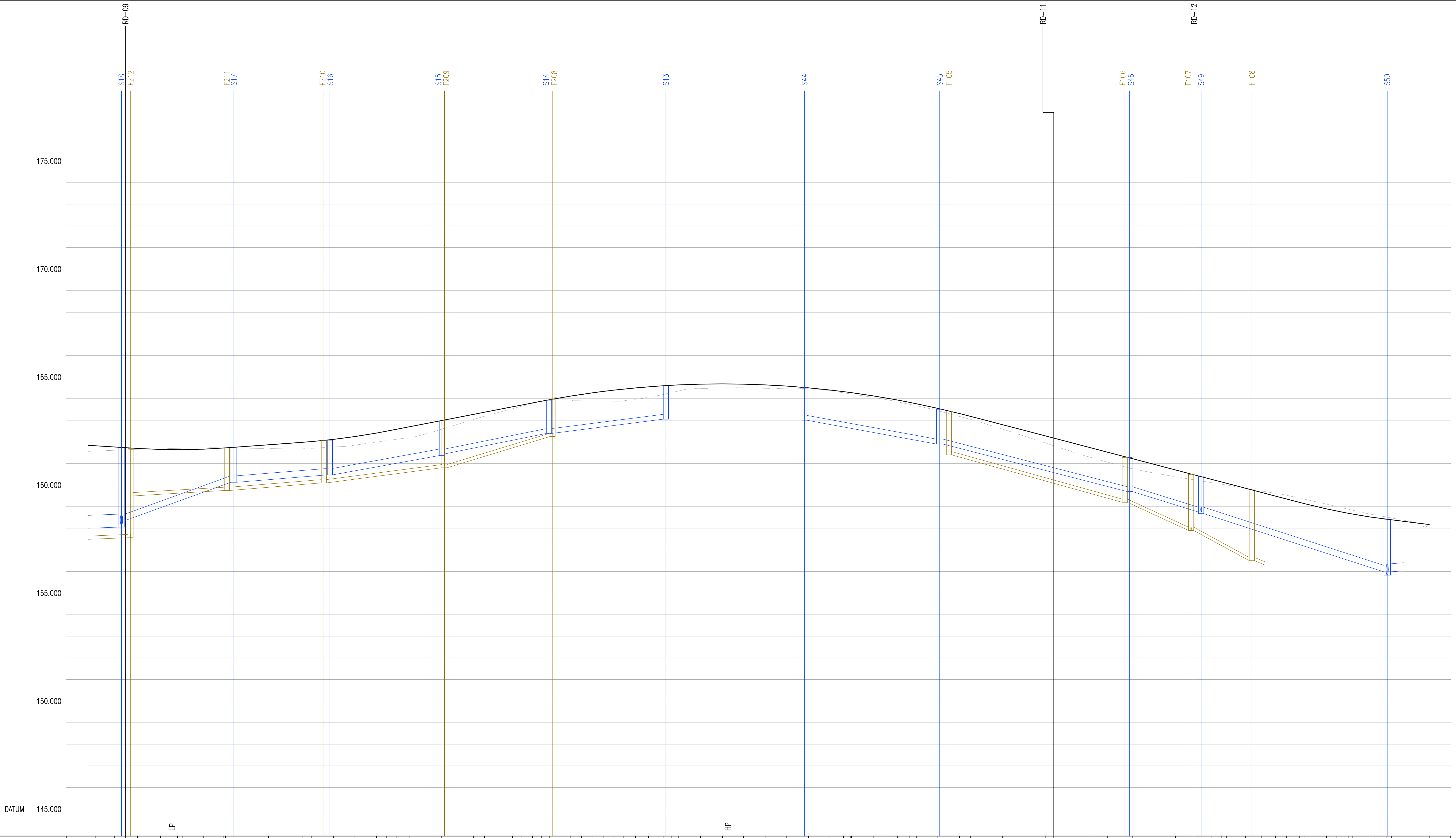
DO NOT SCALE

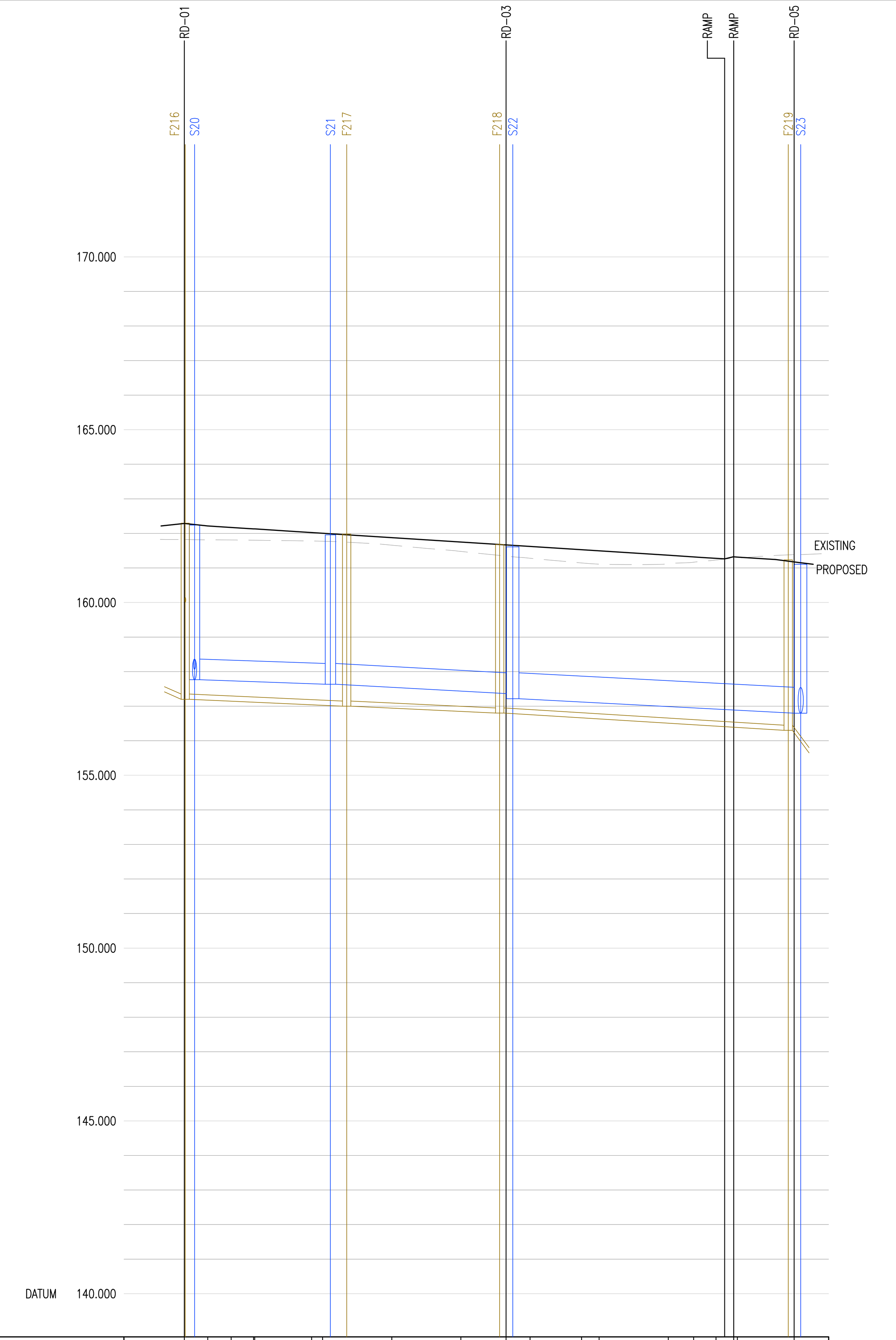


RD-01

Row	Values
CHAINAGE	240.000, 245.381, 246.856, 249.655, 250.000, 255.000, 258.925, 260.000, 265.000, 269.655, 270.000, 280.000, 287.762, 290.000, 295.000, 300.000, 305.000, 307.762, 309.556, 310.000, 312.727, 320.000, 328.490, 330.000, 330.091, 340.000, 341.670, 342.600, 343.271, 345.000, 350.000, 355.000, 357.034, 358.982, 360.000, 362.120, 365.000, 370.000, 371.362, 373.386, 375.000, 380.000, 385.000, 385.139, 390.000, 395.000, 400.000, 405.000, 410.000, 413.182, 414.831, 415.000, 420.000, 425.000, 426.691, 428.340, 430.000, 435.000, 440.000, 442.600, 450.000, 460.000, 461.832, 470.000, 474.230, 480.000, 490.000, 494.313, 500.000, 500.601, 501.784, 508.763, 510.000, 515.191, 517.191, 518.781, 520.000, 525.000, 528.207, 530.000, 531.093, 535.000, 538.781, 540.000, 548.781
EXISTING GROUND LEVEL	161.5/4, 161.655, 161.703, 161.721, 161.689, 161.701, 161.847, 162.128, 162.580, 163.185, 163.720, 163.930, 163.886, 164.135, 164.464, 164.503, 164.453, 164.371, 164.061, 163.675, 163.181, 162.590, 161.943, 161.306, 160.757, 160.387, 160.060, 159.722, 159.340, 158.884, 158.479, 158.172
