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- NOTES**
- All statutory undertakers equipment in footway and carriageway to be located and diverted before work commences.
  - A pedestrian route through the works shall be maintained at all times and clearly defined by suitable barriers and lights where necessary.
  - The contractor is obliged to obtain necessary road opening and/or sewer connection licence prior to commencement on site.
  - One vertical joint per course of brick work shall be left open to allow shrinkage during construction.
  - All statutory undertakers covers and frames to be adjusted to suit new carriageway levels prior to surfacing.
  - All existing gullies and drain runs to be cleared of debris and high pressure water jetted prior to commencement of works.
  - The existing sewers and culverts shown on this drawing are taken from various archives, drainage plans and sewer records. Some of the information is contradictory and the locations shown are interpreted using existing features and manhole locations shown on the survey. The exact depth and location should be verified on-site prior to commencing construction.
  - All adoptable sewer works and material to be in accordance with Sewer Sector Guidance (SSG), DCS, and the Water Authorities requirements and Kitemarked.
  - All drainage works that shall be adopted by the Water Authority to be subject to their approval prior to commencement on site.
  - All hard standing and impermeable areas outside the adopted highway boundary to be drained and collected in private drainage systems and discharged into the surface water sewer before water encroaches onto the public highway.
  - Gullies should not be located in the area of dropped crossings.
  - The chamber size of manholes with more than one connection in them may need to be increased and movement to accommodate the connection and bands.
  - 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 600mm in non-vehicular access areas there is a concrete slab to be provided above granular bed and surround. Refer to Sewer Sector Guidance (SSG) / DCS for protection measures.
  - Granular bedding for pipes shall consist of aggregates from natural sources complying with the relevant provisions of BS 852 stated in accordance with the table across.
  - All pipes with a diameter larger or equal to 375mm shall be concrete. Pipes with a diameter less than 375mm shall be clay or ductile iron.
  - Vertical day pipes and fittings for sewers shall have flexible mechanical joints. Pipes for foot sewers and surface water sewers shall comply with relevant requirements of BS EN205 and BS 65 (Surface water pipes only).
  - Manhole covers shall meet a clear opening of 675mm and shall be Class D40 to BS EN 124 with 150mm deep frames in Highways.
  18. Filled ground must be filled and consolidated under the supervision and to the satisfaction of the Water Authority before any sewer works are carried out.
  - The Water Authority is not obliged to accept filter drain/drainage runoff into the public sewer network or adoptable drainage system (directly or indirectly). An alternative method of disposal of the first drainage runoff will therefore be required and must be agreed with the Local Authority, Land Drainage Division with regard to the disposal of the filter drain/drainage runoff.
  - Cover slabs must carry the BS Kitemark or will be rejected by the Water Authority Inspectors. (Where the clear opening of the Kitemarked product is different to that of the cover and frame, a loading bearing slab should be fitted above the cover slab to bring the size down to 675mm x 675mm for the Water Authority specified cover size. Please refer to Concrete Pipe Systems Association (CPSA), 'Technical Bulletin' issued Autumn 2004 for Kitemarked cover slab opening sizes.
  - Sulphate Resistant cement (C20-DC2) and precast concrete products must be used or a laboratory report provided proving that such precautions are not necessary.
  - The adoptable sewers should be a minimum of 1m and manholes 0.5m from kerb faces and service margins.
  - Sewers must have 50m clearance from trees and hedges, (refer to Sewer Sector Guidance (SSG) / DCS for restrictions on tree planting adjacent to sewers).
  - All private work to be in accordance with current building regulations.
  - Drains passing through buildings to be protected with level cover.
  - No building to take place within 3.0m of an adoptable sewer.
  - Where adoptable pipes have 150mm concrete bed and surround protection, all joints to be provided with 150mm thick flexible filler.
  - No services to be sited over or within 1.0m of an adoptable sewer.
  - Private drainage connections not direct to manholes are to be made via a 45 degree junction and not saddle.
  - Bedding and backfill material to conform to the requirement of Water Industry Specification 4-08-02 (Table A2).
  29. All private work to be in accordance with current building regulations.
  31. Any proposed sewers located within 5 meters of the public sewer shall be ductile iron pipe work.

Extract from Table A2 WIS 4-08-02  
Processed granular bedding and sidefill material for flexible pipes

Pipe nominal bore (mm) see note (c)	Nominal maximum particle size (mm)	Material specified in British Standards see note (a)
100	10	10mm nominal single size
Over 100 to 150	14	10 or 14mm nominal single size or 14mm to 5mm graded
Over 150 to 300	20	10-14 or 20mm nominal single size or 14mm to 5mm graded or 20mm to 5mm graded
Over 300 to 500	20	14 or 20mm nominal single size or 14mm to 5mm graded or 20mm to 5mm graded
Over 550	40	14-20 or 40mm nominal single size or 14mm to 5mm graded or 20mm to 5mm graded or 40mm to 5mm graded

- Notes:**
- Proposed granular material to include aggregates to BS 882, air-cooled blast furnace slag to BS1047 and lightweight aggregates BS5379?
