SECTION 104 & 38 NOTES

1. All adoptable drainage works have been designed and are to be constructed in accordance with current Design & Construction Guidance & local practices
2. All clay pipe work shall be Extra Strength Clayware to B.S. EN 295:1991 Part 1
3. All precast concrete pipework shall be to the class stated on the drawings in accordance with BE EN 1916:2002. All manholes and chambers shall be to BS EN 1917:2002
4. The Contractor may elect to use reinforced PVC pipes as covered by BS 4660:2000 & BS EN 1401-1 Structured wall upvc pipes to comply with wis 4-35-01 up to and including 300mm.(By prior agreement with adopting authority) MAX. PIPE LENGTH TO BE 3.0m
5. All levels relate to an Ordnance Datum.
6. This drawing is to be read in conjunction with all other relevant drawings.
7. House drainage connections to sewers must be 150mm Ø and unless otherwise stated laid to the dragout invert level shown.
8. Levels given on drag out chambers are incoming pipe levels.
9. House drainage runs to be kept within the curtilage of the plot they serve wherever possible.
10. The Contractor shall be responsible for ensuring that any existing invert levels indicated on drawings are correct before work commences.
11. The Contractor should satisfy himself as to the position and depth of any existing Statutory Undertakers plant which could effect the works before the works are commenced.
12. Road gully connections are to be 150mm Ø connecting either directly to manholes shown, or to sewer runs using pre-formed junctions.
13. All connections to adoptable sewers shall be by manufactured junction pipes. Saddle connections will not be permitted.
14. All sewers for adoption with greater than 1.20 metres cover in roads or 0.9m metres cover in fields shall have Class S granular bed and surround.
15. Any sewer for adoption with less than 1.2 metres cover in roads or 0.9 metres cover in fields shall have a minimum of 150mm ST4 concrete surround. Flexibility shall be maintained by the provision of Flexcell or similar approved joint filler breaks in the concrete surround at each pipe joints

ALL PIPES TO HAVE CLASS "S" BED AND SURROUND UNLESS SHOWN OTHERWISE
ALL CONCRETE PIPES TO BE CLASS 120
ALL CLAY PIPES TO BE EXTRA STRENGTH VITRIFIED CLAY
ALL UPVC PIPES TO COMPLY WITH BS 4660:2000 & BS EN 1401-1
STRUCTURED WALL UPVC PIPES TO COMPLY WITH WIS 4-35-01
MAX. PIPE LENGTH TO BE 3.0m

FOUNDATIONS TO BE DESIGNED / CONSTRUCTED TO TAKE INTO ACCOUNT THE PROXIMITY AND DEPTH OF ADJACENT SEWERS AND DRAINS IN ACCORDANCE WITH SFA 7TH EDITION PART B

CONTRACTOR TO BE AWARE OF AND TAKE APPROPRIATE ACTION TO ENSURE DE-STABILISATION OF ANY EXISTING STRUCTURES, TREES, EMBANKMENTS OR OTHER FEATURES DOES NOT OCCUR AS A RESULT OF ANY EXCAVATIONS WORKS UNDERTAKEN IN ACCORDANCE WITH THE DESIGNS SHOWN ON THIS DRAWING IF CONTRACTOR IS UNSURE ABOUT ANY ASPECT OF THE ABOVE HE SHOULD SEEK ADVICE BEFORE COMMENCING EXCAVATION WORK.

THE OFF SITE SEWER CONNECTION(S) HAVE BEEN DESIGNED TO TIE IN WITH THE EXISTING SEWERS AND WHILST IT IS ANTICIPATED NO CLASHES WITH EXISTING SERVICES WILL OCCUR, DUE TO THE INHERENT INACCURACIES IN DEPTHS OF EXISTING SERVICES THIS CANNOT BE GUARANTEED

REFA WOULD ADVISE THE CLIENT TO EMPLOY A SUITABLY EXPERIENCED COMPANY TO UNDERTAKE A SURVEY ALONG THE ROUTE OF THE CONNECTIONS TO ASCERTAIN THE EXISTENCE AND PROXIMITY OF ANY SERVICES AND ADVISE REFA OF ANY POTENTIAL CLASHES TO ASCERTAIN IF DESIGN CHANGES NEED BE MADE.

DUE TO THE NEED FOR OFF SITE SEWER WORKS IT IS STRONGLY ADVISED THAT THESE INVESTIGATIONS ARE UNDERTAKEN PRIOR TO ANY CONSTRUCTION ON SITE TO ALLOW DESIGN CHANGES TO BE MADE.

REFA WILL NOT BE HELD RESPONSIBLE FOR ANY ABORTIVE WORKS IF THIS PROCEDURE IS NOT FOLLOWED

OUTSIDE OF NEW SEWERS TO BE LOCATED 1.0m MINIMUM FROM KERBLINES OUTSIDE OF MANHOLE CHAMBERS TO BE LOCATED 0.5m MINIMUM FROM KERBLINES

CONTRACTOR/CLIENT SHOULD NOTE THE EXISTENCE OF EXISTING BURIED PLANT AND OR OVERHEAD POWER CABLE(S) BEFORE WORK COMMENCES CONTRACTOR MUST UNDERTAKE RISK ASSESSMENT AND PROVIDE METHOD STATEMENT FOR WORKING IN THIS AREA IN ACCORDANCE WITH HSE AND POWER SUPPLIERS GUIDELINES TO SATISFACTION OF THE PRINCIPLE DESIGNER

TO CATER FOR ANY DEVIATIONS IN THE AS CONSTRUCTED ROAD / FOOTPATH LEVELS IN RELATION TO THE DESIGN LEVELS, THE PROPOSED FLOOR LEVELS SHOWN MUST BE CHECKED ON SITE BY THE SITE AGENT OR ENGINEER IN RELATION TO AS BUILT ROAD LEVELS TO ENSURE COMPLIANCE WITH PART M OF THE BUILDING REGULATIONS

ALL EXISTING SERVICES TO BE LOCATED AT COMMENCEMENT IN ACCORDANCE WITH UNDERTAKERS REQUIREMENTS AND PROTECTED ACCORDINGLY DURING THE WORKS

ALL EXISTING MANHOLE INVERT LEVELS ARE TO LOCATED AND SURVEYED PRIOR TO START ON SITE TO ENSURE THAT THEY ARE CORRECT AND ALSO TO ENSURE THAT LEVEL CLASHES ARE AVOIDED AND THAT INTERPOLATED INVERT LEVELS ARE CORRECT. ANY DISCREPANCY TO BE REPORTED TO REFA PRIOR TO START TO ENABLE ANY CHANGES TO BE MADE TO DESIGN THAT PROVE NECESSARY

PLEASE NOTE: EXTRA CARE TO BE TAKEN AROUND EXISTING BRICK CULVERT WHEN CONSTRUCTING NEW MANHOLE S100. SEGMENTED RING TO BE CUT TO FACILITATE EXISTING BRICK CULVERT

PROPOSED SURFACE WATER TO CONNECT TO EXISTING SURFACE WATER CULVERT SUBJECT TO APPROVAL BY LLFA

EXISTING INVERT LEVEL 42.715m CONFIRMED BY CLIENT, TO BE CHECKED BY CONTRACTOR BEFORE ANY ON SITE SEWERS ARE LAID TO ENABLE DESIGN CHANGES TO BE MADE AS REQUIRED.
TRIAL HOLE EXCAVATIONS / DRAINGE SURVEY WILL BE REQUIRED TO LOCATE THIS EXISTING SEWER TO ASCERTAIN DEPTH

CIVILS DESIGN RISK MANAGEMENT

Abnormal or unusual residual risks associated with the design outcomes shown on this drawing are:-

1. EXISTING SERVICES
   EXISTING ELECTRIC MAIN
2. WORKING ON EXISTING HIGHWAY AND IN AREAS WHERE MEMBERS OF PUBLIC MAY HAVE ACCESS
3. DANGER OF COLLAPSE TO ALL EXCAVATIONS – RISK TO BE ASSSESED AND MANAGED BY CONTRACTOR IN ACCORDANCE WITH HSE GUIDANCE
4. WORKING ADJACENT TO EXISTING CULVERTED WATERCOURSE OR LIVE FOUL SEWER (WEIL'S DISEASE)
5. WORKING CLOSE TO EXISTING CULVERT
6. WORKING CLOSE TO EXISTING RAILWAY LINE

REFA Ltd has followed its Design Risk Management process for Hazard Elimination and Risk reduction in developing the designs shown on this drawing. Abnormal or unusual residual risks may be shown above where it is considered that such risk may not normally be expected by competent persons engaged on work of this nature or type

GENERAL

1. All adoptable sewers and associated works are to comply fully with "Design and Construction Guidance" & Local Practices
2. All highway works to be to adoptable standards and to to comply fully with the Local Authority specification.
3. All private drainage works are to comply fully with part H of the Building Regulations
4. All existing invert levels to be checked by the Contractor at the start of works and any discrepancies notified to REFA. All levels are based on topographical survey information provided by others.
5. All materials to bear the relevant B.S.Kitemark and comply fully with the specifications. All concrete & concrete products must use Sulphate resistant cement (unless the site investigation report proves that sulphate attack from soils and groundwater will not occur)
6. All opening notices etc. as required under highways acts etc. are to be obtained prior to commencement of works. All works are to be inspected by LA., NHBC or Relevant Water Authority as applicable.

C.D.M. REGULATIONS 2015

In line with the above regulations we are obliged to inform the Client of their responsibilities under section CDM 15/1, and residual risks that may be encountered in the construction of these works.
All design work has been carried out with Health and Safety aspects given full consideration.
Wherever possible risks have been eliminated from the design, however due to the very nature of this type of work it is not possible to remove all the risks from the design.
We would also respectfully remind the Client of his obligations to take all reasonable steps in ensuring that only competent Contractors who have a valid safety policy are employed.
They should also provide satisfactory responses at tender stage as to the manner in which they will deal with the elements of risk involved in this type of work and in particular those highlighted by REFA below:–

1. Support / treatment for ALL excavation work.
2. Guarding to edges of excavations to prevent people,materials and vehicles falling into excavation.
3. Guarding of excavations outside working hours to prevent unauthorised access.
4. Undermining to adjacent roads or structures.
5. Confined space operations.
6. Dealing with existing services.
7. Traffic management on existing highways.
8. Procedure to be followed in event of accident or emergency.
9. Method of working where contaminated ground is present on site.
10. Confirmation will be required that all operatives are adequately trained, copies of relevant training certificates to be supplied.

The above list is by no means exhaustive but it does highlight operations that present a risk to contractors and the general public.
For clarification on any item please contact REFA.

