Queensberry DESIGN LIMITED

Civil, Structural, Architectural & Geotechnical Consultants

Approval in Principle

Concrete Manholes > 1800mm

Strata
Weatgate, Cleckheaton
QD - 1776

Rev

June 2025

Office: Unit 5, The Staithes, The Watermark, Metro Riverside, Gateshead, NE11 9SN

Issue Sheet

Prepared By	D.J. Phillipson Structural Associate
Reviewed By	D. Rogers Structural Engineering Director
Issue	- (20/06/2025) – Initial Issue

Design Brief

An AIP has been requested by Kirklees Council for the manholes greater than 1800mm diameter sitting in the adopted roads. Queensberry Design Ltd (QDL) have prepared an AIP Cat 0 and Design and Check Certificate for this purpose. This is presented in this document.

Contents

Name of Project	**Westgate, Cleckheaton**
Name of Bridge or Structure	**Concrete Manholes over 1.8m**
Structure Ref No	**N/A**

1. HIGHWAY DETAILS

1.1 Type of Highway

Residential Estate Road

1.2 Permitted Traffic Speed [1]

30 mph

1.3 Existing Restrictions [2]

None.

2. SITE DETAILS

2.1 Obstacles Crossed

Proposed Precast and Insitu concrete manhole and Precast Concrete pipe for surface water

3. PROPOSED STRUCTURE

3.1 Description of Structure and working life

The proposed structures are a precast/insitu concrete manhole which are to be used for surface water. The internal diameters of the manholes are 1.8m and 2.1m and the depth to invert is a maximum 3.45m for the 1.8m and maximum 2.66m for the 2.1m. It is designed to have a working life category 5 (120 years) in accordance with BS EN 1990:2002 NA and will be responsibility of Yorkshire Water on completion.

3.2 Structural Type

Precast/Insitu Concrete Manhole

3.3 Foundation Type

The precast/insitu concrete manholes will be sat on the remediated ground as the remediation strategy by Lithos, Number 3043/4, dated March 2021, clause 7.18.1

3.4 Span Arrangements

Manholes of internal diameter 1.8m and 2.1m.

3.5 Articulation Arrangements

N/A.

3.6 Proposed classes/levels

3.6.1 Consequence class 2 (see BS EN 1990-2002+A1-2005 B3.1)

Consequence class to be CC2 (medium consequence for loss of human life, economic, social or environmental consequences considerable)

3.6.2 Reliability class 2 (see BS EN 1990-2002+A1-2005 B3.2/B3.3)

Reliability class is to be associated with the consequence class detailed in 3.6.1.
Reliability class to be RC2.
Factor for actions to be used KFI = 1,0

3.6.3 Inspection level 2

Inspection Level 2 – Normal inspection (inspection in accordance with the procedures of the inspecting organisation).

3.7 Types of road restraint systems

N/A.

3.8 Proposed arrangements for maintenance and inspection

3.8.1 Traffic management

Single lane access to the site will be maintained under appropriate traffic management.

3.8.2 Access

Access will be from manhole access covers, inspection and maintenance will be in a confined space.

3.8.3 General Maintenance/Drainage

The systematic and cyclical inspection and structural assessment of this structure shall be in full compliance with the “Well-managed highway infrastructure 2016” or any corresponding superseding document thereafter.

3.9 Environment and Sustainability.

N/A

3.10 Materials and Finishes

Item	**Material**	**Finish**
Precast reinforced chamber rings	Grade 44/55 Precast Concrete – Mix Ref Telford BC201 Insitu grade RC32/40 Exposure class XC3/4, XD2, XF4	Top of exposed joint face: steel float finish, U3 Joint face: struck from wooden mould, F1 All faces: struck from steel mould, F2
MH cover/ frame	D400	
Item	**Material**	**Finish**

Precast concrete pipes	Grade C50/60 Precast Concrete – Strength Class 120.	Top of exposed joint face: steel float finish, U3 Joint face: struck from wooden mould, F1 All faces: struck from steel mould, F2
Reinforcement	High Yield Reinforcement	Grade 500B or C to BS4449
Waterproofing	All concrete surfaces in contact with soil, backfill or bedding to be waterproofed in accordance with MCHW1 clauses 2001 & 2007.	NA

3.11 Risks and hazards considered [3]

The design will be undertaken by a specialist manufacturer who are aware of their duties as a Designer under Construction (Design & Management) Regulations 2015. In addition to the manholes and pipes themselves, the following risks have been considered:

Fall from height – Cannot be designed out during construction, to be managed by competent contractor in accordance with normal good site practice – tool box talks, staff training etc.
This is considered to be a normal hazard however that a competent contractor would ordinarily be aware of. N/A post-construction.

Unsuitable ground conditions – A geotechnical investigation (GI) has been carried out at the site and the results of the investigations will be used to generate the design parameters for the manholes.

Groundwater – GI shows limited water strikes within anticipated depth of the excavation.

Existing services – None

Vibration effects – No significant sources of vibration other than normal construction plant.

Construction noise – Normal construction hazard.

Pedestrians – Construction site subject to designated routes for operatives and no public access.

Heavy elements, cranage – Designer's drawings will give details of lifting requirements of heavy elements, including lifting eyes, tonnage etc. such that a competent contractor can undertake an appropriate assessment of the cranage including the potential requirement for any working platform..

3.12 Working life and estimated cost of proposed structure together with other structural forms considered, including where appropriate proprietary manufactured structure, and the reasons for their rejection including comparative whole life costs with dates of estimates.

The working life of the structure is to be 120 years (working life category 5 in accordance with BS EN 1990:2002).

No other forms of construction were considered.

The sizing of manholes has been carried out in accordance with Sewerage Sector Guidance Appendix C to provide the minimum benching requirements.

The pipe sizes are determined by modelling, which is designed for the impacts of climate change following National Planning Policy Framework and the local standards of Kirklee's council. Pipe sizes and then subsequent manhole sizes have been designed to be as small as possible while working within guidance/mandatory requirements.

Yorkshire Water, who will be owning and maintaining the proposed sewer network, have approved the pipe and manhole sizing for adoption; likewise, Kirklees Lead Local Flood Authority have assessed the modelling and approved the drainage scheme.

3.13 Proposed arrangements for construction

3.13.1 Traffic management

None.

3.13.2 Service diversions

None required

3.13.3 Interface with existing structures

Connects to precast Concrete Outfall at each end

4. DESIGN CRITERIA

4.1 Actions

4.1.1 Permanent actions

All permanent actions as outlined in BS EN 1991-1-1 and the national annex.
Backfill density to be 16-20kN/m³
Concrete density to be 25kN/m³ Surfacing density to be 22kN/m³

4.1.2 Snow, wind and thermal actions

All permanent actions as outlined in BS EN 1991-1-3 and the National Annex..
Buried structure – Snow, Wind and Thermal actions not applicable.

4.1.3 Actions relating to normal traffic under AW regulations and C&U regulations:

All permanent actions as outlined in BS EN 1991-2 and the National Annex. To be LM1 and LM2

4.1.4 Persistent actions relating to General Order Traffic under STGO regulations:

N/A.

4.1.5 Footway or footbridge persistent actions:

All permanent actions as outlined in BS EN 1991-2 and the National Annex. To be LM4

4.1.6 Actions relating to Special Order traffic, provision for exceptional abnormal indivisible loads including location of vehicle track on deck cross-section

N/A

4.1.7 Accidental actions N/A.

4.1.8 Actions during construction

Adverse actions during execution as outlined in BS EN 1991-1-6 and the National Annex.

4.1.9 Any special actions not covered above

None.

4.2 Heavy or high load route requirements and arrangements being made to preserve the route, including any provision for future heavier loads or future widening:

Not applicable
.

4.3 Minimum headroom provided

Not applicable.

4.4 Authorities consulted and any special conditions required

Kirklees Council - Highways

4.5 Standards and documents listed in the Technical Approval Schedule

Documents referred to in the design of the structures are contained within the Technical Approval Schedule (TAS) in Appendix A of the AIP.

4.6 Proposed departures from Standards given in 4.5.1 and 4.5.2.

None

4.7 Proposed methods for dealing with aspects not covered by Standards in 4.5.

N/A

5. STRUCTURAL ANALYSIS

5.1 Methods of analysis proposed for superstructure, substructure and foundations

The reinforced concrete Pipes will be considered as a gravity structure analysed elastically with simple load distribution.

5.2 Description and idealised structure to be used for analysis

The reinforced concrete Pipes will be analysed as a gravity structure to resist lateral and vertical loads derived in accordance with section 4.1 above.

5.3 Assumptions intended for calculation of structural element stiffness

Calculations of the structural element stiffness will be based upon the gross cross sectional areas.

5.4 Proposed earth pressure coefficients (K_a, K_0, or K_p) to be used in the design of earth retaining elements

It is proposed to backfill around the pipe with Class S pipe bedding and over the pipe with selected well-graded free draining granular fill 6N in accordance with the specification for highways works series 600. For the design of the Pipe walls, no objective test data is available for the 'fill' therefore a representative effective stress value for Ø' internal friction of 35º is assumed.
This results in

i)	Earth Pressure at rest coefficient (Ko)	=	0.50
ii)	Active Pressure coefficient (Ka)	=	0.27

6. GEOTECHNICAL CONDITIONS

6.1 Acceptance of recommendation of the Section 8 of the Geotechnical Report to be used in the design and reasons for any proposed changes

Yes a ground investigation Report has been commissioned and has been previously submitted

6.2 Geotechnical Report Highway Structure Summary Information (Form C) [7]

The Precast Concrete Pipes are to be sat on 375mm deep granular bed, from the ground investigation this will be sat on Firm clays.

6.3 Differential settlement to be allowed for in the design of the structure

All Pipes to be founded on the same strata, therefore differential settlement is not anticipated.

6.4 If the Geotechnical Report is not yet available, state when the results are expected and list the sources of information used to justify the preliminary choice of foundations [8]

N/A

7. CHECKING

7.1 Proposed Category

Category 0

7.2 If Category 3, name of proposed Independent Checker Not Applicable

7.3 Erection proposals or temporary works for which an independent check will be required, listing parts of the structure affected with reasons for recommending an independent check

N/A

8. DRAWINGS AND DOCUMENTS

8.1 List of Drawings (including numbers) and documents accompanying the submission [9]

QD1776-03-01 L – Engineering Layout
QD1776-05-01 K – Longsections Sheet 1
QD1776-05-02 J – Longsections Sheet 2
QD1776-05-03 M – Manhole Schedules
QD1776-08-01 F – Adoptable Drainage
Appendix A Technical Approval Schedules
Certificate of Conformity - F. P. McCann DN1350mm-DN3000mm Diameter Concrete Manholes,
BSI Kitemark Certificate KM 12033

9. THE ABOVE IS SUBMITTED FOR ACCEPTANCE

Signed 

Name D. J. Phillipson
Design Team Leader

Engineering Qualifications[10] BEng(Hons), CEng, M.I. StructE

Name of Organisation Queensberry Design Limited

Date 20/06/2025

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10. THE ABOVE IS REJECTED/AGREED SUBJECT TO THE AMENDMENTS AND CONDITIONS SHOWN BELOW[11]

Signed _____

Name _____

Position held _____

Engineering Qualifications[10] _____

TAA _____

Date _____

Notes

1. *For a bridge give over and or under.*
2. *Include weight, width and any environmental restriction on or adjacent to the bridge.*
3. *e.g. Risks and hazards required to be considered under CDM such as construction methods, future demolition, jacking for bearing replacement.*
4. *e.g. HA Loading*
5. *e.g. HB or SV Loading*
6. *Include the following as applicable:*
   a) Gross weight of vehicle in tonnes and vehicle No
   b) Axle load and spacing (longitudinally and transversely)
   c) Air cushion in tonnes over area applied in m x m
   d) Single or twin tyres and wheel contact areas
7. *Include the Geotechnical Report Highway Structure Summary Information Form C listing relevant design parameters*
8. *When results of the ground investigation become available, an addendum to the AIP, covering section 6, shall be submitted to the TAA. The addendum shall have its own sections 8, 9 and 10 to provide a list of drawings, documents and signatures*
9. *Include without limitation*
   a) Technical Approval schedule (TAS)
   b) General Arrangement Drawing
   c) Relevant extracts from the Geotechnical Report (Section 8), Inspection Report, Intrusive Investigation Report, Previous Assessment Report (or reference for Report)
   d) Departures from Standards
   e) Methods of dealing with aspects not covered by Standards
   f) Relevant correspondence and documents from consultations
10. *CEng, MICE, MIStructE or equivalent*
11. *AIP is valid for three years after the date of agreement by the TAA. If the construction has not yet commenced within this period, the AIP shall be re-submitted to the TAA for review*

APPENDIX A

Technical Approval Schedule (TAS)

Schedule of Documents Relating to Design of Highway Bridges and Structures

(All documents are taken to include revisions current as of 06 April 2020)

The standards listed are typically required for a highway structure.

Additional standards needed for a particular design should be added to the section at the bottom of the TAS.

The Designer is responsible for ensuring that the standards and references given in the schedule are correct and up to date.

Eurocodes and associated UK National Annexes				
Eurocode part	**Title**	**Amendment / Corrigenda**	***Notes***	***Tick if relevant***
Eurocode 0	**Basis of structural design**			
BS EN 1990**:**2002 +A1:2005	Eurocode 0: Basis of structural design	+A1:2005 Incorporating corrigenda December 2008 and April 2010	See BD100 Annex A for additional guidance.	✓
NA to BS EN 1990:2002 + A1:2005	UK National Annex to Eurocode 0 Basis of structural design	National Amendment No.1	See BD100 Annex A for additional guidance.	✓
Eurocode 1	**Actions on structures**			
BS EN 1991-1-1:2002	Eurocode 1: Actions on structures. General Actions. Densities, self-weight, imposed load for buildings	Corrigenda December 2004 and March 2009		✓
NA to BS EN 1991-1-1:2002	UK National Annex to Eurocode 1: Actions on structures. General Actions. Densities, self-weight, imposed load for buildings	Corrigenda July 2019		✓

Eurocodes and associated UK National Annexes				
Eurocode part	**Title**	**Amendment / Corrigenda**	***Notes***	***Tick if relevant***
BS EN 1991-1-3:2003 +A1:2015	Eurocode 1: Actions on structures. General Actions. Snow loads	+A1:2015 Incorporating corrigenda December 2004 and March 2009		
NA + A2:18 to BS EN 1991-1-3:2003+A1:2015	UK National Annex to Eurocode 1: Actions on structures. General Actions. Snow loads	+A2:2018 Incorporating corrigenda June 2007, December 2015 and October 2018		
BS EN 1991-1-4:2005 +A1:2010	Eurocode 1: Actions on structures. General Actions. Wind actions	+A1:2010 Corrigenda July 2009 and January 2010		
NA to BS EN 1991-1-4:2005 + A1:2010	UK National Annex to Eurocode 1: Actions on structures. General Actions. Wind actions	National Amendment No.1		
BS EN 1991-1-5:2003	Eurocode 1: Actions on structures. General Actions. Thermal actions	Corrigenda December 2004 and March 2009		
NA to BS EN 1991-1-5:2003	UK National Annex to Eurocode 1: Actions on structures. General Actions. Thermal actions	-		
BS EN 1991-1-6:2005	Eurocode 1: Actions on structures. General Actions. Actions during execution	Corrigenda July 2008, November 2012 and February 2013		✓

Eurocodes and associated UK National Annexes				
Eurocode part	**Title**	**Amendment / Corrigenda**	***Notes***	***Tick if relevant***
NA to BS EN 1991-1-6:2005	UK National Annex to Eurocode 1: Actions on structures. General Actions. Actions during execution	-		✓
BS EN 1991-1-7:2006 +A1:2014	Eurocode 1: Actions on structures. General Actions. Accidental actions	+A1: 2014 Corrigendum February 2010		✓
NA+A1 to BS EN 1991-1-7:2006+A1:2014	UK National Annex to Eurocode 1: Actions on structures. Part 1-7 : Accidental actions	+A1:2014 Incorporating corrigenda August 2014 and November 2015	See BD100 for additional guidance.	✓
BS EN 1991-2:2003	Eurocode 1: Actions on structures. Traffic loads on bridges	Corrigenda December 2004 and February 2010	See BD100 Annex A for additional guidance.	✓
NA to BS EN 1991-2:2003	UK National Annex to Eurocode 1: Actions on structures. Traffic loads on bridges	Corrigendum No.1	See BD100 Annex A for additional guidance.	✓
Eurocode 2	**Design of concrete structures**			
BS EN 1992-1-1:2004 + A1:2014	Eurocode 2: Design of concrete structures– Part 1-1: General rules and rules for buildings	Incorporating corrigendum January 2008, November 2010 and January 2014		✓
NA + A2:2014 to BS EN 1992-1-1:2004 + A1:2014	UK National Annex to Eurocode 2: Design of concrete structures – Part 1-1: General rules and rules for buildings			✓

Eurocodes and associated UK National Annexes				
Eurocode part	**Title**	**Amendment / Corrigenda**	***Notes***	***Tick if relevant***
BS EN 1992-2:2005	Eurocode 2: Design of concrete structures – Part 2: Concrete bridges – Design and detailing rules	Corrigendum July 2008		✓
NA to BS EN 1992-2:2005	UK National Annex to Eurocode 2: Design of concrete structure – Part 2: Concrete bridges – Design and detailing rules	-		✓
BS EN 1992-3:2006	Eurocode 2: Design of concrete structures – Part 3: Liquid retaining and containment structures	-		✓
NA to BS EN 1992-3:2006	UK National Annex to Eurocode 2: Design of concrete structures – Part 3: Liquid retaining and containment structures	-		✓
BS EN 1992-4:2018	Eurocode 2: Design of concrete structures – Part 4: Design of fastenings for use in concrete			✓
NA to BS EN 1992-4:2018	UK National Annex to Eurocode 2: Design of concrete structures – Part 4: Design of fastenings for use in concrete			✓
Eurocode 3	**Design of steel structures**			
BS EN 1993-1-1:2005 + A1:2014	Eurocode 3: Design of steel structures – Part 1-1 General rules and rules for buildings	Corrigenda February 2006 and April 2009		

Eurocodes and associated UK National Annexes				
Eurocode part	**Title**	**Amendment / Corrigenda**	***Notes***	***Tick if relevant***
NA + A1:2014 to BS EN 1993-1-1:2005 + A1:2014	UK National Annex to Eurocode 3: Design of steel structures – Part 1-1 General rules and rules for buildings	-		
BS EN 1993-1-3:2006	Eurocode 3: Design of steel structures – Part 1-3 General rules – Supplementary rules for cold-formed members and sheeting	Corrigendum November 2009		
NA to BS EN 1993-1-3:2006	UK National Annex to Eurocode 3: Design of steel structures – Part 1-3 Supplementary rules for cold-formed members and sheeting	-		
BS EN 1993-1-4:2006	Eurocode 3: Design of steel structures – Part 1-4 General rules – Supplementary rules for stainless steels	-		
NA to BS EN 1993-1-4:2006	UK National Annex to Eurocode 3: Design of steel structures – Part 1-4 Supplementary rules for stainless steels	-		
BS EN 1993-1-5:2006+A2:2019	Eurocode 3: Design of steel structures – Part 1-5 Plated structural elements	Corrigendum April 2009, +A1:2017 Amendment No. 1, +A2:2019		

Eurocodes and associated UK National Annexes				
Eurocode part	**Title**	**Amendment / Corrigenda**	***Notes***	***Tick if relevant***
NA to BS EN 1993-1-5:2006	UK National Annex to Eurocode 3: Design of steel structures – Part 1-5 Plated structural elements	-		
BS EN 1993-1-6:2007+ A1:2017	Eurocode 3: Design of steel structures – Part 1-6 Strength and stability of shell structures	+ A1:2017 Amendment No. 1		
BS EN 1993-1-7:2007	Eurocode 3: Design of steel structures – Part 1-7 Plated structures subject to out of plane loading	Corrigendum April 2009		
BS EN 1993-1-8:2005	Eurocode 3: Design of steel structures – Part 1-8 Design of joints	Corrigenda December 2005, September 2006, July 2009 and August 2010		
NA to BS EN 1993-1-8:2005	UK National Annex to Eurocode 3: Design of steel structures – Part 1-8 Design of joints	-		
BS EN 1993-1-9:2005	Eurocode 3: Design of steel structures – Part 1-9 Fatigue	Corrigenda December 2005, September 2006 and April 2009		
NA to BS EN 1993-1-9:2005	UK National Annex to Eurocode 3: Design of steel structures – Part 1-9 Fatigue	-		

Eurocodes and associated UK National Annexes				
Eurocode part	**Title**	**Amendment / Corrigenda**	***Notes***	***Tick if relevant***
BS EN 1993-1-10:2005	Eurocode 3: Design of steel structures – Part 1-10 Material toughness and through-thickness properties	Corrigenda December 2005, September 2006 and March 2009		
NA to BS EN 1993-1-10:2005	UK National Annex to Eurocode 3: Design of steel structures – Part 1-10 Material toughness and through thickness properties	-		
BS EN 1993-1-11:2006	Eurocode 3: Design of steel structures – Part 1-11 Design of structures with tension components	Corrigendum April 2009		
NA to BS EN 1993-1-11:2006	UK National Annex to Eurocode 3: Design of steel structures – Part 1-11 Design of structures with tension components	-		
BS EN 1993-1-12:2007	Eurocode 3: Design of steel structures – Part 1-12 Additional rules for the extension of EN 1993 up to steel grades S 700	Corrigendum April 2009		
NA to BS EN 1993-1-12:2007	UK National Annex to Eurocode 3: Design of steel structures – Part 1-12 Additional rules for the extension of EN 1993 up to steel grades S 700	-		

Eurocodes and associated UK National Annexes				
Eurocode part	**Title**	**Amendment / Corrigenda**	***Notes***	***Tick if relevant***
BS EN 1993-2:2006	Eurocode 3: Design of steel structures – Part 2 Steel bridges	Corrigendum July 2009		
NA + A1:2012 to BS EN 1993-2:2006	UK National Annex to Eurocode 3: Design of steel structures – Part 2 Steel bridges	+ A1:2012		
BS EN 1993-5:2007	Eurocode 3: Design of steel structures – Part 5 Piling	Corrigendum May 2009		
NA + A1:2012 to BS EN 1993-5:2007	UK National Annex to Eurocode 3: Design of steel structures – Part 5 Piling	+ A1:2012		
Eurocode 4	**Design of composite steel and concrete structures**			
BS EN 1994-1-1:2004	Eurocode 4: Design of composite steel and concrete structures – Part 1-1 General rules and rules for buildings	Corrigendum April 2009		
NA to BS EN 1994-1-1:2004	UK National Annex to Eurocode 4: Design of composite steel and concrete structures – Part 1-1 General rules and rules for buildings	-		
BS EN 1994-2:2005	Eurocode 4: Design of composite steel and concrete structures – Part 2 General rules and rules for bridges	Corrigendum July 2008		

Eurocodes and associated UK National Annexes				
Eurocode part	**Title**	**Amendment / Corrigenda**	***Notes***	***Tick if relevant***
NA to BS EN 1994-2:2005	UK National Annex to Eurocode 4: Design of composite steel and concrete structures – Part 2 General rules and rules for bridges	-		
Eurocode 5	**Design of timber structures**			
BS EN 1995-1-1:2004 + A2:2014	Eurocode 5: Design of timber structures – Part 1-1 General – common rules and rules for buildings	+ A2:2014 Incorporating corrigendum June 2006		
NA to BS EN 1995-1-1:2004 + A2:2014	UK National Annex to Eurocode 5: Design of timber structures – Part 1-1 General – common rules and rules for buildings	+ A2:2014		
BS EN 1995-2:2004	Eurocode 5: Design of timber structures – Part 2 Bridges	-		
NA to BS EN 1995-2:2004	UK National Annex to Eurocode 5: Design of timber structures – Part 2 Bridges	-		
Eurocode 6	**Design of masonry structures**			
BS EN 1996-1-1:2005+A1:2012	Eurocode 6: Design of masonry structures – Part 1-1 General rules for reinforced and unreinforced masonry structures	+A1:2012 Corrigenda February 2006 and July 2009		

Eurocodes and associated UK National Annexes				
Eurocode part	**Title**	**Amendment / Corrigenda**	***Notes***	***Tick if relevant***
NA to BS EN 1996-1-1:2005 +A1:2012	UK National Annex to Eurocode 6: Design of masonry structures – Part 1-1 General rules for reinforced and unreinforced masonry structures	Corrigendum October 2015		
BS EN 1996-2:2006	Eurocode 6: Design of masonry structures – Part 2 Design considerations, selection of materials and execution of masonry	Corrigendum September 2009		
NA to BS EN 1996-2:2006	UK National Annex to Eurocode 6: Design of masonry structures – Part 2 Design considerations, selection of materials and execution of masonry	Corrigendum No.1		
BS EN 1996-3:2006	Eurocode 6: Design of masonry structures – Part 3 Simplified calculation methods for unreinforced masonry structures	Corrigendum October 2009		
NA +A1:2014 to BS EN 1996-3:2006	UK National Annex to Eurocode 6: Design of masonry structures – Part 3 Simplified calculation methods for unreinforced masonry structures	+A1:2014		

Eurocodes and associated UK National Annexes				
Eurocode part	**Title**	**Amendment / Corrigenda**	***Notes***	***Tick if relevant***
Eurocode 7	**Geotechnical design**			
BS EN 1997-1:2004+A1:2013	Eurocode 7: Geotechnical design – Part 1 General rules	+A1:2013 Corrigendum February 2009		✓
NA+A1 to BS EN 1997-1:2004+A1:2013	UK National Annex to Eurocode 7: Geotechnical design – Part 1 General rules	+A1:2013 Incorporating Corrigendum No.1		✓
BS EN 1997-2:2007	Eurocode 7: Geotechnical design – Part 2 Ground investigation and testing	Corrigendum June 2010		✓
NA to BS EN 1997-2:2007	UK National Annex to Eurocode 7: Geotechnical design – Part 2 Ground investigation and testing	-		✓
Eurocode 8	**Design of structures for earthquake resistance**			
BS EN 1998-1:2004 + A1:2013	Eurocode 8: Design of structures for earthquake resistance – Part 1 General rules, seismic actions and rules for buildings	Corrigendum June 2009, January 2011 and March 2013		
NA to BS EN 1998-1:2004	UK National Annex to Eurocode 8: Design of structures for earthquake resistance – Part 1 General rules, seismic actions and rules for buildings	-		

Eurocodes and associated UK National Annexes				
Eurocode part	**Title**	**Amendment / Corrigenda**	***Notes***	***Tick if relevant***
BS EN 1998-2:2005+A2:2011	Eurocode 8: Design of structures for earthquake resistance – Part 2 Bridges	Corrigenda February 2010 and February 2012		
NA to BS EN 1998-2:2005	UK National Annex to Eurocode 8: Design of structures for earthquake resistance – Part 2 Bridges	-		
BS EN 1998-5:2004	Eurocode 8: Design of structures for earthquake resistance – Part 5 Foundations, retaining structures and geotechnical aspects	-		
NA to BS EN 1998-5:2004	UK National Annex to Eurocode 8: Design of structures for earthquake resistance – Part 5 Foundations, retaining structures and geotechnical aspects	-		
Eurocode 9	**Design of aluminium structures**			
BS EN 1999-1-1:2007 + A2:2013	Eurocode 9: Design of aluminium structures– Part 1-1 General structural rules	+ A2:2013 Incorporating corrigendum March 2014		

Eurocodes and associated UK National Annexes				
Eurocode part	**Title**	**Amendment / Corrigenda**	***Notes***	***Tick if relevant***
NA to BS EN 1999-1-1:2007 + A1:2009	UK National Annex to Eurocode 9: Design of aluminium structures – Part 1-1 General structural rules	National Amendment No.1 Corrigendum No.1		
BS EN 1999-1-3:2007 + A1:2011	Eurocode 9: Design of aluminium structures – Part 1-3 Structures susceptible to fatigue	+ A1:2011		
NA to BS EN 1999-1-3:2007 + A1:2011	UK National Annex to Eurocode 9: Design of aluminium structures – Part 1-3 Structures susceptible to fatigue	+ A1:2011		
BS EN 1999-1-4:2007 +A1:2011	Eurocode 9: Design of aluminium structures – Part 1-4 Cold formed structural sheeting	+ A1:2011 Corrigendum November 2009		
NA to BS EN 1999-1-4:2007	UK National Annex to Eurocode 9: Design of aluminium structures – Part 1-4 Cold formed structural sheeting	-		
Bsi Published Documents ***For guidance only unless clauses are otherwise specified in BD 100/16 Annex B.***				
Published Document reference	**Title**	**Notes**		**Tick if Relevant**
PD 6688-1-1:2011	Recommendations for the design of structures to BS EN 1991-1-1	See BD100 Annex B for additional guidance.		

