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ADDRESS:

Little Manor, Barnet Lane, Elstree
WD6 3QU

CONFIDENTIALITY STATEMENT:
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3. THE CONTRACTOR MUST CHECK ALL
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4. THE CONTRACTOR IS RESPONSIBLE FOR
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SUPPORT TO THE BUILDING AND ANY ADJACENT
STRUCTURES.

REV. NO.	DESCRIPTION	DATE	BY

PROJECT:
Multi Floor House

TITLE:
**ELECTRICAL GENERAL
NOTE**

PROJ. NO.	PROJ. ENGR.	SCALE @ 24X36: N/A
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DATE :
August 28, 2026

DRAWING NO.	REV.
E - 0	

GENERAL SPECIFICATIONS

- GENERAL:
 - WORK INDICATED: Drawings are diagrammatic – do not scale for precise locations. Verify all existing site conditions; make adjustments as needed.
 - FURNISHING WORK: Provide all labour, materials, tools, plant, equipment, and services necessary for complete execution in accordance with the Contract at no additional cost to the Employer. Includes all incidental items for a compliant, complete installation.
 - COMPLETION & TESTING: All equipment shall be commissioned, tested, and handed over operational to the Employer's satisfaction. "Provide" means supply, install, commission, and make ready for use.
 - MATERIALS & EQUIPMENT: All materials/equipment shall be new, CE/UKCA marked (as required), and compliant with UKCA Regulations 2023. Compatible with existing interfaces. Install per manufacturer's instructions and BS/BSIA standards.
 - EXISTING OBSTRUCTIONS: Remove/relocate conflicting existing services to the Contract Administrator's satisfaction at no cost to the Employer.
 - PENETRATIONS & MAKING GOOD: Written Employer approval required before cutting structural elements or fire compartments. Make good all disturbed areas to match existing. Fire compartment penetrations must use certified systems (tested to BS 476-20/22 or BS EN 1366) and maintain fire resistance (Approved Document B, 2023 amendments).
 - SITE CLEANLINESS: Daily clearance of waste/debris. At Practical Completion, remove all plant/materials, leave site clean and ready for occupation (CDM 2015, Regulation 36).
- COORDINATION AND SCHEDULING (CDM 2015 COMPLIANT):
 - COORDINATION: Principal Contractor shall coordinate all trades, verify site conditions, and prevent spatial/scheduling conflicts.
 - STAKEHOLDER COORDINATION: Coordinate with Subcontractors, suppliers, Statutory Undertakers, Building Safety Regulator (BSR) / Approved Inspector, Clerk of Works, Principal Designer, Contract Administrator, and Employer.
 - FIELD VERIFICATION: No work starts until site dimensions (structure, retained services/furniture) are verified.
 - MINIMISING DISTURBANCE: Phase work to minimise disruption in occupied areas. Submit Construction Phase Plan (CPP) and Programme for approval. Provide dust/impact protection (e.g., polythene, Heras screens) between zones.
 - UTILITY SHUTDOWNS: Notify Employer in writing 14 days prior. Written approval required before shutdown.
 - SITE EXAMINATION: Thoroughly examine site conditions. No claims for errors/omissions in site verification.
- COMPLIANCE, PERMITS AND INSPECTIONS (BUILDING SAFETY ACT 2022):
 - COMPLIANCE: Comply with:
 - Building Regulations 2010 (as amended, inc. 2023 Part B, L, F)
 - British Standards (BS, BS EN)
 - Construction Products Regulation (UKCA/CE)
 - Water Supply (Water Fittings) Regulations 1999
 - Gas Safety (Installation & Use) Regulations 1998
 - Electricity at Work Regulations 1989
 - Obtain/rev for all Building Control applications, permits, and inspections (BSR/Approved Inspector).
 - CERTIFICATION: Provide:
 - Building Regulations Completion Certificate
 - Commissioning Certificates (BSRIA BG/2021)
 - Electrical Installation Certificate (BS 7671:2022)
 - Gas Safe Certificates
 - Final Inspection Sign-off
 - Deliver to Employer at Practical Completion.
 - CURRENT STANDARDS: Use latest editions of standards applicable in the Local Authority/BSR jurisdiction.
 - PRECEDENCE: Contract Documents > Referenced Standards. Notify Contract Administrator immediately of conflicts.
 - HEALTH, SAFETY & ENVIRONMENT: Comply with:
 - CDM 2015 (Principal Contractor duties)
 - Health and Safety at Work Act 1974
 - COSHH 2002
 - Environmental Permitting (England & Wales) Regulations 2016
 - Site Waste Management Plans Regulations 2006
 - UTILITIES: Comply with DNO (electricity), GDMO (gas), and water supplier regulations.
- DEFECTS LIABILITY PERIOD (JCT STANDARD):
 - DEFECTS: Rectify defects in workmanship/materials arising within 12 months of Practical Completion at no cost to the Employer. Includes commissioning issues. Notify Contract Administrator within 7 days of discovery.
- PRE-CONSTRUCTION INFORMATION (CDM 2015):
 - SUBMISSIONS: Submit electronic Technical Submissions (shop drawings, calculations, O&M data, BIM LOD 300+ if applicable) for Contract Administrator/Principal Designer approval before ordering/installation. Include:
 - Declarations of Performance (UKCA)
 - Fire performance data (BS EN 13501)
 - Efficiency data (ErP/Energy Labelling)
- HEALTH AND SAFETY FILE & AS-BUILTS (CDM 2015):
 - AS-BUILT RECORDS: Maintain on-site red-line markups of drawings showing all changes. Deliver digital + hard copy including:
 - Final As-Built drawings (PDF & CAD)
 - Operation & Maintenance (O&M) Manuals
 - Commissioning records
 - Warranties/certifications
 - Asset Information (Uniclass 2015)
 - Form Part G of the Health and Safety File to Employer at Practical Completion.

BRANCH CIRCUITRY AND FEEDER

CABLE TYPES
ALL conductors: Copper to BS EN 13601:2024 (100% recycled content)
Above ground:
Twin & Earth (T&E) to BS 6004:2024 (Class Dca-stb.d1 fire rating)
Steel-Wire Armoured (SWA): Only for external feeds (BS 5467)
Non-metallic sheathed cables prohibited (Reg 522.8.10)

CONDUIT REQUIREMENTS

Location	Permitted System	Minimum Size
Internal walls	PVC-U conduit (BS EN 61386-21)	20mm (½")
Kitchens/bath	Galvanised steel (BS 4568:2024)	25mm (1")
External	Heavy-wall galvanised steel	25mm (1")
Underground	PVC-U (BS EN 61386-24)	32mm (1¼")

CIRCUIT PROTECTION

ALL final circuits: 30mA Type A RCD (Reg 411.3.3)
Critical circuits (bedrooms, living rooms):
AFDDs to BS EN 62606 (Reg 531.3.3)
EV Chargers: Dedicated RCBO (40A min) + Type B RCD

INSTALLATION RULES

Concealed wiring only in finished areas (No surface runs)
Min. depths:
Walls: ≥50mm from surface (Reg 522.6.204)
Floors: Under screed/joints (No contact with insulation)
Cable avoidance zones: ±150mm around ceilings/corners (Reg 522.6.202)

ELECTRICAL CODE NOTES

UK ELECTRICAL REGULATIONS COMPLIANCE NOTES
(BS 7671:2022 Amd 2, Building Regulations Part P, and British Standards)

SOCKET-OUTLETS (RECEPTACLES):
All new socket-outlets shall be shuttered type complying with BS 1363-2 (Regulation 553.1.7).

ARC FAULT PROTECTION:
Final circuits supplying 230V AC socket-outlets (≤ 32A) in habitable rooms (living rooms, bedrooms, dining rooms, studies, hallways, kitchens) shall be protected by:
AFDDs (Arc Fault Detection Devices) to BS EN 62606
Installed per Regulation 531.3.3 for high-risk locations.

EXTERIOR SOCKET-OUTLET ENCLOSURES:
Outdoor socket-outlets shall be housed in IP66-rated enclosures complying with BS EN 60670-22.

EXTERIOR SOCKET-OUTLETS:
All outdoor socket-outlets shall be:
Weatherproof (IP66) per BS EN 60529
Compliant with BS EN 60309-2 or BS 1363-2 with integral covers.

RCD PROTECTION:
Minimum breaking capacity: 16kA (up from 10kA for commercial sites per Reg 434.5.1)
Socket-outlets for:
Laundry/utility rooms (dishwashers, waste disposers)
Shall be protected by 30mA Type A RCDs (Regulation 411.3.3).

CUPBOARD LUMINAIRES:
Luminaires in storage cupboards shall be:
Totally enclosed (IP4X minimum)
Installed with ≥ 500mm clearance from storage areas (Regulation 559.5.1).

BATHROOM LUMINAIRES:
Luminaires above baths/showers shall be:
Rated for Zone 1/2 locations (IPX4 minimum)
Compliant with Section 701.55.2.

EARTHING ARRANGEMENT:
The installation shall utilise a foundation earth electrode (concrete-encased) per Regulation 542.2.1.4, supplemented by:
Main protective bonding to BS 951
Earth fault loop impedance compliance with Chapter 41.

MANDATORY CERTIFICATION & VERIFICATION
Initial Verification: Regulation 643.7 tests (insulation resistance, polarity, earth fault loop impedance).
Certification: Provide Electrical Installation Certificate (EIC) per Part 6.
Building Regulations: Part P Compliance Certificate for England/Wales.

MISCELLANEOUS ELECTRICAL

1. EARTHING & BONDING
(BS 7671:2022 Amd 2 Chapter 54, BS EN 62305-3:2024)
1.1 Equipment Bonding Conductors:
Size per Table 54.7 (e.g., 10mm² for ≤32A circuits)
Comply with Regulation 411.3.1.2 (automatic disconnection)
1.2 Device Earthing:
All accessories/switches to have CPC (Circuit Protective Conductor)
Regulation 411.3.1.1 compliance for exposed-conductive-parts
1.3 Main Earthing:
16mm² minimum for TN-C-S systems (Regulation 542.3)
Foundation electrode required per Regulation 542.2

2. FIRE PENETRATION SEALING
(Building Regs Part B 2023, BS EN 1366-4:2024, BS 7671:2022)
2.1 Fire Compartment Seals:
Use BS EN 1366-4 certified systems (EI 60/90/120 ratings)
Submit manufacturer's Third-Party Certification (UKCA/UK)
2.2 Temperature Transition Seals:
Apply non-setting compound (BS EN 60423-1:2024) for:
Cold storage penetrations
Internal-external transitions
Hygroscopic sealing putty for condensation control (e.g., Roxtec CMS)

3. VERIFICATION & TESTING
(BS 7671:2022 Amd 2 Part 6, BS EN 60364-6:2024)
3.1 Final Certification:
Complete Schedule of Inspections (Reg 641.1)
Pass mandatory tests:
≥100MΩ insulation resistance (Reg 643.3)
RCD trip ≤25ms (Reg 643.8)
Ze ≤0.35Ω for TN-C-S (Reg 643.7)

4. CONTAINMENT LABELING
(BS 7671:514.9, BS 1710:2024, Building Safety Act 2022)
4.1 Feeder Identification:
Laser-etched labels with:
Source DB
Load designation
Fault current rating
15mm letter height (was 3/4")
4.2 Junction Box Marking:
Machine-readable QR codes containing:
Circuit origin (e.g., "DB3/C5")
Installation date
Test certificate reference

SPECIFICATIONS

G. FUSES & PROTECTIVE DEVICES
(BS 7671:2022 Amd 2:2023 | BS 88-3:2024 | BS EN IEC 60269-1:2024)
Install fuses with BS 88-3:2024 compliance (enhanced DC fault ratings for solar/wind systems).
Labels must include:
Arc flash hazard warning (ISO 3864-2 symbols)
Carbon reduction data (per Building Regs Part Z consultation draft)
H. ISOLATION & CIRCUIT PROTECTION
(BS EN IEC 60947-3:2024 | BS EN 50618:2024 (DC systems))
Isolators:
1,500V DC rating required if PV/battery systems present
Padlock hasps: Must accommodate BS EN 1677-2:2024 safety locks
Interlocks: Dual mechanical/electronic where accessible to public
Compliant with BS EN 60309-2 or BS 1363-2 with integral covers.
Circuit Breakers:
Minimum breaking capacity: 16kA (up from 10kA for commercial sites per Reg 434.5.1)
Type F (Selective) breakers for critical circuits (hospitals/data centers)
Enclosures:
Location New Standard (2024)
Outdoor IP66 + IK10 impact rating
Kitchens Stainless 316L (BS EN 10088-3)
EV Charger Zones IP67 + UV stability certification
LIGHTING
(BS 7671:2022 Amd 2 §559 | BS EN IEC 60598-1:2024 | Part L 2023)
Recessed Fixtures:
Fire rating: EI 60 minimum where penetrating ceilings (BS EN 1385-2:2024)
Thermal management: Built-in temperature cut-offs (BS EN 62386-306)
Lamps:
Smart-ready drivers (BS EN IEC 62386-105:2024)
Circuit economy compliance: Lamps must be field-replaceable (Part L 2023)
J. EQUIPMENT LOCATION
(Building Safety Act 2022 Schedule 3)
Fire compartment boundaries:
No panels within 1.5m of compartment walls (BS 9999-1)
Digital twin coordinates required for high-risk +

WIRE & CABLE

FEEDERS:
Copper conductors only. Insulation: 90°C thermosetting (e.g., BS EN 50525-2-21 H07Z-R) or equivalent meeting BS 7671 Table 5.1. Minimum rating: 90°C.
COLOUR CODE:
All wiring UK harmonised colours (BS 7671 Table 51 / Fig 51B):
Single-Phase: Brown (L1), Blue (N), Green/Yellow (CPC).
Three-Phase: Brown (L1), Black (L2), Grey (L3), Blue (N), Green/Yellow (CPC).
Pre-2004 colours (e.g., Red/Black) prohibited.
CONDUCTORS:
All conductors: Copper. Minimum size:
1.5 mm² (lighting circuits).
2.5 mm² (general socket/radial circuits).
4.1 Feeder Identification:
(Note: 1.0 mm² permitted for lighting per BS 7671, but 1.5 mm² specified for robustness/voltage drop).)
CIRCUIT PROTECTIVE CONDUCTORS (CPC / EARTHING):
All final circuits: Include separate CPC. Minimum size:
1.5 mm² (if mechanically protected) / 2.5 mm² (standard practice) for circuits ≤ 32A with 2.5 mm² phase conductors (per BS 7671 Table 54.7).
CIRCUIT DISTRIBUTION & NEUTRAL SIZING:
For IT equipment/circuits with high harmonic currents:
Neutral conductor ≥ 200% capacity of phase conductors.
(Oversizing required per BS 7671 Appendix 11 to mitigate harmonic overheating).
VOLTAGE DROP MANAGEMENT:
230V circuits > 30 metres run length:
Size conductors to ensure ≤ 3% drop (lighting) / ≤ 5% drop (other) (BS 7671 Appendix 4). Typically requires ≥ 4.0 mm² for longer runs/higher loads.

SPECIFICATIONS

A. TRUNKING, BOXES AND CONDUITS:
1. OUTDOOR WIRING METHODS – INSTALLATION TO BE IN ACCORDANCE WITH BS 7671 AND BS EN STANDARDS:
a. Exposed installations: Use galvanised steel conduit to BS EN 61386.
b. Concealed installations: Use heavy-gauge steel conduit in compliance with BS EN 61386.
c. Underground installations: Use heavy-duty PVC-U ducting conforming to BS EN 61386-24 unless otherwise stated.
d. Connection to vibrating equipment: Use liquid-tight flexible metallic conduit or steel-wire armoured flexible cable.
e. Boxes and enclosures: Minimum IPX4 or IP65-rated enclosures for outdoor use.
2. INDOOR WIRING METHODS:
a. Connection to vibrating equipment: Use flexible metallic conduit or SY cable. In wet/damp areas, use liquid-tight conduit or equivalent rated cabling.
b. Damp or wet locations: Use galvanised steel conduit or SWA cable rated for the environment.
c. Exposed locations: Use galvanised steel conduit or surface-mounted trunking systems.
d. Concealed installations: Use steel conduit or LSZH (Low Smoke Zero Halogen) twin & earth cable in trunking or chased into walls.
e. Boxes and enclosures: Use IP20-rated boxes for dry indoor locations, IP66 stainless steel or GRP for wet/damp areas.
3. All final circuits in finished areas shall be installed concealed wherever practical.
4. Minimum conduit/trunking size shall be 20 mm diameter (or equivalent cross-sectional area).
5. All conduit fittings shall be of metallic compression type, with nylon grommets or insulated bushings at entry points.
6. All wiring shall be installed neatly, clipped or supported as high as practical and routed parallel/perpendicular to walls or ceiling lines.
7. Exposed extra-low voltage wiring (e.g. data, fire, security) shall be installed within suitable trunking or conduit unless otherwise indicated.
8. Install 100 mm square boxes (minimum) with appropriate surface or flush front plates as required.
9. Where walls are to be dry-lined or faced, and existing accessories are retained, provide approved back box extensions or relocate to align with new surface finishes.
B. CABLES AND CONDUCTORS
1. All fixed wiring shall be copper conductors, with LSZH insulation complying with BS EN 50525 or BS 6004. Minimum size: 1.5 mm² for lighting; 2.5 mm² for sockets.
2. All cable sizes and current ratings shall comply with BS 7671 and the IET On-Site Guide.
3. Armoured or flexible metallic cables shall include an internal green/yellow CPC (Circuit Protective Conductor) unless otherwise specified.
4. For radial or ring final circuits over 30 metres, increase conductor size to reduce voltage drop in accordance with BS 7671, typically to 4 mm².
C. WIRING ACCESSORIES AND COMMUNICATION OUTLETS
1. Verify exact location of all outlets, accessories and communication points with the Contract Administrator or Architect prior to installation. Minor relocations (within 1.5 m) shall be made without additional cost to the Employer.
2. Accessory faceplates shall be selected for finish and colour by the Architect (e.g., stainless steel, white moulded, etc.).
3. Data and communications outlet locations to be confirmed with Architect. Structured cabling / telephone wiring by specialist installer (others).
4. All fixings and supports shall meet BS 7671 regulations and relevant building standards. Provide robust, corrosion-resistant support systems.
D. ELECTRICAL IDENTIFICATION
1. All distribution boards, isolators, and major electrical equipment shall be fitted with engraved trafolette or equivalent labels, with minimum 25 mm high characters where visible to the public.
2. Label access panels and doors concealing electrical apparatus with appropriate safety and identification signage in accordance with BS 7671 and Health & Safety regulations.
E. EARTHING & BONDING
1. All installations shall be earthed and bonded in compliance with BS 7671 (latest edition). Equipotential bonding shall be provided as required.
2. All final circuits shall include a CPC. All socket circuits shall include a minimum 2.5 mm² CPC for 2.5 mm² ring final circuits or 1.5 mm² CPC for 1.5 mm² radial circuits.
3. Where a separate earthed system (e.g., generator or inverter) is installed, provide a TT, TN-S, or TN-C-S earthing arrangement in accordance with local DNO approval.
F. DISTRIBUTION BOARDS
1. "Spacer" in a distribution board shall include provision for future circuit protection devices, neutral and earth bars, and proper labelling.
2. Final circuit layout and board schedules must match the design drawings. Any changes must be authorised by the project engineer.
3. Distribution board busbars shall be copper. All final circuit breakers shall be Type B or C MCBs or RCBOs as appropriate. Inform characteristics of motor protection devices (curve types, trip ratings) with the mechanical services provider prior to ordering.
4. Surface-mounted boards shall be installed with Unistrut-type steel framing or equivalent to provide structural support and clearance from the wall.
5. For recessed boards, provide a 20 mm conduit stub for every 3 spare ways to allow future additions.
6. Distribution boards to be from reputable manufacturers such as Schneider (A919), Hager, Eaton, ABB, or equivalent with UKCA/CE marking.
8. Provide neatly typed and framed circuit schedules at each board showing clearly the load served by each circuit. All existing schedules impacted by new works shall be updated accordingly.

ABBREVIATIONS

A Ampere	N Neutral
AFF Above Finished Floor	NIC Not in Contract
AIC Amps Interrupting Capacity (Minimum)	OEM Original Equipment Manufacturer
BCP Bonding Conductor Protective	OCFI Owner Furnished Contractor Installed
CB Circuit Breaker	P Pole (e.g., 1P, 3P)
C Conduit	PANL Panel (Distribution Board / Consumer Unit)
CCT Circuit	PH / Ø Phase
CPC Circuit Protective Conductor	R Remove existing and relocate
EC Empty Conduit	RECPT Receptacle (UK Socket Outlet)
(E) Existing to remain, continue in service	RPD Residual Current Device
FA Fire Alarm	SWA Steel Wire Armoured Cable
FLA Full Load Current (Amps)	TBD To Be Determined
G Earth (Ground – UK uses "Earth")	SPD Surge Protective Device
HP Horsepower	TSD To Be Determined
Ics/IcsShort-Circuit Breaking Capacity (BS EN 60947-2)	UON Unless Otherwise Noted
IP Ingress Protection Rating	V Volt
kVA Kilovolt-Amps	W Wire
kW Kilowatt	W/ With
L Live	WP Weatherproof (IP rated)
LSZH Low Smoke Zero Halogen	XFM Transformer
LTC Lighting	(X) Remove with all associated wiring
MCB Miniature Circuit Breaker	
MN Mounting Height	
MLO Main Lug Only (not common in UK – state "main terminals only")	



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REV. NO.	DESCRIPTION	DATE	BY

PROJECT:

Multi Floor House

TITLE:

GROUND FLOOR ELECTRICAL POWER PLAN

PROJ. NO.

PROJ. ENGR.

SCALE @ 24X36

$$1/128^n = 1' 0^n$$

DATE : _____

August 28, 2026

DRAWING NO.

REV.