EXISTING CULVERTED WATERCOURSE TO BE ABANDONED TO BE CCTV SURVEYED TO ENSURE ANY LIVE CONNECTIONS ARE CATERED FOR

DENOTES CULVERT TO BE ABANDONED

PLEASE NOTE: EXTRA CARE TO BE TAKEN AROUND EXISTING BRICK CULVERT WHEN CONSTRUCTING NEW MANHOLE S107. SEGMENTED RING TO BE CUT TO FACILITATE EXISTING BRICK CULVERT

PROPOSED SURFACE WATER TO CONNECT TO EXISTING SURFACE WATER CULVERT SUBJECT TO APPROVAL BY LLFA

INTERPOLATED INVERT LEVEL 40.540m CONFIRMED BY CLIENT, TO BE CHECKED BY CONTRACTOR BEFORE ANY ON SITE SEWERS ARE LAID TO ENABLE DESIGN CHANGES TO BE MADE AS REQUIRED.
TRIAL HOLE EXCAVATIONS / DRAINGE SURVEY WILL BE REQUIRED TO LOCATE THIS EXISTING SEWER TO ASCERTAIN DEPTH

THIS DRAWING IS BASED ON PLANNING LAYOUT PROVIDED BY CLIENT
DRAWING NUMBER:- KH006 A-100
REVISION:- M
CLIENT TO ENSURE THE ABOVE LAYOUT IS CURRENT BEFORE USING THIS DRAWING FOR CONSTRUCTION PURPOSES

PLEASE NOTE THAT THIS DRAWING IS ISSUED FOR INFORMATION/TENDER PURPOSES ONLY UNTIL TECHNICAL APPROVAL HAS BEEN GRANTED. ANY WORK UNDERTAKEN PRIOR TO TECHNICAL APPROVAL BEING GRANTED IS AT THE CLIENTS RISK.

rev	Revision details	RevBy	Date
G	TO PLANNING LAYOUT REV M, FFL'S REVISED S106 & S107 CL REVISED	RW	13.07.23
F	REVISED TO LATEST DESIGN	AS	03.04.23
E	REVISED TO LATEST DESIGN	AS	27.03.23
D	REVISED FOLLOWING LLFA COMMENTS	AS	22.02.23
C	REVISED TO CLIENT COMMENTS	AS	19.01.23
B	REVISED TO LATEST DESIGN	AS	18.01.23
A	TO LATEST LAYOUT REV H/TO LLFA COMMENTS	AS	21.12.22

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Drawing Stage				Drawing Status	
	Draft		Comments	●	Tender
●	Issued		Information		Construction
		●	Approval		As Built

Client
KELLEN HOMES

Job title
BENNETT STREET MANCHESTER

Drawing title
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CONSULTING ENGINEERS
CIVIL • STRUCTURAL
GEOTECHNICAL • ENVIRONMENTAL

Date	Scale	Drawn
18.11.22	1/500	AS

DRAWING No 22122/104/1 Rev G

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A1 SHEET

PLEASE NOTE: EXTRA CARE TO BE TAKEN AROUND EXISTING BRICK CULVERT WHEN CONSTRUCTING NEW MANHOLE S100. SEGMENTED RING TO BE CUT TO FACILITATE EXISTING BRICK CULVERT

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TRIAL HOLE EXCAVATIONS / DRAINGE SURVEY WILL BE REQUIRED TO LOCATE THIS EXISTING SEWER TO ASCERTAIN DEPTH

EXISTING SERVICES CROSSING THE SITE - REFER TO UTILITIES SURVEY FOR TYPE AND POSITIONS

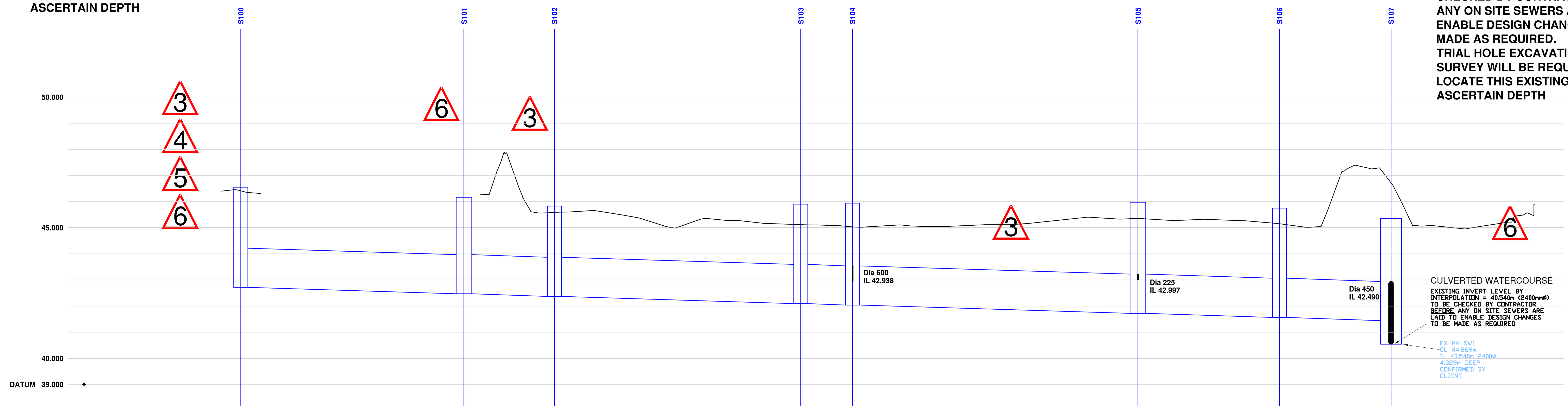
SCALE IN METRES 0 5 10 20 50

BENCH MARK INFORMATION
All levels relate to O.S (Newlyn) Datum, Established using network RTK. Survey plotted on a plane local grid, orientated to National Grid.

PLEASE NOTE: EXTRA CARE TO BE TAKEN AROUND EXISTING BRICK CULVERT WHEN CONSTRUCTING NEW MANHOLE S107. SEGMENTED RING TO BE CUT TO FACILITATE EXISTING BRICK CULVERT

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TRIAL HOLE EXCAVATIONS / DRAINGE SURVEY WILL BE REQUIRED TO LOCATE THIS EXISTING SEWER TO ASCERTAIN DEPTH



GROUND LEVEL	46.410, 47.649, 45.588, 45.583, 45.134, 45.337, 45.167, 45.104, 45.032, 45.054, 45.093, 45.152, 45.360, 45.343, 45.285, 45.279, 45.121, 46.735, 46.759, 45.070, 45.019, 45.028
STORMWATER DETAILS	CL 46.550 IL 42.715
	Pipe 1.000 Dia 1500 Circular CONC 1 in 173 42.721
	CL 46.167 IL 42.468 IL 42.468
	Pipe 1.001 Dia 1500 Circular CONC 1 in 173 17.321
	CL 45.827 IL 42.368 IL 42.368
	Pipe 1.002 Dia 1500 Circular CONC 1 in 173 47.151
	CL 45.903 IL 42.095 IL 42.095
	Pipe 1.003 Dia 1500 Circular CONC 1 in 173 9.893
	CL 45.941 IL 42.038 IL 42.038
	Pipe 1.004 Dia 1500 Circular CONC 1 in 173 54.637
	CL 45.973 IL 41.722 IL 41.722
	Pipe 1.005 Dia 1500 Circular CONC 1 in 173 27.109
	CL 45.791 IL 41.565 IL 41.565
	Pipe 1.006 Dia 1500 Circular CONC 1 in 173 21.335
	CL 45.630 IL 41.441

ALL PIPES TO HAVE CLASS "S" BED AND SURROUND UNLESS SHOWN OTHERWISE
ALL CONCRETE PIPES TO BE CLASS 120
ALL CLAY PIPES TO BE EXTRA STRENGTH VITRIFIED CLAY
ALL UPVC PIPES TO COMPLY WITH BS 4660:2000 & BS EN 1401-1
STRUCTURED WALL UPVC PIPES TO COMPLY WITH WIS 4-35-01
MAX. PIPE LENGTH TO BE 3.0m

FOUNDATIONS TO BE DESIGNED / CONSTRUCTED TO TAKE INTO ACCOUNT THE PROXIMITY AND DEPTH OF ADJACENT SEWERS AND DRAINS IN ACCORDANCE WITH SFA 7TH EDITION PART B

CONTRACTOR TO BE AWARE OF AND TAKE APPROPRIATE ACTION TO ENSURE DE-STABILISATION OF ANY EXISTING STRUCTURES, TREES, EMBANKMENTS OR OTHER FEATURES DOES NOT OCCUR AS A RESULT OF ANY EXCAVATIONS WORKS UNDERTAKEN IN ACCORDANCE WITH THE DESIGNS SHOWN ON THIS DRAWING IF CONTRACTOR IS UNSURE ABOUT ANY ASPECT OF THE ABOVE HE SHOULD SEEK ADVICE BEFORE COMMENCING EXCAVATION WORK.

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ALL EXISTING MANHOLE INVERT LEVELS ARE TO LOCATED AND SURVEYED PRIOR TO START ON SITE TO ENSURE THAT THEY ARE CORRECT AND ALSO TO ENSURE THAT LEVEL CLASHES ARE AVOIDED AND THAT INTERPOLATED INVERT LEVELS ARE CORRECT. ANY DISCREPANCY TO BE REPORTED TO REFA PRIOR TO START TO ENABLE ANY CHANGES TO BE MADE TO DESIGN THAT PROVE NECESSARY

ALL DRAGOUT CONNECTIONS FROM MAIN SEWER MANHOLES TO FIRST INSPECTION CHAMBER TO BE 150mm Ø UNLESS INDICATED OTHERWISE

ALL ROAD GULLY CONNECTIONS TO BE 150mm Ø

ALL STORAGE MANHOLES ON THE TANK SEWER WILL NEED TO BE CONCRETE SURROUNDED AS THEY ARE WATER RETAINING.

