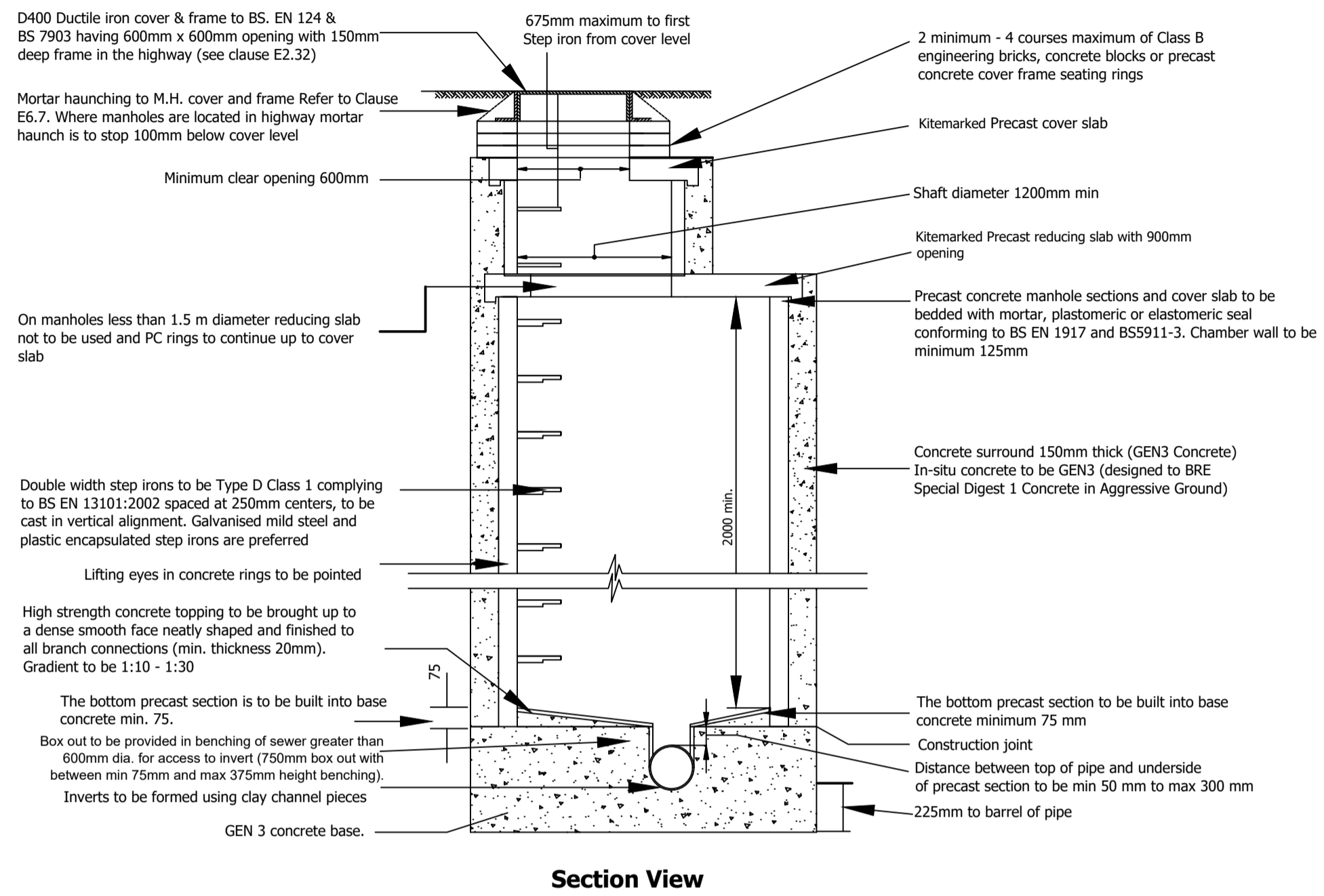


Typical Manhole Construction

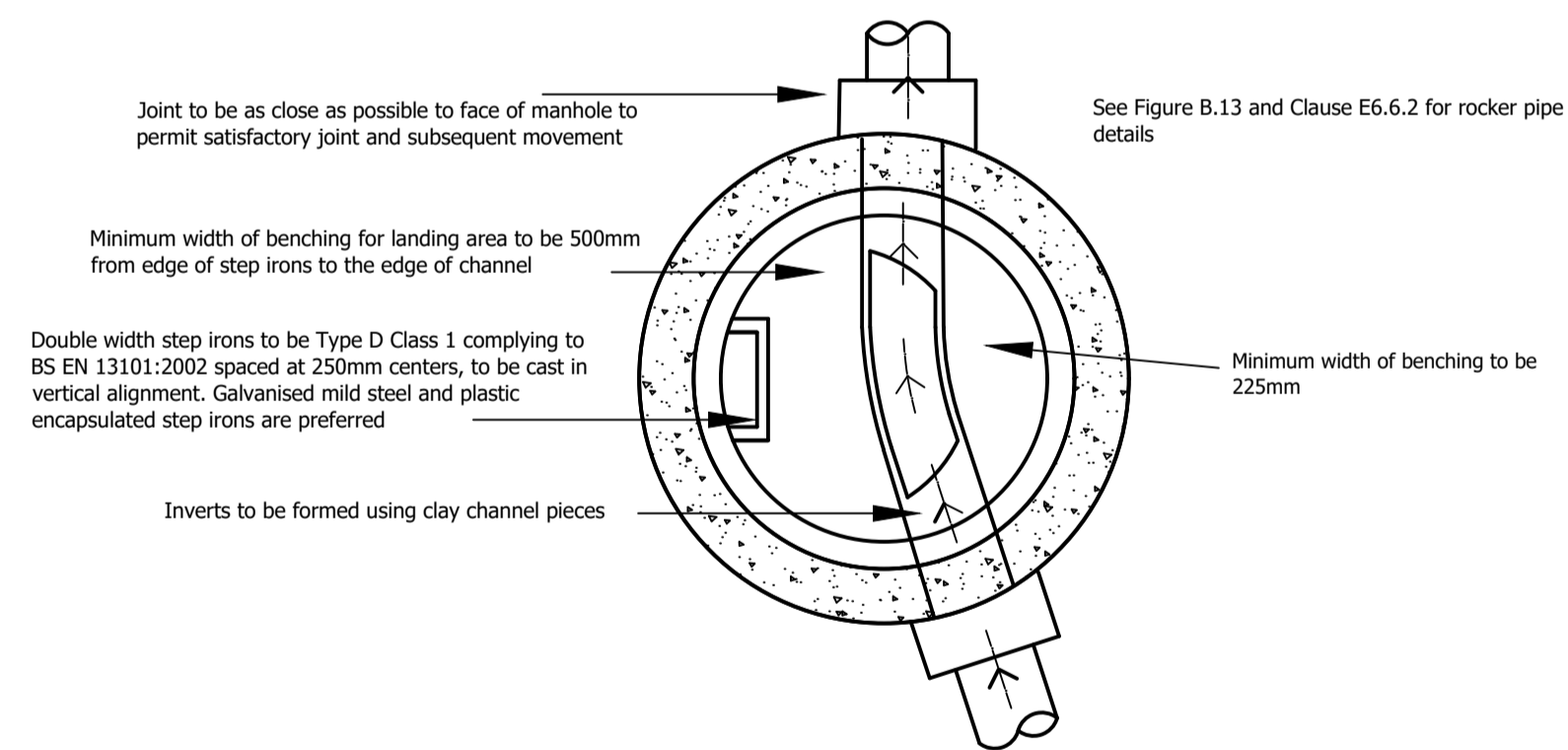
Type A1 (Design and Construction Guidance)

For use on manholes of depth from cover level to soffit level between 3000mm and 6000mm



Typical Manhole Plan View

Type A & B (Design and Construction Guidance)

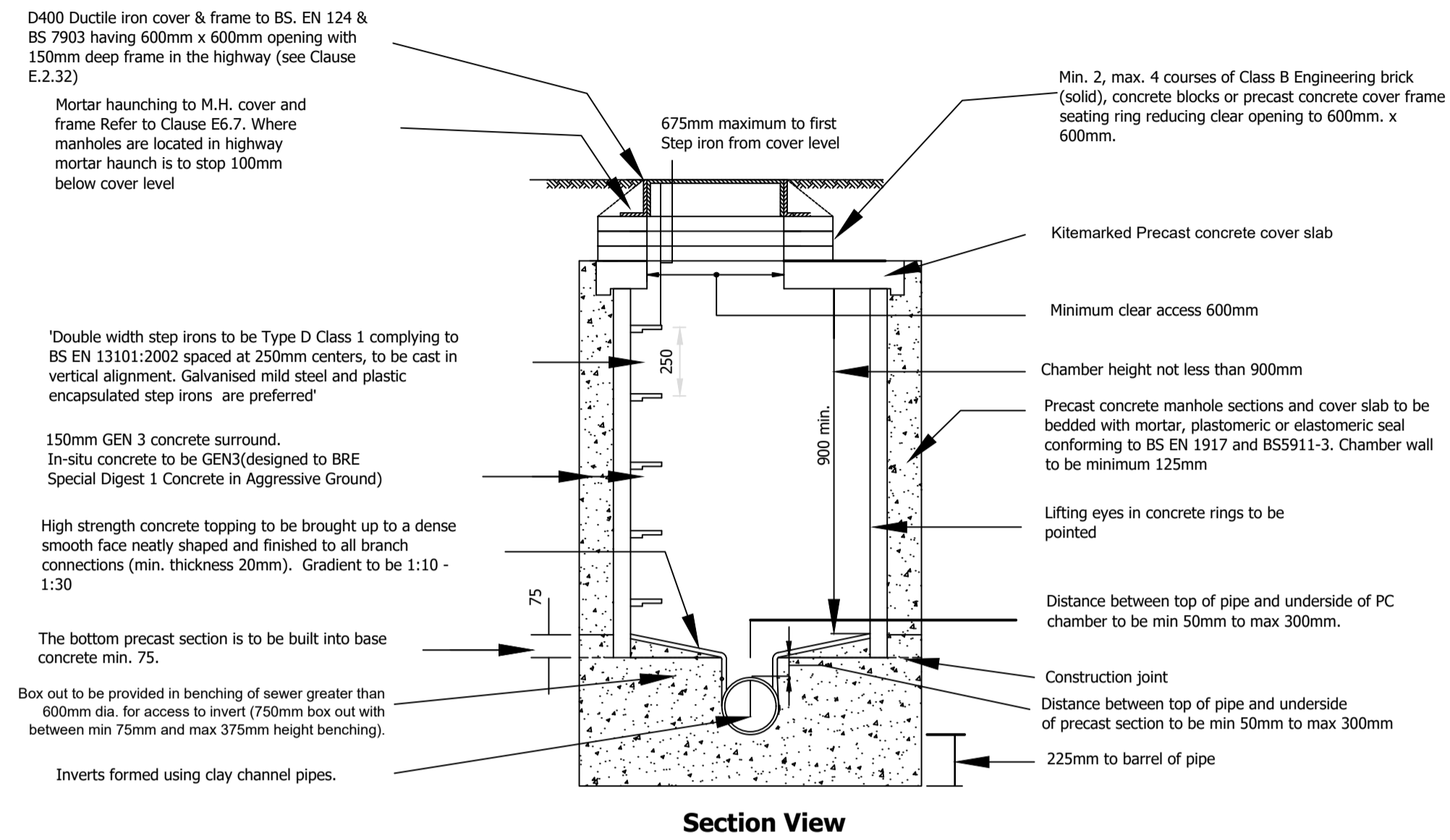


Manhole Diameters	
Nominal internal diameter of largest pipe in manhole (mm)	Minimum nominal internal dimension of manhole (mm)
Up to 300	1200
375-450	1350
500-700	1500
750-900	1800
Greater than 900	Specific detailed drawing required

Typical Manhole Construction

Type B (Design and Construction Guidance)

