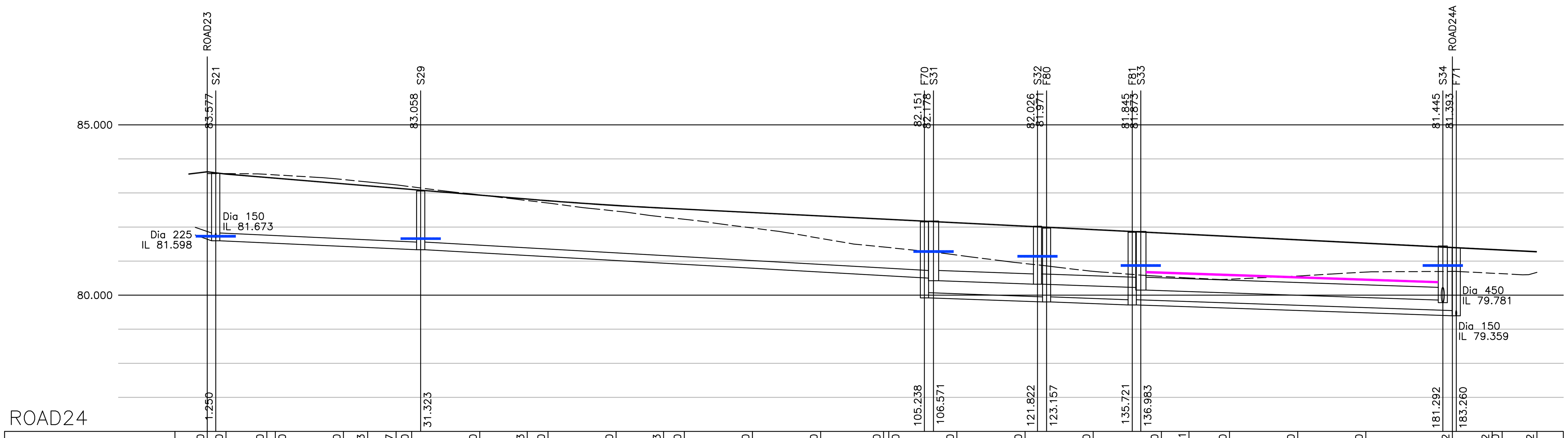
UU REF 4200029492 - PHASE 2A
UU REF 42000xxxxx - PHASE 2B