  - For the purpose of this table, PE pipe of 630mm O.D. can be regarded as having a nominal bore of over 550mm irrespective of wall thickness
  - Nominal bore is used in preference to DN because of the different nominal size classifications for flexible pipes

Minimum recommended trench widths for structural wall pipes in poor ground conditions

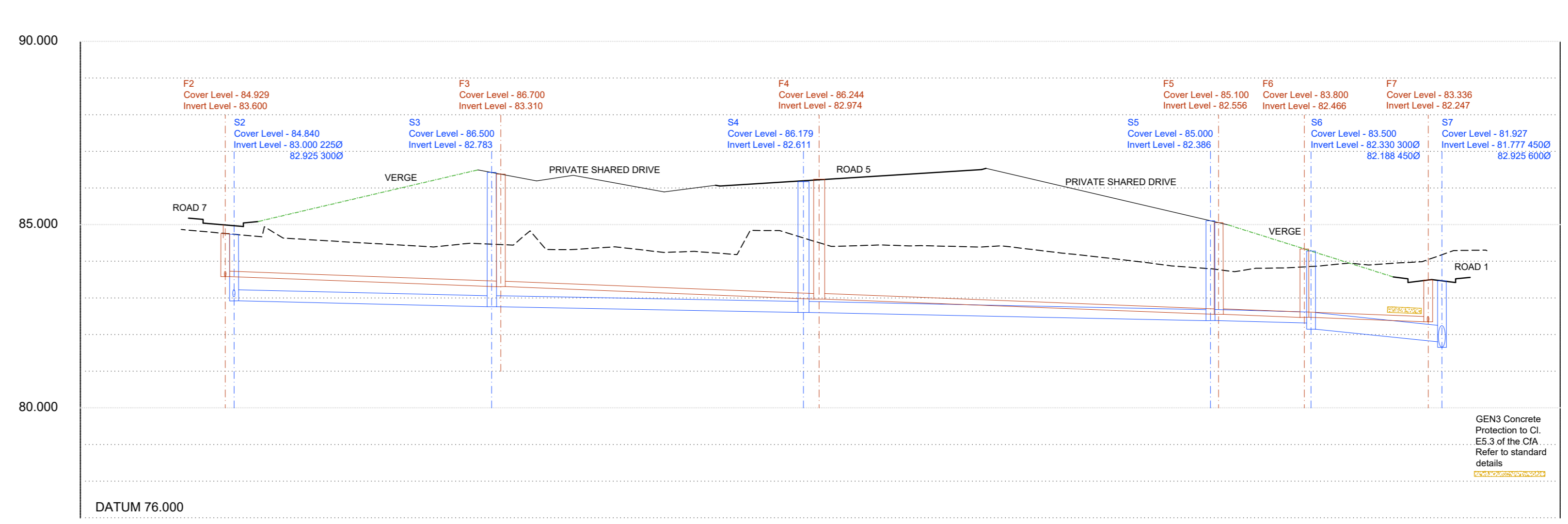
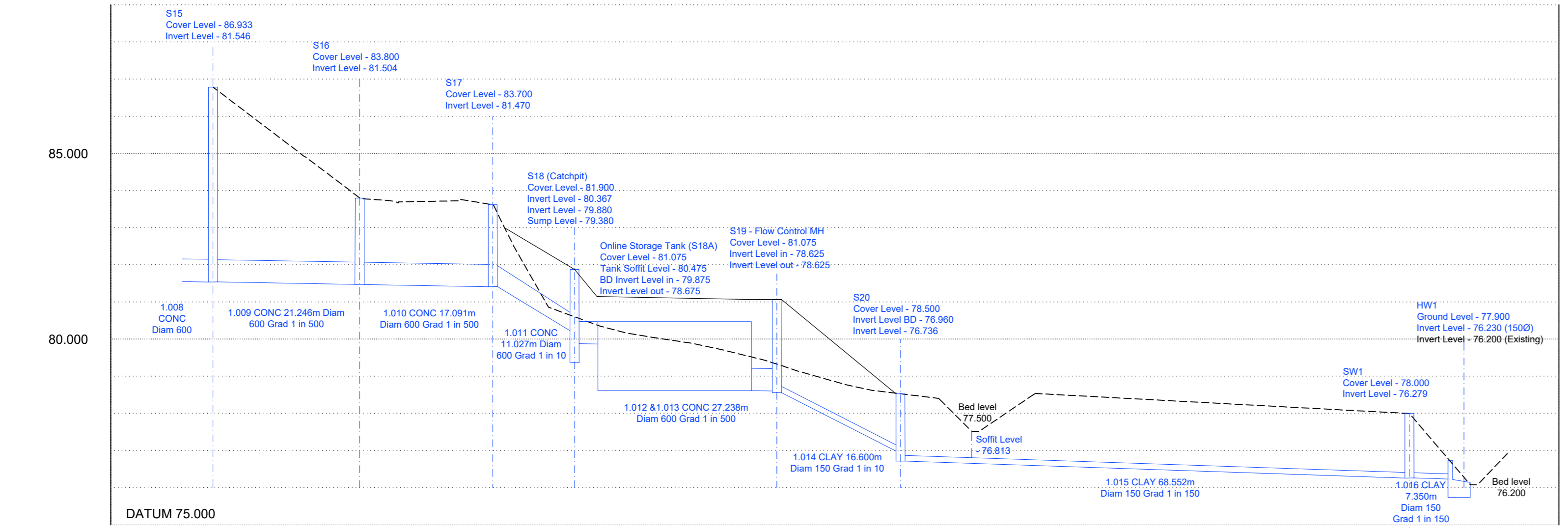
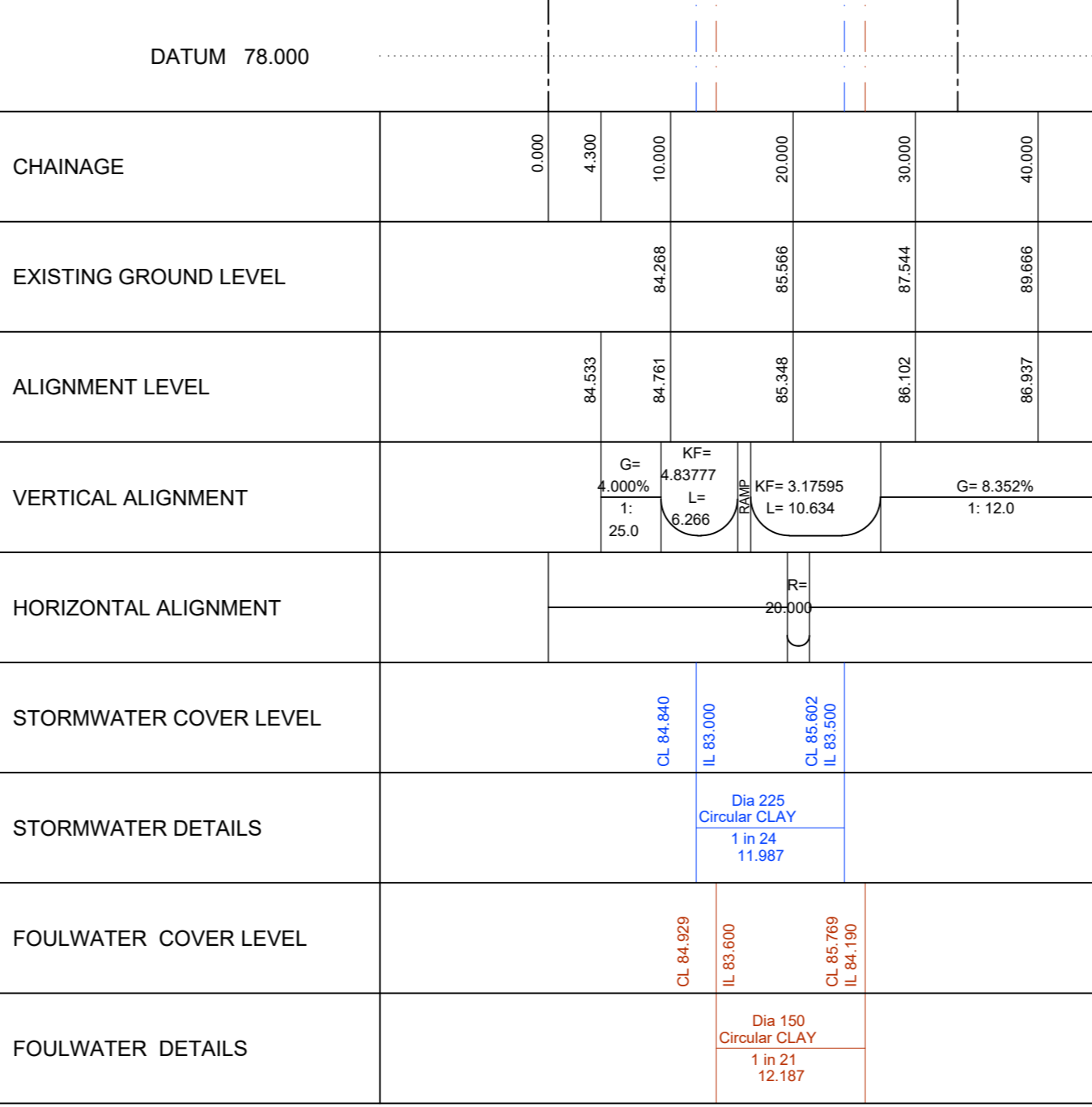
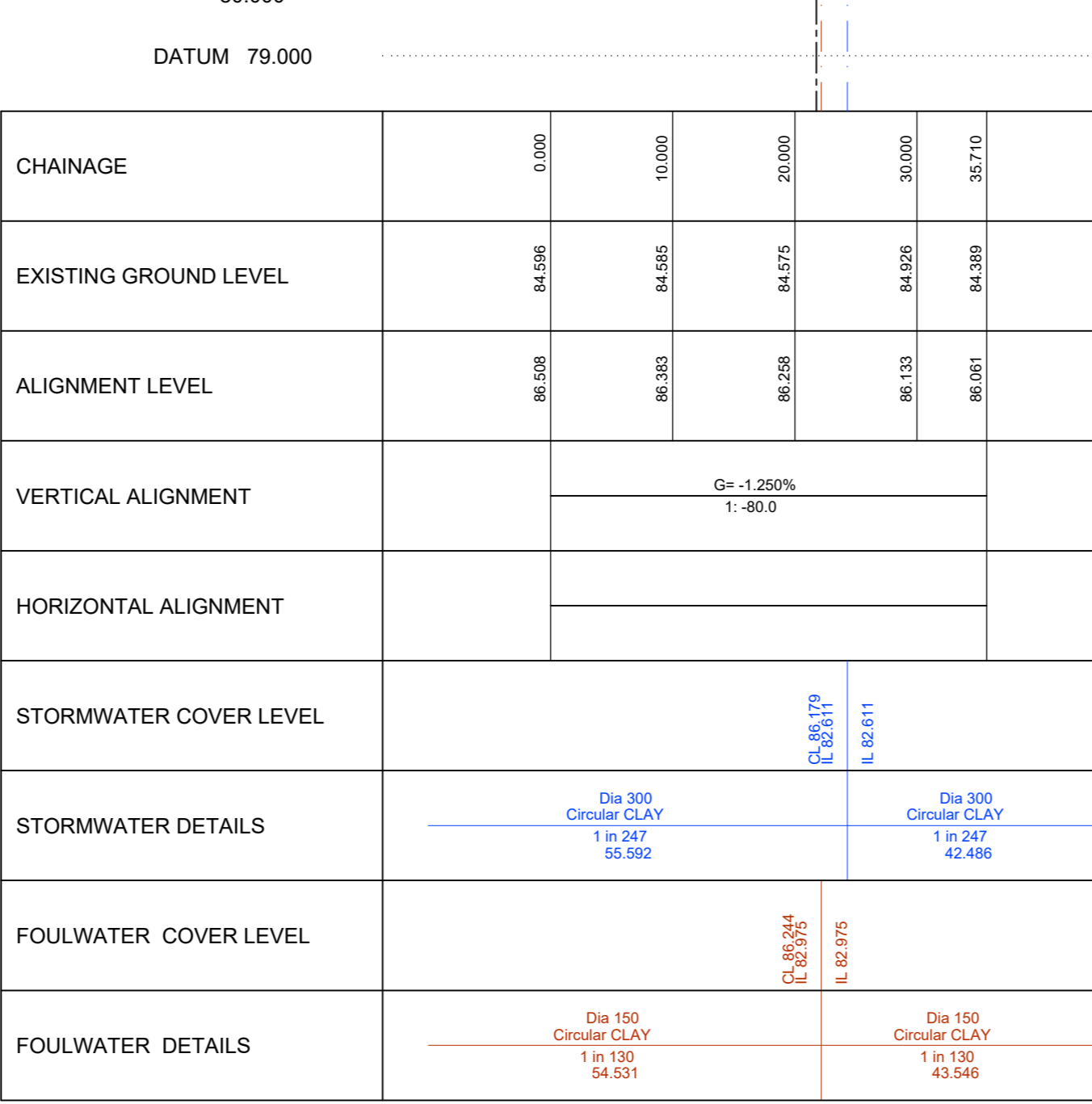
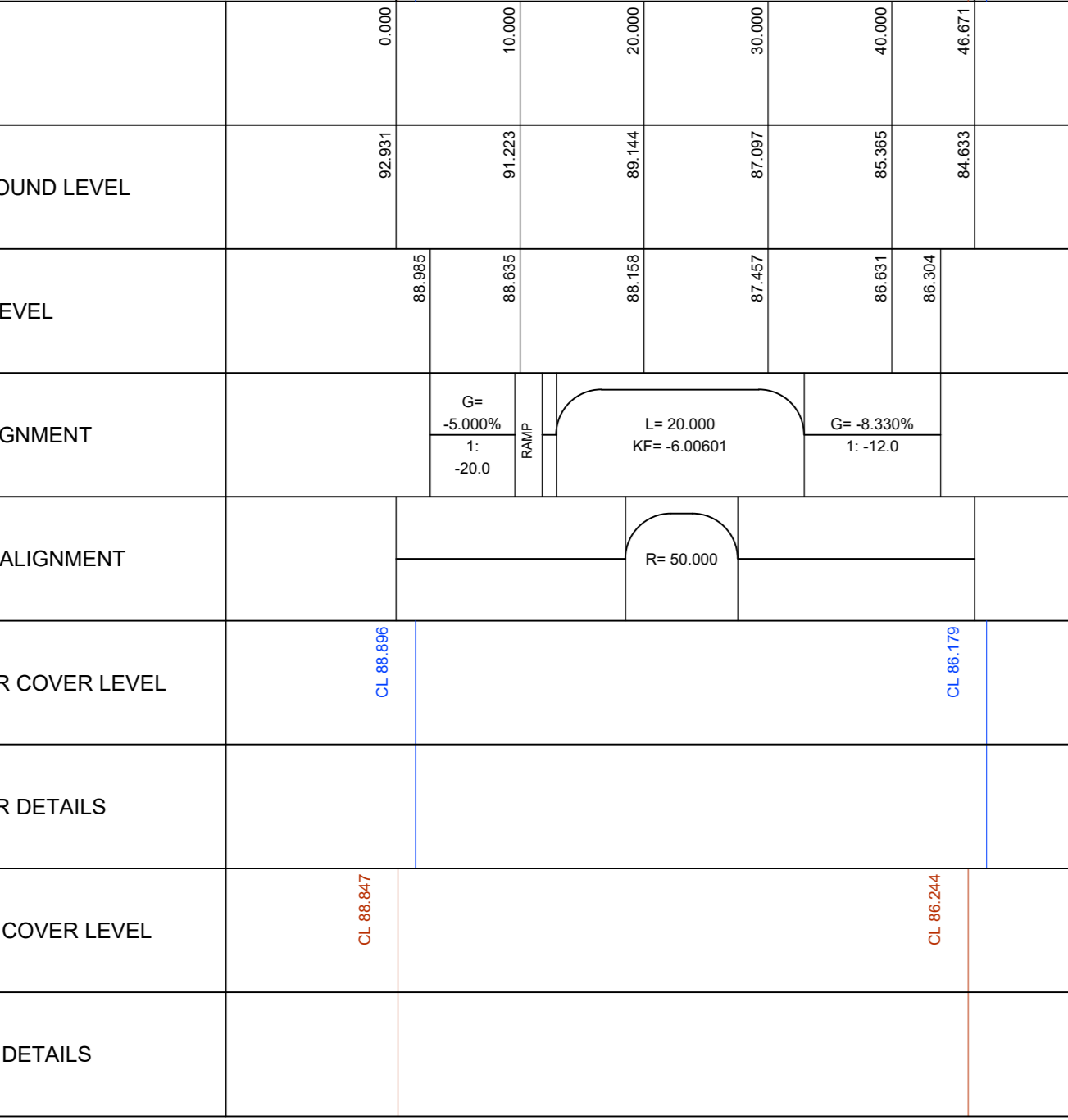
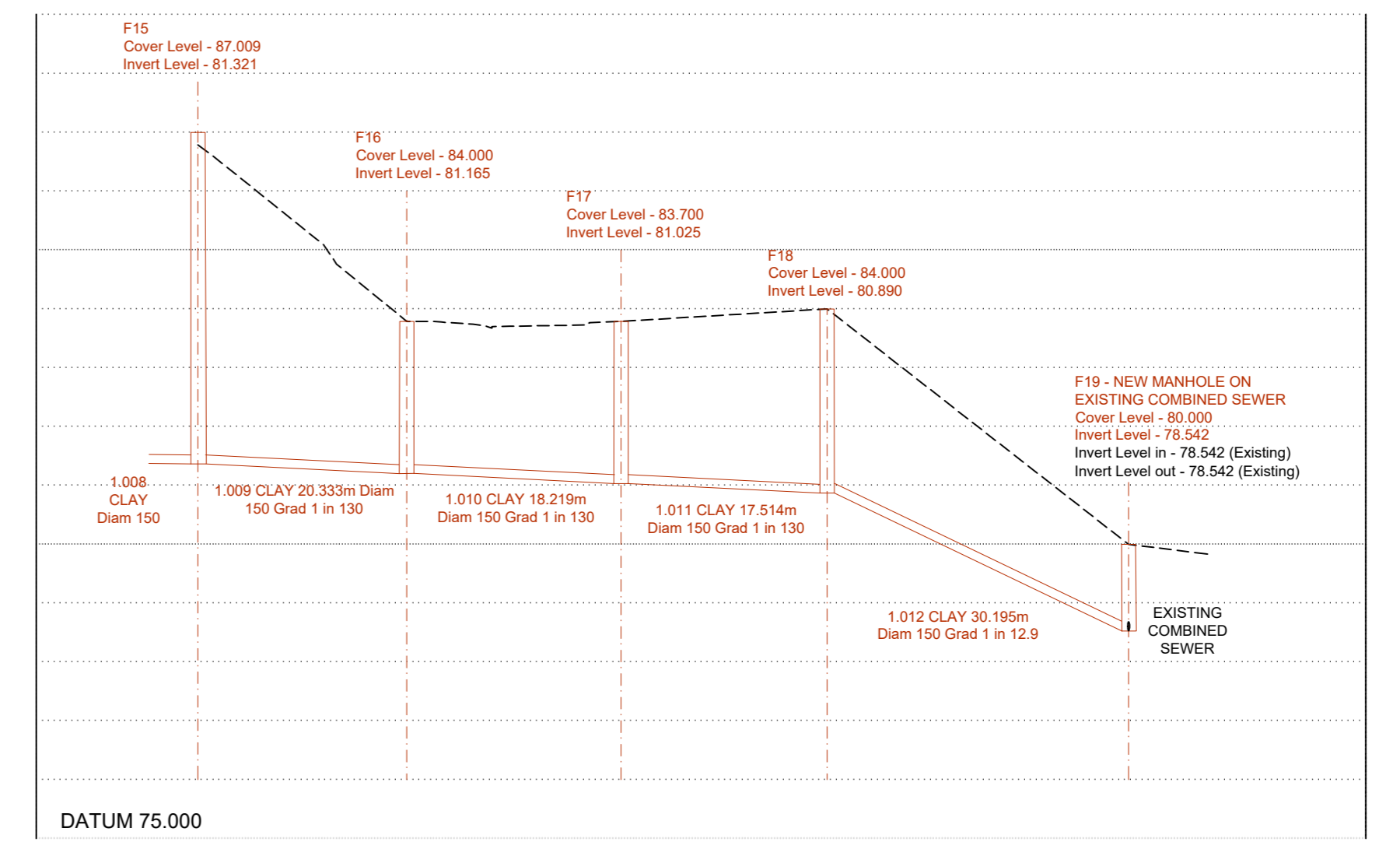
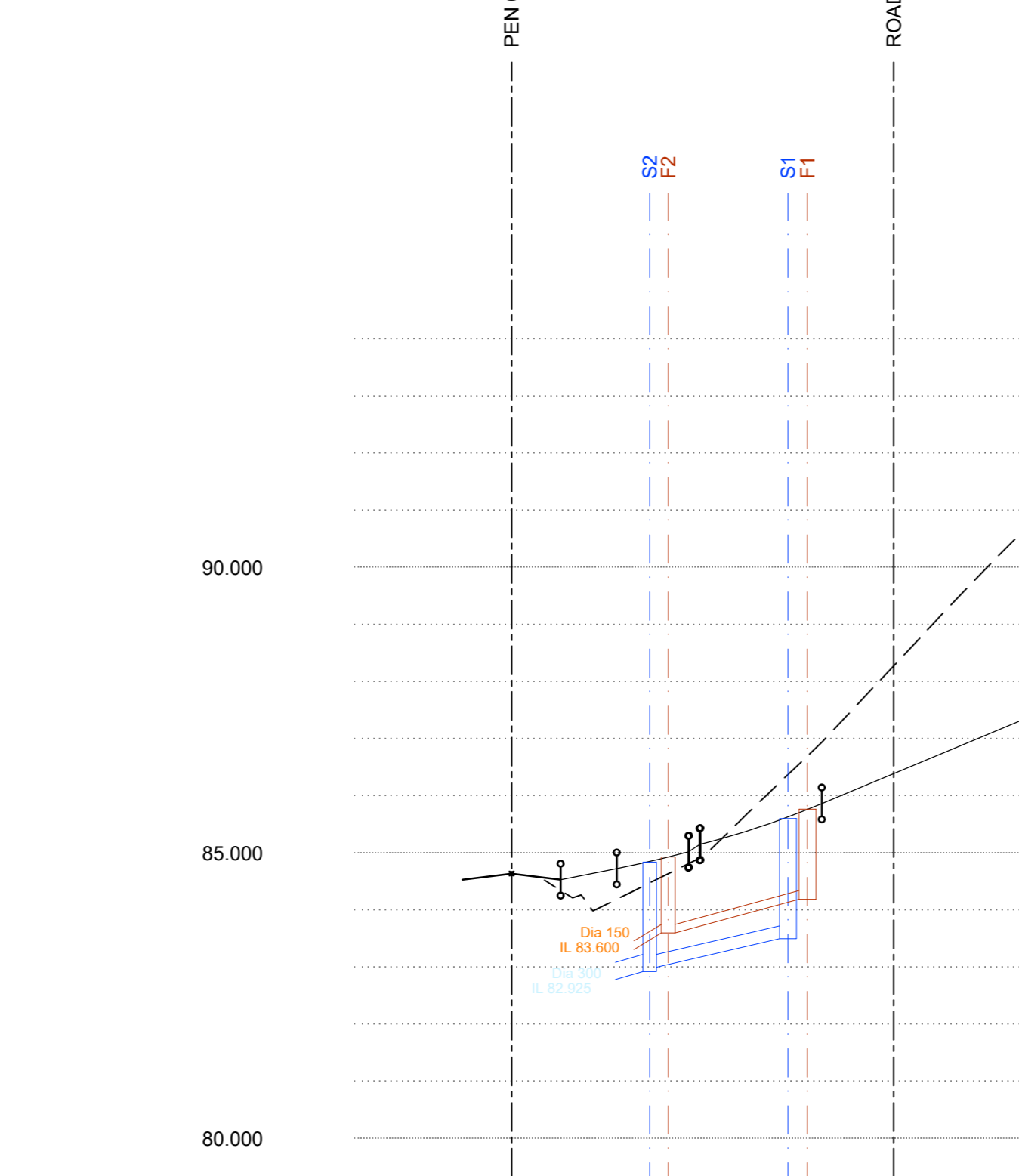
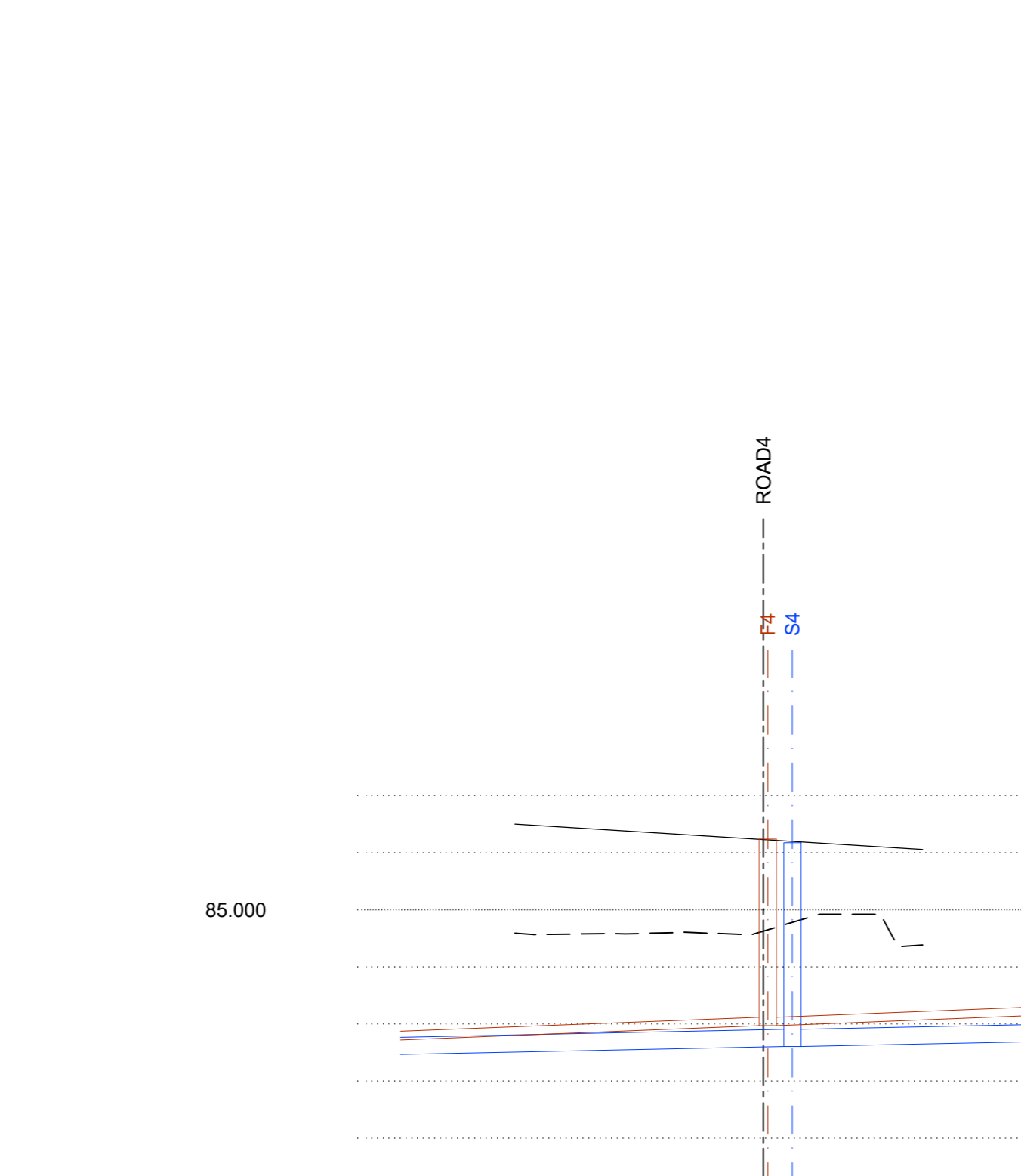