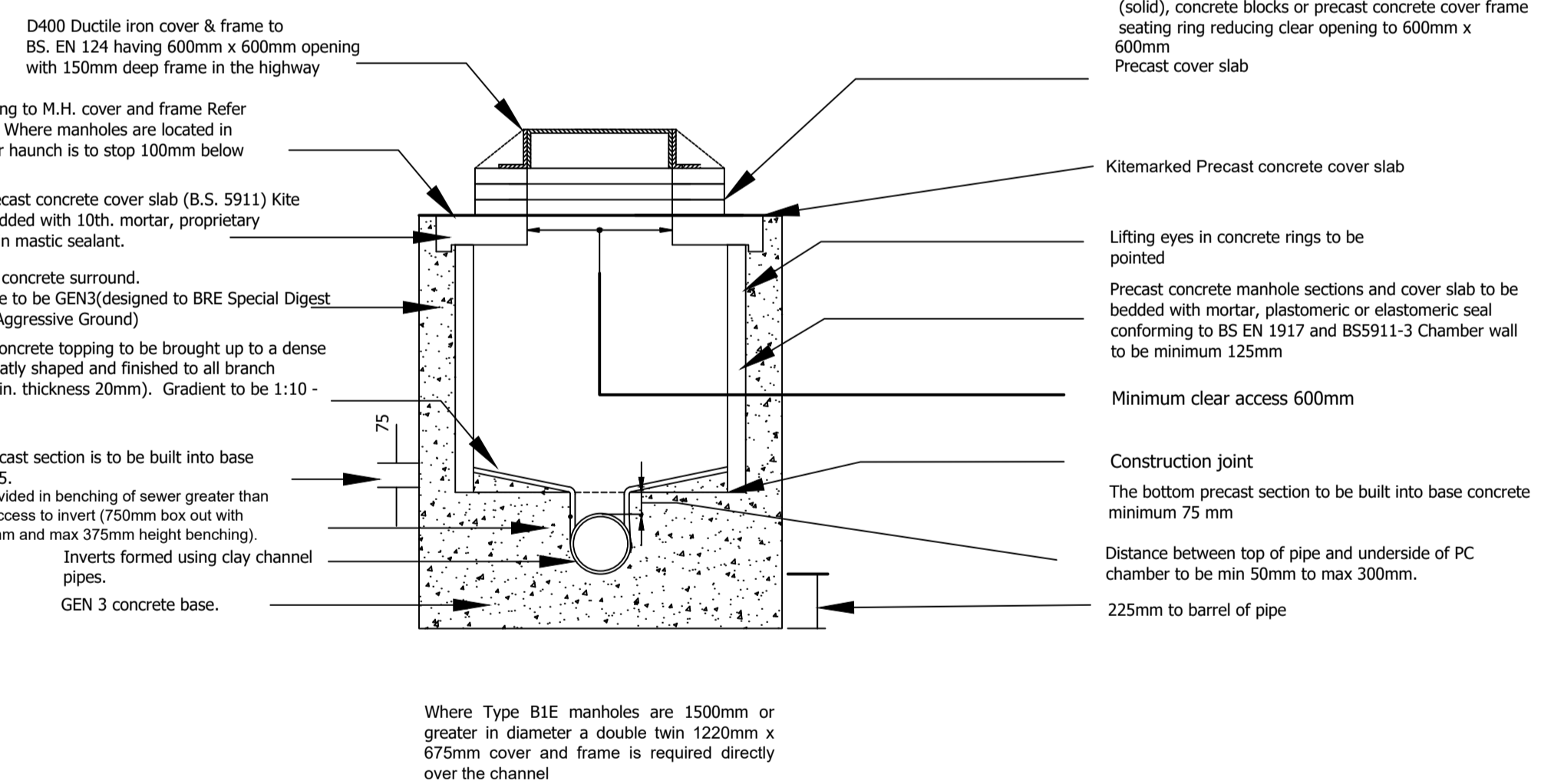
Maximum depth from cover level to soffit of pipe 3000mm



Shallow Manhole Construction

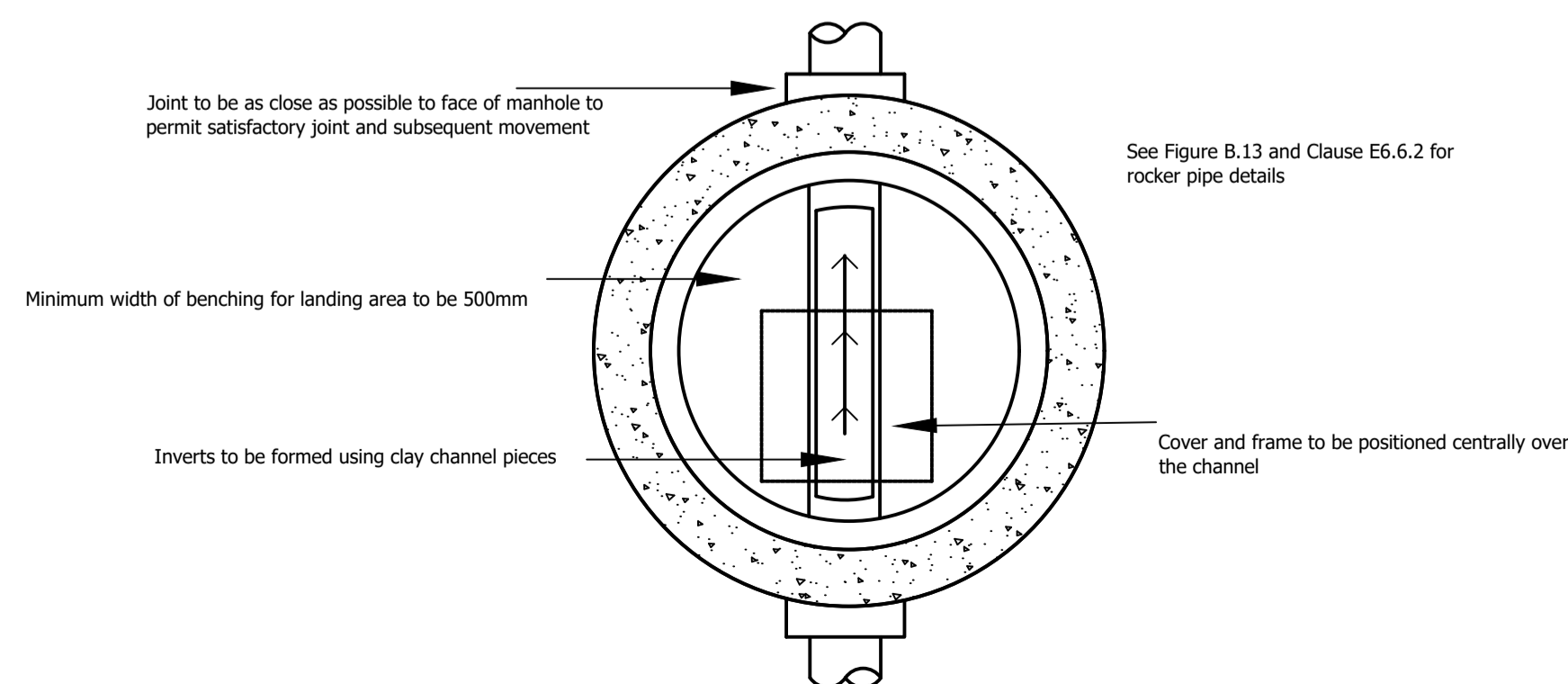
Type C (Design and Construction Guidance)

Construction of manhole where depth from soffit to cover level less than 1.5m



Shallow Manhole Plan View

Type C (Design and Construction Guidance)



Yorkshire Water Notes

- All adoptable sewer works and material to be in accordance with Design and Construction Guidance, The Relevant British/European and Yorkshire Water's Standards/Requirements/Addendum to the Mechanical and Electrical Specification and Kitemarked.
- Manhole covers shall/must have a clear opening of 600mm and shall be Class D400 to BS EN 124 with 150mm deep frames in highways.
- Filled ground must be filled and consolidated under the supervision and to the satisfaction of Yorkshire Water before any sewer works are carried out.
- Yorkshire Water is **not** obliged to accept filter drain/land drainage run-off into the public sewer network or adoptable drainage system (**directly or in-directly**). An alternative method of disposal of the land drainage run-off will therefore be required and you will have to liaise with the Local Authority, Land Drainage Section with regard to the disposal of the filter drain/land drainage run-off.
- Cover slabs must carry the BSI Kitemark or will be rejected by Yorkshire Water Inspector. Where the clear opening of the Kitemarked product is different to that of the cover and frame, a loading bearing slab should be fitted above the cover slab to bring the size down to 600mm x 600mm for the Yorkshire Water specified cover size. Please refer to Concrete Pipe Systems Association (CPSA) 'Technical Bulletin' issued Autumn 2004 for Kitemarked cover slab opening sizes.
- Sulphate resistant cement (C20-DC2) and precast concrete products must be used or a laboratory report provided proving that such precautions are not necessary.
- The adoptable sewers should be a minimum of 1m and manholes 0.5m from kerb faces and service margins.
- "Sewers must have 5 metres clearance from trees and hedges (please also refer to the Design and Construction Guidance for restrictions on tree planting adjacent to sewers)".
- Sewers to be laid in Class "S" Bedding (150mm granular bed and surround). Where depth of cover to top of the sewer is less than 1.2m in highways and verges (or less than 900mm in non vehicular access areas) then a concrete slab should provide above granular bed and surround.
- Bedding and backfill material to conform to the requirement of Water Industry Specification 4-08-02 (Table A2).
- The chamber size of manholes with more than one connection in them may need to be increased an increment to accommodate the connections and bends.
- Yorkshire Water policy is not to accept Type "C" brick manholes and 1050mm dia manhole rings. Instead it is preferred that you use a Type "B" manhole with 1200mm dia or 1500mm dia rings, with the opening sited over the channel where depth of cover to pipe soffit is 1 - 1.5m.
- Adoptable plastic sewer pipes to be BSI Kitemarked (certified to WIS 4-35-01 and BS EN 13476). Adoptable plastic sewer pipes to be laid in maximum 3 metre lengths unless there is a specific operational need to lay longer lengths. Plastic channel sections in manholes are not acceptable and Yorkshire Water would prefer clayware channel in manholes. We have found that plastic channels are difficult to set in concrete because they float and a satisfactory finish cannot be obtained on the benching.
- Where a B125 cover and frame has been approved, this **must not** be coated in plastic and must have lifting eyes suitably sized to accommodate standard lifting keys. Screw down covers are not acceptable.

For all clause and table references please refer to the Design and Construction Guidance contained within the Code for Adoption

Developer Services

Title	Typical Manhole Details
Drawing No	YW-DS-001
Revision	-
Date	April 2020

Yorkshire Water Notes

- All adoptable sewer works and material to be in accordance with the Design and Construction Guidance, The Relevant British/European and Yorkshire Water's Standards/Requirements/Addendum to the Mechanical and Electrical Specification and Kitemarked.
- Manhole covers shall/must have a clear opening of 600mm and shall be Class D400 to BS EN 124 with 150mm deep frames in highways.
- Filled ground must be filled and consolidated under the supervision and to the satisfaction of Yorkshire Water before any sewer works are carried out.
- Yorkshire Water is **not** obliged to accept filter drain/land drainage run-off into the public sewer network or adoptable drainage system (**directly or in-directly**). An alternative method of disposal of the land drainage run-off will therefore be required and you will have to liaise with the Local Authority, Land Drainage Section with regard to the disposal of the filter drain/land drainage run-off.
- Cover slabs must carry the BSI Kitemark or will be rejected by Yorkshire Water Inspector. Where the clear opening of the Kitemarked product is different to that of the cover and frame, a loading bearing slab should be fitted above the cover slab to bring the size down to 600mm x 600mm for the Yorkshire Water specified cover size. Please refer to Concrete Pipe Systems Association (CPSA) 'Technical Bulletin' issued Autumn 2004 for Kitemarked cover slab opening sizes.
- Sulphate resistant cement (C20-DC2) and precast concrete products must be used or a laboratory report provided proving that such precautions are not necessary.
- The adoptable sewers should be a minimum of 1m and manholes 0.5m from kerb faces and service margins.
- "Sewers must have 5 metres clearance from trees and hedges (please also refer to the Design and Construction Guidance for restrictions on tree planting adjacent to sewers)".
- Sewers to be laid in Class "S" Bedding (150mm granular bed and surround). Where depth of cover to top of the sewer is less than 1.2m in highways and verges (or less than 900mm in non vehicular access areas) then a concrete slab should be provide above granular bed and surround.
- Bedding and backfill material to conform to the requirement of Water Industry Specification 4-08-02 (Table A2).
- The chamber size of manholes with more than one connection in them may need to be increased an increment to accommodate the connections and bends.
- Yorkshire Water policy is not to accept Type "C" brick manholes and 1050mm dia manhole rings. Instead it is preferred that you use a Type "B" manhole with 1200mm dia or 1500mm dia rings, with the opening sited over the channel where depth of cover to pipe soffit is 1 - 1.5m.
- Adoptable plastic sewer pipes to be BSI Kitemarked (certified to WIS 4-35-01 and BS/EN13476). Adoptable plastic sewer pipes to be laid in maximum 3 metre lengths unless there is a specific operational need to lay longer lengths. Plastic channel sections in manholes are not acceptable and Yorkshire Water would prefer clayware channel in manholes. We have found that plastic channels are difficult to set in concrete because they float and a satisfactory finish cannot be obtained on the benching.
- Where a B125 cover and frame has been approved, this **must not** be coated in plastic and must have lifting eyes suitably sized to accommodate standard lifting keys. Screw down covers are not acceptable.