E - 1



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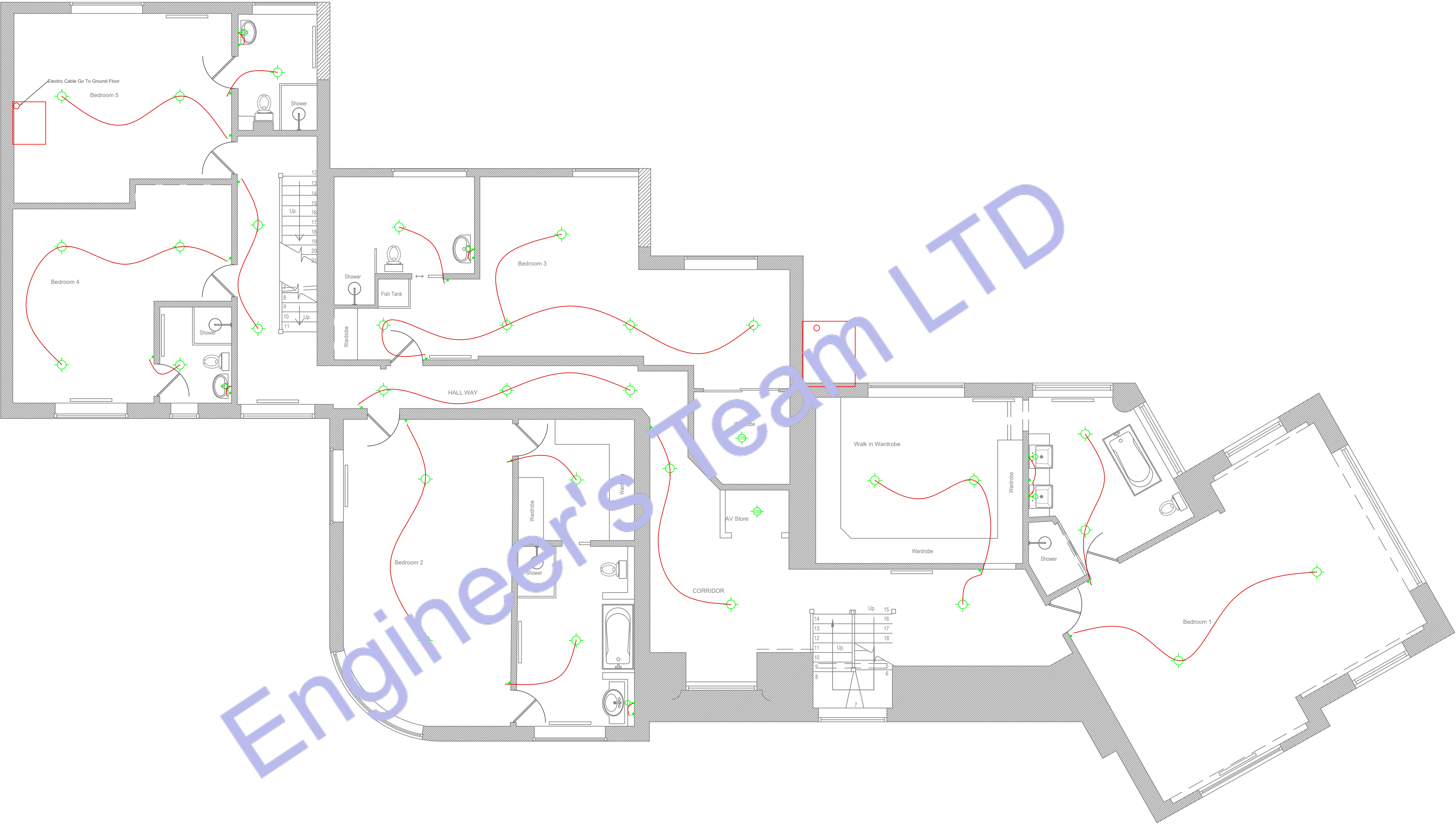
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REV. NO.	DESCRIPTION	DATE	BY

PROJECT: Multi Floor House			
TITLE: FIRST FLOOR ELECTRICAL LIGHTING PLAN			
PROJ. NO.	PROJ. ENGR.	SCALE @ 24X36: 1/128" = 1' 0"	
DATE : August 28, 2026			
DRAWING NO. E - 2		REV.	

Legend:

- F1 – IRIS LUMINE MIAMI 3660MM SUSPENDED LINEAR
- F2 – ARKOS ART 4 MODULAR SUSPENDED LINEAR
- F3 – ARKOS ART 5 MODULAR SUSPENDED LINEAR
- P1/P2 – ARCHITECTURAL DOWNRIGHT
- P3 – DECORATIVE PENDANT
- P4 – SURFACE SPOTLIGHT
- WL1 – WALL LIGHT
- CANDLE LIGHT
- WC1 / SV1 – SERVICE AND WC LIGHTS
- SUSPENDED CAN LIGHT 20W
- PIR – PIR SENSOR
- LCM – LIGHTING CONTROL MODULE
- AD – ABSENCE DETECTOR SENSOR / CONTROLLER
- THOR LUX CLEAN LINE RECESSED CLEAN ROOM LUMINARIES, LOW-GLARE OPTIC, TP (A) DIFFUSER
- 3-WAY ROCKERY SWITCH
- 2-WAY ROCKERY SWITCH
- SCENE SET SWITCH
- EXTRACT FAN (ICON 15 ECO) 30W
- PER METER LINEAR LED STRIP 10W
- ISOLATOR SWITCH
- S22 ILLUMINATED EXIT SIGN 4W
- AREA CONTROLLER
- CLOSET DOWNRIGHT SERVICE
- DOWNRIGHT ADJUSTABLE
- 300mm TRAY WORK



1 FIRST FLOOR ELECTRICAL LIGHTNING PLAN
SCALE: 1/128" = 1'-0"



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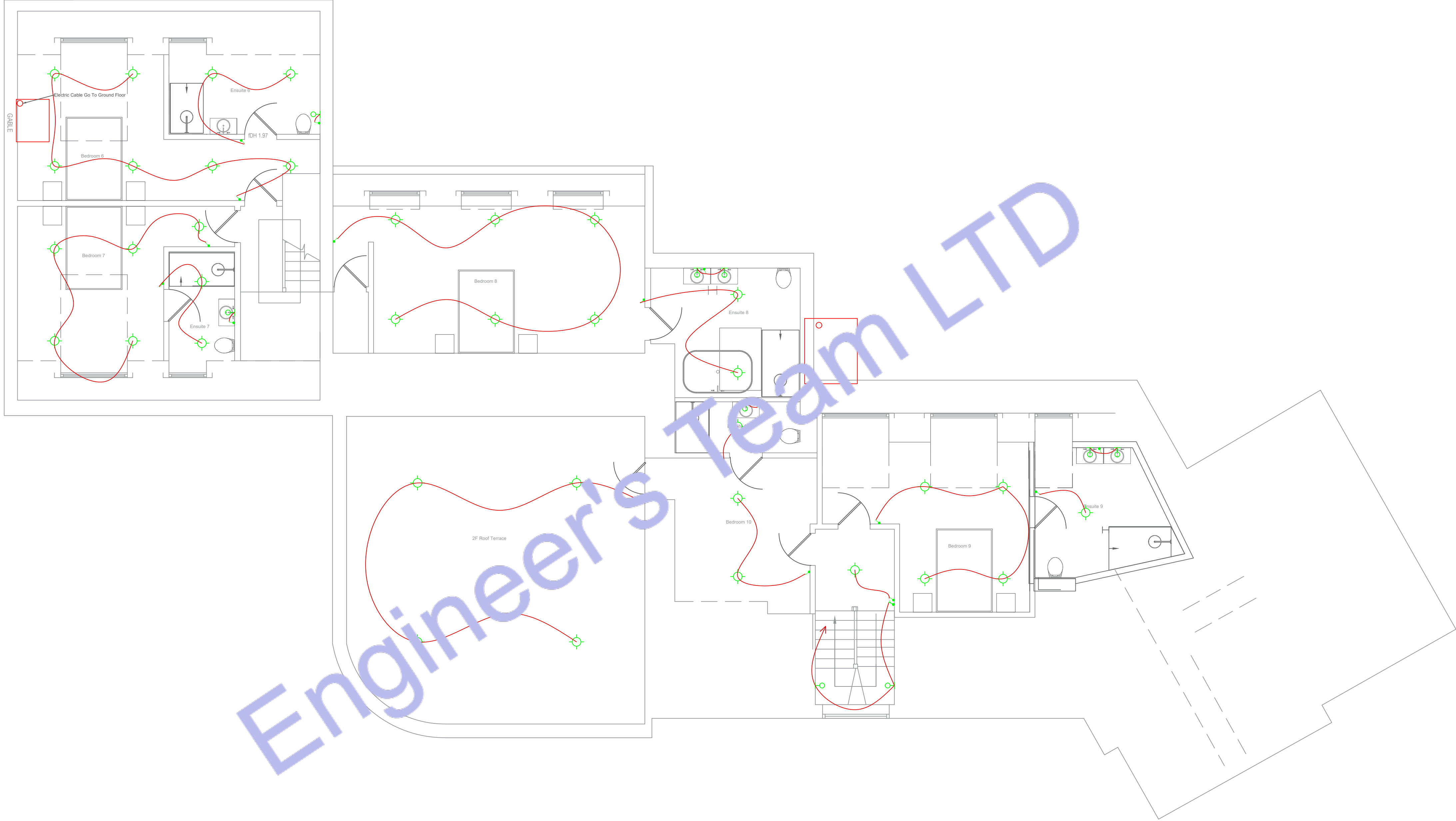
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REV. NO.	DESCRIPTION	DATE	BY

PROJECT: Multi Floor House			
TITLE: SECOND FLOOR ELECTRICAL LIGHTING PLAN			
PROJ. NO.	PROJ. ENGR.	SCALE @ 24X36: 1/128" = 1' 0"	
DATE : August 28, 2026			
DRAWING NO. E - 3		REV.	

Legend:

- F1 – IRIS LUMINE MIAMI 3660MM SUSPENDED LINEAR
- F2 – ARKOS ART 4 MODULAR SUSPENDED LINEAR
- F3 – ARKOS ART 5 MODULAR SUSPENDED LINEAR
- P1/P2 – ARCHITECTURAL DOWNRIGHT
- P3 – DECORATIVE PENDANT
- P4 – SURFACE SPOTLIGHT
- WL1 – WALL LIGHT
- CANDLE LIGHT
- WC1 / SV1 – SERVICE AND WC LIGHTS
- SUSPENDED CAN LIGHT 20W
- PIR – PIR SENSOR
- LCM – LIGHTING CONTROL MODULE
- AD – ABSENCE DETECTOR SENSOR / CONTROLLER
- THOR LUX CLEAN LINE RECESSED CLEAN ROOM LUMINARIES, LOW-GLARE OPTIC, TP (A) DIFFUSER
- 3-WAY ROCKERY SWITCH
- 2-WAY ROCKERY SWITCH
- SCENE SET SWITCH
- EXTRACT FAN (ICON 15 ECO) 30W
- PER METER LINEAR LED STRIP 10W
- ISOLATOR SWITCH
- S22 ILLUMINATED EXIT SIGN 4W
- AREA CONTROLLER
- DOWNRIGHT SERVICE
- DOWNRIGHT ADJUSTABLE
- 300mm TRAY WORK



2 SECOND FLOOR ELECTRICAL LIGHTING PLAN
SCALE: 1/128" = 1'-0"



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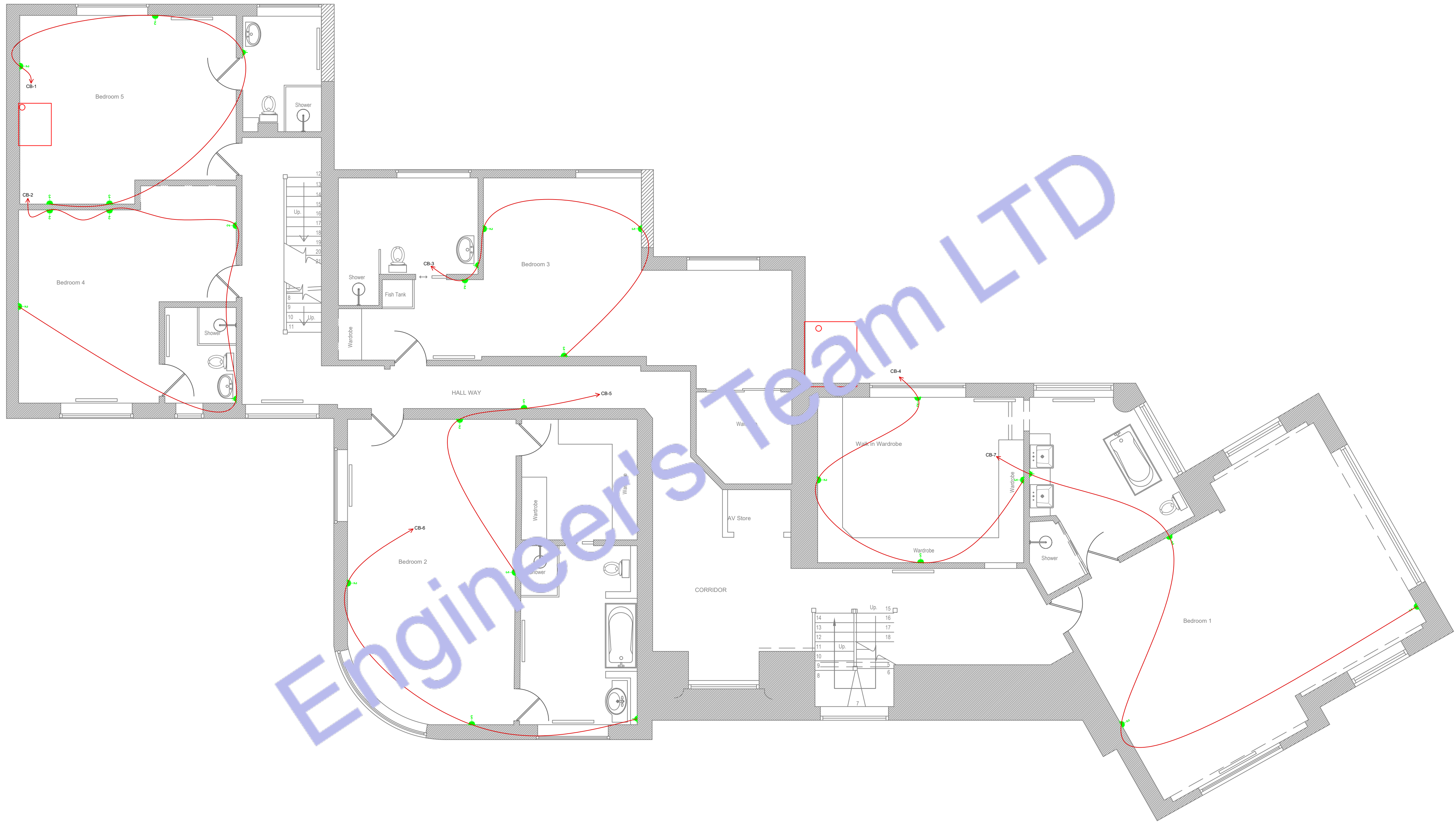
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4. THE CONTRACTOR IS RESPONSIBLE FOR
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SUPPORT TO THE BUILDING AND ANY ADJACENT
STRUCTURES.

REV. NO.	DESCRIPTION	DATE	BY

PROJECT: Multi Floor House		
TITLE: FIRST FLOOR ELECTRICAL POWER PLAN		
PROJ. NO.	PROJ. ENGR.	SCALE @ 24X36: 1/128" = 1' 0"
DATE : August 28, 2026		
DRAWING NO. E - 4		REV.

Legend:

	DOUBLE SOCKET OUTLET		CAT5 TO THE COMMUNAL DISTRIBUTION BOX (BT)
	Single Socket		CAT5 INTERNAL ETHERNET
	AIR HANDLING UNIT		SMOKE DETECTOR
	CONDENSER UNIT		SMOKE & CARBON MONOXIDE DETECTOR WITH SOUNDER
	FRIDGE/FREEZER		EXTRACT FAN
	3 AMP SOCKET FOR LIGHTING		FUSE BOX
	Microwave		3-GANG ROCKERY SWITCH
	Wine Cooler		2-GANG ROCKERY SWITCH
	MID LEVEL DOUBLE SOCKET OUTLET		SINGLE GANG ROCKERY SWITCH
	HIGH LEVEL DOUBLE SOCKET OUTLET		FUSED SPUR SOCKET
	LOW LEVEL DOUBLE SOCKET OUTLET		FLOOR MOUNT SOCKET
	HIGH LEVEL SINGLE SOCKET OUTLET		SCREW LESS DUAL VOLTAGE SHAVER SOCKET
	UNDER FLOOR HEATING		DOOR CONTACT SENSOR FOR LIGHTING
	ACCESS CONTROL		INTRUDER ALARM KEYPAD
	VIDEO ENTRY SYSTEM		USB-C SOCKET OUTLET
	CCTV MONITOR SYSTEM		INTRUDER ALARM WINDOW CONTACT SWITCH
	CCTV CAMERA		INTRUDER ALARM DOOR CONTACT SWITCH
	PIR MOTION SENSOR FOR LIGHTING		ELECTRICAL TOWEL RADIATOR
	ELECTRICAL WIRE		TELEVISION
			INTERCOM PORT



1 FIRST FLOOR ELECTRICAL POWER PLAN
SCALE: 1/128" = 1'-0"



Web site: www.engrteam.com
Email: support@engrteam.com

CLIENT:

ADDRESS:
Little Manor, Barnet Lane, Elstree
WD6 3QU

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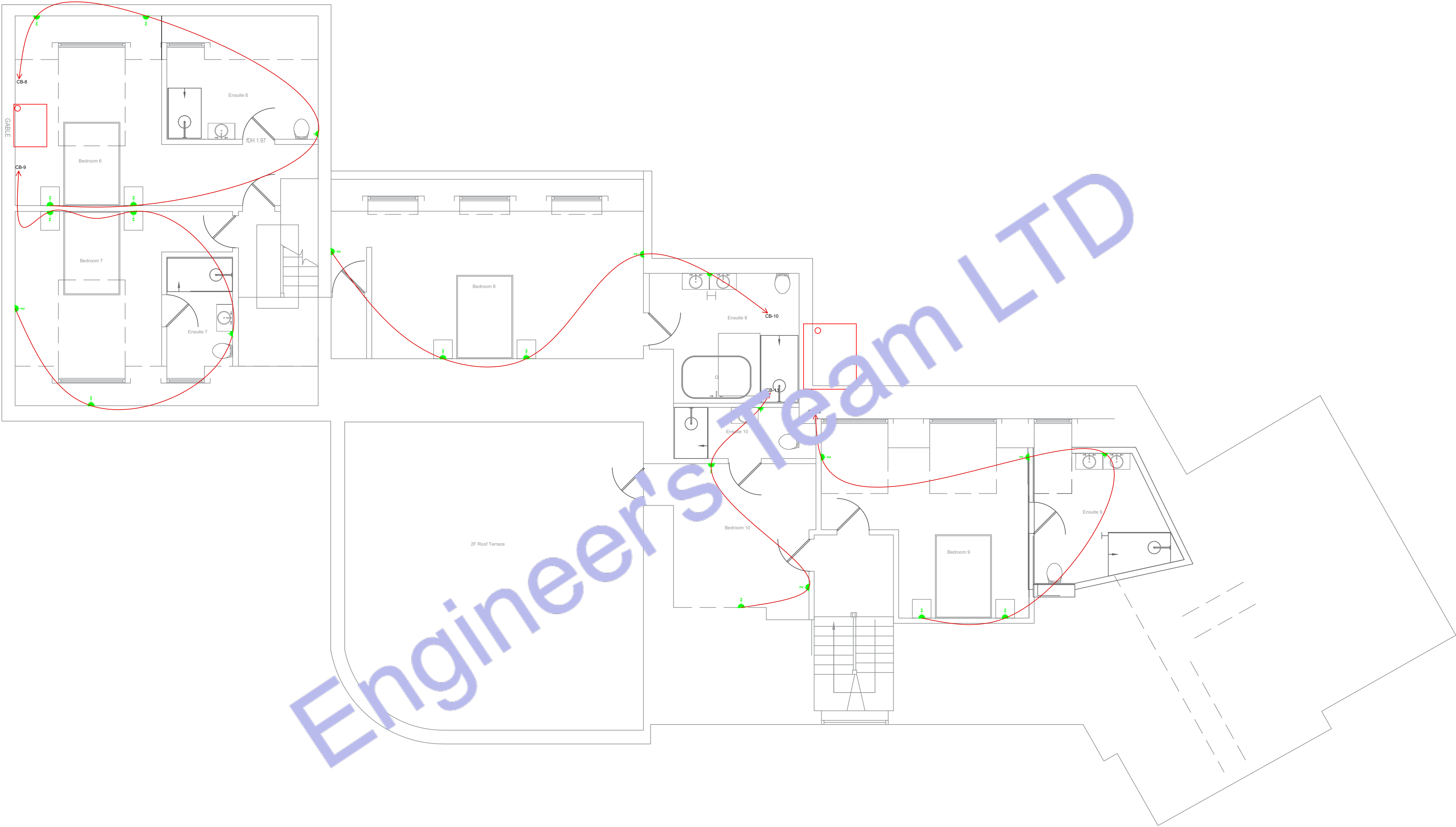
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REV. NO.	DESCRIPTION	DATE	BY

PROJECT: Multi Floor House			
TITLE: SECOND FLOOR ELECTRICAL POWER PLAN			
PROJ. NO.	PROJ. ENGR.	SCALE @ 24X36: 1/128" = 1' 0"	
DATE : August 28, 2026			
DRAWING NO. E - 5		REV.	

Legend:

DOUBLE SOCKET OUTLET	CABLE TO THE COMMUNAL DISTRIBUTION BOX (BT)
Single Socket	CAT5 INTERNAL ETHERNET
AIR HANDLING UNIT	SMOKE DETECTOR
CONDENSER UNIT	SMOKE & CARBON MONOXIDE DETECTOR WITH SOUNDER
FRIDGE/FREEZER	EXTRACT FAN
5 AMP SOCKET FOR LIGHTING	FUSE BOX
Microwave	3-GANG ROCKER SWITCH
Wine Cooler	2-GANG ROCKER SWITCH
MID LEVEL DOUBLE SOCKET OUTLET	SINGLE GANG ROCKER SWITCH
HIGH LEVEL DOUBLE SOCKET OUTLET	FUSED SPUR SOCKET
LOW LEVEL DOUBLE SOCKET OUTLET	FLOOR MOUNT SOCKET
HIGH LEVEL SINGLE SOCKET OUTLET	SCREW LED DUAL VOLTAGE SHAVER SOCKET
UNDER FLOOR HEATING	DOOR CONTACT SENSOR FOR LIGHTING
ACCESS CONTROL	USB-C SOCKET OUTLET
VIDEO ENTRY SYSTEM	INTRUDER ALARM KEYPAD
CCTV MONITOR SYSTEM	INTRUDER ALARM WINDOW CONTACT SWITCH
CCTV CAMERA	INTRUDER ALARM DOOR CONTACT SWITCH
PIR MOTION SENSOR FOR LIGHTING	ELECTRICAL TOWEL RADIATOR
ELECTRICAL WIRE	TELEVISION
	INTERCOM PORT



2 SECOND FLOOR ELECTRICAL POWER PLAN
SCALE: 1/128" = 1'-0"



CLIENT:

ADDRESS:

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4. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL NECESSARY TEMPORARY SUPPORT TO THE BUILDING AND ANY ADJACENT STRUCTURES.

[illegible]

PROJECT:

Multi Floor House

TITLE:

ELECTRICAL LOAD

ELECTRICAL LOAD SCHEDULE & S.I.D.

PROJ.	
-------	--

PROJ. ENGR.

SCALE @ 24X36

N/A

DATE :

August 28, 2026

DRAWING NO.