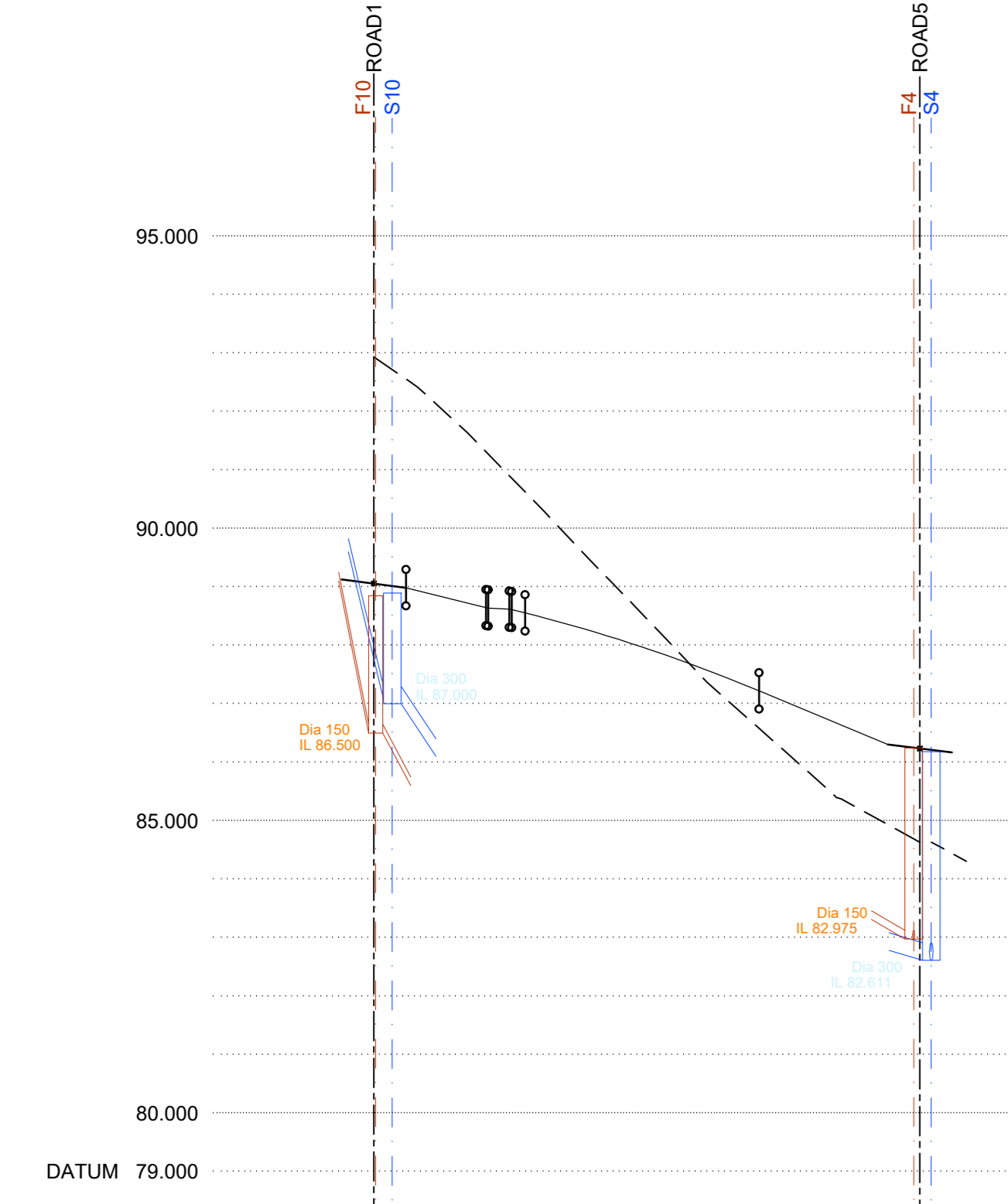
Nominal Bore of Pipe (mm)	Alternative Aggregate Sizes Single Sized	(mm) Graded (Where directed)
100 - 125	10	-
150 - 200	10 or 14	14 - 5
225 - 300	10, 14 or 20	14.5 or 20.5
375 - 500	14 or 20	14.5 or 20.5
Exceed 500	14, 20 or 40	14.5 or 20.5 or 40.5

Other Assumed Values: Depth of cover = 6.00 meter max.  
