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RETAINING WALL TO BE DESIGNED BY A STRUCTURAL ENGINEER DUE TO PROXIMITY OF ROAD & LEVEL DIFFERENCE ADJACENT TO BOUNDARY.

FFL OF EXISTING No.76 TO BE CONFIRMED TO CHECK RELATIONSHIP OF PLOT 1 AND ANY EXTERNAL WORKS REQUIREMENTS

IN ACCORDANCE WITH THE FRA - FINISHED FLOOR LEVELS TO BE A MINIMUM OF 48.82m AOD - HOWEVER THIS IS CURRENTLY BEING REVISED DUE TO THE CORRECTION IN THE FLOOD MAP. THEREFORE PROPOSED FINISHED FLOOR LEVELS ARE SET AT 600mm ABOVE EXISTING GROUND LEVELS TO PROVIDED FREEBOARD

Possible location of Pole mounted Transformer to serve the development

EXISTING CANAL - WIL 47.81m

EXG.7202
CL 47.25 (from Topo Survey)
IL 45.76 (from Sewer Records)

Exg.FWS
CL 47.49 (from Topo Survey)
IL 46.37 (from drainage survey)

Exg.2150 FW Connection

MANHOLE REQUIREMENTS FOR SEWERS FOR ADOPTION 6TH EDITION - ADOPTIONS & DIVERSIONS

GENERAL REQUIREMENTS.

COPIES OF DELIVERY NOTES FOR CONCRETE AND PIPE BEDDING WILL BE REQUIRED INTERMITTENTLY AS THE JOB PROGRESSES. ALL OTHER COMPONENT UNITS MUST BE KITE-MARKED.

CHANNELS AND BENCHING.

ALL CHAMBERS WITH PIPE SIZES 150MM, 225MM, 300MM MUST HAVE SWEPT BENDS AND CHANNELS. ALL BENCHING TO BE A *MINIMUM 40MM THICK* GRANOLITHIC CONCRETE *TROWELLED TO A SMOOTH FINISH*.

IRONWORK IN MANHOLES.

IF THE CHAMBER IS LESS THAN 3M DEEP WE REQUIRE DOUBLE ENCAPSULATED STEP RUNGS UNLESS OTHERWISE APPROVED. IF THE CHAMBER IS OVER 3M DEEP WE REQUIRE *HOT DIPPED GALVANISED MILD STEEL LADDERS* . THERE MUST BE 900MM BETWEEN LADDER AND BACK OF SHAFT. DEPTH IS MEASURED FROM FINISHED COVER LEVEL TO THE TOP OF THE BENCHING. THE MAXIMUM DISTANCE BETWEEN COVER LEVEL AND THE FIRST STEP MUST BE 675MM.

BRICKWORK

MIN 2 MAX 4 COURSES UNDER FRAME AND MUST BE SOLID CLASS B ENGINEERING BRICKS OR CONCRETE SPACING RINGS NEATLY POINTED UP. ENGLISH BOND TO BE USED ON ALL BRICKWORK. SULPHATE RESISTING CEMENT MUST BE USED IN ALL LOCATIONS.

COVER AND FRAMES.

COVER SLAB OPENING, COVER AND FRAMES MUST BE 675 X 675 *UNLESS OTHERWISE APPROVED*. DN400 SHALL BE USED AT ALL LOCATIONS. ON SPINE ROADS MUST BE 150MM DEEP. ON RESIDENTIAL CUL-DE-SACS 100MM MAY BE USED SUBJECT TO APPROVAL. FRAMES FOR MANHOLE COVERS SHOULD BE BEDDED IN A POLYESTER RESIN BEDDING MORTAR IN ALL SITUATIONS WHERE COVERS ARE SITED IN NRSWA ROAD CATEGORIES I, II OR III.

'INFILL' TYPE COVERS SHOULD NOT BE USED.

IN BLOCK PAVED AREAS 150MM DEEP FRAMES MUST BE USED (IN ACCORDANCE WITH CL 2.8.6 SFA6 P.25)

LATERALS

THEY SHOULD BE LAID TO THE SAME STANDARD AS PUBLIC SEWERS. THEY SHOULD HAVE NO CHANGES OF LINE OR GRADIENT BETWEEN THE SE WER AND THE DEMARCATION CHAMBER. THEY SHOULD HAVE AN ADOPTABLE MANHOLE AS THE DEMARCATION CHAMBER UNLESS THERE IS ONLY ON PROPERTY WHEN A PLASTIC CHAMBER TO BS7158 IS ALLOWED. LOCKABLE B125 AND A15 COVERS MAY BE ALLOWED IN CERTAIN LOCATIONS SUBJECT TO APPROVAL. THE DEMARCATION SHOULD BE INSIDE THE BOUNDARY OF THE PROPERTY, NO MORE THAN 1M INSIDE THE BOUNDARY, PREFERABLY IN THE DRIVEWAY AND NOT IN THE WHEEL TRACKS OF VEHICLES.