	REV.
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MAIN PANEL

Panel Location- Voltage (Phase-Ground/Phase-Phase)		230	400	Source of Supply-From Service Disconnect/Meter															
Phase- 1				Wire- 3															
Rated Amps- 125				AIC- 10k															
MCCB 125 Amps MCCB				Mounting- Wall Surface															
Circuit	Description	New/ Existing	Load Type	Breaker Size	Poles	Wire Size	A	B	C	Wire Size	Poles	Breaker Size	Load Type	New/ Existing	Description	Circuit			
1	ALL LOADS	N	SPD	125	3	35	16634	16634		35	3	125	RCD	N	ALL LOADS	2			
3						35		15084	15084	35						4			
5						35			14334	14334						6			
7	PANEL A (1st Floor)	N	MCB, Type-B	25	1	2.5	1400	900		2.5	1	25	MCB, Type-B	N	PANEL B (2nd Floor)	8			
9						6		7334	750	2.5	1	20	MCB, Type-B	N	Water Booster Pump	10			
11	HVAC HTM-1	N	MCB, Type-B	35	3	6			7334	0	--	--	--	--	SPARE	12			
13						6	7334	0		--	--	--	--	--	SPARE	14			
15						6		7000	0	--	--	--	--	--	SPARE	16			
17	HVAC HTM-2	N	MCB, Type-B	35	3	6			7000	0	--	--	--	--	SPARE	18			
19						6	7000	0		--	--	--	--	--	SPARE	20			
						A		B		C		Total Amps							
						16634		15084		14334		750							
						Connected Amps													
						Main Type and Amps Rating						125 Amps MCCB							
Demand Load Calculation																			
Load Classification		Connected Load	Demand Factor	Estimated Demand															
Lighting - Commercial Unit		1530	125%	1912.5															
Combine Water Heater		0	100%	0															
Receptacle		770	65%	500.5															
Cooling		43002	100%	43002															
Pump		750	125%	937.5															
Other		0	100%	0															
Demand Load		46052		46352.5															
Demand Amps				67.17753623															

230/400V THREE PHASE 5WIRE 125 A SERVICE

ELECTRICAL METER

125A MCB MAIN SWITCH

125A SPD

125A RCD

BUS

20A MCB 1-φ

20A MCB 3-φ

20A MCB 1-φ

25A MCB 3-φ

25A MCB 1-φ

HVAC -1

BUSTER PUMP

HVAC -2

Panel A

Panel B

TO CONNECTED LOAD

TO CONNECTED LOAD

GENERAL NOTES:

1. A LISTED INTERSYSTEM BONDING TERMINATION PROVIDING THE REQUIRED NUMBER OF TERMINALS (MINIMUM OF THREE) FOR CONNECTING OTHER BUILDING SYSTEMS TO THE GROUNDING SYSTEM OF THE ELECTRICAL POWER SUPPLY (NEC250.94).

KEY NOTES: Ⓢ

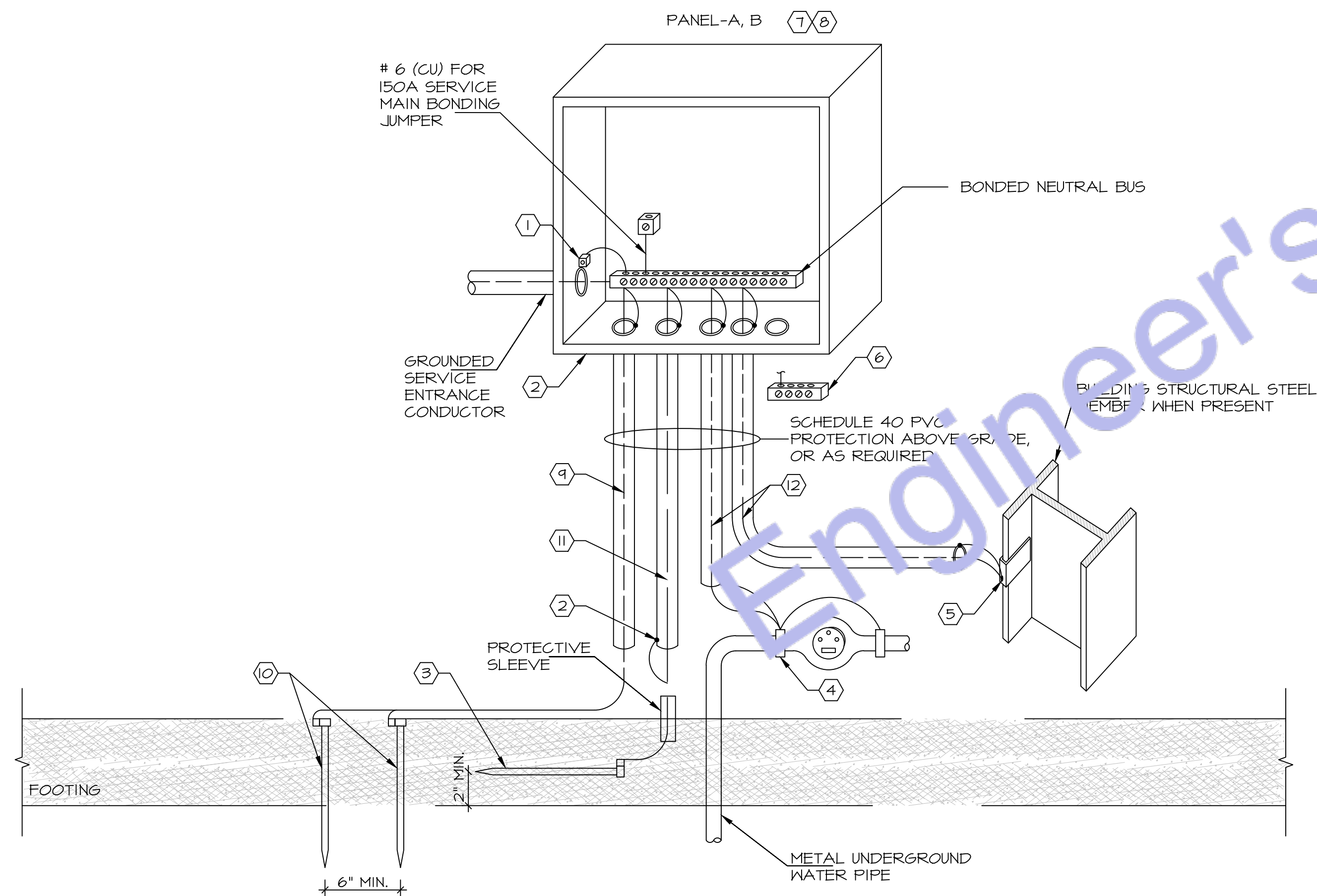
1. ALL METAL CONDUITS ENCLOSING ANY SERVICE SHALL BE FITTED WITH A "BONDING BUSHING".
2. ALL METAL CONDUITS ENCLOSING ANY GROUNDING ELECTRODE CONDUCTOR SHALL BE FITTED WITH A "BONDING BUSHING" AT EACH END.
3. PROVIDE GROUNDING ELECTRODE PER NEC. ELECTRODE SHALL BE IN THE FORM OF A 20'-0" x 1/2" COPPER CLAD GROUND ROD LAID AT LEAST 2" OFF THE BOTTOM OF A CONCRETE FOOTING. SECURE THE GROUND ROD TO THE REBAR WITH STEEL TIE WRAPS. IF THE REBAR BEING USED IN THE FOOTING IS SMALLER THAN 1/2" (#4), THEN USE 20' OF BARE

4. FOR CONNECTION TO COLD WATER MAIN. CONNECT WITHIN 5 FT. OF CONTACT OF EARTH.
5. IF STRUCTURAL STEEL MEMBER OR REBARS ARE AVAILABLE, BOND IT TO THE SERVICE USING A UL LISTED IRREVERSIBLE CLAMP OR WELDING LUG.
6. PROVIDE A INTERSYSTEM BONDING TERMINATION PER NEC 250.94.

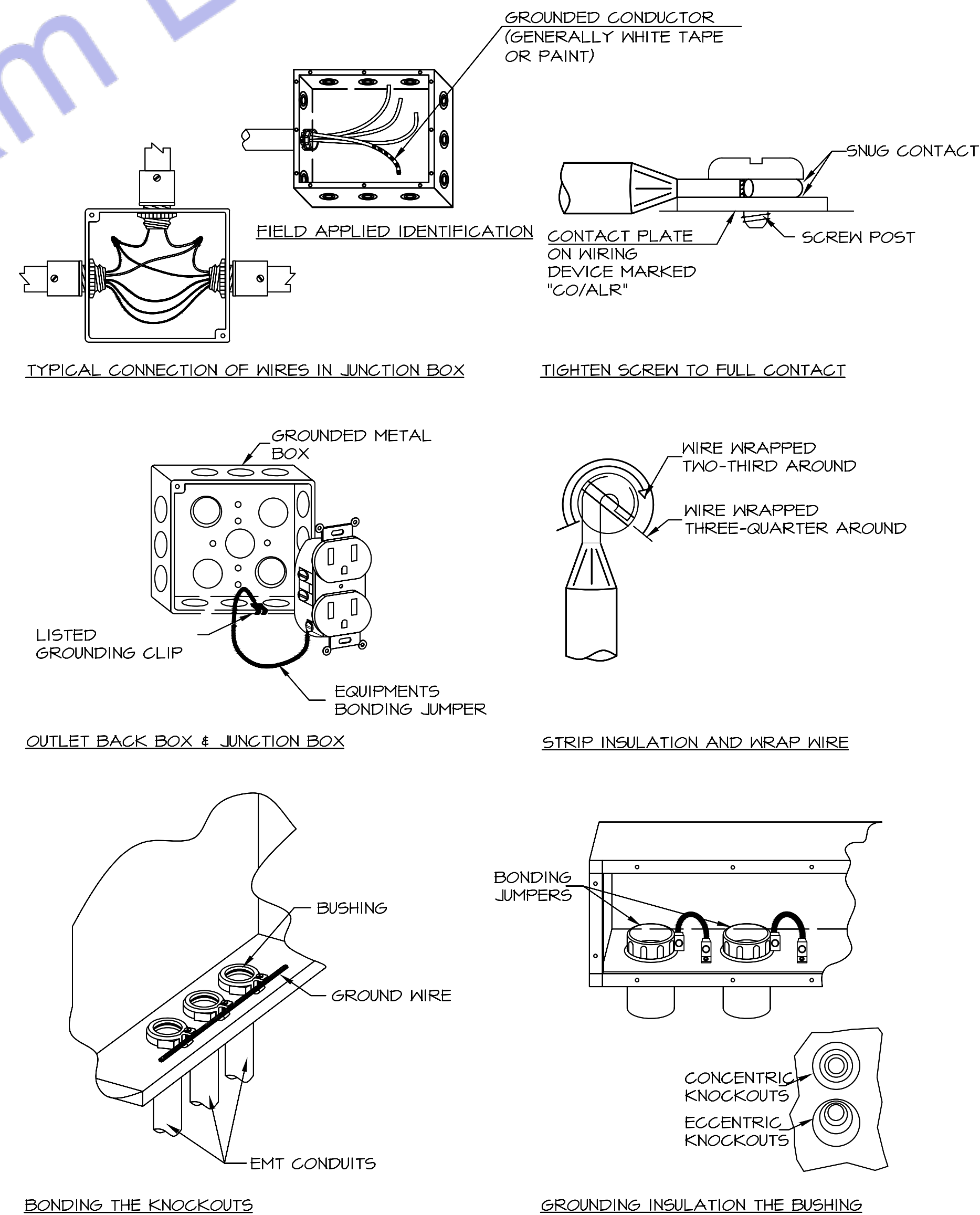
- INTERSYSTEM BONDING TERMINATION SHALL:
- 6.1. BE ACCESSIBLE FOR CONNECTION AND INSPECTION.
- 6.2. CONSIST OF A SET OF TERMINALS (LISTED AS GROUNDING AND BONDING EQUIPMENT) WITH THE CAPACITY OF NOT LESS THAN THREE INTERSYSTEM BONDING CONDUCTORS.
- 6.3. BE SECURELY MOUNTED AND ELECTRICALLY CONNECTED TO SERVICE EQUIPMENT, METER ENCLOSURE, OR EXPOSED NON METALLIC SERVICE RACEWAY, OR BE MOUNTED ON ONE OF THESE ENCLOSURES AND BE CONNECTED TO THE ENCLOSURE OR GROUNDING

- ELECTRODE CONDUCTOR WITH A MINIMUM #6 CU CONDUCTOR.
- 6.4. BE SECURELY MOUNTED TO THE BUILDING'S DISCONNECTING MEANS, OR BE MOUNTED AT THE DISCONNECTING MEANS AND BE CONNECTED TO THE METALLIC ENCLOSURE OR GROUNDING ELECTRODE CONDUCTOR WITH A MINIMUM #6 CU CONDUCTOR.
7. ALL BRANCH CIRCUIT AND FEEDER CONDUITS ARE TO HAVE AN INSULATED EQUIPMENT GROUNDING CONDUCTOR REGARDLESS OF THE CONDUIT MATERIAL.
8. WHEN THE SERVICE CONSISTS OF MULTIPLE DISCONNECTING MEANS IN SEPARATE ENCLOSURES, CONNECT A TAP

- CONDUCTOR FROM THE MAIN GROUNDING ELECTRODE CONDUCTOR TO EACH DISCONNECTING MEANS. SIZE THIS TAP BASED ON THE LARGEST SERVICE CONDUCTOR IN THAT SERVICE DISCONNECT ENCLOSURE.
9. #6 COPPER GROUNDING ELECTRODE CONDUCTOR.
10. INSTALL #6 CU TO TWO 5/8"x 8" MIN. GROUND RODS AS SHOWN.
11. #4 COPPER GROUNDING ELECTRODE CONDUCTOR.
12. COPPER GROUNDING ELECTRODE CONDUCTOR. PROVIDE #6 COPPER.



1 GROUNDING ELECTRODE SYSTEM DIAGRAM
E500 SCALE: NOT TO SCALE



2 BONDING DETAILS
E500 SCALE: NOT TO SCALE



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Email: support@engrteam.com

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REV. NO.	DESCRIPTION	DATE	BY

PROJECT: Multi Floor House		
TITLE: ELECTRICAL INSTALLATION ISTRATION		
PROJ. NO.	PROJ. ENGR.	SCALE @ 24X36: N/A
DATE : August 28, 2026		
DRAWING NO. E - 7		REV.

GENERAL SPECIFICATIONS

1. GENERAL (All specifications on this sheet as applicable)
- A. Work indicated on these drawings is diagrammatic and shall not be scaled. The drawings are intended to convey the scope of works and indicate the general arrangement of engineered systems. The Contractor shall verify all existing site conditions, dimensions, and services and make all necessary adjustments to complete the works in accordance with the Contract Documents.
- B. Provide all labour, materials, plant, tools, equipment, and services required to execute the works in accordance with the Contract Documents. All supplementary or incidental items necessary for a complete, safe, and fully operational installation shall be deemed included, whether or not specifically shown, at no additional cost to the Client.
- C. All equipment under this contract shall be fully installed, tested, commissioned, and left operational to the satisfaction of the Client and Engineer. These drawings are intended to represent finished works, tested and ready for use. Wherever the word "provide" is used, it shall mean supply, install, test, and commission complete.
- D. All materials and equipment shall be new, of first quality, UKCA/CE marked where applicable, and compatible with existing systems. Installation shall be carried out strictly in accordance with manufacturers' recommendations, relevant British Standards, and recognised good engineering practice.
- E. Where existing pipework, ductwork, containment, cabling, or other obstructions are encountered, the Contractor shall remove, reroute, rearrange, or relocate such items as necessary, subject to approval, at no additional cost.
- F. The Contractor shall obtain written approval prior to cutting or forming penetrations through slabs, walls, ceilings, roofs, or shafts for services. All disturbed areas shall be made good using matching materials and finishes. All penetrations through fire-resisting elements shall be sealed with approved fire-stopping systems to maintain fire integrity in accordance with Building Regulations Approved Document B.
- G. The Contractor shall maintain a clean and safe site at all times. Waste and debris shall be removed regularly. Upon completion, all tools, surplus materials, and temporary works shall be removed and the site left clean and ready for occupation.
2. COORDINATION AND PROGRAMMING
- A. The Contractor shall fully coordinate and programme the works of all trades. All existing site conditions shall be verified to avoid conflicts in routing, sequencing, and installation.
- B. The Contractor shall be responsible for full coordination between all subcontractors, suppliers, statutory authorities, utility providers, Building Control, the Architect/Engineer, building management, and the Client.
- C. No work shall commence until accurate site measurements and verification of existing structures, ceilings, services, and retained installations have been completed, where these may affect the installation of new systems or equipment.
- D. Works shall be phased and programmed to minimise disruption to occupied areas. A detailed programme shall be submitted for approval. Temporary partitions, dust control, and protective barriers shall be provided where necessary.
- E. The Contractor shall provide a minimum of fourteen (14) days' written notice prior to any required shutdown of utilities and shall obtain written approval before proceeding.
- F. The Contractor shall be deemed to have examined the premises and understood all conditions under which the works are to be carried out. No allowance shall be made for errors or omissions arising from failure to inspect the site.
3. CODES, PERMITS, AND INSPECTIONS (UK)
- A. All works shall be carried out in accordance with the latest applicable UK legislation, regulations, and standards. The Contractor shall obtain and pay for all required permits and approvals and arrange all inspections by the relevant Authorities Having Jurisdiction.
- B. Final approval and sign-off by Building Control and all relevant authorities shall be obtained at project completion. All completion certificates shall be issued and provided to the Client.
- C. Works shall comply with the current editions of all applicable British Standards, Building Regulations, and statutory requirements enforced at the project location.
- D. Codes and standards referenced represent minimum requirements. Where Contract Documents require a higher standard, the Contract Documents shall take precedence. Any conflicts shall be reported in writing prior to commencement.
- E. The Contractor shall comply with all Health and Safety Executive (HSE) requirements, including the Health and Safety at Work Act 1974 and CDM Regulations 2015.
- F. The Contractor shall comply with all requirements of statutory utility providers and local authorities.
4. WARRANTY
- A. All works shall be free from defects in workmanship and materials for a period of twelve (12) months from the date of Practical Completion. Any defects arising within this period shall be rectified by the Contractor at no additional cost.
5. SHOP DRAWINGS
- A. Shop drawings and product data shall be submitted electronically to the Engineer, Architect, and Client for approval. Submittals shall include manufacturers' technical data and certified performance information for all new equipment.
6. RECORD DRAWINGS / AS-BUILTS
- A. The Contractor shall maintain a complete and up-to-date set of marked-up drawings on site, recording all changes made during construction. Final as-built drawings and associated documentation shall be submitted to the Client upon completion of the works.

PLUMBING GENERAL NOTES & SPECIFICATIONS

- A. All water supply and vent pipework shall be routed as high as practicable and concealed above ceilings unless noted otherwise. All soil and waste pipework shall be routed as high as practicable below floor slab or floor structure unless noted otherwise.
- B. All soil and waste pipework shall be installed at gradients appropriate to pipe size and in accordance with BS EN 12056 and Approved Document H. All gradients and invert levels shall be verified prior to installation to ensure correct falls are maintained. The Contractor shall confirm that pipe routes and connections are feasible before commencing works.
- C. Provide complete and proper soil, waste, vent, hot water, and cold water connections to all fixtures and equipment, whether or not all branches, fittings, or connections are shown on the drawings. Refer to sanitary waste and water riser diagrams for pipe sizes and system configuration.
- D. The potable water system shall be flushed, cleaned, and disinfected in accordance with BS EN 806, Water Supply (Water Fittings) Regulations 1999, and local water authority requirements.
- E. The Plumbing Contractor shall coordinate with relevant subcontractors regarding the quantity and locations of access panels required for valves and fittings within walls and ceilings. Access panels shall be provided by the appropriate trade.
- F. Where horizontal water pipework conflicts with vent pipework within wall cavities, the Contractor shall provide additional water pipe drops or alternative routing to maintain compliance and accessibility.
- G. All pipe penetrations below sinks shall be sealed. All pipe penetrations through floor slabs or fire-resisting elements shall be sealed with approved fire-stopping materials in accordance with Approved Document B.
- H. Provide individual isolation valves to all plumbing fixtures and appliances. Valves shall be full-bore WRAS-approved ball valves suitable for potable water systems, with threaded, compression, or soldered connections as appropriate.
- I. The Contractor shall verify on site the exact location, depth, and direction of flow of all existing drainage and sewer pipework within the building and below ground prior to commencement of works.
- J. All pipework shall be adequately supported from existing or new structure using suitable proprietary pipe hangers and supports. Design, selection, spacing, and installation shall comply with relevant British Standards, manufacturers' recommendations, and good engineering practice.
- K. Slab Penetrations: Prior to any cutting or coring of slabs, suitable detection methods (such as ground-penetrating radar or equivalent) shall be used to identify reinforcement, post-tensioning cables, services, or conduits. Written approval from the Structural Engineer shall be obtained before proceeding.
- L. The Contractor shall make good all existing finishes, surfaces, and elements damaged during construction to match existing, unless otherwise noted.
- M. Provide and install dielectric or insulating unions where connections are made between dissimilar metals, as required to prevent galvanic corrosion.
- N. No new pipework shall be installed above new or existing electrical switchboards, distribution boards, panelboards, or motor control centres.
- O. Provide escutcheon plates at all locations where pipework passes through walls, floors, or ceilings. Plates shall fully cover penetration openings or sleeves. Finishes shall be chrome or nickel plated in exposed areas and primed/painted finish in concealed areas.

PLUMBING PIPING & INSULATION

- DOMESTIC WATER PIPING
1. Above ground domestic water pipework shall be copper tube manufactured in accordance with BS EN 1057, hard-drawn (R250) temper, complete with wrought copper fittings. Joints shall be made using lead-free solder and non-corrosive flux suitable for potable water systems, installed in accordance with Water Supply (Water Fittings) Regulations 1999.
2. Provide full-bore isolation ball valves of dezincification-resistant brass or bronze construction, WRAS-approved for potable water use, with threaded, compression, or soldered ends as appropriate. Valves shall be suitable for the system operating pressure and temperature.
- WASTE AND VENT PIPING
1. Soil, waste, and vent pipework shall be installed in accordance with BS EN 12056 and Approved Document H, using one of the following approved materials:
- Cast iron soil pipe systems to BS EN 877
- Copper waste and vent pipework to BS EN 1057
- Galvanised steel pipework where permitted
- All fittings shall be compatible with the selected pipe material and system type.
2. Plastic pipework (PVC-U, HDPE, or other approved materials) may be used for cold water, hot water, soil, waste, and vent systems where permitted by Building Regulations and the local authority. Vent terminations shall be installed in accordance with Approved Document H. Where roofs are accessible or used by occupants, vent pipes shall terminate at a safe height above roof level in accordance with regulations.
- INSULATION
1. Provide thermal insulation to all pipework and equipment in accordance with BS 5422 and Building Regulations Approved Document L. Insulation materials shall achieve appropriate fire performance classifications in accordance with BS EN 13501-1. Installation shall comply strictly with the insulation manufacturer's instructions. All cold water pipework shall be provided with a continuous vapour barrier to prevent condensation. External pipework insulation shall be protected with a suitable weather-resistant jacket.
- 1.1. Domestic cold water pipework: minimum 13 mm thickness
- 1.2. Domestic hot water pipework: minimum 25 mm thickness
- 1.3. Domestic circulating hot water pipework: minimum 25 mm thickness

PLUMBING CODE NOTES

1. Condensate Drainage
- Condensate drains shall not be connected to the sanitary sewer system and shall not discharge into mop sinks or similar plumbing fixtures. Condensate shall be disposed of in accordance with applicable plumbing codes and local AHJ requirements.
2. Water Hammer Arrestors
- Provide water hammer arrestors at all quick-closing valves and fixtures, including but not limited to:
- Water closets
- Dishwashers
- Clothes washers
- Other solenoid- or fast-acting valve equipment, as applicable
- Water hammer arrestors shall conform to ASSE 1010 and be installed in accordance with manufacturer's recommendations.
3. Trap Seal Protection
- Provide trap primers or approved barrier-type trap seal protection devices for all floor drains subject to evaporation or infrequent use.
- Trap seal protection devices shall comply with ASSE 1072 and shall be installed per the manufacturer's installation instructions.