For all clause and table references please refer to the Design and Construction Guidance contained within the Code for Adoption

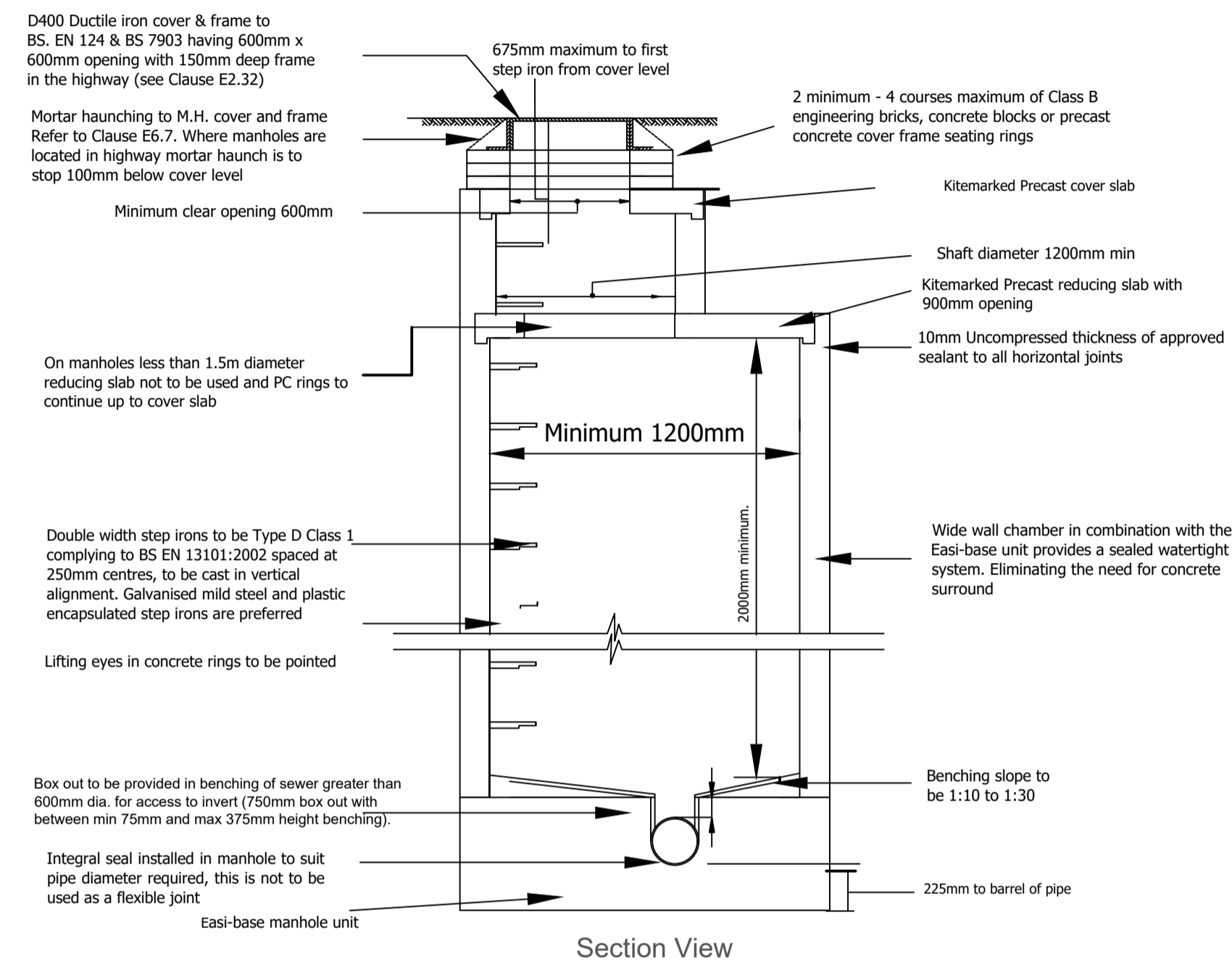
Developer Services

Title	Widewall Manhole Details
Drawing No	YW-DS-002
Revision	-
Date	April 2020

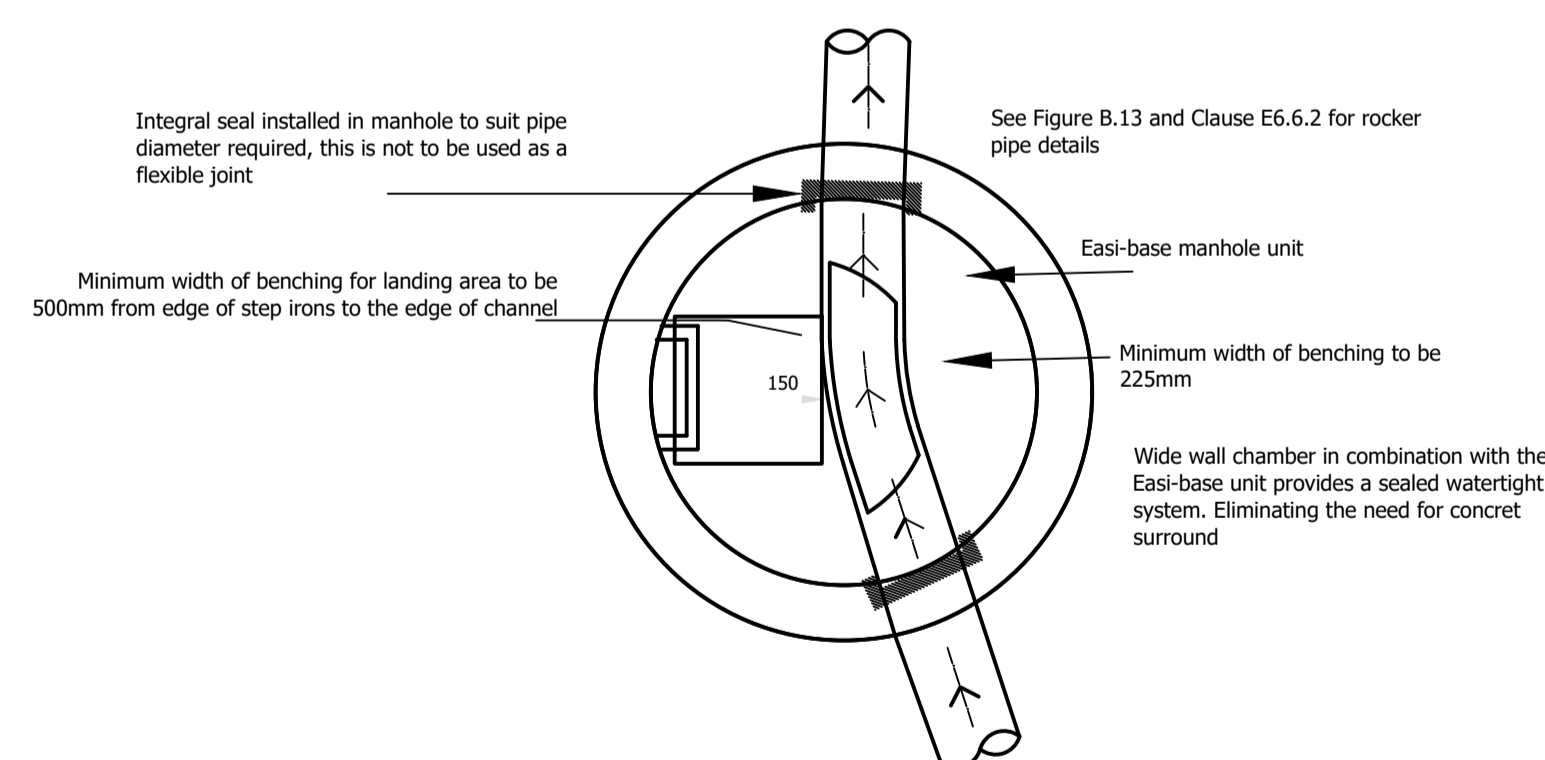


Typical Widewall Manhole Construction Type A2 Alternative Wide Wall Manhole Construction (Design and Construction Guidance)

For use on manholes of depth from cover level to soffit level between 3000mm and 6000mm.
Wide wall manhole ring construction



Typical Widewall Manhole Plan View Type A & B (Design and Construction Guidance)

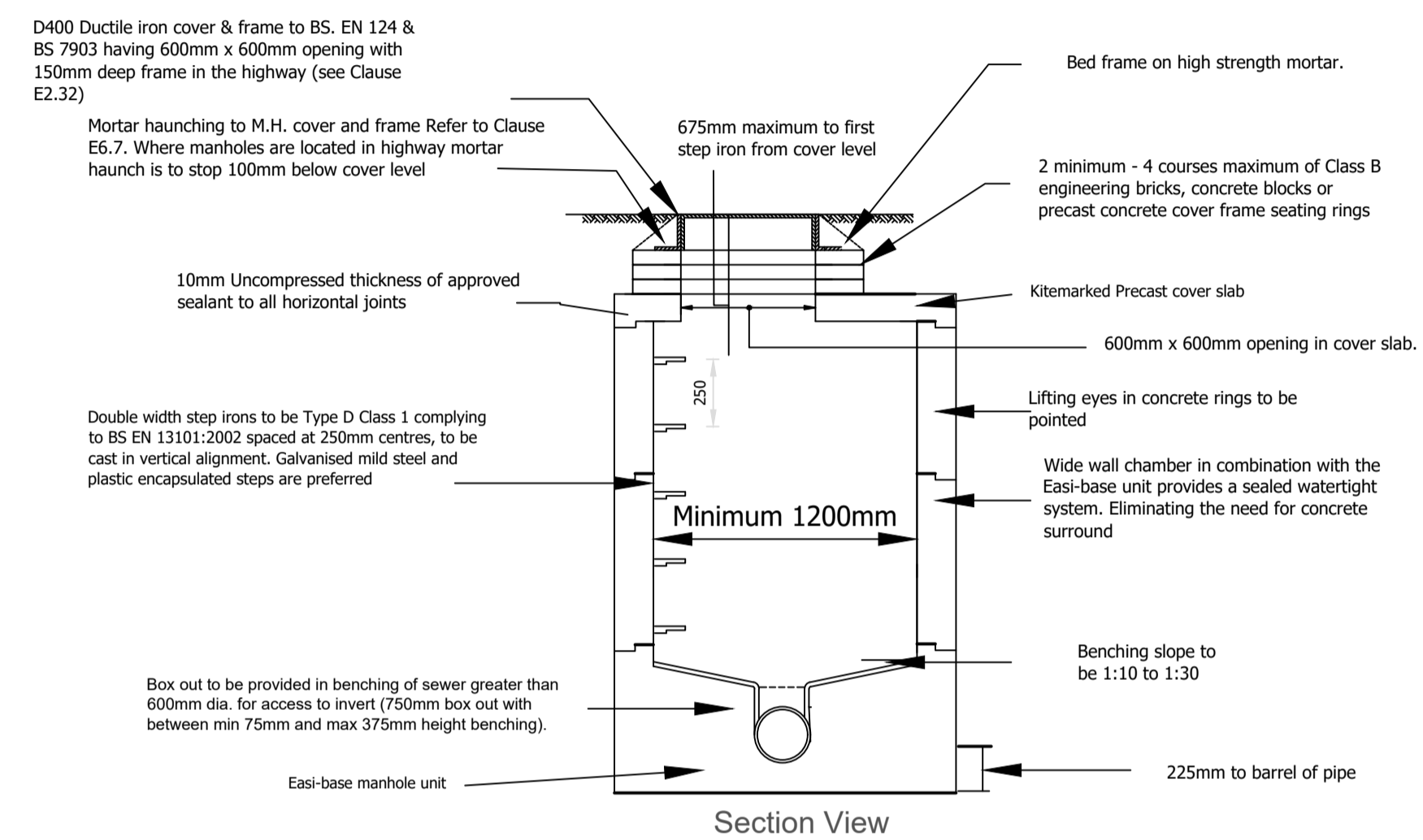


Manhole Diameters	
Nominal internal diameter of largest pipe in manhole (mm)	Minimum nominal internal dimension of manhole (mm)
Up to 300	1200
375-450	1350
500-700	1500
750-900	1800
Greater than 900	Specific detailed drawing required

