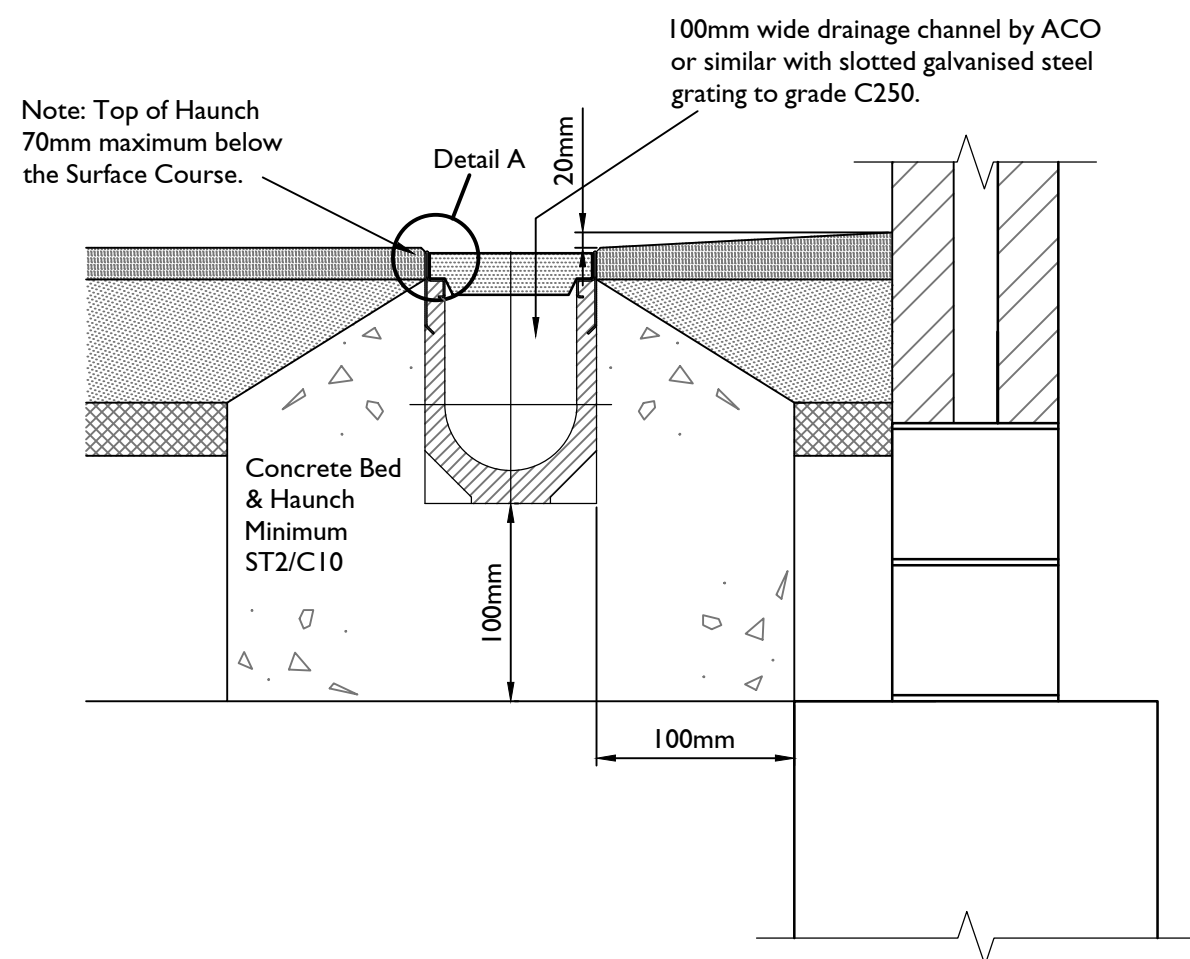
Rev:



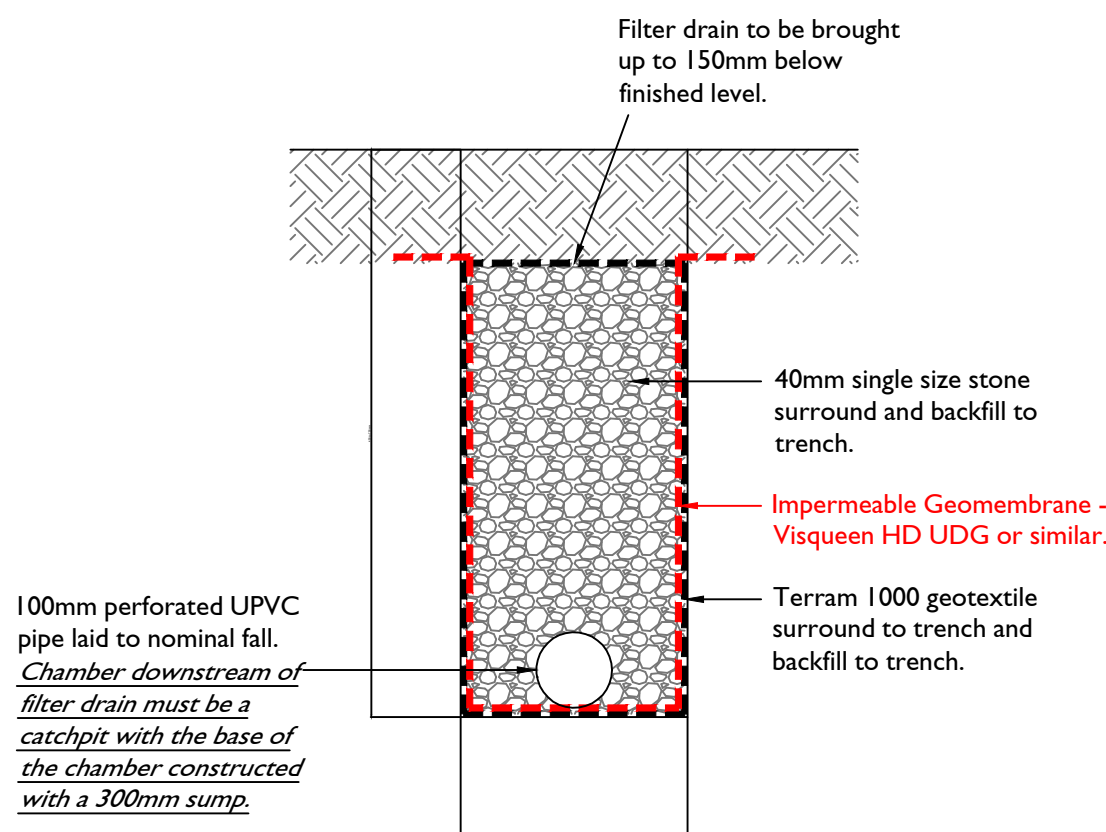
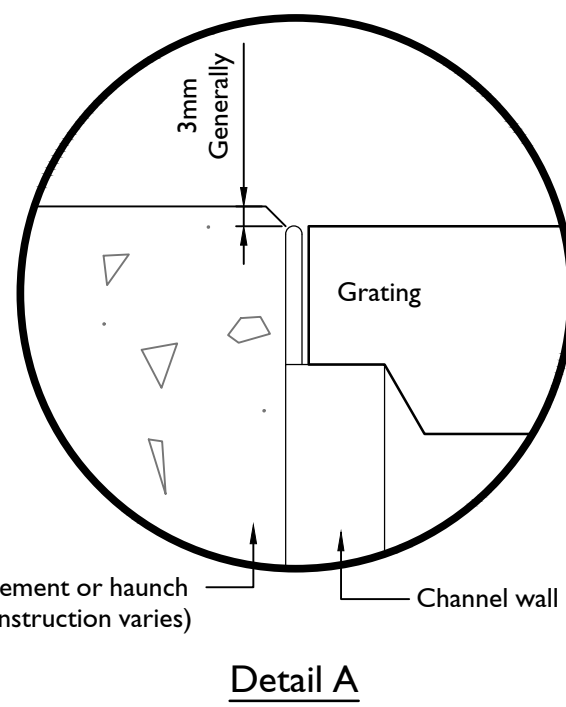