NATURAL GAS PIPING

1. GENERAL
- Gas installation shall conform to the requirements of the Gas Safety (Installation and Use) Regulations (GSIUR), BS 6891, IGE/UP/2, IGE/UP/1, and all applicable UK standards and Local Authority / Gas Transporter requirements.
2. PIPING
- A. Steel Pipe – 50 mm (2") and Smaller
- Carbon steel pipework shall comply with BS EN 10255 (Medium Grade), black steel, threaded ends. Threaded joints shall be in accordance with BS 21.
- Malleable iron threaded fittings shall comply with BS EN 10242, Class A or B.
- B. Steel Pipe – 65 mm (2½") and Larger
- Carbon steel pipework shall comply with BS EN 10255 (Medium or Heavy Grade), welded joints. Steel butt-weld fittings shall comply with BS EN 10253.
3. VALVE LOCATIONS
- Gas isolation valves shall not be installed within ceiling voids or air plenums and shall remain readily accessible for operation and maintenance in accordance with BS 6891.
4. CONCEALED PIPING
- A. Concealed Locations
- Gas pipework installed in concealed locations shall use approved permanent jointing methods only. The following fittings and joint types are not permitted in concealed locations:
- Unions
- Compression fittings
- Gasketed joints
- Mechanical couplings
- Bushings
- Swing joints
- Running threads
- All concealed joints shall be welded, brazed, or threaded as permitted by UK standards.
- B. Piping in Partitions
- Gas pipework shall not be embedded in solid walls, concrete, or masonry.
- Gas pipework routed within partitions shall be sleeved or otherwise protected against mechanical damage.
- Pipework passing through walls or partitions shall be sleeved and sealed in accordance with BS 6891.
5. UNIONS
- Where permitted, unions shall comply with BS EN 10242, malleable iron, ground-joint type, suitable for gas service, and installed only in accessible locations.
6. DIELECTRIC JOINTS
- Where dissimilar metals are connected, provide approved insulating joints to prevent galvanic corrosion in accordance with IGE/UP standards and manufacturer recommendations.
7. CORROSION PROTECTION
- Where gas pipework is exposed to corrosive environments or installed externally, pipe and fittings shall be protected using:
- Factory-applied protective coating or
- Site-applied corrosion protection system suitable for gas installations
- Protection systems shall comply with BS EN ISO 12944 and manufacturer recommendations.
8. PLUG VALVES (65 mm and Larger)
- Plug valves shall comply with BS EN 331 or BS EN 13774, suitable for gas service, with a minimum pressure rating appropriate to the system design.
- Gas valves shall not be installed above ceilings.
9. GAS COCKS (50 mm and Smaller)
- Gas cocks shall be:
- CE-marked and approved for gas service
- Bronze or brass body
- Suitable for operating pressure of the system
- Provided with lever or square head handle
- Threaded connections complying with BS 21
10. BALL VALVES
- Ball valves shall be:
- Full bore type
- CE marked and approved for gas service
- Brass or steel body with appropriate seals
- Rated for the system design pressure
- Installed in accessible locations only
11. GAS PRESSURE REGULATORS
- Gas pressure regulators shall be:
- CE-marked and approved for gas service
- Sized for the inlet pressure, outlet pressure, and gas flow rate indicated
- Installed in well-ventilated, accessible locations
- Regulators shall be vented to atmosphere where required by:
- The Gas Transporter
- The regulator manufacturer
- Vent piping shall:
- Be of the same material as the gas pipework
- Discharge externally to a safe, non-hazardous location
- Terminate with a downward-facing outlet fitted with corrosion-resistant insect screening
12. TESTING AND COMMISSIONING
- Gas pipework shall be pressure tested, purged, and commissioned in accordance with:
- BS 6891
- IGE/UP/1 or IGE/UP/2
- Gas Transporter requirements
- Local Authority and Building Control regulations
- Test certificates shall be submitted prior to system energisation.

PLUMBING SYMBOLS

SYMBOL	ABBREVIATION	DESCRIPTION
		EXISTING PIPING OR EQUIPMENT TO REMAIN
		EXISTING PIPING OR EQUIPMENT TO BE REMOVED
	CW	DOMESTIC COLD WATER
	HW	DOMESTIC HOT WATER
	HWC	DOMESTIC HOT WATER RECIRCULATION
	WP	SANITARY SOIL AND WASTE
	VP	SANITARY VENT
	D	DRAIN LINE
	PD	PUMPED DISCHARGE
	G	NATURAL GAS
	ST	STORM WATER
		PIPE TURNING UP
		PIPE TURNING DOWN
		VALVE IN VERTICAL
		PIPE BRANCH BOTTOM TAKEOFF
		PIPE BRANCH TOP TAKEOFF
		CAPPED PIPE
		BALL VALVE
		CHECK VALVE
		UNION
		GATE VALVE
	PRV	PRESSURE REDUCING VALVE
		GAS COCK
		GAS METER
		COMBINATION BALANCING AND SHUT-OFF VALVE
	FDC	FIRE DEPARTMENT CONNECTION
		PIPE DIRECTION OF FLOW
	FD	FLOOR DRAIN
		POINT OF REMOVAL
		POINT OF CONNECTION TO EXISTING
		KEYED NOTE, DEMOLITION
		KEYED NOTE, NEW WORK

ABBREVIATIONS

(E)	EXISTING TO REMAIN	KW	KILOWATTS
(R)	EXISTING TO BE REMOVED AND RELOCATED	L	LAVATORY
(RE)	RELOCATED EQUIPMENT	LBS	POUNDS
(X)	DEMOLISHED EQUIPMENT	MAX	MAXIMUM
ABV	ABOVE	MECH	MECHANICAL
AFF	ABOVE FINISHED FLOOR	MBH	THOUSANDS OF BTU'S PER HOUR
BFP	BACKFLOW PREVENTER	MIN	MINIMUM
BTU	BRITISH THERMAL UNITS	MS	MOP SINK
CISPI	CAST IRON SOIL PIPE INSTITUTE	NSF	NATIONAL SANITARY FOUNDATION
CLG	CEILING	OD	OVERFLOW DRAIN
CO	CLEANOUT	OSD	OPEN SITE DRAIN
CONT	CONTINUATION	PH	PHASE
CM	COFFEE MAKER	PSI	POUNDS PER SQUARE INCH
DF	DRINKING FOUNTAIN	RD	ROOF DRAIN
DFU	DRAINAGE FIXTURE UNITS	REF	REFRIGERATOR
DN	DOWN	RL	RAIN LEADER
DW	DISHWASHER	SH	SHOWER
DWG	DRAWING	SK	SINK
EA	EACH	SQ FT	SQUARE FOOT, FEET
ELEC	ELECTRIC, ELECTRICAL	SS	SERVICE SINK
ELEV	ELEVATION	TPV	TRAP PRIMER VALVE
EWC	ELECTRIC WATER COOLER	TS	TAMPER SWITCH
°F	DEGREES FAHRENHEIT	TYP	TYPICAL
FCD	FLOOR CLEANOUT	U	URINAL
FD	FLOOR DRAIN	V	VOLT, VOLTS
GAL	GALLON, GALLONS	VS	VENT STACK
GD	GARBAGE DISPOSAL	VTR	VENT THROUGH ROOF
GPH	GALLONS PER HOUR	W	WITH
GPM	GALLONS PER MINUTE	WC	WATER CLOSET
HB	HOSE BIB	WH	WATER HEATER
HD	HUB DRAIN	WHA	WATER HAMMER ARRESTOR
IM	ICE MAKER	WS	WASTE STACK
INV	INVERT ELEVATION		



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REV. NO.	DESCRIPTION	DATE	BY

PROJECT:

Multi Floor House

TITLE:

PLUMBING GENERAL NOTE

PROJ. NO.

PROJ. ENGR.

SCALE @ 24X36:

N/A

DATE :

August 28, 2026

DRAWING NO.

REV.

P - 0



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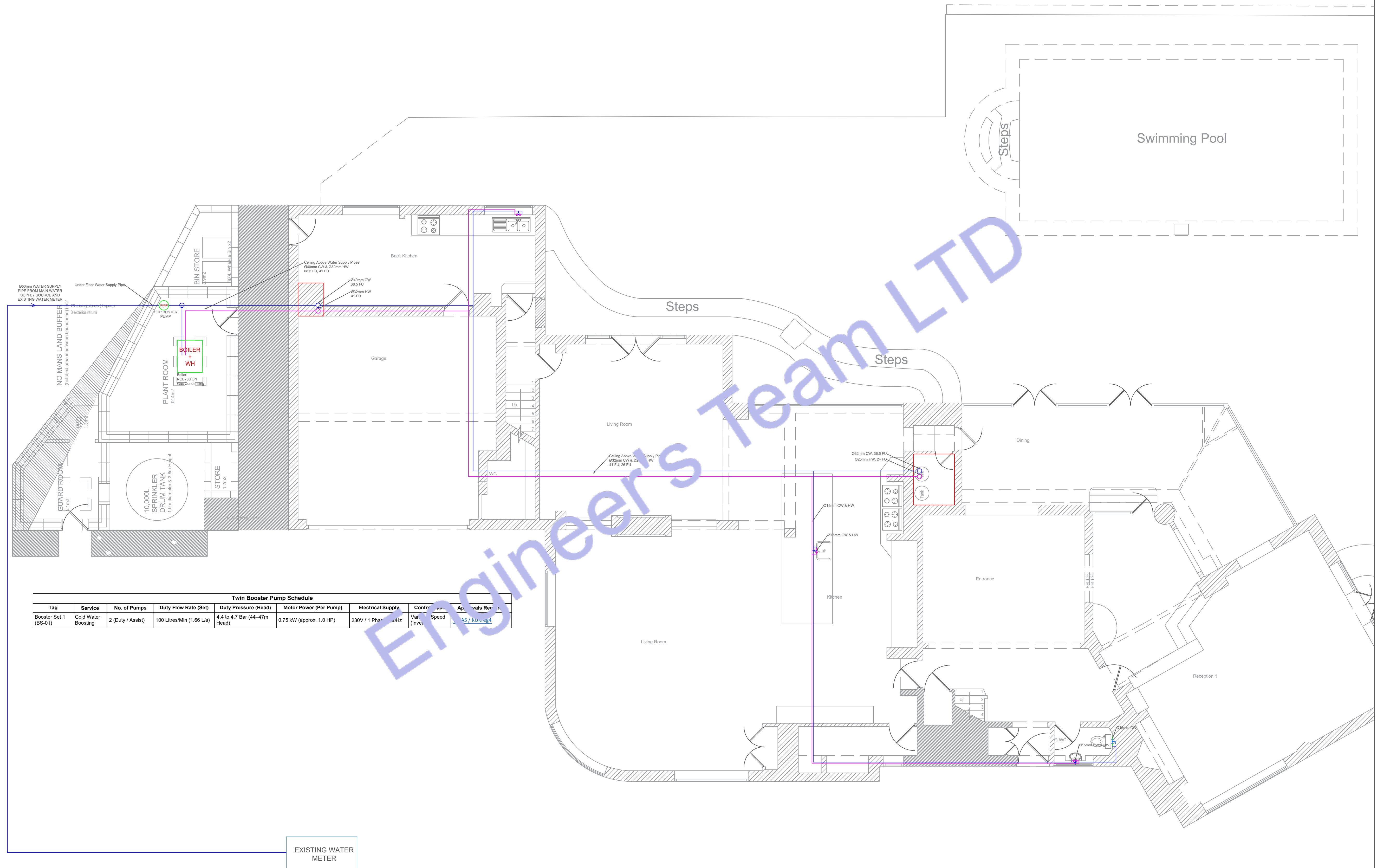
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REV. NO.	DESCRIPTION	DATE	BY

PROJECT:		
Multi Floor House		
TITLE:		
GROUND FLOOR WATER SUPPLY PLAN		
PROJ. NO.	PROJ. ENGR.	SCALE @ 24X36: $1/128" = 1' 0"$
DATE :		
August 28, 2026		
DRAWING NO.		REV.
P - 1		

PLUMBING LEGEND	
	BALL VALVE (BV)
	GATE VALVE (GV)
	MIXING VALVE (MV)
	FLOOR CLEAN OUT (FCO)
	FLOOR DRAIN (FD)
	HUB DRAIN (HD)
	FLOOR SINK (FS)
	PIPE TURNING UP
	PIPE TURNING DOWN
	EXISTING PIPE
	NEW PIPE
	BOILER & WATER HEATER
	WATER BOOSTER PUMP
	GAS METER
	WATER METER
LINES TYPE LEGEND	
	COLD WATER LINE (CW)
	HOT WATER LINE (HW)
	SEWER LINE (S)
	RAIN LINE (R)



Twin Booster Pump Schedule							
Tag	Service	No. of Pumps	Duty Flow Rate (Set)	Duty Pressure (Head)	Motor Power (Per Pump)	Electrical Supply	Controls
Booster Set 1 (BS-01)	Cold Water Boosting	2 (Duty / Assist)	100 Litres/Min (1.66 L/s)	4.4 to 4.7 Bar (44-47m Head)	0.75 kW (approx. 1.0 HP)	230V / 1 Phase / 50Hz	Variable Speed (Inverter)

EXISTING
SEPTIC TANK

0 GROUND FLOOR WATER SUPPLY PLAN
SCALE: 1/128" = 1'-0"



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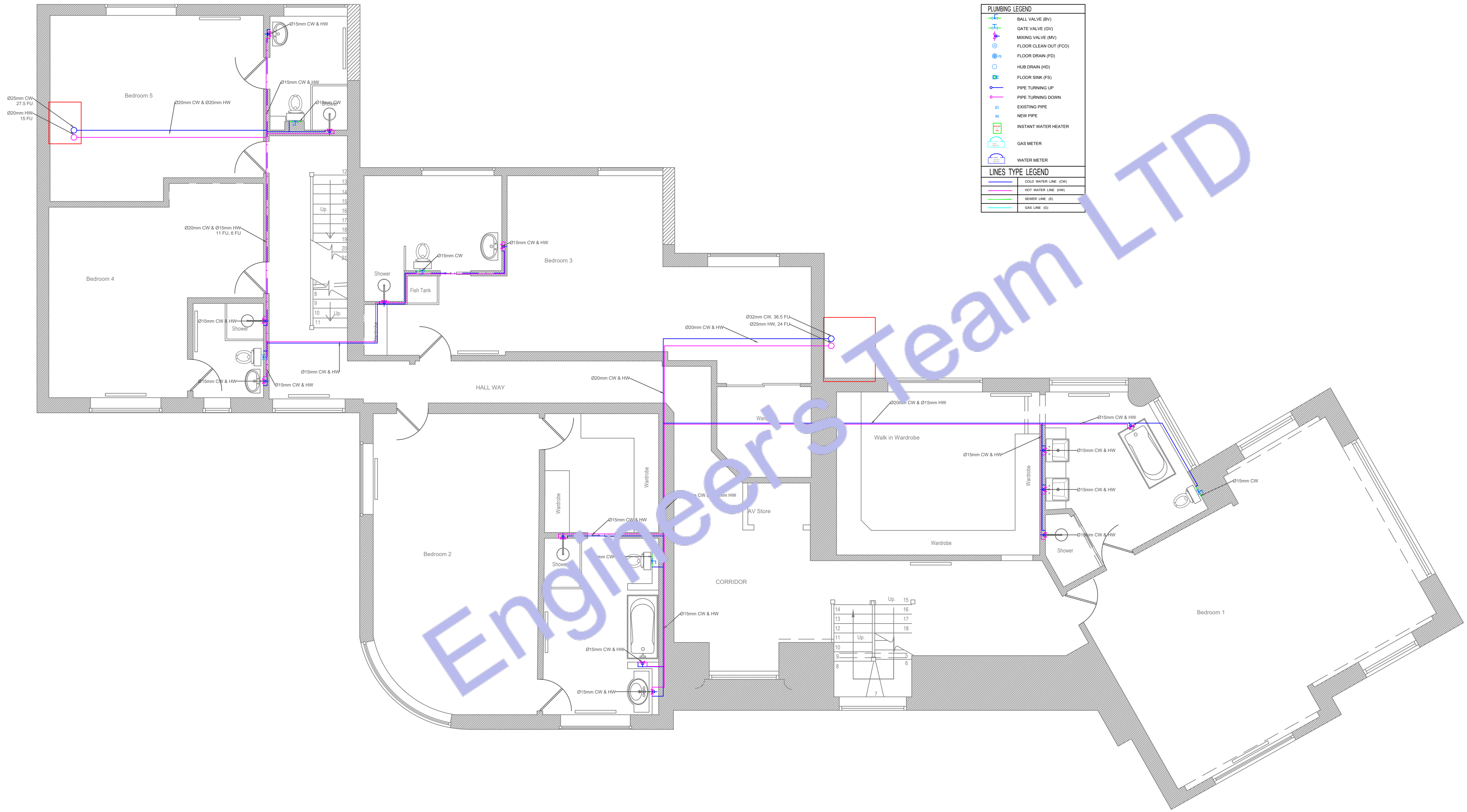
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1 FIRST FLOOR WATER SUPPLY PLAN
SCALE: 1/128" = 1'-0"

REV. NO.	DESCRIPTION	DATE	BY

PROJECT: Multi Floor House			
TITLE: FIRST FLOOR WATER SUPPLY PLAN			
PROJ. NO.	PROJ. ENGR.	SCALE @ 24X36: 1/128" = 1' 0"	
DATE : August 28, 2026			
DRAWING NO. P - 2		REV.	



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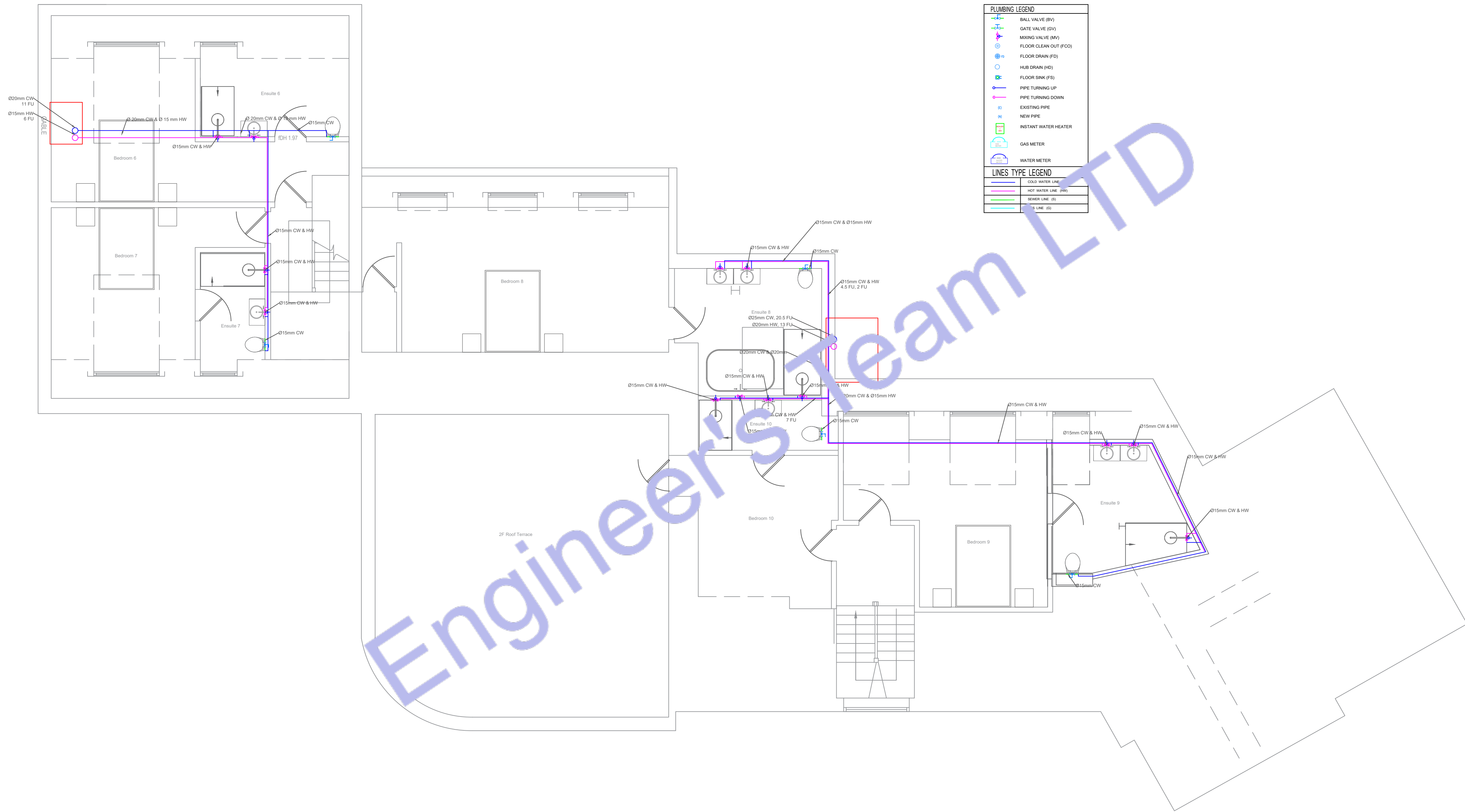
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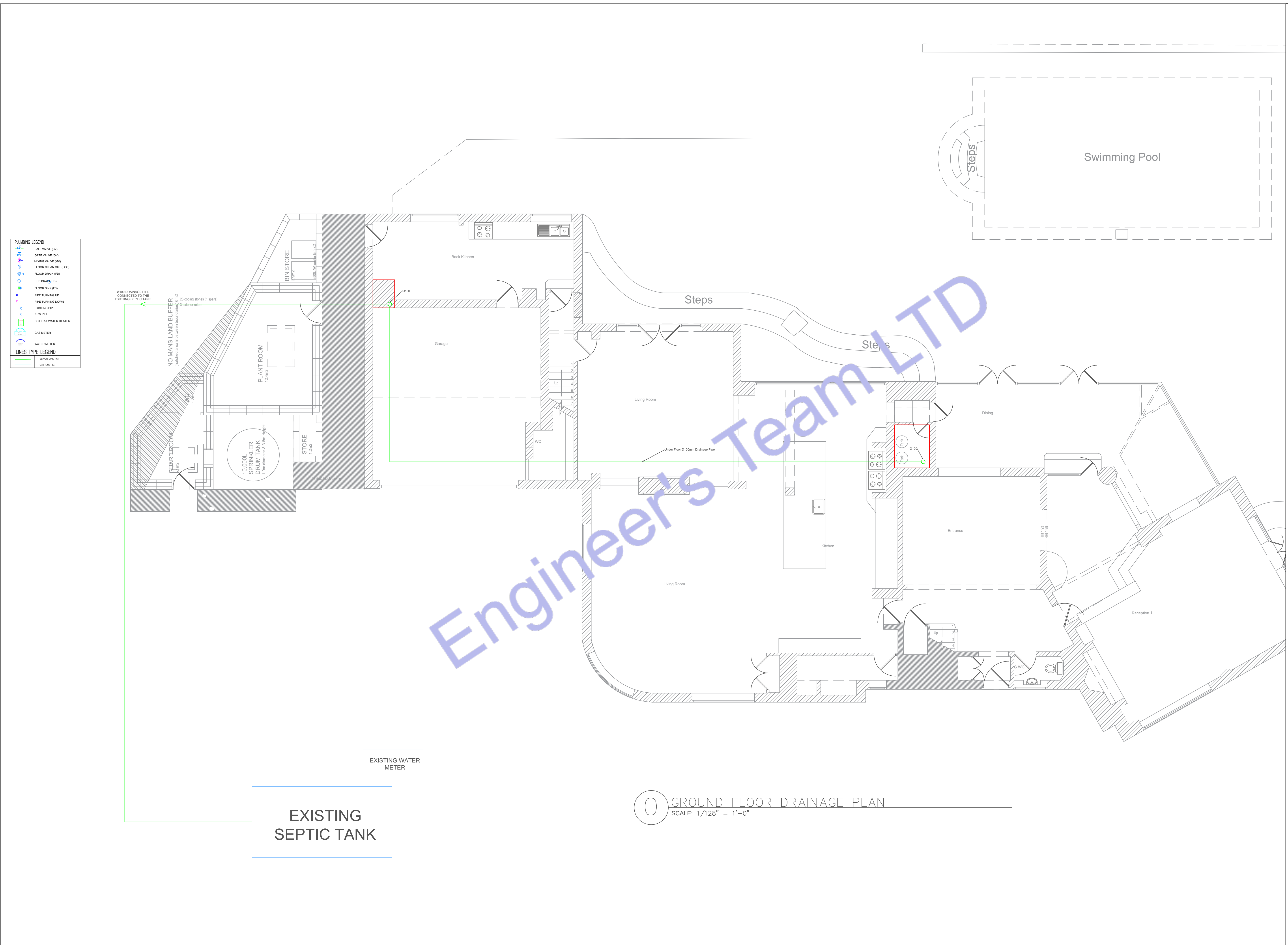
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REV. NO.	DESCRIPTION	DATE	BY

PROJECT: Multi Floor House			
TITLE: SECOND FLOOR WATER SUPPLY PLAN			
PROJ. NO.	PROJ. ENGR.	SCALE @ 24X36: 1/128" = 1' 0"	
DATE : August 28, 2026			
DRAWING NO. P - 3		REV.	