OUTSIDE OF NEW SEWERS TO BE LOCATED 1.0m MINIMUM FROM KERBLINES OUTSIDE OF MANHOLE CHAMBERS TO BE LOCATED 0.5m MINIMUM FROM KERBLINES

ALL PIPES TO HAVE CLASS "S" BED AND SURROUND UNLESS SHOWN OTHERWISE

CIVILS DESIGN RISK MANAGEMENT

Abnormal or unusual residual risks associated with the design outcomes shown on this drawing are:-

1. EXISTING SERVICES EXISTING ELECTRIC MAIN
2. WORKING ON EXISTING HIGHWAY AND IN AREAS WHERE MEMBERS OF PUBLIC MAY HAVE ACCESS
3. DANGER OF COLLAPSE TO ALL EXCAVATIONS - RISK TO BE ASSSESED AND MANAGED BY CONTRACTOR IN ACCORDANCE WITH HSE GUIDANCE
4. WORKING ADJACENT TO EXISTING CULVERTED WATERCOURSE OR LIVE FOUL SEWER (WEIL'S DISEASE)
5. WORKING CLOSE TO EXISTING CULVERT
6. WORKING CLOSE TO EXISTING RAILWAY LINE

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GENERAL

1. All adoptable sewers and associated works are to comply fully with "Design and Construction Guidance" & Local Practices
2. All highway works to be to adoptable standards and to to comply fully with the Local Authority specification.
3. All private drainage works are to comply fully with part H of the Building Regulations
4. All existing invert levels to be checked by the Contractor at the start of works and any discrepancies notified to REFA. All levels are based on topographical survey information provided by others.
5. All materials to bear the relevant B.S.Kitemark and comply fully with the specifications. All concrete & concrete products must use Sulphate resistant cement (unless the site investigation report proves that sulphate attack from soils and groundwater will not occur)
6. All opening notices etc. as required under highways acts etc. are to be obtained prior to commencement of works. All works are to be inspected by L.A., NHBC or Relevant Water Authority as applicable.

C.D.M. REGULATIONS 2015

In line with the above regulations we are obliged to inform the Client of their responsibilities under section CDM 15/1, and residual risks that may be encountered in the construction of these works. All design work has been carried out with Health and Safety aspects given full consideration. Wherever possible risks have been eliminated from the design, however due to the very nature of this type of work it is not possible to remove all the risks from the design. We would also respectfully remind the Client of his obligations to take all reasonable steps in ensuring that only competent Contractors who have a valid safety policy are employed. They should also provide satisfactory responses at tender stage as to the manner in which they will deal with the elements of risk involved in this type of work and in particular those highlighted by REFA below:-

1. Support / treatment for ALL excavation work.
2. Guarding to edges of excavations to prevent people,materials and vehicles falling into excavation.
3. Guarding of excavations outside working hours to prevent unauthorised access.
4. Undermining to adjacent roads or structures.
5. Confined space operations.
6. Dealing with existing services.
7. Traffic management on existing highways.
8. Procedure to be followed in event of accident or emergency.
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The above list is by no means exhaustive but it does highlight operations that present a risk to contractors and the general public.
For clarification on any item please contact REFA.

rev	Revision details	Rev.By	Date
G	S106 AND S107 CL REVISED	RW	13.07.23
F	REVISED TO LATEST DESIGN	AS	03.04.23
E	REVISED TO LATEST DESIGN	AS	27.03.23
D	REVISED TO LATEST DESIGN	AS	22.02.23
C	REVISED TO CLIENT COMMENTS	AS	19.01.23
B	REVISED TO LATEST DESIGN	AS	18.01.23
A	REVISED TO LATEST SURVEY LEVELS	AS	21.12.22

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Drawing Stage		Drawing Status	
Draft		Comments	● Tender
● Issued		Information	Construction
		● Approval	As Built

Client
KELLEN HOMES

Job title
BENNETT STREET MANCHESTER

Drawing title
LONGITUDINAL SECTION

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CIVIL• STRUCTURAL
GEOTECHNICAL•ENVIRONMENTAL

Date	Scale	Drawn
18.11.22	1/500H & 1/100V	AS

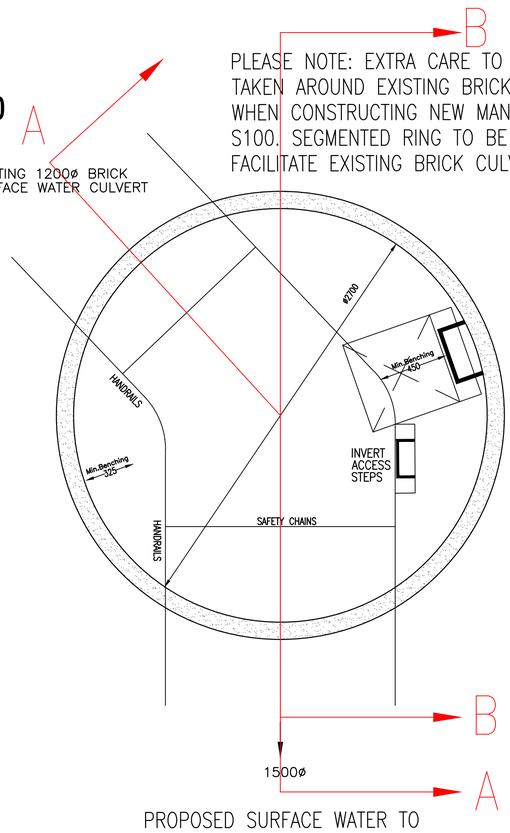
DRAWING No 22122/104/2 Rev G

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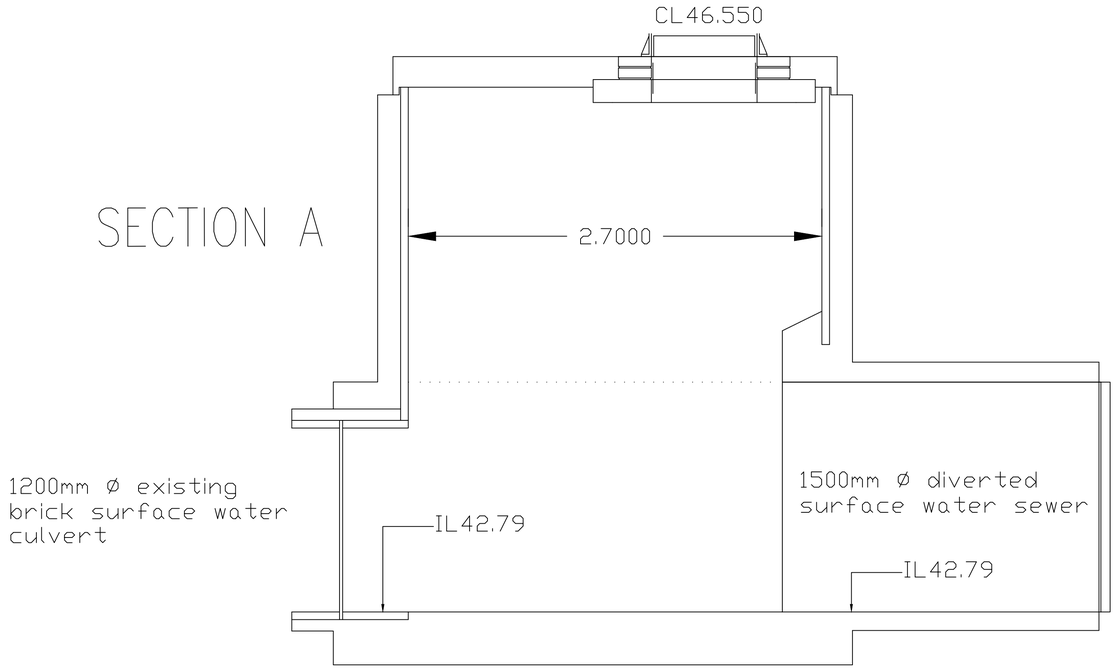
A1 SHEET

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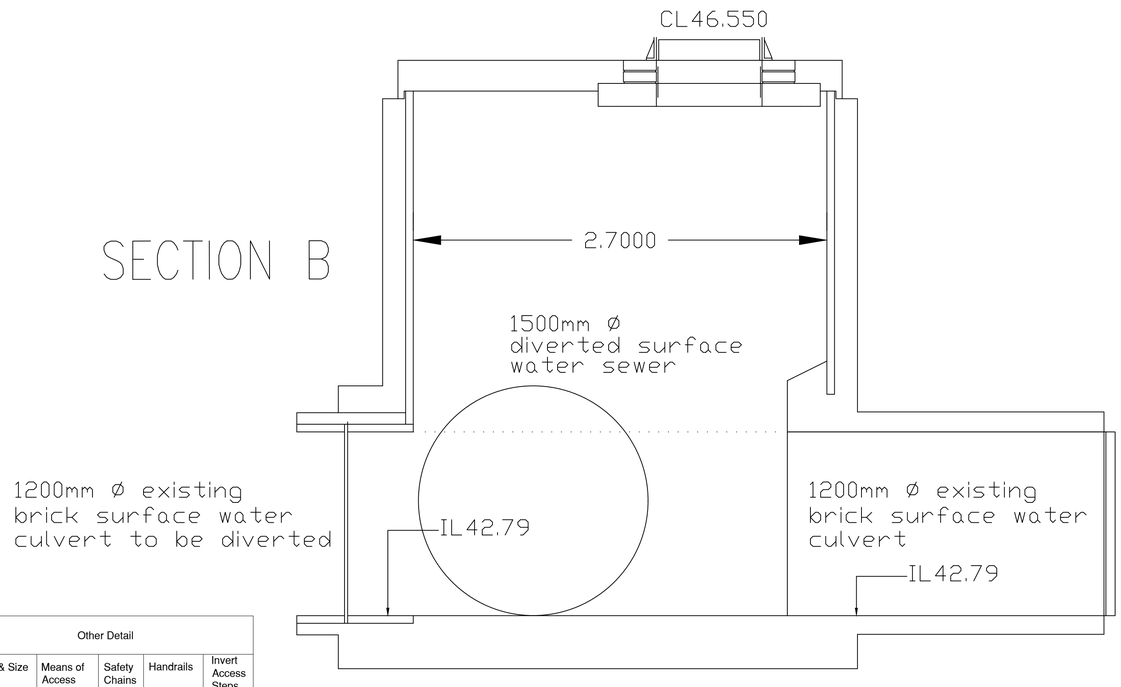
S100



SECTION A



SECTION B



Manhole Number	Cover Level		Pipe				Manhole Size	Types		Other Detail				
Coordinates	Depth To Soffit	Connections	Code	Inverts	Diams			Manhole	Cover	Depth & Size (mm)	Means of Access	Safety Chains	Handrails	Invert Access Steps
S100	46.550	EX								150				
	2.260							TYPE A2		600 x 600				
E= 386239.047								FIGURE B7			Ladder	Yes	Yes	Yes
N= 397142.52		0	0	1.000	42.790	1500	2700		D400	750 x 600 COVER SLAB OPENING				

GENERAL

1. All adoptable sewers and associated works are to comply fully with "Design and Construction Guidance" & Local Practices
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rev	Revision details	Rev.By	Date

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Drawing Stage			Drawing Status		
	Draft		Comments	●	Tender
●	Issued		Information		Construction
		●	Approval		As Built