PLEASE NOTE WHERE MANHOLES HAVE BACKDROP CONNECTIONS A FULL 150MM CONCRETE SURROUND TO THE MANHOLE IS REQUIRED

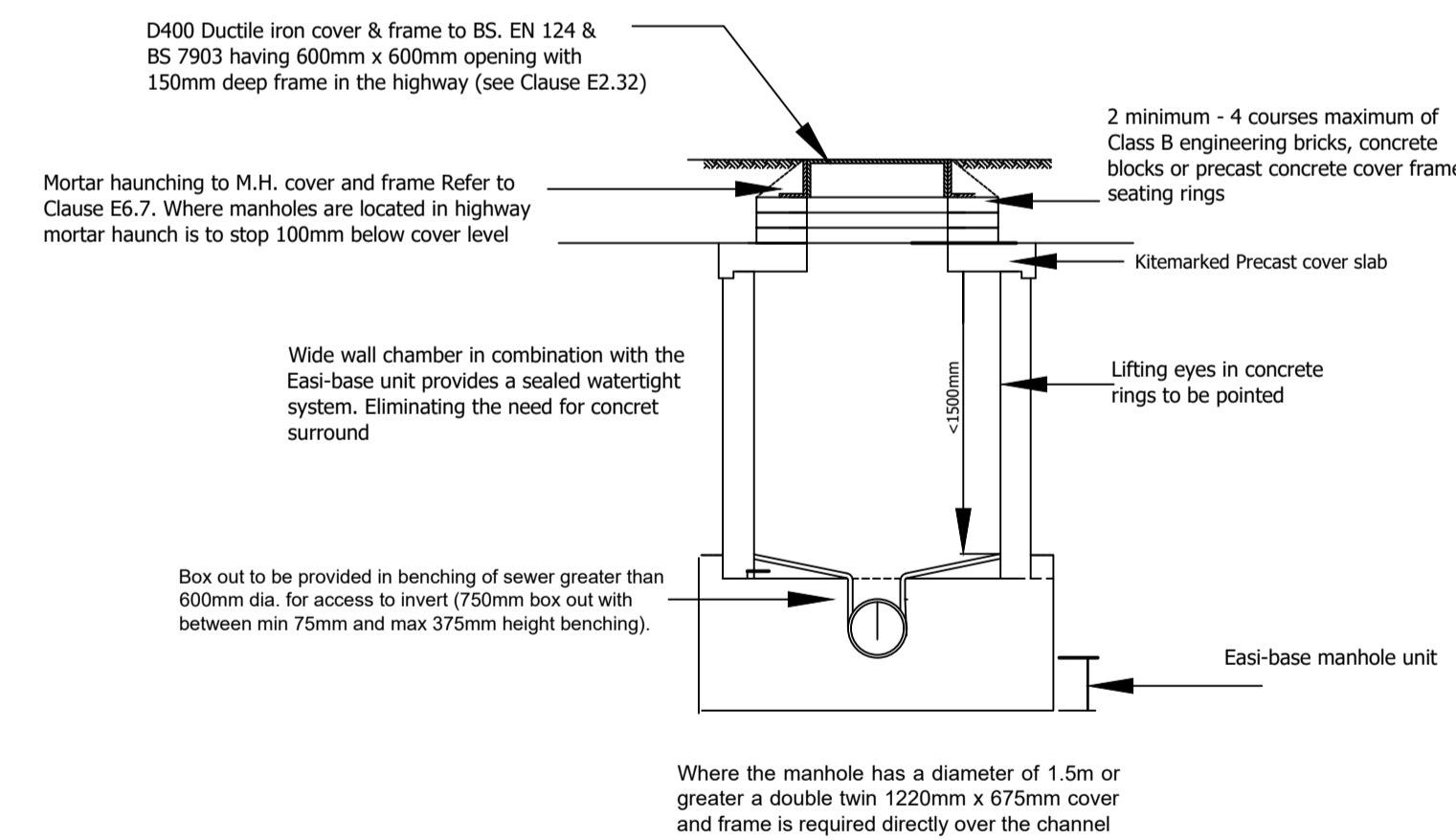
Typical Widewall Manhole Construction Type B Alternative Wide Wall Manhole Construction (Design and Construction Guidance)

Maximum depth from cover level to soffit of pipe 3000mm
Wide wall manhole ring construction

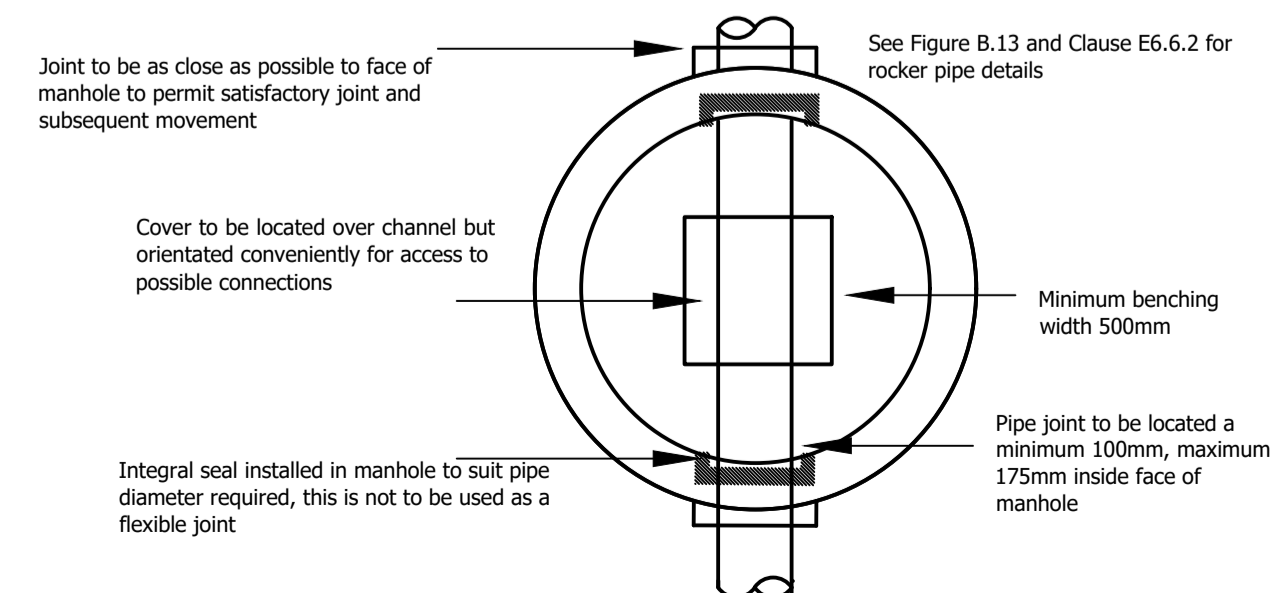


Shallow Manhole Construction Type C Alternative Wide Wall Manhole Construction (Design and Construction Guidance)

Construction of manhole where depth from soffit to cover level less than 1500mm

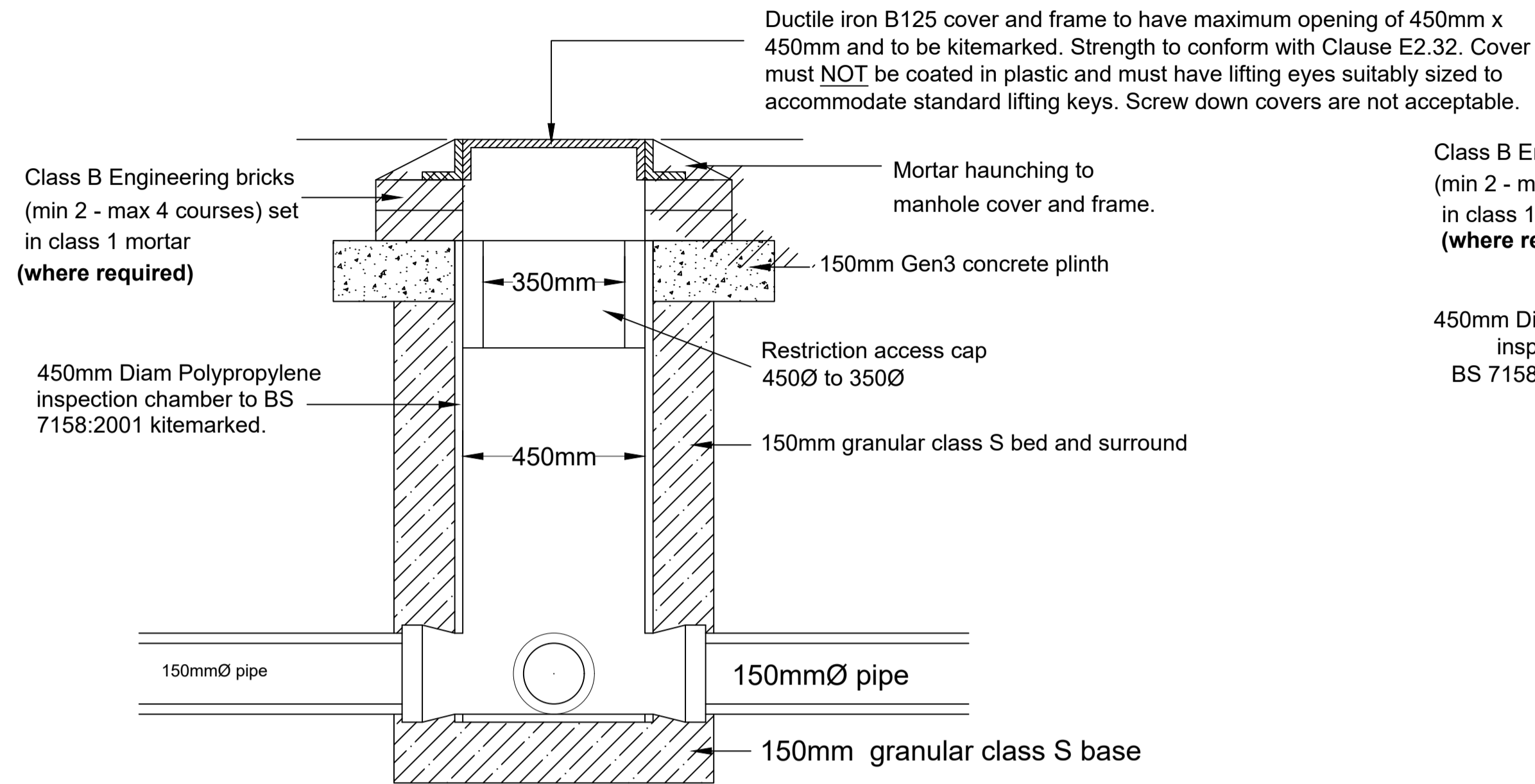


Shallow Widewall Manhole Plan View Type C (Design and Construction Guidance)



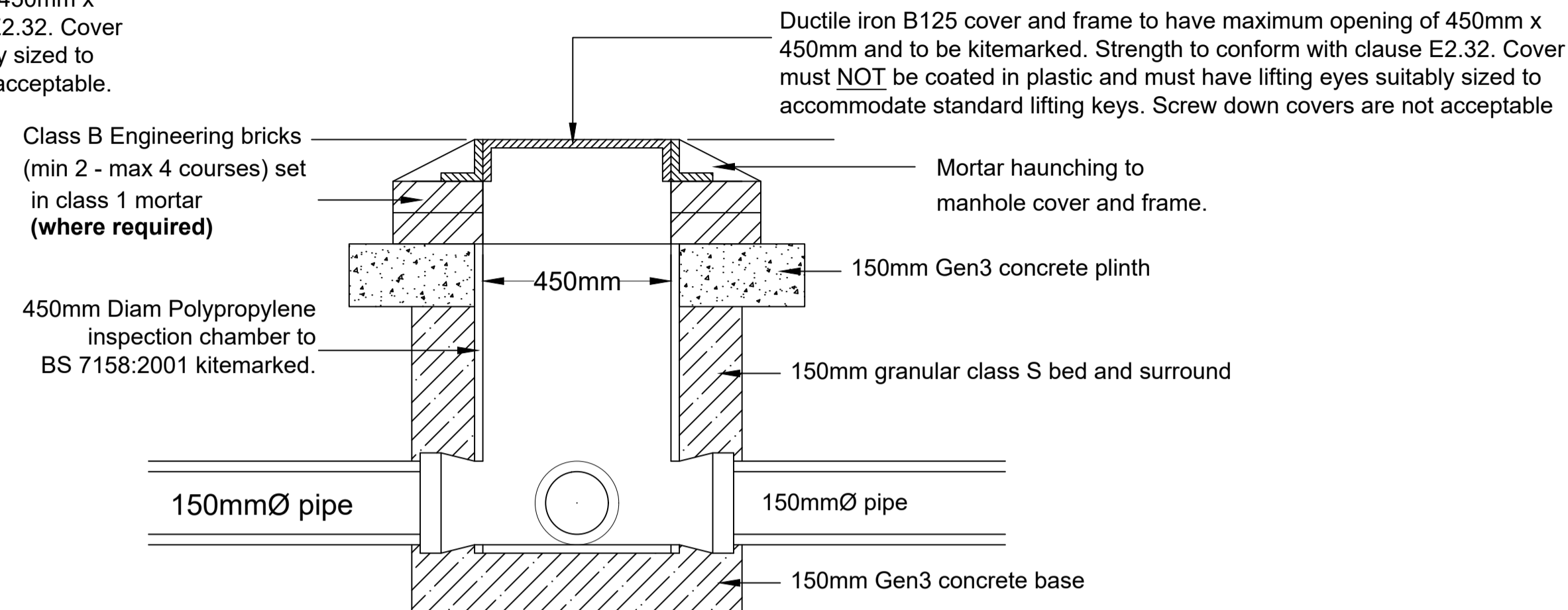
DEMARCATON CHAMBER LOCATED IN GARDENS DETAIL

Depth from cover level to invert level of pipe chamber greater than 1200mm (maximum depth 2000mm).
Maximum lateral drain diameter 150mm



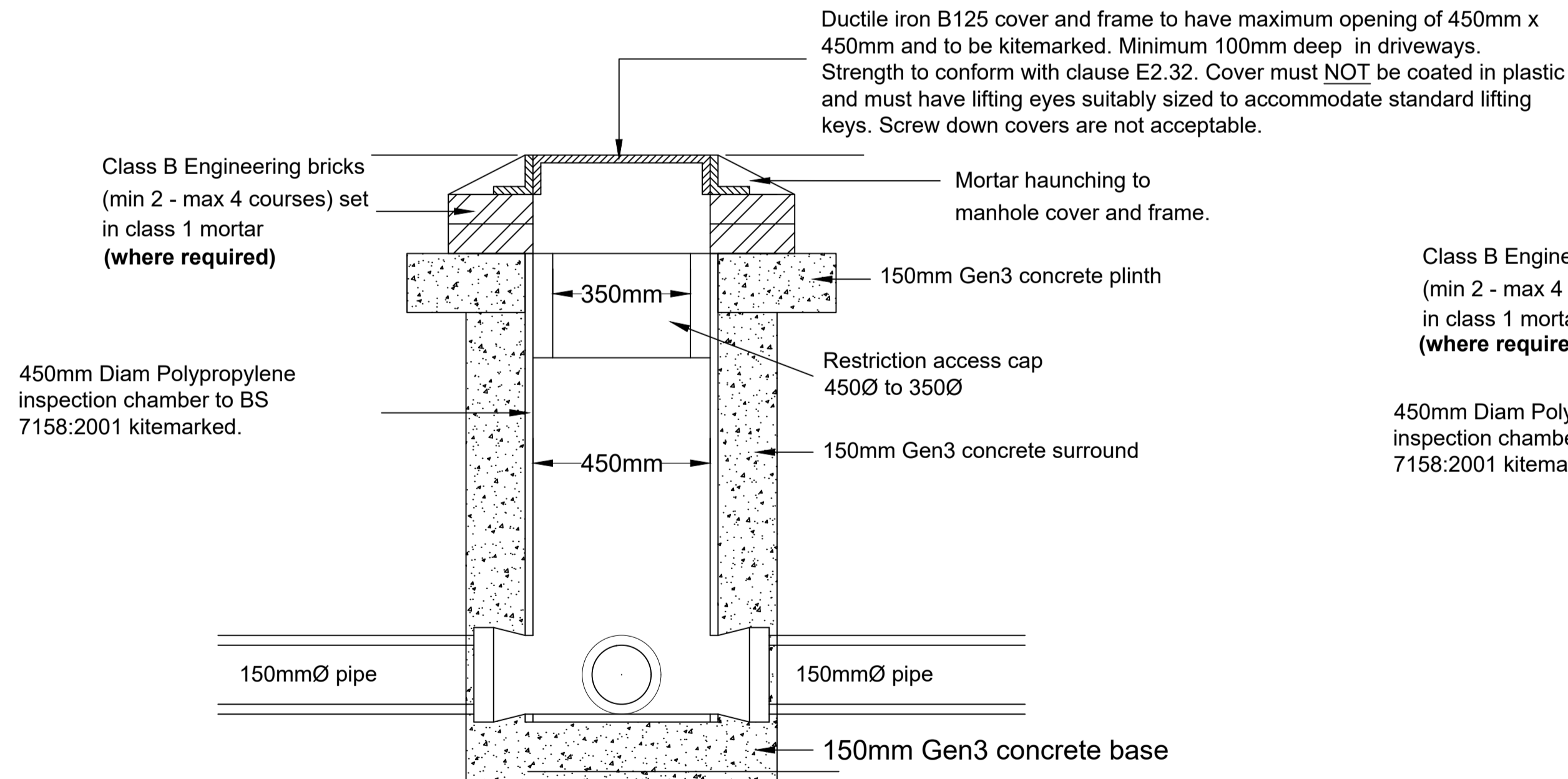
DEMARCATON CHAMBER LOCATED IN GARDENS DETAIL

Depth from cover level to invert level of pipe chamber less than 1200mm.
Maximum lateral drain diameter 150mm



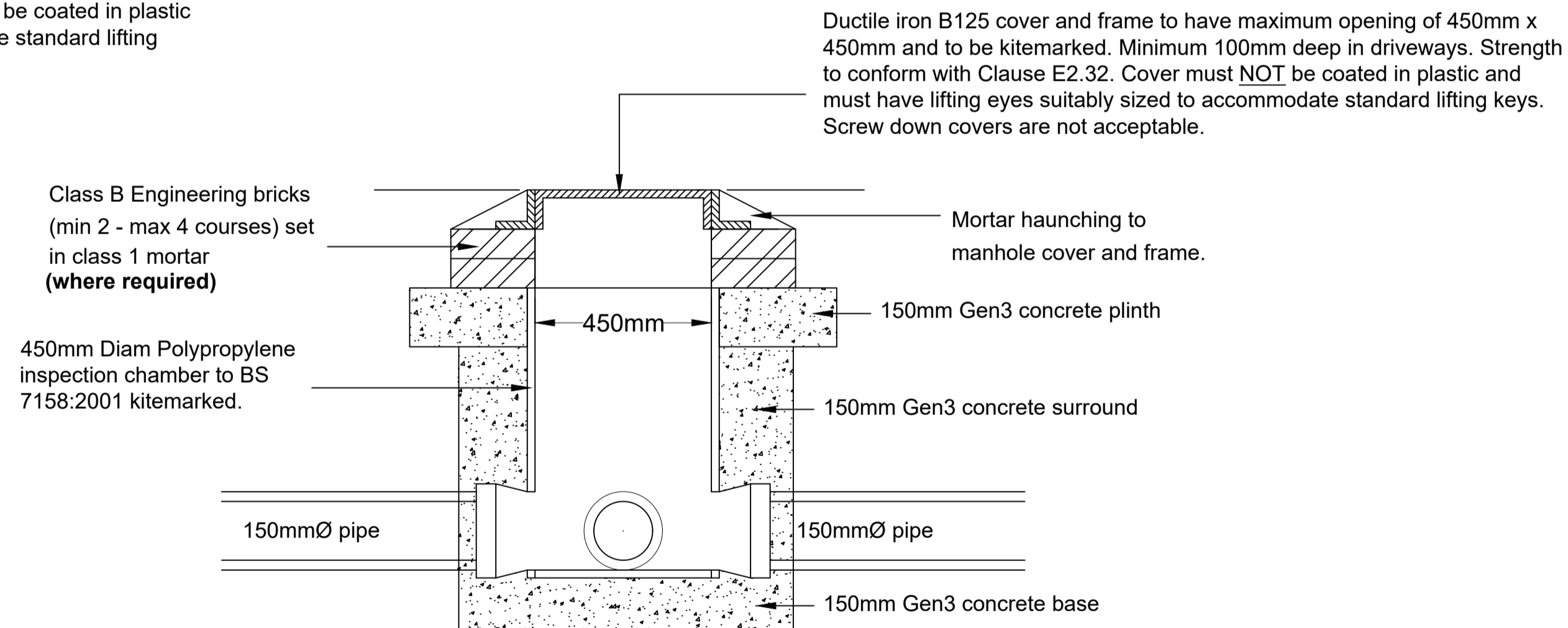
DEMARCATON CHAMBER LOCATED IN DRIVEWAY

Depth from cover level to invert level of pipe chamber greater than 1200mm (maximum depth 2000mm).
Maximum lateral drain diameter 150mm



DEMARCATON CHAMBER LOCATED IN DRIVEWAY

Depth from cover level to invert level of pipe chamber less than 1200mm.
Maximum lateral drain diameter 150mm



Pipes

Diameter (mm)	Gradient	
	Foul	S.W.
100	1:80	-
150	1:80	1:80

Vitrified clay pipes to BS EN 295 kitemarked.
Unplasticised PVC pipes to BS 4660:200 & BS EN 1401-1 kitemarked.
Structured Wall Unplasticid PVC pipes to WIS 4-35-01 kitemarked.

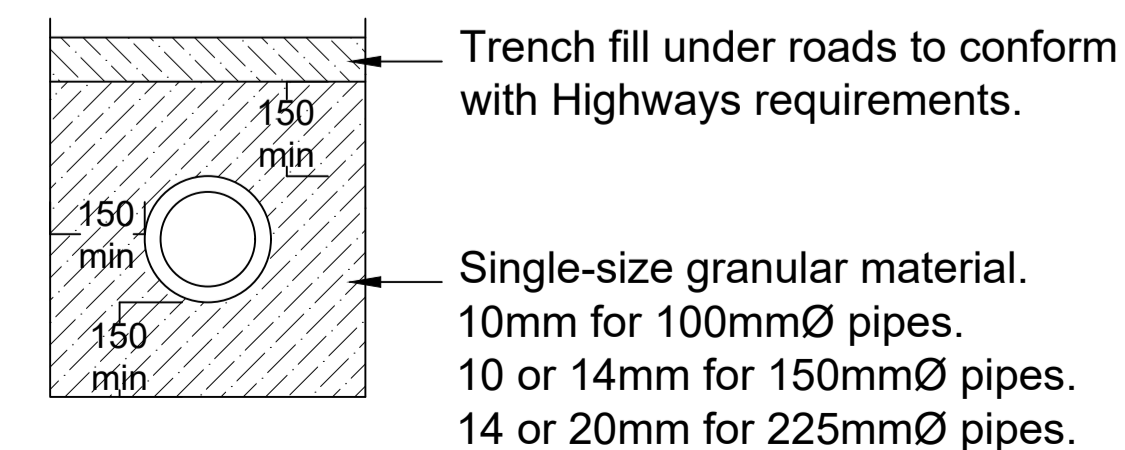
Demarcation chamber covers & frames

Surface	Class (Loading in kN)	Loading
Road	D400	Vehicle Impact
Footway & Driveway	B125	Occasional vehicle loading
Gardens	B125	Pedestrian/cyclist

Minimum depth of Lateral drains

Location	Minimum Depth (m)
Gardens	0.9
Agricultural/Open spaces	0.9
Driveways (trafficked areas)	1.2 (see detail)

