

**BELOW GROUND DRAINAGE SPECIFICATION**

PIPEWORK SHALL BE DESIGNED AND INSTALLED IN THE POSITIONS AND TO THE SIZES INDICATED ON THE DRAWINGS IN STRAIGHT LINES AND EVEN GRADIENTS IN ACCORDANCE WITH THE RECOMMENDATIONS OF BS EN 752-1,2,3 & 4 CODE OF PRACTICE FOR DRAIN AND SEWER SYSTEMS, AND BUILDING REGULATIONS 2000 APPROVED DOCUMENT H AND TO THE SATISFACTION OF THE LOCAL AUTHORITY BUILDING CONTROL INSPECTOR.

CAST IRON PIPEWORK AND FITTINGS, FOR USE ON FOUL DRAINAGE SYSTEMS BELOW GROUND, SHALL BE MANUFACTURED IN SOCKETLESS CAST IRON WHICH FULLY COMPLIES WITH THE REQUIREMENTS OF PRODUCT STANDARD BS 437 WITH EPDM GASKETS TO BS EN 681/ISO 4633 AND DUCTILE IRON COUPLINGS, INCORPORATING EARTH CONTINUITY CLIPS AS MANUFACTURED BY SAINT-GOBAIN PIPELINES FROM THEIR 'TIMESAVER' RANGE.

TRENCHES SHALL BE EXCAVATED TO SUFFICIENT DEPTH TO ALLOW A MINIMUM 150MM BED BELOW THE UNDERSIDE OF THE PIPE AND TO A WIDTH NOT LESS THAN THE OUTER DIAMETER OF THE PIPE PLUS 300MM. THE BOTTOM OF THE TRENCH SHALL BE SUCH THAT EVEN SUPPORT IS GIVEN TO THE DRAIN FOR ITS FULL LENGTH.

THE BOTTOM OF THE TRENCH SHALL BE PREPARED WITH A BED OF CONCRETE TO 20KNM<sup>2</sup> CUBE STRENGTH. THE BED SHALL BE COMPACTED, TO A FULL 150MM IN DEPTH AND SHALL BE TRUE TO THE GRADIENT AT WHICH THE PIPE IS TO BE LAID USING VERTICAL SHUTTERING OR THE TRENCH SIDES TO ACHIEVE THE REQUIRED WIDTH. WHEN SET, PIPES SHALL BE INSTALLED ON THE CONCRETE BED SUPPORTED ON FOLDING TIMBER WEDGES. SUPPORT WITH BRICKWORK OR SIMILAR BUILDING MATERIAL WILL NOT BE PERMITTED.

AFTER THE LINE OF DRAIN HAS BEEN LAID SATISFACTORILY, ALL JOINTS SHALL BE TESTED FOR WATER TIGHTNESS, PRIOR TO HAUNCHING. AFTER TESTING TO THE SATISFACTION OF THE APPROVING AUTHORITY FURTHER CONCRETE SHALL BE COMPACTED EQUALLY AROUND FROM THE CROWN OF THE PIPE TO THE WIDTH OF THE BED AT AN ANGLE OF 45°. TEMPORARY SUPPORTS PROVIDE TO ACHIEVE THE REQUIRED GRADIENTS SHALL BE REMOVED PRIOR TO THE HAUNCHING OF THE PIPEWORK AND WHERE NECESSARY MAY BE CARRIED OUT IN STAGES. AT LEAST 24 HOURS SHALL EXPIRE WHERE HAUNCHING IS CARRIED OUT IN STAGES BEFORE TEMPORARY SUPPORTS ARE REMOVED TO ALLOW THE CONCRETE TO SET.

AFTER TESTING, THE REMAINDER OF THE TRENCH SHALL BE BACKFILLED WITH CONCRETE TO 20KNM<sup>2</sup> CUBE STRENGTH UP TO THE LEVEL OF THE EXISTING FLOOR SLAB. REBAR HANGERS SHALL BE INSTALLED WITHIN THE BEDDING MATERIAL SECURED TO THE REINFORCEMENT OF THE CONCRETE FLOOR SLAB.

**MANHOLE CONSTRUCTION**

ACCESS TO THE DRAINAGE SYSTEM SHALL BE PROVIDED BY MEANS OF MANHOLES AT JUNCTIONS AND CHANGES OF DIRECTION IN ACCORDANCE WITH BS EN 752-1,2 & 3 FOR DRAINS AND SEWER SYSTEMS AND BUILDING REGULATIONS 2000 APPROVED DOCUMENT H, AND SHALL BE CONSTRUCTED TO THE SIZES AND IN THE POSITIONS SHOWN ON THE DRAWINGS FOR THE CONTRACT WORKS.

WHERE MANHOLES ARE REQUIRED INTERNALLY, THEY SHALL BE CONSTRUCTED FROM CLASS 'B' ENGINEERING BRICKS IN ENGLISH BOND, TO A MINIMUM WALL THICKNESS OF 200MM. THE BRICKWORK SHALL BE SET OUT SO THAT THE REQUIRED BOND IS ACHIEVED WITH THE MINIMUM OF CUT BRICKS. BASE SLABS SHALL BE CONSTRUCTED FROM IN-SITU REINFORCED CONCRETE IN ACCORDANCE WITH THE STRUCTURAL ENGINEER'S FULL REINFORCING DETAILS AND CONCRETE SPECIFICATION.

MANHOLE COVERS SHALL BE SUPPLIED, TO A SIZE EQUAL TO THE MANHOLE DIMENSIONS, FIXED IN THE POSITIONS SHOWN, WITH FRAMES SOLIDLY BEDDED SO THAT THE COVERS WHEN IN POSITION ARE FAIR AND EVEN WITH THE ADJACENT SURFACES. REFERENCE SHALL BE MADE TO THE SCHEDULES ON THE DRAWINGS FOR SIZE, TYPE AND PERFORMANCE OF THE COVERS REQUIRED.

**SANITARY PLUMBING SPECIFICATION**

SOIL, WASTE AND VENTILATING PIPEWORK SHALL BE AIR TESTED TO A PRESSURE OF 38MM WATER GAUGE FOR 3 MINUTES IN ACCORDANCE WITH BS EN12056-2 AND BUILDING REGULATIONS PART H1. ANY DEFECTS WHICH BECOME APPARENT DURING THE TESTS SHALL BE RECTIFIED AT THE SUB-CONTRACTOR'S EXPENSE AND THE PARTS RE-TESTED TO THE SATISFACTION OF THE ENGINEER AND THE LOCAL AUTHORITY OFFICER WHERE APPLICABLE.

IF CALLED FOR BY THE ENGINEER, DISCHARGE TESTS WILL BE CARRIED OUT IN ACCORDANCE WITH BS EN10256-2 TO DETERMINE THE SYSTEM IS ADEQUATELY VENTILATED AND THAT WATER SEALS TO TRAPS ARE SUITABLE.

FOUL AND SURFACE WATER DRAINAGE

THE BELOW GROUND DRAINAGE SHALL BE TESTED FOR WATER TIGHTNESS EITHER BY AIR OR WATER IN ACCORDANCE WITH BS EN 752 AND BUILDING REGULATIONS PART H1. FOR A WATER TEST THE SYSTEM SHALL BE FILLED WITH WATER UP TO A DEPTH OF 5M ABOVE THE LOWEST INVERT IN THE TEST SECTION AND A MINIMUM DEPTH OF 1M MEASURED AT THE HIGHEST INVERT OF THE TEST SECTION. THIS FILLED SECTION SHALL BE LEFT FOR 60 MINUTES TO CONDITION THE PIPE. THE TEST PRESSURE SHALL THEN BE MAINTAINED FOR A PERIOD OF 30 MINUTES, BY TOPPING UP THE WATER LEVEL AS NECESSARY SO THAT IT IS WITHIN 100MM OF THE REQUIRED LEVEL THROUGHOUT THE TEST. THE LOSSES PER SQUARE METRE OF SURFACE AREA SHALL NOT EXCEED 0.15 LITRES FOR TEST LENGTHS WITH ONLY PIPELINES AND 0.20 LITRES FOR TEST LENGTHS INCLUDING PIPELINES AND MANHOLES.