Client
KELLEN HOMES

Job title
BENNETT STREET MANCHESTER

Drawing title
S100 MANHOLE SCHEMATIC SECTION

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GEOTECHNICAL• ENVIRONMENTAL

Date	Scale	Drawn
22.02.23	1:20	AS

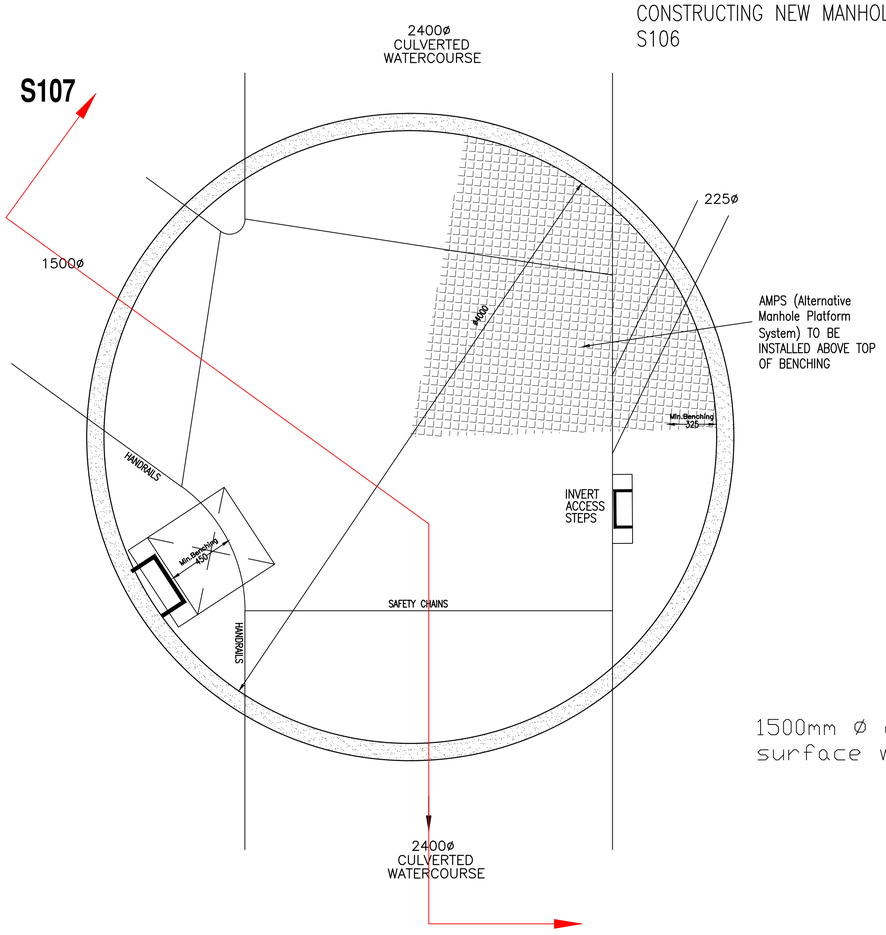
DRAWING No 22122/104/10 Rev

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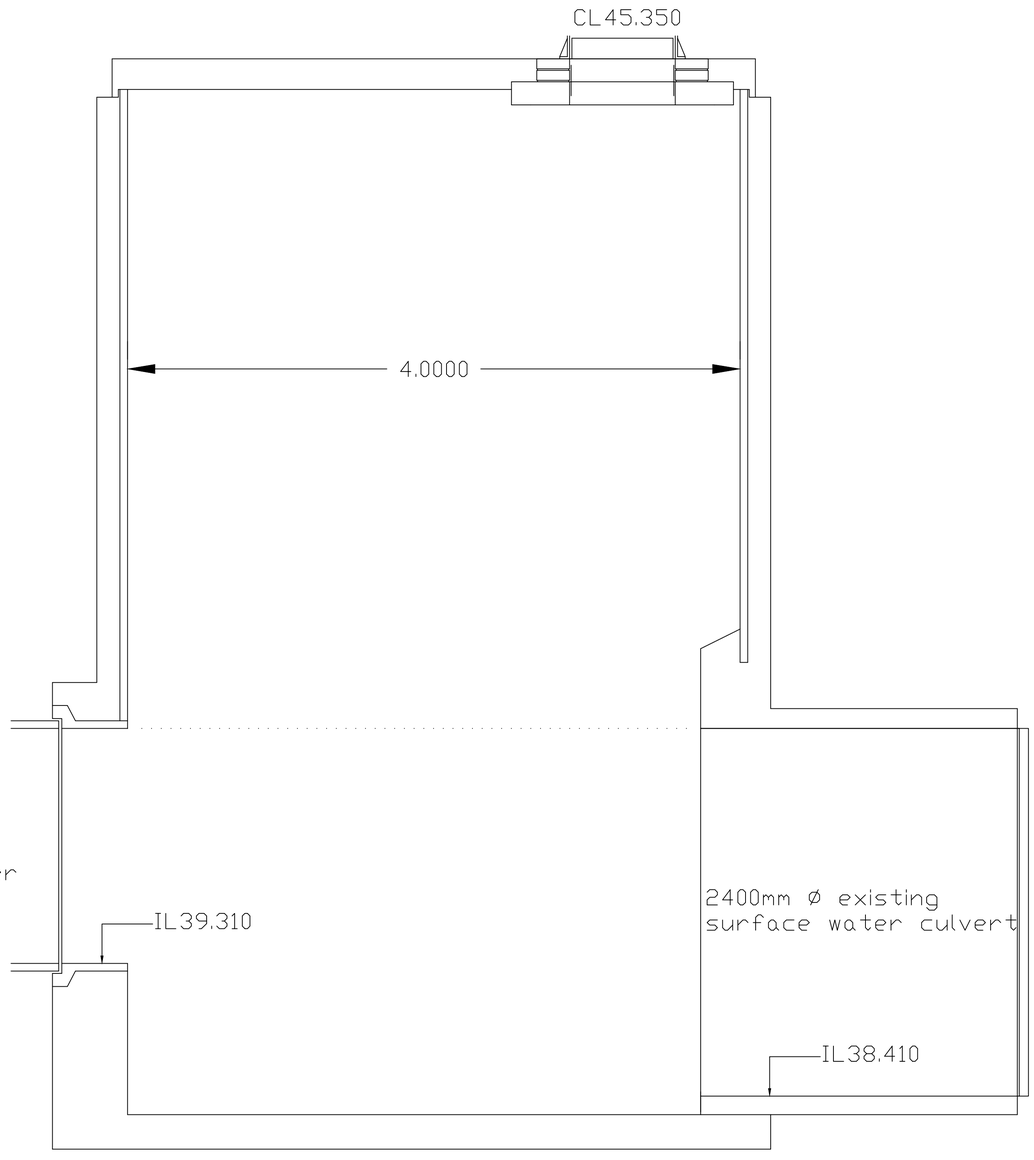
A1 SHEET

PROPOSED SURFACE WATER TO CONNECT TO EXISTING SURFACE WATER CULVERT SUBJECT TO APPROVAL BY LLFA

PLEASE NOTE: EXTRA CARE TO BE TAKEN AROUND EXISTING BRICK CULVERT WHEN CONSTRUCTING NEW MANHOLE S106



1500mm ø diverted surface water sewer



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GENERAL

1. All adoptable sewers and associated works are to comply fully with "Design and Construction Guidance" & Local Practices
2. All highway works to be to adoptable standards and to to comply fully with the Local Authority specification.
3. All private drainage works are to comply fully with part H of the Building Regulations
4. All existing invert levels to be checked by the Contractor at the start of works and any discrepancies notified to REFA. All levels are based on topographical survey information provided by others.
5. All materials to bear the relevant B.S.Kitemark and comply fully with the specifications. All concrete & concrete products must use Sulphate resistant cement (unless the site investigation report proves that sulphate attack from soils and groundwater will not occur)
6. All opening notices etc. as required under highways acts etc. are to be obtained prior to commencement of works. All works are to be inspected by L.A., NHBC or Relevant Water Authority as applicable.

C.D.M. REGULATIONS 2015

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1. Support / treatment for ALL excavation work.
2. Guarding to edges of excavations to prevent people,materials and vehicles falling into excavation.
3. Guarding of excavations outside working hours to prevent unauthorised access.
4. Undermining to adjacent roads or structures.
5. Confined space operations.
6. Dealing with existing services.
7. Traffic management on existing highways.
8. Procedure to be followed in event of accident or emergency.
9. Method of working where contaminated ground is present on site.
10. Confirmation will be required that all operatives are adequately trained, copies of relevant training certificates to be supplied.

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rev	Revision details	Rev.By	Date

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Drawing Stage			Drawing Status		
	Draft		Comments	●	Tender
●	Issued		Information		Construction
		●	Approval		As Built

Client
KELLEN HOMES

Job title
BENNETT STREET MANCHESTER

Drawing title
S107 MANHOLE SCHEMATIC SECTION 1

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CONSULTING ENGINEERS
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GEOTECHNICAL•ENVIRONMENTAL

