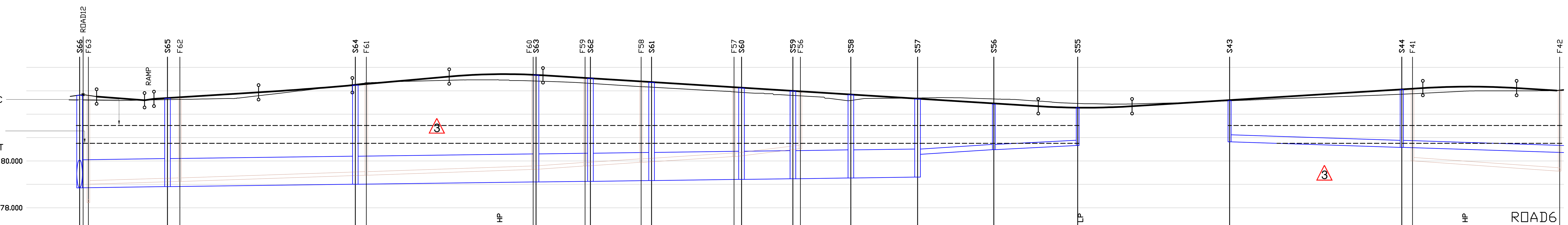
ROAD6



CHAINAGE	EXISTING GROUND LEVEL	ALIGNMENT LEVEL
0.000	82.603	
2.886		82.754
10.000	82.590	82.643
13.115		82.595
15.115		82.655
20.000	82.628	82.716
22.317		
26.251		
30.000	82.667	82.841
37.434		82.934
40.000	82.850	82.967
50.000	83.088	83.112
57.434		83.238
60.000	83.321	83.284
70.000	83.410	83.463
78.081		83.607
80.000	83.462	83.639
89.854	83.461 HP	83.712
90.056		83.712
98.081		83.661
100.000	83.396	83.637
109.522		
110.000	83.294	83.512
119.697		
120.000	83.169	83.387
129.080		
130.000	83.055	83.262
140.000	82.937	83.137
149.068		
150.000	82.818	83.012
160.000	82.655	82.887
160.625		
170.000	82.676	82.762
180.000	82.698	82.637
188.035		
190.000	82.680	82.512
200.000	82.610	82.387
202.409		82.340
203.726		
210.000	82.476	82.287
213.726	LP	82.278
215.287		
220.000	82.429	82.303
223.726		82.340
230.000	82.471	82.419
238.456		
240.000	82.534	82.544
250.000	82.614	82.669
255.771		
260.000	82.693	82.794
263.282		
270.000	82.765	82.919
280.000	82.841	83.044
285.746		83.116
290.000	82.938	83.158
295.746	HP	83.178
300.000	82.996	83.167
305.746		83.116
310.000	82.999	83.063
316.671	83.018	83.009

VERTICAL ALIGNMENT: G= -1.556% 1: -64.3; G= 1.250% 1: 80.0; R= 3710.182 L= 20.000; G= 1.789% 1: 55.9; L= 20.000 R= -658.099; G= -1.250% 1: -80.0; R= 800.0 L= 20.000; G= 1.250% 1: 80.0; L= 20.000 R= -800.0; G= -1.250% 1: -80.0

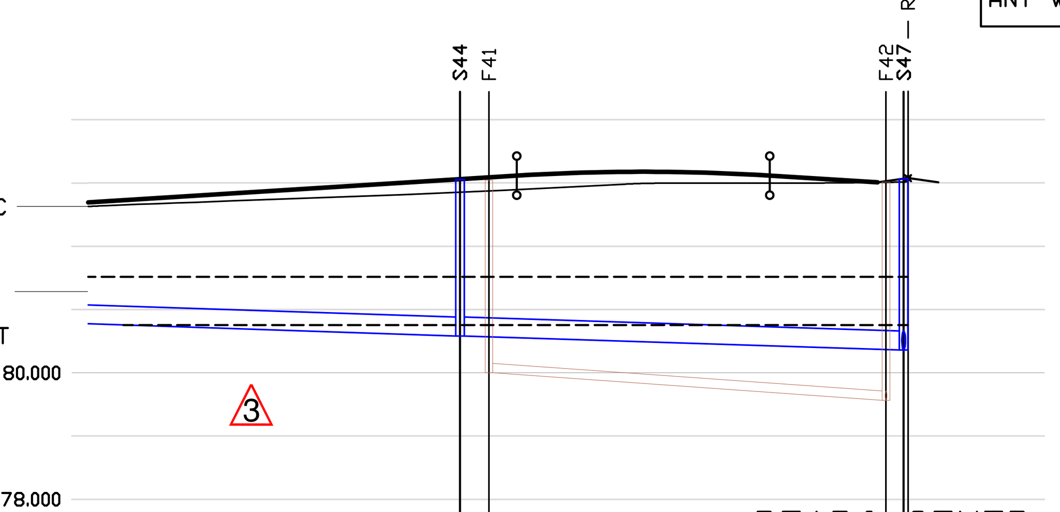
HORIZONTAL ALIGNMENT: R= 100.000; R= 14.003; R= 24.000; R= 24.000; R= 50.000; R= 50.000; R= 14.750; R= 82.338; R= 127.750