ROAD24

Row	Values
CHAINAGE	0.000, 2.750, 8.750, 10.000, 20.000, 23.543, 27.717, 30.000, 40.000, 46.963, 50.000, 60.000, 66.963, 70.000, 80.000, 90.000, 99.240, 100.000, 110.000, 120.000, 130.000, 140.000, 144.051, 150.000, 160.000, 170.000, 182.692, 188.532, 190.000, 195.092
EXISTING GROUND LEVEL	83.567, 83.531, 83.394, 83.180, 82.942, 82.704, 82.467, 82.227, 81.972, 81.668, 81.399, 81.176, 80.928, 80.698, 80.550, 80.469, 80.561, 80.679, 80.695, 80.630, 80.670
ALIGNMENT LEVEL	83.554, 83.434, 83.268, 83.103, 82.937, 82.821, 82.773, 82.633, 82.556, 82.525, 82.425, 82.325, 82.225, 82.125, 82.025, 81.925, 81.825, 81.725, 81.625, 81.525, 81.425, 81.325, 81.274
VERTICAL ALIGNMENT	G= −1.658% 1: −60.3; KF= 30.41133 L= 20.000; G= −1.000% 1: −100.0
HORIZONTAL ALIGNMENT	R= 60.000; R= 970.763; R= 42.300
LEFT HAND CHANNEL	83.395, 83.374, 83.208, 83.043, 82.877, 82.713, 82.573, 82.465, 82.365, 82.265, 82.165, 82.065, 81.965, 81.865, 81.765, 81.665, 81.565, 81.465, 81.365, 81.280, 81.265, 81.214
RIGHT HAND CHANNEL	83.515, 83.494, 83.328, 83.163, 82.997, 82.833, 82.693, 82.585, 82.485, 82.385, 82.285, 82.185, 82.085, 81.985, 81.885, 81.785, 81.685, 81.585, 81.485, 81.400, 81.385, 81.334
STORMWATER INVERT	81.598, 81.333, 81.333, 80.498, 80.423, 80.324, 80.324, 80.225, 80.150, 79.856
STORMWATER DETAILS	Pipe 8.001 Dia 225 POLYSEWER 1 in 113 WIS.4.35.01; Pipe 8.002 Dia 225 POLYSEWER 1 in 90 WIS.4.35.01; Pipe 8.003 Dia 300 POLYSEWER 1 in 151 WIS.4.35.01; Pipe 8.004 Dia 300 POLYSEWER 1 in 150 WIS.4.35.01; Pipe 8.005 Dia 375 Circular CONC 1 in 150 Concrete Class 120
STORMWATER LENGTHS	29.995 Type S granular surround; 75.108 Type S granular surround; 14.904, 14.821 Type S granular surround; 44.157 Type A concrete surround
FOULWATER INVERT	79.921, 79.791, 79.791, 79.700, 79.700, 79.359
FOULWATER DETAILS	Pipe 1.000 Dia 150 POLYSEWER 1 in 140 WIS.4.35.01; Pipe 1.001 Dia 150 POLYSEWER 1 in 140 WIS.4.35.01; Pipe 1.002 Dia 150 POLYSEWER 1 in 140 WIS.4.35.01
FOULWATER LENGTHS	18.161, 12.788 Type S granular surround; 47.668 Type S granular surround

A01. These notes are intended to augment drawings and specifications. Where conflict of requirements exists the order of precedence shall be as shown in the specification. Otherwise the strictest provision shall govern.

A02. This drawing to be read in conjunction with all other relevant engineers and architects drawings.

A03. Drawings not to be scaled. All dimensions to be checked on site by the contractor. Any discrepancies to be notified to the Engineer and further instructions obtained before work is commenced.

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Manhole construction - refer to CPA technical bulletin Sept 2001 outlining changes to relevant British Product Standards BS5911-200:1994. All precast concrete products are to be kite marked or they will be rejected as part of an adoptable system. Manhole cover slabs to BS5911
Manhole covers to have a clear opening of 600 x 600mm and shall be class D400 to BSEN124 with 150mm deep frames.
Filled ground must be filled and consolidated under the supervision of ST before any sewer works are carried out. All adoptable sewers to be BSI kitemarked, (certified to WIS-4-35-01)

Plastic channels are not acceptable

All custom built ironwork to be hot dipped galvanised prior to final fitting.

Adoptable sewer pipes to be laid in max 3m lengths unless there is a specific operational need to lay longer lengths.

United Utilities are not obliged to accept filter drain / land drainage runoff into the public sewernetwork or adoptable drainage network (directly or indirectly). An alternative method of disposal of land drainage runoff will therefore be required and you will have to liaise with the Local Authority, Land Drainage Section with regard to the disposal of the filter drain/land drainage run-off.

Cover slabs must carry the BSI Kitemark or will be rejected by United Utilities Inspector. Where the clear opening of the Kitemarked product is different to that of the cover and frame, a loading bearing slab should be fitted above the cover slab to bring the size down to 600mm x 600mm for the United Utilities specified cover size. Please refer to Concrete Pipe Systems Association (CPSA), 'Technical Bulletin' issued Autumn 2004 for Kitemarked cover slab opening sizes.

Sulphate resistant cement (C20-DC2) and precast concrete products must be used or a laboratory report provided proving that such precautions are not necessary.

“Sewers must have 5 metres clearance from trees and hedges (please also refer to Figure 2.3 on page 33 in “Sewers for Adoption” 6th Edition for restrictions on tree planting adjacent to sewers)”.

Sewers to be laid in class S bedding (150mm granular bed and surround. Where depth of cover is less then 1.2m in highways and verges (or less then 900mm in non vehicle access areas) then a concrete slab should be provided above the granular bed and surround.