Date	Scale	Drawn
22.02.23	1:20	AS

DRAWING No 22122/104/8 Rev

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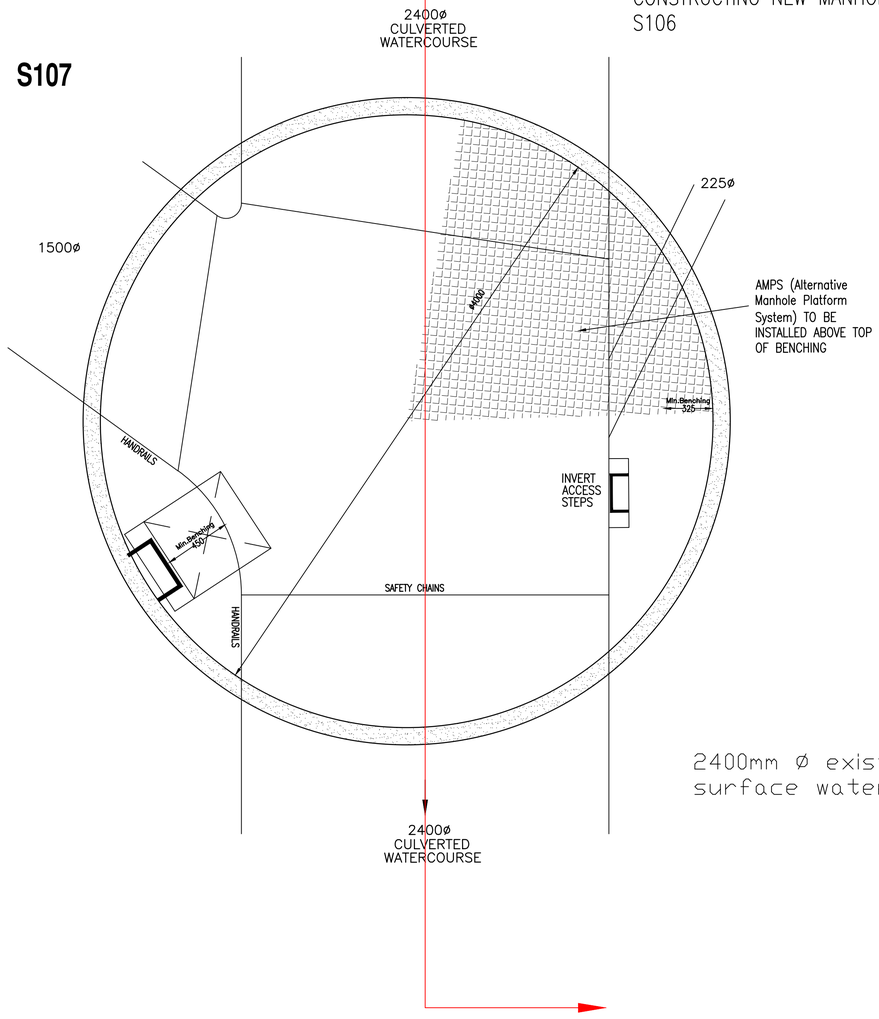
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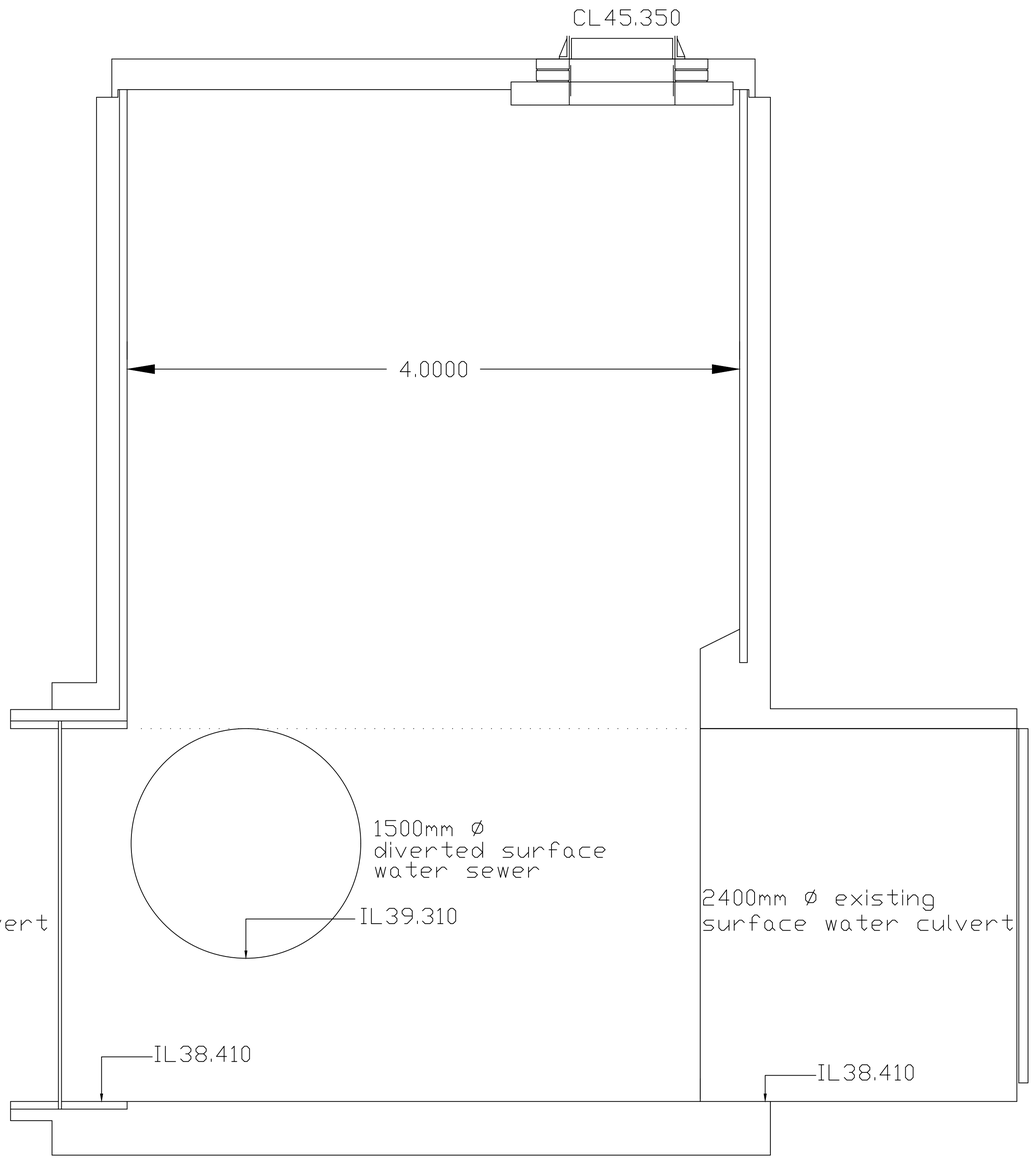
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PROPOSED SURFACE WATER TO CONNECT TO EXISTING SURFACE WATER CULVERT SUBJECT TO APPROVAL BY LLFA

PLEASE NOTE: EXTRA CARE TO BE TAKEN AROUND EXISTING BRICK CULVERT WHEN CONSTRUCTING NEW MANHOLE S106

S107





GENERAL

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rev	Revision details	Rev.By	Date

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Drawing Stage			Drawing Status		
	Draft		Comments	●	Tender
●	Issued		Information		Construction
		●	Approval		As Built

Client
KELLEN HOMES

Job title
BENNETT STREET MANCHESTER

Drawing title
S107 MANHOLE SCHEMATIC SECTION 2

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CONSULTING ENGINEERS
CIVIL• STRUCTURAL
GEOTECHNICAL•ENVIRONMENTAL

Date	Scale	Drawn
22.02.23	1:20	AS

DRAWING No 22122/104/9 — Rev

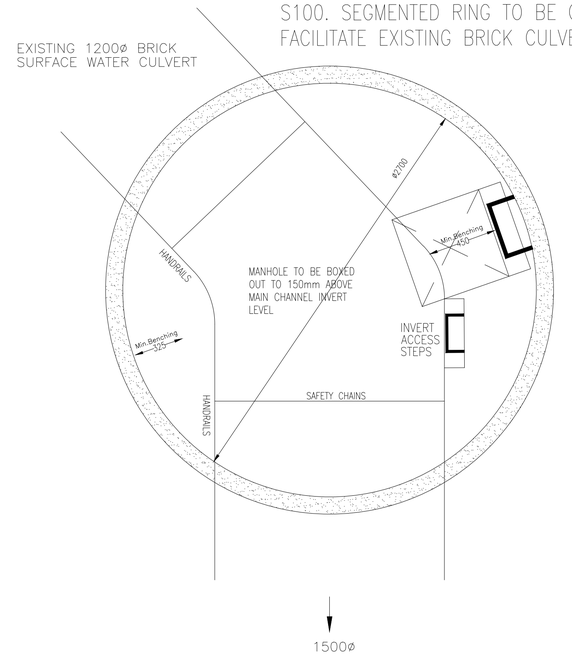
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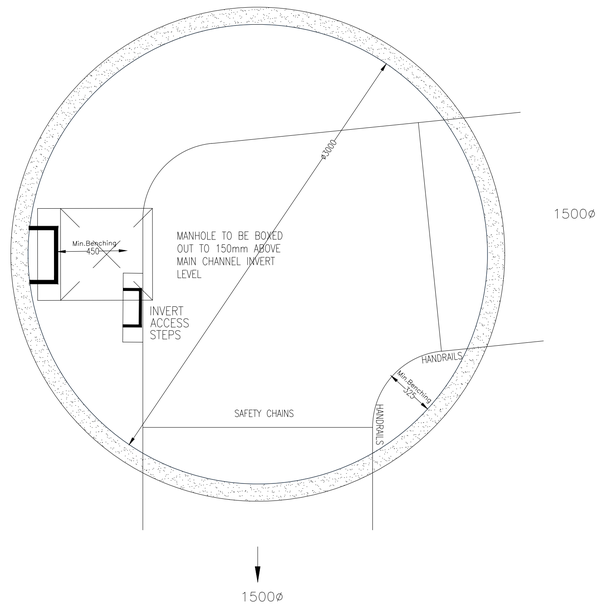
PLEASE NOTE: EXTRA CARE TO BE TAKEN AROUND EXISTING BRICK CULVERT WHEN CONSTRUCTING NEW MANHOLE S100. SEGMENTED RING TO BE CUT TO FACILITATE EXISTING BRICK CULVERT

PLEASE NOTE THAT THIS DRAWING IS ISSUED FOR INFORMATION/TENDER PURPOSES ONLY UNTIL TECHNICAL APPROVAL HAS BEEN GRANTED.
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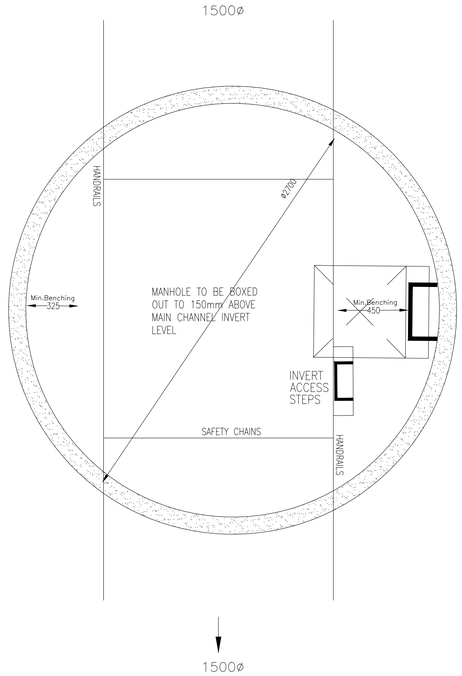
S100