CENTRE LINE	161.81/, 161.755, 161.692, 161.649, 161.639, 161.663, 161.721, 161.793, 161.866, 161.938, 162.014, 162.115, 162.246, 162.408, 162.597, 162.702, 162.790, 162.984, 163.177, 163.313, 163.371, 163.375, 163.565, 163.758, 163.823, 163.885, 163.949, 164.121, 164.269, 164.323, 164.371, 164.395, 164.498, 164.578, 164.596, 164.620, 164.636, 164.670, 164.682, 164.672, 164.638, 164.582, 164.503, 164.401, 164.325, 164.281, 164.277, 164.129, 163.959, 163.897, 163.833, 163.767, 163.551, 163.313, 163.054, 162.793, 162.531, 162.270, 162.008, 161.747, 161.485, 161.224, 160.962, 160.701, 160.439, 160.178, 159.916, 159.655, 159.393, 159.383, 159.278, 159.133, 158.896, 158.727, 158.694, 158.655, 158.527, 158.392, 158.267, 158.172
VERTICAL ALIGNMENT	KF= 7.41565 L= 20.000; G= 1.447% 1: 69.1; KF= 8.24742 L= 20.000; G= 3.872% 1: 25.8; L= 100.000 KF= −10.98624; G= −5.230% 1: −19.1; KF= 7.32522 L= 20.000; G= −2.500% 1: −40.0
HORIZONTAL ALIGNMENT	R= 96.164; R= 96.164; R= 106.000; R= 250.000; R= 100.000; R= 37.375; R= 100.000
LEFT HAND CHANNEL	161./51, 161.689, 161.627, 161.584, 161.575, 161.600, 161.658, 161.731, 161.804, 161.877, 161.953, 162.055, 162.187, 162.349, 162.538, 162.644, 162.733, 162.927, 163.121, 163.256, 163.284, 163.286, 163.476, 163.671, 163.736, 163.830, 163.895, 164.067, 164.216, 164.270, 164.287, 164.311, 164.415, 164.496, 164.515, 164.569, 164.585, 164.620, 164.633, 