The chamber size of manholes with more then one connection in them may need to be increased one increment to accommodate the connection and bends. See individual manhole detail

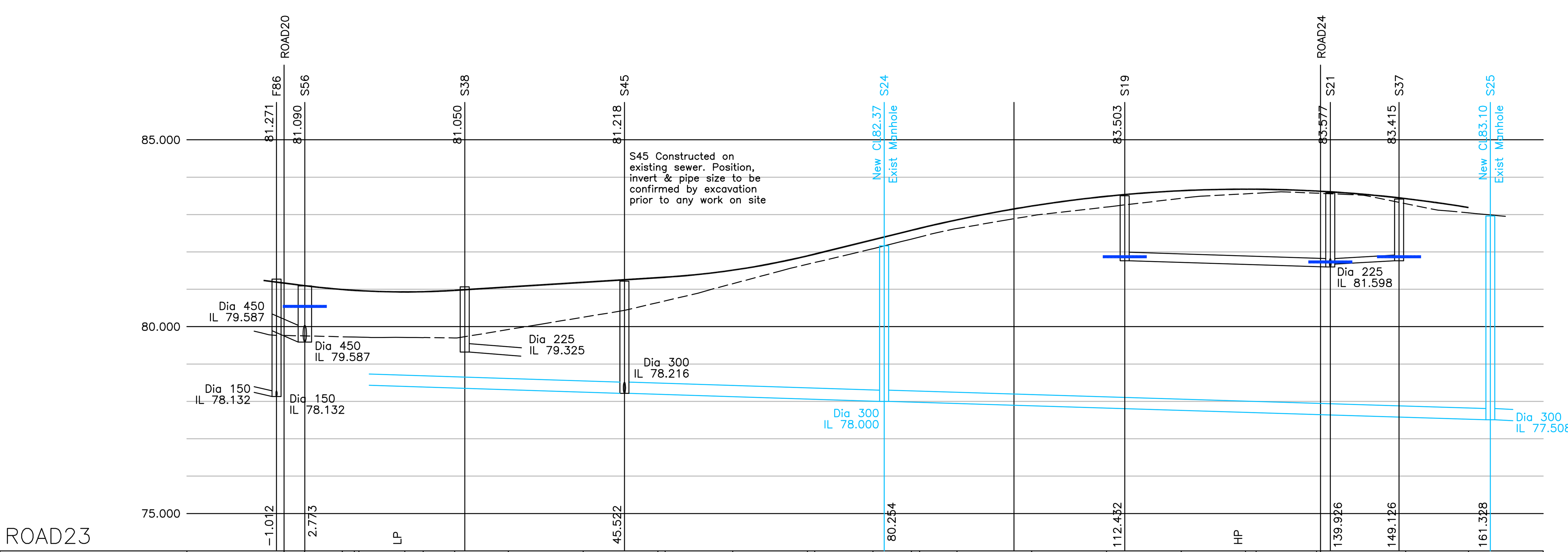
Contractors should be aware of significantly large diameter pipes and manhole chamber rings proposed in this design and precautions should be taken in movement and placing of such items. Also to be considered is the depth of excavation of the drainage works especially the large diameter components up to 8m deep excavations.

All adoptable sewer works and materials to be in accordance with Sewers for Adoption 6th edition. The relevant British / European and United Utilities standards / requirements / addendum & Kitemarked.

The adoptable sewers shall be a min 1.0m and manholes 0.5m from the curb and service margins.

Sewers must have 5m clearance from trees and hedges see SfA6 for restrictions on tree planting / types.

Bedding and backfill material to conform with the Water Industry specification 4-08-02 (table A2)



ALL MANHOLES AND DRAINAGE COMPONENTS TO COMPLY WITH UNITED UTILITIES CURRENT STANDARD DETAILS. ANY DEVIATION BETWEEN THESE AND THE CURENT DESIGN TO BE CLARIFIED PRIOR TO CONSTRUCTION.