STORMWATER DETAILS: CL 82.809 IL 78.852; Pipe 11.010 Dia 1200 Circular CONC 1 in 368 18.748; CL 82.676 IL 78.903 IL 78.903; Pipe 11.009 Dia 1200 Circular CONC 1 in 392 40.035; CL 83.239 IL 79.005 IL 79.005; Pipe 11.008 Dia 1200 Circular CONC 1 in 390 38.204; CL 83.670 IL 79.103 IL 79.103; Pipe 11.007 Dia 1200 CONC 1 in 398 11.151; CL 83.533 IL 79.131 IL 79.131; Pipe 11.006 Dia 1200 CONC 1 in 409 13.078; CL 83.355 IL 79.163 IL 79.163; Pipe 11.005 Dia 1200 CONC 1 in 372 18.955; CL 83.117 IL 79.214 IL 79.214; Pipe 11.004 Dia 1200 CONC 1 in 397 10.707; CL 82.984 IL 79.241 IL 79.241; Pipe 11.003 Dia 1200 CONC 1 in 387 12.395; CL 82.825 IL 79.273 IL 79.273; Pipe 11.002 Dia 1200 CONC 1 in 388 14.357; CL 82.643 IL 79.310 IL 80.285; Pipe 11.001 Dia 225 UPVC 1 in 83 16.280; CL 82.427 IL 80.482 IL 80.482; Pipe 11.000 Dia 225 UPVC 1 in 100 17.753; CL 82.279 IL 80.660; CL 82.574 IL 80.820; Pipe 8.000 Dia 300 Circular UPVC 1 in 153 36.764; CL 83.051 IL 80.580 IL 80.580; Pipe 8.001 Dia 300 Circular UPVC 1 in 160 35.046; CL 83.065 IL 80.361

FOULWATER DETAILS: CL 82.815 IL 79.012; Pipe 12.006 Dia 150 Circular UPVC 1 in 171 19.513; CL 82.691 IL 79.125 IL 79.125; Pipe 12.005 Dia 150 Circular UPVC 1 in 149 39.813; CL 83.252 IL 79.393 IL 79.393; Pipe 12.004 Dia 150 Circular UPVC 1 in 149 36.123; CL 83.636 IL 79.635 IL 79.635; PN12.003 Dia 150 UPVC 1 in 79 12.014; CL 83.507 IL 79.787 IL 79.787; Pipe 12.002 Dia 150 UPVC 1 in 80 12.223; CL 83.373 IL 79.941 IL 79.941; Pipe 12.001 Dia 150 UPVC 1 in 80 19.783; CL 83.111 IL 80.188 IL 80.188; Pipe 12.000 Dia 150 UPVC 1 in 44 14.637; CL 82.932 IL 80.520; CL 83.044 IL 80.000; Pipe 9.000 Dia 150 Circular UPVC 1 in 72 31.673; CL 83.013 IL 79.563

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.

ROAD6 CONTD.



CHAINAGE	EXISTING GROUND LEVEL	ALIGNMENT LEVEL
255.771		
260.000	82.693	82.794
263.282		
270.000	82.765	82.919
280.000	82.841	83.044
285.746		83.116
290.000	82.938	83.158
295.746	HP	83.178
300.000	82.996	83.167
305.746		83.116
310.000	82.999	83.063
316.671	83.018	83.009