Eurocodes and associated UK National Annexes				
Eurocode part	**Title**	**Amendment / Corrigenda**	***Notes***	***Tick if relevant***
PD 6688-1-4:2015	Background paper to the UK National Annex to BS EN 1991-1-4	See BD100 Annex B for additional guidance.		
PD 6688-1-7:2009 +A1:2014	Recommendations for the design of structures to BS EN 1991-1-7	See BD100 clause 2.17 and Annex B for additional guidance.		
PD 6688-2:2011	Recommendations for the design of structures to BS EN 1991-2	See BD100 Annex B for additional guidance.		
PD 6687-1:2010	Background paper to the UK National Annexes to BS EN 1992-1 and BS EN 1992-3	See BD100 clauses 2.15, 2.16 and Annex B for additional guidance.		
PD 6687-2:2008	Recommendations for the design of structures to BS EN 1992-2:2005	See BD100 clause 2.16 and Annex B for additional guidance.		
PD 6695-1-9:2008	Recommendations for the design of structures to BS EN 1993-1-9	See BD100 Annex B for additional guidance.		
PD 6695-1-10:2009	Recommendations for the design of structures to BS EN 1993-1-10	See BD100 Annex B for additional guidance.		
PD 6695-2:2008 + A1:2012 Incorporating Corrigendum No.1	Recommendation for the design of bridges to BS EN 1993	See BD100 Annex B for additional guidance.		
PD 6696-2:2007 + A1:2012	Background paper to BS EN 1994-2 and the UK National Annex to BS EN 1994-2	See BD100 Annex B for additional guidance.		
PD 6694-1:2011	Recommendations for the design of structures subject to traffic loading to BS EN 1997-1	See BD100 Annex B for additional guidance.		✓
PD 6698:2009	Recommendations for the design of structures for earthquake resistance to BS EN 1998	See BD100 Annex A for additional guidance.		

Eurocodes and associated UK National Annexes				
Eurocode part	**Title**	**Amendment / Corrigenda**	***Notes***	***Tick if relevant***
PD 6703:2009	Structural bearings – Guidance on the use of structural bearings			
PD 6705-2:2010 + A1:2013	Recommendations for the execution of steel bridges to BS EN 1090-2	Amended 30 April 2013		
PD 6705-3:2009	Recommendations on the execution of aluminium structures to BS EN 1090-3			
PD 6702-1:2009+A1:2019	Structural use of aluminium. Recommendations for the design of aluminium structures to BS EN 1999	Amended 31 May 2019		

Execution Standards referenced in British Standards or Eurocodes			
Execution Standard reference	**Title**	**Notes**	**Tick if relevant**
BS EN 1090-1:2009+A1:2011	Execution of steel structures and aluminium structures - Part 1: Requirements for conformity assessment of structural components		
BS EN 1090-2:2018	Execution of steel structures and aluminium structures. Technical requirements for the execution of steel structures	Supersedes BS EN 1090-2:2008+A1:2011	

~~BS EN 1090-3:2008~~	~~Execution of steel structures and aluminium structures – Part 3: Technical requirements for aluminium structures~~		
BS EN 1090-3:2019	**Execution of steel structures and aluminium structures – Part 3: Technical requirements for aluminium structures**	**Supersedes BS EN 1090-3:2008**	
BS EN 13670:2009 Incorporating corrigenda October 2015 and November 2015	Execution of concrete structures		

Product Standards referenced in British Standards or Eurocodes			
Product Standard reference	**Title**	**Notes**	**Tick if relevant**
BS EN 206:2013	Concrete – Specification, performance, production and conformity	Corrigendum May 2014	
BS EN 1317-1:2010	Road Restraint Systems – Part 1 – Terminology and general criteria for test methods		
BS EN 1317-2:2010	Road Restraint Systems – Part 2 – Performance classes, impact test acceptance criteria and test methods for safety barriers.		

Product Standards referenced in British Standards or Eurocodes			
Product Standard reference	**Title**	**Notes**	**Tick if relevant**
BS EN 1317-3:2010	Road Restraint Systems – Part 3 – Performance classes, impact test acceptance criteria and test methods for crash cushions.		
DD ENV 1317-4:2002	Road Restraint Systems – Part 4 – Performance classes, impact test acceptance criteria and test methods for terminals and transitions of safety barriers.	*Draft BS EN 1317-4 for public comment published in June 2012*	
BS EN 1317-5:2007+A2:2012	Road Restraint Systems – Part 5 - Product requirements and evaluation of conformity for vehicle restraint systems	Incorporating corrigendum August 2012 *Draft prEN 1317-5 for public comment published in December 2013*	
PD CEN/TR 16949:2016	Road Restraint System – Pedestrian restraint system - Pedestrian parapets	*Bsi Published Document / CEN Technical Report published in July 2016* *(This document should not be used. The requirements of BS 7818:1995 apply.)*	
Draft prEN 1317-7	Road restraint systems - Part 7: Performance classes, impact test acceptance criteria and test methods for terminals of safety barriers	*Draft prEN 1317-7 for public comment published in June 2012* *(This document should not be used. All terminals should continue to be in accordance with ENV1317-4.)*	
PD CEN/TS 17342:2019	Road restraint systems - Motorcycle road restraint systems which reduce the impact severity of motorcyclist collisions with safety barriers	*Replaces* PD CEN/TS 1317-8:2012 *(This document should not be used.)*	
PD CEN/TR 17081:2018	Design of fastenings for use in concrete – Plastic design of fastenings with headed and post-installed fasteners		

Product Standards referenced in British Standards or Eurocodes			
Product Standard reference	**Title**	**Notes**	**Tick if relevant**
BS EN 1337-1:2000	Structural bearings – Part 1: General Design Rules		
BS EN 1337-2:2004	Structural bearings – Part 2: Sliding elements		
BS EN 1337-3:2005	Structural bearings – Part 3: Elastomeric bearings		
BS EN 1337-4:2004	Structural bearings – Part 4: Roller bearings		
BS EN 1337-5:2005	Structural bearings – Part 5: Pot bearings		
BS EN 1337-6:2004	Structural bearings – Part 6: Rocker bearings		
BS EN 1337-7:2004	Structural bearings – Part 7: Spherical and cylindrical PTFE bearings		
BS EN 1337-8:2007	Structural bearings – Part 8: Guide bearings and restraint bearings		
BS EN 1337-9:1998	Structural bearings – Part 9: Protection		
BS EN 1337-10:2003	Structural bearings – Part 10: Inspection and maintenance		
BS EN 1337-11:1998	Structural bearings – Part 11: Transport, Storage and Installation.		
BS EN 1794-1:2003	Road traffic noise reducing devices – Non-acoustic performance Part 1: Mechanical performance and stability requirements	There is a newer version, however the harmonised standard BS EN 14388:2005 makes reference to the 2003 version	
BS EN 1794-2:2003	Road traffic noise reducing devices – Non-acoustic performance Part 2: General safety and environmental requirements	There is a newer version, however the harmonised standard BS EN 14388:2005 makes reference to the 2003 version	
BS EN 10025-1:2004	Hot rolled products of structural steels Part 1: General technical delivery conditions.		

Product Standards referenced in British Standards or Eurocodes			
Product Standard reference	**Title**	**Notes**	**Tick if relevant**
BS EN 10025-2:2019	Hot rolled products of structural steels Part 2: Technical delivery conditions for non-alloy structural steels.	Supersedes BS EN 10025-1:2004	
BS EN 10025-3:2019	Hot rolled products of structural steels Part 3: Technical delivery conditions for normalized/normalized rolled weldable fine grain structural steels.	Supersedes BS EN 10025-3:2004	
BS EN 10025-4:2019	Hot rolled products of structural steels Part 4: Technical delivery conditions for thermomechanical rolled weldable fine grain structural steels.	Supersedes BS EN 10025-4:2004	
BS EN 10025-5:2019	Hot rolled products of structural steels – Part 5: Technical delivery conditions for structural steels with improved atmospheric corrosion resistance	Supersedes BS EN 10025-5:2004	
BS EN 10025-6:2019	Hot rolled products of structural steels – Part 6: Technical delivery conditions for flat products of high yield strength structural steels in the quenched and tempered condition.	Supersedes BS EN 10025-6:2004+A1:2009	
BS EN 10080:2005	Steel for the reinforcement of concrete – Weldable reinforcing steel - General		
BS EN 10210-1:2006	Hot finished structural hollow sections of non-alloy and fine grain steels – Part 1: Technical delivery conditions		

Product Standards referenced in British Standards or Eurocodes			
Product Standard reference	**Title**	**Notes**	**Tick if relevant**
BS EN 10210-2:2019	Hot finished structural hollow sections – Part 2: Tolerances, dimensions and sectional properties	Supersedes BS EN 10210-2:2006	
BS EN 10248-1:1996	Hot rolled sheet piling of non alloy steels. Technical delivery conditions		
BS EN 10248-2:1996	Hot rolled sheet piling of non alloy steels. Tolerances on shape and dimensions		
BS EN 12063:1999	Execution of special geotechnical work. Sheet pile walls.		
BS EN 14388:2005	Road traffic noise reducing devices	There is a 2015 version, however the 2015 version is not harmonised.	
BS EN 15050:2007 + A1:2012	Precast concrete products – Bridge elements	See BD100 clause 2.18 for additional guidance.	

British Standards			
British Standard reference	**Title**	**Notes**	**Tick if relevant**
BS 4449:2005+A3:2016	Steel for the reinforcement of concrete	No longer covers plain round bar. (See BS4482 up to 12mm dia, see BS EN 10025-1 for larger sizes and dowels. See BS EN 13877-3 for dowel bars in concrete pavements.)	
BS 5896:2012	Specification for high tensile steel wire and strand for the prestressing of concrete		
BS 7818:1995	Specification for pedestrian restraint systems in metal	Currently the requirements of BS 7818:1995 are to be used instead of PD CEN/TR 16949:2016	
BS 8002:2015	Code of practice for earth retaining structures		

British Standards			
BS 8004:2015 +A1 2020	**Code of practice for foundations**	**Amendment +A1:2020**	
BS 8006-1:2010+A1:2016	Code of practice for strengthened/reinforced soils and other fills		
BS 8500-1:2015+A2:2019	Concrete – Complementary British Standard to BS EN 206: Method of specifying and guidance for the specifier.	Incorporating Corrigendum No.1 Amendment +A2:2019	✓
BS 8500-2:2015+A2:2019	Concrete – Complementary British Standard to BS EN 206 : Specification for constituent materials and concrete.	Amendment +A2:2019	
BS 8666:2005	Scheduling, dimensioning, bending and cutting of steel reinforcement for concrete	Incorporating Amendment No.1	
BS EN 1295-1:2019	Structural design of buried pipelines under various conditions of loading. General requirements		✓
BS 9295:2020	Guide to the structural design of buried pipes		✓
BS 5911-3:2010+A1:2014	Concrete pipes and ancillary concrete products. Specification for unreinforced and reinforced concrete manholes and soakaways (complementary to BS EN 1917:2002)		✓
BS EN 1917:2002	Concrete manholes and inspection chambers, unreinforced, steel fibre and reinforced		✓

The Manual Contract Document for Highway Works (MCHW)			
MCHW reference	**Title**	***Notes***	***Tick if relevant***
MCHW	**Specification**	***Specification compliant with the execution standards***	

Volume 1: February 2020	**for Highway Works**	***must be used. A Departure is necessary for the parts where a compliant revision has not been published. Amendments February 2020***	✓
MCHW Volume 2: February 2020	**Notes for guidance on the Specification for Highway Works**	***Notes for guidance compliant with the execution standards must be used. A Departure is necessary for the parts where a compliant revision has not been published. Amendments February 2020***	
MCHW Volume 3: February 2017	Highway Construction Details		

The Design Manual for Roads and Bridges (DMRB)			
DMRB reference	**Title**	**Notes**	**Tick if Relevant**
GG 101 Revision 0	Introduction to the Design Manual for Roads and Bridges	Replaces GD 01/16	
GG102 Revision 0	Quality Management Systems for Highway Design	Replaces GD 02/16	
GG 103 Revision 0	Introduction and general requirements for sustainable development and design		
GG 104 Revision 0	Requirements for Safety Risk Assessment	Replaces GD04/12 and IAN 191/16	
CG 300 Revision 0	**Technical approval of highway structures**	**Supersedes BD 2/12**	✓
CG 302 Revision 0	**As-built, operational and maintenance records for highway structures**	**Supersedes BD 62/07**	
CG 303 Revision 0	Quality assurance scheme for paints and similar protective coatings	Supersedes BD 35/14	
CG 305 Revision 0	**Identification marking of highway**	**Supersedes BD 45/93**	

The Design Manual for Roads and Bridges (DMRB)			
DMRB reference	**Title**	**Notes**	**Tick if Relevant**
	structures		
GG 184	**Specification for the use of Computer Aided Design**	**Replaces IAN 184/16**	
CD 127 Revision 0	Cross-sections and headrooms	Replaces TD 27/05 and TD 70/08	
CD 350 Revision 0	**The design of highway structures**	**Supersedes BD 100/16, BA 57/01, BD 57/01 and IAN 124/11**	
CD 351 Revision 0	**The design and appearance of highway structures**	**Supersedes BA 41/98**	
CD 352 Revision 0	**Design of road tunnels**	**Supersedes BD 78/99**	
CD 353 Revision 0	**Design criteria for footbridges**	**Supersedes BD 29/17**	
CD 354 Revision 1	Design of minor structures	Supersedes BD 94/17	
CD 355 Revision 0	Application of whole-life costs for design and maintenance of highway structures	Replaces BD 36/92 and BA 28/92	
CD 356 Revision 1	Design of highway structures for hydraulic action	Supersedes BA 59/94	
CD 357 Revision 1	Bridge expansion joints	Replaces BD 33/94, BA 26/94, IAN 168/12 and IAN 169/12	
CD 358 Revision 1	Waterproofing and surfacing of concrete bridge decks	Replaces BD 47/99, BA 47/99 and IAN 96/07	
CD 359 Revision 0	**Design requirements for permanent soffit formwork**	**Supersedes BA 36/90 and IAN 131/11**	
CD 361 Revision 0	Weathering steel for highway structures	Supersedes BD 7/01	
CD 362 Revision 0	Enclosure of bridges	Replaces BD 67/96 and BA 67/96	
CD 363 Revision 0	Design rules for aerodynamic effects on bridges	Replaces BD 49/01	
CD 364 Revision 0	**Formation of continuity joints in bridge**	**Replaces BA 82/00**	

The Design Manual for Roads and Bridges (DMRB)			
DMRB reference	**Title**	**Notes**	**Tick if Relevant**
	decks		
CD 365 Revision 1	Portal and cantilever signs/signals gantries	Replaces BD 51/14, IAN 193/16, BE 7/04	
CD 366 Revision 0	**Design criteria for collision protection beams**	**Replaces BD 65/14**	
CD368 Revision 0	**Design of fibre reinforced polymer bridges and highway structures**	**Replaces BD 90/05**	
CD369 Revision 0	**Surface protection for concrete highway structures**	**Replaces BA 85/04**	
CD 372 Revision 0	**Design of post-installed anchors and reinforcing bar connections in concrete**	**Supersedes IAN 104/15**	
CD 373 Revision 0	**Impregnation of reinforced and prestressed concrete highway structures using hydrophobic pore-lining impregnants**	**Supersedes BD 43/03**	
CD 374 Revision 0	**The use of recycled aggregates in structural concrete**	**Supersedes BA 92/07**	
CD 375 Revision 1	Design of corrugated steel buried structures	Supersedes BD 12/01	
CD 377 Revision 0	**Requirements for road restraint systems**	**Supersedes TD 19/06**	
CD 622 Revision 0	Managing geotechnical risk	Replaces HD 22/08, BD 10/97 and HA 120/08	

The Design Manual for Roads and Bridges (DMRB)			
DMRB reference	**Title**	**Notes**	**Tick if Relevant**
CS 461 Revision 0	**Assessment and upgrading of in-service parapets**	**Supersedes BA 37/92 and IAN 97/07**	
GD 304 Revision 0	Designing health and safety into maintenance	Replaces IAN 69/15	
LA 119 Revision 0	Roadside environmental mitigation and enhancement	Replaces HA 65/94 and HA 66/95	
~~**BD 2/12**~~	~~**Technical Approval of Highway Structures**~~	**Superseded by CG 300**	
~~BD 10/97~~	~~Design of highway structures in areas of mining subsidence~~	Replaced by CD 622	
~~**BD 29/17**~~	~~**Design criteria for footbridges**~~	**Superseded by CD 353**	
~~BD 33/94~~	~~Expansion joints for use in highway bridge decks~~	Replaced by CD 357	
~~BD 35/14~~	~~Quality assurance scheme for paints and similar protective coatings~~	Superseded by CG 303	
~~BD 36/92~~	~~Evaluation of maintenance costs in comparing alternative designs for highway structures~~	Replaced by CD 355	
~~**BD 43/03**~~	~~**The impregnation of reinforced and prestressed concrete highway structures using hydrophobic pore-lining impregnants**~~	**Superseded by CD 373**	

The Design Manual for Roads and Bridges (DMRB)			
DMRB reference	**Title**	**Notes**	**Tick if Relevant**
~~**BD 45/93**~~	~~**Identification markings of highway structures**~~	**Superseded by CG 305**	
~~BD 47/99~~	~~Waterproofing and surfacing of concrete bridge decks~~	Replaced by CD 358	
~~BD 49/01~~	~~Design rules for Aerodynamic Effects on Bridges~~	Replaced by CD 363	
~~BD 51/14~~	~~Portal and cantilever signs/signal gantries~~	Replaced by CD 365	
~~**BD 57/01**~~	~~**Design for durability**~~	~~***Not to be used. See IAN 124/11 Annex C for additional guidance.***~~ **Superseded by CD 350**	
~~**BD 62/07**~~	~~**As built, operational and maintenance records for highway structures**~~	~~***See IAN 124/11 Annex C for additional guidance.***~~ **Superseded by CG 302**	
~~**BD 65/14**~~	~~**Design criteria for collision protection beams**~~	**Superseded by CD 366**	
~~BD 67/96~~	~~Enclosure of bridges~~	Replaced by CD 362	
~~BD 68/97~~	~~Crib retaining walls~~	Withdrawn	
~~**BD 78/99**~~	~~**Design of road tunnels**~~	~~***See IAN 124/11 Annex C for additional guidance.***~~ **Superseded by CD 352**	
~~BD 82/00~~	~~Design of buried rigid pipes~~	Withdrawn	
~~**BD 90/05**~~	~~**Design of FRP bridges and highway structures**~~	***Superseded by CD 368***	
~~BD 94/17~~	~~Design of minor structures~~	Superseded by CD 354	
~~**BD 100/16**~~	~~**The use of Eurocodes for the design of highway structures**~~	**Superseded by CD 350**	
~~BA 26/94~~	~~Expansion joints for use in~~	Replaced by CD 357	

The Design Manual for Roads and Bridges (DMRB)			
DMRB reference	**Title**	**Notes**	**Tick if Relevant**
	~~highway bridge decks~~		
~~BA 28/92~~	~~Evaluation of maintenance costs in comparing alternative designs for highway structures~~	Replaced by CD 355	
~~**BA 36/90**~~	~~**The use of permanent formwork**~~	~~***Not to be used. See IAN 124/11 Annex C for additional guidance.***~~ **Superseded by CD 359**	
~~**BA 41/98**~~	~~**The design and appearance of bridges**~~	**Superseded by CD 351**	
~~BA 42/96~~	~~The design of integral bridges~~	Withdrawn	
~~BA 47/99~~	~~Waterproofing and surfacing of concrete bridge decks~~	Replaced by CD 358	
~~**BA 57/01**~~	~~**Design for durability**~~	~~***Not to be used. See IAN 124/11 Annex C for additional guidance.***~~ **Superseded by CD 350**	
~~BA 59/94~~	~~Design of highway bridges for hydraulic action.~~	Replaced by CD 356	
~~BA 67/96~~	~~Enclosure of bridges~~	Replaced by CD 362	
~~BA 68/97~~	~~Crib retaining walls~~	Withdrawn	
~~**BA 82/00**~~	~~**Formation of continuity joints in bridge decks**~~	**Superseded by CD 364**	
~~**BA 85/04**~~	~~**Coatings for concrete highway structures & ancillary structures**~~	**Superseded by CD 369**	
~~**BA 92/07**~~	~~**Use of recycled concrete aggregates in structural concrete**~~	**Superseded by CD 374**	
~~**TD 19/06**~~	~~**Requirement for road**~~	~~***See IAN 124/11 Annex C for additional guidance.***~~	

The Design Manual for Roads and Bridges (DMRB)			
DMRB reference	**Title**	**Notes**	**Tick if Relevant**
	~~**restraint systems**~~	**Superseded by CD 377**	
~~TD 27/05~~	~~Cross-sections and headrooms~~	Replaced by CD 127	
~~HD 22/08~~	~~Managing geotechnical risk~~	Replaced by CD 622	
~~HA 66/95~~	~~Environmental barriers~~	Replaced by LA 119	
Interim Advice Notes			
IAN reference	**Title**	**Notes**	
~~IAN 69/15~~	~~Designing for maintenance~~	(Replaced by GD 304)	
~~IAN 83/06~~	~~Principal and General Inspection of Sign/Signal Gantries, and Gantries with low handrails or open mesh flooring~~	(Superseded by BD63/17)	
~~IAN 96/07r1~~	~~Guidance on implementing results of research on bridge deck waterproofing~~	(Superseded by CD 358)	
~~**IAN 97/07**~~	~~**Assessment and upgrading of existing parapets**~~	**Superseded by CS 461**	
~~**IAN 104/15**~~	~~**The anchorage of reinforcement and fixings in hardened concrete.**~~	**Superseded by CD 372**	
IAN 105/08	Implementation of construction (design and management) 2007 and the withdrawal of SD 10 and SD 11		
~~IAN 117/08r2~~	~~Certification of combined kerb and drainage products~~	(Withdrawn)	

The Design Manual for Roads and Bridges (DMRB)			
DMRB reference	**Title**	**Notes**	**Tick if Relevant**
~~**IAN 124/11 Annex C**~~	~~**Use of Eurocodes for the design of highway structures**~~	**Superseded by CD 350**	
~~**IAN 127/10r1**~~	~~**The use of foamed concrete**~~	**Superseded by MCHW series 2600 (clause 2608 and NG 2608)**	
~~**IAN 131/11**~~	~~**Deflection of Permanent Formwork**~~	**Superseded by CD 359**	
IAN 136/10	Structural safety reporting		
~~IAN 149/17~~	~~Existing Motorway Minimum Requirements~~	(Superseded by CD 109, CD 122, CD127 and CD 146)	
IAN 161/15	Smart Motorways		
~~IAN 177/13~~	~~Introduction of the Construction Products Regulation (EU) 305/2011~~	(Withdrawn)	
~~**IAN 184/16**~~	~~**Highways Agency Data & CAD Standard**~~	**Superseded by GG 184**	
~~IAN 186/15~~	~~In-situ concrete barriers based on proprietary designs commercialised as products~~	(Withdrawn)	
~~IAN 193/16~~	~~Requirements for the provision of access arrangements on gantries~~	(Replaced by CD 365)	

Miscellaneous			
Standard reference	**Title**	**Notes**	**Tick if Relevant**

Miscellaneous			
Standard reference	**Title**	**Notes**	**Tick if Relevant**
CHE Memorandum 227/08	The Impregnation of Reinforced and Prestressed Concrete Highway Structures using Hydrophobic Pore Lining Impregnants	CHE memoranda are internal Highways England documents and not available to external organisations. This CHE memorandum is included as a useful reference for the Technical Approval Authority.	
CIRIA C543	Bridge Detailing Guide		
CIRIA C766	Control of cracking caused by restrained deformation in concrete	Supersedes C660	
CIRIA C686	Safe Access for Maintenance and Repair		
CIRIA C760	Guidance on embedded retaining wall design		

Additional Standards **Additional standards needed for a particular design should be listed here.**			
Reference	**Title**	**Notes**	**Tick if Relevant**
SfA	Sewers for Adoption 7th Edition		✓

APPENDIX B:

GENERAL ARRANGEMENT DRAWINGS

YORKSHIRE WATER REF
H-3-264-963

Only PDF/ DWF Issues of this drawing are controlled. All other formats (eg. DWG AutoCAD FILES) are UN-controlled and are used at your own risk.