164.623, 164.590, 164.534, 164.456, 164.354, 164.278, 164.208, 164.203, 164.057, 163.887, 163.825, 163.788, 163.722, 163.507, 163.269, 163.011, 162.750, 162.510, 162.270, 162.029, 161.789, 161.548, 161.308, 161.047, 160.785, 160.523, 160.262, 160.000, 159.739, 159.449, 159.438, 159.348, 159.177, 158.896, 158.689, 158.657, 158.621, 158.470, 158.307, 158.182, 158.088
RIGHT HAND CHANNEL	161./51, 161.689, 161.627, 161.584, 161.575, 161.600, 161.658, 161.731, 161.804, 161.877, 161.953, 162.055, 162.187, 162.349, 162.538, 162.644, 162.733, 162.927, 163.121, 163.256, 163.315, 163.319, 163.509, 163.703, 163.768, 163.830, 163.895, 164.067, 164.216, 164.270, 164.318, 164.342, 164.446, 164.527, 164.545, 164.569, 164.585, 164.620, 164.633, 164.623, 164.590, 164.534, 164.456, 164.354, 164.278, 164.235, 164.230, 164.084, 163.914, 163.852, 163.788, 163.722, 163.507, 163.269, 163.011, 162.750, 162.482, 162.213, 161.945, 161.676, 161.408, 161.139, 160.878, 160.616, 160.355, 160.093, 159.832, 159.570, 159.309, 159.299, 159.144, 158.998, 158.762, 158.592, 158.582, 158.570, 158.442, 158.307, 158.182, 158.088
STORMWATER COVER LEVEL	161.725, 161.726, 162.075, 162.969, 163.924, 164.586, 164.518, 163.508, 161.278, 160.421, 158.395
