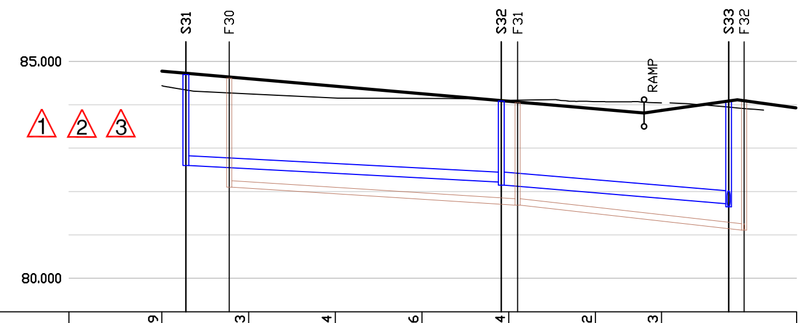
PLEASE NOTE THAT THIS DRAWING IS ISSUED FOR INFORMATION/TENDER PURPOSES ONLY UNTIL TECHNICAL APPROVAL HAS BEEN GRANTED. ANY WORK UNDERTAKEN PRIOR TO TECHNICAL APPROVAL BEING GRANTED IS AT THE CLIENTS RISK.

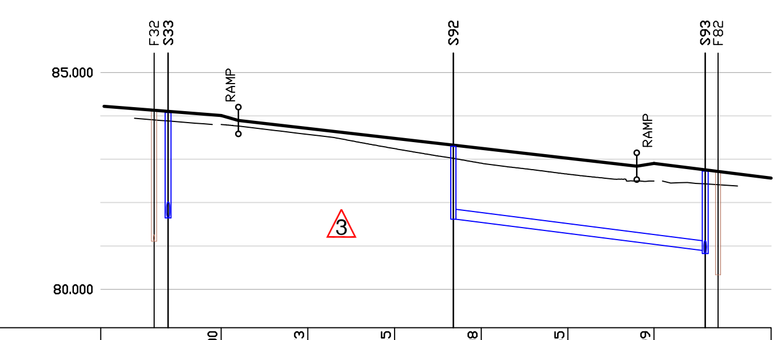
LIMIT OF S38 WORKS S278 WORKS BY OTHERS
DESIGN MAY NEED TO CHANGE IN THIS AREA TO TIE IN WITH S278 DESIGN WHEN AVAILABLE

LIMIT OF S278



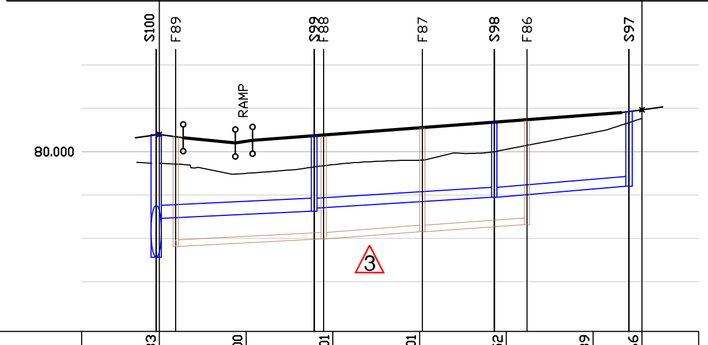
ROAD9

EXISTING GROUND LEVEL	84.439	84.253	84.154	84.146	84.104	84.072	84.043
ALIGNMENT LEVEL	84.776	84.602	84.429	84.255	84.082	83.908	83.811 / 83.871
VERTICAL ALIGNMENT	G= -1.735% 1: -57.6						G= 3.000% 1: 33.3
HORIZONTAL ALIGNMENT							
STORMWATER DETAILS	CL 84.695 IL 82.600	Pipe 6.000 Dia 225 Circular UPVC 1 in 96 36.364			CL 84.084 IL 82.220 / IL 82.145	Pipe 6.001 Dia 300 Circular UPVC 1 in 62 26.218	CL 84.075 IL 81.720
FOULWATER DETAILS	CL 84.615 IL 82.100	Pipe 6.000 Dia 150 Circular UPVC 1 in 80 33.260			CL 84.045 IL 81.684 / IL 81.684	Pipe 6.001 Dia 150 Circular UPVC 1 in 45 26.116	CL 84.120 IL 81.109
CHAINAGE	0.000	10.000	20.000	30.000	40.000	50.000	55.609 / 57.604