Traffic Loading = Main Road  
Pipe Stiffness = SNB

Note: Where the native soil modulus is below 3Mpa or the depth of cover exceeds 6.0m guidance should be sought from the pipe manufacturer regarding structural design and installation details

Pipe Diameter (mm)	Minimum Crushing Strength Clay Pipes
150	40KN/m
225	45KN/m
300	72KN/m
375 Concrete	45KN/m
1200 Concrete	144KN/m
1500 Concrete	180KN/m

Concrete minimum crushing strength should conform to class 120 EN1916/BS5911-1:2002



Rev	Date	Annotation	DWG	CHK	APP
G	20.05.25	Updated following Kitekeys comments dated 17.04.25	NB	IE	
F	10.01.25	Details updated following Kitekeys comments dated 10.01.25	NB	IE	
E	12.12.24	Catchpit manhole detail updated following losses	NB	IE	
D	24.10.24	Updated as per losses comments dated 15.10.24	NB	IE	
C	22.02.24	Details reviewed and amended following VE	NB	IE	
B	29.11.23	Drainage reviewed and amended following request from Newett Homes dated 05.02.24	NB	IE	
A	12.06.23	Site layout updated to latest drawing revision M. Road 7 details updated accordingly.	NB	IE	

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Client: Newett Homes  
 Status:   
 Scale: 1:250  
 Size: A2 - 1189 x 841 | Drawn: NB | Check: CNB | Issue: AP  
 Project: Residential Development  
 Penistone Road, Fenay Bridge  
 Title: Long Sections  
 Sheet 2 of 2