STORMWATER INVERT	158.050, 158.350, 160.130, 160.130, 160.470, 160.470, 161.365, 161.440, 162.390, 162.390, 163.050, 163.000, 161.900, 161.900, 159.700, 159.700, 158.750, 158.675, 156.055
STORMWATER DETAILS	)07)0 ;ONC 49; Pipe 3.004 Dia 300 Circular CLAY 1 in 14; Pipe 3.003 Dia 300 Circular CLAY 1 in 64; Pipe 3.002 Dia 300 Circular CLAY 1 in 29; Pipe 3.001 Dia 225 Circular CLAY 1 in 26; Pipe 3.000 Dia 225 Circular CLAY 1 in 41; Pipe 7.000 Dia 225 Circular CLAY 1 in 29; Pipe 7.001 Dia 225 Circular CLAY 1 in 20; Pipe 7.002 Dia 225 Circular CLAY 1 in 17; Pipe 7.003 Dia 300 Circular CLAY 1 in 16
STORMWATER LENGTHS	6, 25.638, 21.918, 25.848, 25.064, 27.166, 31.458, 44.098, 16.376, 43.157
FOULWATER COVER LEVEL	161.697, 161.715, 162.059, 162.997, 163.970, 163.431, 161.282, 160.493, 159.731
FOULWATER INVERT	157.565, 159.500, 159.750, 159.750, 160.100, 160.100, 160.800, 160.800, 162.250, 161.400, 159.200, 159.200, 157.900, 157.900, 156.500
FOULWATER DETAILS	1.007 150 ır CLAY 124; Pipe 2.003 Dia 150 Circular CLAY 1 in 90; Pipe 2.002 Dia 150 Circular CLAY 1 in 64; Pipe 2.001 Dia 150 Circular CLAY 1 in 40; Pipe 2.000 Dia 150 Circular CLAY 1 in 17; Pipe 2.000 Dia 150 Circular CLAY 1 in 18; Pipe 2.001 Dia 150 Circular CLAY 1 in 12; Pipe 1.004 Dia 150 Circular CLAY 1 in 10
FOULWATER LENGTHS	.641, 22.454, 22.513, 27.916, 24.817, 40.693, 15.487, 14.144