GENERAL NOTES:-

1. DO NOT USE THIS DRAWING IN ISOLATION. THIS DRAWING HAS BEEN PREPARED AS PART OF A SET, AND MUST THEREFORE BE READ IN CONJUNCTION WITH ALL OTHER DRAWINGS. ANY DISCREPANCIES MUST BE REPORTED TO THE ENGINEER PRIOR TO COMMENCING WORKS.
2. THIRD PARTY INFORMATION IS USED TO PREPARE THE ENGINEERING DESIGN (INCLUDING, ARCHITECTURAL LAYOUT, GROUND INVESTIGATION, EXISTING UTILITIES RECORDS, AND SPECIALIST DESIGN ITEMS). THE ENGINEERING DESIGN MUST THEREFORE BE READ IN CONJUNCTION WITH ALL THIRD PARTY INFORMATION PRIOR TO COMMENCING WORK. QUEENSBERRY DESIGN LTD ARE NOT RESPONSIBLE FOR ANY THIRD PARTY INFORMATION OR DETAILS.
3. DRAWING STATUS WILL REMAIN PRELIMINARY UNTIL FULL TECHNICAL APPROVAL IS RECEIVED FROM LOCAL AUTHORITY AND SEWERAGE UNDERTAKER. WORKS COMMENCED PRIOR TO TECHNICAL APPROVAL ARE DONE SO AT RISK AND MAY BE SUBJECT TO CHANGE.
4. THE CONTRACTOR IS EXPECTED TO PREPARE APPROPRIATE CONSTRUCTION METHOD STATEMENTS FOR ALL ASPECTS OF APPOINTED WORK. THIS SHOULD INCLUDE ANY TEMPORARY PROTECTION / WORKS.
5. LAND DRAINAGE IS NOT PERMITTED TO DISCHARGE INTO THE PUBLIC SEWER NETWORK. ANY NEED FOR LAND DRAINAGE SHOULD BE ASSESSED BY THE GROUND WORKER AND LANDSCAPER DURING CONSTRUCTION AND PLACEMENT OF GARDENS ON AN INDIVIDUAL PLOT BASIS. IF LAND DRAINAGE DESIGNS ARE REQUIRED, THEY SHOULD BE APPOINTED PRIOR TO PLOT COMPLETION.
6. THE CONTRACTOR IS EXPECTED TO CROSS CHECK ALL DRAINAGE INVERTS PRIOR TO COMMENCING WORK, THIS MAY INVOLVE COMPLETION OF TRIAL HOLES IF INVERT LEVELS HAVE BEEN INTERPOLATED. THE POSITION, LINE AND DIAMETER OF ALL EXISTING DRAINAGE APPARATUS SHOULD BE CONFIRMED ON SITE PRIOR TO THE COMMENCEMENT OF THE WORKS. ANY DISCREPANCIES MUST BE REPORTED TO THE ENGINEER IMMEDIATELY.
7. THE CONTRACTOR MUST MONITOR THE "AS BUILT" PROGRESS OF EACH CONSTRUCTION STAGE (ROADS/SEWERS/PLOT WORKS ETC), TO ENABLE THE NEXT STAGES OF CONSTRUCTION TO BE CHECKED BEFORE INSTALLATION.

HIGHWAYS

1. ALL HIGHWAY WORKS TO BE CARRIED OUT IN ACCORDANCE WITH THE CURRENT LOCAL AUTHORITY DESIGN GUIDE AND SPECIFICATION
2. ALL EXCAVATIONS BELOW PROPOSED AND EXISTING HIGHWAYS TO BE BACK FILLED WITH GRANULAR TYPE 1 SUB BASE AND WELL COMPACTED IN LAYERS NOT EXCEEDING 150MM, UNLESS OTHERWISE AGREED.
3. HIGHWAY AUTHORITY TO BE NOTIFIED BY THE CONTRACTOR PRIOR TO THE COMMENCEMENT OF WORKS.

ADOPTABLE DRAINAGE

1. ALL ADOPTABLE SEWER WORKS AND MATERIAL TO BE IN ACCORDANCE WITH "CODE FOR ADOPTION". THE RELEVANT BRITISH/EUROPEAN AND YORKSHIRE WATER'S STANDARDS/REQUIREMENTS/ADDENDUM TO THE MECHANICAL AND ELECTRICAL SPECIFICATION AND KITEMARKED
2. 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
3. FILLED GROUND MUST BE FILLED AND CONSOLIDATED UNDER THE SUPERVISION AND TO THE SATISFACTION OF YORKSHIRE WATER BEFORE ANY SEWER WORKS ARE CARRIED OUT
4. 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 REGARDING THE DISPOSAL OF THE FILTER DRAIN/LAND DRAINAGE RUN-OFF
5. THE ADOPTABLE SEWERS SHOULD BE A MINIMUM OF 1M AND MANHOLES 0.5M FROM KERB FACES AND SERVICE MARGINS
6. SEWERS MUST HAVE 5 METRES CLEARANCE FROM TREES AND HEDGES OR THE WIDTH OF THE CANOPY AT MATURE HEIGHT.
7. 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 NONVEHICULAR ACCESS AREAS) THEN A CONCRETE SLAB SHOULD BE PROVIDED ABOVE GRANULAR BED AND SURROUND
8. BEDDING AND BACKFILL MATERIAL TO CONFORM TO THE REQUIREMENT OF WATER INDUSTRY SPECIFICATION 4-08-02 (TABLE A2).
9. YORKSHIRE WATER POLICY IS THAT TYPE "C" BRICK MANHOLES AND 1050MM DIAMETER MANHOLE RINGS ARE NOT PREFERRED. INSTEAD, IT IS PREFERRED THAT YOU USE A TYPE "B" MANHOLE WITH 1200MM DIAMETER OR 1500MM DIAMETER RINGS, WITH THE OPENING SITED OVER THE CHANNEL WHERE DEPTH OF COVER TO PIPE SOFFIT IS 1 - 1.5M
10. 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 REQUIRE CLAY WARE CHANNEL IN MANHOLES
11. THE MINIMUM CRUSHING STRENGTH FOR CLAY PIPES SHOULD BE AS FOLLOWS: 100MM DIA. 40KN/M, 150MM DIA. 40KN/M, 225MM DIA. 45KN/M AND 300MM DIA. 72KN/M. THE MINIMUM CRUSHING STRENGTH FOR CONCRETE PIPES SHOULD BE - (CLASS120 TO EN 1916/BS5911-1 2002). PLASTIC PIPES SHOULD CONFORM TO WIS 4-35-01 AND BS EN13476
12. 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
13. THERE MUST BE ENOUGH CLEARANCE AT CROSSOVERS TO ACCOMMODATE BEDDING TO BOTH PIPES, APPROX. 300MM : IF CROSSOVER IS NEAR THE ROCKER THEN THE CLEARANCE NEEDED MAY NEED TO BE INCREASED".

DRAINAGE WITHIN HIGHWAY REQUIREMENTS

14. ALL ADOPTABLE SEWER WORKS AND MATERIALS TO BE IN ACCORDANCE WITH CODE FOR ADOPTION AND NATIONAL SPECIFICATION DESIGN MANUAL FOR ROADS AND BRIDGES
15. ALL PCC UNITS IN OVERSIZE MANHOLES MUST HAVE A DESIGN WORKING LIFE OF 100 YEARS (MIN) IN ACCORDANCE WITH BS 8500-1:2015+A2:2019-TABLE A5.
16. PRECAST CONCRETE MANHOLE UNITS INCLUDING THEIR PCC COVER SLABS SHALL COMPLY WITH THE RELEVANT PROVISIONS OF BS EN 1917 AND BS 5911-3 AND SHALL BE MANUFACTURED FROM CONCRETE WITH A DESIGN CHEMICAL CLASS DC-4 UNLESS SATISFACTORY EVIDENCE THROUGH SOIL ANALYSIS CAN BE PROVIDED THAT A LOWER CLASS WILL RESIST ATTACK FROM SOILS AND GROUND WATER.
17. PRECAST CONCRETE CORBEL SLABS SHALL COMPLY WITH BS 5911-3 TABLE 3 AND FIGURE 8.
18. COVER SLABS SHALL BE INSTALLED WITH A MINIMUM OF 300mm COVER TO FINISHED GROUND LEVEL.
19. SUBMISSION OF A CONSTRUCTION COMPLIANCE CERTIFICATE SHALL BE PROVIDED UPON COMPLETION OF DRAINAGE WORKS

EXISTING SERVICES

PRIOR TO THE COMMENCEMENT OF ANY WORKS UNDER GROUND MAPPING SURVEYS AND CONSTRAINTS PLAN IS TO BE REFEREED TO ANY DISCREPANCIES ARE TO BE REPORTED TO ENGINEER.

ANY EXISTING SERVICES WHICH MAY BE AFFECTED BY THE PROPOSED WORKS SHOULD BE LOCATED BY MEANS OF A HAND DIG IN CLOSE LIAISON WITH THE STATUTORY SERVICE AUTHORITIES. THE CONTRACTOR SHALL INFORM THE DEVELOPER OF ANY SERVICES THAT MAY AFFECT THE PROPOSED DESIGN. CONTRACTOR TO NOTIFY STATUTORY SERVICE AUTHORITIES PRIOR TO COMMENCEMENT OF WORK. AS CONSTRUCTED INFORMATION IT IS THE CONTRACTORS RESPONSIBILITY TO PROVIDE THE FOLLOWING AS CONSTRUCTED DRAWINGS TO THE DEVELOPER UPON THE COMPLETION OF THE WORKS COVERED BY THE CONTRACT :-

1. POSITION/CO-ORDINATES OF ALL ADOPTABLE MANHOLES.
2. INVERT AND COVER LEVELS OF ALL ADOPTABLE MANHOLES.
3. NEW GULLY POSITIONS AND CONNECTIONS.
4. POSITION AND DEPTH OF SERVICE DUCTS FOR WATER, GAS, ELECTRIC, BT, CABLE AND STREET LIGHTING, STATING SIZE AND NUMBER OF DUCTS.

LEGEND

ADOPTABLE DRAINAGE

PROPOSED ADOPTABLE FOUL MANHOLE F1

PROPOSED ADOPTABLE STORM MANHOLE S1

PROPOSED ADOPTABLE COMBINED MANHOLE C1

EXISTING ADOPTED COMBINED MANHOLE ex.mh

ADOPTED COMBINED MANHOLE ABANDONED ex.mh

ROAD GULLY G

LATERAL DRAINAGE

450MM DIA. PRIVATE TYPE D CHAMBER. TO BE USED WHERE DEPTH TO INVERT IS 2000MM OR LESS. REDUCED ACCESS FITTING REQUIRED AT DEPTHS GREATER THAN 1200MM

OR

1200MM DIA. TYPE D MANHOLE WHERE DEPTH TO INVERT IS 2000 - 3000MM COVER TO HAVE A 600MM OPENING

COVER LEVELS PROVIDE ARE FOR GUIDANCE AND ARE SUBJECT TO FINISHED GROUND LEVELS

STREET LIGHTING

PROPOSED 6 METRE STEEL COLUMN WITH SPIGOT MOUNTED ORANGETEK IGNIS MINI 20 MPH 4.0_70_203_2168_2 (13W) 2.17KLM LANTERN- 5 DEGREE TILT

PROPOSED 6 METRE STEEL COLUMN WITH SPIGOT MOUNTED ORANGETEK IGNIS MINI 20 MPH 4.0_70_203_2168_2 (13W) 2.17KLM LANTERN- 0 DEGREE TILT

STREET TREES

POSITIONS AS LANDSCAPE DESIGN REFER TO LANDSCAPE ARCHITECT FOR TREE SPECIMEN, PLANTING MATERIAL AND TREE PIT OR BARRIER REQUIREMENTS

Rev.	Date	Revision Details	Drawn	Checked
L	17.03.25	UPDATED TO SUIT COMMENTS & MARK-UPS FROM STRATA - PLOT 52 AND RETAINING ZONE AMENDED TO LAND TITLE	CW	ND
K	12.12.24	VERGE SHOWN PLOT 129 FOR FORWARD VISIBILITY - RAMP MOVED ROAD 4 / PLOT 39	ND	ND
J	03.10.24	LINK 2 ALIGNMENT AMENDED	ND	ND
I	22.07.24	TANK OUTLET PIPE LEVELS AMENDED	ND	ND
H	12.03.24	ROAD 6 INCREASED IN LENGTH - LINKS 1 AND 2 UPDATED TO NEW PLANNING LAYOUT - LOAD SPEC ADDED TO DRAINAGE CHANNEL - DOUBLE GULLIES ADDED AT RAMPS	ND	ND
G	18.02.24	NOTES RELATING TO PRE-CAST CONCRETE PRODUCTS REVIEWED	ND	ND
F	18.01.24	COMBINED DIVERSION CHANGED TO 300Ø FOLLOWING SITE INVESTIGATION - ROAD GULLY POSITIONS AMENDED	ND	ND
E	10.01.24	DRAINAGE WITHIN HIGHWAY NOTES ADDED	ND	ND
D	22.11.23	STREET LIGHTING ADDED - FFL AMENDED 155-156 - STREET TREES ADDED	ND	ND
C	06.09.23	YORKSHIRE WATER COMMENTS ADDED - ATTENUATION CHANGED TO CELLULAR STORAGE	ND	ND
B	21.04.23	MINOR UPDATES TO PLANNING APPROVED LAYOUT	ND	ND
A	01.03.22	SITE RE-DESIGNED TO NEW PLANNING LAYOUT AND FLOOD RISK / SURFACE WATER DRAINAGE DESIGN REQUIREMENTS	ND	ND
-	18.02.22	FIRST ISSUE	ND	ND

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Client: STRATA HOMES

Project: WESTGATE CLECKHEATON

Title: ENGINEERING LAYOUT

Drawn	Checked	Date
ND	AL	26.10.2021

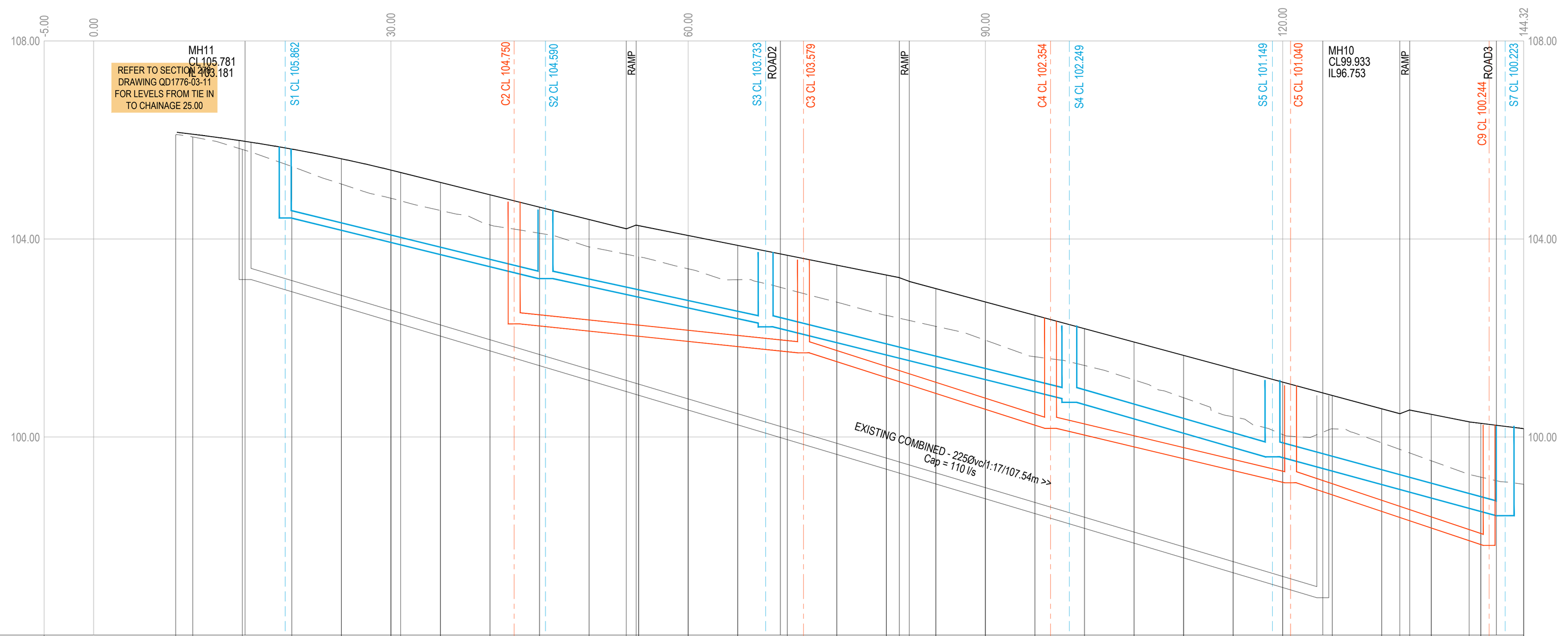
Drawing Number: QD1776-03-01

Drawing Status	Scale	Rev.
TENDER	1:500 - A0	K

YORKSHIRE WATER REF
H-3-264-963

Only PDF/ DWF Issues of this drawing are controlled. All other formats (eg. DWG AutoCAD FILES) are UN-controlled and are used at your own risk.

ROAD1
Vt 1:100
Hz 1:500
96.00 A.O.D.

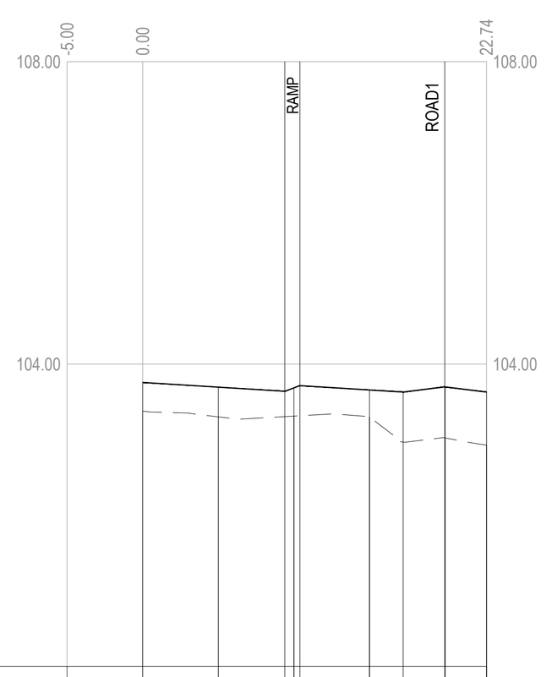


Exist. Level	106.086	106.061	105.809	105.464	105.111	104.823	104.576	104.284	104.116	103.840	103.642	103.398	103.178	102.986	102.725	102.457	102.235	101.955	101.621	101.445	101.154	100.794	100.408	100.050	100.164	99.882	99.520	99.189	99.045
Exist. Chainage	8.281	10.000	15.000	20.000	25.000	30.000	35.000	40.000	45.000	50.000	55.000	60.000	65.000	70.000	75.000	80.000	85.000	90.000	95.000	100.000	105.000	110.000	115.000	120.000	125.000	130.000	135.000	140.000	144.321

Prop. Level	105.620	105.392	105.344	105.143	104.893	104.643	104.393	104.205	104.260	104.270	104.070	103.870	103.670	103.470	103.270	103.218	103.143	102.998	102.728	102.458	102.188	101.918	101.648	101.379	101.109	100.839	100.569	100.471	100.546	100.458	100.306	100.276	100.168
Prop. Chainage	25.000	30.000	30.987	35.000	40.000	45.000	50.000	53.752	54.752	55.000	60.000	65.000	70.000	75.000	80.000	81.317	82.317	85.000	90.000	95.000	100.000	105.000	110.000	115.000	120.000	125.000	130.000	131.821	132.821	135.000	138.821	140.000	144.321

Band	Values
Vert. Elements	1 in 20.000 L=22.765; 1 in 13.333 L=1.000; 1 in 25.000 L=26.565; 1 in 13.333 L=1.000; 1 in 18.525 L=49.504; 1 in 13.328 L=1.000; 1 in 25.000 L=6.000; 1 in 40.000 L=5.500
Horiz. Elements	Str. L=18.121; LH curve R=35.396 L=6.591; Str. L=15.097; LH curve R=60.000 L=12.792; Str. L=8.409; RH curve R=60.000 L=12.792; Str. L=17.030; RH curve R=60.000 L=12.792; Str. L=8.409; LH curve R=60.000 L=12.792; Str. L=19.497
SW Invert Levels	104.425; 103.200 103.200; 102.300 102.225; 100.775 100.700; 99.600 99.600; 98.410 98.335
SW Details	1.000Diam 150Ø Grad 1 in 21.4Length 26.27 Clay Pipe Class 40KN/m Class S bed surround; 1.001Diam 150Ø Grad 1 in 24.7Length 22.21 Clay Pipe Class 40KN/m Class S bed surround; 1.002Diam 225Ø Grad 1 in 21.0Length 30.42 Clay Pipe Class 45KN/m Class S bed surround; 1.003Diam 300Ø Grad 1 in 18.6Length 20.49 Clay Pipe Class 72KN/m Class S bed surround; 1.004Diam 300Ø Grad 1 in 19.8Length 23.54 Clay Pipe Class 72KN/m Class S bed surround
FW Invert Level	102.210; 101.625 101.625; 100.100 100.100; 99.000 99.000; 97.735
FW Details	1.001Diam 300Ø Grad 1 in 49.9Length 29.18 Clay Pipe Class 72KN/m Class S bed surround; 1.002Diam 300Ø Grad 1 in 16.4Length 25.04 Clay Pipe Class 72KN/m Class S bed surround; 1.003Diam 300Ø Grad 1 in 22.0Length 24.15 Clay Pipe Class 72KN/m Class S bed surround; 1.004Diam 300Ø Grad 1 in 15.8Length 19.97 Clay Pipe Class 72KN/m Class S bed surround

ROAD2
Vt 1:100
Hz 1:500
100.00 A.O.D.

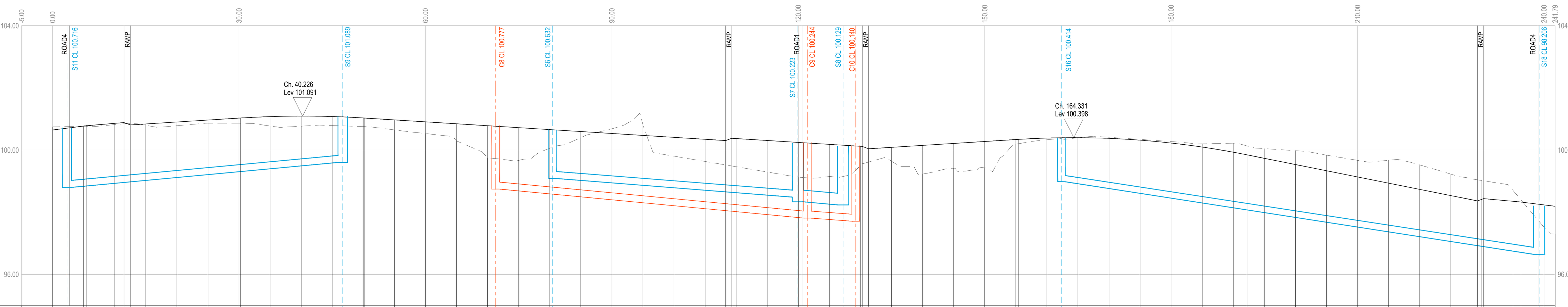


Exist. Level	103.378	103.301	103.312	103.299	103.022	102.928
Exist. Chainage	0.000	5.000	10.000	15.000	20.000	22.738

Prop. Level	103.757	103.695	103.640	103.685	103.715	103.657	103.629	103.698	103.698	103.629
Prop. Chainage	0.000	5.000	9.398	10.000	10.398	15.000	17.222	19.980	20.000	22.738

Band	Values
Vert. Elements	1 in 80.000 L=9.398; 1 in 13.333 L=1.000; 1 in 80.000 L=6.824; 1 in 40.000 L=2.758; 1 in 40.000 L=2.758
Horiz. Elements	Str. L=22.738

ROAD3
Vt 1:100
Hz 1:500
95.00 A.O.D.

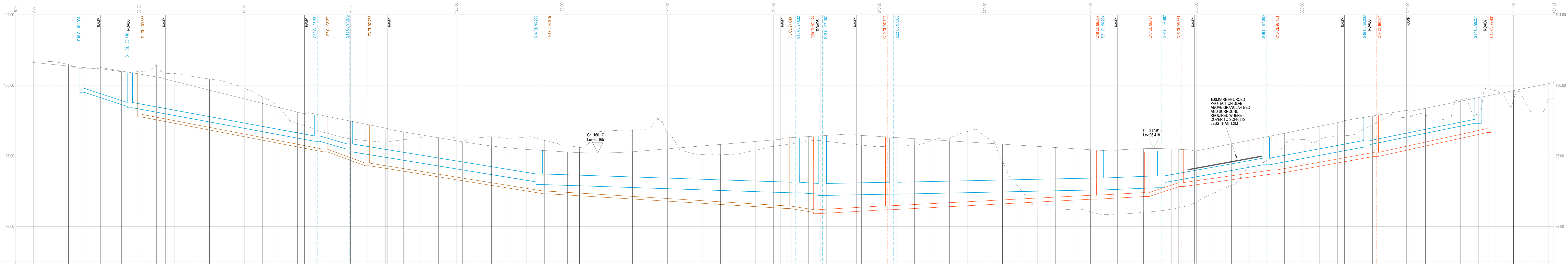


Exist. Level	100.745	100.764	100.816	100.794	100.783	100.862	100.862	100.773	100.767	100.788	100.754	100.647	100.531	100.293	99.750	99.667	100.058	100.399	100.684	100.810	99.802	99.632	99.463	99.293	99.133	99.149	99.499	99.641	99.228	99.413	99.426	100.186	100.330	100.394	100.409	100.341	100.273	100.199	100.219	100.044	99.979	99.835	99.669	99.671	99.521	99.226	99.019	98.703	97.528	97.294
Exist. Chainage	0.000	5.000	10.000	15.000	20.000	25.000	30.000	35.000	40.000	45.000	50.000	55.000	60.000	65.000	70.000	75.000	80.000	85.000	90.000	95.000	100.000	105.000	110.000	115.000	120.000	125.000	130.000	135.000	140.000	145.000	150.000	155.000	160.000	165.000	170.000	175.000	180.000	185.000	190.000	195.000	200.000	205.000	210.000	215.000	220.000	225.000	230.000	235.000	240.000	241.789

Prop. Level	100.645	100.770	100.782	100.857	100.882	100.807	100.839	100.901	100.964	101.026	101.029	101.074	101.091	101.077	101.032	101.029	100.969	100.907	100.844	100.782	100.719	100.657	100.594	100.532	100.469	100.407	100.344	100.303	100.378	100.369	100.307	100.244	100.182	100.119	100.090	100.115	100.087	100.149	100.212	100.274	100.337	100.342	100.385	100.397	100.375	100.318	100.225	100.096	99.930	99.846	99.734	99.534	99.334	99.134	98.934	98.734	98.534	98.363	98.416	98.438	98.351	98.328	98.235	98.190
Prop. Chainage	0.000	5.000	5.500	10.000	11.500	12.500	15.000	20.000	25.000	30.000	30.226	35.000	40.000	45.000	50.000	50.226	55.000	60.000	65.000	70.000	75.000	80.000	85.000	90.000	95.000	100.000	105.000	108.304	109.304	110.000	115.000	120.000	125.000	130.000	130.304	131.304	135.000	140.000	145.000	150.000	155.000	155.463	160.000	165.000	170.000	175.000	180.000	185.000	190.000	192.213	195.000	200.000	205.000	210.000	215.000	220.000	225.000	229.289	230.000	230.289	235.000	236.289	240.000	241.789

Band	Values
Vert. Elements	1 in 40.000 L=5.500; 1 in 60.000 L=6.000; 1 in 13.333 L=1.000; 1 in 80.000 L=17.726; Vert Curv L=20.000 k=8.000; 1 in 80.000 L=58.078; 1 in 13.333 L=1.000; 1 in 80.000 L=21.000; 1 in 13.333 L=1.000; 1 in 80.000 L=24.159; Vert Curv L=36.750 k=7.000; 1 in 25.000 L=37.076; 1 in 13.333 L=1.000; 1 in 54.736 L=6.000; 1 in 40.000 L=5.500
Horiz. Elements	Str. L=135.042; LH curve R=40.000 L=12.845; Str. L=7.514; RH curve R=40.000 L=12.845; Str. L=73.543
SW Invert Levels	98.725 98.800; 99.600; 99.200; 98.485 98.335; 98.235; 98.985; 96.645 96.495
SW Details	3.000Diam 225Ø Grad 1 in 55.5Length 44.37 Clay Pipe Class 45KN/m Class S bed surround; 2.000Diam 225Ø Grad 1 in 55.2Length 39.48 Clay Pipe Class 45KN/m Class S bed surround; 1.005Diam 375Ø Grad 1 in 72.9Length 7.29 Conc. Pipe Class 120 to EN 1916 / BS 5911-1:2002 Class S bed surround; 5.000Diam 225Ø Grad 1 in 32.9Length 76.87 Clay Pipe Class 45KN/m Class S bed surround
FW Invert Level	98.885; 97.735 97.735; 97.585
FW Details	2.002Diam 300Ø Grad 1 in 43 Length 49.44 Clay Pipe Class 72KN/m Class S bed surround; 1.005Diam 300Ø Grad 1 in 51.7Length 7.76 Clay Pipe Class 72KN/m Class S bed surround

ROAD4
Vt 1:100
Hz 1:500
90.00 A.O.D.