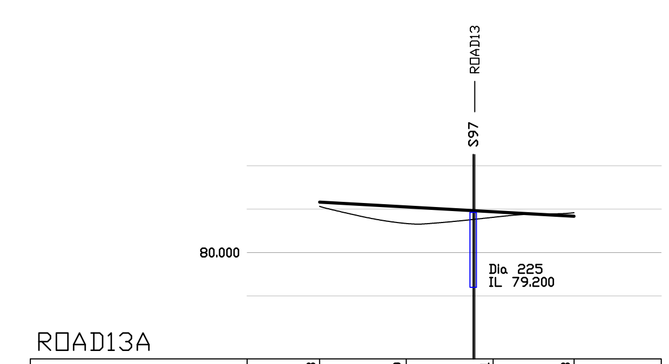
ROAD10

EXISTING GROUND LEVEL	83.800	83.573	83.245	82.908	82.655	82.499	
ALIGNMENT LEVEL	84.010 / 83.894	83.710	83.480	83.251	83.021	82.839 / 82.903	
VERTICAL ALIGNMENT	G= -2.297% 1: -43.5						
HORIZONTAL ALIGNMENT							
STORMWATER DETAILS	CL 84.075		CL 83.295 IL 81.618	Pipe 17.000 Dia 225 Circular UPVC 1 in 40 29.029		CL 82.725 IL 80.898	
FOULWATER DETAILS	CL 84.120					CL 82.700	
CHAINAGE	0.000	2.003	10.000	20.000	30.000	40.000	47.924 / 49.919



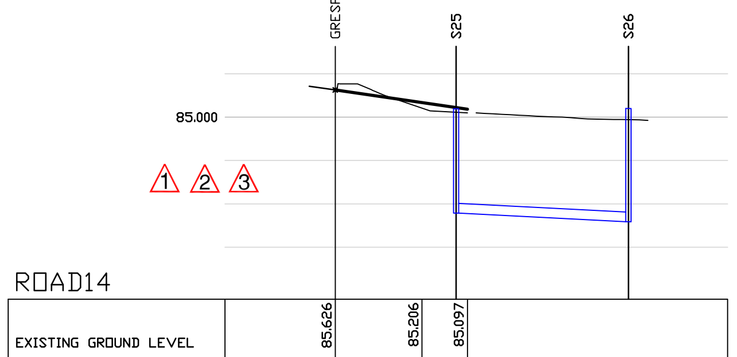
ROAD13

EXISTING GROUND LEVEL	79.733	79.500	79.701	79.801	80.052	80.439	80.766			
ALIGNMENT LEVEL	80.319	80.199 / 80.259	80.398	80.549	80.699	80.849	80.898			
VERTICAL ALIGNMENT	G= -2.000% 1: -50.0		G= 1.503% 1: 66.5							
HORIZONTAL ALIGNMENT			R= 23.850		R= 23.426					
STORMWATER DETAILS	CL 80.390 IL 78.462	Pipe 18.002 Dia 300 UPVC 1 in 112 18.220	CL 80.364 IL 78.625 / IL 78.700	Pipe 18.001 Dia 225 UPVC 1 in 83 20.739	CL 80.656 IL 78.950 / IL 78.950	Pipe 18.000 Dia 225 UPVC 1 in 63 15.665	CL 80.925 IL 79.200			
FOULWATER DETAILS	CL 80.359 IL 77.814	Pipe 16.002 Dia 150 UPVC 1 in 100 17.164	CL 80.344 IL 77.986 / IL 77.986	Pipe 16.001 Dia 150 UPVC 1 in 70 11.725	CL 80.542 IL 78.153 / IL 78.153	Pipe 16.000 Dia 150 UPVC 1 in 70 11.557	CL 80.705 IL 78.319			
CHAINAGE	0.000	2.750	8.758 / 10.753	16.813	20.000	29.654 / 30.000	40.000	45.315	50.000	55.632



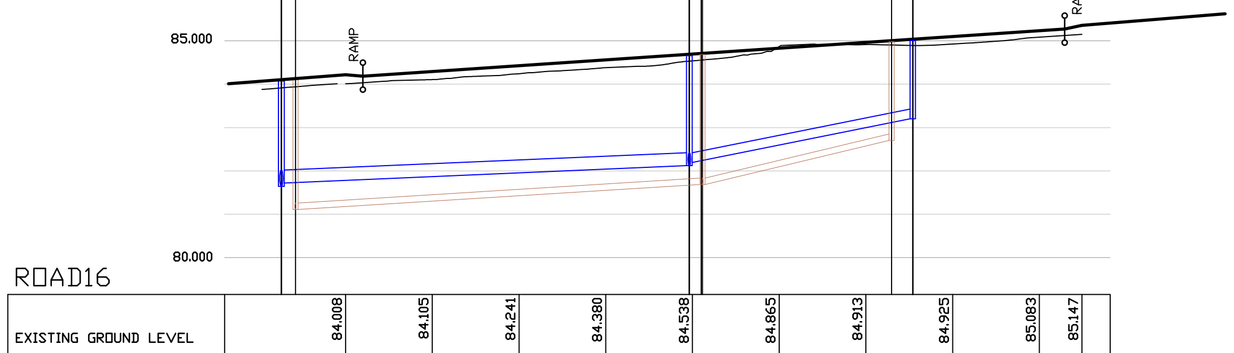
ROAD13A

EXISTING GROUND LEVEL	81.063	80.669	80.811	80.918	
ALIGNMENT LEVEL	81.163	81.052	80.941	80.837	
VERTICAL ALIGNMENT	G= -1.111% 1: -90.0				
HORIZONTAL ALIGNMENT					
STORMWATER DETAILS			CL 80.925		
CHAINAGE	0.000	10.000	17.884 / 20.000	29.351	



ROAD14

EXISTING GROUND LEVEL	85.626	85.206	85.097	
ALIGNMENT LEVEL	85.628	85.337	85.185	
VERTICAL ALIGNMENT		G= -2.906% 1: -34.4		
HORIZONTAL ALIGNMENT				
STORMWATER DETAILS		CL 85.191 IL 82.787	Pipe 4.000 Dia 225 Circular UPVC 1 in 100 19.867	CL 85.200 IL 82.588
FOULWATER DETAILS				
CHAINAGE	0.000	10.000	15.242	



ROAD16

EXISTING GROUND LEVEL	84.008	84.105	84.241	84.380	84.538	84.865	84.913	84.925	85.083	85.147							
ALIGNMENT LEVEL	84.218 / 84.185	84.292	84.426	84.560	84.694	84.829	84.963	85.097	85.231	85.270 / 85.357							
VERTICAL ALIGNMENT	G= 1.341% 1: 74.5																
HORIZONTAL ALIGNMENT						R= 124.527											
STORMWATER DETAILS	CL 84.075 IL 81.720	Pipe 4.004 Dia 300 Circular UPVC 1 in 118 47.091				CL 84.657 IL 82.120 / IL 82.195	Pipe 5.000 Dia 225 Circular UPVC 1 in 26 25.956			CL 85.003 IL 83.200							
FOULWATER DETAILS	CL 84.120 IL 81.109	Pipe 4.003 Dia 150 Circular UPVC 1 in 81 46.871				CL 84.682 IL 81.685 / IL 81.685	Pipe 5.000 Dia 150 Circular UPVC 1 in 21 21.622			CL 84.984 IL 82.700							
CHAINAGE	0.000	2.002	10.000	20.000	30.000	34.109	40.000 / 41.810	50.000	60.000	70.000	73.707	80.000	82.906	84.903			

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.

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 IN 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

SCALE IN METRES
0 5 10 20 50

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	28.8.19

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

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 5

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GEOTECHNICAL• ENVIRONMENTAL

Date	Scale	Drawn
12.2.18	1/500H &1/100V	GWH

DRAWING No 17040/08/12 Rev A

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A1 SHEET