S101



S102



PROPOSED SURFACE WATER TO CONNECT TO EXISTING SURFACE WATER CULVERT SUBJECT TO APPROVAL BY LLFA

Manhole Number / Coordinates	Cover Level: Depth To Soffit	Connections	Pipe: Code	Pipe: Inverts	Pipe: Diams	Manhole Size	Types: Manhole	Types: Cover	Other Detail: Depth & Size (mm)	Means of Access	Safety Chains	Handrails	Invert Access Steps
S100 E= 386236.741 N= 397141.980	46.550 2.335	EX 0	0 1	1.000 42.715	1500	2700	SHALLOW ACCESS MH	D400	150 600 x 600 750 x 600 COVER SLAB OPENING	Ladder	Yes	Yes	Yes
S101 E= 386197.453 N= 397132.775	46.167 2.199	1 0	1 0	1.000 1.001	1500 1500	3000	SHALLOW ACCESS MH	D400	150 600 x 600 750 x 600 COVER SLAB OPENING	Ladder	Yes	Yes	Yes
S102 E= 386199.688 N= 397115.599	45.827 1.959	1 0	1 0	1.001 1.002	1500 1500	2700	SHALLOW ACCESS MH	D400	150 600 x 600 750 x 600 COVER SLAB OPENING	Ladder	Yes	Yes	Yes
S103 E= 386205.772 N= 397068.842	45.903 2.308	1 0	1 0	1.002 1.003	1500 1500	2700	SHALLOW ACCESS MH	D400	150 600 x 600 750 x 600 COVER SLAB OPENING	Ladder	Yes	Yes	Yes

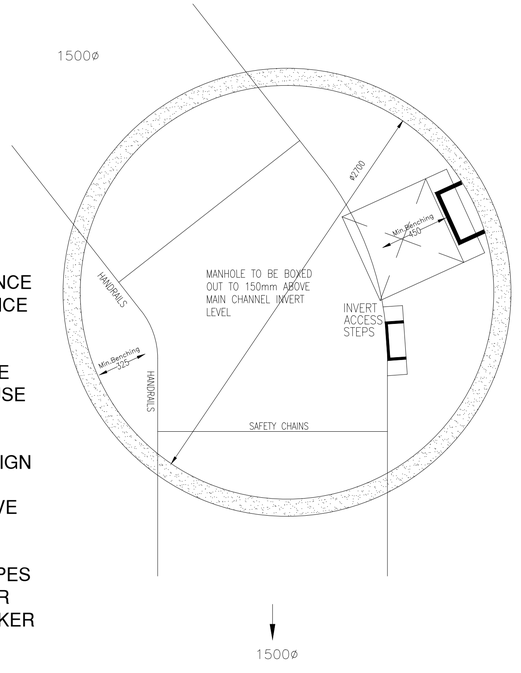
MANHOLES TO BE CONSTRUCTED IN ACCORDANCE WITH THE DESIGN AND CONSTRUCTION GUIDANCE - MAY 2021

MANHOLE LADDER TO BE CONSTRUCTED IN LINE WITH DESIGN AND CONSTRUCTION GUIDE CLAUSE DCG CLAUSE E2.37

ROCKER PIPES WILL BE USED IN LINE WITH DESIGN AND CONSTRUCTION GUIDANCE
FOR PIPES 225-600 DIA - ROCKER PIPE EFFECTIVE LENGTH:600
FOR PIPES 825 DIA AND ABOVE - ROCKER PIPE EFFECTIVE LENGTH SHALL BE 1250, ROCKER PIPES TO BE USED UNTIL THE PIPE OUTSIDE DIAMETER EXCEEDS THE EFFECTIVE LENGTH OF THE ROCKER PIPE

NOTE ALL CONNECTIONS TO BE MADE SOFFIT LEVEL UNLESS INDICATED OTHERWISE

S103



GENERAL

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C.D.M. REGULATIONS 2015

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rev	Revision details	Rev.By	Date
F	S103 REVISED	AS	03.04.23
E	MH CO ORDS REVISED	AS	30.03.23
D	REVISED TO LATEST DESIGN	AS	27.03.23
C	MH CO ORDS ADDED	AS	23.01.23
B	REVISED TO LATEST DESIGN	AS	18.01.23
A	REVISED TO LATEST DESIGN	AS	21.12.22

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Drawing Stage			Drawing Status		
	Draft		Comments	●	Tender
●	Issued		Information		Construction
		●	Approval		As Built

Client
KELLEN HOMES

Job title
BENNETT STREET MANCHESTER

Drawing title
SW MANHOLE SCHEMATICS DRG 1

REFA
45 Bridgeman Terrace
Wigan, Lancs
WN1 1TT
Tel:-(01942) 826020
Fax:-(01942) 230816
CONSULTING ENGINEERS
CIVIL • STRUCTURAL
GEOTECHNICAL • ENVIRONMENTAL

Date	Scale	Drawn
18.11.22	1:20	AS

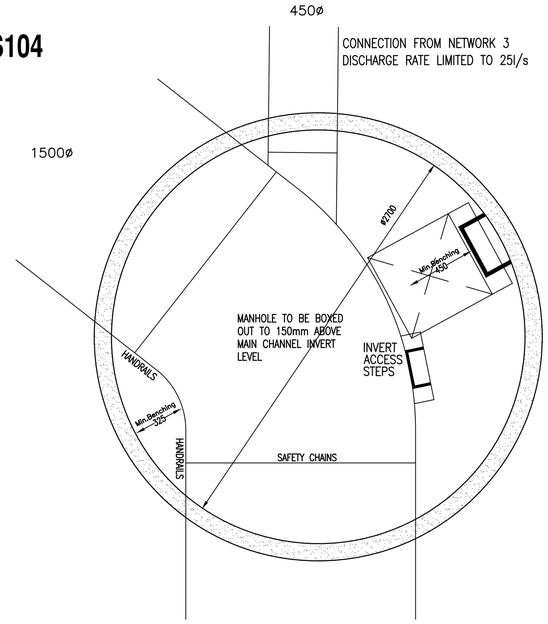
DRAWING No 22122/104/3 Rev F

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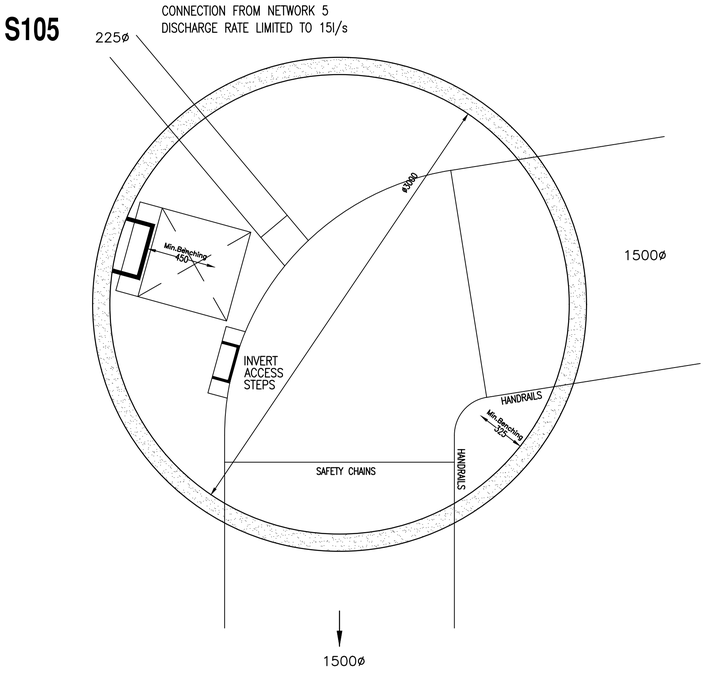
A1 SHEET

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S104



S105

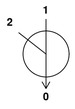
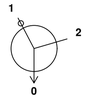
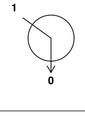


MANHOLES TO BE CONSTRUCTED IN ACCORDANCE WITH THE DESIGN AND CONSTRUCTION GUIDANCE - MAY 2021

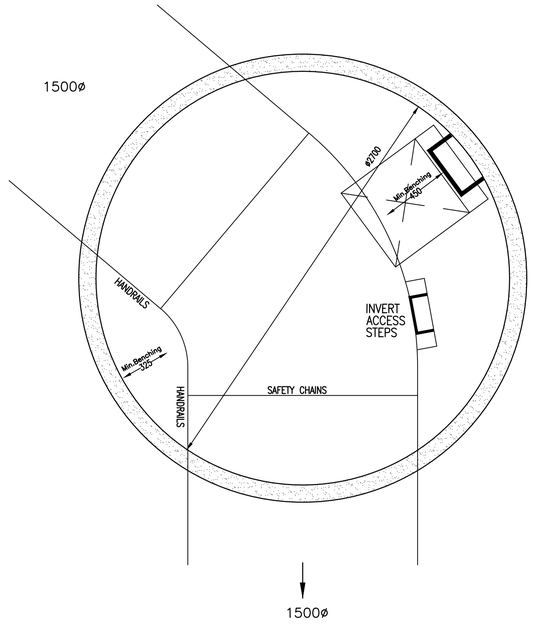
MANHOLE LADDER TO BE CONSTRUCTED IN LINE WITH DESIGN AND CONSTRUCTION GUIDE CLAUSE DCG CLAUSE E2.37

ROCKER PIPES WILL BE USED IN LINE WITH DESIGN AND CONSTRUCTION GUIDANCE
FOR PIPES 225-600 DIA - ROCKER PIPE EFFECTIVE LENGTH:600
FOR PIPES 825 DIA AND ABOVE - ROCKER PIPE EFFECTIVE LENGTH SHALL BE 1250, ROCKER PIPES TO BE USED UNTIL THE PIPE OUTSIDE DIAMETER EXCEEDS THE EFFECTIVE LENGTH OF THE ROCKER PIPE

NOTE ALL CONNECTIONS TO BE MADE SOFFIT LEVEL UNLESS INDICATED OTHERWISE

Manhole Number / Coordinates	Cover Level / Depth To Soffit	Connections	Pipe:	Code	Inverts	Diams	Manhole Size	Types: Manhole	Types: Cover	Other Detail: Depth & Size (mm)	Means of Access	Safety Chains	Handrails	Invert Access Steps
S104	45.941		1	1.003	42.938	600	2700	SHALLOW ACCESS MH	D400	150 600 x 600 750 x 600 COVER SLAB OPENING	Ladder	Yes	Yes	Yes
E= 386200.733	2.403		2		42.038	1500								
N= 397060.329			0	1.004	42.038	1500								
S105	45.973		1	1.004	42.585	225	3000	TYPE B FIGURE B10	D400	150 600 x 600 750 x 600 COVER SLAB OPENING	Ladder	Yes	Yes	Yes
E= 386146.611	2.751		2		41.722	1500								
N= 397053.535			0		41.722	1500								
S106	45.791		1	1.005	41.565	1500	2700	TYPE B FIGURE B10	D400	150 600 x 600 750 x 600 COVER SLAB OPENING	Ladder	Yes	Yes	Yes
E= 386145.828	2.726													
N= 397026.137			0	1.006	41.565	1500								