CLAY PIPE STRENGTH REQUIREMENTS
100mm DIA. MINIMUM CRUSHING STRENGTH = 40kN/m
150mm DIA. MINIMUM CRUSHING STRENGTH = 40kN/m
225mm DIA. MINIMUM CRUSHING STRENGTH = 45kN/m
300mm DIA. MINIMUM CRUSHING STRENGTH = 72kN/m

CONCRETE PIPE STRENGTH REQUIREMENTS
ALL CONCRETE PIPES SHOULD BE CLASS 120
TO EN 1916 / BS 5911-1:2002



RD-02

Row	Values
CHAINAGE	0.000, 3.380, 9.272, 10.000, 10.170, 18.416, 20.000, 30.000, 40.000, 46.542, 50.000, 57.461, 60.000, 70.000, 78.161, 79.411, 79.461, 80.000, 88.211
EXISTING GROUND LEVEL	161.820, 161.801, 161.772, 161.657, 161.478, 161.280, 161.109, 161.120, 161.283, 161.387
CENTRE LINE	162.194, 162.140, 162.131, 162.128, 162.067, 162.003, 161.940, 161.876, 161.812, 161.749, 161.685, 161.621, 161.557, 161.494, 161.430, 161.366, 161.303, 161.262, 161.322, 161.321, 161.314, 161.250, 161.245
VERTICAL ALIGNMENT	G= −1.274% 1: −78.5
HORIZONTAL ALIGNMENT	R= 80.000
LEFT HAND CHANNEL	162.192, 162.185, 162.183, 162.136, 162.072, 162.008, 161.945, 161.881, 161.817, 161.754, 161.690, 161.626, 161.563, 161.507, 161.451, 161.396, 161.361, 161.422, 161.421
RIGHT HAND CHANNEL	162.074, 161.998, 161.935, 161.871, 161.807, 161.743, 161.680, 161.616, 161.552, 161.489, 161.425, 161.353, 161.281, 161.210, 161.164, 161.221, 161.221
STORMWATER COVER LEVEL	162.242, 161.957, 161.608, 161.106
STORMWATER INVERT	157.765, 157.635, 157.635, 157.365, 157.215, 156.795
STORMWATER DETAILS	Pipe 1.005 Dia 600 Circular CONC 1 in 151; Pipe 1.006 Dia 600 Circular CONC 1 in 99; Pipe 1.007 Dia 750 Circular CONC 1 in 100
STORMWATER LENGTHS	19.693, 26.773, 41.852
FOULWATER COVER LEVEL	162.296, 161.980, 161.676, 161.231
FOULWATER INVERT	157.200, 157.000, 157.000, 156.800, 156.800, 156.300
FOULWATER DETAILS	Pipe 1.009 Dia 150 Circular CLAY 1 in 116; Pipe 1.010 Dia 150 Circular CLAY 1 in 110; Pipe 1.011 Dia 150 Circular CLAY 1 in 83
FOULWATER LENGTHS	23.297, 21.968, 41.712

CLAY PIPE STRENGTH REQUIREMENTS
100mm DIA. MINIMUM CRUSHING STRENGTH = 40kN/m
150mm DIA. MINIMUM CRUSHING STRENGTH = 40kN/m
225mm DIA. MINIMUM CRUSHING STRENGTH = 45kN/m
300mm DIA. MINIMUM CRUSHING STRENGTH = 72kN/m