2 SECOND FLOOR WATER SUPPLY PLAN
SCALE: 1/128" = 1'-0"



PLUMBING LEGEND	
	BALL VALVE (BV)
	GATE VALVE (GV)
	MIXING VALVE (MV)
	FLOOR CLEAN OUT (FCO)
	FLOOR DRAIN (FD)
	HUB DRAIN (HD)
	FLOOR SINK (FS)
	PIPE TURNING UP
	PIPE TURNING DOWN
	EXISTING PIPE
	NEW PIPE
	BOILER & WATER HEATER
	GAS METER
	WATER METER
LINES TYPE LEGEND	
	SOLID LINE (S)
	DASH LINE (D)



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STRUCTURES.

REV. NO.	DESCRIPTION	DATE	BY

PROJECT: Multi Floor House			
TITLE: GROUND FLOOR DRAINAGE PLAN			
PROJ. NO.	PROJ. ENGR.	SCALE @ 24X36: 1/128" = 1' 0"	
DATE : August 28, 2026			
DRAWING NO. P - 4		REV.	

0 GROUND FLOOR DRAINAGE PLAN
SCALE: 1/128" = 1'-0"



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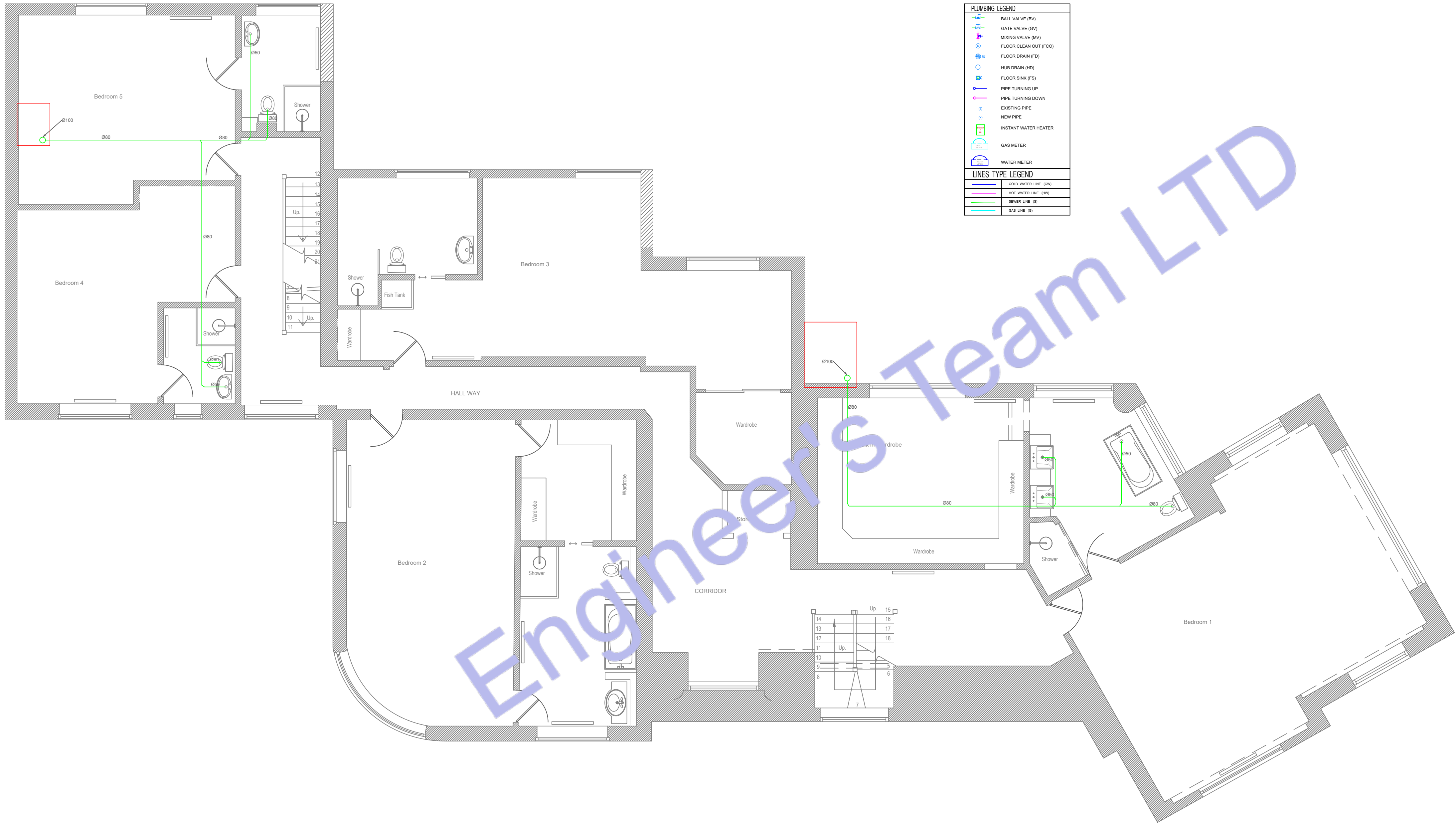
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SUPPORT TO THE BUILDING AND ANY ADJACENT
STRUCTURES.

REV. NO.	DESCRIPTION	DATE	BY

PROJECT: Multi Floor House		
TITLE: FIRST FLOOR DRAINAGE PLAN		
PROJ. NO.	PROJ. ENGR.	SCALE @ 24X36: 1/128" = 1' 0"
DATE : August 28, 2026		
DRAWING NO. P - 5		REV.



1 FIRST FLOOR DRAINAGE PLAN
SCALE: 1/128" = 1'-0"



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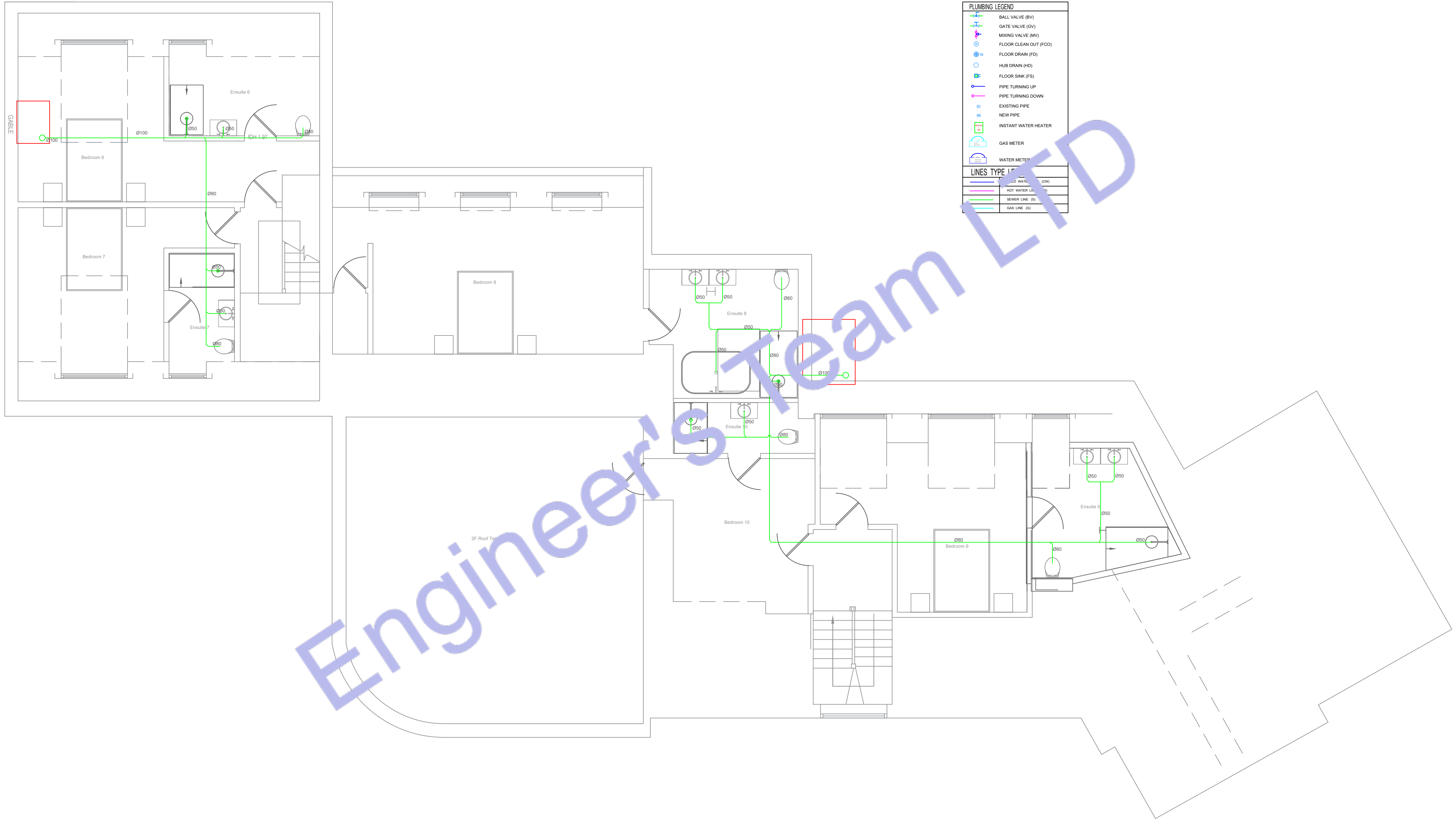
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REV. NO.	DESCRIPTION	DATE	BY

PROJECT: Multi Floor House		
TITLE: SECOND FLOOR DRAINAGE PLAN		
PROJ. NO.	PROJ. ENGR.	SCALE @ 24X36: 1/128" = 1' 0"
DATE : August 28, 2026		
DRAWING NO. P - 6		REV.



2 SECOND FLOOR DRAINAGE PLAN
SCALE: 1/128" = 1'-0"



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PROJECT: Multi Floor House

TITLE: **GROUND FLOOR GAS PLAN**

DATE : August 28, 2026

DRAWING NO.	REV.
P - 7	





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REV. NO.	DESCRIPTION	DATE	BY

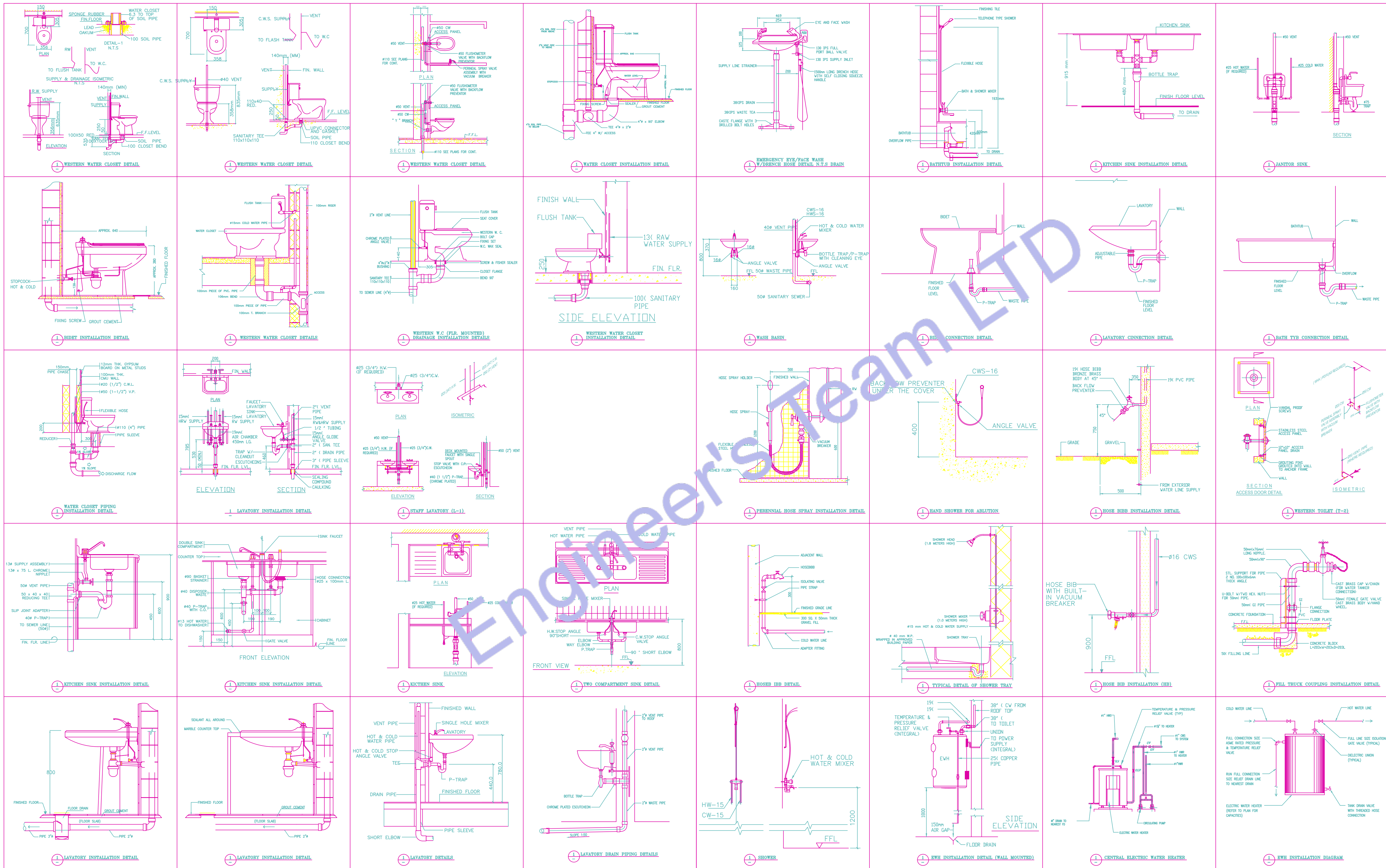
PROJECT: Multi Floor House

TITLE: PLUMBING INSTALLATION
INSTRUCTION

PROJ. NO. PROJ. ENGR. SCALE @ 24X36:
N/A

DATE: August 28, 2026

DRAWING NO. REV.





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GENERAL SPECIFICATIONS

1. GENERAL (ALL SPECIFICATIONS ON THIS SHEET AS APPLICABLE)

A. Work indicated on these drawings is diagrammatic and shall not be scaled. The drawings are intended to convey the scope of work and general arrangement of services. The Contractor shall verify all existing site conditions prior to installation and make all necessary adjustments to complete the works in accordance with the Contract Documents and UK statutory requirements.

B. Provide all labour, materials, plant, tools, equipment, and services necessary for the complete execution of the works in accordance with the Contract Documents. All incidental or supplementary items required for a complete, safe, and operational installation shall be deemed included, whether or not specifically shown or described, at no additional cost to the Employer.

C. All systems and equipment shall be fully installed, tested, commissioned, and left in a complete operational condition to the satisfaction of the Employer. The term "Provide" shall be interpreted as supply, install, test, and commission.

D. All materials and equipment shall be new, of good quality, fit for purpose, and compatible with existing systems where interfaces occur. Installation shall be in accordance with manufacturers' instructions, relevant British Standards, CIBSE guidance, and recognised good engineering practice.

E. Where existing services or building elements obstruct new works, the Contractor shall coordinate and rearrange such items as required, subject to approval by the Contract Administrator, and without additional cost.

F. Written approval shall be obtained prior to cutting or forming penetrations through slabs, walls, ceilings, roofs, or fire compartments. All disturbed finishes shall be reinstated to match existing. All fire-resisting elements shall be reinstated to maintain required fire resistance in accordance with Approved Document B.

G. Maintain the site in a clean and safe condition at all times in accordance with CDM Regulations 2015. Remove waste daily. Upon completion, clear the site of all tools, materials, and debris and leave areas clean and ready for occupation.

2. COORDINATION AND PROGRAMMING

A. The Contractor shall fully coordinate all trades and verify existing conditions to prevent clashes in routing, access, or programme.

B. The Contractor is responsible for coordination between subcontractors, suppliers, statutory authorities, utility providers, the Client, and the Design Team.

C. No installation shall commence until all site dimensions, structural constraints, existing services, and retained fixtures have been verified.

D. Works shall be programmed and phased to minimise disruption to occupied areas. A detailed programme shall be submitted for approval. Temporary partitions or protection shall be provided where required.

E. Provide a minimum of fourteen (14) days' written notice prior to any planned shutdown of utilities. Written approval shall be obtained before shutdown.

F. The Contractor shall be deemed to have inspected the site and fully understood all conditions affecting the works. No claims shall be entertained for failure to do so.

3. STATUTORY COMPLIANCE, PERMITS AND INSPECTIONS (UK)

A. All works shall comply with the latest editions of applicable UK legislation and standards, including but not limited to:

Building Regulations (England/Wales)

Approved Documents A, B, F, G, L, M

BS and EN Standards

CIBSE Guides

Health and Safety at Work Act 1974

CDM Regulations 2015

B. The Contractor shall obtain all required approvals, inspections, and completion certificates from Building Control and relevant Authorities Having Jurisdiction.

C. All works shall comply with statutory utility provider requirements and local authority regulations.

D. Where Contract Documents exceed statutory minimum requirements, the Contract Documents shall take precedence. Any conflict shall be reported in writing prior to installation.

E. The Contractor shall comply with all UK health, safety, and environmental legislation, including COSHH and waste management regulations.

F. All works shall comply with the requirements of relevant utility companies and network operators.

4. WARRANTY

A. All workmanship and materials shall be warranted for a minimum period of twelve (12) months from the date of Practical Completion. Defects arising during this period shall be remedied at no cost to the Employer.

5. SHOP DRAWINGS

A. Submit electronic shop drawings, manufacturers' data sheets, and performance information for all equipment for review and approval prior to installation.

6. RECORD DRAWINGS / AS-BUILT INFORMATION

A. Maintain a complete set of marked-up drawings on site recording all changes. Upon completion, provide electronic and hard-copy as-built drawings and manuals in accordance with CIBSE TM31 / Soft Landings principles, if applicable.

DUCTWORK & INSULATION

SHEET METAL DUCTWORK

A. All ductwork shall be galvanised steel fabricated and installed in accordance with DW/144 and BS EN 1507 / BS EN 12237.

B. All ductwork routes shall be site-verified prior to fabrication.

C. Duct leakage classes shall comply with DW/143. Testing shall be carried out where required.

D. Turning vanes shall be installed in elbows as recommended by DW/144.

E. Flexible duct connections shall be limited in length and installed in accordance with BS EN 13180.

F. Exposed ductwork shall be single-skin galvanised steel with approved seams.

DUCT INSULATION & ACOUSTIC LINING

Thermal Insulation
Insulation thickness shall comply with Approved Document L and CIBSE Guide A.

Insulation Materials
Insulation shall achieve appropriate fire performance in accordance with BS EN 13501-1.

Acoustic Lining
Acoustic lining shall comply with BS EN ISO 11654 and be mould-resistant.

PIPING & INSULATION

REFRIGERANT & CONDENSATE PIPEWORK

1. Refrigerant pipework shall comply with BS EN 378 and manufacturer requirements.

1. Pipe identification shall comply with BS 1710.

3. Pipe routing shall not obstruct equipment servicing.

4. Condensate pipework shall be PVC-U or equivalent and installed to falls per Approved Document H.

5. Traps shall be provided where required.

6. Dissimilar metals shall be isolated to prevent corrosion.

PIPE INSULATION

1. Pipe insulation shall comply with Approved Document L.

2. External insulation shall be weather-protected.

3. Fire stopping shall comply with Approved Document B and BS 476 / BS EN 1366.

MECHANICAL CODE NOTES

1. No ductwork or pipework shall be installed above electrical storage, distribution boards, or control panels in accordance with BS 7671 and good engineering practice.

2. Materials within air plenums shall be non-combustible or achieve Class 0 or Class 1, 2, 3, 4, 5, 6, 7, 8, 9 reaction to fire in accordance with Approved Document B and BS EN 13501-1.

3. Verify roof warranty status prior to works. Roof penetration shall be carried out by approved contractors.

4. Ductwork and horizontal pipework shall be installed high as practicable and coordinated to avoid clashes.

5. Provide adequate access for maintenance, filter replacement, valves, and electrical isolation in accordance with CIBSE Guide M.

6. Structural approval shall be obtained for equipment loads exceeding manufacturer or structural limits.

7. Motorised dampers shall be provided on all outdoor air and exhaust air ducts where required by Approved Document F.

8. Provide balancing dampers on all main and branch ducts.

9. Fire dampers shall be installed where ductwork penetrates fire compartments in accordance with BS 9999 and BS EN 1366.

10. Provide access panels for fire, smoke, and control dampers.

11. Access panels shall be provided for all concealed valves and dampers.

12. Provide remote volume control where dampers are inaccessible.

13. External vents shall be corrosion-resistant and suitable for UK environmental conditions.

CONTROLS

1. Controls installation and commissioning shall be undertaken by competent specialists.

2. Thermostats shall be insulated from cold bridging on external walls.

3. Thermostats shall be installed at appropriate heights and coordinated with the Design Team.

4. Provide all required interfaces for full system control.

5. Demonstrate and commission all systems prior to handover in accordance with CIBSE Commissioning Codes.

TESTING & BALANCING

1. Scope
Testing and balancing shall be carried out by competent commissioning specialists in accordance with CIBSE Commissioning Codes A, B, and M.

2. Pre-conditions
All systems shall be complete, clean, and operational prior to commissioning.

3. Documentation
Provide commissioning reports demonstrating compliance with design performance.

4. Recorded Data
Record airflow rates, temperatures, capacities, and electrical data.

5. Functional Testing
Demonstrate heating and cooling operation and record performance results.

ABBREVIATIONS

(E)	EXISTING TO REMAIN	IN WG	INCHES OF WATER GAUGE
(R)	REMOVED AND RELOCATED	KW	KILOWATTS
(RF)	RELOCATED EQUIPMENT	LAT	LEAVING AIR TEMPERATURE
A/J	AIR CONDITIONING UNIT	LBS	POUNDS
F	ABOVE FINISHED FLOOR	LRA	LOCKED ROTOR AMPS
A/H	AIR HANDLING UNIT	LWT	LEAVING WATER TEMPERATURE
BA	BUILDING AUTOMATION SYSTEM	MBH	THOUSAND BRITISH THERMAL UNITS PER HOUR
BTU	BRITISH THERMAL UNITS PER HOUR	MCA	MINIMUM CIRCUIT AMPACITY
FM	CUBIC FEET PER MINUTE	MIN	MINIMUM
LG	CEILING	MOC	MAX OVER-CURRENT PROTECTION
DB	DRY BULB TEMPERATURE	OA	OUTSIDE AIR
DN	DOWN	PD	PRESSURE DROP
EAT	ENTERING AIR TEMPERATURE	PH	PHASE
EF	EXHAUST FAN	PSI	POUNDS PER SQUARE INCH
EFF	EFFICIENCY	RA	RETURN AIR
ESP	EXTERNAL STATIC PRESSURE	RH	RELATIVE HUMIDITY
EWB	ENTERING WET BULB TEMPERATURE	RLA	RUNNING LOAD AMPS
EWT	ENTERING WATER TEMPERATURE	RPM	REVOLUTIONS PER MINUTE
F	DEGREES FAHRENHEIT	SA	SUPPLY AIR
FLA	FULL LOAD AMPS	SL	SOUND LINING
FPB	FAN POWERED BOX	TYP	TYPICAL
FT	FOOT, FEET	TF	TRANSFER FAN
GPM	GALLONS PER MINUTE	V	VOLT, VOLTS
HP	HORSEPOWER	VAV	VARIABLE AIR VOLUME
HZ	HERTZ (CYCLES PER SECOND)	W/	WITH
IN	INCH, INCHES	WB	WET BULB TEMPERATURE
		WG	WATER GAUGE

HVAC SYMBOLS

SYMBOL	DESCRIPTION
	EXISTING DUCTWORK, EQUIPMENT OR PIPING TO REMAIN
	EXISTING DUCTWORK, EQUIPMENT OR PIPING TO BE REMOVED OR RELOCATED
	NEW OR RELOCATED DUCTWORK, EQUIPMENT OR PIPING
	DUCTWORK WITH SOUNDLINING
	SUPPLY DUCT TURNING UP
	RETURN/EXHAUST DUCT TURNING UP
	SUPPLY DUCT TURNING DOWN
	RETURN/EXHAUST DUCT TURNING DOWN
	TRANSITION IN DUCT, SQUARE TO SQUARE
	TRANSITION IN DUCT, SQUARE TO ROUND
	SQUARE THROAT DUCT ELBOW WITHOUT TURNING VANES
	SQUARE THROAT DUCT ELBOW WITH TURNING VANES
	RADIUS ELBOW
	45 DEGREE TAP
	SPIN-IN RUNOUT FITTING WITH BALANCING DAMPER AND FLEXIBLE DUCT
	CONICAL TAP
	FLEXIBLE DUCT
	FLEXIBLE DUCT CONNECTION
	RECTANGULAR SUPPLY AIR DIFFUSER
	RETURN AIR GRILLE
	HUMIDISTAT, THERMOSTAT, CO2 SENSOR
	EXHAUST FAN
	SIDE WALL/DUCT REGISTER
	CFM DESIGNATION SYMBOL & QUANTITY
	KEYED NOTE, DEMOLITION
	KEYED NOTE, NEW WORK
	POINT OF REMOVAL
	POINT OF CONNECTION TO EXISTING
	DIFFUSER OR GRILLE DESIGNATION SYMBOL
	ACCESS DOOR, SIZE ON FLOOR PLANS
	RECTANGULAR SUPPLY AIR DIFFUSER
	VOLUME DAMPER
	FD: FIRE DAMPER SD: SMOKE DAMPER MD: MOTORIZED DAMPER F/SD: COMBINATION FIRE/SMOKE DAMPER BDD: BACKDRAFT DAMPER
	VAV TAG: TYPE, BOX NUMBER AIRFLOW AND KW
	VAV BOX TYPE V-SHUT-OFF TYPE VAV BOX S-SERIES FAN POWERED BOX P-PARALLEL FAN POWERED BOX

REV. NO.	DESCRIPTION	DATE	BY

PROJECT: Multi Floor House		
TITLE: HVAC GENERAL NOTE		
PROJ. NO.	PROJ. ENGR.	SCALE @ 24X36: 1/128" = 1' 0"
DATE : August 28, 2026		
DRAWING NO. H - 0		REV.



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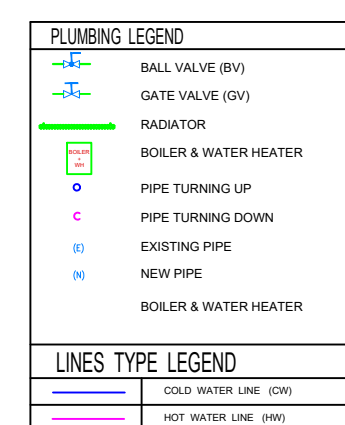
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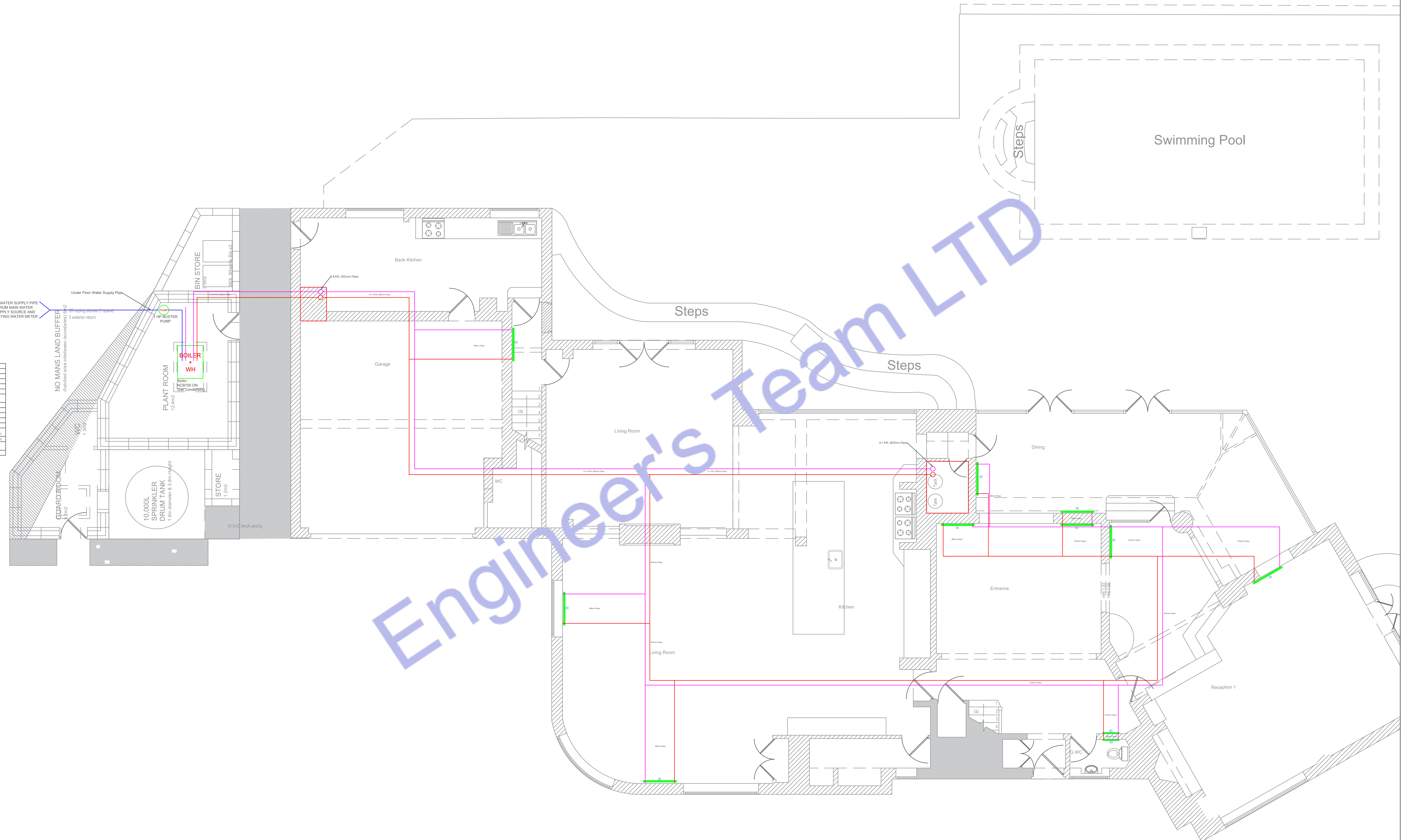
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PROJECT: Multi Floor House		
TITLE: GROUND FLOOR HEATING SYSTEM PLAN		
PROJ. NO.	PROJ. ENGR.	SCALE @ 24X36: $1/128" = 1' 0"$
DATE : August 28, 2026		
DRAWING NO.		REV.
H - 1		



Boiler Equipment Schedule	
Parameter	Specification
Brand Name	Norton
Model Series	NCB720-50 Gas Condensing Combi Boiler
Model Numbers (Capacity Variation)	NCB720-55+42K (42 kW DHW Output) NCB720-55+44K (44 kW DHW Output)
Rated Voltage / Supply Frequency	230 V AC / Single-Phase / 50 Hz
Nominal Power Consumption	NCB720-55+42K: ~105 W NCB720-55+44K: ~106 W
Rated / Running Amps	NCB720-55+42K: ~0.5 A NCB720-55+44K: ~0.7 A
Internal PCB Fuse Rating	1.1A / 250V
Pressure Control Switch / Breaker Size	2.5 A (Type 500) / 1.5A Switched Phase Connection Unit of 5 A MCB (1-Pole, Type B/C)
Recommended Supply Wiring	53 mm ² 1.5 Volt/mm ² (2.5 Line, Neutral, Earth)
Maximum Heating Flow / Space Heat Output	34 kW (at 60/50°C)
Access Protection Rating	IPX4



0 GROUND FLOOR HEATING SYSTEM PLAN
SCALE: 1/128" = 1'-0"



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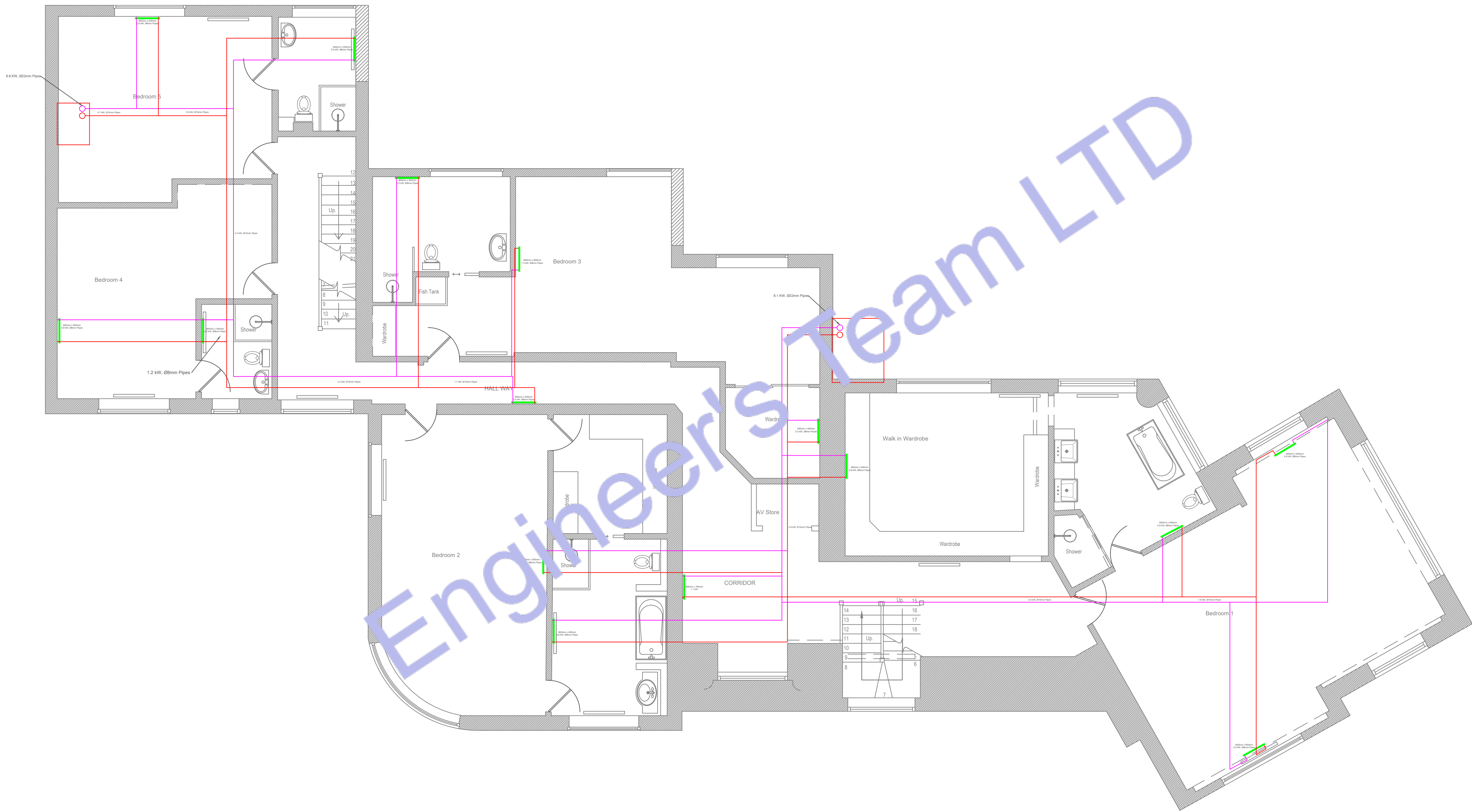
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STRUCTURES.

REV. NO.	DESCRIPTION	DATE	BY

PROJECT: Multi Floor House		
TITLE: FIRST FLOOR HEATING SYSTEM PLAN		
PROJ. NO.	PROJ. ENGR.	SCALE @ 24X36: 1/128" = 1' 0"
DATE : August 28, 2026		
DRAWING NO. H - 2		REV.

PLUMBING LEGEND	
	BALL VALVE (BV)
	GATE VALVE (GV)
	RADIATOR
	BOILER & WATER HEATER
	PIPE TURNING UP
	PIPE TURNING DOWN
	EXISTING PIPE
	NEW PIPE
	BOILER & WATER HEATER

LINES TYPE LEGEND	
	COLD WATER LINE (CWL)
	HOT WATER LINE (HWL)



1 FIRST FLOOR HEATING SYSTEM PLAN
SCALE: 1/128" = 1'-0"



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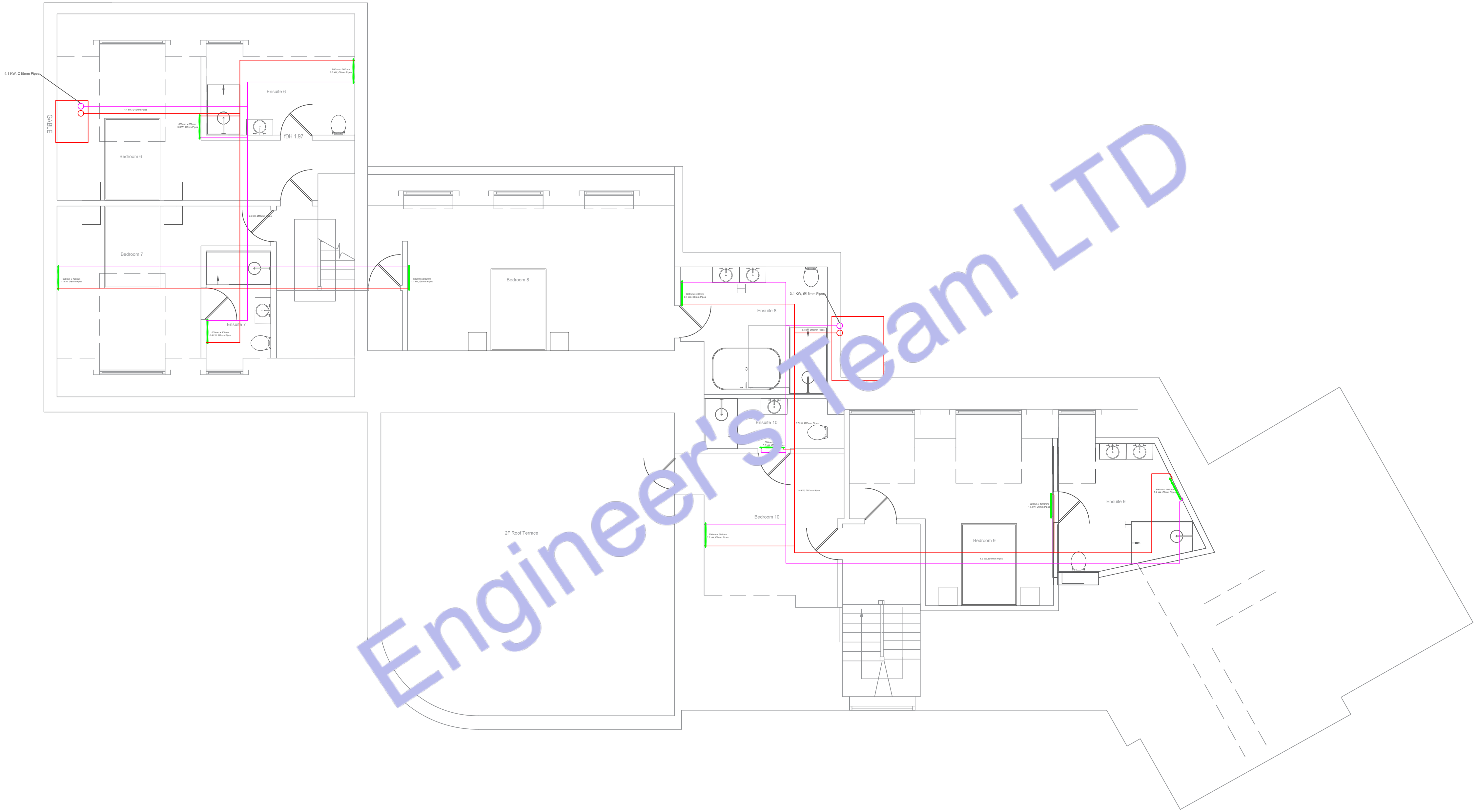
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SUPPORT TO THE BUILDING AND ANY ADJACENT
STRUCTURES.

REV. NO.	DESCRIPTION	DATE	BY

PROJECT: Multi Floor House		
TITLE: SECOND FLOOR HEATING SYSTEM PLAN		
PROJ. NO.	PROJ. ENGR.	SCALE @ 24X36: 1/128" = 1' 0"
DATE : August 28, 2026		
DRAWING NO. H - 3		REV.