LATERAL DRAIN BEDDING DETAIL



Yorkshire Water Notes

- All adoptable sewer works and material to be in accordance with the Design and Construction Guidance, The Relevant British/European and Yorkshire Water's Standards/Requirements/Addendum to the Mechanical and Electrical Specification and Kitemarked.
- Manhole covers shall/must have a clear opening of 600mm and shall be Class D400 to BS EN 124 with 150mm deep frames in highways.
- Filled ground must be filled and consolidated under the supervision and to the satisfaction of Yorkshire Water before any sewer works are carried out.
- Yorkshire Water is **not** obliged to accept filter drain/land drainage run-off into the public sewer network or adoptable drainage system (**directly or in-directly**). An alternative method of disposal of the land drainage run-off will therefore be required and you will have to liaise with the Local Authority, Land Drainage Section with regard to the disposal of the filter drain/land drainage run-off.
- Cover slabs must carry the BSI Kitemark or will be rejected by Yorkshire Water Inspector. Where the clear opening of the Kitemarked product is different to that of the cover and frame, a loading bearing slab should be fitted above the cover slab to bring the size down to 600mm x 600mm for the Yorkshire Water specified cover size. Please refer to Concrete Pipe Systems Association (CPSA) 'Technical Bulletin' issued Autumn 2004 for Kitemarked cover slab opening sizes.
- Sulphate resistant cement (C20-DC2) and precast concrete products must be used or a laboratory report provided proving that such precautions are not necessary.
- The adoptable sewers should be a minimum of 1m and manholes 0.5m from kerb faces and service margins.
- *Sewers must have 5 metres clearance from trees and hedges (please also refer to the Design and Construction Guidance for restrictions on tree planting adjacent to sewers)*.
- Sewers to be laid in Class "S" Bedding (150mm granular bed and surround). Where depth of cover to top of the sewer is less than 1.2m in highways and verges (or less than 900mm in non vehicular access areas) then a concrete slab should be provide above granular bed and surround.
- Bedding and backfill material to conform to the requirement of Water Industry Specification 4-08-02 (Table A2).
- The chamber size of manholes with more than one connection in them may need to be increased an increment to accommodate the connections and bends.
- Yorkshire Water policy is not to accept Type "C" brick manholes and 1050mm dia manhole rings. Instead it is preferred that you use a Type "B" manhole with 1200mm dia or 1500mm dia rings, with the opening sited over the channel where depth of cover to pipe soffit is 1 - 1.5m.
- Adoptable plastic sewer pipes to be BSI Kitemarked (certified to WIS 4-35-01 and BS/EN13476). Adoptable plastic sewer pipes to be laid in maximum 3 metre lengths unless there is a specific operational need to lay longer lengths. Plastic channel sections in manholes are not acceptable and Yorkshire Water would prefer clayware channel in manholes. We have found that plastic channels are difficult to set in concrete because they float and a satisfactory finish cannot be obtained on the benching.
- Where a B125 cover and frame has been approved, this **must not** be coated in plastic and must have lifting eyes suitably sized to accommodate standard lifting keys. Screw down covers are not acceptable.

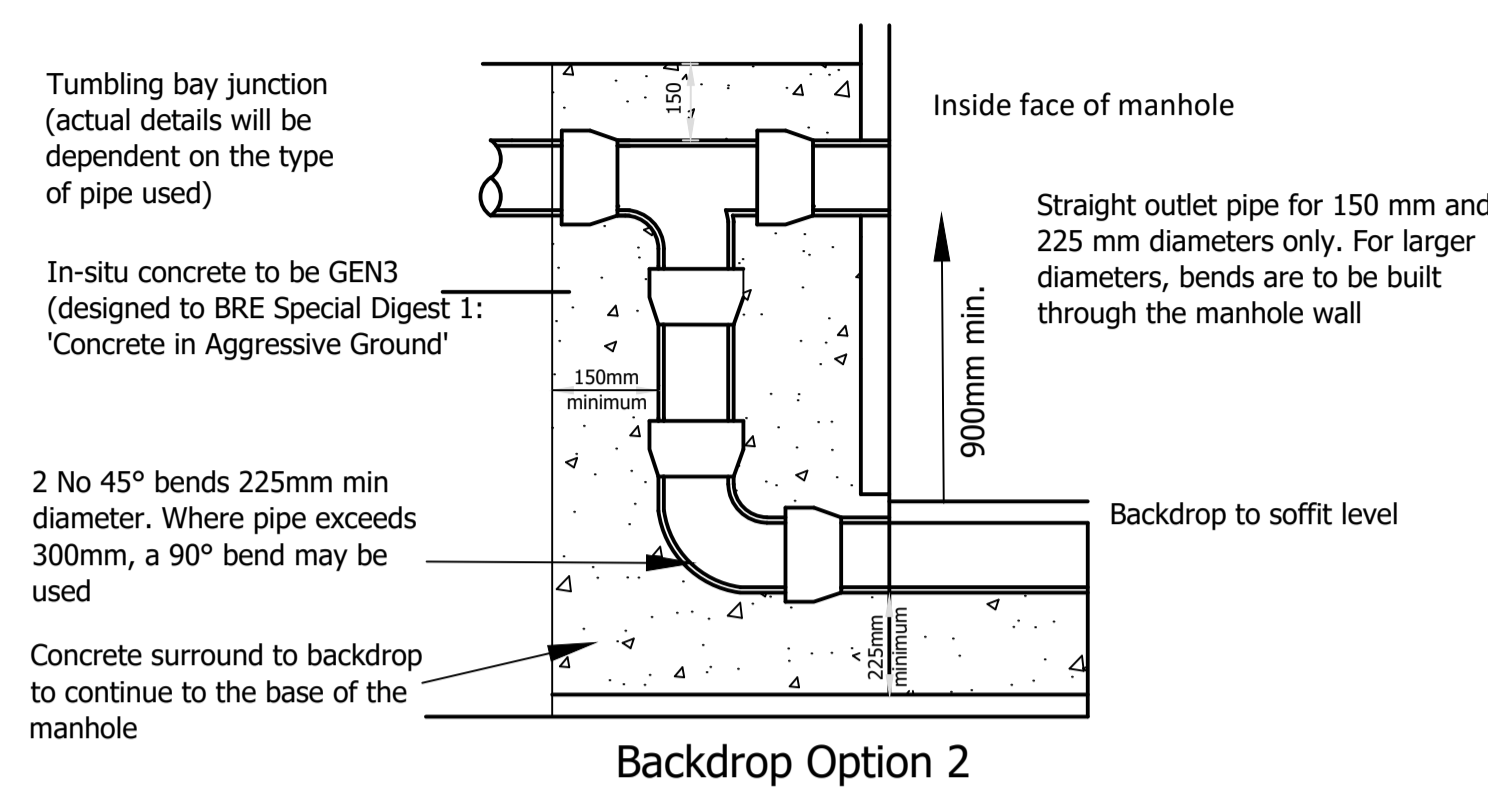
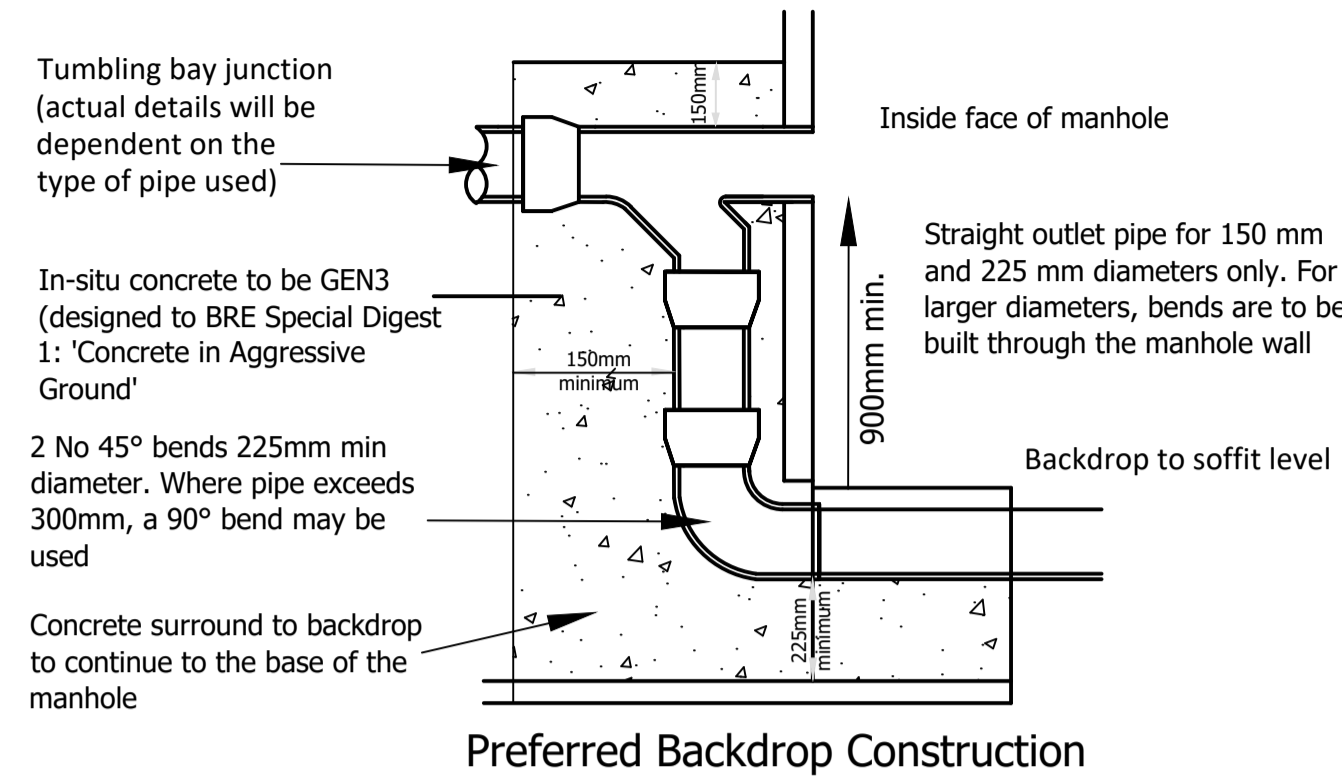
For all clause and table references please refer to the Design and Construction Guidance contained within the Code for Adoption

Developer Services

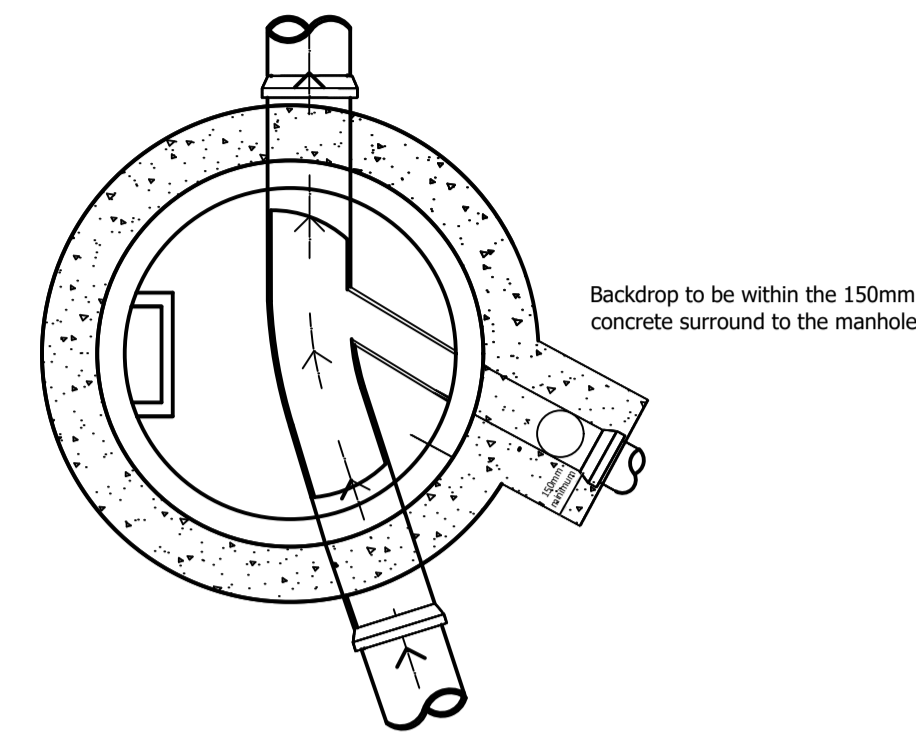
Title	Typical Demarcation Chambers
Drawing No	YW-DS-003
Revision	-
Date	April 2020