OPTIONAL MANHOLE CONSTRUCTION.
IN LIEU OF THE STANDARD DETAILS UNITED UTILITIES WILL ACCEPT FP MACcANN EASI-BASE PRECAST MANHOLE BASES AND FP MACcANN WIDE WALLED MANHOLE RINGS.
DEVIATION FROM THESE DRAWING BY UTILIZING THE ABOVE PROJECTS MUST BE APPROVED FOR INDIVIDUAL MANHOLES BY UNITED UTILITIES PRIOR TO CONSTRUCTION

Top water level for the 30year 15min storm

ROAD23

Row	Values
CHAINAGE	0.000, 2.750, 7.781, 9.386, 10.000, 16.139, 18.600, 22.818, 30.000, 40.000, 50.000, 50.968, 60.000, 70.000, 70.968, 78.762, 83.898, 85.003, 90.000, 100.000, 110.000, 120.000, 128.591, 130.000, 138.097, 138.626, 150.000, 158.409
EXISTING GROUND LEVEL	79.764, 79.719, 79.705, 79.923, 80.253, 80.645, 81.149, 81.669, 82.147, 82.625, 82.967, 83.201, 83.435, 83.570, 83.556, 83.291, 83.045
ALIGNMENT LEVEL	81.097, 80.965, 80.929, 80.943, 80.971, 81.061, 81.186, 81.311, 81.323, 81.511, 81.894, 81.941, 82.386, 82.578, 82.858, 83.228, 83.488, 83.638, 83.679, 83.677, 83.607, 83.426, 83.189
VERTICAL ALIGNMENT	KF= 5.34286 L= 20.068; G= 1.250% 1: 80.0; KF= 5.43982 L= 20.000; G= 4.927% 1: 20.3; L= 74.511 KF= −9.07163
HORIZONTAL ALIGNMENT	R= 12.206; R= 202.738
LEFT HAND CHANNEL	81.013, 80.962, 80.875, 80.992, 81.117, 81.242, 81.442, 81.825, 82.317, 82.789, 83.159, 83.419, 83.569, 83.609, 83.560, 83.538, 83.357, 83.120
RIGHT HAND CHANNEL	80.926, 80.896, 80.875, 80.992, 81.117, 81.242, 81.442, 81.825, 82.317, 82.789, 83.159, 83.419, 83.569, 83.609, 83.560, 83.538, 83.357, 83.120
FOULWATER INVERT	79.325, 79.005, 78.630 HIGHWAY DRAIN; 81.765, 81.598, 81.673, 81.765 HIGHWAY DRAIN
FOULWATER DETAILS	Pipe x.xxx Dia 225 POLYSEWER 1 in 67 WIS.4.35.01; Pipe 8.000 Dia 225 POLYSEWER 1 in 165 WIS.4.35.01; Pipe 9.000 Dia 150 POLYSEWER 1 in 100 WIS.4.35.01
FOULWATER LENGTHS	21.385 Type S granular surround; 27.494, 9.200 Type S granular surround

K. Full redesign following layout changes and implementation of surface water storage basin 14–8–21
J. UU reference numbers added 2–8–20
H. phases 2A & 2B annotation added 16–7–20
G. Revised following UU comment 29–11–19 2–12–19
F. Details/revisions for section 104 submission 28–11–19
E. Full redesign in line with Alpha Design layout 17–10–19
D. Full redesign to incorporate northern field and tank storage 12–6–19
C. Drainage redesigned following client and UU comments. Road20 lifted to give cover to storage pipe 17–4–19
B. Foul outfall section revised, Road 22 revised, section S59–S72 added 7–8–17
A. Storage revised to D1800mm, highway vertical alignment revised. 22–5–17

R.A.B. ENGINEERING DESIGN LTD
12 BERRY HOLME CLOSE
SHEFFIELD S35 1AB

High Grange Developments Ltd

Mill Hill, Cleator Moor
Whitehaven
Longitudinal Sections

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DRAWING No 1083-2-2 REV K

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