Typical Strategic Cross Section Through Rear Gardens

(This detail has been provided in the unlikely event that the conditions listed above are not met and to provide an additional means for flood mitigation in rear gardens)

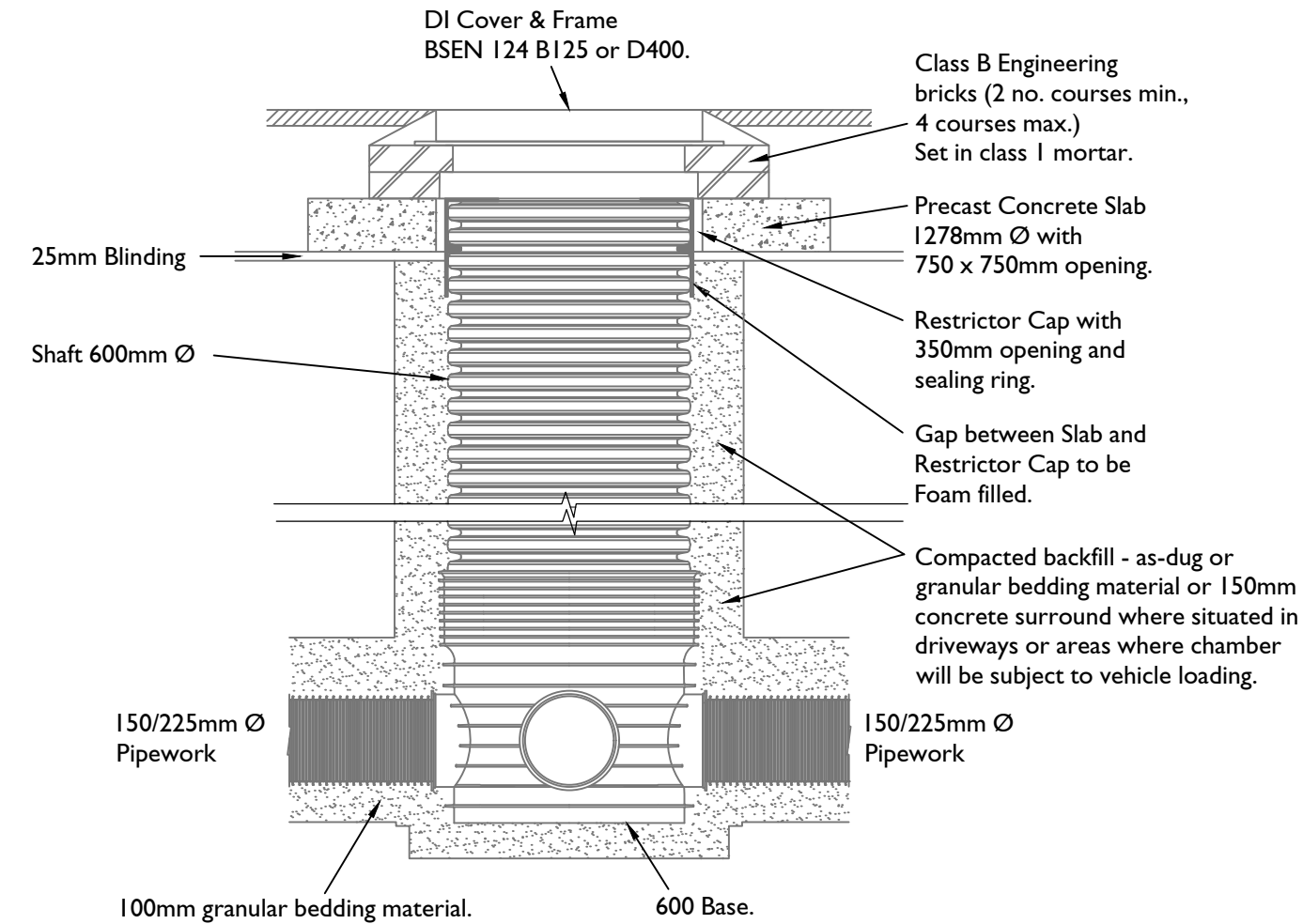


Channel Drainage Construction Typical Detail

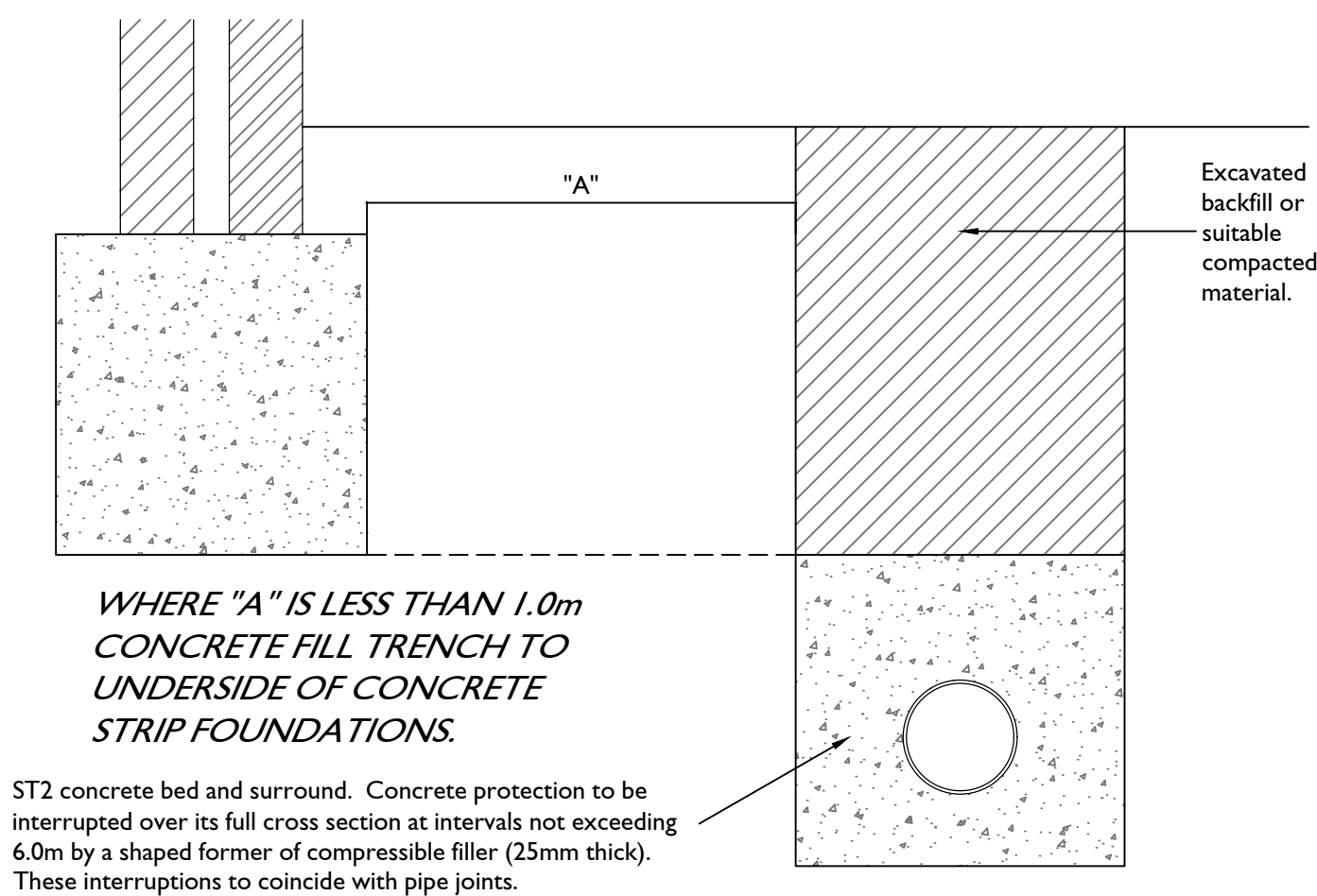


Filter Drain Typical Detail

(Connection of filter drains to the Surface Water Network is subject to Approval from IWNL Water)