GENERAL NOTES

1. LEVELS INDICATED IN BLOCKS ARE FINISHED FLOOR LEVELS WHICH ARE GENERALLY 150MM ABOVE GROUND LEVEL.
2. ROADS FOOTPATHS AND PARKING BAYS WHICH FORM PART OF THE HIGHWAY TO BE ADOPTED UNDER SECTION 38 OF THE HIGHWAYS ACT 1980 SHALL COMPLY WITH THE RELEVANT COUNCIL HIGHWAY SPECIFICATION.
3. SEWERS TO BE ADOPTED UNDER SECTION 104 OF THE WATER INDUSTRIES ACT 1991 SHALL COMPLY WITH THE WATER AUTHORITIES ASSOCIATION "SEWERS FOR ADOPTION 6TH EDITION AND COMBINED ADDENDUM".
4. ALL PIPES TO BE USED IN ADOPTABLE SEWERS SHALL BE EITHER CLAYWARE TO BS EN 295-1:1991 AND BS 65:1991 (surface water pipes only), CONCRETE TO BS 5911-1:2002 OR UNPLASTICISED PVC PIPES TO BS 4660/ BS EN1401-1:1998 WITH CLASS S BEDDING UNLESS OTHERWISE STATED. THE MINIMUM REQUIREMENT FOR PIPES TO BE USED IN ADOPTABLE SEWERS IS TO BE AS FOLLOWS:
   - 4.1. 150MM DIA - CLASS 187 - MIN CRUSHING STRENGTH 28KN/M
     225MM DIA - CLASS 120 - MIN CRUSHING STRENGTH 28KN/M
     300MM DIA - CLASS 120 - MIN CRUSHING STRENGTH 36KN/M
   - 4.2. LARGER THAN 300MM DIA - HIGH STRENGTH CONCRETE. WHERE COVER TO PIPES IS LESS THAN 1200MM UNDER CARRIAGEWAY OR VEHICULAR ACCESS AREAS THEY SHALL BE SURROUNDED WITH 150MM GRADE C20 CONCRETE, FLEXIBILITY OF JOINTS BEING MAINTAINED BY USING COMPRESSIBLE FIBREBOARD AT INTERVALS NOT EXCEEDING 5M.
5. ALL EXISTING DRAINAGE INVERT LEVELS, DIAMETERS AND LOCATIONS ARE TO BE CHECKED BY THE CONTRACTOR PRIOR TO THE COMMENCEMENT OF ANY PROPOSED DRAINAGE WORK. ANY DIFFERENCE BETWEEN ACTUAL AND DRAWN DETAILS IS TO REPORTED IMMEDIATELY.
6. POSITIONS OF EXISTING SERVICES/STAUTORY UNDERTAKERS APPARATUS ADJACENT TO OR CROSSING PROPOSED SEWERS IS TO BE CHECKED BY THE CONTRACTOR PRIOR TO STARTING WORK.

MINIMUM DIMENSIONS FOR MANHOLES

Type	Size of largest pipe (DN)	Min internal dimensions* Rectangular length and width	Circular diameter	Min clear opening size* Rectangular length and width	Circular diameter
Manhole < 1.5m deep to soffit	≤ 150 225 300 >300	750 x 675 ¹ 1200 x 675 1200 x 750 1800 x (DN+450)	1000 ¹ 1200 1200 The larger of 1800 or (DN+450)	750 x 675 ¹ 1200 x 675 ²	na³
> 1.5m deep to soffit	≤ 225 300 375-450 >450	1200 x 1000 1200 x 1075 1350 x 1225 1800 x (DN+775)	1200 1200 1200 The larger of 1800 or (DN+775)	675 x 675	600
Manhole shaft * > 3.0m deep to soffit of pipe	Steps¹ Ladder²	1050 x 800 1200 x 800	1050 1200	675 x 675 WMS	600 WMS
	WMS	900 x 800	900	675 x 675	600

Notes:
1) Larger sizes may be required for manholes on bends or where there are junctions.
2) May be reduced to 600 by 600 where required by highway loading considerations, subject to a safe system of work being specified.
3) Minimum size of chamber is shaft size.
4) Minimum height of chamber in shafted manhole 2m from benching to underside of reducing slab.
5) Min clear space between ladders or steps and the opposite face of the shaft should be approximately 900mm.
6) Winch only - no steps or ladders, permanent or removable
7) The minimum size of any manhole serving a sewer (i.e any drain serving more than one property) should be 1200 mm x 675 mm rectangular or 1200 mm diameter

