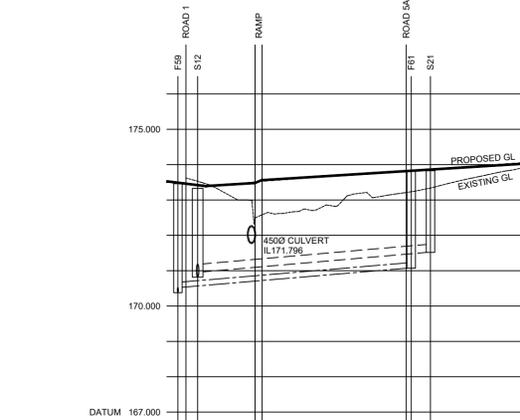
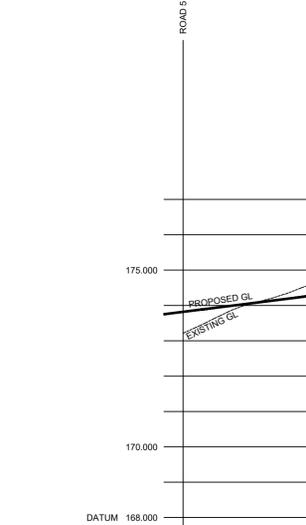


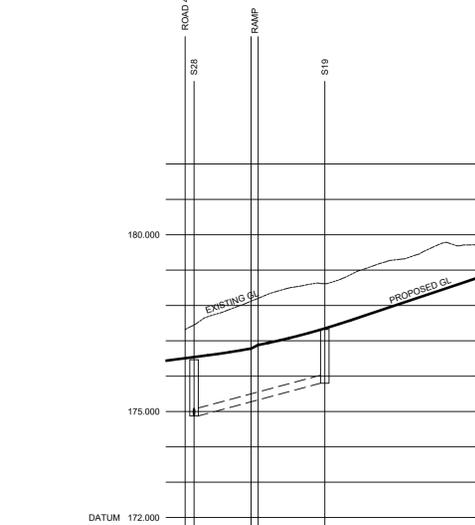
CHAINAGE	EXISTING GROUND LEVEL	ALIGNMENT LEVEL	VERTICAL ALIGNMENT	HORIZONTAL ALIGNMENT	STORMWATER COVER LEVEL	STORMWATER INVERT	STORMWATER DETAILS	STORMWATER LENGTHS	FOULWATER COVER LEVEL	FOULWATER INVERT	FOULWATER DETAILS	FOULWATER LENGTHS
-2.750	174.715	174.845	G = 2.500%		174.806	172.690	Pipe 4.002 Dia 225 Circular CLAY 1 in 19	17.746	174.756	172.422	Pipe 2.001 Dia 150 Circular CLAY 1 in 17	18.132
0.000	175.107	174.857	KF = 4.79962 L = 7.747		174.806	172.690			174.756	172.422		
0.500	175.107	174.857			174.806	172.690			174.756	172.422		
5.000	175.260	174.990	G = 1.250%		174.806	172.690			174.756	172.422		
8.249	175.260	174.990	KF = 4.79962 L = 10.249		174.806	172.690			174.756	172.422		
10.249	175.260	174.990			174.806	172.690			174.756	172.422		
13.044	175.260	174.990			174.806	172.690			174.756	172.422		
15.000	175.260	174.990			174.806	172.690			174.756	172.422		
18.615	175.260	174.990			174.806	172.690			174.756	172.422		
20.000	175.260	174.990			174.806	172.690			174.756	172.422		
23.924	175.260	174.990			174.806	172.690			174.756	172.422		
29.322	177.290	176.471	G = 6.667%	R = 50.000	176.484	174.874	Pipe 4.001 Dia 225 Circular CLAY 1 in 16	15.105	176.572	174.430	Pipe 2.000 Dia 150 Circular CLAY 1 in 16	15.180
31.864	177.290	176.471	L = 15.0	R = 30.000	176.484	174.874			176.572	174.430		
34.100	178.741	178.741		R = 35.000	178.741	178.741			178.741	178.741		
35.000	178.741	178.741			178.741	178.741			178.741	178.741		
40.000	178.940	178.940			178.940	178.940			178.940	178.940		
42.420	178.940	178.940			178.940	178.940			178.940	178.940		
45.000	178.940	178.940			178.940	178.940			178.940	178.940		
49.920	178.197	176.739			176.739	176.739			176.739	176.739		
60.000	178.599	178.599			178.599	178.599			178.599	178.599		
82.725	178.599	178.599			178.599	178.599			178.599	178.599		
70.000	178.790	178.790			178.790	178.790			178.790	178.790		
74.289	178.790	178.790			178.790	178.790			178.790	178.790		
74.861	178.790	178.790			178.790	178.790			178.790	178.790		