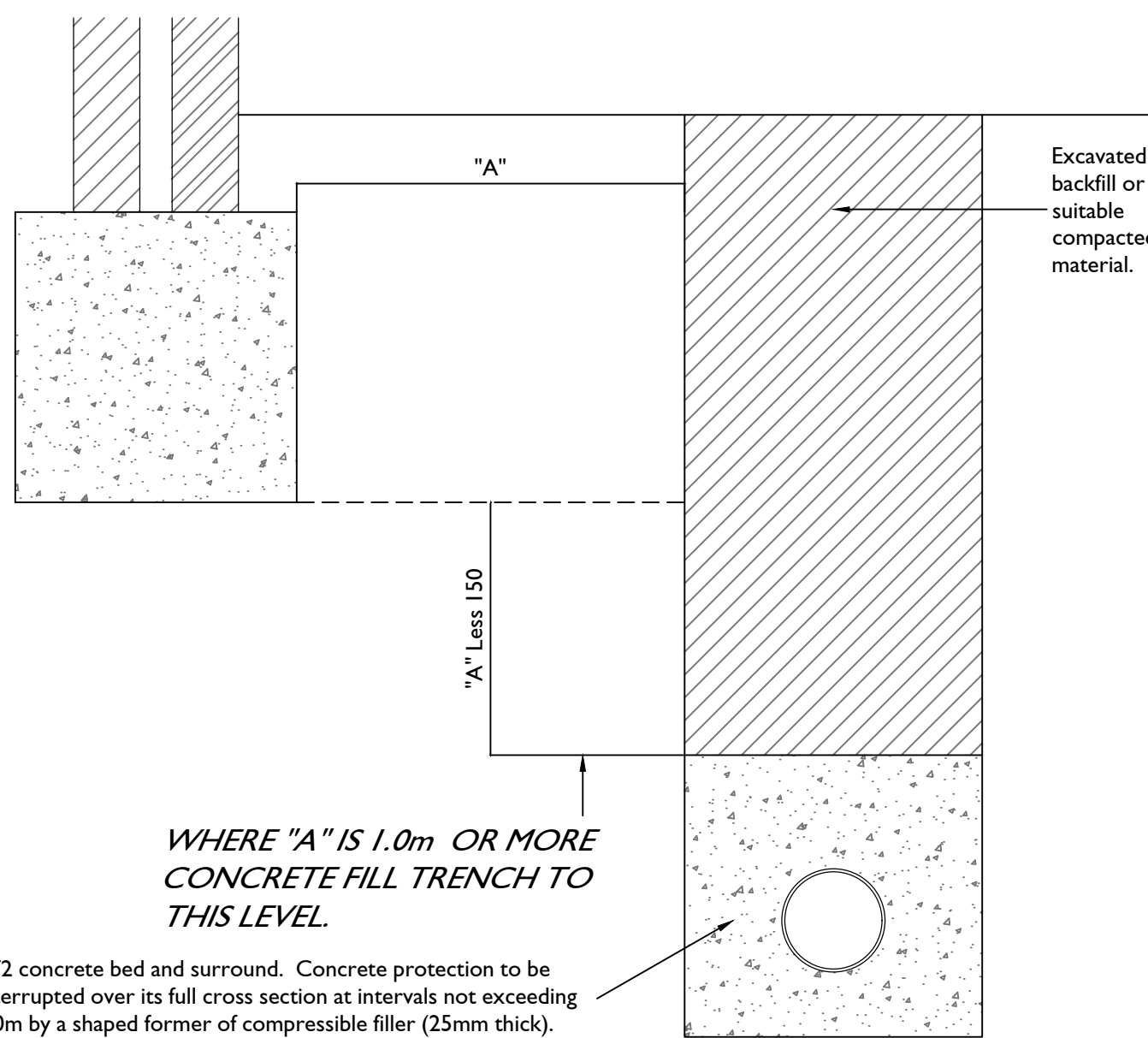


600mmØ PPIC Typical Detail



Pipe Runs Near Buildings

NOTE: THIS DETAIL IS NOT APPLICABLE WHERE BUILDINGS HAVE PILED FOUNDATIONS.



WHERE "A" IS 1.0m OR MORE CONCRETE FILL TRENCH TO THIS LEVEL.

ST2 concrete bed and surround. Concrete protection to be interrupted over its full cross section at intervals not exceeding 6.0m by a shaped former of compressible filler (25mm thick). These interruptions to coincide with pipe joints.

NOTE:- WHERE SCHEDULE INDICATES CATCHPIT, BASE OF CHAMBER TO BE CONSTRUCTED 500mm SUMP IN PLACE OF BENCHED BASE

NOTES

1. This drawing should be read in conjunction with other Domestic Drainage Construction Details, Foul & Surface Water Sewer Longitudinal Sections (CIV-4100 to 4110), Foul & Surface Water Sewer Manhole Schedules (CIV-4310 to 4311) and Domestic Drainage Layouts (CIV-4351 to 4355).
2. All dimensions are in millimetres unless stated otherwise.
3. Do not scale from this drawing. Only written dimensions are to be used.
4. All construction to be in accordance with SSG Appendix C Design and Construction Guidance Version 2.3 dated November 2023 and the specific requirements of IWNL Water.
5. Refer to geotechnical report for sulphate resisting class and ACEC class.
6. Insitu concrete generally to be GEN 4 Designated Mix.
7. Insitu reinforced concrete to be RC 35 Designated Mix only when specified.
8. All insitu concrete to be thoroughly compacted.
9. All covers to be stamped "FW" or "SW", as appropriate.
10. For Manufacturer and specification of pipes and fittings refer to drainage layout and schedule.