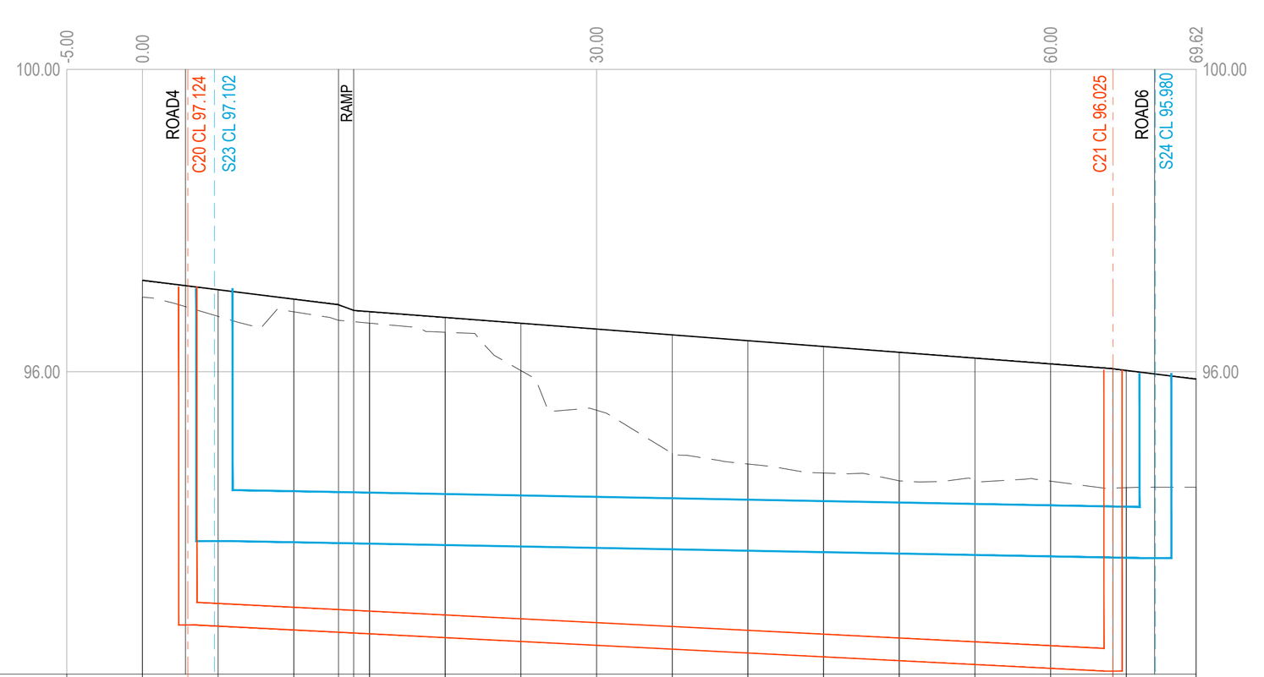


Exist. Level	101.380	101.345	101.184	100.964	100.911	100.770	100.778	101.147	100.670	100.504	100.356	100.163	99.826	99.343	98.706	97.830	97.495	97.195	96.966	96.852	96.781	96.917	97.045	97.070	97.031	97.006	97.080	96.991	97.058	96.874	96.592	96.481	97.224	97.437	97.443	97.586	97.341	96.254	96.079	96.066	96.126	96.322	96.534	96.682	96.833	96.823	96.699	96.609	96.521	96.557	96.616	96.867	97.014	97.374	97.133	95.688	94.128	93.034	92.943	92.975	92.830	92.678	92.719	92.806	92.893	93.059	93.388	93.888	94.339	95.462	95.749	96.622	96.924	96.923	97.117	97.220	97.758	98.285	98.155	98.339	98.065	99.184	98.373	99.689	99.177	98.475	99.228	99.261
Exist. Chainage	0.000	5.000	10.000	15.000	20.000	25.000	30.000	35.000	40.000	45.000	50.000	55.000	60.000	65.000	70.000	75.000	80.000	85.000	90.000	95.000	100.000	105.000	110.000	115.000	120.000	125.000	130.000	135.000	140.000	145.000	150.000	155.000	160.000	165.000	170.000	175.000	180.000	185.000	190.000	195.000	200.000	205.000	210.000	215.000	220.000	225.000	230.000	235.000	240.000	245.000	250.000	255.000	260.000	265.000	270.000	275.000	280.000	285.000	290.000	295.000	300.000	305.000	310.000	315.000	320.000	325.000	330.000	335.000	340.000	345.000	350.000	355.000	360.000	365.000	370.000	375.000	380.000	385.000	390.000	395.000	400.000	405.000	410.000	415.000	420.000	425.000	430.000	431.507

Prop. Level	101.291	101.191	101.091	100.991	100.930	101.005	100.974	100.807	100.640	100.474	100.422	100.347	100.224	99.974	99.724	99.474	99.224	98.974	98.724	98.474	98.377	98.452	98.370	98.170	97.970	97.770	97.570	97.477	97.552	97.359	97.192	97.025	96.859	96.798	96.697	96.561	96.450	96.365	96.341	96.301	96.239	96.219	96.185	96.165	96.182	96.236	96.260	96.317	96.400	96.484	96.567	96.650	96.734	96.817	96.900	96.933	97.008	97.034	97.096	97.159	97.221	97.254	97.179	97.161	97.099	97.036	96.974	96.911	96.849	96.786	96.724	96.661	96.599	96.536	96.474	96.411	96.349	96.286	96.265	96.340	96.364	96.393	96.409	96.413	96.393	96.372	96.337	96.262	96.281	96.481	96.681	96.881	97.081	97.281	97.481	97.681	97.881	97.922	97.997	98.096	98.263	98.430	98.583	98.559	98.521	98.697	98.897	99.097	99.297	99.497	99.697	99.897	100.097	100.157
Prop. Chainage	0.000	5.000	10.000	15.000	18.050	19.050	20.000	25.000	30.000	35.000	36.550	37.550	40.000	45.000	50.000	55.000	60.000	65.000	70.000	75.000	76.954	77.954	80.000	85.000	90.000	95.000	100.000	100.446	101.446	105.000	110.000	115.000	120.000	121.812	125.000	130.000	135.000	140.000	141.812	145.000	150.000	151.592	155.000	160.000	165.000	170.000	171.592	175.000	180.000	185.000	190.000	195.000	200.000	205.000	210.000	211.958	212.958	215.000	220.000	225.000	230.000	232.614	233.614	235.000	240.000	245.000	250.000	255.000	260.000	265.000	270.000	275.000	280.000	285.000	290.000	295.000	300.000	305.000	306.677	307.677	310.000	312.910	315.000	320.000	322.910	325.000	328.516	329.516	330.000	335.000	340.000	345.000	350.000	355.000	360.000	365.000	370.000	371.030	372.030	375.000	380.000	385.000	389.610	390.000	390.610	395.000	400.000	405.000	410.000	415.000	420.000	425.000	430.000	431.489

Band	Values
Vert. Elements	1 in 50.000 L=18.050; 1 in 13.333 L=1.000; 1 in 30.000 L=17.500; 1 in 13.333 L=1.000; 1 in 20.000 L=39.404; 1 in 13.333 L=1.000; 1 in 25.000 L=22.492; 1 in 13.333 L=1.000; 1 in 30.000 L=20.366; Vert Curv L=20.000 k=9.600; 1 in 80.000 L=9.780; Vert Curv L=20.000 k=6.857; 1 in 60.000 L=40.366; 1 in 13.333 L=1.000; 1 in 80.000 L=19.656; 1 in 13.333 L=1.000; 1 in 80.000 L=73.063; 1 in 13.333 L=1.000; 1 in 100.000 L=5.233; Vert Curv L=10.000 k=5.000; 1 in 100.000 L=5.606; 1 in 13.333 L=1.000; 1 in 25.000 L=41.514; 1 in 13.333 L=1.000; 1 in 30.000 L=17.580; 1 in 16.167 L=1.000; 1 in 25.000 L=40.879
Horiz. Elements	Str. L=78.454; LH curve R=14.000 L=21.991; Str. L=103.283; LH curve R=101.648 L=30.153; RH curve R=99.812 L=26.694; Str. L=48.147; LH curve R=14.000 L=21.922; Str. L=66.009; LH curve R=55.248 L=6.636; Str. L=9.477; RH curve R=64.750 L=7.777; Str. L=10.964
SW Invert Levels	99.605; 98.800 98.725; 96.825 96.825; 96.375 96.225; 94.525 94.375; 93.905 93.905; 93.835 93.685 93.760; 93.830 93.830; 94.070 94.070; 94.195 94.495; 95.495 95.495; 96.495 96.645; 97.845
SW Details	4.000Diam 225Ø Grad 1 in 16.9Length 13.60 Clay Pipe Class 45KN/m Class S bed surround; 3.001Diam 300Ø Grad 1 in 28.0Length 53.28 Clay Pipe Class 72KN/m Class S bed surround; 3.002Diam 300Ø Grad 1 in 28.6Length 12.89 Clay Pipe Class 72KN/m Class S bed surround; 3.003Diam 450Ø Grad 1 in 33.8Length 57.54 Conc. Pipe Class 120 to EN 1916 / BS 5911-1:2002 Class S bed surround; 3.004Diam 600Ø Grad 1 in 155.0Length 72.83 Conc. Pipe Class 120 to EN 1916 / BS 5911-1:2002 Class S bed surround; 1.007Diam 600Ø Grad 1 in 111.6Length 7.81 Conc. Pipe Class 120 to EN 1916 / BS 5911-1:2002 Class S bed surround; 5.005Diam 675Ø Grad 1 in 288.8Length 20.22 Conc. Pipe Class 120 to EN 1916 / BS 5911-1:2002 Class S bed surround; 5.004Diam 675Ø Grad 1 in 243.6Length 58.46 Conc. Pipe Class 120 to EN 1916 / BS 5911-1:2002 Class S bed surround; 5.003Diam 675Ø Grad 1 in 168.1Length 21.01 Conc. Pipe Class 120 to EN 1916 / BS 5911-1:2002 Class S bed surround; 5.002Diam 375Ø Grad 1 in 33.4Length 33.40 Conc. Pipe Class 120 to EN 1916 / BS 5911-1:2002 Class S bed surround; 5.001Diam 375Ø Grad 1 in 28.6Length 28.58 Conc. Pipe Class 120 to EN 1916 / BS 5911-1:2002 Class S bed surround; 6.000Diam 225Ø Grad 1 in 26.3Length 31.53 Clay Pipe Class 45KN/m Class S bed surround
FW Invert Level	98.200; 96.230 96.230; 95.440 95.440; 93.850 93.850; 93.020 93.020; 92.725 92.575 92.650; 92.945 92.945; 93.545 93.545; 93.695 93.695; 94.260 94.260; 94.970 94.970; 95.970 95.970; 97.320
FW Details	3.000Diam 150Ø Grad 1 in 26.6Length 52.34 Clay Pipe Class 40KN/m Class S bed surround; 3.001Diam 150Ø Grad 1 in 14.7Length 11.61 Clay Pipe Class 40KN/m Class S bed surround; 3.002Diam 150Ø Grad 1 in 31.9Length 50.74 Clay Pipe Class 40KN/m Class S bed surround; 3.003Diam 150Ø Grad 1 in 82.3Length 68.31 Clay Pipe Class 40KN/m Class S bed surround; 3.004Diam 150Ø Grad 1 in 27.5Length 8.12 Clay Pipe Class 40KN/m Class S bed surround; 4.008Diam 225Ø Grad 1 in 65.9 Length 20.49 Clay Pipe Class 45KN/m Class S bed surround; 4.007Diam 225Ø Grad 1 in 98.0Length 58.78 Clay Pipe Class 45KN/m Class S bed surround; 4.006Diam 225Ø Grad 1 in 96.3Length 14.44 Clay Pipe Class 45KN/m Class S bed surround; 4.005Diam 225Ø Grad 1 in 16.9Length 9.53 Clay Pipe Class 45KN/m Class S bed surround; 4.004Diam 225Ø Grad 1 in 36.9Length 26.23 Clay Pipe Class 45KN/m Class S bed surround; 4.003Diam 225Ø Grad 1 in 29.0Length 29.05 Clay Pipe Class 45KN/m Class S bed surround; 4.002Diam 225Ø Grad 1 in 23.6Length 31.85 Clay Pipe Class 45KN/m Class S bed surround

ROAD5
Vt 1:100
Hz 1:500
92.00 A.O.D.

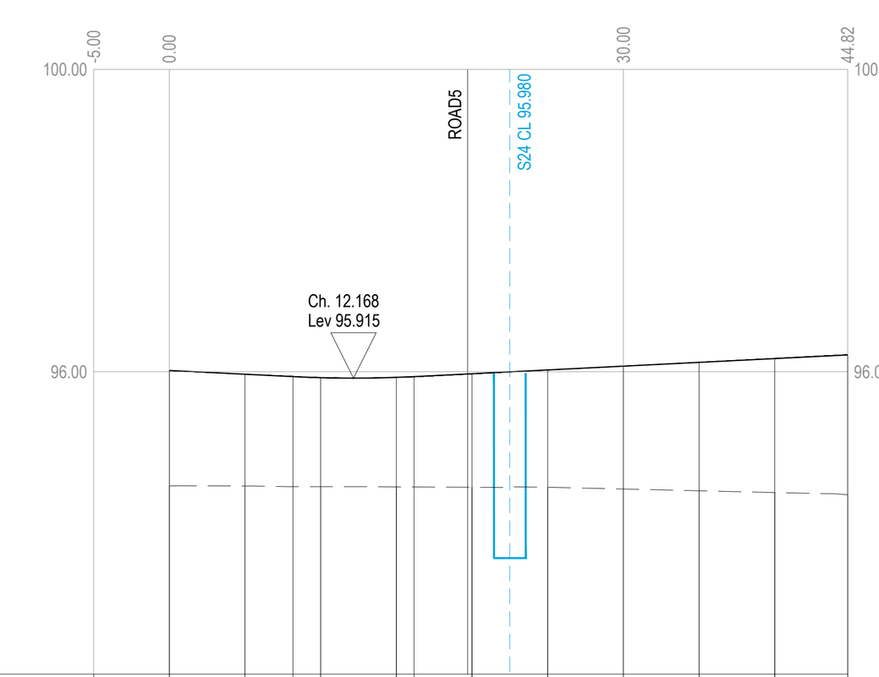


Exist. Level	96.987	96.732	96.792	96.643	96.522	96.016	95.491	94.918	94.779	94.661	94.557	94.570	94.552	94.467	94.472
Exist. Chainage	0.000	5.000	10.000	15.000	20.000	25.000	30.000	35.000	40.000	45.000	50.000	55.000	60.000	65.000	69.617

Prop. Level	97.210	97.085	96.960	96.886	96.811	96.795	96.718	96.641	96.564	96.487	96.411	96.334	96.257	96.180	96.103	96.039	96.017	95.902
Prop. Chainage	0.000	5.000	10.000	12.952	13.952	15.000	20.000	25.000	30.000	35.000	40.000	45.000	50.000	55.000	60.000	64.117	65.000	69.617

Band	Values
Vert. Elements	1 in 40.000 L=12.952; 1 in 13.333 L=1.000; 1 in 65.000 L=50.165; 1 in 40.000 L=5.500
Horiz. Elements	Str. L=69.617
SW Invert Levels	93.835 93.685 93.760; 93.385
SW Details	1.008Diam 750Ø Grad 1 in 207.2 Length 62.17 Conc. Pipe Class 120 to EN 1916 / BS 5911-1:2002 Class S bed surround
FW Invert Level	92.575; 91.995
FW Details	1.008Diam 300Ø Grad 1 in 67.2 Length 61.12 Clay Pipe Class 72KN/m Class S bed surround

ROAD6
Vt 1:100
Hz 1:500
92.00 A.O.D.

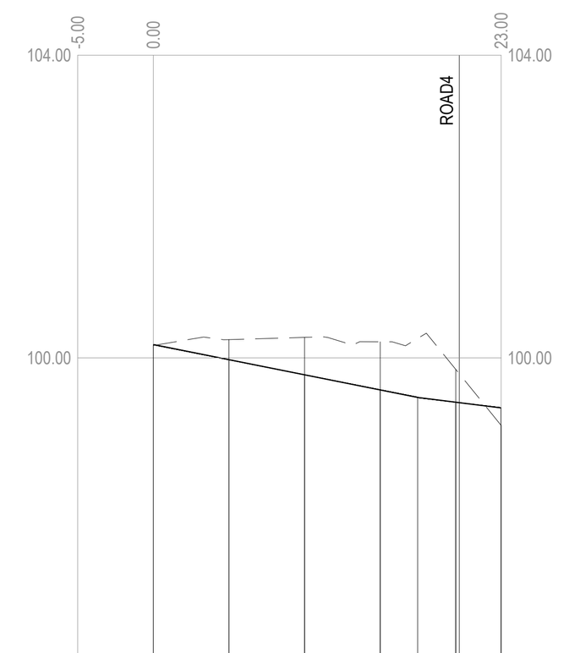


Exist. Level	94.489	94.488	94.480	94.477	94.472	94.471	94.448	94.425	94.402	94.373
Exist. Chainage	0.000	5.000	10.000	15.000	20.000	25.000	30.000	35.000	40.000	44.821

Prop. Level	96.017	95.967	95.935	95.921	95.925	95.935	95.974	96.024	96.074	96.124	96.174	96.222
Prop. Chainage	0.000	5.000	8.168	10.000	15.000	16.168	20.000	25.000	30.000	35.000	40.000	44.821

Band	Values
Vert. Elements	1 in 100.000 L=8.168; Vert Curv L=8.000 k=4.000; 1 in 100.000 L=28.652
Horiz. Elements	Str. L=44.821
SW Invert Levels	93.535
SW Details	
FW Invert Level	
FW Details	

ROAD7
Vt 1:100
Hz 1:500
96.00 A.O.D.

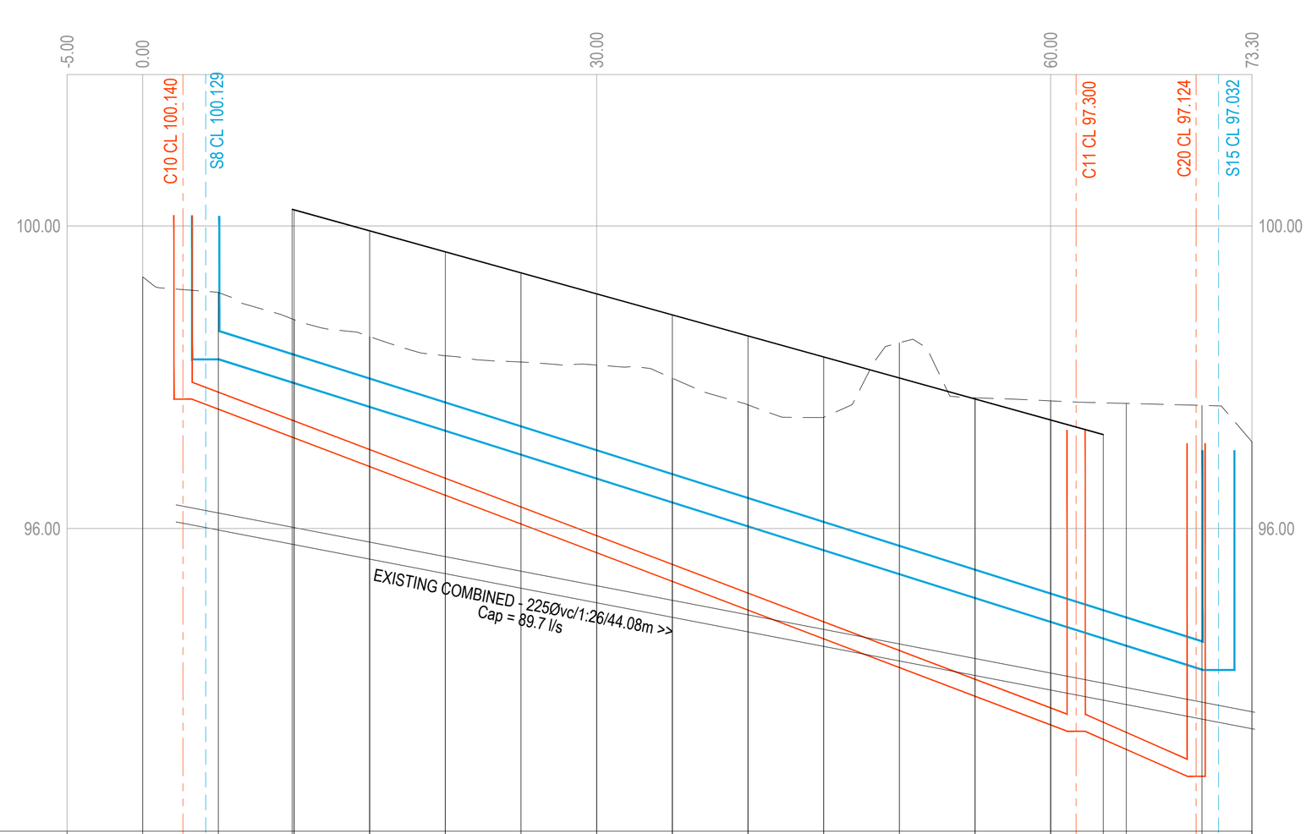


Exist. Level	100.163	100.241	100.271	100.213	99.846	99.107
Exist. Chainage	0.000	5.000	10.000	15.000	20.000	23.000

Prop. Level	100.176	99.976	99.776	99.576	99.476	99.413	99.339
Prop. Chainage	0.003	5.000	10.000	15.000	17.481	20.000	22.981

Band	Values
Vert. Elements	1 in 25.000 L=17.478; 1 in 40.000 L=5.500
Horiz. Elements	Str. L=23.000

LINK1
Vt 1:100
Hz 1:500
92.00 A.O.D.

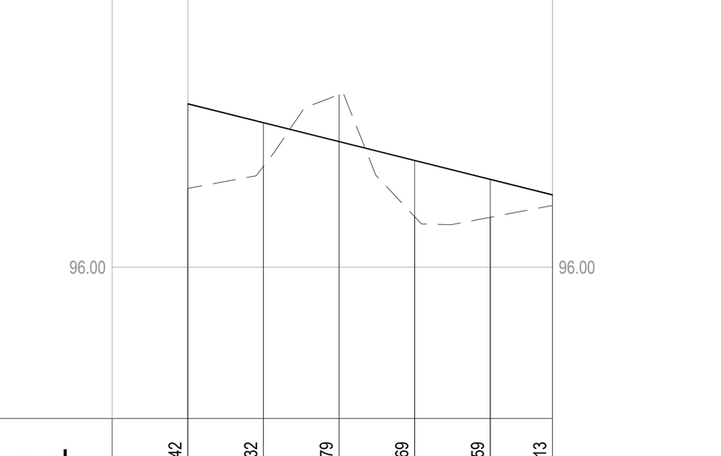


Exist. Level	99.325	99.119	98.760	98.536	98.284	98.200	98.160	97.986	97.635	97.469	98.454	97.727	97.687	97.653	97.628	97.146
Exist. Chainage	0.000	5.000	10.000	15.000	20.000	25.000	30.000	35.000	40.000	45.000	50.000	55.000	60.000	65.000	70.000	73.303

Prop. Level	100.220	100.213	99.935	99.657	99.379	99.101	98.823	98.545	98.267	97.989	97.711	97.433	97.240
Prop. Chainage	9.874	10.000	15.000	20.000	25.000	30.000	35.000	40.000	45.000	50.000	55.000	60.000	63.478

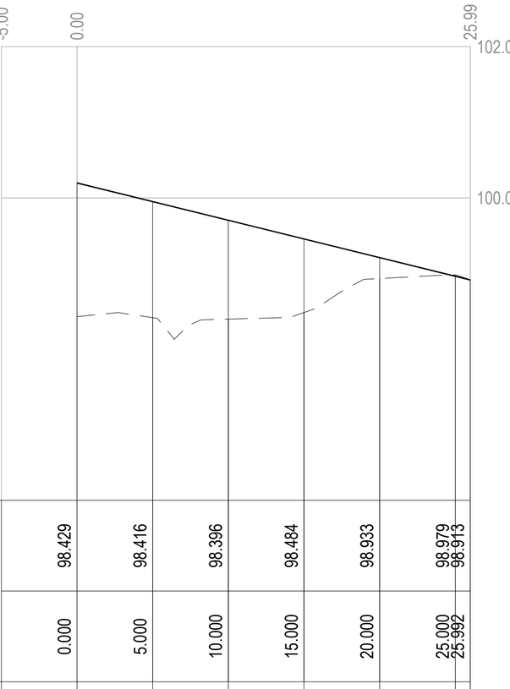
Band	Values
Vert. Elements	1 in 17.988 L=53.604
Horiz. Elements	Str. L=12.794; LH curve R=10.000 L=7.341; Str. L=1.835; RH curve R=10.000 L=12.478; Str. L=4.685; LH curve R=10.000 L=7.851; Str. L=9.509; RH curve R=10.000 L=2.731; Str. L=14.077
SW Invert Levels	98.235; 94.130
SW Details	1.006Diam 375Ø Grad 1 in 15.6Length 63.91 Conc. Pipe Class 120 to EN 1916 / BS 5911-1:2002 Class S bed surround
FW Invert Level	97.585; 93.245 93.245; 92.575
FW Details	1.006Diam 300Ø Grad 1 in 12.9Length 55.87 Clay Pipe Class 45KN/m Class S bed surround; 1.007Diam 300Ø Grad 1 in 12.8Length 8.60 Clay Pipe Class 45KN/m Class S bed surround

LINK2
Vt 1:100
Hz 1:500
94.00 A.O.D.