CHAINAGE	EXISTING GROUND LEVEL	ALIGNMENT LEVEL	VERTICAL ALIGNMENT	HORIZONTAL ALIGNMENT	STORMWATER COVER LEVEL	STORMWATER INVERT	STORMWATER DETAILS	STORMWATER LENGTHS	FOULWATER COVER LEVEL	FOULWATER INVERT	FOULWATER DETAILS	FOULWATER LENGTHS
-2.750	173.623	173.623	G = 1.250%		173.623	170.967	Pipe 5.000 Dia 225 Circular CLAY 1 in 60	32.984	173.461	170.379	Pipe 3.000 Dia 150 Circular CLAY 1 in 60	32.543
-1.096	173.464	173.464	L = 80.0		173.464	170.967			173.461	170.379		
0.000	173.464	173.464			173.464	170.967			173.461	170.379		
7.000	172.608	172.608			172.608	170.967			172.608	170.967		
8.100	172.608	172.608			172.608	170.967			172.608	170.967		
10.000	172.608	172.608			172.608	170.967			172.608	170.967		
20.000	173.713	173.713			173.713	171.517			173.713	171.517		
28.468	173.261	173.261			173.261	171.517			173.261	171.517		
30.000	173.261	173.261			173.261	171.517			173.261	171.517		
31.868	173.261	173.261			173.261	171.517			173.261	171.517		
40.000	173.715	173.715			173.715	171.517			173.715	171.517		
44.855	173.911	174.024			174.024	171.517			174.024	171.517		



CHAINAGE	EXISTING GROUND LEVEL	ALIGNMENT LEVEL	VERTICAL ALIGNMENT	HORIZONTAL ALIGNMENT
-2.750	173.212	173.212	G = 2.500%	
-0.000	173.464	173.464	L = 40.0	
10.000	174.214	174.214		
14.825	174.554	174.554		



CHAINAGE	EXISTING GROUND LEVEL	ALIGNMENT LEVEL	VERTICAL ALIGNMENT	HORIZONTAL ALIGNMENT	STORMWATER COVER LEVEL	STORMWATER INVERT	STORMWATER DETAILS	STORMWATER LENGTHS
-2.750	177.318	177.318	G = 2.500%		176.464	174.874	Pipe 4.000 Dia 225 Circular PLASTIC 1 in 20	18.526
0.000	177.617	177.617	KF = 4.79962 L = 6.098		176.464	174.874		
0.501	177.617	177.617			176.464	174.874		
5.000	178.585	178.585			176.464	174.874		
6.502	178.585	178.585			176.464	174.874		
7.001	178.585	178.585			176.464	174.874		
10.000	178.802	178.802			176.464	174.874		
15.000	179.039	179.039			176.464	174.874		
17.039	179.039	179.039			176.464	174.874		
20.000	179.423	179.423			176.464	174.874		
20.501	179.423	179.423			176.464	174.874		
30.000	179.717	179.717			176.464	174.874		
38.959	179.717	179.717			176.464	174.874		