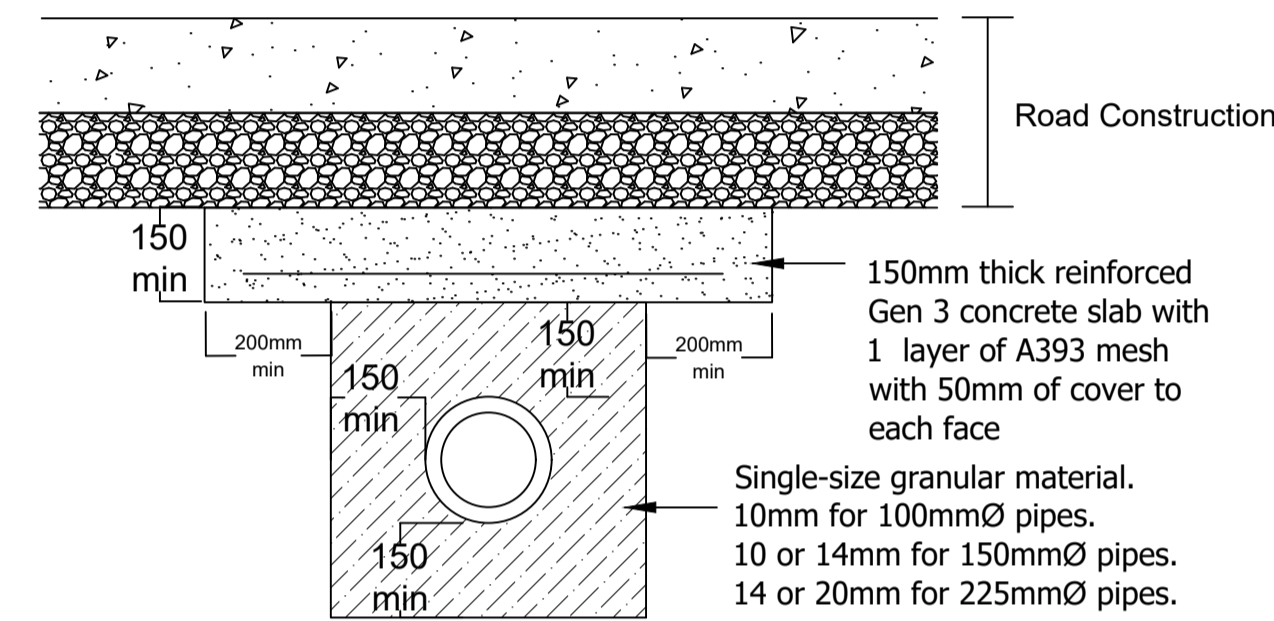
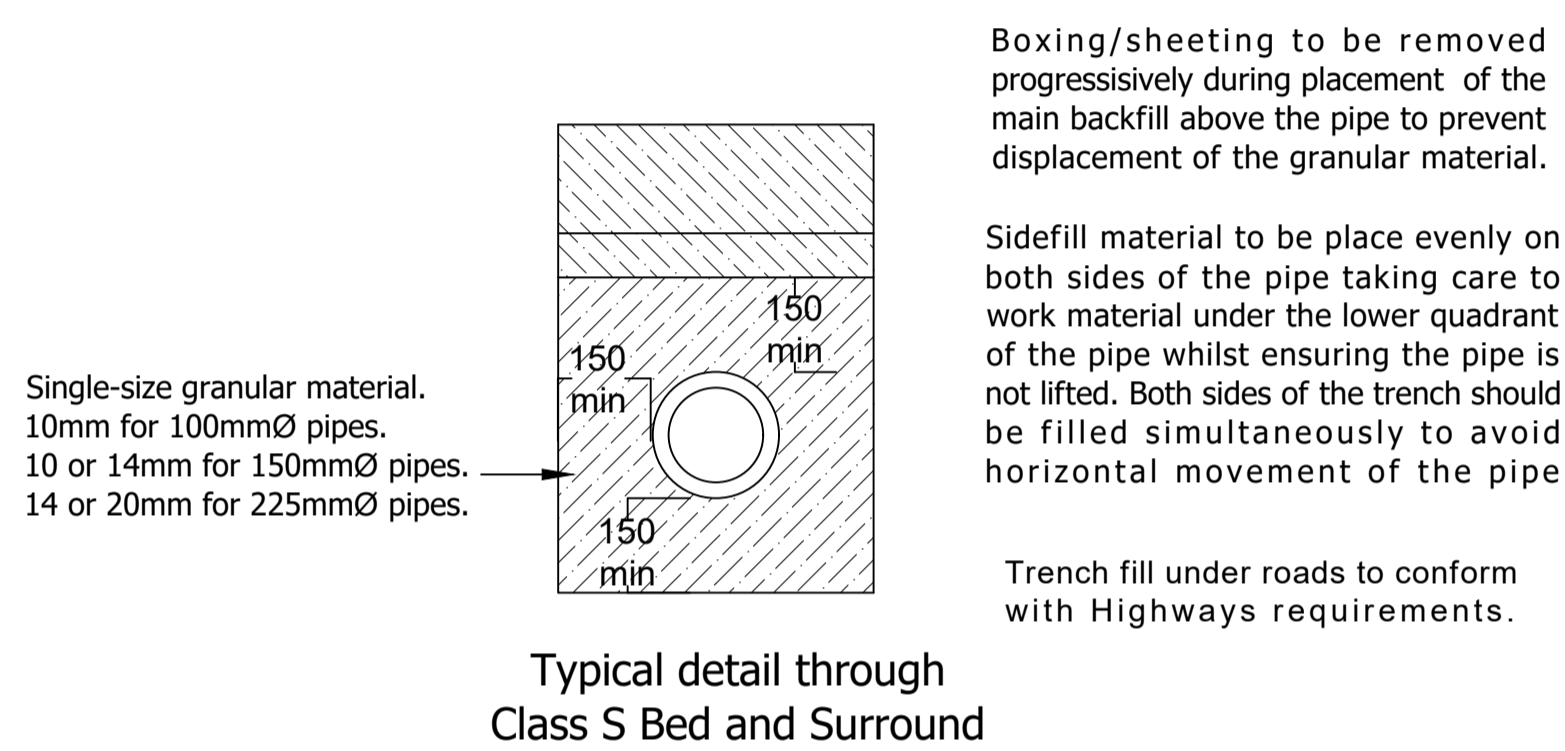
Backdrop Details



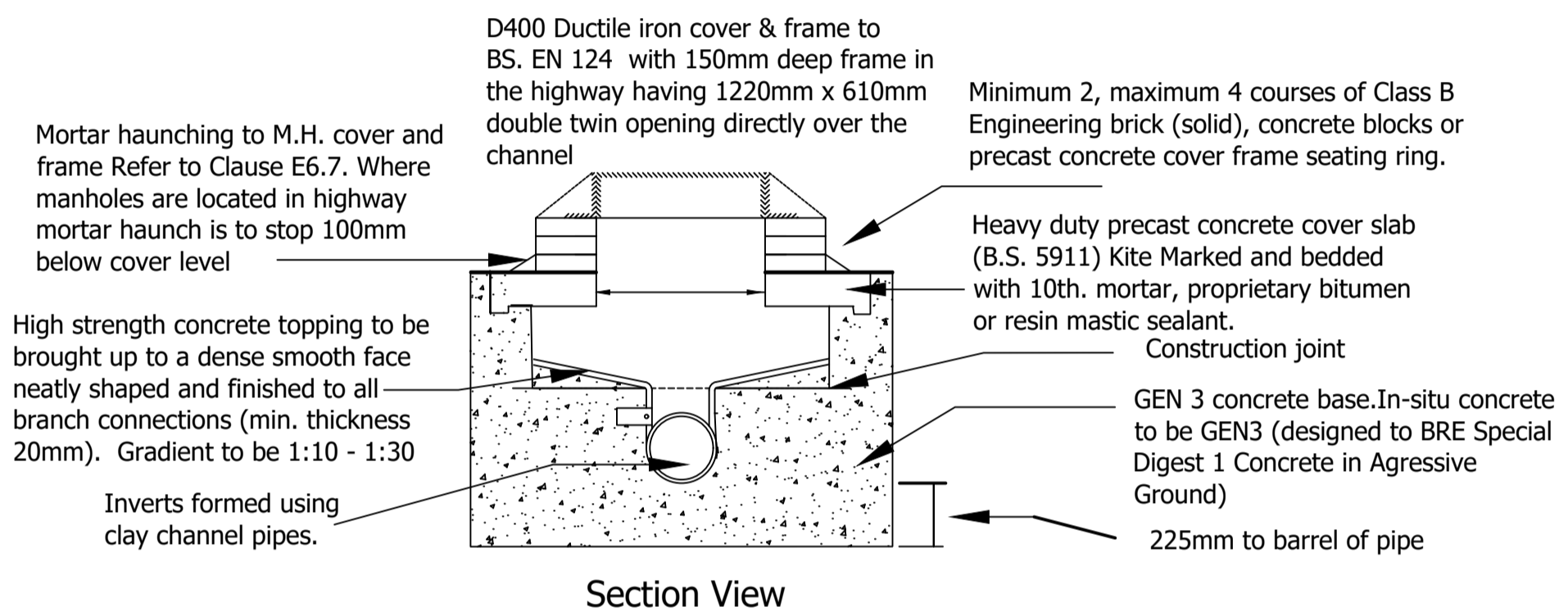
Backdrop Plan View



Pipe Surround Details

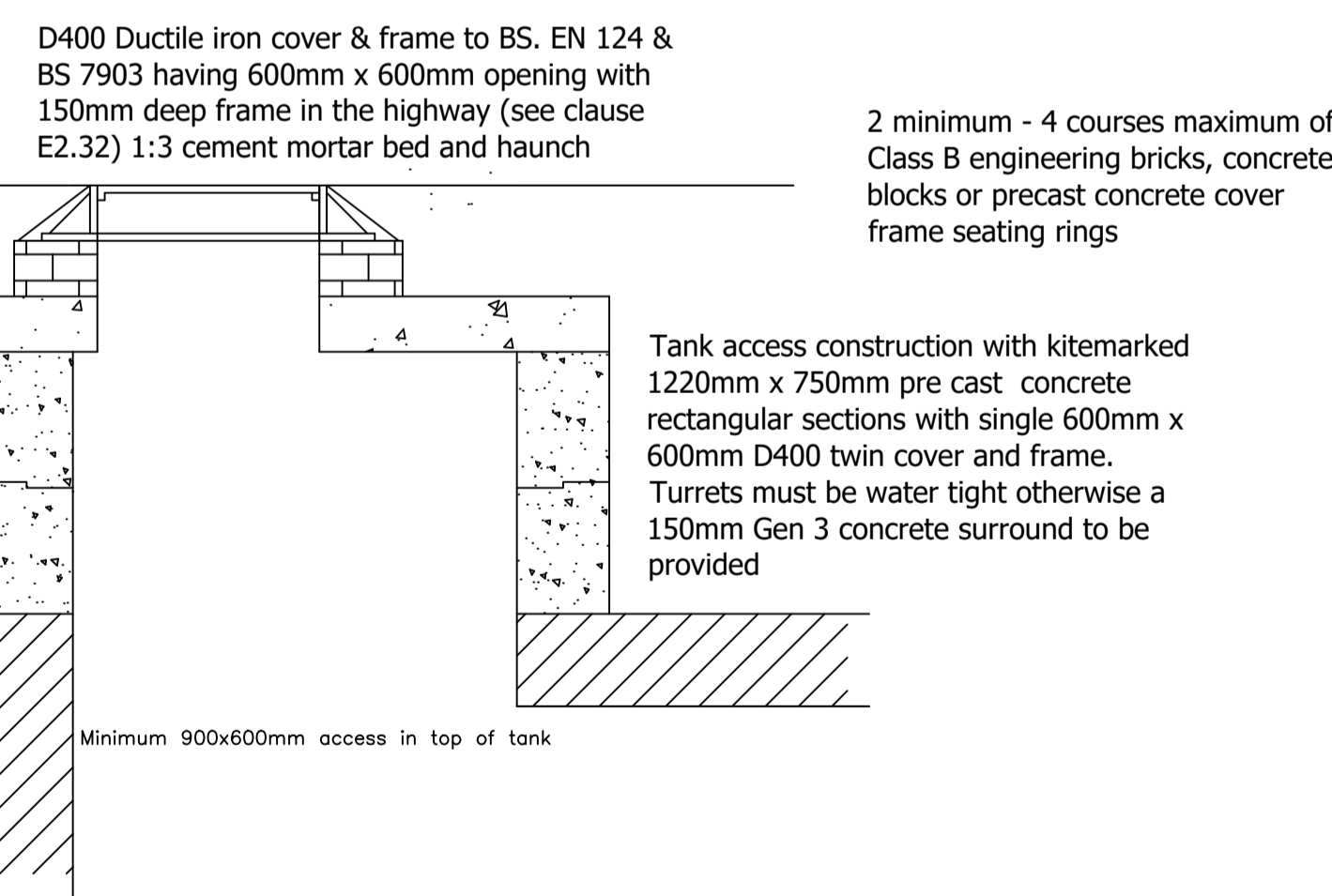


Shallow Manhole Detail

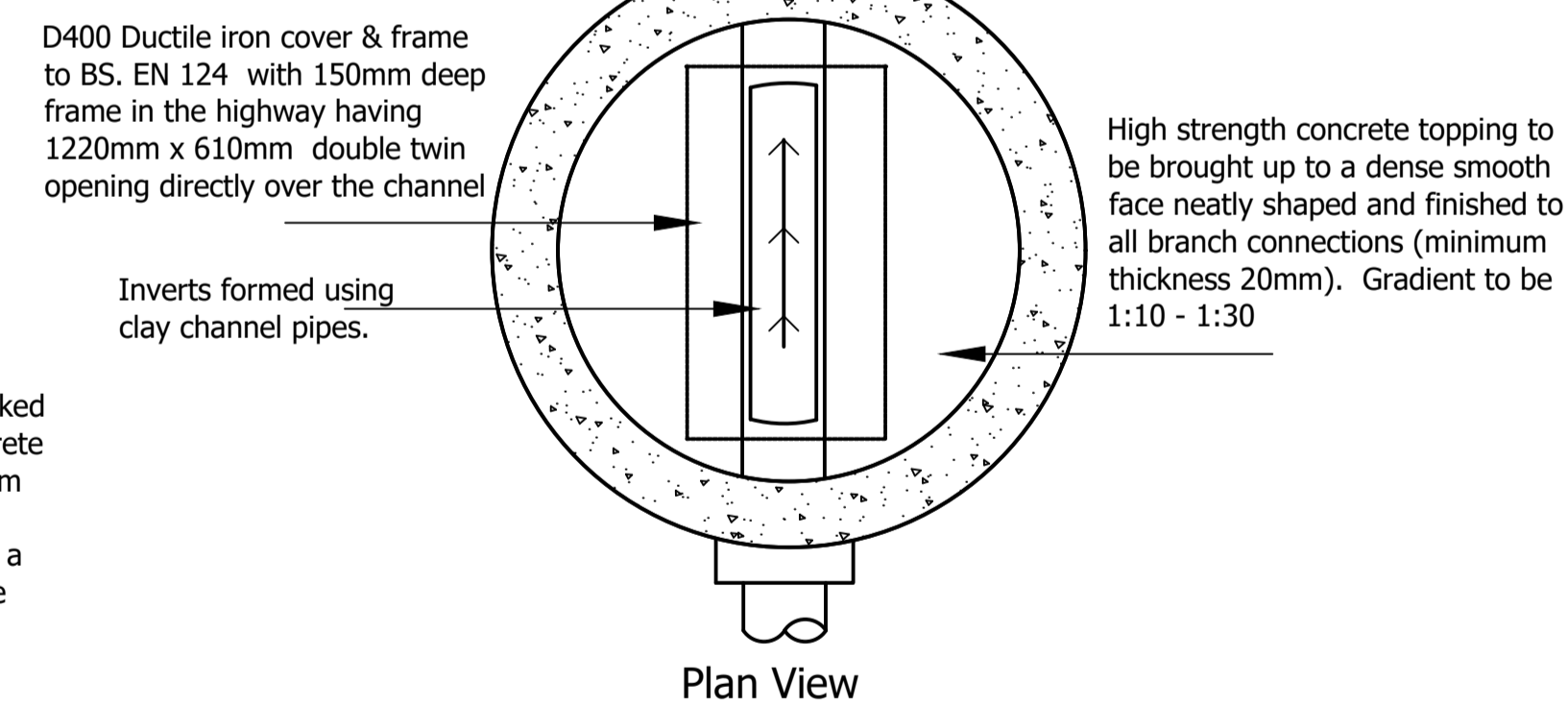
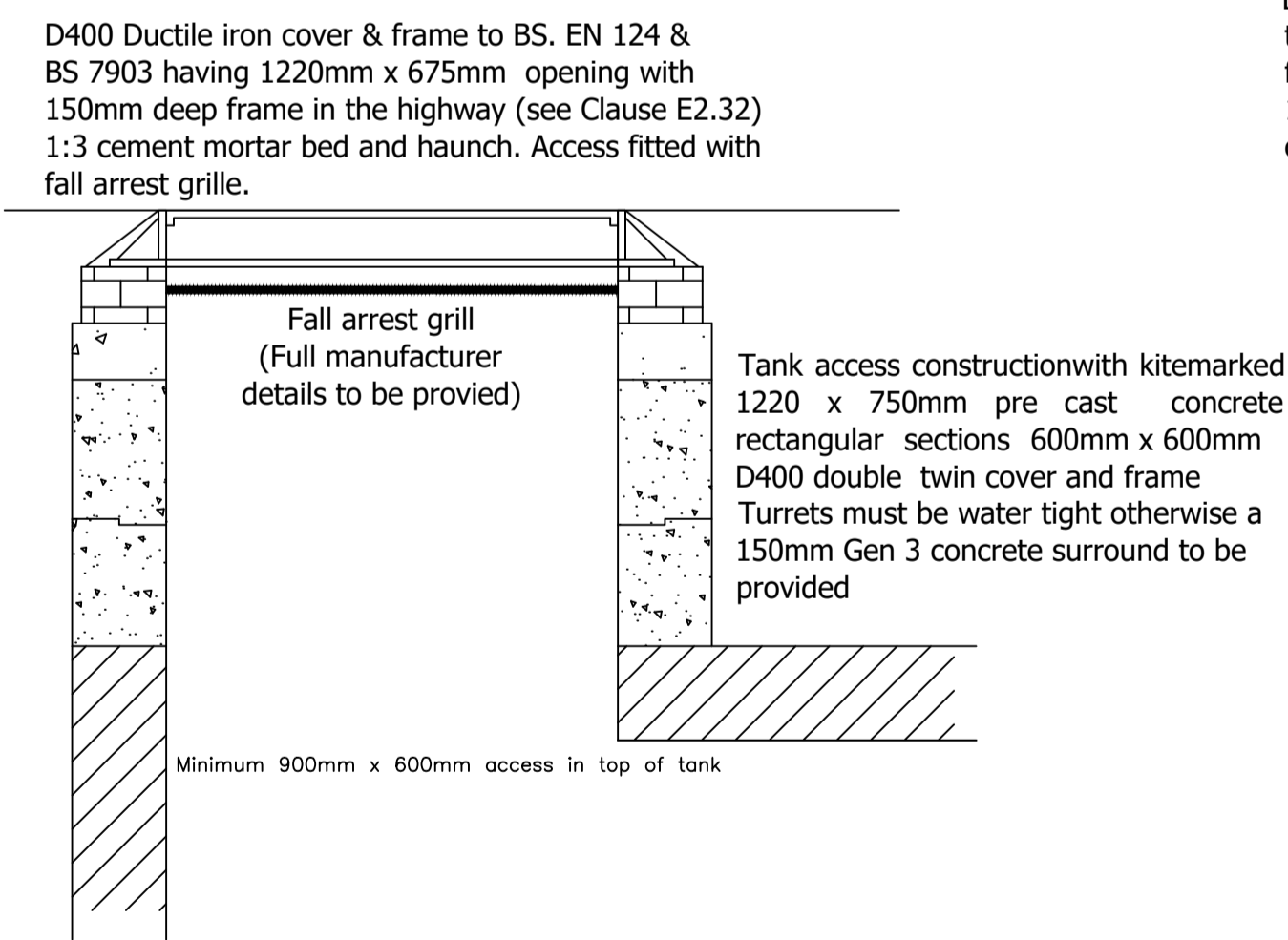


Tank Access Details

Standard Tank Access

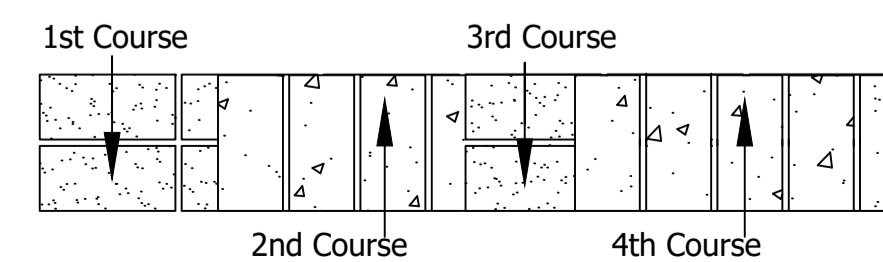
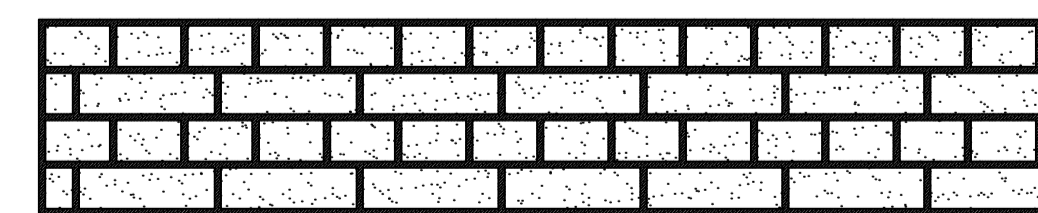


Access Over Tank Inlet/Outlet Points



Brickwork Detail

All brickwork to be minimum 2 - maximum 4 courses of Class B engineering bricks constructed in English Bond



Brickwork Plan View

Yorkshire Water Notes

- All adoptable sewer works and material to be in accordance with the Design and Construction Guidance, The Relevant British/European and Yorkshire Water's Standards/Requirements/Addendum to the Mechanical and Electrical Specification and Kitemarked.
- Manhole covers shall/must have a clear opening of 600mm and shall be Class D400 to BS EN 124 with 150mm deep frames in highways.
- Filled ground must be filled and consolidated under the supervision and to the satisfaction of Yorkshire Water before any sewer works are carried out.
- Yorkshire Water is **not** obliged to accept filter drain/land drainage run-off into the public sewer network or adoptable drainage system (**directly or indirectly**). An alternative method of disposal of the land drainage run-off will therefore be required and you will have to liaise with the Local Authority, Land Drainage Section with regard to the disposal of the filter drain/land drainage run-off.
- Cover slabs must carry the BSI Kitemark or will be rejected by Yorkshire Water Inspector. Where the clear opening of the Kitemarked product is different to that of the cover and frame, a loading bearing slab should be fitted above the cover slab to bring the size down to 600mm x 600mm for the Yorkshire Water specified cover size. Please refer to Concrete Pipe Systems Association (CPSA) 'Technical Bulletin' issued Autumn 2004 for Kitemarked cover slab opening sizes.
- Sulphate resistant cement (C20-DC2) and precast concrete products must be used or a laboratory report provided proving that such precautions are not necessary.
- The adoptable sewers should be a minimum of 1m and manholes 0.5m from kerb faces and service margins.
- Sewers must have 5 metres clearance from trees and hedges (please also refer to the Design and Construction Guidance for restrictions on tree planting adjacent to sewers).
- Sewers to be laid in Class "S" Bedding (150mm granular bed and surround). Where depth of cover to top of the sewer is less than 1.2m in highways and verges (or less than 900mm in non vehicular access areas) then a concrete slab should be provided above granular bed and surround.
- Bedding and backfill material to conform to the requirement of Water Industry Specification 4-08-02 (Table A2).
- The chamber size of manholes with more than one connection in them may need to be increased an increment to accommodate the connections and bends.
- Yorkshire Water policy is not to accept Type "C" brick manholes and 1050mm dia manhole rings. Instead it is preferred that you use a Type "B" manhole with 1200mm dia or 1500mm dia rings, with the opening sited over the channel where depth of cover to pipe soffit is 1 - 1.5m.
- Adoptable plastic sewer pipes to be BSI Kitemarked (certified to WIS 4-35-01 and BS/EN13476). Adoptable plastic sewer pipes to be laid in maximum 3 metre lengths unless there is a specific operational need to lay longer lengths. Plastic channel sections in manholes are not acceptable and Yorkshire Water would prefer clayware channel in manholes. We have found that plastic channels are difficult to set in concrete because they float and a satisfactory finish cannot be obtained on the benching.
- Where a B125 cover and frame has been approved, this **must not** be coated in plastic and must have lifting eyes suitably sized to accommodate standard lifting keys. Screw down covers are not acceptable.

For all clause and table references please refer to the Design and Construction Guidance contained within the Code for Adoption

Developer Services

Title	Typical Construction Details
Drawing No	YW-DS-004
Revision	-
Date	April 2020