The Contractor is to check and verify all building and site dimensions, levels and sewer invert levels at connection points before work starts. The Contractor is to comply in all respects with current Building Legislation, British Standard Specifications , Building Regulations, Construction (Design & Management) Regulations, Party Wall Act, etc. whether or not specifically stated on this drawing. This drawing must be read with and checked against any structural, geotechnical or other specialist documentation provided. This drawing is not intended to show details of foundations, ground conditions or ground contaminants. Each area of ground relied upon to support any structure depicted (including drainage) must be investigated by the Contractor. A suitable method of foundation should be provided allowing for existing ground conditions. Any suspect or fluid ground, contaminates on or within the ground, should be further investigated by a suitable expert. Any earthwork constructions shown indicate typical slopes for guidance only & should be further investigated by a suitable expert. Where existing trees / structures are to be retained they should be subject to a full specialist inspection for safety. All trees are to be planted so as to ensure they are a minimum of 5 metres from buildings. A suitable method of foundation is to be provided to accommodate the proposed tree planting.
Residential & Commercial Engineering Limited do not accept any responsibility for any losses (financial or otherwise) to any Client or third party arising out of the Clients (be it Developer or Contractor but not limited thereto) non-compliance with afore mentioned provisos.

GENERAL CONSTRUCTION NOTES -
1. HIGHWAY INSPECTOR TO BE PRESENT DURING INSPECTIONS / CBR TESTING.
2. ALL TACTILE PAVING CROSSING POINTS ARE TO BE AGREED ONSITE WITH HIGHWAYS CLERK OF WORKS. SHOULD THEY VARY FROM THE POSITIONS SHOWN ON THE DETAILED DESIGN PLANS.
3. ALL EXISTING DRAINAGE INVERT LEVELS, & POSITIONS, TO BE CONFIRMED BY CONTRACTOR PRIOR TO ANY WORKS BEING UNDERTAKEN ONSITE.
4. ALL LEVELS, HIGHWAYS & DRAINAGE DETAILS SUBJECT TO CHANGE FOLLOWING FINAL TECHNICAL APPROVAL VIA RELEVANT APPROVING AUTHORITIES.
5. BUILDING DRAINAGE SHALL COMPLY WITH BS8301 1985 & THE BUILDING REGULATIONS 1985 PART H.
6. ALL BUILDING DRAINAGE SHALL BE 100MM DIAMETER UNLESS SHOWN OTHERWISE. ALL DRAINAGE SERVING 10 OR MORE PLOTS SHALL BE 150MM DIAMETER IN ACCORDANCE WITH SEWERS FOR ADOPTION.
7. ALL MANHOLES , BE THEY PRIVATE OR ADOPTABLE PRIOR TO ENTERING A SIGN/AWAY ARE TO BE PROVIDED AS A CATCHPIT WITH A MINIMUM 500mm SUMP TO COLLECT SILK AND DELETERIOUS MATERIAL.
8. CONCRETE PROTECTION SHALL BE PROVIDED TO ALL UPVC PIPES WITH LESS THAN 600MM COVER & TO CLAY PIPES WITH LESS THAN 300MM COVER WITHIN NON ADOPTED AREAS.
9. WHERE A PIPE PASSES THROUGH A WALL AN OPENING IS TO BE PROVIDED AT LEAST 150MM LARGER THAN THE PIPE DIAMETER. MORTAR AROUND THE PIPE BRICKWORK OVER SHALL BE SUPPORTED BY A LINTEL. A ROCKER PIPE OF MAXIMUM 600MM LENGTH SHALL BE USED TO CONTINUE THE PIPEWORK.
10. WHERE A PIPE TRENCH IS WITHIN 1M OF A BUILDING IT IS TO BE FILLED WITH CONCRETE TO A LEVEL EQUAL TO THE BUILDING EQUAL TO THE DISTANCE FROM THE BUILDING LESS 150MM.
11. WHERE THE FORMATION OF A PIPE TRENCH IS ABOVE ORIGINAL GROUND LEVEL, LEVELS ARE TO BE MADE UP WITH WELL COMPACTED DTP TYPE 2 MATERIAL OR BETTER.
12. WHERE A DRIVEWAY FALLS TOWARDS A DWELLING, IT SHALL BE PROVIDE WITH A SUITABLE GULLY OR DRAINAGE CHANNEL TO PREVENT WATER DAMAGING THE BUILDING.
13. ALL RETAINING WALLS ABOVE 600MM TO HAVE SUITABLE FALL PROTECTION MEASURES AT THE HIGHER LEVEL.
14. ALL ADOPTABLE PIPEWORK FOR HIGHWAY DRAINS TO BE MINIMUM CLASS M TO BS5911 OR CLASS 120 CLAY OR 28 KN/M CRUSHING STRENGTH IF 150MM DIAMETER TO BS EN 295-1 AND LAID ON CLASS S GRANULAR BED UNLESS SHOWN OTHERWISE.
15. MANHOLES COVERS AND GULLEY GRATES TO BE ADOPTED SHALL BE KITE MARKED AND TO BS EN124, CLASS D400.
16. ALL CONNECTIONS TO SEWERAGE UNDERNEATH HIGHWAYS MUST BE MADE VIA FACTORY MADE JUNCTIONS.
17. ALL DRAINAGE UNDER PROPOSED ADOPTABLE ROADS MUST BE BACKFILLED WITH AN APPROVED GRADED GRANULAR MATERIAL.
18. ALL DRAINAGE MATERIALS MARKED WITH (*) TO BE AGREED WITH THE LOCAL AUTHORITY PRIOR TO ANY WORKS PRIOR TO ANY CHANGES TO THE MATERIAL PALETTE SPECIFIED.
19. POLISHED STONE VALUES, AGGREGATE SIZES, AGGREGATE ABRASION VALUES AND PENETRATION VALUES OF ALL SURFACE COURSE MATERIALS MUST BE CHECKED WITH HIGHWAY AUTHORITY AND COMPLY WITH ALL CODES OF PRACTICE PRIOR TO ORDERING AND LAYING OF MATERIAL.
20. A SCREEN IS TO BE FITTED OVER THE OUTGOING PIPE TO THE LAST MANHOLE BEFORE THE FINAL MANHOLE IS BUILT ENTERING THE ESHKAM SEWERS IN ACCORDANCE WITH SEWERS FOR ADOPTION 6TH EDITION. THE SCREEN SHALL ONLY BE REMOVED ONCE ON-SITE CONSTRUCTION WORKS HAVE BEEN COMPLETED.
21. CONTRACTOR SHALL PRIOR TO STARTING ANY WORKS; CONTACT THE RELEVANT STATUTORY UNDERTAKERS AND HAVE THE LOCATION OF THEIR APPARATUS MARKED ON SITE. BE AWARE THAT UNRECORDED PRIVATE AND STATUTORY UNDERTAKERS APPARATUS MAY ALSO EXIST WITHIN THE SITE AND THE CONTRACTOR SHALL EXERCISE DUE CAUTION WHEN CARRYING OUT ANY EXCAVATION. IF SERVICES ARE ENCOUNTERED ON SITE THE ENGINEER IS TO BE CONTACTED IMMEDIATELY.

Rev	Description	Date	Drawn	Check
A	Plots 1 & 2 driveway levels adjusted & drainage sumps relocated.	18.09.17	SM	#

Revisions:

Lioncourt Homes

RACE
RESIDENTIAL & COMMERCIAL ENGINEERING

Drawing Status:
Subject to the following approvals:
S111 - Subject to Technical Approval from Staffordshire CC Highways
S104 - Subject to Technical Approval from Severn Trent Water
S106 - Developer to complete application/approval with STW.
Consent to Discharge - Developer to complete application/approval with SCC Land Drainage Team

Client:
LIONCOURT HOMES

Project:
TATENHILL LANE, BRANSTON

Title:
EXTERNAL WORKS LAYOUT
(Sheet 1 of 3)

Job Number.
RACE/LCH/TLB
Drawing No.
ENG_111
Revision. A

Scale: 1:250 @ A1
Date: JUNE ' 17
Drawn by: SM
Checked by: GJ

EXTERNAL WORKS KEY

- 79.29 — BACK OF FOOTPATH LEVEL
- 79.29 — PROPOSED LEVEL
- EXPOSED BRICKWORK, *INCLUDING* STANDARD 2 COURSES BELOW 150MM DPC
- TANKING + HEIGHT
- 150mm Max RS — RETAINING STRUCTURE + RETAINED HEIGHT
- 1:12 — PROPOSED GRADIENT
- steps — STEPS AND NO. (280MM TREAD, 150MM RISE)
- BANKING. (MAX SLOPE 1:3)

PLEASER REFER TO DRG.No. ENG_100 (ENGINEERING LAYOUT) FOR ALL ENGINEERING NOTES & KEY TO SYMBOLS

PRELIMINARY
SUBJECT TO CLIENT & TECHNICAL APPROVALS

ALL SEWERS IN ACCORDANCE WITH SEWER FOR ADOPTION 6TH EDITION & BUILDING REGULATIONS

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