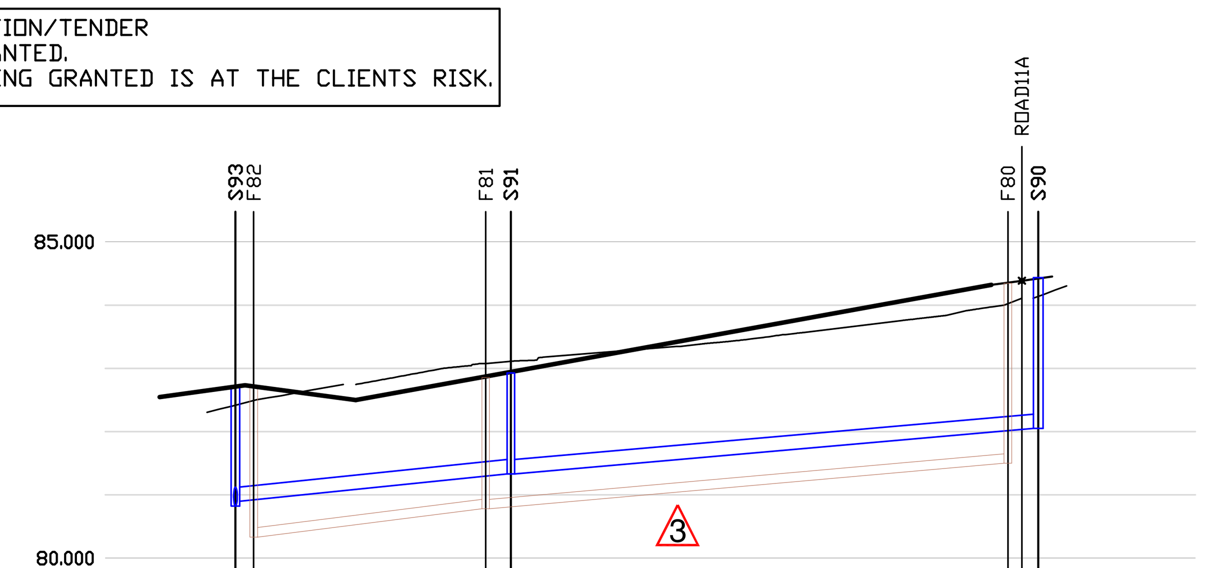
VERTICAL ALIGNMENT: = 1.250% 1: 80.0; L= 20.000 R= -800.0; G= -1.250% 1: -80.0

HORIZONTAL ALIGNMENT: R= 82.338; R= 127.750

STORMWATER DETAILS: Pipe 8.000 Dia 300 Circular UPVC 1 in 153 36.764; CL 83.051 IL 80.580 IL 80.580; Pipe 8.001 Dia 300 Circular UPVC 1 in 160 35.046; CL 83.065 IL 80.361

FOULWATER DETAILS: CL 83.044 IL 80.000; Pipe 9.000 Dia 150 Circular UPVC 1 in 72 31.673; CL 83.013 IL 79.563

ROAD11



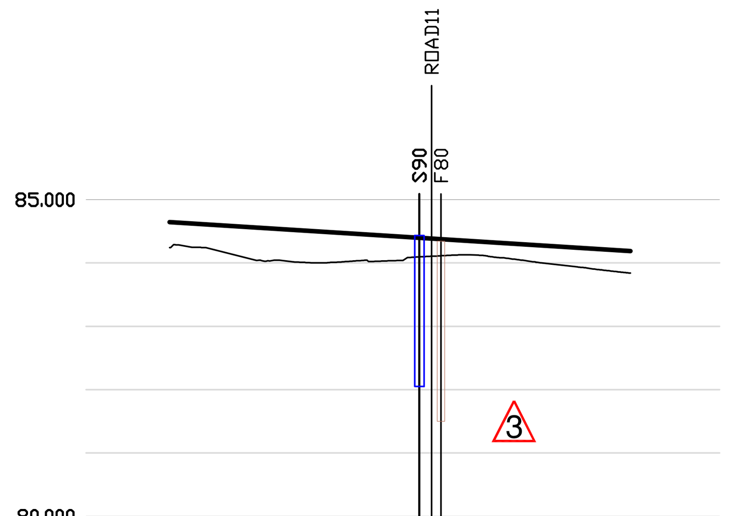
CHAINAGE	EXISTING GROUND LEVEL	ALIGNMENT LEVEL
0.000	82.746	82.500
10.000	83.075	82.862
20.000	83.259	83.224
30.000	83.436	83.585
40.000	83.679	83.947
50.000	83.963	84.309
52.660	84.106	84.319

VERTICAL ALIGNMENT: G= 3.618% 1: 27.6

STORMWATER DETAILS: CL 82.725 IL 80.898; Pipe 16.001 Dia 225 Circular UPVC 1 in 50 21.769; CL 82.926 IL 81.333 IL 81.333; Pipe 16.000 Dia 225 Circular UPVC 1 in 58 41.702; CL 84.434 IL 82.050

FOULWATER DETAILS: CL 82.700 IL 80.333; Pipe 15.001 Dia 150 Circular UPVC 1 in 41 18.346; CL 82.856 IL 80.779 IL 80.779; Pipe 15.000 Dia 150 Circular UPVC 1 in 57 41.279; CL 84.345 IL 81.500

ROAD11A



CHAINAGE	EXISTING GROUND LEVEL	ALIGNMENT LEVEL
0.000	84.244	84.644
10.000	84.015	84.519
20.000 / 20.734	84.099	84.394
30.000	83.987	84.269
36.455	83.839	84.189

VERTICAL ALIGNMENT: G= -1.250% 1: -80.0

STORMWATER DETAILS: CL 84.434

FOULWATER DETAILS: CL 84.345

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

smas worksafe consultant 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 4

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 17040/08/11 Rev A

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A1 SHEET