11. Drainage pipes and fittings to be Hepworth vitrified clay and PVCu or Wavin Osma PVCu or other equivalent approved. Refer to drainage layout and schedules for details of manufacturer and specification.

DEPTH OF PIPE COVER

The minimum depth of pipe cover to the crown of gravity pipes without protection should be as follows:

- domestic gardens and pathways without any possibility of vehicular access, 0.35m;
- domestic driveways, parking areas and yards with height restrictions to prevent entry by vehicles with a gross weight in excess of 7.5 tonnes, 0.5m;
- domestic driveways, parking areas and narrow streets without footways (e.g. mews developments) with limited access for vehicles with a gross weight in excess of 7.5 tonnes, 0.9m;
- agricultural land and public open space, 0.9m;
- other highways and parking areas with unrestricted access to vehicles with a gross vehicle weight in excess of 7.5 tonnes, 1.2m.

SUBJECT TO PLANNING APPROVAL

CDM NOTES

1. EXISTING SERVICES: Depth of existing services must be determined prior to works commencing. The contractor is responsible for establishing underground services in accordance with HSE Guidance note HS (G) 47. Any services which would be within the proposed construction layers must be lowered to below the sub-base.

Rev Note

INITIAL TENDER ISSUE

SUBJECT TO ADOPTING AUTHORITY APPROVAL

Scale @ A1:

Not to Scale

Rev Date Drawn Checked Authorised

Project:

Crawley Down Road, Felbridge

Title:

Domestic Drainage Construction Details Sheet 2

Client:



Date: JUNE 2025

Drawn by: AD

Checked by: JC

Authorised by: TRS

Org No: CIV-4361

Rev:

