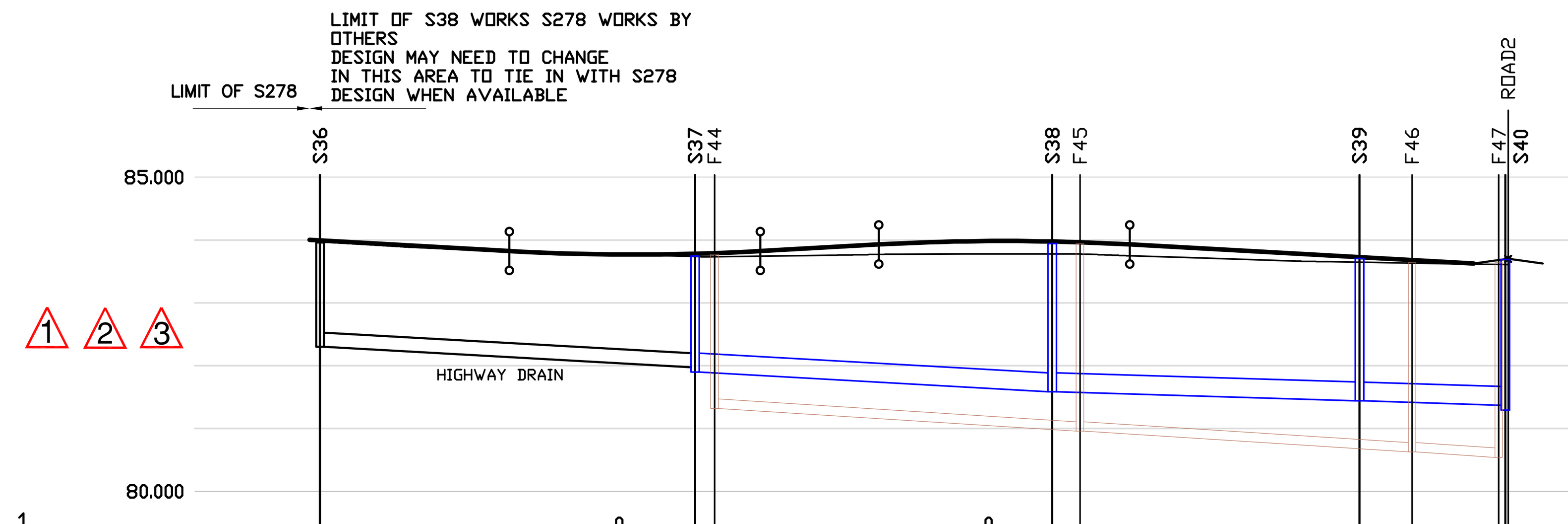
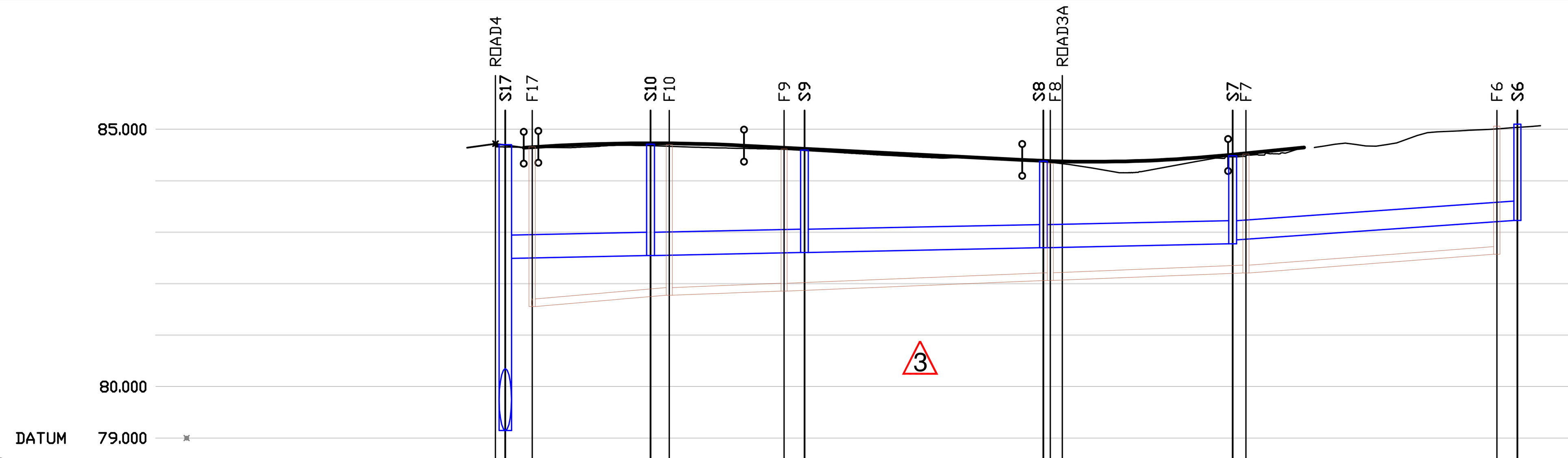


ROAD 1

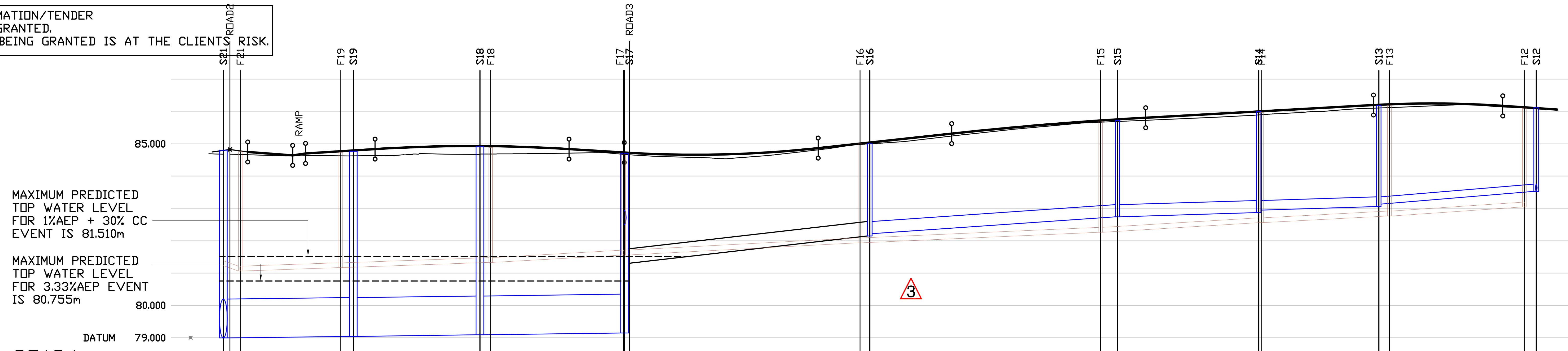
EXISTING GROUND LEVEL	83.981, 83.866, 83.790, 83.741, 83.754, 83.776, 83.780, 83.722, 83.658, 83.625, 83.607
ALIGNMENT LEVEL	84.000, 83.889, 83.823, 83.787, 83.768, 83.777, 83.823, 83.869, 83.928, 83.968, 83.984, 83.972, 83.928, 83.877, 83.766, 83.654, 83.624
VERTICAL ALIGNMENT	G= -1.111% 1: -90.0; R= 900.090 L= 20.000; G= 1.111% 1: 90.0; L= 20.000 R= -900.090; G= -1.111% 1: -90.0
HORIZONTAL ALIGNMENT	R= 134.485
STORMWATER DETAILS	CL 83.959 IL 82.300; Pipe 7.000 Dia 225 Circular UPVC 1 in 92 29.886; CL 83.742 IL 81.975 IL 81.900; Pipe 7.001 Dia 300 Circular UPVC 1 in 91 28.527; CL 83.941 IL 81.586 IL 81.587; Pipe 7.002 Dia 300 Circular UPVC 1 in 167 24.612; CL 83.706 IL 81.440 IL 81.439; CL 83.687 IL 81.369; Pipe 7.003 Dia 300 UPVC 1 in 167 11.687
FOULWATER DETAILS	CL 83.773 IL 81.320; Pipe 10.000 Dia 150 Circular UPVC 1 in 80 29.056; CL 83.937 IL 80.957 IL 80.957; Pipe 10.001 Dia 150 Circular UPVC 1 in 80 26.268; CL 83.639 IL 80.628 IL 80.628; CL 83.639 IL 80.540; Pipe 10.002 Dia 150 UPVC 1 in 80 7.076
CHAINAGE	0.000, 10.000, 15.925, 20.000, 25.925, 30.000, 35.925, 40.000, 45.360, 50.000, 52.160, 55.360, 60.000, 65.360, 70.000, 80.000, 81.334, 90.000, 95.509



ROAD3

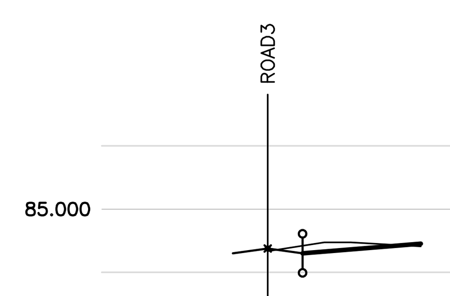
EXISTING GROUND LEVEL	84.661, 84.668, 84.648, 84.587, 84.472, 84.419, 84.178, 84.439, 84.645
ALIGNMENT LEVEL	84.642, 84.659, 84.713, 84.728, 84.715, 84.682, 84.622, 84.519, 84.416, 84.404, 84.369, 84.372, 84.477, 84.499, 84.645
VERTICAL ALIGNMENT	G= 1.250% 1: 80.0; L= 20.000 R= -878.608; G= -1.026% 1: -97.4; R= 666.188 L= 20.000; G= 1.976% 1: 50.6
HORIZONTAL ALIGNMENT	R= 12.895; R= 63.266; R= 10.936; R= 16.691
STORMWATER DETAILS	CL 84.700 IL 82.492; Pipe 1.009 Dia 450 CONC 1 in 252 14.124; CL 84.710 IL 82.548 IL 82.548; Pipe 1.008 Dia 450 CONC 1 in 250 14.749; CL 84.597 IL 82.607 IL 82.607; Pipe 1.007 Dia 450 CONC 1 in 251 23.109; CL 84.379 IL 82.699 IL 82.699; Pipe 1.006 Dia 450 CONC 1 in 235 17.891; CL 84.484 IL 82.775 IL 82.850; Pipe 1.005 Dia 375 CONC 1 in 72 27.218; CL 85.100 IL 83.229
FOULWATER DETAILS	CL 84.657 IL 81.555; Pipe 1.009 Dia 150 UPVC 1 in 62 13.506; CL 84.699 IL 81.774 IL 81.774; Pipe 1.008 Dia 150 UPVC 1 in 135 11.312; CL 84.617 IL 81.858 IL 81.858; Pipe 1.007 Dia 150 UPVC 1 in 130 26.573; CL 84.331 IL 82.062 IL 82.062; Pipe 1.006 Dia 150 UPVC 1 in 135 19.758; CL 84.517 IL 82.208 IL 82.208; Pipe 1.005 Dia 150 UPVC 1 in 67 24.482; CL 85.061 IL 82.572
CHAINAGE	0.000, 2.751, 4.155, 8.197, 10.000, 10.503, 15.137, 15.268, 20.000, 24.155, 30.000, 37.062, 40.000, 49.171, 50.000, 51.183, 55.076, 58.020, 60.000, 60.137, 68.009, 70.000, 71.183, 77.896, 78.559

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.



ROAD4

EXISTING GROUND LEVEL	84.677, 84.626, 84.625, 84.692, 84.683, 84.702, 84.688, 84.586, 84.586, 84.788, 85.011, 85.201, 85.421, 85.608, 85.713, 85.796, 85.904, 86.016, 86.124, 86.209, 86.108, 86.056
ALIGNMENT LEVEL	84.745, 84.641, 84.649, 84.701, 84.804, 84.835, 84.906, 84.929, 84.926, 84.864, 84.835, 84.741, 84.729, 84.662, 84.660, 84.697, 84.845, 84.866, 85.061, 85.277, 85.314, 85.482, 85.652, 85.786, 85.805, 85.898, 86.009, 86.120, 86.197, 86.225, 86.247, 86.236, 86.171, 86.129, 86.056
VERTICAL ALIGNMENT	G= -1.500% 1: -66.7; G= 1.250% 1: 80.0; L= 30.000 R= -1200.0; G= -1.250% 1: -80.0; R= 878.199 L= 30.000; G= 2.166% 1: 46.2; L= 30.000 R= -2843.378; G= 1.111% 1: 90.0; L= 20.000 R= -806.887; G= -1.368% 1: -73.1
HORIZONTAL ALIGNMENT	R= 64.828; R= 11.750; R= 80.000; R= 48.000; R= 125.000
STORMWATER DETAILS	CL 84.800 IL 78.994; Pipe 1.012 Dia 1200 CONC 1 in 425 19.993; CL 84.766 IL 79.041 IL 79.041; Pipe 1.011 Dia 1200 CONC 1 in 393 19.251; CL 84.906 IL 79.090 IL 79.090; Pipe 1.010 Dia 1200 CONC 1 in 393 22.389; CL 84.700 IL 79.147 IL 81.300; Pipe 2.005 Dia 450 CONC 1 in 45 38.095; CL 85.002 IL 82.145 IL 82.220; Pipe 2.004 Dia 375 CONC 1 in 74 38.449; CL 85.725 IL 82.740 IL 82.740; Pipe 2.003 Dia 375 CONC 1 in 167 21.733; CL 85.994 IL 82.870 IL 82.945; Pipe 2.002 Dia 300 UPVC 1 in 166 18.460; CL 86.178 IL 83.056 IL 83.131; Pipe 2.001 Dia 225 UPVC 1 in 62 24.424; CL 86.073 IL 83.525
FOULWATER DETAILS	CL 84.757 IL 81.064; Pipe 1.012 Dia 150 UPVC 1 in 150 15.666; CL 84.734 IL 81.168 IL 81.168; Pipe 1.011 Dia 150 UPVC 1 in 145 23.549; CL 84.887 IL 81.330 IL 81.330; Pipe 1.010 Dia 150 UPVC 1 in 99 22.270; CL 84.657 IL 81.555 IL 81.555; Pipe 2.005 Dia 150 UPVC 1 in 100 38.248; CL 85.000 IL 81.937 IL 81.937; Pipe 2.004 Dia 150 UPVC 1 in 114 37.176; CL 85.707 IL 82.262 IL 82.262; Pipe 2.003 Dia 150 UPVC 1 in 84 25.105; CL 85.966 IL 82.562 IL 82.562; Pipe 2.002 Dia 150 UPVC 1 in 98 19.979; CL 86.203 IL 82.766 IL 82.766; Pipe 2.001 Dia 150 UPVC 1 in 75 20.830; CL 86.105 IL 83.044
CHAINAGE	0.000, 2.751, 9.718, 0.773, 11.718, 20.000, 2.464, 30.000, 7.464, 40.000, 50.000, 2.464, 5.667, 50.000, 51.004, 51.798, 7.942, 70.000, 71.982, 30.000, 30.000, 91.004, 00.000, 10.000, 1.673, 20.000, 5.780, 30.000, 40.000, 0.045, 1.673, 7.795, 50.000, 50.000, 70.000, 2.095, 6.932, 30.000, 5.896, 6.969, 90.000, 6.932, 00.000, 05.331



ROAD3A

EXISTING GROUND LEVEL	84.332, 84.433, 84.408
ALIGNMENT LEVEL	84.299, 84.417, 84.450
VERTICAL ALIGNMENT	G= 1.619% 1: 61.8
HORIZONTAL ALIGNMENT	
CHAINAGE	0.000, 2.750, 10.000, 12.080

Note 1- SFA 7th Footnote

The Developer must self-vet and certify that the design criteria, material standards and workmanship specifications for the proposed adoptable sewers are in accordance with those set out in "Sewers for Adoption" 7th Edition and the requirements of DCWW as the Statutory Sewerage Undertaker, and the Welsh Ministers Build Standards.

Note 2 - Connection

"A Section 106 application to connect to adopted sewers must be made to DCWW, the developer shall give 21 days notice prior to connection, the works may only be undertaken by a DCWW Health & Safety approved contractor."

Note - 3 Materials

All materials are to comply fully with the requirements of clause "E" in Sewers for Adoption 7th Edition, of which the contractor must fully acquaint himself with to ensure compliance.

SCALE IN METRES 0 5 10 20 50

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

CIVILS DESIGN RISK MANAGEMENT

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

1. EXISTING SERVICES
2. WORKING ON EXISTING HIGHWAY. WORKING IN AREAS WHERE MEMBERS OF THE PUBLIC HAVE ACCESS
3. DANGER OF COLLAPSE TO ALL EXCAVATIONS - RISK TO BE ASSESSED AND MANAGED BY CONTRACTOR IN ACCORDANCE WITH HSE GUIDANCE

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

THE OFF SITE SEWER CONNECTIONS 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 CAN BE MADE.

DUE TO THE NEED FOR OFF SITE SEWER WORKS IT IS STRONGLY ADVISED THAT THESE ARE CONSTRUCTED PRIOR TO ANY WORKS ON SITE TO ALLOW DESIGN CHANGES ON SITE TO BE MADE IN THE EVENT THAT THE OFF SITE DESIGNS REQUIRE REVISION.
REFA WILL NOT BE HELD RESPONSIBLE FOR ANY ABORTIVE WORKS IF THIS PROCEDURE IS NOT FOLLOWED

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

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.

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

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

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

BENCH MARK INFORMATION

HORIZONTAL AND VERTICAL CONTROL ESTABLISHED USING SMARTNET GPS NETWORK AND OSGB36(02) COORDINATE SYSTEM

GENERAL

1. All adoptable sewers and associated works are to comply fully with "Sewers for Adoption" 7th.Edition dated August 2012.
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.
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.

rev	Revision details	Rev.By	Date
A	TO PLANNING REV P	GWH	28.8.18

worksafe consultant smas www.smasltd.com SSIP SAFETY SCHEMES IN PROCUREMENT

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

Client
ANWYL HOMES
BELLWAY HOMES

Job title
GRESFORD ROAD
LLAY, WREXHAM

Drawing title
ROAD AND MAIN
LONG SECTIONS 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
12.2.18	1/500H &1/100V	GWH

DRAWING No 17040/08/8 Rev A

© This drawing is the property of REFA and should not be copied, used or its contents divulged without prior written consent.

A1 SHEET