**EXTERNAL SOIL & RAINWATER PIPEWORK**

SHALL BE CONSTRUCTED FROM BS416 CAST IRON FITTINGS & PIPEWORK, EAARED WITH SPIGOT & SOCKET JOINTS CAULKED WITH JUTE & MASTIC AS MANUFACTURED BY HARGREAVES FOUNDRY LTD.

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BRACKETS SHALL BE MANUFACTURER'S PROPRIETARY GALVANISED MILD STEEL (NOT PLASTIC), WHERE MASONRY FIXINGS ARE NOT POSSIBLE AND/OR PARTITIONS OR PIPE DUCTS ARE CONSTRUCTED FROM PLASTER BOARD, UNISTRUT OR SIMILAR INDEPENDENT PRIMARY SUPPORT SYSTEMS SHALL BE PROVIDED TO PROVIDE A SECURE FIXING FREE FROM THE STRUCTURE.

ALL PIPEWORK PASSING THROUGH FLOORS AND ANY FIRE COMPARTMENT WALLS, SHALL BE FITTED WITH A POLYPIPE TERRAIN FIRE TRAP INTUMESCENT SLEEVE BUILT IN TO BE LEVEL WITH THE FLOOR FINISH AND SOFFIT BELOW, OR FINISHED FACES OF WALLS, WITHOUT ANY ANNULAR GAP. THE SLEEVES SHALL BE FITTED AS THE PIPE IS INSTALLED. NO OTHER ALTERNATIVE SHALL BE ACCEPTED. FOR OTHER SITUATIONS A SLEEVE OF THE SAME MATERIAL AS THE PIPE, ONE SIZE UP, SHALL BE PROVIDED AS A SLEEVE TO ALLOW THERMAL MOVEMENT.

CONNECTIONS TO BS437 CAST IRON DRAIN TO BE MADE USING 'TIMESAVER' TD02 MECHANICAL COUPLING.

SECTIONS OF PIPEWORK WITHIN SERVICES VOIDS AND DUCTS SHALL BE ENCAPSULATED WITH 'KARMAWALL' ACOUSTIC PIPE WRAP.