PUMPING LEGEND	
	BALL VALVE (BV)
	GATE VALVE (GV)
	RADIATOR
	BOILER & WATER HEATER
	PIPE TURNING UP
	PIPE TURNING DOWN
	EXISTING PIPE
	NEW PIPE
	BOILER & WATER HEATER
LINES TYPE LEGEND	
	COLD WATER LINE (CWL)
	HOT WATER LINE (HWL)



2 SECOND FLOOR HEATING SYSTEM PLAN
SCALE: 1/128" = 1'-0"



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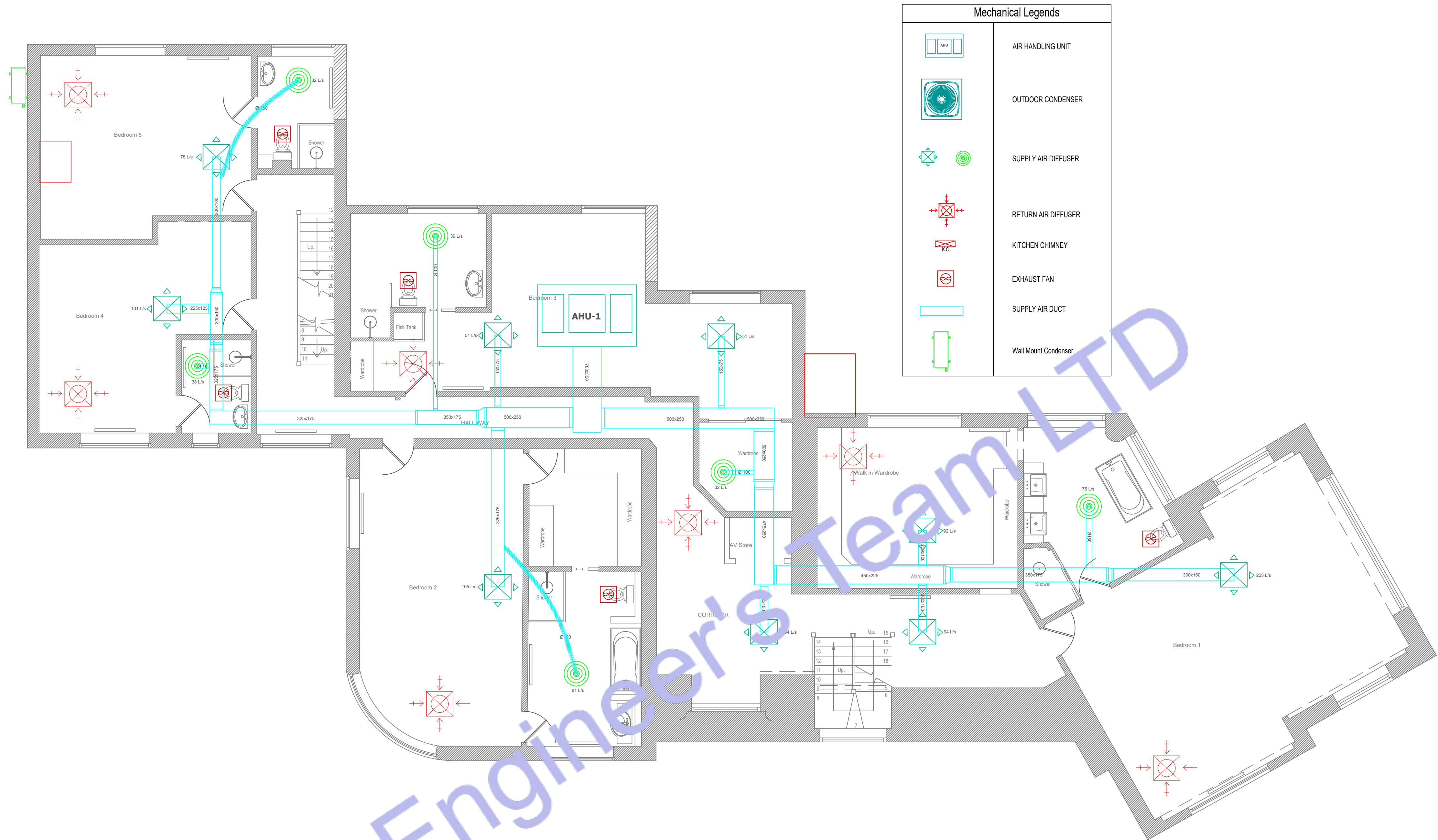
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1 FIRST FLOOR HVAC PLAN
SCALE: 1/128" = 1'-0"

HVAC Equipment Schedule															
Parameter	Equipment Tag / Identifier	Application / Duty	System Classification	Manufacturer / Brand	Outdoor Unit Model Number	Indoor Hydro Unit Model Number	Nominal Thermal Capacity	Electrical Supply (Voltage / Phase)	Nominal Running Current	Maximum Operating Current	Recommended Breaker Size (MCB)	Minimum Supply Cable Cross-Section	Refrigerant Type	Maximum Flow Temperature	Control Integration / Interface
System 1 (22 kW High-Temp)	HVAC 1	High-Temperature Space Heating & Domestic Hot Water	Air-to-Water High-Temp Split Kit	Trianco	Activair 22 kW Outdoor	T22-HP-SPLIT Hydro Kit	22.0 kW	400V AC / 3-Phase + N + E / 50 Hz	~15.2 A per phase	~26.0 A per phase	32 A (3-Pole, Type C Curve)	5 x 6.0 mm ² (3P+N+E)	R290 (Propane)	Up to 70°C – 75°C	Pre-plumbed System / Weather Comp
System 2 (12 kW / 14 kW 3-Phase)	HVAC 2	Space Heating & Cooling / Low Ambient Heating	Air-to-Water Inverter Split System	Panasonic	WH-UQ12HE8 (12 kW) / WH-UX12HE8 (14 kW)	WH-SQC12H9E8	12.0 kW – 14.0 kW	400V AC / 3-Phase + N + E / 50 Hz	~5.5 A – 7.2 A per phase	~13.0 A per phase (with backup heater active)	16 A or 20 A (3-Pole, Type C Curve)	5 x 2.5 mm ² or 5 x 4.0 mm ² (3P+N+E)	R410A / R32 (depending on exact generation)	Up to 60°C	Panasonic Smart Cloud / CZ-TAW1 / Modbus

REV. NO.	DESCRIPTION	DATE	BY

PROJECT:			
Multi Floor House			
TITLE:			
FIRST FLOOR HVAC SYSTEM PLAN			
PROJ. NO.	PROJ. ENGR.	SCALE @ 24X36: 1/128" = 1' 0"	
DATE :			
August 28, 2026			
DRAWING NO.		REV.	
H - 4			



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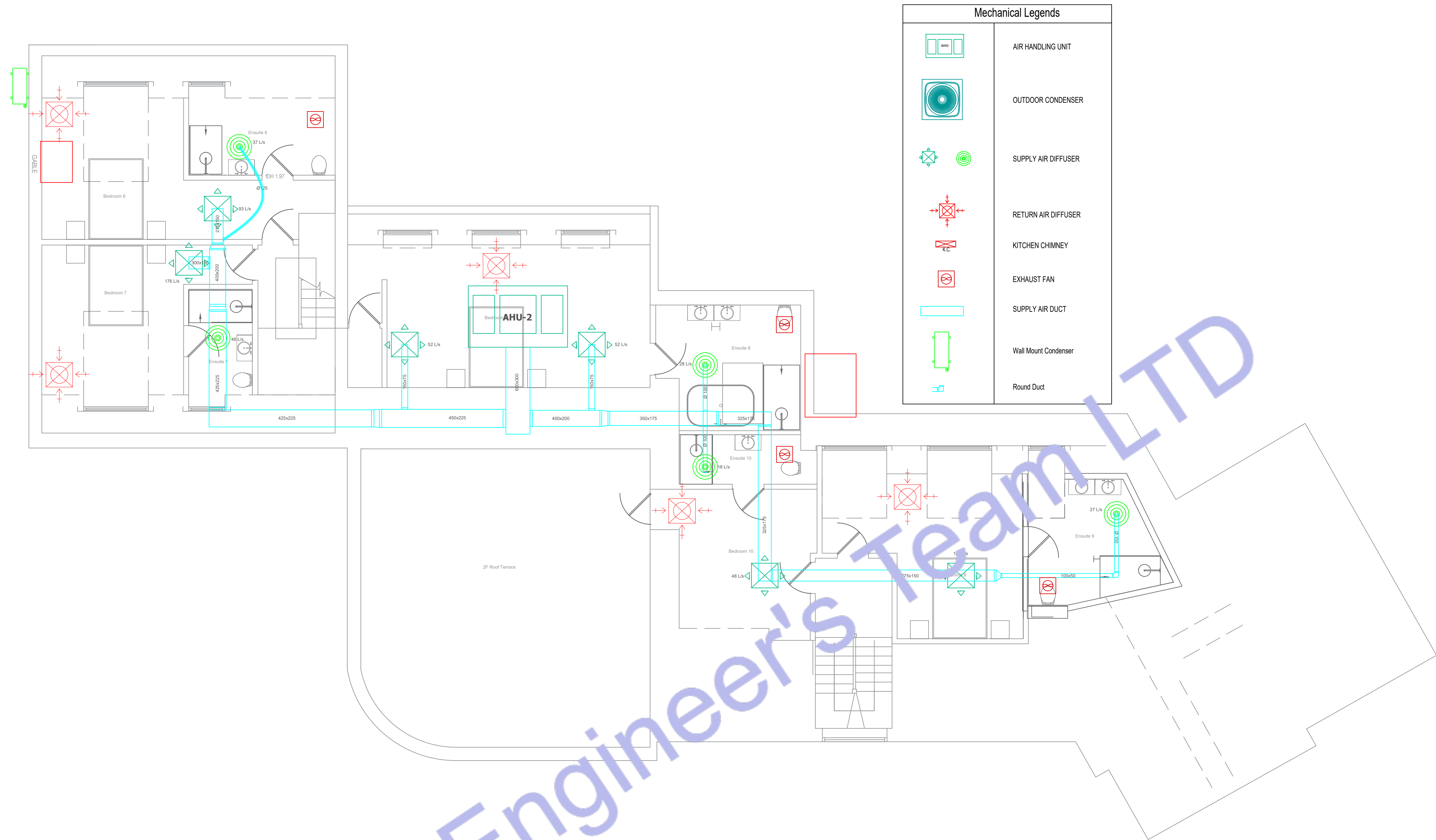
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REV. NO.	DESCRIPTION	DATE	BY

PROJECT: Multi Floor House		
TITLE: SECOND FLOOR HVAC PLAN		
PROJ. NO.	PROJ. ENGR.	SCALE @ 24X36: 1/128" = 1' 0"
DATE : August 28, 2026		
DRAWING NO. H - 5		REV.



2 SECOND FLOOR HVAC PLAN
SCALE: 1/128" = 1'-0"

Exhaust Fan Schedule						
Ref.	Brand	Model	Airflow	Power	Rated Current	Supply
EFK-01	Manrose	XF150T	30 L/s	25 W	0.11 A	230 V, 1Ø
EFB-01	Manrose	XF100T	15 L/s	15 W	0.08 A	230 V, 1Ø



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Air System Sizing Summary for HVAC 1

Project Name: 246_Fate_Little Manor, Barnet Lane, Elstree WD6 3Q
Prepared by: Engineer's Team

08/15/2026
05:32PM

Air System Information

Air System Name: HVAC 1
Equipment Class: SPLT AHU
Air System Type: SZCAV
Number of zones: 1
Floor Area: 243.9 m²
Location: London - Heathrow, United Kingdom

Sizing Calculation Information

Calculation Months: Jan to Dec
Sizing Data: Calculated
Zone L/s Sizing: Sum of space airflow rates
Space L/s Sizing: Individual peak space loads

Central Cooling Coil Sizing Data

Total coil load: 21.0 kW
Sensible coil load: 18.8 kW
Coil L/s at Jul 1500: 1306 L/s
Max block L/s: 1306 L/s
Sum of peak zone L/s: 1306 L/s
Sensible heat ratio: 0.894
L/s (kW): 62.1
m³/kW: 11.6
W/m²: 86.2
Water flow @ 5.6 K rise: N/A
Load occurs at: Jul 1500
OA DB / WB: 26.9 / 18.8 °C
Entering DB / WB: 24.8 / 17.1 °C
Leaving DB / WB: 12.9 / 12.0 °C
Coil ADP: 11.3 °C
Bypass Factor: 0.120
Resulting RH: 46 %
Design supply temp.: 12.8 °C
Zone T-stat Check: 1 of 1 OK
Max zone temperature deviation: 0.0 K

Central Heating Coil Sizing Data

Max coil load: 14.8 kW
Coil L/s at Des Htg: 1306 L/s
Max coil L/s: 1306 L/s
Water flow @ 11.1 K drop: N/A
Load occurs at: Des Htg
W/m²: 60.6
Ent. DB / Lvg DB: 18.1 / 27.5 °C

Supply Fan Sizing Data

Actual max L/s: 1306 L/s
Standard L/s: 1302 L/s
Actual max L/s (m³): 5.35 L/s (m³)
Fan motor BHP: 0.00 BHP
Fan motor kW: 0.00 kW
Fan static: 0 Pa

Outdoor Ventilation Air Data

Design airflow L/s: 138 L/s
L/s (m³): 0.57 L/s (m³)
L/s/person: 5.31 L/s/person

Hourly Analysis Program 5.10

Page 1 of 14

Zone Sizing Summary for HVAC 1

Project Name: 246_Fate_Little Manor, Barnet Lane, Elstree WD6 3Q
Prepared by: Engineer's Team

08/15/2026
05:32PM

Air System Information

Air System Name: HVAC 1
Equipment Class: SPLT AHU
Air System Type: SZCAV
Number of zones: 1
Floor Area: 243.9 m²
Location: London - Heathrow, United Kingdom

Sizing Calculation Information

Calculation Months: Jan to Dec
Sizing Data: Calculated
Zone L/s Sizing: Sum of space airflow rates
Space L/s Sizing: Individual peak space loads

Zone Terminal Sizing Data

Zone Name	Design Supply Airflow (L/s)	Minimum Supply Airflow (L/s)	Zone L/s (m ²)	Reheat Coil Load (kW)	Reheat Coil Water L/s @ 11.1 K	Zone Htg Unit Coil Load (kW)	Zone Htg Unit Water L/s @ 11.1 K	Mixing Box Fan Airflow (L/s)
Zone 1	1306	1306	5.35	0.0	-	0.0	-	0

Zone Peak Sensible Loads

Zone Name	Zone Cooling Sensible Peak Load (kW)	Time of Peak Cooling Load	Zone Heating Load (kW)	Zone Floor Area (m ²)
Zone 1	16.4	Jul 1500	11.4	243.9

Space Loads and Airflows

Zone Name / Space Name	Mult	Cooling Sensible (kW)	Time of Peak Sensible Load	Air Flow (L/s)	Heating Load (kW)	Floor Area (m ²)	Space L/s (m ³)
Zone 1							
F Bedroom (1)	1	3.0	Jun 1500	223	1.8	41.4	5.38
F Bedroom (2)	1	2.2	Jun 1500	165	1.3	28.3	5.84
F Bedroom (3)	1	1.4	Jun 1500	102	1.2	28.7	3.66
F Bedroom (4)	1	1.8	Sep 1500	131	0.8	21.2	6.18
F Bedroom (5)	1	1.0	Jun 1500	75	0.8	22.3	3.35
F CORRIDOR	1	2.5	Sep 1500	188	1.1	27.3	6.89
F Ensuite (1)	1	1.0	Jun 1500	75	0.8	11.3	6.63
F Ensuite (2)	1	1.1	Sep 1500	81	0.6	12.1	6.87
F Ensuite (3)	1	0.5	Jun 1500	39	0.5	8.4	4.59
F Ensuite (4)	1	0.5	Sep 1500	38	0.3	4.0	9.49
F Ensuite (5)	1	0.4	Jun 1500	32	0.5	5.3	6.12
F HALL WAY	1	0.5	Aug 1500	39	0.5	8.9	4.39
F WALK IN WARDROBE	1	1.2	Jun 1800	92	0.8	19.8	4.63
F WARDROBE	1	0.3	Jul 1800	26	0.3	4.9	5.31

Hourly Analysis Program 5.10

Page 2 of 14

Air System Design Load Summary for HVAC 1

Project Name: 246_Fate_Little Manor, Barnet Lane, Elstree WD6 3Q
Prepared by: Engineer's Team

08/15/2026
05:32PM

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 1500 COOLING OA DB / WB 26.9 °C / 18.8 °C			HEATING DATA AT DES HGTG HEATING OA DB / WB -3.9 °C / -6.1 °C		
	Details	Sensible (W)	Latent (W)	Details	Sensible (W)	Latent (W)
ZONE LOADS						
Window & Skylight Solar Loads	57 m ²	8960	-	57 m ²	-	-
Wall Transmission	498 m ²	1158	-	498 m ²	4693	-
Roof Transmission	244 m ²	431	-	244 m ²	622	-
Window Transmission	57 m ²	265	-	57 m ²	4785	-
Skylight Transmission	0 m ²	0	-	0 m ²	0	-
Door Loads	31 m ²	74	-	31 m ²	1329	-
Floor Transmission	0 m ²	0	-	0 m ²	0	-
Partitions	303 m ²	0	-	303 m ²	0	-
Ceiling	0 m ²	0	-	0 m ²	0	-
Overhead Lighting	2100 W	1693	-	0	0	-
Task Lighting	2100 W	1874	-	0	0	-
Electric Equipment	2600 W	2369	-	0	0	-
People	26	1558	1647	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	0% / 0%	0	0	0%	0	0
>> Total Zone Loads	-	16380	1647	-	11438	0
Zone Conditioning	-	18400	1647	-	10706	0
Plenum Wall Load	0%	0	-	0	0	-
Plenum Roof Load	0%	0	-	0	0	-
Plenum Lighting Load	0%	0	-	0	0	-
Return Fan Load	1306 L/s	0	-	1306 L/s	0	-
Ventilation Load	138 L/s	392	576	138 L/s	4084	0
Supply Fan Load	1306 L/s	0	-	138 L/s	0	-
Space Fan Coil Fans	-	0	-	-	0	-
Duct Heat Gain / Loss	0%	0	-	0%	0	-
>> Total System Loads	-	16380	1647	-	14790	0
Central Cooling Coil	-	1871	222	-	0	0
Central Heating Coil	-	0	-	-	14790	0
>> Total Conditioning	-	1871	222	-	14790	0
Key:	Positive values are clg loads Negative values are htg loads			Positive values are htg loads Negative values are clg loads		

Hourly Analysis Program 5.10

Page 3 of 14

Air System Sizing Summary for HVAC 2

Project Name: 246_Fate_Little Manor, Barnet Lane, Elstree WD6 3Q
Prepared by: Engineer's Team

08/15/2026
05:33PM

Air System Information

Air System Name: HVAC 2
Equipment Class: SPLT AHU
Air System Type: SZCAV
Number of zones: 1
Floor Area: 192.4 m²
Location: London - Heathrow, United Kingdom

Sizing Calculation Information

Calculation Months: Jan to Dec
Sizing Data: Calculated
Zone L/s Sizing: Sum of space airflow rates
Space L/s Sizing: Individual peak space loads

Central Cooling Coil Sizing Data

Total coil load: 12.7 kW
Sensible coil load: 11.4 kW
Coil L/s at Jul 1500: 792 L/s
Max block L/s: 792 L/s
Sum of peak zone L/s: 792 L/s
Sensible heat ratio: 0.893
L/s (kW): 62.3
m³/kW: 15.1
W/m²: 66.2
Water flow @ 5.6 K rise: N/A
Load occurs at: Jul 1500
OA DB / WB: 26.9 / 18.8 °C
Entering DB / WB: 25.0 / 17.2 °C
Leaving DB / WB: 13.1 / 12.2 °C
Coil ADP: 11.5 °C
Bypass Factor: 0.120
Resulting RH: 46 %
Design supply temp.: 12.8 °C
Zone T-stat Check: 1 of 1 OK
Max zone temperature deviation: 0.0 K

Central Heating Coil Sizing Data

Max coil load: 10.6 kW
Coil L/s at Des Htg: 792 L/s
Max coil L/s: 792 L/s
Water flow @ 11.1 K drop: N/A
Load occurs at: Des Htg
W/m²: 56.2
Ent. DB / Lvg DB: 17.5 / 28.6 °C

Supply Fan Sizing Data

Actual max L/s: 792 L/s
Standard L/s: 790 L/s
Actual max L/s (m³): 4.12 L/s (m³)
Fan motor BHP: 0.00 BHP
Fan motor kW: 0.00 kW
Fan static: 0 Pa

Outdoor Ventilation Air Data

Design airflow L/s: 103 L/s
L/s (m³): 0.53 L/s (m³)
L/s/person: 5.71 L/s/person

Hourly Analysis Program 5.10

Page 8 of 14

Zone Sizing Summary for HVAC 2

Project Name: 246_Fate_Little Manor, Barnet Lane, Elstree WD6 3Q
Prepared by: Engineer's Team

08/15/2026
05:33PM

Air System Information

Air System Name: HVAC 2
Equipment Class: SPLT AHU
Air System Type: SZCAV
Number of zones: 1
Floor Area: 192.4 m²
Location: London - Heathrow, United Kingdom

Sizing Calculation Information

Calculation Months: Jan to Dec
Sizing Data: Calculated
Zone L/s Sizing: Sum of space airflow rates
Space L/s Sizing: Individual peak space loads

Zone Terminal Sizing Data

Zone Name	Design Supply Airflow (L/s)	Minimum Supply Airflow (L/s)	Zone L/s (m ²)	Reheat Coil Load (kW)	Reheat Coil Water L/s @ 11.1 K	Zone Htg Unit Coil Load (kW)	Zone Htg Unit Water L/s @ 11.1 K	Mixing Box Fan Airflow (L/s)
Zone 2	792	792	4.12	0.0	-	0.0	-	0

Zone Peak Sensible Loads

Zone Name	Zone Cooling Sensible Peak Load (kW)	Time of Peak Sensible Cooling Load	Zone Heating Load (kW)	Zone Floor Area (m ²)
Zone 2	10.0	Jul 1500	8.0	192.4

Space Loads and Airflows

Zone Name / Space Name	Mult	Cooling Sensible (kW)	Time of Peak Sensible Load	Air Flow (L/s)	Heating Load (kW)	Floor Area (m ²)	Space L/s (m ³)
Zone 2							
Bedroom (10)	1	0.6	Jul 1500	48	0.5	12.2	3.91
Bedroom (6)	1	1.2	Jun 1500	93	1.0	22.5	4.15
Bedroom (7)	1	2.4	Sep 1500	176	1.1	18.0	9.80
Bedroom (8)	1	1.4	Jun 1500	103	1.1	32.2	3.19
Bedroom (9)	1	1.6	Jun 1500	123	1.5	19.8	6.20
Ensuite (10)	1	0.2	Aug 1500	18	0.3	3.7	4.86
Ensuite (6)	1	0.5	Jun 1500	37	0.5	11.1	3.32
Ensuite (7)	1	0.6	Sep 1500	46	0.4	5.6	8.21
Ensuite (8)	1	0.4	Jul 1500	28	0.4	10.4	2.70
Ensuite (9)	1	0.4	Jun 1500	27	0.4	5.2	8.15
2F Roof Terrace	1	1.3	Jul 1500	94	0.8	51.7	1.82

Hourly Analysis Program 5.10

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Air System Design Load Summary for HVAC 2

Project Name: 246_Fate_Little Manor, Barnet Lane, Elstree WD6 3Q
Prepared by: Engineer's Team

08/15/2026
05:33PM

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 1500 COOLING OA DB / WB 26.9 °C / 18.8 °C			HEATING DATA AT DES HGTG HEATING OA DB / WB -3.9 °C / -6.1 °C		
	Details	Sensible (W)	Latent (W)	Details	Sensible (W)	Latent (W)
ZONE LOADS						
Window & Skylight Solar Loads	35 m ²	3033	-	35 m ²	-	-
Wall Transmission	383 m ²	895	-	383 m ²	3610	-
Roof Transmission	201 m ²	354	-	201 m ²	512	-
Window Transmission	35 m ²	160	-	35 m ²	2888	-
Skylight Transmission	0 m ²	0	-	0 m ²	0	-
Door Loads	24 m ²	56	-	24 m ²	1014	-
Floor Transmission	0 m ²	0	-	0 m ²	0	-
Partitions	197 m ²	0	-	197 m ²	0	-
Ceiling	0 m ²	0	-	0 m ²	0	-
Overhead Lighting	1657 W	1248	-	0	0	-
Task Lighting	1657 W	1430	-	0	0	-
Electric Equipment	2150 W	1914	-	0	0	-
People	18	879	957	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	0% / 0%	0	0	0%	0	0
>> Total Zone Loads	-	9969	957	-	8023	0
Zone Conditioning	-	11084	957	-	7579	0
Plenum Wall Load	0%	0	-	0	0	-
Plenum Roof Load	0%	0	-	0	0	-
Plenum Lighting Load	0%	0	-	0	0	-
Return Fan Load	792 L/s	0	-	792 L/s	0	-
Ventilation Load	103 L/s	277	400	103 L/s	3034	0
Supply Fan Load	792 L/s	0	-	792 L/s	0	-
Space Fan Coil Fans	-	0	-	-	0	-
Duct Heat Gain / Loss	0%	0	-	0%	0	-
>> Total System Loads	-	11371	1357	-	10613	0
Central Cooling Coil	-	11371	1357	-	0	0
Central Heating Coil	-	0	-	-	10613	0
>> Total Conditioning	-	11371	1357	-	10613	0
Key:	Positive values are clg loads Negative values are htg loads			Positive values are htg loads Negative values are clg loads		