1. ALL ADOPTABLE SEWER WORKS AND MATERIAL TO BE IN ACCORDANCE WITH "CODES 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 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 RUNOFF INTO THE PUBLIC SEWER NETWORK OR ADOPTABLE DRAINAGE SYSTEM (DIRECTLY OR INDIRECTLY). AN ALTERNATIVE METHOD OF DISPOSAL OF THE LAND DRAINAGE RUNOFF WILL THEREFORE BE REQUIRED AND YOU WILL HAVE TO LIAISE WITH THE LOCAL AUTHORITY. LAND DRAINAGE SECTION WITH REGARD TO THE DISPOSAL OF THE FILTER DRAIN/LAND DRAINAGE RUNOFF.
5. COVER SLABS MUST CARRY THE BS1 KITEMARK OR WILL BE REJECTED BY YORKSHIRE WATER INSPECTOR. 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 600x600mm FOR THE YORKSHIRE WATER SPECIFIED COVER SIZE. PLEASE REFER TO CONCRETE PIPE SYSTEMS ASSOCIATION (CPSA), TECHNICAL BULLETIN ISSUED AUTUMN 2004 FOR KITEMARKED COVER SLAB OPENING SIZES.
6. SULPHATE RESISTANT CEMENT (C20-DC2) AND PRECAST CONCRETE PRODUCTS MUST BE USED OR A LABORATORY REPORT PROVIDED PROVING THAT SUCH PRECAUTIONS ARE NOT NECESSARY.
7. THE ADOPTABLE SEWERS SHOULD BE A MINIMUM OF 1m AND MANHOLES 0.5m FROM KERB FACED AND MARGINS.
8. SEWERS MUST HAVE 5m CLEARANCE FROM TREES AND HEDGES (PLEASE ALSO REFER TO FIGURE 2.3 ON PAGE 33 IN "CODES FOR ADOPTION" FOR RESTRICTION ON TREE PLANTING ADJACENT TO SEWERS).
9. SEWERS TO BE LAID IN CLASS "B" 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 NONE VEHICULAR ACCESS AREAS) THEN A CONCRETE SLAB OVER SEWER SHALL BE PROVIDED ABOVE GRANULAR BED AND SURROUND.
10. BEDDING AND BACKFILL MATERIAL TO CONFORM TO THE REQUIREMENT OF WATER INDUSTRY SPECIFICATION 4-08-02 (TABLE A2).
11. THE CHAMBER SIZE OF MANHOLES WITH MORE THAN ONE CONNECTION IN THEM MAY NEED TO BE INCREASED AN INCREMENT TO ACCOMMODATE THE CONNECTIONS AND BENDS.
12. YORKSHIRE WATER POLICY IS NOT TO ACCEPT TYPE "C" BRICK MANHOLES AND 1050mm DIAM. MANHOLE RINGS. INSTEAD IT IS PREFERRED THAT YOU USE A TYPE "B" MANHOLE WITH 1200mm DIAM. OR 1500mm DIAM. RINGS, WITH THE OPENING SIGHTED OVER THE CHANNEL WHERE DEPTH OF COVER TO PIPE SOFFIT IS 1-1.5m.
13. ADOPTABLE PLASTIC SEWER PIPES TO BE BS1 KITEMARKED (CERTIFIED TO WIS 4-35-01 AND BS EN 13476). 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 PREFER CLAYWARE CHANNELS IN MANHOLES. WE HAVE FOUND THAT PLASTIC CHANNELS ARE DIFFICULT TO SET IN CONCRETE BECAUSE THEY FLOAT AND A SATISFACTORY FINISHED CANNOT BE OBTAINED ON THE BENCHING.
14. 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 CLASS 120 (54KN/m) TO EN 1916/BS5911+1 2002. PLASTIC PIPES SHOULD CONFORM TO WIS 4-35-01 AND BS EN 13476.
15. WHERE A B125 COVER AND FRAME HAS BEEN APPROVED, THIS MUST NOT BE COATED IN PLASTIC AND MUST HAVE LIFTING EYES SUIABLY SIZED TO ACCOMMODATE STANDARD LIFTING KEYS. SCREW DOWN COVERS ARE NOT ACCEPTABLE.
16. ALL HIGHWAY WORKS AND MATERIAL TO CONFORM WITH KIRKLEES MDC SPECIFICATION.
17. GULLY COVER AND FRAMES SHALL BE D400 DUCTILE IRON AND COMPLY WITH EUROPEAN STANDARD BS EN 124. THOSE SIGHTED IN ACCESSWAYS AND MEWS COURTS MUST BE SUITABLE FOR USE IN PEDESTRIAN AREAS.