CONCRETE PIPE STRENGTH REQUIREMENTS
ALL CONCRETE PIPES SHOULD BE CLASS 120
TO EN 1916 / BS 5911-1:2002

CLASS S TYPE BEDDING AND SURROUND FOR ALL PIPES

SUBJECT TO THE APPROVAL OF KIRKLEES COUNCIL

SUBJECT TO THE APPROVAL OF YORKSHIRE WATER

N W E S

GENERAL NOTES

1. THIS DRAWING IS BASED UPON REDROW HOMES SITE LAYOUT REFERENCE BVF-16-02-03 – PROPOSED SITE LAYOUT, AND MET GEO-ENVIRONMENTAL TOPOGRAPHICAL SURVEY DRAWING REFERENCE P18-01196 DATED FEB 2019.
2. ALL LEVELS AND DIMENSIONS SHALL BE VERIFIED ON SITE PRIOR TO COMMENCEMENT OF ANY WORKS. ANY DISCREPANCIES SHALL IMMEDIATELY BE BROUGHT TO THE ATTENTION OF THE ENGINEER. IF IN DOUBT, ASK.
3. ALL DRAINAGE WORKS SHALL BE CARRIED OUT IN ACCORDANCE WITH ICOSA'S SPECIFICATIONS/SPECIAL REQUIREMENTS.
4. ALL BUILDING DRAINAGE WORKS SHALL BE CARRIED OUT IN ACCORDANCE WITH BSEN752:2008 BUILDING REGULATIONS AND THE LOCAL AUTHORITY BUILDING CONTROL SPECIFICATIONS AND REGULATIONS.
5. THE CONTRACTOR SHALL ALLOW FOR THE PROTECTION, TEMPORARY AND PERMANENT SUPPORT & DIVERSION WORKS AS NECESSARY TO ALL EXISTING SERVICES TO THE SATISFACTION OF THE PUBLIC UTILITY COMPANIES.
6. THE CONTRACTOR SHALL ALLOW FOR OBTAINING ALL RELEVANT APPROVALS FROM THE RELEVANT AUTHORITIES WHEN WORKING IN THE PUBLIC HIGHWAY AND ON SEWERAGE SYSTEMS.
7. UPON COMPLETION OF THE WORKS, THE CONTRACTOR SHALL CLEAN ALL DRAINAGE BY JETTING, REMOVING ALL DEBRIS FROM SITE. NO DEBRIS SHALL BE PERMITTED TO ENTER THE PUBLIC DRAINAGE OR WATERCOURSE SYSTEM. ALL DRAINS SHALL BE CCTV SURVEYED WITH THE DVD/CD PASSED TO THE ENGINEER FOR REVIEW.

DRAINAGE NOTES

(THESE NOTES APPLY TO ALL ADOPTABLE DRAINAGE WORKS)