Exist. Level	97.042	97.332	98.279	96.669	96.659	96.813
Exist. Chainage	0.000	5.000	10.000	15.000	20.000	24.120
Prop. Level	98.160	97.910	97.660	97.410	97.160	96.954
Prop. Chainage	0.000	5.000	10.000	15.000	20.000	24.120
Vert. Elements	1 in 20.000 L=24.120					
Horiz. Elements	Str. L=24.120					

LINK3
Vt 1:100
Hz 1:500
96.00 A.O.D.



Exist. Level	98.429	98.416	98.396	98.484	98.933	98.979	98.913
Exist. Chainage	0.000	5.000	10.000	15.000	20.000	25.000	25.992
Prop. Level	100.198	99.951	99.704	99.456	99.209	98.962	98.913
Prop. Chainage	0.000	5.000	10.000	15.000	20.000	25.000	25.992
Vert. Elements	1 in 20.225 L=25.992						
Horiz. Elements	Str. L=25.992						

GENERAL NOTES:-
1. DO NOT USE THIS DRAWING IN ISOLATION. THIS DRAWING HAS BEEN PREPARED AS PART OF A SET, AND MUST THEREFORE BE READ IN CONJUNCTION WITH ALL OTHER DRAWINGS. ANY DISCREPANCIES MUST BE REPORTED TO THE ENGINEER PRIOR TO COMMENCING WORKS.
2. THIRD PARTY INFORMATION IS USED TO PREPARE THE ENGINEERING DESIGN (INCLUDING, ARCHITECTURAL LAYOUT, GROUND INVESTIGATION, EXISTING UTILITIES RECORDS, AND SPECIALIST DESIGN ITEMS). THE ENGINEERING DESIGN MUST THEREFORE BE READ IN CONJUNCTION WITH ALL THIRD PARTY INFORMATION PRIOR TO COMMENCING WORK. QUEENSBERRY DESIGN LTD ARE NOT RESPONSIBLE FOR ANY THIRD PARTY INFORMATION OR DETAILS.
3. DRAWING STATUS WILL REMAIN PRELIMINARY UNTIL FULL TECHNICAL APPROVAL IS RECEIVED FROM LOCAL AUTHORITY AND SEWERAGE UNDERTAKER. WORKS COMMENCED PRIOR TO TECHNICAL APPROVAL ARE DONE SO AT RISK AND MAY BE SUBJECT TO CHANGE.
4. THE CONTRACTOR IS EXPECTED TO PREPARE APPROPRIATE CONSTRUCTION METHOD STATEMENTS FOR ALL ASPECTS OF APPOINTED WORK. THIS SHOULD INCLUDE ANY TEMPORARY PROTECTION / WORKS.
5. LAND DRAINAGE IS NOT PERMITTED TO DISCHARGE INTO THE PUBLIC SEWER NETWORK. ANY NEED FOR LAND DRAINAGE SHOULD BE ASSESSED BY THE GROUND WORKER AND LANDSCAPER DURING CONSTRUCTION AND PLACEMENT OF GARDENS ON AN INDIVIDUAL PLOT BASIS. IF LAND DRAINAGE DESIGNS ARE REQUIRED, THEY SHOULD BE APPOINTED PRIOR TO PLOT COMPLETION.
6. THE CONTRACTOR IS EXPECTED TO CROSS CHECK ALL DRAINAGE INVERTS PRIOR TO COMMENCING WORK, THIS MAY INVOLVE COMPLETION OF TRIAL HOLES IF INVERT LEVELS HAVE BEEN INTERPOLATED. THE POSITION, LINE AND DIAMETER OF ALL EXISTING DRAINAGE APPARATUS SHOULD BE CONFIRMED ON SITE PRIOR TO THE COMMENCEMENT OF THE WORKS. ANY DISCREPANCIES MUST BE REPORTED TO THE ENGINEER IMMEDIATELY.
7. THE CONTRACTOR MUST MONITOR THE "AS BUILT" PROGRESS OF EACH CONSTRUCTION STAGE (ROADS/SEWERS/PLOT WORKS ETC), TO ENABLE THE NEXT STAGES OF CONSTRUCTION TO BE CHECKED BEFORE INSTALLATION.

HIGHWAYS
1. ALL HIGHWAY WORKS TO BE CARRIED OUT IN ACCORDANCE WITH THE CURRENT LOCAL AUTHORITY DESIGN GUIDE AND SPECIFICATION
2. ALL EXCAVATIONS BELOW PROPOSED AND EXISTING HIGHWAYS TO BE BACK FILLED WITH GRANULAR TYPE 1 SUB BASE AND WELL COMPACTED IN LAYERS NOT EXCEEDING 150MM, UNLESS OTHERWISE AGREED.
3. HIGHWAY AUTHORITY TO BE NOTIFIED BY THE CONTRACTOR PRIOR TO THE COMMENCEMENT OF WORKS.

ADOPTABLE DRAINAGE
1. ALL ADOPTABLE SEWER WORKS AND MATERIAL TO BE IN ACCORDANCE WITH "CODE FOR ADOPTION". THE RELEVANT BRITISH/EUROPEAN AND YORKSHIRE WATER'S STANDARDS/REQUIREMENTS/ADDENDUM TO THE MECHANICAL AND ELECTRICAL SPECIFICATION AND KITEMARKED
2. 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
3. FILLED GROUND MUST BE FILLED AND CONSOLIDATED UNDER THE SUPERVISION AND TO THE SATISFACTION OF YORKSHIRE WATER BEFORE ANY SEWER WORKS ARE CARRIED OUT
4. 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 REGARDING THE DISPOSAL OF THE FILTER DRAIN/LAND DRAINAGE RUN-OFF
5. THE ADOPTABLE SEWERS SHOULD BE A MINIMUM OF 1M AND MANHOLES 0.5M FROM KERB FACES AND SERVICE MARGINS
6. SEWERS MUST HAVE 5 METRES CLEARANCE FROM TREES AND HEDGES OR THE WIDTH OF THE CANOPY AT MATURE HEIGHT.
7. 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 NONVEHICULAR ACCESS AREAS) THEN A CONCRETE SLAB SHOULD BE PROVIDED ABOVE GRANULAR BED AND SURROUND
8. BEDDING AND BACKFILL MATERIAL TO CONFORM TO THE REQUIREMENT OF WATER INDUSTRY SPECIFICATION 4-08-02 (TABLE A2).
9. YORKSHIRE WATER POLICY IS THAT TYPE "C" BRICK MANHOLES AND 1050MM DIAMETER MANHOLE RINGS ARE NOT PREFERRED. INSTEAD, IT IS PREFERRED THAT YOU USE A TYPE "B" MANHOLE WITH 1200MM DIAMETER OR 1500MM DIAMETER RINGS, WITH THE OPENING SITED OVER THE CHANNEL WHERE DEPTH OF COVER TO PIPE SOFFIT IS 1 - 1.5M
10. 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 REQUIRE CLAY WARE CHANNEL IN MANHOLES
11. THE MINIMUM CRUSHING STRENGTH FOR CLAY PIPES SHOULD BE AS FOLLOWS: 100MM DIA. 40KN/M, 150MM DIA. 40KN/M, 225MM DIA. 45KN/M AND 300MM DIA. 72KN/M. THE MINIMUM CRUSHING STRENGTH FOR CONCRETE PIPES SHOULD BE - (CLASS120 TO EN 1916/BS5911-1 2002). PLASTIC PIPES SHOULD CONFORM TO WIS 4-35-01 AND BS EN13476
12. 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
13. THERE MUST BE ENOUGH CLEARANCE AT CROSSOVERS TO ACCOMMODATE BEDDING TO BOTH PIPES, APPROX. 300MM : IF CROSSOVER IS NEAR THE ROCKER THEN THE CLEARANCE NEEDED MAY NEED TO BE INCREASED".

DRAINAGE WITHIN HIGHWAY REQUIREMENTS
14. ALL ADOPTABLE SEWER WORKS AND MATERIALS TO BE IN ACCORDANCE WITH CODE FOR ADOPTION AND NATIONAL SPECIFICATION DESIGN MANUAL FOR ROADS AND BRIDGES
15. ALL PCC UNITS IN OVERSIZE MANHOLES MUST HAVE A DESIGN WORKING LIFE OF 100 YEARS (MIN) IN ACCORDANCE WITH BS 8500-1:2015+A2:2019-TABLE A5.
16. PRECAST CONCRETE MANHOLE UNITS INCLUDING THEIR PCC COVER SLABS SHALL COMPLY WITH THE RELEVANT PROVISIONS OF BS EN 1917 AND BS 5911-3 AND SHALL BE MANUFACTURED FROM CONCRETE WITH A DESIGN CHEMICAL CLASS DC-4 UNLESS SATISFACTORY EVIDENCE THROUGH SOIL ANALYSIS CAN BE PROVIDED THAT A LOWER CLASS WILL RESIST ATTACK FROM SOILS AND GROUND WATER.
17. PRECAST CONCRETE CORBEL SLABS SHALL COMPLY WITH BS 5911-3 TABLE 3 AND FIGURE 8.
18. COVER SLABS SHALL BE INSTALLED WITH A MINIMUM OF 300mm COVER TO FINISHED GROUND LEVEL.
19. SUBMISSION OF A CONSTRUCTION COMPLIANCE CERTIFICATE SHALL BE PROVIDED UPON COMPLETION OF DRAINAGE WORKS

EXISTING SERVICES

PRIOR TO THE COMMENCEMENT OF ANY WORKS UNDER GROUND MAPPING SURVEYS AND CONSTRAINTS PLAN IS TO BE REFERED TO ANY DISCREPANCIES ARE TO BE REPORTED TO ENGINEER.

ANY EXISTING SERVICES WHICH MAY BE AFFECTED BY THE PROPOSED WORKS SHOULD BE LOCATED BY MEANS OF A HAND DIG IN CLOSE LIAISON WITH THE STATUTORY SERVICE AUTHORITIES. THE CONTRACTOR SHALL INFORM THE DEVELOPER OF ANY SERVICES THAT MAY AFFECT THE PROPOSED DESIGN. CONTRACTOR TO NOTIFY STATUTORY SERVICE AUTHORITIES PRIOR TO COMMENCEMENT OF WORK. AS CONSTRUCTED INFORMATION IT IS THE CONTRACTORS RESPONSIBILITY TO PROVIDE THE FOLLOWING AS CONSTRUCTED DRAWINGS TO THE DEVELOPER UPON THE COMPLETION OF THE WORKS COVERED BY THE CONTRACT :-
1. POSITION/CO-ORDINATES OF ALL ADOPTABLE MANHOLES.
2. INVERT AND COVER LEVELS OF ALL ADOPTABLE MANHOLES.
3. NEW GULLY POSITIONS AND CONNECTIONS.
4. POSITION AND DEPTH OF SERVICE DUCTS FOR WATER, GAS, ELECTRIC, BT, CABLE AND STREET LIGHTING, STATING SIZE AND NUMBER OF DUCTS.

Rev.	Date	Revision Details	Drawn	Checked
K	12.12.24	RAMP MOVED ROAD 4	ND	ND
J	03.10.24	LINK 2 ALIGNMENT AND LEVELS AMENDED	ND	ND
I	22.07.24	INVERT LEVELS AMENDED C17 AND FD22 - SEWER NO. 4.000 AMENDED	ND	ND
H	08.05.24	YORKSHIRE WATER COMMENTS ADDED	ND	ND
G	12.03.24	RAMPS ADDED ROAD 4	ND	ND
F	18.02.24	NOTES RELATING TO PRE-CAST CONCRETE PRODUCTS REVIEWED	ND	ND
E	18.01.24	COMBINED DIVERSION CHANGE TO 300Ø FOLLOWING SITE INVESTIGATION	ND	ND
D	10.01.24	DRAINAGE WITHIN HIGHWAY NOTES ADDED	ND	ND
A	B	C	D	E
B	21.04.23	MINOR UPDATES TO PLANNING APPROVED LAYOUT	ND	ND
A	01.03.22	SITE RE-DESIGNED TO NEW PLANNING LAYOUT AND FLOOD RISK / SURFACE WATER DRAINAGE DESIGN REQUIREMENTS	ND	ND
-	18.02.22	FIRST ISSUE	ND	ND

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www.queensberrydesign.co.uk

Client: STRATA HOMES

Project: WESTGATE, CLECKHEATON

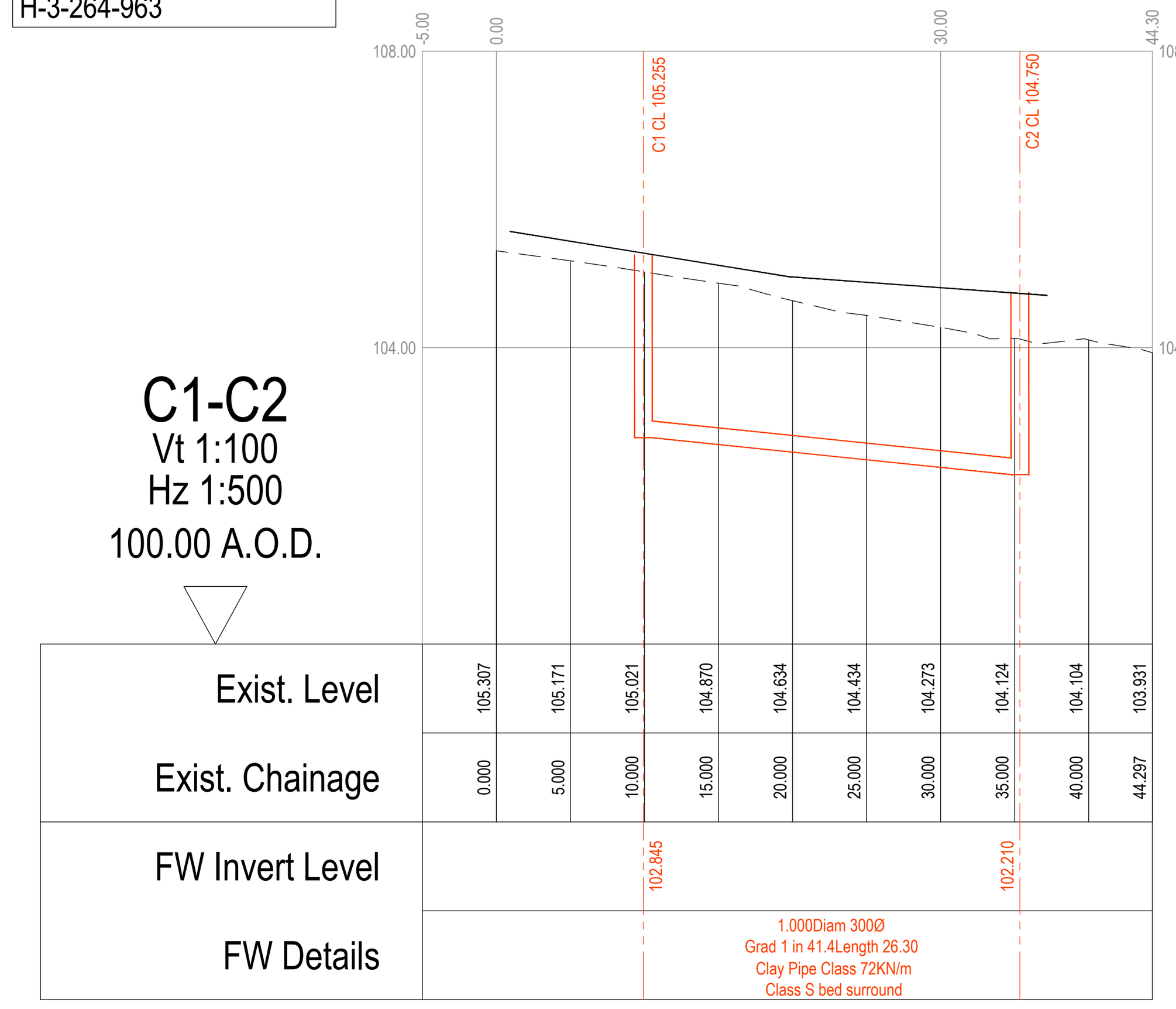
Title: LONGSECTIONS SHEET 1

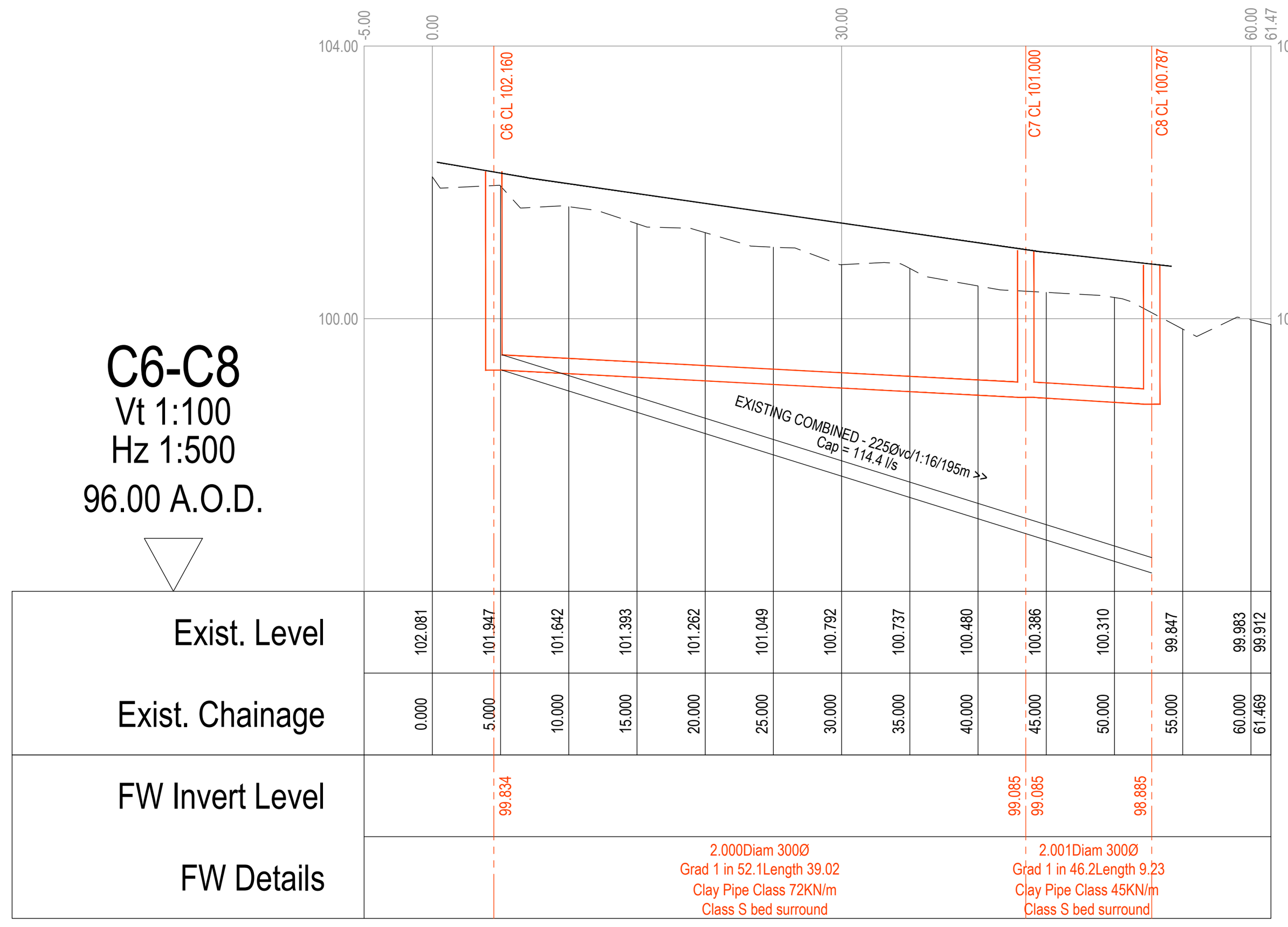
Drawn	Checked	Date
ND	AL	16.02.2022

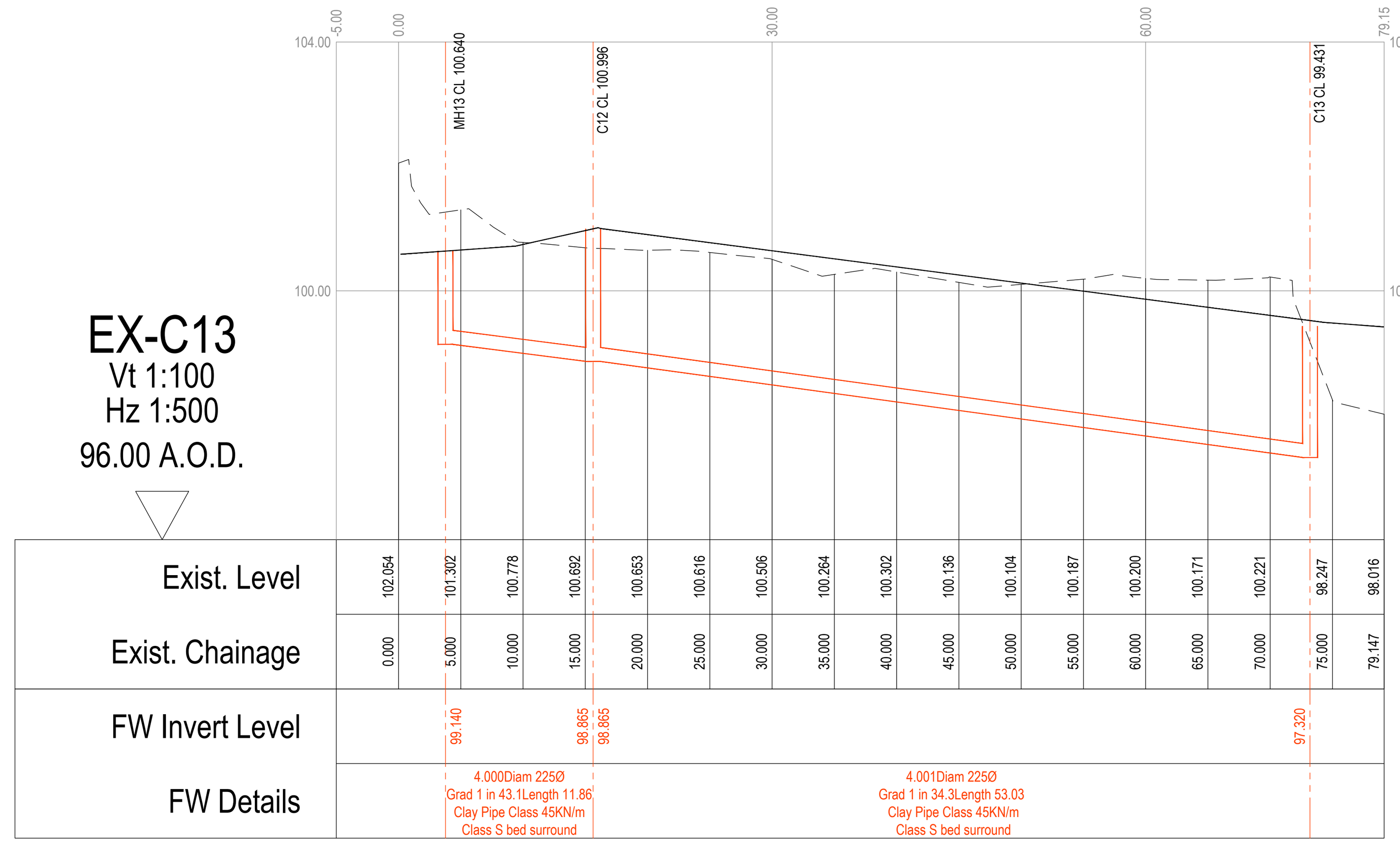
Drawing Number: QD1776-05-01

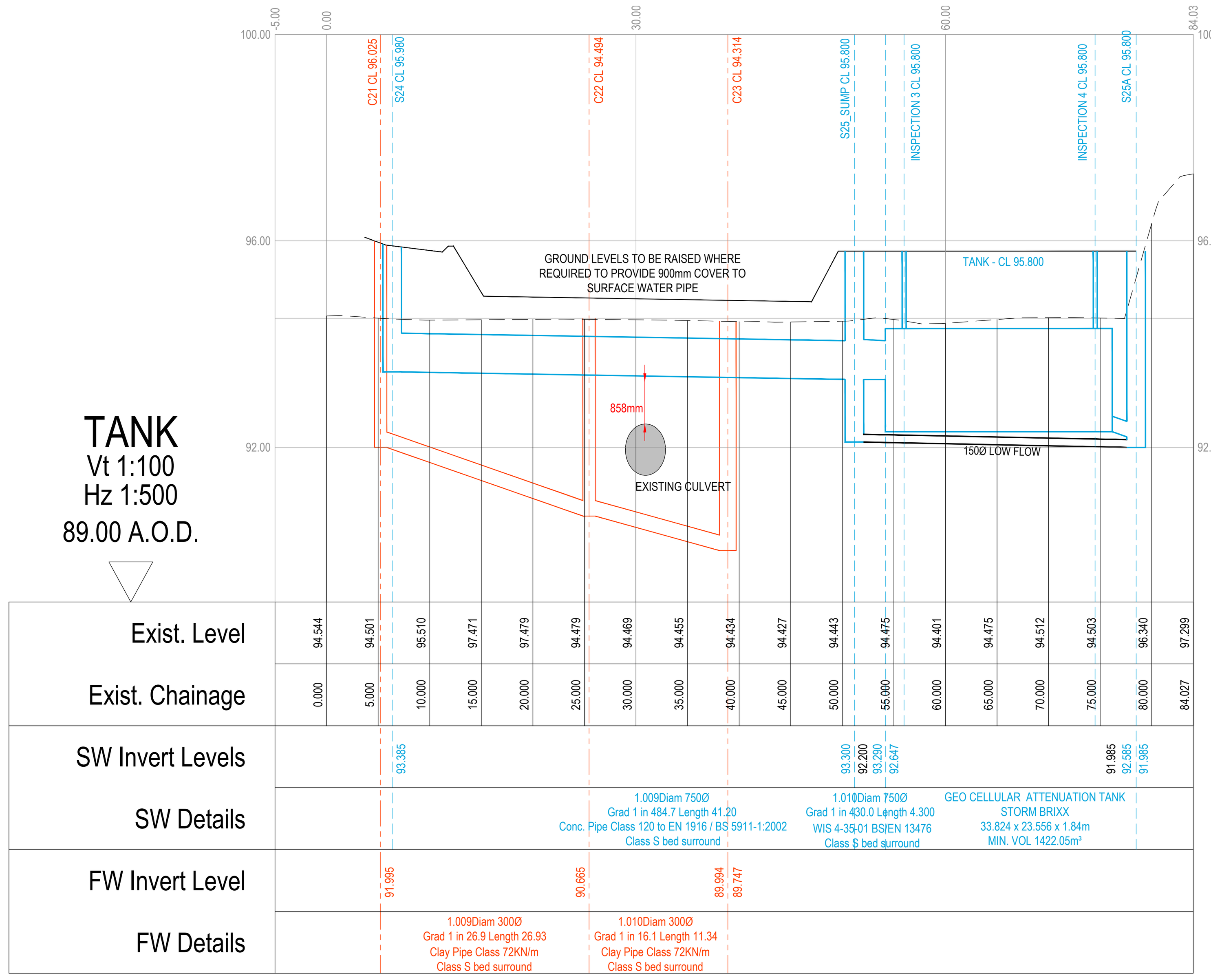
Drawing Status	Scale	Rev.
TENDER	1:500/1:100	K

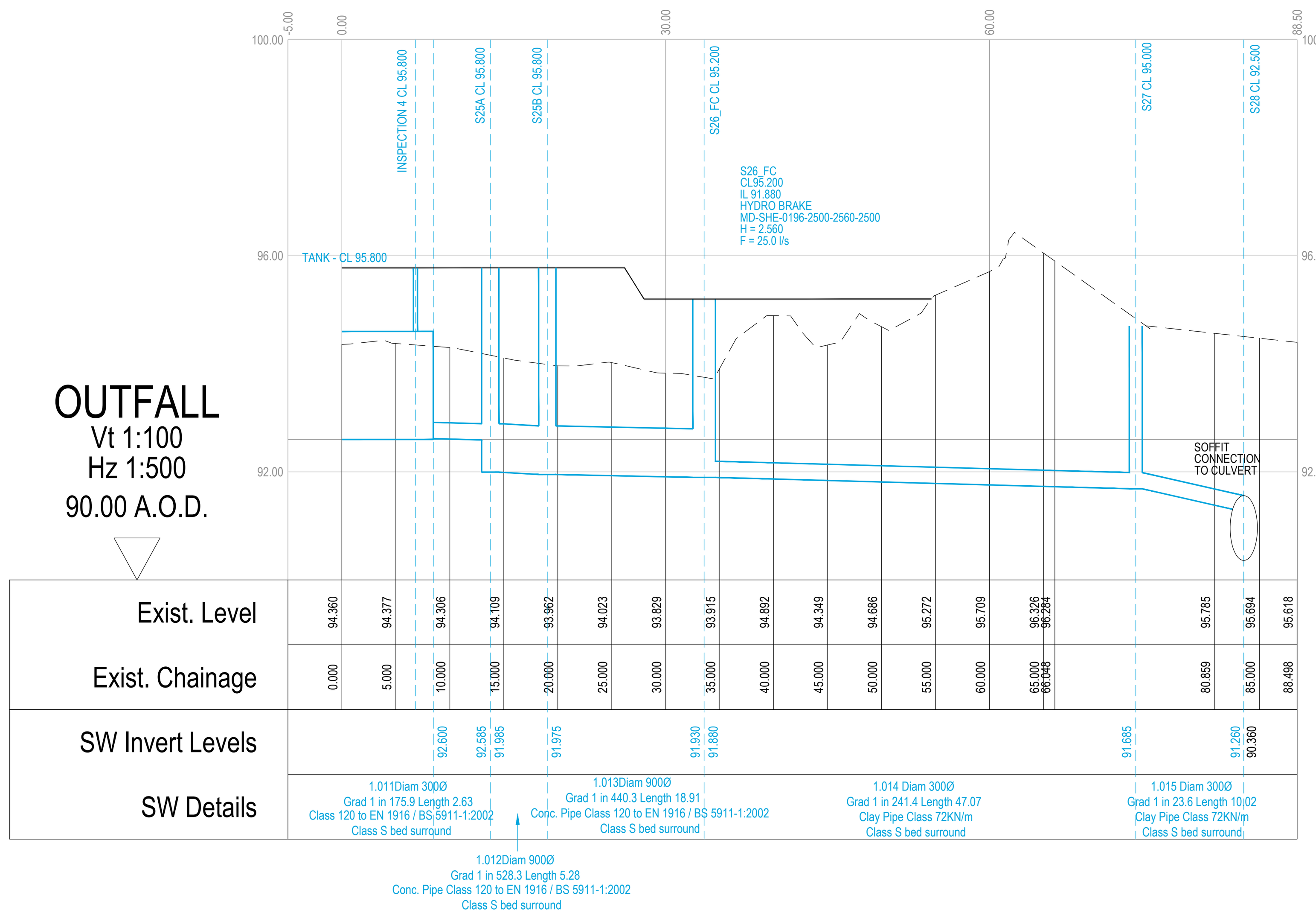
YORKSHIRE WATER REF
H-3-264-963











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3. DRAWING STATUS WILL REMAIN PRELIMINARY UNTIL FULL TECHNICAL APPROVAL IS RECEIVED FROM LOCAL AUTHORITY AND SEWERAGE UNDERTAKER. WORKS COMMENCED PRIOR TO TECHNICAL APPROVAL ARE DONE SO AT RISK AND MAY BE SUBJECT TO CHANGE.
4. THE CONTRACTOR IS EXPECTED TO PREPARE APPROPRIATE CONSTRUCTION METHOD STATEMENTS FOR ALL ASPECTS OF APPOINTED WORK. THIS SHOULD INCLUDE ANY TEMPORARY PROTECTION / WORKS.
5. LAND DRAINAGE IS NOT PERMITTED TO DISCHARGE INTO THE PUBLIC SEWER NETWORK. ANY NEED FOR LAND DRAINAGE SHOULD BE ASSESSED BY THE GROUND WORKER AND LANDSCAPER DURING CONSTRUCTION AND PLACEMENT OF GARDENS ON AN INDIVIDUAL PLOT BASIS. IF LAND DRAINAGE DESIGNS ARE REQUIRED, THEY SHOULD BE APPOINTED PRIOR TO PLOT COMPLETION.
6. THE CONTRACTOR IS EXPECTED TO CROSS CHECK ALL DRAINAGE INVERTS PRIOR TO COMMENCING WORK, THIS MAY INVOLVE COMPLETION OF TRIAL HOLES IF INVERT LEVELS HAVE BEEN INTERPOLATED. THE POSITION, LINE AND DIAMETER OF ALL EXISTING DRAINAGE APPARATUS SHOULD BE CONFIRMED ON SITE PRIOR TO THE COMMENCEMENT OF THE WORKS. ANY DISCREPANCIES MUST BE REPORTED TO THE ENGINEER IMMEDIATELY.
7. THE CONTRACTOR MUST MONITOR THE "AS BUILT" PROGRESS OF EACH CONSTRUCTION STAGE (ROADS/SEWERS/PLOT WORKS ETC), TO ENABLE THE NEXT STAGES OF CONSTRUCTION TO BE CHECKED BEFORE INSTALLATION.

HIGHWAYS

1. ALL HIGHWAY WORKS TO BE CARRIED OUT IN ACCORDANCE WITH THE CURRENT LOCAL AUTHORITY DESIGN GUIDE AND SPECIFICATION
2. ALL EXCAVATIONS BELOW PROPOSED AND EXISTING HIGHWAYS TO BE BACK FILLED WITH GRANULAR TYPE 1 SUB BASE AND WELL COMPACTED IN LAYERS NOT EXCEEDING 150MM, UNLESS OTHERWISE AGREED.
3. HIGHWAY AUTHORITY TO BE NOTIFIED BY THE CONTRACTOR PRIOR TO THE COMMENCEMENT OF WORKS.

ADOPTABLE DRAINAGE

1. ALL ADOPTABLE SEWER WORKS AND MATERIAL TO BE IN ACCORDANCE WITH "CODE FOR ADOPTION". THE RELEVANT BRITISH/EUROPEAN AND YORKSHIRE WATER'S STANDARDS/REQUIREMENTS/ADDENDUM TO THE MECHANICAL AND ELECTRICAL SPECIFICATION AND KITEMARKED
2. 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
3. FILLED GROUND MUST BE FILLED AND CONSOLIDATED UNDER THE SUPERVISION AND TO THE SATISFACTION OF YORKSHIRE WATER BEFORE ANY SEWER WORKS ARE CARRIED OUT
4. 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 REGARDING THE DISPOSAL OF THE FILTER DRAIN/LAND DRAINAGE RUN-OFF
5. THE ADOPTABLE SEWERS SHOULD BE A MINIMUM OF 1M AND MANHOLES 0.5M FROM KERB FACES AND SERVICE MARGINS
6. SEWERS MUST HAVE 5 METRES CLEARANCE FROM TREES AND HEDGES OR THE WIDTH OF THE CANOPY AT MATURE HEIGHT.
7. 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 NONVEHICULAR ACCESS AREAS) THEN A CONCRETE SLAB SHOULD BE PROVIDED ABOVE GRANULAR BED AND SURROUND
8. BEDDING AND BACKFILL MATERIAL TO CONFORM TO THE REQUIREMENT OF WATER INDUSTRY SPECIFICATION 4-08-02 (TABLE A2).
9. YORKSHIRE WATER POLICY IS THAT TYPE "C" BRICK MANHOLES AND 1050MM DIAMETER MANHOLE RINGS ARE NOT PREFERRED. INSTEAD, IT IS PREFERRED THAT YOU USE A TYPE "B" MANHOLE WITH 1200MM DIAMETER OR 1500MM DIAMETER RINGS, WITH THE OPENING SITED OVER THE CHANNEL WHERE DEPTH OF COVER TO PIPE SOFFIT IS 1 - 1.5M
10. 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 REQUIRE CLAY WARE CHANNEL IN MANHOLES
11. THE MINIMUM CRUSHING STRENGTH FOR CLAY PIPES SHOULD BE AS FOLLOWS: 100MM DIA. 40KN/M, 150MM DIA. 40KN/M, 225MM DIA. 45KN/M AND 300MM DIA. 72KN/M. THE MINIMUM CRUSHING STRENGTH FOR CONCRETE PIPES SHOULD BE - (CLASS120 TO EN 1916/BS5911-1 2002). PLASTIC PIPES SHOULD CONFORM TO WIS 4-35-01 AND BS EN13476
12. 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
13. THERE MUST BE ENOUGH CLEARANCE AT CROSSOVERS TO ACCOMMODATE BEDDING TO BOTH PIPES, APPROX. 300MM : IF CROSSOVER IS NEAR THE ROCKER THEN THE CLEARANCE NEEDED MAY NEED TO BE INCREASED".

DRAINAGE WITHIN HIGHWAY REQUIREMENTS

14. ALL ADOPTABLE SEWER WORKS AND MATERIALS TO BE IN ACCORDANCE WITH CODE FOR ADOPTION AND NATIONAL SPECIFICATION DESIGN MANUAL FOR ROADS AND BRIDGES
15. ALL PCC UNITS IN OVERSIZE MANHOLES MUST HAVE A DESIGN WORKING LIFE OF 100 YEARS (MIN) IN ACCORDANCE WITH BS 8500-1:2015+A2:2019-TABLE A5.
16. PRECAST CONCRETE MANHOLE UNITS INCLUDING THEIR PCC COVER SLABS SHALL COMPLY WITH THE RELEVANT PROVISIONS OF BS EN 1917 AND BS 5911-3 AND SHALL BE MANUFACTURED FROM CONCRETE WITH A DESIGN CHEMICAL CLASS DC-4 UNLESS SATISFACTORY EVIDENCE THROUGH SOIL ANALYSIS CAN BE PROVIDED THAT A LOWER CLASS WILL RESIST ATTACK FROM SOILS AND GROUND WATER.
17. PRECAST CONCRETE CORBEL SLABS SHALL COMPLY WITH BS 5911-3 TABLE 3 AND FIGURE 8.
18. COVER SLABS SHALL BE INSTALLED WITH A MINIMUM OF 300mm COVER TO FINISHED GROUND LEVEL.
19. SUBMISSION OF A CONSTRUCTION COMPLIANCE CERTIFICATE SHALL BE PROVIDED UPON COMPLETION OF DRAINAGE WORKS

EXISTING SERVICES

PRIOR TO THE COMMENCEMENT OF ANY WORKS UNDER GROUND MAPPING SURVEYS AND CONSTRAINTS PLAN IS TO BE REFERED TO ANY DISCREPANCIES ARE TO BE REPORTED TO ENGINEER.

ANY EXISTING SERVICES WHICH MAY BE AFFECTED BY THE PROPOSED WORKS SHOULD BE LOCATED BY MEANS OF A HAND DIG IN CLOSE LIAISON WITH THE STATUTORY SERVICE AUTHORITIES. THE CONTRACTOR SHALL INFORM THE DEVELOPER OF ANY SERVICES THAT MAY AFFECT THE PROPOSED DESIGN. CONTRACTOR TO NOTIFY STATUTORY SERVICE AUTHORITIES PRIOR TO COMMENCEMENT OF WORK. AS CONSTRUCTED INFORMATION IT IS THE CONTRACTORS RESPONSIBILITY TO PROVIDE THE FOLLOWING AS CONSTRUCTED DRAWINGS TO THE DEVELOPER UPON THE COMPLETION OF THE WORKS COVERED BY THE CONTRACT :-

1. POSITION/CO-ORDINATES OF ALL ADOPTABLE MANHOLES.
2. INVERT AND COVER LEVELS OF ALL ADOPTABLE MANHOLES.
3. NEW GULLY POSITIONS AND CONNECTIONS.
4. POSITION AND DEPTH OF SERVICE DUCTS FOR WATER, GAS, ELECTRIC, BT, CABLE AND STREET LIGHTING, STATING SIZE AND NUMBER OF DUCTS.

Rev.	Date	Revision Details	Drawn	Checked
J	05.08.24	NOTE AMENDED	ND	ND
I	22.07.24	TANK OUTLET PIPE LEVELS AMENDED	ND	ND
H	08.05.24	YORKSHIRE WATER COMMENTS ADDED	ND	ND
G	19.03.24	TANK ARRANGEMENT UPDATED	ND	ND
F	18.02.24	NOTES RELATING TO PRE-CAST CONCRETE PRODUCTS REVIEWED	ND	ND
E	18.01.24	COMBINED DIVERSION CHANGE TO 300Ø FOLLOWING SITE INVESTIGATION	ND	ND
D	10.01.24	DRAINAGE WITHIN HIGHWAY NOTES ADDED	ND	ND
C	06.09.23	YORKSHIRE WATER REFERENCE ADDED - STORAGE CHANGED TO GEO CELLULAR	ND	ND
B	21.04.23	MINOR UPDATES TO PLANNING APPROVED LAYOUT	ND	ND
A	01.03.22	SITE RE-DESIGNED TO NEW PLANNING LAYOUT AND FLOOD RISK / SURFACE WATER DRAINAGE DESIGN REQUIREMENTS	ND	ND
-	18.02.22	FIRST ISSUE	ND	ND

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STRATA HOMES

Project
WESTGATE, CLECKHEATON

Title
LONGSECTIONS
SHEET 2

Drawn	Checked	Date
ND	AL	16.02.2022

Drawing Number: QD1776-05-02

Drawing Status	Scale	Rev.
APPROVAL	1:500/100 - A1	J

YORKSHIRE WATER REF
H-3-264-963
D-3-023-007

FOUL MANHOLE SCHEDULE - SECTION 104

MH REF	MANHOLE TYPE	MANHOLE SIZE	COVER SLAB	COVER TYPE / SIZE	COVER LEVEL	INVERT LEVEL	DEPTH TO SOFFIT (m)	PIPES IN			PIPES OUT		
								PIPE No	IL	DIAMETER	PIPE No	102.845	DIAMETER
F1	MH B	1500	600 x 600	D 400 - 600 x 600	100.688	98.200	2.338	3.000	96.230	150	3.001	96.230	150
F2	MH B	1500	600 x 600	D 400 - 600 x 600	98.271	96.230	1.891	3.001	95.440	150	3.002	95.440	150
F3	MH B	1200	600 x 600	D 400 - 600 x 600	97.768	95.440	2.178	3.002	93.850	150	3.003	93.850	150
F4	MH B	1500	600 x 600	D 400 - 600 x 600	96.315	93.850	2.315	3.003	93.020	150	3.004	93.020	150
F5	MH A	1500	600 x 600	D 400 - 600 x 600	97.049	93.020	3.879				4.000	99.140	225

FOUL DEMARCATION CHAMBER SCHEDULE - SECTION 104

MH REFERENCE	MANHOLE TYPE	MANHOLE MATERIAL	MANHOLE MANUFACTURE	MANHOLE DIA	COVER LEVEL	U/S INVERT LEVEL	D/S INVERT LEVEL	DEPTH (m) TO SOFFIT	GRADIENT	COVER TYPE / OPENING	PIPE TYPE	PIPE MANUFACTURER	PIPE DIA	PIPE LENGTH (m)
FD1	TYPE B	PCC	PCC	1200	105.150	103.150	102.360	1.850	1:10	Class D400 - 600 x 600	uPVC	Wavin	150	7.90
FD2	TYPE D	Polypropylene	Wavin	500	103.900	102.300	101.775	1.450	1:25	Class B125 - 460Ø	uPVC	Wavin	150	13.30
FD3	TYPE D	Polypropylene	Wavin	500	102.300	100.900	100.250	1.250	1:10	Class B125 - 460Ø	uPVC	Wavin	150	6.50
FD4	TYPE D	Polypropylene	Wavin	500	100.400	98.800	97.885	1.450	1:10	Class B125 - 460Ø	uPVC	Wavin	150	9.30
FD5	TYPE D	Polypropylene	Wavin	500	100.300	98.650	97.885	1.500	1:11	Class B125 - 460Ø	uPVC	Wavin	150	8.20
FD6	TYPE D	Polypropylene	Wavin	500	100.950	99.400	99.235	1.400	1:18	Class B125 - 460Ø	uPVC	Wavin	150	3.00
FD7	TYPE D	Polypropylene	Wavin	500	100.900	99.350	98.820	1.400	1:16	Class B125 - 460Ø	uPVC	Wavin	150	8.40
FD8	TYPE C	PCC	PCC	1200	101.100	99.520	99.235	1.430	1:21	Class D400 - 600 x 600	uPVC	Wavin	150	6.00
FD9	TYPE D	Polypropylene	Wavin	500	101.150	99.250	98.200	1.750	1:10	Class B125 - 460Ø	uPVC	Wavin	150	10.50
FD10	TYPE D	Polypropylene	Wavin	500	100.700	98.850	98.200	1.700	1:10	Class B125 - 460Ø	uPVC	Wavin	150	6.50
FD11	TYPE D	Polypropylene	Wavin	500	98.450	96.750	96.230	1.550	1:10	Class B125 - 460Ø	uPVC	Wavin	150	5.40
FD12	TYPE D	Polypropylene	Wavin	500	98.300	96.850	96.230	1.300	1:10	Class B125 - 460Ø	uPVC	Wavin	150	6.50
FD13	TYPE D	Polypropylene	Wavin	500	97.800	96.050	95.440	1.600	1:10	Class B125 - 460Ø	uPVC	Wavin	150	6.00
FD14	TYPE D	Polypropylene	Wavin	500	96.400	94.450	93.850	1.800	1:10	Class B125 - 460Ø	uPVC	Wavin	150	6.20
FD15	TYPE D	Polypropylene	Wavin	500	96.550	95.150	95.050	1.250	1:48	Class B125 - 460Ø	uPVC	Wavin	150	4.80
FD16	TYPE D	Polypropylene	Wavin	500	97.150	95.700	95.000	1.300	1:11	Class B125 - 460Ø	uPVC	Wavin	150	7.60
FD17	TYPE D	Polypropylene	Wavin	500	97.050	95.650	95.000	1.250	1:10	Class B125 - 460Ø	uPVC	Wavin	150	6.80
FD18	TYPE D	Polypropylene	Wavin	500	96.150	94.450	93.850	1.550	1:11	Class B125 - 460Ø	uPVC	Wavin	150	6.60
FD19	TYPE D	Polypropylene	Wavin	500	96.300	94.650	94.510	1.500	1:56	Class B125 - 460Ø	uPVC	Wavin	150	7.90
FD20	TYPE D	Polypropylene	Wavin	500	97.200	95.300	94.700	1.750	1:10	Class B125 - 460Ø	uPVC	Wavin	150	6.00
FD21	TYPE D	Polypropylene	Wavin	500	96.300	95.100	94.750	1.050	1:19	Class B125 - 460Ø	uPVC	Wavin	150	6.60
FD22	TYPE B	PCC	PCC	1200	96.150	93.880	93.770	2.120	1:94	Class D400 - 600 x 600	uPVC	Wavin	150	10.30
FD23	TYPE D	Polypropylene	Wavin	500	96.400	94.950	94.335	1.300	1:10	Class B125 - 460Ø	uPVC	Wavin	150	6.20
FD24	TYPE D	Polypropylene	Wavin	500	97.300	95.650	95.045	1.500	1:10	Class B125 - 460Ø	uPVC	Wavin	150	6.10
FD25	TYPE D	Polypropylene	Wavin	500	97.500	95.700	95.045	1.650	1:10	Class B125 - 460Ø	uPVC	Wavin	150	6.60
FD26	TYPE D	Polypropylene	Wavin	500	99.600	97.900	97.395	1.550	1:12	Class B125 - 460Ø	uPVC	Wavin	150	5.90
FD27	TYPE D	Polypropylene	Wavin	500	100.000	98.350	97.395	1.500	1:10	Class B125 - 460Ø	uPVC	Wavin	150	9.70
FD28	TYPE D	Polypropylene	Wavin	500	98.600	97.100	97.000	1.350	1:73	Class B125 - 460Ø	uPVC	Wavin	150	7.30
FD29	TYPE D	Polypropylene	Wavin	500	100.350	99.150	98.900	1.050	1:20	Class B125 - 460Ø	uPVC	Wavin	150	5.00
FD30	TYPE D	Polypropylene	Wavin	500	102.600	100.800	100.250	1.650	1:12	Class B125 - 460Ø	uPVC	Wavin	150	6.50
FD31	TYPE D	Polypropylene	Wavin	500	104.900	103.400	103.260	1.350	1:54	Class B125 - 460Ø	uPVC	Wavin	150	7.60

COMBINED FOUL MANHOLE SCHEDULE - SECTION 185

MH REF	MANHOLE TYPE	MANHOLE SIZE	COVER SLAB	COVER TYPE / SIZE	COVER LEVEL	INVERT LEVEL	DEPTH TO SOFFIT (m)	PIPES IN			PIPES OUT		
								PIPE No	IL	DIAMETER	PIPE No	IL	DIAMETER
C1	MH B	1200	600 x 600	D 400 - 600 x 600	105.255	102.845	2.110				1.000	102.845	300
C2	MH B	1500	600 x 600	D 400 - 600 x 600	104.750	102.210	2.240	1.000	102.210	300	1.001	102.210	300
C3	MH B	1200	600 x 600	D 400 - 600 x 600	103.579	101.625	1.654	1.001	101.625	300	1.002	101.625	300
C4	MH B	1500	600 x 600	D 400 - 600 x 600	102.354	100.100	1.954	1.002	100.100	300	1.003	100.100	300
C5	MH B	1200	600 x 600	D 400 - 600 x 600	101.040	99.000	1.740	1.003	99.000	300	1.004	99.000	300
C6	MH B	1200	600 x 600	D 400 - 600 x 600	102.160	99.834	2.026				2.000	99.834	300
C7	MH B	1500	600 x 600	D 400 - 600 x 600	101.000	99.085	1.615	2.000	99.085	300	2.001	99.085	300
C8	MH B	1200	600 x 600	D 400 - 600 x 600	100.777	98.885	1.592	2.001	98.885	300	2.002	98.885	300
C9	MH B	1500	600 x 600	D 400 - 600 x 600	100.244	97.735	2.209	1.004	97.735	300	1.005	97.735	300
								2.002	97.735	300			
C10	MH B	1200	600 x 600	D 400 - 600 x 600	100.140	97.585	2.255	1.005	97.585	300	1.006	97.585	300
C11	MH A	1200	600 x 600	D 400 - 600 x 600	97.300	93.245	3.755	1.006	93.245	300	1.007	93.245	300
MH13	EXISTING	1200	600 x 600	D 400 - 600 x 600	100.640	99.140	1.275				4.000	99.140	225
C12	MH B	1200	600 x 600	D 400 - 600 x 600	100.996	98.865	1.906	4.000	98.865	225	4.001	98.865	225
C13	MH B	1500	600 x 600	D 400 - 600 x 600	99.431	97.320	1.886	4.001	97.320	225	4.002	97.320	225
C14	MH B	1200	600 x 600	D 400 - 600 x 600	98.334	95.970	2.139	4.002	95.970	225	4.003	95.970	225
C15	MH B	1500	600 x 600	D 400 - 600 x 600	97.181	94.970	1.986	4.003	94.970	225	4.004	94.970	225
C16	MH B	1200	600 x 600	D 400 - 600 x 600	96.361	94.260	1.876	4.004	94.260	225	4.005	94.260	225
C17	MH B	1200	600 x 600	D 400 - 600 x 600	96.424	93.695	2.504	4.005	93.695	225	4.006	93.695	225
C18	MH B	1500	600 x 600	D 400 - 600 x 600	96.357	93.545	2.587	4.006	93.545	225	4.007	93.545	225
C19	MH A	1200	600 x 600	D 400 - 600 x 600	97.102	92.945	3.932	4.007	92.945	225	4.008	92.945	225
C20	MH A	1500	600 x 600	D 400 - 600 x 600	97.124	92.575	4.249	1.007	92.575	300	1.008	92.575	300
								3.004	92.730	150			
								4.008	92.650	225			
C21	MH A	1500	600 x 600	D 400 - 600 x 600	96.025	91.665	4.060	1.008	91.665	300	1.009	91.665	300
C22	MH A	1200	600 x 600	D 400 - 600 x 600	94.494	90.665	3.529	1.009	90.665	300	1.010	90.665	300
C23	MH A	1500	600 x 600	D 400 - 600 x 600	94.314	89.994	3.529	1.010	90.144	300	EXISTING	89.994	450

SURFACE WATER MANHOLE SCHEDULE - SECTION 104

MH REF	MANHOLE TYPE	MANHOLE SIZE	COVER SLAB	COVER TYPE / SIZE	COVER LEVEL	INVERT LEVEL	DEPTH TO SOFFIT (m)	PIPES IN			PIPES OUT		
								PIPE No	IL	DIAMETER	PIPE No	IL	DIAMETER
S1	MH C	1500	1220 x 675	D 400 - TWIN 600 x 600	105.862	104.425	1.287				1.000	104.425	150
S2	MH C	1500	1220 x 675	D 400 - TWIN 600 x 600	104.590	103.200	1.240	1.000	103.200	150	1.001	103.200	150
S3	MH C	1500	1220 x 675	D 400 - TWIN 600 x 600	103.733	102.225	1.283	1.001	102.300	150	1.002	102.225	225
S4	MH C	1500	1220 x 675	D 400 - TWIN 600 x 600	102.249	100.700	1.249	1.002	100.775	225	1.003	100.700	300
S5	MH C	1500	1220 x 675	D 400 - TWIN 600 x 600	101.149	99.600	1.249	1.003	99.600	300	1.004	99.600	300
S6	MH C	1500	1220 x 675	D 400 - TWIN 600 x 600	100.632	99.200	1.207				2.000	99.200	225
S7	MH B	1800	600 x 600	D 400 - 600 x 600	100.223	98.335	1.513	1.004	98.410	300	1.005	98.335	375
								2.000	98.485	225			
S8	MH B	1800	600 x 600	D 400 - 600 x 600	100.129	98.235	1.519	1.005	98.235	375	1.006	98.235	375
S9	MH C	1500	1220 x 675	D 400 - TWIN 600 x 600	101.089	99.600	1.264				3.000	99.600	225
S10	MH C	1500	1220 x 675	D 400 - TWIN 600 x 600	101.037	99.605	1.207				4.000	99.605	225
S11	MH B	1500	600 x 600	D 400 - 600 x 600	100.716	98.725	1.691	3.000	98.800	225	3.001	98.725	300
								4.000	98.800	225			
S12	MH C	1500	1220 x 675	D 400 - TWIN 600 x 600	98.331	96.825	1.206	3.001	96.825	300	3.002	96.825	300
S13	MH C	1500	1220 x 675	D 400 - TWIN 600 x 600	97.976	96.225	1.301	3.002	96.375	300	3.003	96.225	450
S14	MH C	1800	1220 x 675	D 400 - TWIN 600 x 600	96.299	94.375	1.324	3.003	94.525	450	3.004	94.375	600
S15	MH B	2100	600 x 600	D 400 - 600 x 600	97.032	93.905	2.527	1.006	94.130	375	1.007	93.905	600
								3.004	93.905	600			
S16	MH C	1500	1220 x 675	D 400 - TWIN 600 x 600	100.414	98.985	1.204				5.000	98.985	225
S17	MH C	1800	1220 x 675	D 400 - TWIN 600 x 600	99.274	97.845	1.204				6.000	97.845	225
S18	MH C	1800	600 x 600	D 400 - 600 x 600	98.206	96.495	1.336	5.000	96.645	225	5.001	96.495	375
								6.000	96.645	225			
S19	MH C	1800	1220 x 675	D 400 - TWIN 600 x 600	97.050	95.495	1.180	5.001	95.495	375	5.002	95.495	375
S20	MH C	1800	1220 x 675	D 400 - TWIN 600 x 600	96.467	94.195	1.597	5.002	94.495	375	5.003	94.195	675
S21	MH B	1800	600 x 600	D 400 - 600 x 600	96.294	94.070	1.549	5.003	94.070	675	5.004	94.070	675
S22	MH B	1800	600 x 600	D 400 - 600 x 600	97.030	93.830	2.525	5.004	93.830	675	5.005	93.830	675
S23	MH B	2100	600 x 600	D 400 - 600 x 600	97.102	93.685	2.667	1.007	93.835	600	1.008	93.685	750
								5.005	93.760	675			
S24	MH B	2100	600 x 600	D 400 - 600 x 600	95.980	93.385	1.845	1.008	93.385	750	1.009	93.385	750
S25_SUMP	SUMP	1800	600 x 600	D 400 - 600 x 600	95.800	92.200	3.450	1.009	93.300	750	1.010	93.300	750
TANK	STORM BRIXX HD900 CELLULAR ATTENUATION TANK				95.800	92.600	2.900	1.010	93.290	750	1.011	92.600	300
INSPECTION 1	STORM BRIXX	225	450 x 450	D 400 - 450 x 450	95.800	92.703	1.257						
INSPECTION 2	STORM BRIXX	225	450 x 450	D 400 - 450 x 450	95.800	92.660	1.300						
INSPECTION 3	STORM BRIXX	225	450 x 450	D 400 - 450 x 450	95.800	92.647	1.313						
INSPECTION 4	STORM BRIXX	225	450 x 450	D 400 - 450 x 450	95.800	92.600	1.360						
S25A	MH B	1800	600 x 600	D 400 - 600 x 600	95.800	91.985	2.915	1.011	92.585	300	1.012	91.985	900
S25B	MH B	1800	600 x 600	D 400 - 600 x 600	95.800	91.975	3.075	1.012	91.975	900	1.013	91.975	900
S26_FC	QD1776-08-03	2400	1220 x 675	D 400 - TWIN 600 x 600	95.200	91.880	3.020	1.013	91.930	900	1.014	91.880	300
S27	MH A	1200	600 x 600	D 400 - 600 x 600	95.000	91.685	3.015	1.014	91.685	300	1.015	91.685	300
S28_CULVERT					95.000	90.360	3.440	1.015	91.260	300	EXISTING	90.360	1200

STORM DEMARCATION CHAMBER SCHEDULE - SECTION 104

MH REFERENCE	MANHOLE TYPE	MANHOLE MATERIAL	MANHOLE MANUFACTURE	MANHOLE DIA	COVER LEVEL	U/S INVERT LEVEL	D/S INVERT LEVEL	DEPTH (m) TO SOFFIT	GRADIENT	COVER TYPE / OPENING	PIPE TYPE	PIPE MANUFACTURER	PIPE DIA	PIPE LENGTH (m)
SD1	TYPE D	Polypropylene	Wavin	500	106.500	105.150	104.425	1.200	1:10	Class B125 - 460Ø	uPVC	Wavin	150	7.50
SD2	TYPE D	Polypropylene	Wavin	500	103.900	102.500	102.300	1.250	1:41	Class B125 - 460Ø	uPVC	Wavin	150	8.30
SD3	TYPE D	Polypropylene	Wavin	500	102.300	101.100	100.850	1.050	1:18	Class B125 - 460Ø	uPVC	Wavin	150	4.60
SD4	TYPE D	Polypropylene	Wavin	500	100.400	99.200	98.560	1.050	1:15	Class B125 - 460Ø	uPVC	Wavin	150	9.90
SD5	TYPE D	Polypropylene	Wavin	500	100.300	99.150	98.560	1.000	1:11	Class B125 - 460Ø	uPVC	Wavin	150	6.30
SD6	TYPE D	Polypropylene	Wavin	500	100.800	99.450	99.275	1.200	1:36	Class B125 - 460Ø	uPVC	Wavin	150	6.30
SD7	TYPE D	Polypropylene	Wavin	500	101.200	99.900	99.675	1.150	1:34	Class B125 - 460Ø	uPVC	Wavin	150	7.60
SD8	TYPE D	Polypropylene	Wavin	500	101.200	99.850	99.675	1.200	1:48	Class B125 - 460Ø	uPVC	Wavin	150	8.40
SD9	TYPE D	Polypropylene	Wavin	500	101.200	99.850	99.680	1.250	1:26	Class B125 - 460Ø	uPVC	Wavin	150	4.50
SD10	TYPE D	Polypropylene	Wavin	500	100.750	99.350	98.875	1.250	1:11	Class B125 - 460Ø	uPVC	Wavin	150	5.00
SD11	TYPE D	Polypropylene	Wavin	500	98.600	97.400	96.975	1.050	1:15	Class B125 - 460Ø	uPVC	Wavin	150	6.40
SD12	TYPE D	Polypropylene	Wavin	500	98.200	97.000	96.525	1.050	1:14	Class B125 - 460Ø	uPVC	Wavin	150	6.80
SD13	TYPE D	Polypropylene	Wavin	500	96.400	95.200	94.825	1.050	1:14	Class B125 - 460Ø	uPVC	Wavin	150	5.20
SD14	TYPE D	Polypropylene	Wavin	500	96.550	95.350	94.825	1.050	1:12	Class B125 - 460Ø	uPVC	Wavin	150	6.30
SD15	TYPE D	Polypropylene	Wavin	500	97.050	95.850	95.550	1.050	1:17	Class B125 - 460Ø	uPVC	Wavin	150	5.00
SD16	TYPE D	Polypropylene	Wavin	500	96.100	94.750	94.060	1.200	1:15	Class B125 - 460Ø	uPVC	Wavin	150	10.40
SD17	TYPE D	Polypropylene	Wavin	500	96.300	94.850	94.060	1.300	1:10	Class B125 - 460Ø	uPVC	Wavin	150	8.20
SD18	TYPE D	Polypropylene	Wavin	500	97.000	95.500	95.350	1.350	1:33	Class B125 - 460Ø	uPVC	Wavin	150	5.00
SD19	TYPE D	Polypropylene	Wavin	500	97.250	95.500	95.350	1.050	1:53	Class B125 - 460Ø	uPVC	Wavin	150	8.00
SD20	TYPE D	Polypropylene	Wavin	500	96.250	94.650	94.595	1.450	1:85	Class B125 - 460Ø	uPVC	Wavin	150	4.40
SD21	TYPE D	Polypropylene	Wavin	500	96.300	95.100	94.595	1.050	1:16	Class B125 - 460Ø	uPVC	Wavin	150	8.30
SD22	TYPE D	Polypropylene	Wavin	500	96.000	94.800	94.720	1.050	1:55	Class B125 - 460Ø	uPVC	Wavin	150	4.50
SD23	TYPE D	Polypropylene	Wavin	500	97.500	96.300	95.720	1.050	1:14	Class B125 - 460Ø	uPVC	Wavin	150	6.10
SD24	TYPE D	Polypropylene	Wavin	500	97.200	95.950	95.720	1.100	1:20	Class B125 - 460Ø	uPVC	Wavin	150	5.20
SD25	TYPE D	Polypropylene	Wavin	500	98.350	97.250	96.720	0.950	1:12	Class B125 - 460Ø	uPVC	Wavin	150	12.40
SD26	TYPE D	Polypropylene	Wavin	500	99.450	98.250	97.920	1.050	1:16	Class B125 - 460Ø	uPVC	Wavin	150	11.40
SD27	TYPE D	Polypropylene	Wavin	500	100.000	98.800	97.910	1.050	1:14	Class B125 - 460Ø	uPVC	Wavin	150	7.20
SD28	TYPE D	Polypropylene	Wavin	500	98.600	97.400	96.720	1.050	1:17	Class B125 - 460Ø	uPVC	Wavin	150	7.50
SD29	TYPE D	Polypropylene	Wavin	500	99.400	98.200	97.690	1.050	1:14	Class B125 - 460Ø	uPVC	Wavin	150	5.30
SD30	TYPE D	Polypropylene	Wavin	500	100.500	99.200	99.060	1.150	1:52	Class B125 - 460Ø	uPVC	Wavin	150	8.30
SD31	TYPE D	Polypropylene	Wavin	500	100.600	99.300	99.060	1.150	1:19	Class B125 - 460Ø	uPVC	Wavin	150	4.60
SD32	TYPE D	Polypropylene	Wavin	500	100.500	99.200	98.460	1.150	1:10	Class B125 - 460Ø	uPVC	Wavin	150	7.10
SD33	TYPE D	Polypropylene	Wavin	500	102.500	101.000	100.850	1.350	1:57	Class B125 - 460Ø	uPVC	Wavin	150	8.60
SD34	TYPE C	PCC	PCC	1200	104.700	103.300	103.200	1.250	1:66	Class D400 - 600 x 600	uPVC	Wavin	150	6.60

GENERAL NOTES:-

1. DO NOT USE THIS DRAWING IN ISOLATION. THIS DRAWING HAS BEEN PREPARED AS PART OF A SET, AND MUST THEREFORE BE READ IN CONJUNCTION WITH ALL OTHER DRAWINGS. ANY DISCREPANCIES MUST BE REPORTED TO THE ENGINEER PRIOR TO COMMENCING WORKS.
2. THIRD PARTY INFORMATION IS USED TO PREPARE THE ENGINEERING DESIGN (INCLUDING, ARCHITECTURAL LAYOUT, GROUND INVESTIGATION, EXISTING UTILITIES RECORDS, AND SPECIALIST DESIGN ITEMS). THE ENGINEERING DESIGN MUST THEREFORE BE READ IN CONJUNCTION WITH ALL THIRD PARTY INFORMATION PRIOR TO COMMENCING WORK. QUEENSBERRY DESIGN LTD ARE NOT RESPONSIBLE FOR ANY THIRD PARTY INFORMATION OR DETAILS.
3. DRAWING STATUS WILL REMAIN PRELIMINARY UNTIL FULL TECHNICAL APPROVAL IS RECEIVED FROM LOCAL AUTHORITY AND SEWERAGE UNDERTAKER. WORKS COMMENCED PRIOR TO TECHNICAL APPROVAL ARE DONE SO AT RISK AND MAY BE SUBJECT TO CHANGE.
4. THE CONTRACTOR IS EXPECTED TO PREPARE APPROPRIATE CONSTRUCTION METHOD STATEMENTS FOR ALL ASPECTS OF APPOINTED WORK. THIS SHOULD INCLUDE ANY TEMPORARY PROTECTION / WORKS.
5. LAND DRAINAGE IS NOT PERMITTED TO DISCHARGE INTO THE PUBLIC SEWER NETWORK. ANY NEED FOR LAND DRAINAGE SHOULD BE ASSESSED BY THE GROUND WORKER AND LANDSCAPER DURING CONSTRUCTION AND PLACEMENT OF GARDENS ON AN INDIVIDUAL PLOT BASIS. IF LAND DRAINAGE DESIGNS ARE REQUIRED, THEY SHOULD BE APPOINTED PRIOR TO PLOT COMPLETION.
6. THE CONTRACTOR IS EXPECTED TO CROSS CHECK ALL DRAINAGE INVERTS PRIOR TO COMMENCING WORK, THIS MAY INVOLVE COMPLETION OF TRIAL HOLES IF INVERT LEVELS HAVE BEEN INTERPOLATED. THE POSITION, LINE AND DIAMETER OF ALL EXISTING DRAINAGE APPARATUS SHOULD BE CONFIRMED ON SITE PRIOR TO THE COMMENCEMENT OF THE WORKS. ANY DISCREPANCIES MUST BE REPORTED TO THE ENGINEER IMMEDIATELY.
7. THE CONTRACTOR MUST MONITOR THE "AS BUILT" PROGRESS OF EACH CONSTRUCTION STAGE (ROADS/SEWERS/PLOT WORKS ETC), TO ENABLE THE NEXT STAGES OF CONSTRUCTION TO BE CHECKED BEFORE INSTALLATION.

HIGHWAYS

1. ALL HIGHWAY WORKS TO BE CARRIED OUT IN ACCORDANCE WITH THE CURRENT LOCAL AUTHORITY DESIGN GUIDE AND SPECIFICATION
2. ALL EXCAVATIONS BELOW PROPOSED AND EXISTING HIGHWAYS TO BE BACK FILLED WITH GRANULAR TYPE 1 SUB BASE AND WELL COMPACTED IN LAYERS NOT EXCEEDING 150MM, UNLESS OTHERWISE AGREED.
3. HIGHWAY AUTHORITY TO BE NOTIFIED BY THE CONTRACTOR PRIOR TO THE COMMENCEMENT OF WORKS.

ADOPTABLE DRAINAGE

1. ALL ADOPTABLE SEWER WORKS AND MATERIAL TO BE IN ACCORDANCE WITH "CODE FOR ADOPTION". THE RELEVANT BRITISH/EUROPEAN AND YORKSHIRE WATER'S STANDARDS/REQUIREMENTS/ADDENDUM TO THE MECHANICAL AND ELECTRICAL SPECIFICATION AND KITEMARKED
2. 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
3. FILLED GROUND MUST BE FILLED AND CONSOLIDATED UNDER THE SUPERVISION AND TO THE SATISFACTION OF YORKSHIRE WATER BEFORE ANY SEWER WORKS ARE CARRIED OUT
4. 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 REGARDING THE DISPOSAL OF THE FILTER DRAIN/LAND DRAINAGE RUN-OFF
5. THE ADOPTABLE SEWERS SHOULD BE A MINIMUM OF 1M AND MANHOLES 0.5M FROM KERB FACES AND SERVICE MARGINS
6. SEWERS MUST HAVE 5 METRES CLEARANCE FROM TREES AND HEDGES OR THE WIDTH OF THE CANOPY AT MATURE HEIGHT.
7. 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 NONVEHICULAR ACCESS AREAS) THEN A CONCRETE SLAB SHOULD BE PROVIDED ABOVE GRANULAR BED AND SURROUND
8. BEDDING AND BACKFILL MATERIAL TO CONFORM TO THE REQUIREMENT OF WATER INDUSTRY SPECIFICATION 4-08-02 (TABLE A2).
9. YORKSHIRE WATER POLICY IS THAT TYPE "C" BRICK MANHOLES AND 1050MM DIAMETER MANHOLE RINGS ARE NOT PREFERRED. INSTEAD, IT IS PREFERRED THAT YOU USE A TYPE "B" MANHOLE WITH 1200MM DIAMETER OR 1500MM DIAMETER RINGS, WITH THE OPENING SITED OVER THE CHANNEL WHERE DEPTH OF COVER TO PIPE SOFFIT IS 1 - 1.5M
10. 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 REQUIRE CLAY WARE CHANNEL IN MANHOLES
11. THE MINIMUM CRUSHING STRENGTH FOR CLAY PIPES SHOULD BE AS FOLLOWS: 100MM DIA. 40KN/M, 150MM DIA. 40KN/M, 225MM DIA. 45KN/M AND 300MM DIA. 72KN/M. THE MINIMUM CRUSHING STRENGTH FOR CONCRETE PIPES SHOULD BE - (CLASS120 TO EN 1916/BS5911-1 2002). PLASTIC PIPES SHOULD CONFORM TO WIS 4-35-01 AND BS EN13476
12. 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
13. THERE MUST BE ENOUGH CLEARANCE AT CROSSOVERS TO ACCOMMODATE BEDDING TO BOTH PIPES, APPROX. 300MM : IF CROSSOVER IS NEAR THE ROCKER THEN THE CLEARANCE NEEDED MAY NEED TO BE INCREASED".

DRAINAGE WITHIN HIGHWAY REQUIREMENTS

14. ALL ADOPTABLE SEWER WORKS AND MATERIALS TO BE IN ACCORDANCE WITH CODE FOR ADOPTION AND NATIONAL SPECIFICATION DESIGN MANUAL FOR ROADS AND BRIDGES
15. ALL PCC UNITS IN OVERSIZE MANHOLES MUST HAVE A DESIGN WORKING LIFE OF 100 YEARS (MIN) IN ACCORDANCE WITH BS 8500-1:2015+A2:2019-TABLE A5.
16. PRECAST CONCRETE MANHOLE UNITS INCLUDING THEIR PCC COVER SLABS SHALL COMPLY WITH THE RELEVANT PROVISIONS OF BS EN 1917 AND BS 5911-3 AND SHALL BE MANUFACTURED FROM CONCRETE WITH A DESIGN CHEMICAL CLASS DC-4 UNLESS SATISFACTORY EVIDENCE THROUGH SOIL ANALYSIS CAN BE PROVIDED THAT A LOWER CLASS WILL RESIST ATTACK FROM SOILS AND GROUND WATER.
17. PRECAST CONCRETE CORBEL SLABS SHALL COMPLY WITH BS 5911-3 TABLE 3 AND FIGURE 8.
18. COVER SLABS SHALL BE INSTALLED WITH A MINIMUM OF 300mm COVER TO FINISHED GROUND LEVEL.
19. SUBMISSION OF A CONSTRUCTION COMPLIANCE CERTIFICATE SHALL BE PROVIDED UPON COMPLETION OF DRAINAGE WORKS

EXISTING SERVICES

PRIOR TO THE COMMENCEMENT OF ANY WORKS UNDER GROUND MAPPING SURVEYS AND CONSTRAINTS PLAN IS TO BE REFERED TO ANY DISCREPANCIES ARE TO BE REPORTED TO ENGINEER.

ANY EXISTING SERVICES WHICH MAY BE AFFECTED BY THE PROPOSED WORKS SHOULD BE LOCATED BY MEANS OF A HAND DIG IN CLOSE LIAISON WITH THE STATUTORY SERVICE AUTHORITIES. THE CONTRACTOR SHALL INFORM THE DEVELOPER OF ANY SERVICES THAT MAY AFFECT THE PROPOSED DESIGN. CONTRACTOR TO NOTIFY STATUTORY SERVICE AUTHORITIES PRIOR TO COMMENCEMENT OF WORK. AS CONSTRUCTED INFORMATION IT IS THE CONTRACTORS RESPONSIBILITY TO PROVIDE THE FOLLOWING AS CONSTRUCTED DRAWINGS TO THE DEVELOPER UPON THE COMPLETION OF THE WORKS COVERED BY THE CONTRACT :-

1. POSITION/CO-ORDINATES OF ALL ADOPTABLE MANHOLES.
2. INVERT AND COVER LEVELS OF ALL ADOPTABLE MANHOLES.
3. NEW GULLY POSITIONS AND CONNECTIONS.
4. POSITION AND DEPTH OF SERVICE DUCTS FOR WATER, GAS, ELECTRIC, BT, CABLE AND STREET LIGHTING, STATING SIZE AND NUMBER OF DUCTS.

Rev.	Date	Revision Details	Drawn	Checked
M	05.08.24	SUMP MANHOLE DETAILS UPDATED	ND	ND
L	22.07.24	TANK OUTLET PIPE LEVELS AMENDED	ND	ND
K	14.06.24	C22 SHOWN AS TYPE A	ND	ND
J	08.05.24	YORKSHIRE WATER COMMENTS ADDED	ND	ND
I	19.03.24	TANK ARRANGEMENT UPDATED	ND	ND
H	05.03.24	MINOR AMENDMENTS TO YORKSHIRE WATER APPROVAL COMMENTS	ND	ND
G	18.02.24	NOTES RELATING TO PRE-CAST CONCRETE PRODUCTS REVIEWED	ND	ND
F	18.01.24	COMBINED DIVERSION CHANGED TO 300Ø FOLLOWING SITE INVESTIGATION	ND	ND
E	10.01.24	DRAINAGE WITHIN HIGHWAY NOTES ADDED	ND	ND
D	22.11.23	TANK ACCESS POINTS ADDED	ND	ND
C	06.09.23	YORKSHIRE WATER COMMENTS ADDED	ND	ND
B	21.04.23	MINOR UPDATES TO PLANNING APPROVED LAYOUT	ND	ND
A	01.03.22	SITE RE-DESIGNED TO NEW PLANNING LAYOUT AND FLOOD RISK / SURFACE WATER DRAINAGE DESIGN REQUIREMENTS	ND	ND
-	18.02.22	FIRST ISSUE	ND	ND

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Client: STRATA HOMES

Project: WESTGATE, CLECKHEATON

Title: MANHOLES SCHEDULES

Drawn	Checked	Date
ND	AL	16.02.2022

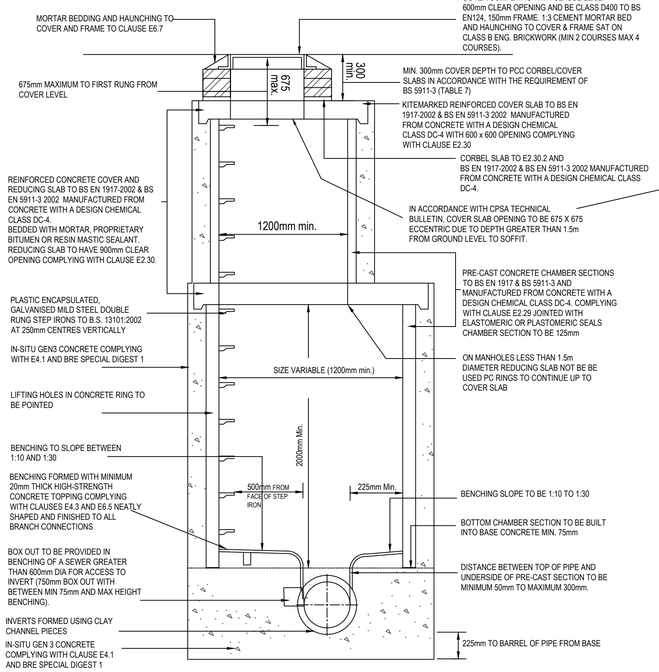
Drawing Number: QD1776-05-03

Drawing Status	Scale	Rev.
APPROVAL	A1	M

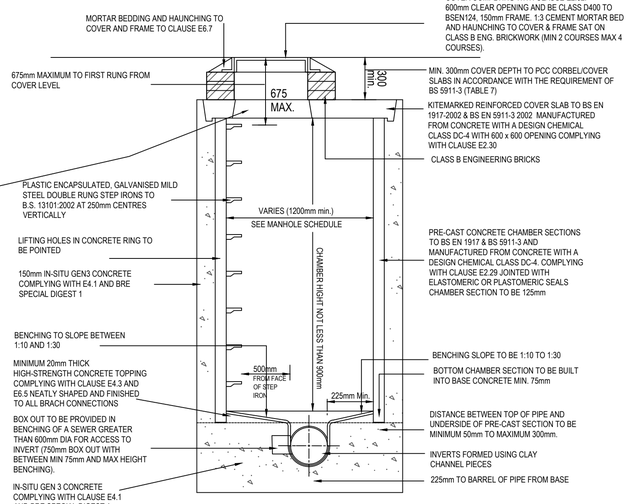
YORKSHIRE WATER REF
H-3-264-963
D-3-023-007

Only PDF/ DWF Issues of this drawing are controlled. All other formats (eg. DWG AutoCAD FILES) are UN-controlled and are used at your own risk.

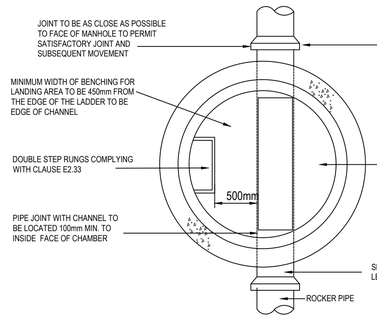
TYPE A
DEPTH TO SOFFIT 3.0 - 6.0m



TYPE B
DEPTH TO SOFFIT 1.5 - 3.0m



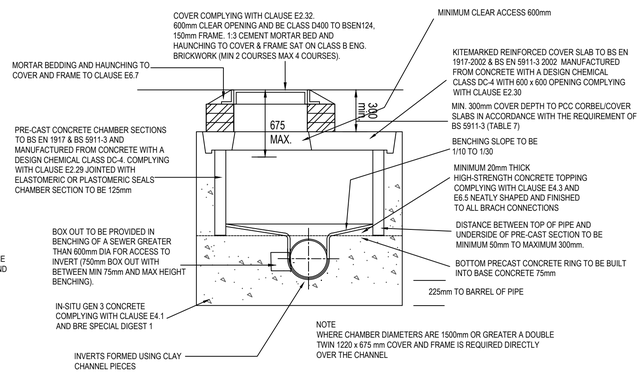
PIPE DIA. mm	ROCKER PIPE LENGTH mm
150-450	0.50-0.75
451-750	0.75-1.00
>750	SEEK GUIDANCE



PIPE DIA. mm	ROCKER PIPE LENGTH mm
150-450	0.50-0.75
451-750	0.75-1.00
>750	SEEK GUIDANCE

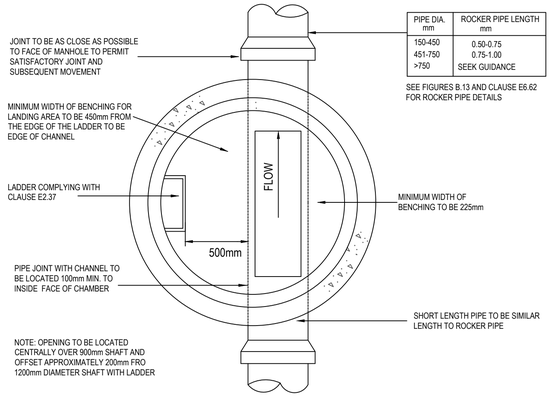
SEE FIGURES B.13 AND CLAUSE E6.62 FOR ROCKER PIPE DETAILS

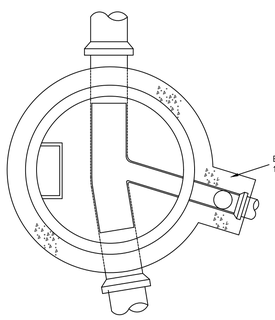
TYPE C
DEPTH TO SOFFIT IS LESS THAN 1.5m



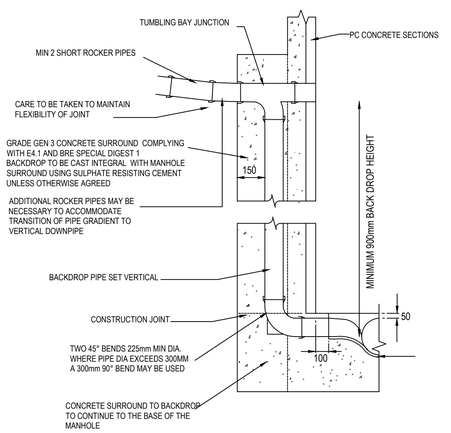
BEDDING TABLE					
DIAMETER mm	MAX TRENCH WIDTH	Bc	Y (min)	PIPE BEDDING MATERIAL SINGLE SIZE (mm)	GRADED (mm)
150	900	178	150	10 or 14	14-5
225	1021	271	150	10, 14 or 20	14-5 or 20-5
300	1160	410	150	10, 14 or 20	14-5 or 20-5
375	1240	490	150	14 or 20	14-5 or 20-5
450	1326	576	150	14 or 20	14-5 or 20-5
525	1420	670	150	14, 20 or 40	14-5, 20-5 or 40-5
600	1522	772	150	14, 20 or 40	14-5, 20-5 or 40-5

ALL GRANULAR MATERIAL TO COMPLY WITH THE REQUIREMENTS OF BS 882:1983

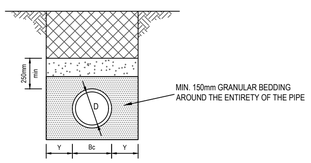




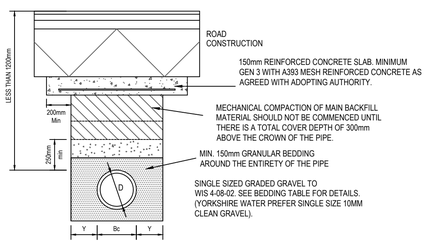
BACK DROP PLAN VIEW



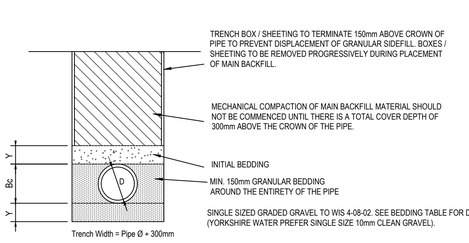
TYPICAL EXTERNAL VERTICAL BACKDROP DETAIL.



BED TYPE S
(IN HIGHWAYS)



BED TYPE S
(IN HIGHWAYS WHERE COVER TO PIPE IS LESS THAN 1.20m)



BED FOR STRUCTED WALL SEWER PIPE TO WIS 4-35-01

COMPRESSIBLE FILLER AND PACKING FOR PIPELINES

1. COMPRESSIBLE FILLER FOR INTERRUPTING CONCRETE PROTECTION TO PIPES SHALL CONSIST OF BITUMEN IMPREGNATED INSULATING BOARD TO BS 1142: PART 3 OR OTHER EQUALLY COMPRESSIBLE MATERIAL. THE THICKNESS OF COMPRESSIBLE FILLER SHALL BE AS FOLLOWS:

NOMINAL DIAMETER OF PIPE (mm)	THICKNESS OF COMPRESSIBLE FILLER
LESS THAN 450	18
450 - 1200	36
EXCEEDING 1200	54

2. COMPRESSIBLE PACKING FOR USE BETWEEN PIPES AND PRE CAST CONCRETE SETTING BLOCKS SHALL CONSIST OF BITUMEN DAMP-PROOF SHEETING COMPLYING WITH BS 743

MORTAR

1. MORTAR SHALL BE MIXED ONLY AS AND WHEN REQUIRED, IN THE RELEVANT PROPORTIONS INDICATED IN THE FOLLOWING TABLE, UNTIL ITS COLOUR AND CONSISTENCY ARE UNIFORM. THE CONSTITUENT MATERIALS SHALL BE ACCURATELY GAUGED, ALLOWANCE BEING MADE FOR BULKING OF SAND.

ALTERNATIVE NOMINAL MIXES BY VOLUME		
CEMENT:LIME:SAND	CEMENT:SAND	CEMENT SAND WITH PLASTICIZER
1 : : 3 ¼	1 : 3	1 : 2 to 3 ½

ALL SEWERAGE WORKS TO BE IN ACCORDANCE WITH THE DESIGN AND CONSTRUCTION GUIDANCE DOCUMENT (DCG)

MAIN BACK FILL MATERIAL COMPACTED IN LAYERS NOT EXCEEDING 250mm THICK. TO BE TYPE 1 GRANULAR MATERIAL UNDER ROADS WHERE DIRECTED MECHANICAL COMPACTION OF MAIN BACKFILL MATERIAL SHOULD NOT BE COMMENCED UNTIL THERE IS A TOTAL COVER DEPTH OF 300mm ABOVE THE CROWN OF THE PIPE.

INITIAL BACK FILL MATERIAL NOT LESS THAN 150MM THICK. HEAVY COMPACTION EQUIPMENT NOT TO BE USED.

PIPE ZONE MATERIAL CONFORMING TO BEDDING TABLE

C20 GRADE CONCRETE WITH COMPRESSIBLE FIBRE AS DESCRIBED IN TABLE PLACED AT EACH PIPE JOINT TO PRESERVE FLEXIBILITY

GENERAL NOTES:-

1. DO NOT USE THIS DRAWING IN ISOLATION. THIS DRAWING HAS BEEN PREPARED AS PART OF A SET, AND MUST THEREFORE BE READ IN CONJUNCTION WITH ALL OTHER DRAWINGS. ANY DISCREPANCIES MUST BE REPORTED TO THE ENGINEER PRIOR TO COMMENCING WORKS.
2. THIRD PARTY INFORMATION IS USED TO PREPARE THE ENGINEERING DESIGN (INCLUDING, ARCHITECTURAL LAYOUT, GROUND INVESTIGATION, EXISTING UTILITIES RECORDS, AND SPECIALIST DESIGN ITEMS). THE ENGINEERING DESIGN MUST THEREFORE BE READ IN CONJUNCTION WITH ALL THIRD PARTY INFORMATION PRIOR TO COMMENCING WORK. QUEENSBERRY DESIGN LTD ARE NOT RESPONSIBLE FOR ANY THIRD PARTY INFORMATION OR DETAILS.
3. DRAWING STATUS WILL REMAIN PRELIMINARY UNTIL FULL TECHNICAL APPROVAL IS RECEIVED FROM LOCAL AUTHORITY AND SEWERAGE UNDERTAKER. WORKS COMMENCED PRIOR TO TECHNICAL APPROVAL ARE DONE SO AT RISK AND MAY BE SUBJECT TO CHANGE.
4. THE CONTRACTOR IS EXPECTED TO PREPARE APPROPRIATE CONSTRUCTION METHOD STATEMENTS FOR ALL ASPECTS OF APPOINTED WORK. THIS SHOULD INCLUDE ANY TEMPORARY PROTECTION / WORKS.
5. LAND DRAINAGE IS NOT PERMITTED TO DISCHARGE INTO THE PUBLIC SEWER NETWORK. ANY NEED FOR LAND DRAINAGE SHOULD BE ASSESSED BY THE GROUND WORKER AND LANDSCAPER DURING CONSTRUCTION AND PLACEMENT OF GARDENS ON AN INDIVIDUAL PLOT BASIS. IF LAND DRAINAGE DESIGNS ARE REQUIRED, THEY SHOULD BE APPOINTED PRIOR TO PLOT COMPLETION.
6. THE CONTRACTOR IS EXPECTED TO CROSS CHECK ALL DRAINAGE INVERTS PRIOR TO COMMENCING WORK, THIS MAY INVOLVE COMPLETION OF TRIAL HOLES IF INVERT LEVELS HAVE BEEN INTERPOLATED. THE POSITION, LINE AND DIAMETER OF ALL EXISTING DRAINAGE APPARATUS SHOULD BE CONFIRMED ON SITE PRIOR TO THE COMMENCEMENT OF THE WORKS. ANY DISCREPANCIES MUST BE REPORTED TO THE ENGINEER IMMEDIATELY.
7. THE CONTRACTOR MUST MONITOR THE "AS BUILT" PROGRESS OF EACH CONSTRUCTION STAGE (ROADS/SEWERS/PLOT WORKS ETC), TO ENABLE THE NEXT STAGES OF CONSTRUCTION TO BE CHECKED BEFORE INSTALLATION.

HIGHWAYS

1. ALL HIGHWAY WORKS TO BE CARRIED OUT IN ACCORDANCE WITH THE CURRENT LOCAL AUTHORITY DESIGN GUIDE AND SPECIFICATION.
2. ALL EXCAVATIONS BELOW PROPOSED AND EXISTING HIGHWAYS TO BE BACK FILLED WITH GRANULAR TYPE 1 SUB BASE AND WELL COMPACTED IN LAYERS NOT EXCEEDING 150MM, UNLESS OTHERWISE AGREED.
3. HIGHWAY AUTHORITY TO BE NOTIFIED BY THE CONTRACTOR PRIOR TO THE COMMENCEMENT OF WORKS.

ADOPTABLE DRAINAGE

1. ALL ADOPTABLE SEWER WORKS AND MATERIAL TO BE IN ACCORDANCE WITH "CODE FOR ADOPTION". THE RELEVANT BRITISH/EUROPEAN AND YORKSHIRE WATERS STANDARDS/REQUIREMENTS/ADDENDUM TO THE MECHANICAL AND ELECTRICAL SPECIFICATION AND KITEMARKED
2. 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.
3. FILLED GROUND MUST BE FILLED AND CONSOLIDATED UNDER THE SUPERVISION AND TO THE SATISFACTION OF YORKSHIRE WATER BEFORE ANY SEWER WORKS ARE CARRIED OUT
4. YORKSHIRE WATER IS NOT OBLIGED TO ACCEPT FILTER DRAINAND 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 REGARDING THE DISPOSAL OF THE FILTER DRAINLAND DRAINAGE RUN-OFF
5. THE ADOPTABLE SEWERS SHOULD BE A MINIMUM OF 1M AND MANHOLES 0.5M FROM KERB FACES AND SERVICE MARGINS
6. SEWERS MUST HAVE 5 METRES CLEARANCE FROM TREES AND HEDGES OR THE WIDTH OF THE CANOPY AT MATURE HEIGHT.
7. 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
8. BEDDING AND BACKFILL MATERIAL TO CONFORM TO THE REQUIREMENT OF WATER INDUSTRY SPECIFICATION 4-08-02 (TABLE 4Z).
9. YORKSHIRE WATER POLICY IS THAT TYPE "C" BRICK MANHOLES AND 1050MM DIAMETER MANHOLE RINGS ARE NOT PREFERRED. INSTEAD, IT IS PREFERRED THAT YOU USE A TYPE "B" MANHOLE WITH 1200MM DIAMETER OR 1500MM DIAMETER RINGS, WITH THE OPENING SITED OVER THE CHANNEL WHERE DEPTH OF COVER TO PIPE SOFFIT IS 1 - 1.5M
10. ADOPTABLE PLASTIC SEWER PIPES TO BE BSI KITEMARKED (CERTIFIED TO WIS 4-35-01 AND BSEN13476). 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 REQUIRE CLAY WARE CHANNEL IN MANHOLES
11. THE MINIMUM CRUSHING STRENGTH FOR CLAY PIPES SHOULD BE AS FOLLOWS: 100MM DIA. 40KN/M. 150MM DIA. 40KN/M. 225MM DIA. 49KN/M AND 300MM DIA. 72KN/M. THE MINIMUM CRUSHING STRENGTH FOR CONCRETE PIPES SHOULD BE - (CLASS120 TO EN 1916/BS5911-1 2002). PLASTIC PIPES SHOULD CONFORM TO WIS 4-35-01 AND BS EN13476
12. 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
13. THERE MUST BE ENOUGH CLEARANCE AT CROSSOVERS TO ACCOMMODATE BEDDING TO BOTH PIPES, APPROX. 300MM - IF CROSSOVER IS NEAR THE ROCKER THEN THE CLEARANCE NEEDED MAY NEED TO BE INCREASED".

DRAINAGE WITHIN HIGHWAY REQUIREMENTS

14. ALL ADOPTABLE SEWER WORKS AND MATERIALS TO BE IN ACCORDANCE WITH CODE FOR ADOPTION AND NATIONAL SPECIFICATION DESIGN MANUAL FOR ROADS AND BRIDGES
15. ALL PCC UNITS IN OVERSIZE MANHOLES MUST HAVE A DESIGN WORKING LIFE OF 100 YEARS (MIN) IN ACCORDANCE WITH BS 8500-1:2015+A2:2019-TABLE A5.
16. PRECAST CONCRETE MANHOLE UNITS INCLUDING THEIR PCC COVER SLABS SHALL COMPLY WITH THE RELEVANT PROVISIONS OF BS EN 1917 AND BS 5911-3 AND SHALL BE MANUFACTURED FROM CONCRETE WITH A DESIGN CHEMICAL CLASS DC-4 UNLESS SATISFACTORY EVIDENCE THROUGH SOIL ANALYSIS CAN BE PROVIDED THAT A LOWER CLASS WILL RESIST ATTACK FROM SOILS AND GROUND WATER.
17. PRECAST CONCRETE CORBEL SLABS SHALL COMPLY WITH BS 5911-3 TABLE 3 AND FIGURE 8
18. COVER SLABS SHALL BE INSTALLED WITH A MINIMUM OF 300mm COVER TO FINISHED GROUND LEVEL
19. SUBMISSION OF A CONSTRUCTION COMPLIANCE CERTIFICATE SHALL BE PROVIDED UPON COMPLETION OF DRAINAGE WORKS

EXISTING SERVICES

PRIOR TO THE COMMENCEMENT OF ANY WORKS UNDER GROUND MAPPING SURVEYS AND CONSTRAINTS PLAN IS TO BE REFERRED TO ANY DISCREPANCIES ARE TO BE REPORTED TO ENGINEER.

ANY EXISTING SERVICES WHICH MAY BE AFFECTED BY THE PROPOSED WORKS SHOULD BE LOCATED BY MEANS OF A HAND DIG IN CLOSE LIAISON WITH THE STATUTORY SERVICE AUTHORITIES. THE CONTRACTOR SHALL INFORM THE DEVELOPER OF ANY SERVICES THAT MAY AFFECT THE PROPOSED DESIGN. CONTRACTOR TO NOTIFY STATUTORY SERVICE AUTHORITIES PRIOR TO COMMENCEMENT OF WORK. AS CONSTRUCTED INFORMATION IT IS THE CONTRACTORS RESPONSIBILITY TO PROVIDE THE FOLLOWING AS CONSTRUCTED DRAWINGS TO THE DEVELOPER UPON THE COMPLETION OF THE WORKS COVERED BY THE CONTRACT :-

14. POSITION/CO-ORDINATES OF ALL ADOPTABLE MANHOLES.
15. INVERT AND COVER LEVELS OF ALL ADOPTABLE MANHOLES.
16. NEW GULLY POSITIONS AND CONNECTIONS.
17. POSITION AND DEPTH OF SERVICE DUCTS FOR WATER, GAS, ELECTRIC, BT, CABLE AND STREET LIGHTING, STATING SIZE AND NUMBER OF DUCTS.

Rev.	Date	Revision Details	Drawn	Checked
F	22.07.24	BENCHING DIMENSION AMENDED	ND	ND
E	18.02.24	NOTES RELATING TO PRE-CAST CONCRETE PRODUCTS REVIEWED	ND	ND
D	09.02.23	ADDITIONAL NOTES ADDED	ND	ND
C	15.01.24	SSG CLAUSES REVIEWED	ND	ND
B	10.01.24	DRAINAGE WITHIN HIGHWAY NOTES ADDED	ND	ND
A	06.09.23	YORKSHIRE WATER COMMENTS ADDED	ND	ND
-	18.02.22	FIRST ISSUE	ND	ND

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Client: STRATA HOMES

Project: WESTGATE CLECKHEATON

Title: ADOPTABLE DRAINAGE DETAILS

Drawn	Checked	Date
FA	ND	14.02.2022

Drawing Number: QD1776-08-01

Drawing Status	Scale	Rev.
TENDER	1:25 - A1	F

APPENDIX C:

Certificates

Kitemark™ Certificate

This is to certify that:

FP McCann Ltd
Ellistown Plant
Whitehill Road
Ellistown
Coalville
LE67 1ET
United Kingdom

Holds Certificate Number: KM 12033

In respect of:

BS EN 1916 BS 5911-1 BSEN 1917 BS 5911-3
Concrete pipes, manholes, inspection chambers, fittings and ancillary products

This issues the right and licence to use the Kitemark in accordance with the Kitemark Terms and Conditions governing the use of the Kitemark, as may be updated from time to time by BSI Assurance UK Ltd (the "Conditions"). All defined terms in this Certificate shall have the same meaning as in the Conditions.

The use of the Kitemark is authorized in respect of the Product(s) detailed on this Certificate provided at or from the above address.

For and on behalf of BSI: Shahm Barhom, Group Product Certification Director

First Issued: 1991-04-02
Latest Issue: 2022-09-14

Effective Date: 2022-09-14
Expiry Date: 2026-08-22

Kitemark™ Certificate

No. KM 12033

BS EN 1916:2002 - Concrete pipes and fittings, unreinforced, steel fibre and reinforced.

Unreinforced flexible jointed concrete pipes

DN 300 to DN 825 inclusive with lengths up to and including 2.5m

Reinforced concrete pipes

DN 300 to DN 1800 inclusive with lengths up to and including 2.5m

11.25º, 22.5º, and 45 º Unreinforced concrete monolithic bends with flexible joints

DN 300 to DN 600 inclusive

Reinforced and unreinforced concrete fabricated polygonal bends

All products fabricated within the scope of BS EN 1916: 2002 to compliment all of the products detailed in both 1 & 2 of the above

Build up junctions for use with unreinforced and reinforced concrete pipes

All products fabricated within the scope of BS EN 1916: 2002 to compliment all of the products detailed in both 1 & 2 of the above

Reinforced jacking pipes with flexible joints

DN 1200 and DN 1500 steel collared jacking pipes

First Issued: 1991-04-02
Latest Issue: 2022-09-14

Effective Date: 2022-09-14
Expiry Date: 2026-08-22

Kitemark™ Certificate

No. KM 12033

BS 5911-1:2002+A2:2010 - Concrete pipes and ancillary concrete products - Part 1: Specification for unreinforced and reinforced concrete pipes (including jacking pipes) and fittings with flexible joints (complementary to BS EN 1916:2002)

Reinforced concrete pipes

DN 1800 with lengths up to and including 2.5m

First Issued: 1991-04-02
Latest Issue: 2022-09-14

Effective Date: 2022-09-14
Expiry Date: 2026-08-22

Kitemark™ Certificate

No. KM 12033

BS EN 1917:2002 - Concrete manholes and inspection chambers, unreinforced, steel fibre and reinforced.

Chamber sections

DN 900 to DN 1250 inclusive with lengths of up to and including 1000mm
DN 1050 to DN1200 Catch pit-silt trap manholes incorporating universal seal

Cover slabs

DN 900 -1250 with all permissible openings

Reducing slabs

DN 1200 to DN 1250 with all permissible openings

Cover frame seating rings

Rectangular load bearing with a 600 x 600mm eccentric opening
Square load bearing with a 600 x 600mm central opening

Base units

DN 600 to DN 1200 Inclusive incorporating a polypropylene prefabricated channel

First Issued: 1991-04-02
Latest Issue: 2022-09-14

Effective Date: 2022-09-14
Expiry Date: 2026-08-22

Kitemark™ Certificate

No. KM 12033

BS 5911-3:2010+A1:2014 - Concrete pipes and ancillary concrete products. Specification for unreinforced and reinforced concrete manholes and soakaways (complimentary to BS EN 1917:2002)

Chamber sections

DN 1300 to DN 3000 inclusive with length of up to and including 1000mm

Cover slabs

DN 1350 to DN 2700 with all permissible openings

Landing slabs

DN 1500 to DN 2700 inclusive with 900mm diameter eccentric access

Reducing slabs

DN 1500 with 900mm & 1050mm diameter eccentric access
DN 1800 to DN 2700 inclusive with 900, 1050 & 1200mm diameter eccentric access

Base units

DN 1500 Inclusive incorporating a polypropylene prefabricated channel or precast concrete channel

First Issued: 1991-04-02
Latest Issue: 2022-09-14

Effective Date: 2022-09-14
Expiry Date: 2026-08-22

Precast Concrete for the Building & Civil Engineering Industry:
Drainage
Shafts & Tunnels
Infrastructure & Power
Water Management
Fencing
Railway
Agriculture

CERTIFICATE OF CONFORMITY

Product Description: - **F. P. McCann DN1350mm-DN3000mm Diameter Concrete Manholes, Soakaways and Cover Slabs.**

This is to certify that the products detailed hereon have been inspected and tested in accordance with the conditions and requirements of:

European Standards
BS EN1917:2002 Concrete Manholes and Inspection Chambers, Cover Slabs and Adjusting units/Seating Rings.
UK Complementary Standards
BS5911-3:2022 Specification for Manholes, Soakaways, Cover Slabs and Adjusting units/Seating rings.

The Manholes/chamber rings are strength tested in accordance with Annex A of BS EN 1917, using the minimum crushing loads outlined in table 7 of BS5911-3.
F.P.McCann Precast manufacturing facilities are licensed with the following British Standards Institute Kitemark licences.

Ellistown, Leicestershire.	**No. KM12033**
Alnwick, Northumberland.	**No. KM06913**
Knockloughrim, Northern Ireland.	**No. KM06893**

Please Note: Although the manholes, soakaways and slabs of the above diameters are manufactured and tested in accordance with BS EN 1917; the scope of this harmonised Standard only covers manholes with diameters up to DN1250mm. Therefore, units with diameters above 1250mm are Kitemarked as conforming to BS5911, but cannot be CE marked.

To achieve the DC4 design chemical class the raw materials and manufacturing processes meet the design criteria prescribed in BRE Special Digest 1:2005 Concrete in aggressive ground.
All products are manufactured under a Quality Assurance System assessed against **BS EN ISO 9001:2015** Quality Systems, by British Standards Institute; certificate No FM97367.

The manholes are manufactured to provide accurate joint profiles to be used in conjunction with a polymer modified bituminous jointing strip, described in BS EN1917 as a plastomeric sealant, to construct watertight manholes efficiently to the details prescribed in the following documents:
BS EN 752 Drains and Sewers Systems Outside Buildings.
BS EN 1610 Construction and Testing of Drains and Sewers.
Civil Engineering for the Water Industry.
The Building Regulations.
Specification for Highway Works
Sewers for Adoption
Sewerage Sector Guidance, Water UK Design and Construction Guidance

Gareth Hughes
Technical Manager

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APPENDIX D:

Design and Check Certificate

Name of Project	Strata - Westgate, Cleckheaton
Name of Structure	Precast Concrete Manholes over 1.8m dia
Structure Ref No	N/A

1. We certify that reasonable professional skill and care has been used in the preparation of the design of the Manholes 1800 diameter and over, with a view to securing that:

   i. It has been designed in accordance with

   The Standards listed in the AIP dated 20th June 2025;

   ii. It has been checked for compliance with the relevant standards in i

   iii. It has been accurately translated into construction drawings and bar bending schedules all of which have been checked. The unique numbers of these drawings and schedules are:-

QD1776-03-01 L – Engineering Layout
QD1776-05-01 K – Longsections Sheet 1
QD1776-05-02 J – Longsections Sheet 2
QD1776-05-03 M – Manhole Schedules
QD1776-08-01 F – Adoptable Drainage
Appendix A Technical Approval Schedules
Certificate of Conformity - F. P. McCann DN1350mm-DN3000mm Diameter Concrete Manholes, BSI Kitemark Certificate KM 12033

Signed

Name D. J. Phillipson
Design Team Leader

Engineering Qualifications BEng(Hons), CEng, MIStructE.

Signed

Name D. Rogers
Check Team Leader

Engineering Qualifications BSc(Hons), MSc

Signed

Name D. Rogers

Position held Structural Engineering Director

Name of Organisation Queensberry Design Ltd

Date 20:06:2025

The certificate is accepted by the TAA

Signed _____

Name _____

Position held _____

Engineering Qualifications _____

TAA _____

Date _____