S106



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G	S106 CL REVISED	RW	13.07.23
F	S104 REVISED	AS	03.04.23
E	MH CD ORDS REVISED	AS	30.03.23
D	REVISED TO LATEST DESIGN	AS	27.03.23
C	MH CD ORDS ADDED	AS	23.01.23
B	REVISED TO LATEST DESIGN	AS	17.01.23
A	REVISED TO LATEST DESIGN	AS	21.12.22

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Drawing Stage			Drawing Status		
	Draft		Comments	●	Tender
●	Issued		Information		Construction
		●	Approval		As Built

Client
KELLEN HOMES

Job title
BENNETT STREET MANCHESTER

Drawing title
SW MANHOLE SCHEMATICS DRG 2

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CONSULTING ENGINEERS
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Date	Scale	Drawn
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DRAWING No 22122/104/4 Rev G

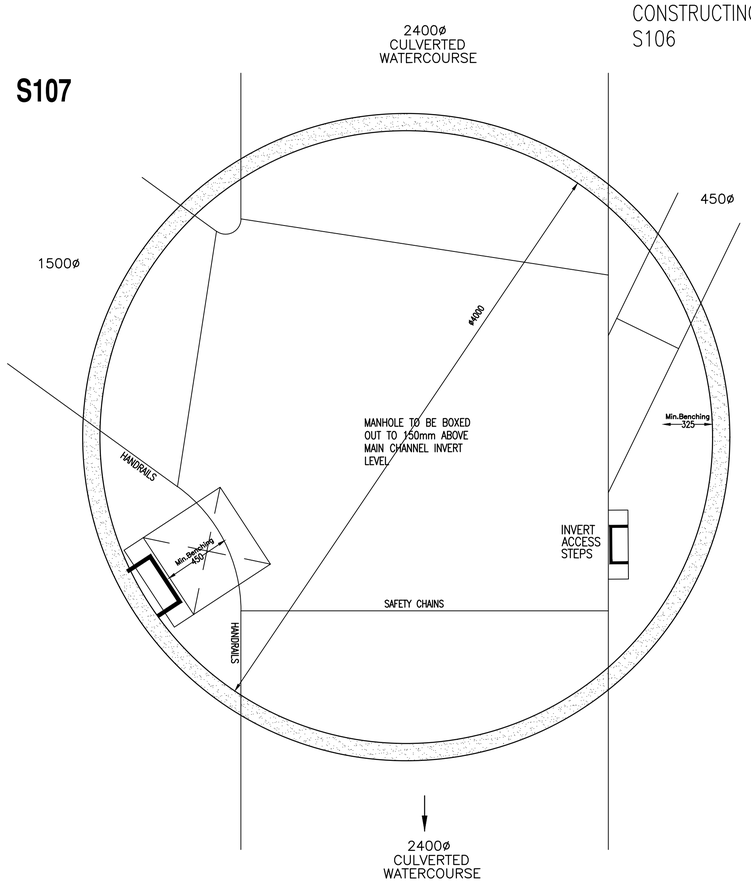
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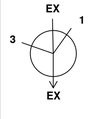
PROPOSED SURFACE WATER TO CONNECT TO EXISTING SURFACE WATER CULVERT SUBJECT TO APPROVAL BY LLFA

PLEASE NOTE: EXTRA CARE TO BE TAKEN AROUND EXISTING BRICK CULVERT WHEN CONSTRUCTING NEW MANHOLE S106



MANHOLES TO BE CONSTRUCTED IN ACCORDANCE WITH THE DESIGN AND CONSTRUCTION GUIDANCE - MAY 2021

MANHOLE LADDER TO BE CONSTRUCTED IN LINE WITH DESIGN AND CONSTRUCTION GUIDE CLAUSE DCG CLAUSE E2.37

Manhole Number	Cover Level	Connections	Pipe				Manhole Size	Types		Other Detail				
Coordinates	Depth To Soffit			Code	Inverts	Diams		Manhole	Cover	Depth & Size (mm)	Means of Access	Safety Chains	Handrails	Invert Access Steps
S107	45.630		1	1.006	42.490	450	4000	SHALLOW ACCESS MH	D400	150	Ladder	Yes	Yes	Yes
			EX		40.540	2400				600 x 600				
	2.690		3		41.441	1500				750 x 600 COVER SLAB OPENING				
E= 386129.207			EX		40.540	2400								
N= 397012.677														

ROCKER PIPES WILL BE USED IN LINE WITH DESIGN AND CONSTRUCTION GUIDANCE
FOR PIPES 225-600 DIA - ROCKER PIPE EFFECTIVE LENGTH:600
FOR PIPES 825 DIA AND ABOVE - ROCKER PIPE EFFECTIVE LENGTH SHALL BE 1250, ROCKER PIPES TO BE USED UNTIL THE PIPE OUTSIDE DIAMETER EXCEEDS THE EFFECTIVE LENGTH OF THE ROCKER PIPE

NOTE ALL CONNECTIONS TO BE MADE SOFFIT LEVEL UNLESS INDICATED OTHERWISE

GENERAL

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C.D.M. REGULATIONS 2015

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rev	Revision details	Rev.By	Date
F	S107 CL REVISED	RW	13.07.23
E	S107 REVISED	AS	04.04.23
D	MH CD DRDS REVISED	AS	30.03.23
C	REVISED TO LATEST DESIGN	AS	27.03.23
B	REVISED TO LATEST DESIGN	AS	22.02.23
A	MH CD DRDS ADDED	AS	23.01.23

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Drawing Stage			Drawing Status		
	Draft		Comments	●	Tender
●	Issued		Information		Construction
		●	Approval		As Built

Client
KELLEN HOMES

Job title
BENNETT STREET MANCHESTER

Drawing title
SW MANHOLE SCHEMATICS DRG 3

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GEOTECHNICAL•ENVIRONMENTAL

Date	Scale	Drawn
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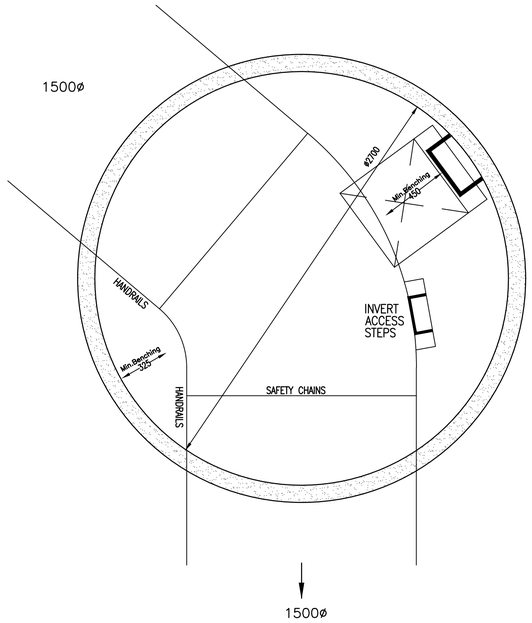
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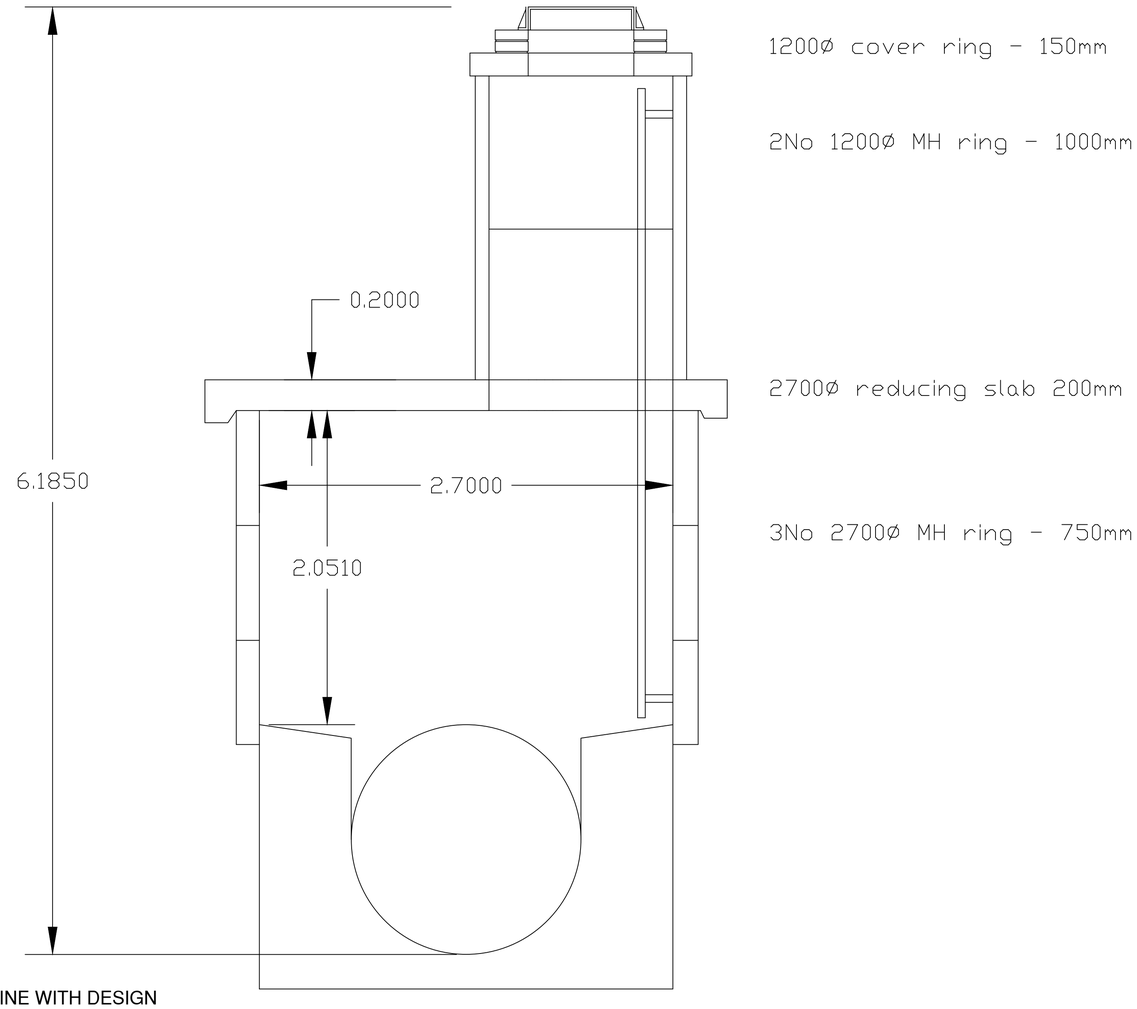
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S106





MANHOLES TO BE CONSTRUCTED IN ACCORDANCE WITH THE DESIGN AND CONSTRUCTION GUIDANCE - MAY 2021

MANHOLE LADDER TO BE CONSTRUCTED IN LINE WITH DESIGN AND CONSTRUCTION GUIDE CLAUSE DCG CLAUSE E2.37

ROCKER PIPES WILL BE USED IN LINE WITH DESIGN AND CONSTRUCTION GUIDANCE
FOR PIPES 225-600 DIA - ROCKER PIPE EFFECTIVE LENGTH:600
FOR PIPES 825 DIA AND ABOVE - ROCKER PIPE EFFECTIVE LENGTH SHALL BE 1250, ROCKER PIPES TO BE USED UNTIL THE PIPE OUTSIDE DIAMETER EXCEEDS THE EFFECTIVE LENGTH OF THE ROCKER PIPE

NOTE ALL CONNECTIONS TO BE MADE SOFFIT LEVEL UNLESS INDICATED OTHERWISE

Manhole Number	Cover Level		Pipe				Manhole Size	Types		Other Detail				
Coordinates	Depth To Soffit	Connections		Code	Inverts	Diams		Manhole	Cover	Depth & Size (mm)	Means of Access	Safety Chains	Handrails	Invert Access Steps
S106	45.750	1	1	1.005	39.565	1500	2700	TYPE A1 FIGURE B5	D400	150 600 x 600 750 x 600 COVER SLAB OPENING	Ladder	Yes	Yes	Yes
E= 386140.011 N= 397028.928	4.685	0	0	1.006	39.565	1500								

GENERAL

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2. All highway works to be to adoptable standards and to to comply fully with the Local Authority specification.
3. All private drainage works are to comply fully with part H of the Building Regulations
4. All existing invert levels to be checked by the Contractor at the start of works and any discrepancies notified to REFA.
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rev	Revision details	Rev.By	Date
B	REVISED TO LATEST DESIGN	AS	22.02.23
A	MH CD ORDS ADDED	AS	23.01.23

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www.smasltd.com

Drawing Stage			Drawing Status		
	Draft		Comments	●	Tender
●	Issued		Information		Construction
		●	Approval		As Built

Client
KELLEN HOMES

Job title
BENNETT STREET MANCHESTER

Drawing title
SW MANHOLE SCHEMATICS DRG 4

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CIVIL• STRUCTURAL
GEOTECHNICAL• ENVIRONMENTAL

Date	Scale	Drawn
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DRAWING No 22122/104/6 Rev B

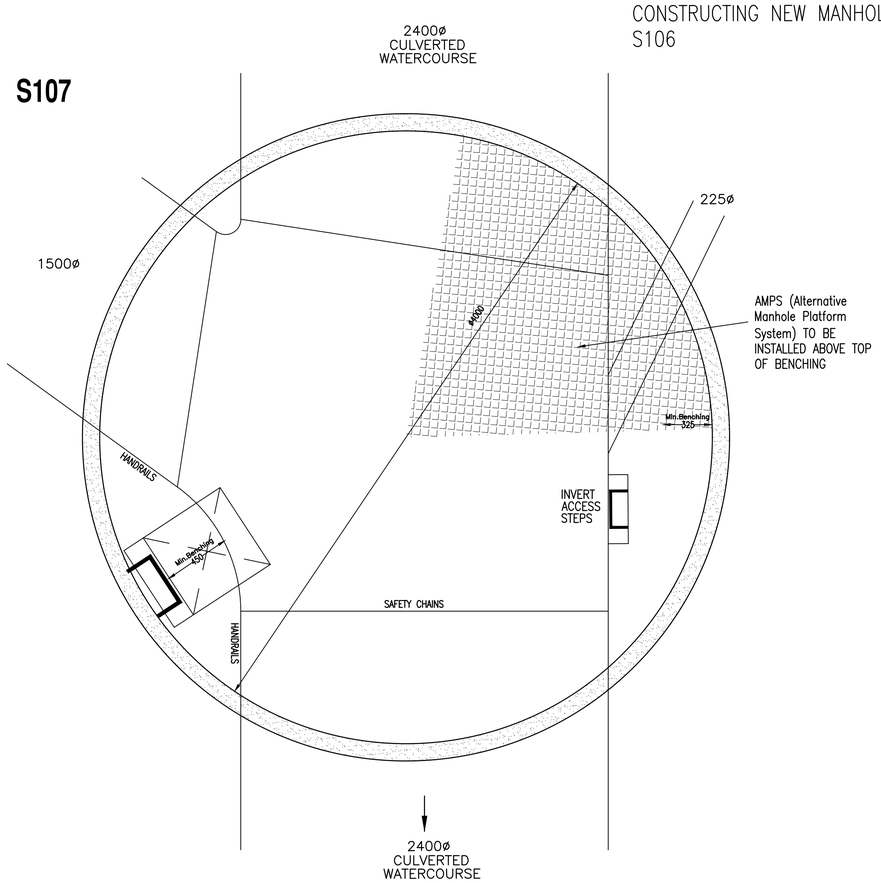
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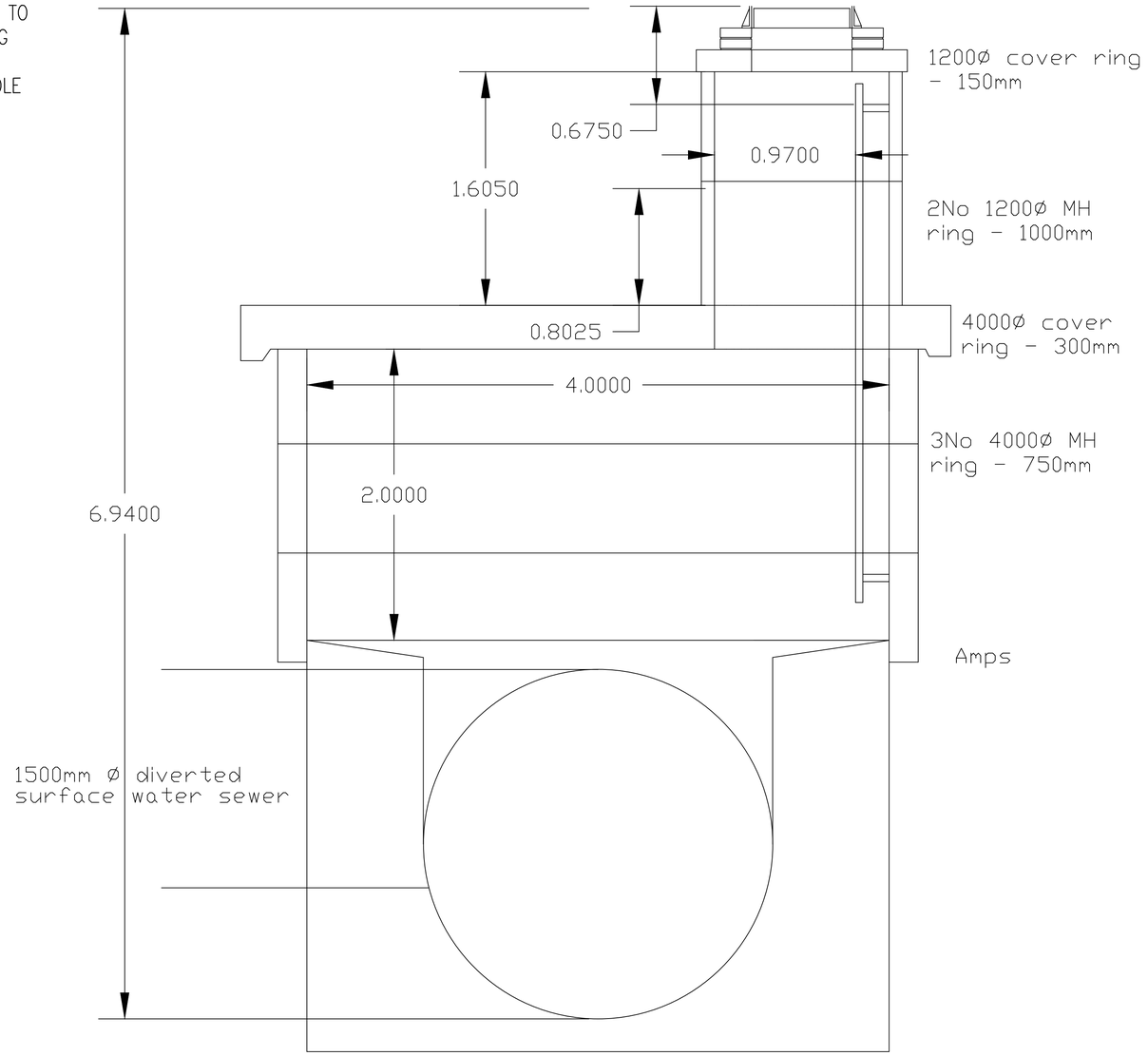
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PROPOSED SURFACE WATER TO CONNECT TO EXISTING SURFACE WATER CULVERT SUBJECT TO APPROVAL BY LLFA

PLEASE NOTE: EXTRA CARE TO BE TAKEN AROUND EXISTING BRICK CULVERT WHEN CONSTRUCTING NEW MANHOLE S106





MANHOLES TO BE CONSTRUCTED IN ACCORDANCE WITH THE DESIGN AND CONSTRUCTION GUIDANCE - MAY 2021

MANHOLE LADDER TO BE CONSTRUCTED IN LINE WITH DESIGN AND CONSTRUCTION GUIDE CLAUSE DCG CLAUSE E2.37

Manhole Number	Cover Level	Connections	Pipe				Manhole Size	Types		Other Detail				
Coordinates	Depth To Soffit			Code	Inverts	Diams		Manhole	Cover	Depth & Size (mm)	Means of Access	Safety Chains	Handrails	Invert Access Steps
S107	45.350	EX 1 3 EX	1	1.006	42.127	225	4000	TYPE A1 FIGURE B5	D400	150	Ladder	Yes	Yes	Yes
			EX		38.410	2400				600 x 600				
	4.540		3		39.310	1500				750 x 600 COVER SLAB OPENING				
E= 386122.194			EX		38.410	2400								
N= 397014.721														

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rev	Revision details	Rev.By	Date
C	REVISED TO LATEST DESIGN	AS	22.02.23
B	MH CO ORDS ADDED	AS	23.01.23
A	REVISED TO CLIENT COMMENTS	AS	19.01.23

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●	Issued		Information		Construction
		●	Approval		As Built

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Job title
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