1. ALL ADOPTABLE SEWER WORKS AND MATERIALS ARE TO BE IN ACCORDANCE WITH "DESIGN AND CONSTRUCTION GUIDANCE (DCG)/CODE FOR ADOPTION". THE RELEVANT BRITISH/EUROPEAN AND ICOSA'S STANDARDS/REQUIREMENTS/ADDENDUM TO THE MECHANICAL AND ELECTRICAL SPECIFICATION AND KITEMARKED.
2. MANHOLE COVERS SHALL/MUST HAVE A CLEAR OPENING OF 675mm 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 ICOSA BEFORE ANY SEWER WORKS ARE CARRIED OUT.
4. ICOSA IS NOT OBLIGED TO ACCEPT FILTER DRAIN/LAND DRAINAGE RUN-OFF INTO THE PUBLIC SEWER NETWORK OR ADOPTABLE DRAINAGE SYSTEM (DIRECTLY OR IN-DIRECTLY). AN ALTERNATIVE METHOD OF DISPOSAL OF THE LAND DRAINAGE RUN-OFF WILL THEREFORE BE REQUIRED AND YOU WILL HAVE TO LIAISE WITH THE LOCAL AUTHORITY, LAND DRAINAGE SECTION WITH REGARD TO THE DISPOSAL OF THE FILTER DRAIN/LAND DRAINAGE RUN-OFF.
5. COVER SLABS MUST CARRY THE BSI KITEMARK OR WILL BE REJECTED BY ICOSA INSPECTOR. WHERE THE CLEAR OPENING OF THE KITEMARKED PRODUCT IS DIFFERENT TO THAT OF THE COVER AND FRAME, A LOAD BEARING SLAB SHOULD BE FITTED ABOVE THE COVER SLAB TO BRING THE SIZE DOWN TO 675mm X 675mm FOR THE ICOSA SPECIFIED COVER SIZE.
6. SULPHATE RESISTANT CEMENT (C20-DC2) AND PRECAST CONCRETE PRODUCTS MUST BE USED OR A LABORATORY REPORT PROVIDED PROVING THAT SUCH PRECAUTIONS ARE NOT NECESSARY.
7. SEWERS MUST HAVE 3m CLEARANCE FROM TREES AND 1.5m FROM SHRUBS / BUSHES.
8. SEWERS TO BE LAID IN CLASS 'S' BEDDING 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 NONE VEHICULAR ACCESS AREAS) THEN A CONCRETE SLAB SHOULD BE PROVIDED ABOVE THE GRANULAR BED AND SURROUND.
9. BEDDING AND BACKFILL MATERIAL IS TO CONFORM TO THE REQUIREMENT OF WATER INDUSTRY SPECIFICATION 4-08-02 (TABLE A2).
10. THE CHAMBER SIZE OF MANHOLES WITH MORE THAN ONE CONNECTION IN THEM MAY NEED TO BE INCREASED TO ACCOMMODATE THE CONNECTIONS AND BENDS.
11. ICOSA POLICY IS THAT TYPE 'C' BRICK MANHOLES AND 1050mm DIA MANHOLE RINGS ARE NOT PREFERRED. INSTEAD IT IS PREFERRED THAT YOU USE A TYPE 'B' MANHOLE WITH 1200mm DIA OR 1500mm DIA RINGS, WITH THE OPENING SITED OVER THE CHANNEL WHERE DEPTH OF COVER TO PIPE SOFFIT IS BETWEEN 1-1.5m
12. ADOPTABLE PLASTIC SEWER PIPES TO BE BSI KITEMARKED (CERTIFIED TO WIS 4-35-01 AND BS/EN13476) AND TO THE RELEVANT BRITISH STANDARDS (SOLID WALL PVC-U TO BS EN 1401, SPIRAL WOUND WELDED HDPE TO EN 13476 PARTS 1 & 2, STRUCTURE-WALL THERMOPLASTIC TO EN 13476 PARTS 1 & 3, POLYPROPYLENE TO BS EN 1852). ADOPTABLE PLASTIC SEWER PIPES ARE TO BE LAID IN MAXIMUM 3m LENGTHS UNLESS THERE IS A SPECIFIC OPERATIONAL NEED TO LAY LONGER LENGTHS. PLASTIC CHANNEL SECTIONS IN MANHOLES ARE NOT ACCEPTABLE AND ICOSA WOULD PREFER CLAYWARE CHANNEL IN MANHOLES. WE HAVE FOUND THAT PLASTIC CHANNELS ARE DIFFICULT TO SET IN CONCRETE BECAUSE THEY FLOAT AND A SATISFACTORY FINISH CANNOT BE OBTAINED ON THE BENCHING.
13. 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.

CLAY PIPE STRENGTH REQUIREMENTS
150mm DIA. MINIMUM CRUSHING STRENGTH = 40kN/m
225mm DIA. MINIMUM CRUSHING STRENGTH = 45kN/m
300mm DIA. MINIMUM CRUSHING STRENGTH = 72kN/m

CONCRETE PIPE STRENGTH REQUIREMENTS
ALL CONCRETE PIPES SHOULD BE CLASS 120
TO EN 1916 / BS 5911-1:2002

REV	DATE	BY	DESCRIPTION	APPROVED
B	NOV 2022	MA	AMENDED FOLLOWING INTERNAL REVIEW	MA
A	NOV 2022	MA	DRAINAGE DESIGN AMENDED TO REDUCE DEPTH	MA

REDROW
Redrow House, Brunel Road, Wakefield 41 Industrial Estate, WF2 0XG
Tel: +44 (0)1924 822 566
www.redrow.co.uk

MARKETING NAME:

PROJECT: BRADLEY VILLA FARM HUDDERSFIELD

TITLE: LONGITUDINAL SECTIONS ROAD 1 AND ROAD 2

SCALE @ A0:	DESIGN-DRAWN:	APPROVED:	DATE:
1:500H 1:100V	MML	MML	FEB 22

PROJECT No:	DRAWING No:	REV:
4607	4607-16-06-114	B

M:\2 Feasibility Projects\Bradley Villa Farm, Huddersfield\1 Drawings\1 Internal\6 Engineering\4607-16-06-113_122 - Longitudinal Sections.dwg 11 Nov, 2022 - 3:10pm