**3.3.3 INSPECTION, TESTING & COMMISSIONING**

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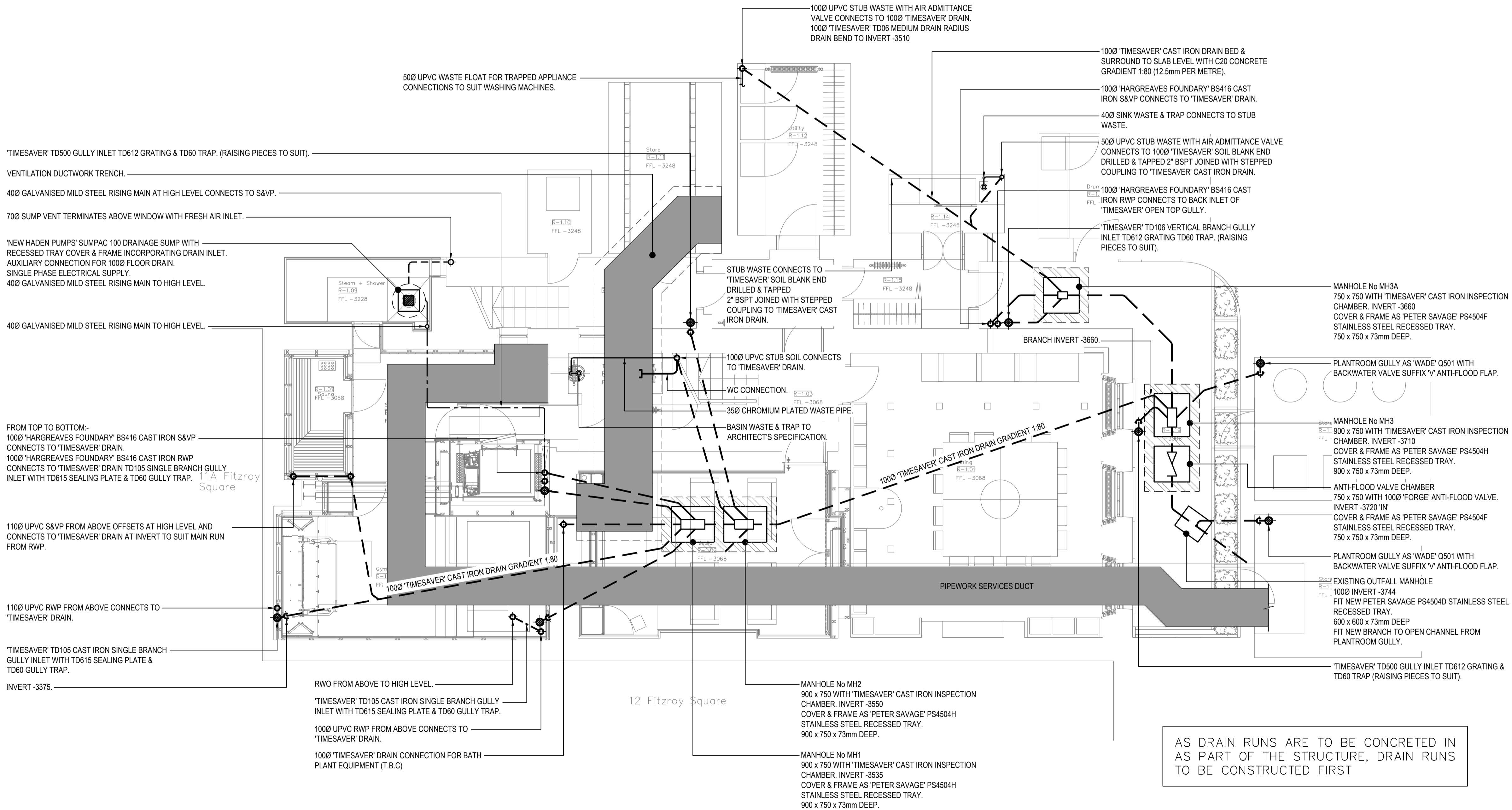
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**EXTERNAL SOIL & RAINWATER PIPEWORK**

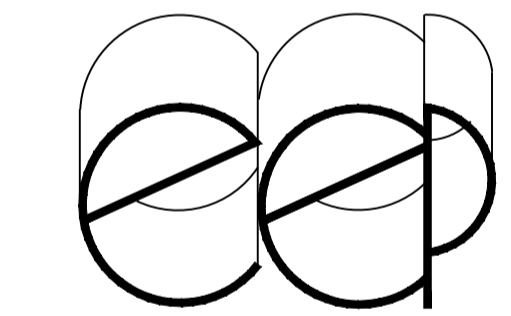
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NOTES		
1.	THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE SPECIFICATION FOR PUBLIC HEALTH SERVICES INSTALLATION AND ALL ASSOCIATED PUBLIC HEALTH DRAWINGS LISTED THEREIN.	
2.	ALL PUBLIC HEALTH SERVICES DRAWINGS SHALL BE READ IN CONJUNCTION WITH ALL ASSOCIATED ARCHITECTURAL, STRUCTURAL, MECHANICAL AND ELECTRICAL SERVICES DRAWINGS.	
3.	THE CONTRACTOR SHALL CHECK AND VERIFY ALL DIMENSIONS ON SITE PRIOR TO COMMENCING CONSTRUCTION.	

REV.	DATE	DESCRIPTION
P1	AUG 14	FOR PLANNING



**ENVIRONMENTAL ENGINEERING PARTNERSHIP**  
CONSULTING ENGINEERS

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CLIENT	RICHARD & JUDITH GREER	
PROJECT	11 FITZROY SQUARE LONDON	
TITLE	LOWER GROUND FLOOR SOIL, WASTE, VENTILATING & RAINWATER DRAINAGE ABOVE & BELOW GROUND	
DRAWN	M.S.	SCALE 1:50@A1
CHECKED	R.D.	DATE APRIL 2013
DRAWING No.	3128/PH/01	REVISION P1