RISK ASSESSMENT SIGNIFICANT RISKS THAT CANNOT BE DESIGNED OUT	LEVEL OF RISK (M/M)	SUGGESTED ACTION
DEEP EXCAVATIONS ASSOCIATED WITH NEW DRAINAGE WORKS	HIGH	ENSURE ALL EXCAVATIONS HAVE ADEQUATE TRENCH SUPPORTS
HANDLING LARGE DIAMETER MANHOLE RINGS AND CIRCULAR PIPES	HIGH	USE CORRECT LIFTING EQUIPMENT AND ENSURE OPERATIVES WEAR APPROPRIATE PROTECTIVE CLOTHING/HARD HATS/SOCCER PPE
CONTACT WITH SEWAGE	MED	OPERATIVES TO USE CORRECT BREATHING EQUIPMENT/CORRECT PPE
NOISE	MED	OPERATIVES TO USE CORRECT EAR PROTECTION/CORRECT PPE
DRAINAGE EXCAVATIONS ADJACENT EXISTING BOUNDARY STRUCTURES	HIGH	ENSURE CORRECT USE OF TRENCH SUPPORTS IN EXCAVATION AND BUILDINGS WHERE REQUIRED
DRAINAGE EXCAVATION IN PUBLIC HIGHWAY	HIGH	ENSURE CORRECT USE OF TRENCH SUPPORTS TO PROTECT MEMBERS OF THE PUBLIC
MAINTAIN ACCESS TO ADJACENT PROPERTIES AND OCCUPIERS	HIGH	ENSURE WORKS ARE PROTECTED WITH BARRIERS AND SIGNS TO GUIDE THE PUBLIC AWAY FROM THE WORKS
DRAINAGE EXCAVATIONS NEAR TO EXISTING SERVICES	HIGH	ENSURE WORKS ARE PROTECTED WITH BARRIERS AND SIGNS TO GUIDE MEMBERS OF THE PUBLIC AWAY FROM THE AREA
WORKING IN CONFINED SPACES: WORKING IN DRAINS AND MANHOLES	HIGH	CONFINED SPACES WORKING TRAINED PERSONNEL ONLY TO CARRY OUT WORKS UNDER A PERMIT TO WORK SCHEME. IMPLEMENTED BY CONTRACTOR GAS TESTING TO TAKE PLACE BEFORE ALL ENTRIES TO CONFINED SPACES
WORKING IN HIGHWAYS / RISKS FROM VEHICLE AND PLANT	HIGH	ALL WORKS TO BE SIGNED AND FENCED FROM NORMAL VEHICULAR TRAFFIC. ALL WORKERS TO WEAR HIGH VISIBILITY CLOTHING. ALL PLANT TO HAVE VISUAL AND AURAL WARNING SYSTEMS
ROAD AND DRAINAGE CONSTRUCTION	HIGH	ALL EXCAVATIONS TO BE ADEQUATELY FENCED OFF AND SUPPORTED DURING CONSTRUCTION. ALL OPERATIVES TO BE TRAINED IN CORRECT METHODS OF LIFTING AND WORK IN ACCORDANCE WITH LOLER REGS.

IT IS ASSUMED THAT WORKS ASSOCIATED WITH THIS DESIGN WILL BE UNDERTAKEN BY A PERSON OR PERSONS WHO ARE COMPETENT AND HAVE THE REQUIRED LEVEL OF EXPERIENCE AND EXPERTISE

Rev	Description	Date	Initials
B	Culvert size amended to 450 Dia. Sewer design amended to suit amended culvert size.	16.01.23	JF
A	Culvert size increased. Sewer design amended to avoid clash. Ramp added to Road 6 to suit Highway comments.	18.11.22	JM

Haigh Huddleston & Associates
Civil Structural Engineering Consultants

Firth Buildings, 99 - 101 Leeds Rd, Dewsbury, WF12 7BU t 01924 464342 f 01924 450662
e martin@haighhuddleston.co.uk

Client
YORKSHIRE COUNTRY PROPERTIES

Project
ABBEY ROAD, SHERLEY

Detail
**ROAD AND SEWER LONG-SECTIONS
ROADS 4 - 6**

Dwg No. E17/7465/505_03B

Date MAR'2022

Scale 1/500 @A1

Dwg No. JM MH