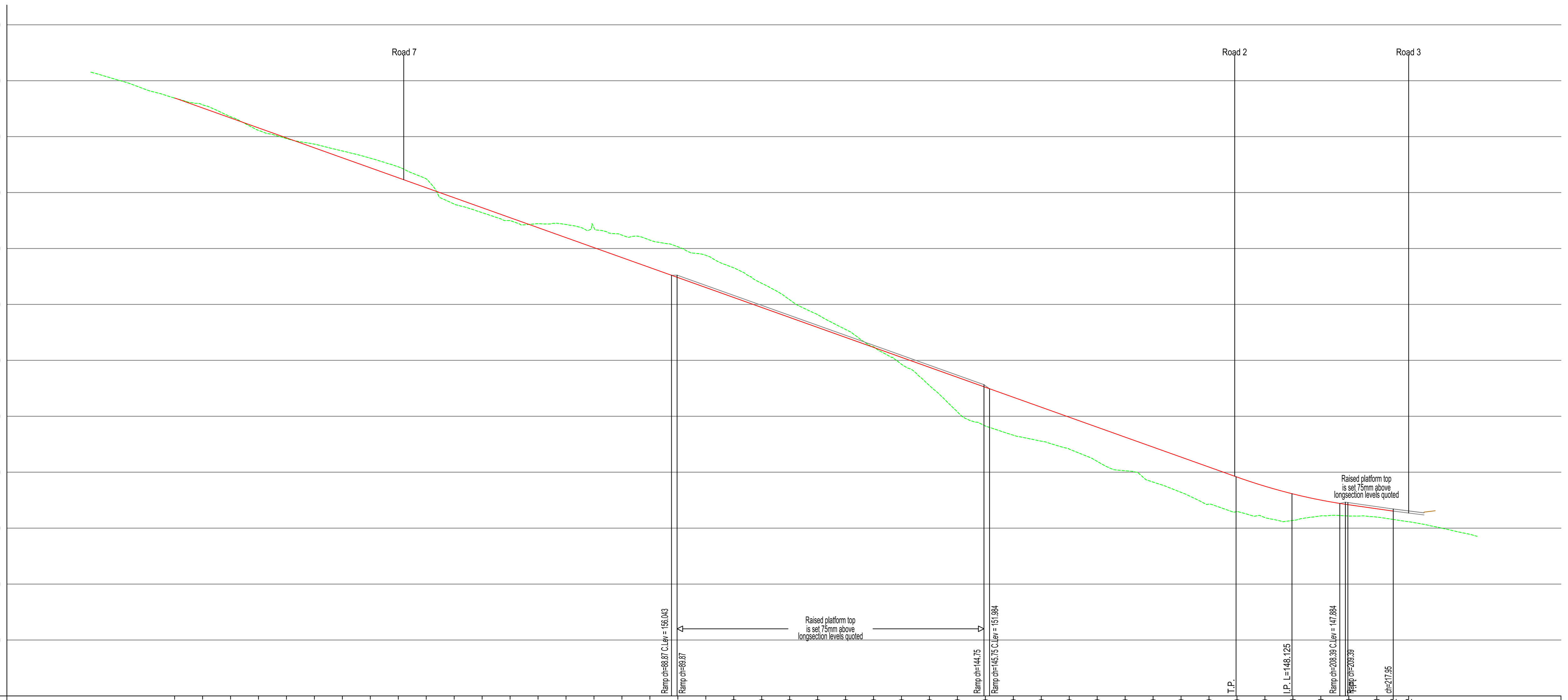
Road 1



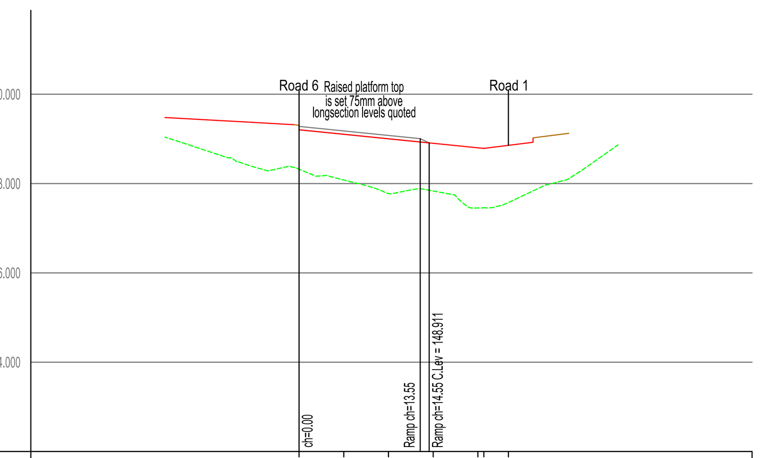
Vertical Exaggeration: 5
Datum: 141.000M AOD

CHAINAGE ON CENTRELINE (m)	EXISTING LEVELS (m)	LEVELS ON CENTRELINE (m)
0.000	162.379	162.383
5.000	162.138	162.026
10.000	161.712	161.670
15.000	161.224	161.313
20.000	160.932	160.956
25.000	160.731	160.599
30.000	160.489	160.243
35.000	160.230	159.886
40.000	159.920	159.529
45.000	159.491	159.172
50.000	158.588	158.816
55.000	158.281	158.459
60.000	157.999	158.102
65.000	157.886	157.745
70.000	157.857	157.389
75.000	157.744	157.032
80.000	157.477	156.675
85.000	157.300	156.318
90.000	157.061	155.962
95.000	156.755	155.605
100.000	156.307	155.248
105.000	155.754	154.891
110.000	155.165	154.535
115.000	154.633	154.178
120.000	154.105	153.821
125.000	153.488	153.465
130.000	152.857	153.108
135.000	152.097	152.751
140.000	151.155	152.394
145.000	150.652	152.038
150.000	150.323	151.681
155.000	150.110	151.324
160.000	149.824	150.967
165.000	149.387	150.611
170.000	149.052	150.254
175.000	148.646	149.897
180.000	148.280	149.540
185.000	147.861	149.184
190.000	147.594	148.827
195.000	147.376	148.499
200.000	147.275	148.224
205.000	147.438	148.003
210.000	147.433	147.836
215.000	147.395	147.693
217.952	147.311	147.609
220.702		147.541

VERTICAL DESIGN: GRADIENT -7.1% (-1 in 14) LENGTH = 189.834m | R = 466.468 L = 20.000 | GRADIENT -2.8% L = 8.118m

HORIZONTAL DESIGN: STRAIGHT L = 6.278m | R = 29.692 L = 24.468 | L = 1.42m | R = 29.952 L = 22.938 | STRAIGHT LENGTH = 21.474m | R = 30.000 L = 11.104 | L = 1.90m | R = 30.000 L = 11.104 | STRAIGHT LENGTH = 29.675m | R = 24.797 L = 9.178 | L = 2.89m | R = 30.000 L = 11.075 | STRAIGHT LENGTH = 35.099m | R = 200.000 L = 3.965 | STRAIGHT LENGTH = 17.924m | R = 20.000 L = 4.125 | L = 3.34m

Road 2



Vertical Exaggeration: 5
Datum: 142.000M AOD

CHAINAGE ON CENTRELINE (m)	EXISTING LEVELS (m)	LEVELS ON CENTRELINE (m)
0.000	148.320	149.205
5.000	148.079	149.104
10.000	147.777	149.002
15.000	147.833	148.901
20.000 / 20.663	147.456	148.800 / 148.787
23.413		148.856

VERTICAL DESIGN: GRADIENT -2.0% (-1 in 49) LENGTH = 20.663m

HORIZONTAL DESIGN: L = 3.62m | R = 72.750 L = 7.186 | STRAIGHT L = 9.860m

Road 7

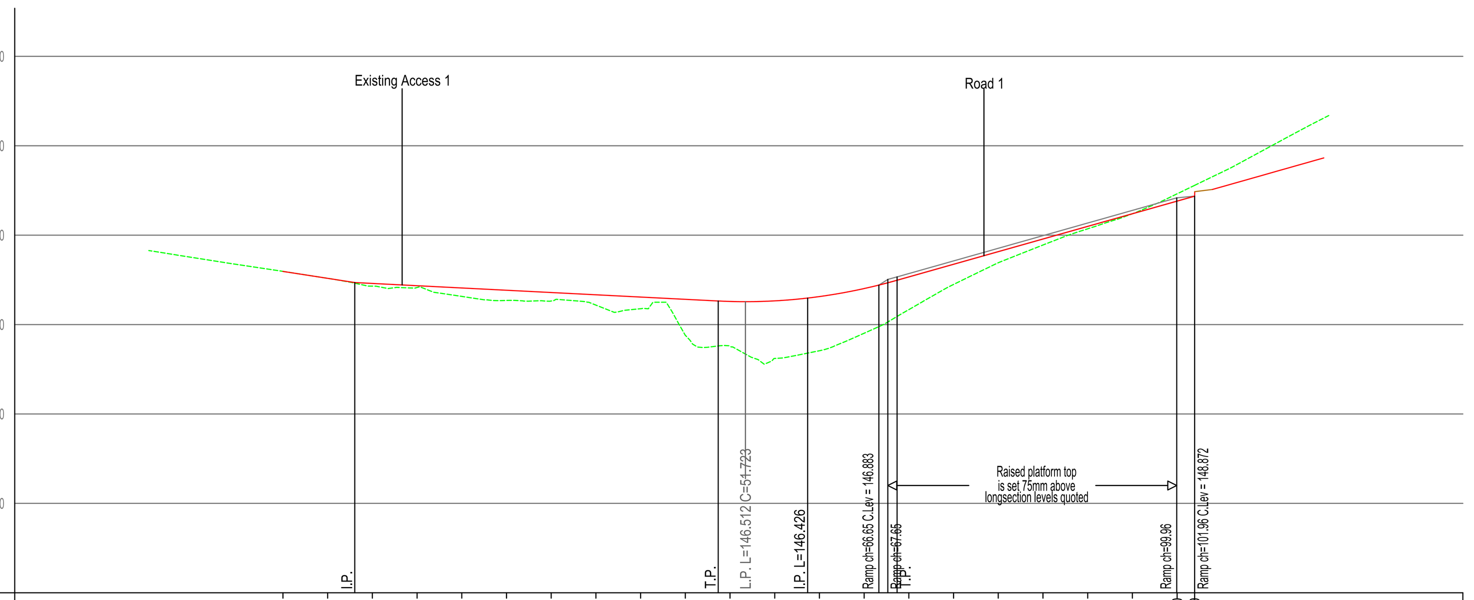
Vertical Exaggeration: 5
Datum: 153.000M AOD

CHAINAGE ON CENTRELINE (m)	EXISTING LEVELS (m)	LEVELS ON CENTRELINE (m)
0.000		159.452
6.750	160.180	159.721
10.000	160.274	159.946
15.000	160.344	160.294
20.000	161.380	160.641
25.000	161.941	160.988
30.000	162.976	161.336
33.383	163.481	161.571

VERTICAL DESIGN: GRADIENT 6.9% (1 in 14) LENGTH = 26.633m

HORIZONTAL DESIGN: L = 3.54m | STRAIGHT LENGTH = 23.089m

Road 3



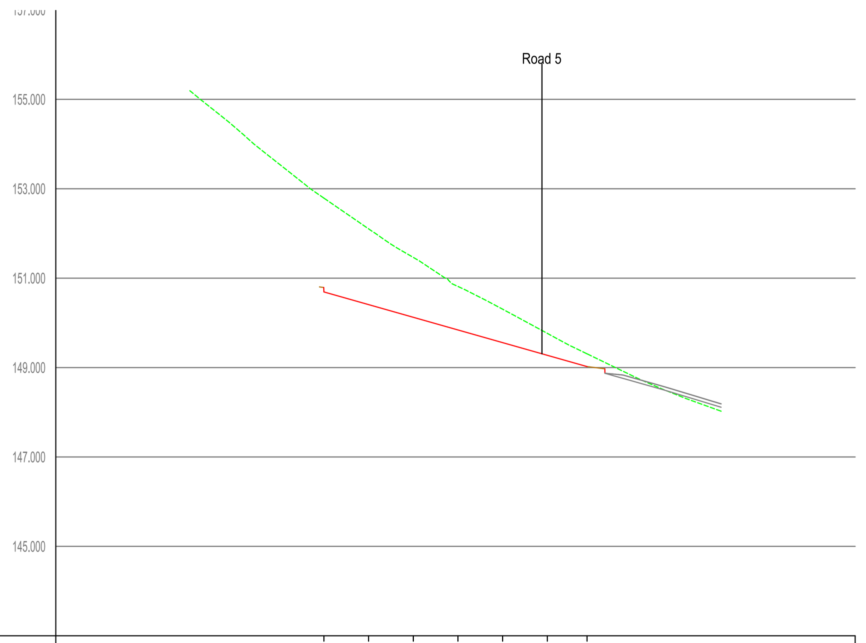
Vertical Exaggeration: 5
Datum: 140.000M AOD

CHAINAGE ON CENTRELINE (m)	EXISTING LEVELS (m)	LEVELS ON CENTRELINE (m)
0.000	147.190	147.189
5.000	147.035	147.034
10.000	146.859	146.920
15.000	146.829	146.869
20.000	146.630	146.818
25.000	146.539	146.768
30.000	146.527	146.717
35.000	146.436	146.666
40.000	146.355	146.616
45.000	145.762	146.565
50.000	145.513	146.517
55.000	145.242	146.530
60.000	145.415	146.626
65.000	145.806	146.806
70.000	146.335	147.066
75.000	146.897	147.349
80.000	147.383	147.631
85.000	147.780	147.914
90.000	148.142	148.196
95.000	148.479	148.479
100.000	148.924	148.762
101.959	149.114	148.872

VERTICAL DESIGN: GRADIENT -3.1% L = 8.031m | GRADIENT -1.0% (-1 in 99) LENGTH = 40.652m | R = 300.048 L = 20.000 | GRADIENT 5.7% (1 in 18) LENGTH = 33.276m

HORIZONTAL DESIGN: STRAIGHT L = 8.031m | STRAIGHT L = 7.412m | R = 30.000 L = 2.827 | STRAIGHT LENGTH = 42.409m | R = 20.000 L = 5.969 | STRAIGHT LENGTH = 28.033m | R = 6.00 | STRAIGHT L = 6.031m

Road 4



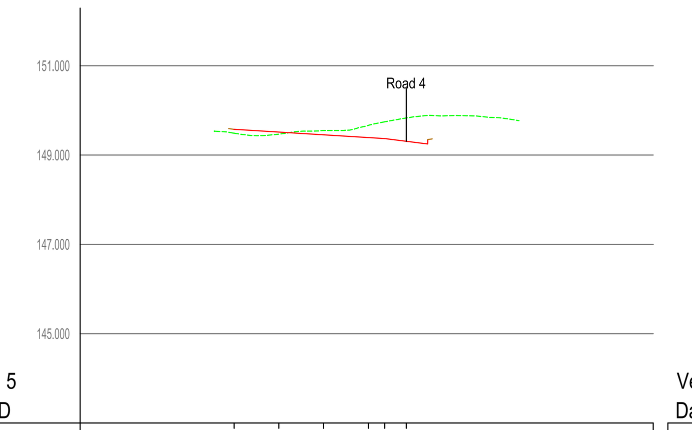
Vertical Exaggeration: 5
Datum: 143.000M AOD

CHAINAGE ON CENTRELINE (m)	EXISTING LEVELS (m)	LEVELS ON CENTRELINE (m)
0.000	152.791	150.692
5.000	152.103	150.408
10.000	151.465	150.125
15.000	150.814	149.841
20.000	150.306	149.558
25.000	149.765	149.275
29.448	149.307	149.022

VERTICAL DESIGN: GRADIENT -5.7% (-1 in 18) LENGTH = 29.448m

HORIZONTAL DESIGN: STRAIGHT LENGTH = 29.448m

Road 5



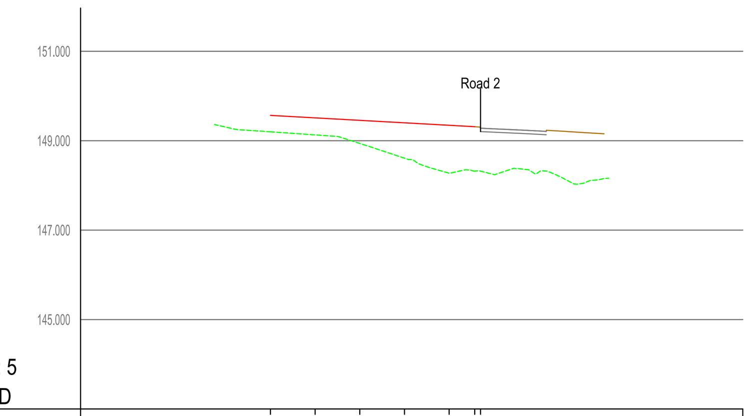
Vertical Exaggeration: 5
Datum: 143.000M AOD

CHAINAGE ON CENTRELINE (m)	EXISTING LEVELS (m)	LEVELS ON CENTRELINE (m)
0.000	149.489	149.576
5.000	149.468	149.515
10.000	149.551	149.453
15.000	149.665	149.391
16.840	149.744	149.369
19.240		149.309

VERTICAL DESIGN: GRADIENT -1.2% (-1 in 81) LENGTH = 16.840m

HORIZONTAL DESIGN: STRAIGHT LENGTH = 16.840m

Road 6



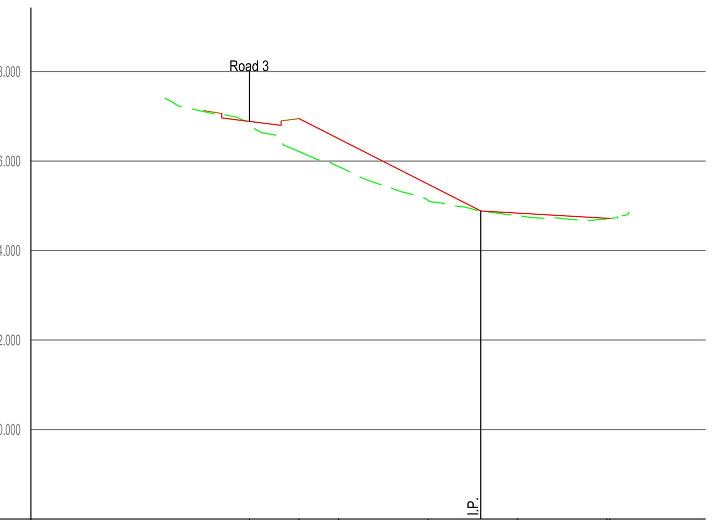
Vertical Exaggeration: 5
Datum: 143.000M AOD

CHAINAGE ON CENTRELINE (m)	EXISTING LEVELS (m)	LEVELS ON CENTRELINE (m)
0.000	149.200	149.567
5.000	149.130	149.511
10.000	148.939	149.456
15.000	148.609	149.400
20.000	148.274	149.345
22.862 / 23.512	148.317	149.313 / 149.305

VERTICAL DESIGN: GRADIENT -1.1% (-1 in 90) LENGTH = 22.862m

HORIZONTAL DESIGN: STRAIGHT LENGTH = 22.862m

Existing Access 1



Vertical Exaggeration: 5
Datum: 138.000M AOD

CHAINAGE ON CENTRELINE (m)	EXISTING LEVELS (m)	LEVELS ON CENTRELINE (m)
0.000	146.826	146.886
5.547	146.213	146.948
10.000	145.873	146.496
20.000	145.115	145.482
30.000	144.781	144.836
40.000 / 40.939	144.717	144.720 / 144.717

HORIZONTAL DESIGN: STRAIGHT LENGTH = 18.247m | R = 5.904 L = 9.464 | STRAIGHT L = 7.077m

VERTICAL DESIGN: GRADIENT -10.1% (-1 in 10) LENGTH = 20.348m | GRADIENT -1.2% (-1 in 86) LENGTH = 14.440m

---

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 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.

HEALTH & SAFETY RISKS

IN ADDITION TO THE STANDARD HAZARDS AND RISKS NORMALLY ASSOCIATED WITH THE TYPE OF WORK DETAILED ON THIS DRAWING. PLEASE NOTE THE FOLLOWING RESIDUAL HEALTH AND SAFETY RISKS THESE RISKS ARE APPLICABLE TO THE SET OF DRAWINGS FORMING THE DESIGN

CONSTRUCTION RISKS

C1	BURIED SERVICES - OBTAIN ACCURATE LOCATIONS OF UNDERGROUND SERVICES PRIOR TO EXCAVATION.
C2	CONFINED SPACE WORKS - ENSURE STAFF ARE SUITABLY TRAINED.
C3	CONSTRUCTION ADJACENT LIVE TRAFFIC - ENSURE SAFE METHOD OF WORKING
C4	DEEP EXCAVATIONS - RISK OF LAND SLIPS AND LARGE FALLS CONNECTION TO EXISTING LIVE SEWERS - RISK OF DROWNING
C5	CONSTRUCTION ADJACENT LIVE TRAFFIC - ENSURE SAFE METHOD OF WORKING
C6	CONTAMINATED GROUND - SITE ASSESSMENT MUST BE CARRIED OUT TO DETERMINE RISK IF CONTAMINATED GROUND IS UNCOVERED.
C7	UNFORESEEN GROUND CONDITIONS - CONTRACTOR SHOULD CARRY OUT APPROPRIATE SURVEYS TO MINIMISE RISK OF ENCOUNTERING UNKNOWN STRUCTURES
C8	STEEP SIDED STRUCTURES/RETAINING WALLS - COULD RESULT IN FALLS FROM HEIGHT ENSURE FALL PROTECTION PRIOR TO PERMANENT FENCING BEING ERECTED.
C9	SHALLOW GROUND WATER WILL BE ENCOUNTERED <1m BGL

OPERATION & MAINTENANCE RISKS

OM 1	UNTREATED/POLLUTED WATER CAN CAUSE ILL HEALTH FOR OPERATIVES
OM 2	WORKING ON OR NEAR SEWERS STEEP SIDED STRUCTURES/RETAINING WALLS COULD RESULT IN FALLS FROM HEIGHT.
OM 3	ENSURE BARRIERS ARE PLACED AROUND TOPS OF RETAINING WALLS AND EXCAVATIONS PRIOR TO PERMANENT FENCING BEING ERECTED. CONFINED SPACE WORKS - ENSURE STAFF ARE SUITABLY TRAINED.

ALL WORKS MUST BE CARRIED OUT BY A COMPETENT CONTRACTOR WORKING IN ACCORDANCE WITH THE REQUIREMENTS DEFINED IN THE CDM REGULATIONS AND BS 8000
THE RISK LISTED ARE NOT EXHAUSTIVE REFER TO DESIGNERS RISK ASSESSMENT FOR FULL DETAILS

KEY

- PROPOSED GROUND
- EXISTING GROUND
- S185 SEWER DIVERSION
- PROPOSED S104 SW SEWER
- PROPOSED S104 FW SEWER
- PROPOSED CULVERT
- SAND LEVEL
- ROCK LEVEL

ADOPTABLE DRAINAGE UNDER REVIEW, TO BE ADDED TO NEXT ISSUE

Rev.	Date	Revision Details	Drawn	Checked
P04	15.09.25	UPDATED FOR SUBMISSION FOR RSA REPORT	JR	ND
P03	21.07.25	UPDATED TO SUIT STRATA COMMENTS	JR	ND
P02	17.07.25	UPDATED TO SUIT STRATA COMMENTS, CULVERT ADDED FOLLOWING DRAINAGE SURVEY	JR	ND
P01	28.02.25	FIRST ISSUE	JR	ND

© This drawing is the property of Queensberry Design Limited and the information can only be reproduced with their prior permission.

QUEENSBERRY DESIGN
CIVIL, STRUCTURAL, ARCHITECTURAL & GEOTECHNICAL CONSULTANTS
QUEENSBERRY DESIGN YORKSHIRE LTD
SUITE 12A, BROOKFIELD COURT, SELBY ROAD, LEEDS, LS25 1NB
T: 0191 460 9090
www.queensberrydesign.co.uk

Client: STRATA/ THIRTEEN

Project: MAIN AVENUE COWERSLEY

Title: PROPOSED LONGSECTIONS

Drawn	Checked	Date
JR	ND	28.02.2025

Drawing Number: 2153-QD-XX-HD-DR-C-05-01

Drawing Status	Scale	Rev.
TENDER	1:500/100 - A0	P04