Hourly Analysis Program 5.10



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WD6 3QU

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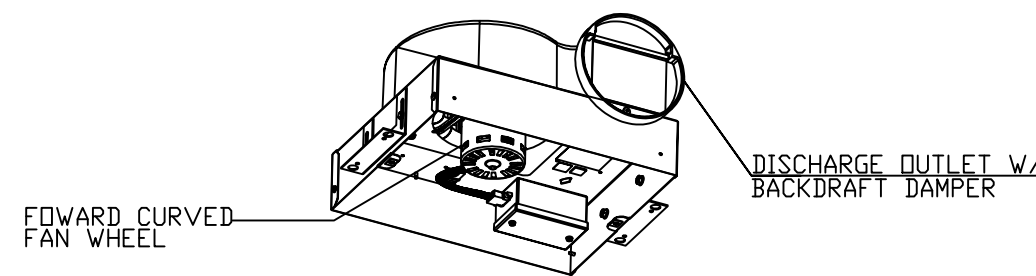
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NOTES:

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REV. NO.	DESCRIPTION	DATE	BY

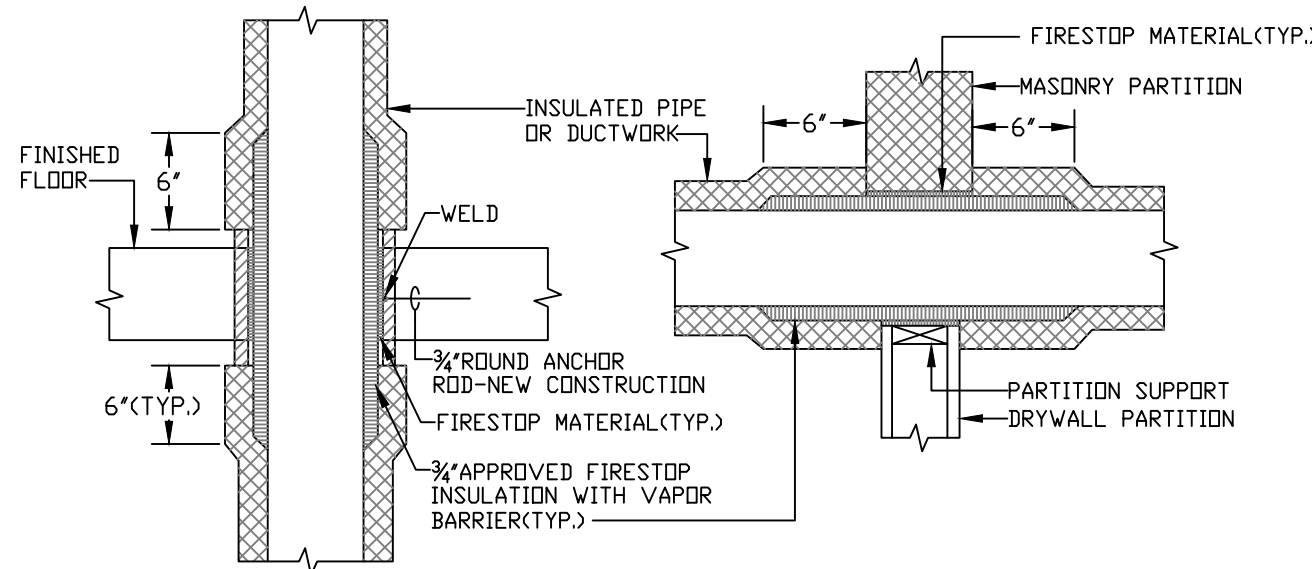
PROJECT: Multi Floor House			
TITLE: HVAC INSTALLATION INSTRUCTION			
PROJ. NO.	PROJ. ENGR.	SCALE @ 24X36: N/A	
DATE : August 28, 2026			
DRAWING NO. H - 7		REV.	



CEILING FAN DETAIL

NOT TO SCALE

CEILING RADIATION DAMPERS SHALL BE INSTALLED IN ACCORDANCE WITH UL 555C



FLOOR OR DECK PENETRATION

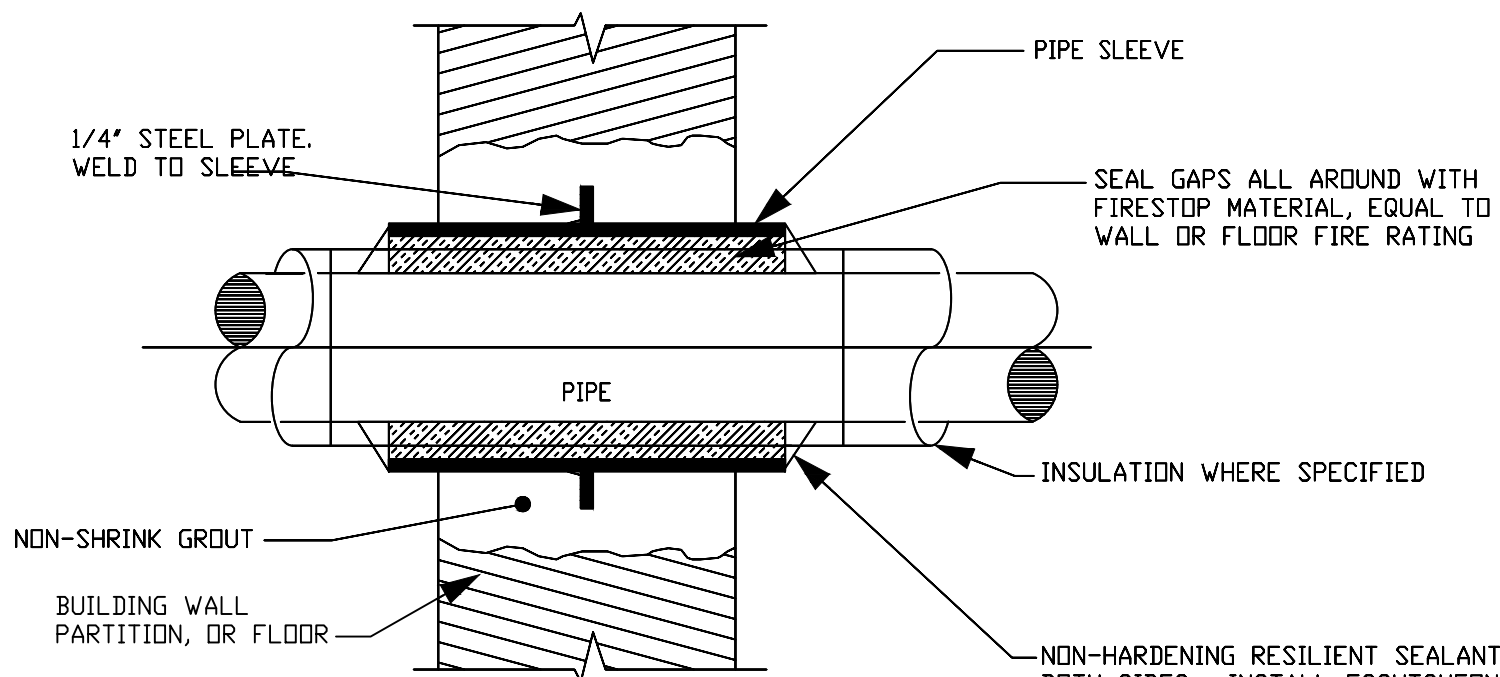
PARTITION OR CHASE PENETRATION

NOTE:

APPLICABLE TO PENETRATIONS OF ALL FIRE RATED MEMBRANES, IN ACCORDANCE WITH 2012 IBC 714. REFER UL LISTED FIRE STOPPING SYSTEMS UL-1479, UL-2043

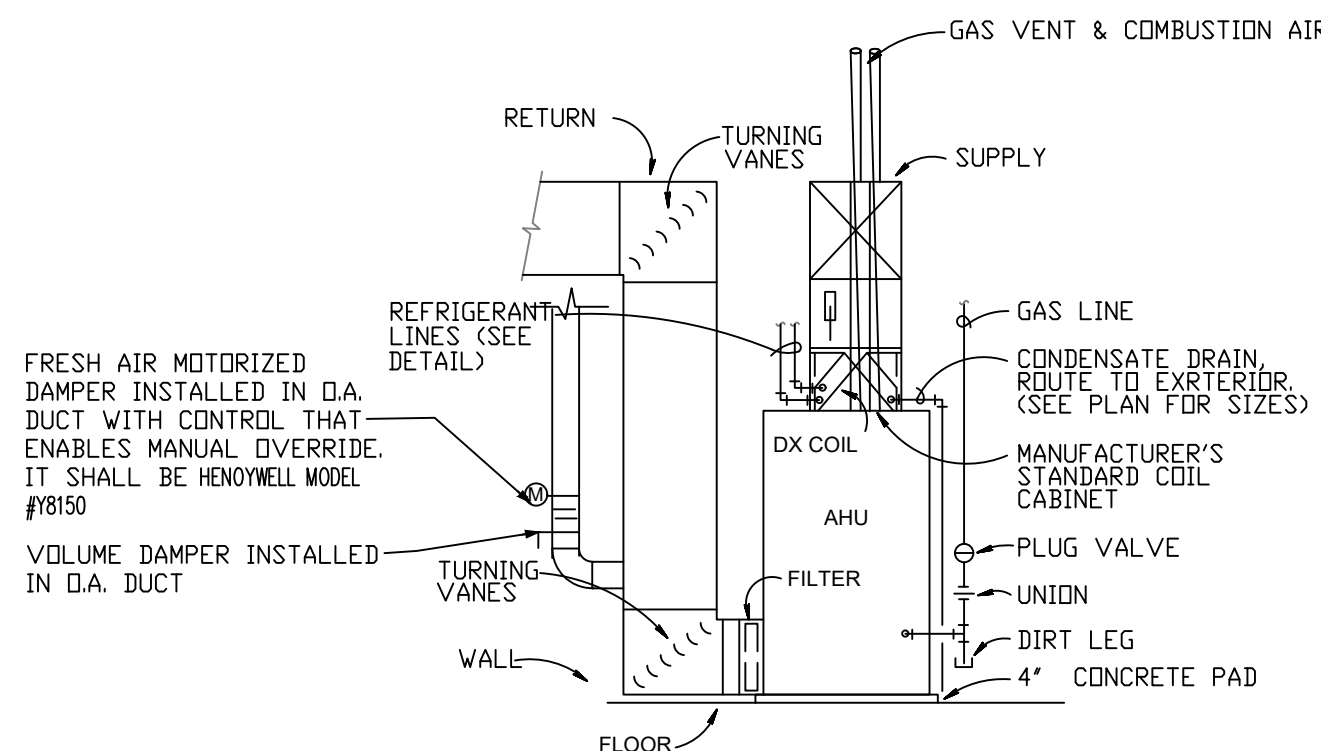
PENETRATION OF FIRE/SMOKE BARRIERS

NOT TO SCALE



INTERIOR MASONRY WALL AND FLOOR PENETRATION

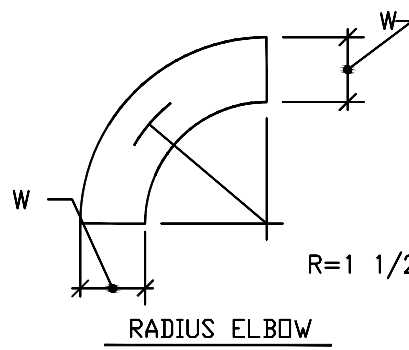
NOT TO SCALE



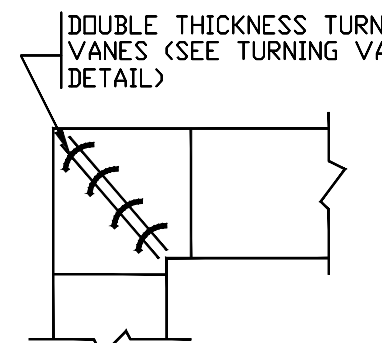
GAS-FIRED AIR HANDLING UNIT DETAIL

N.T.S.

LOW VELOCITY ELBOWS



RADIUS ELBOW

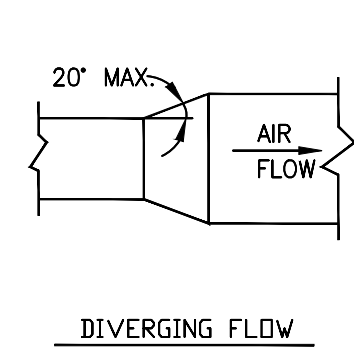


RECTANGULAR ELBOW

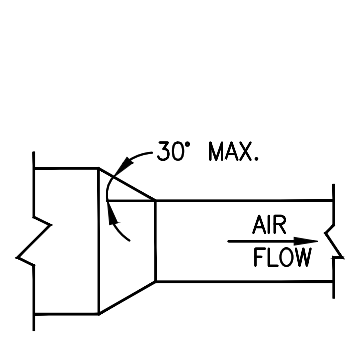
LOW VELOCITY TRANSITIONS, OFFSETS AND ELBOWS

NOT TO SCALE

LOW VELOCITY TRANSITIONS

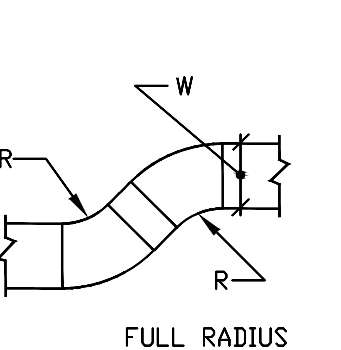


DIVERGING FLOW

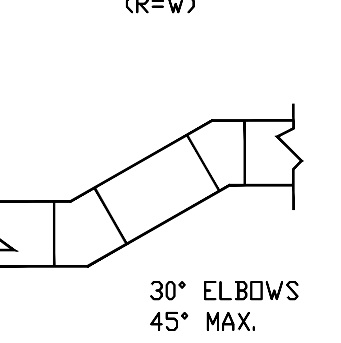


CONTRACTION FLOW

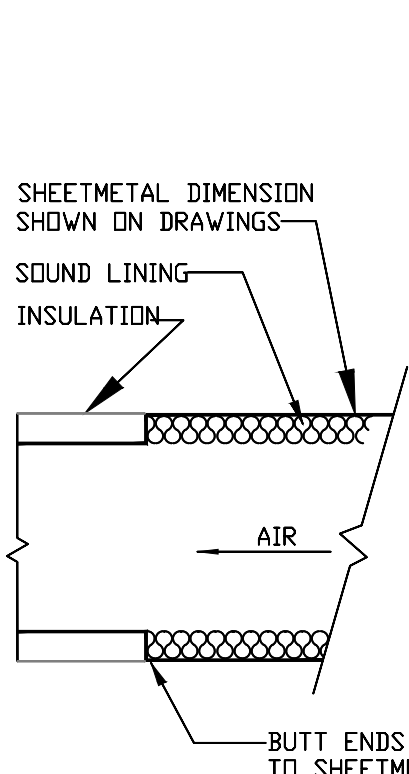
LOW VELOCITY OFFSETS



FULL RADIUS WHERE POSSIBLE (R=W)

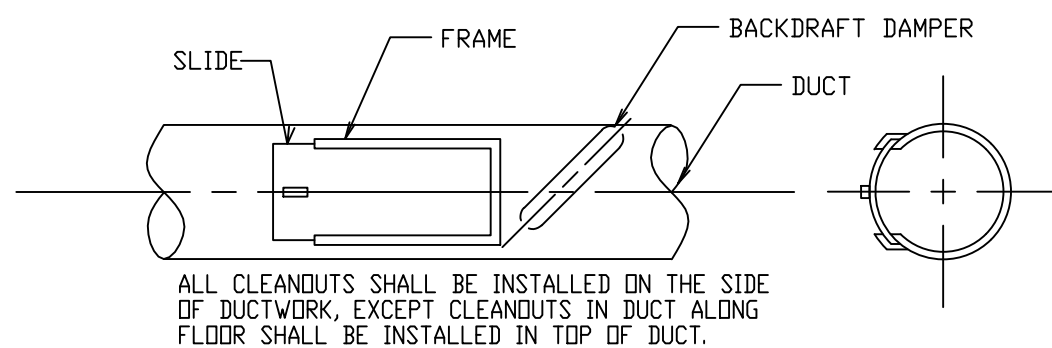


30° ELBOWS 45° MAX.



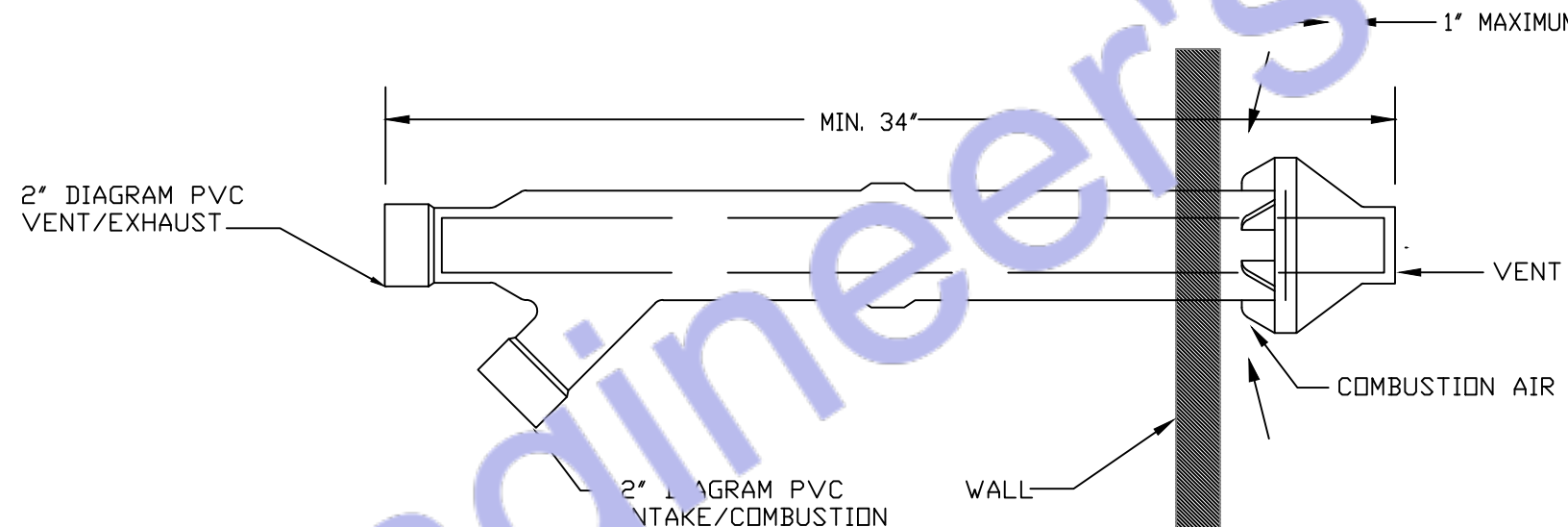
TYPICAL SOUND LINING DETAIL

NOT TO SCALE



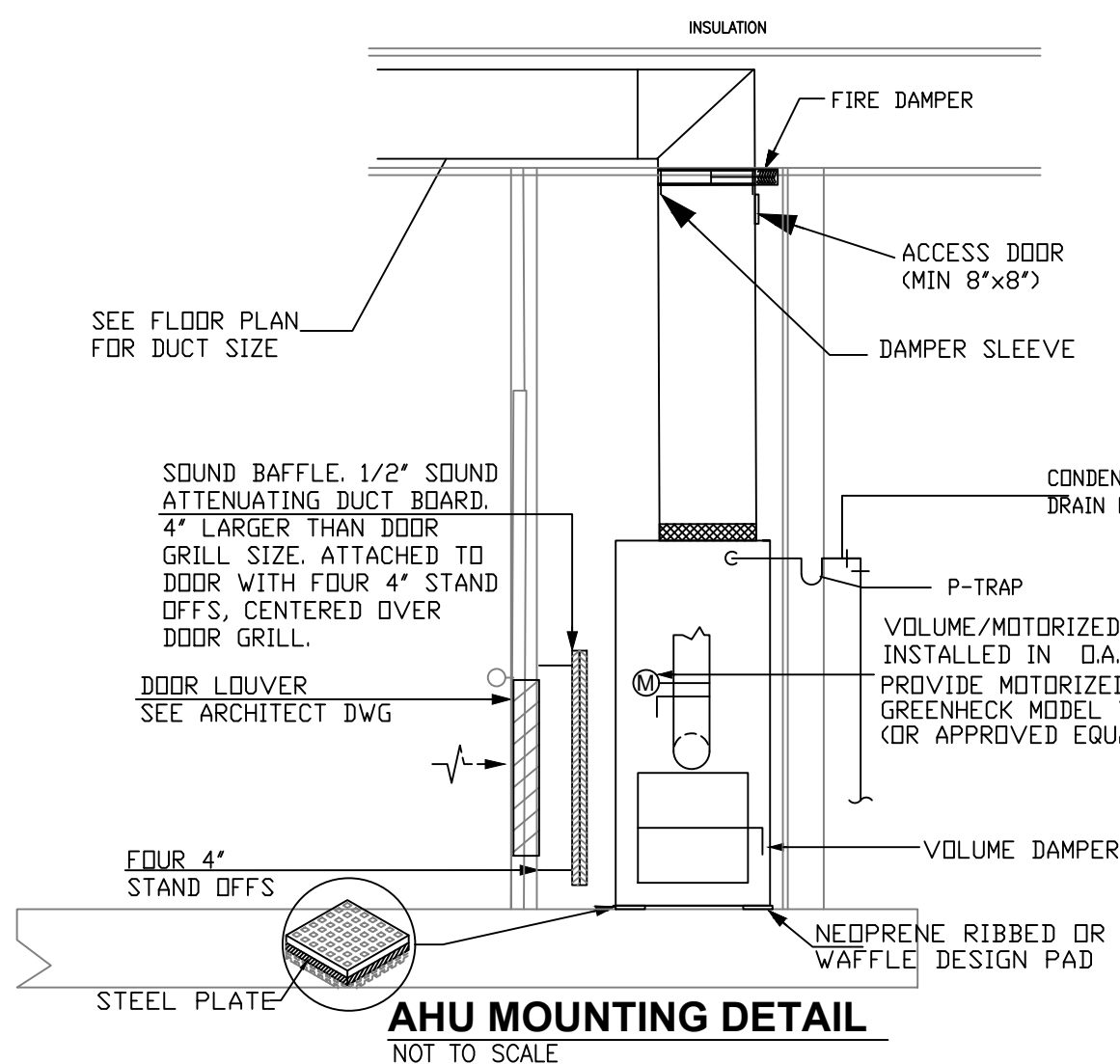
CLEAN OUT / INSPECTION DETAIL

NO SCALE



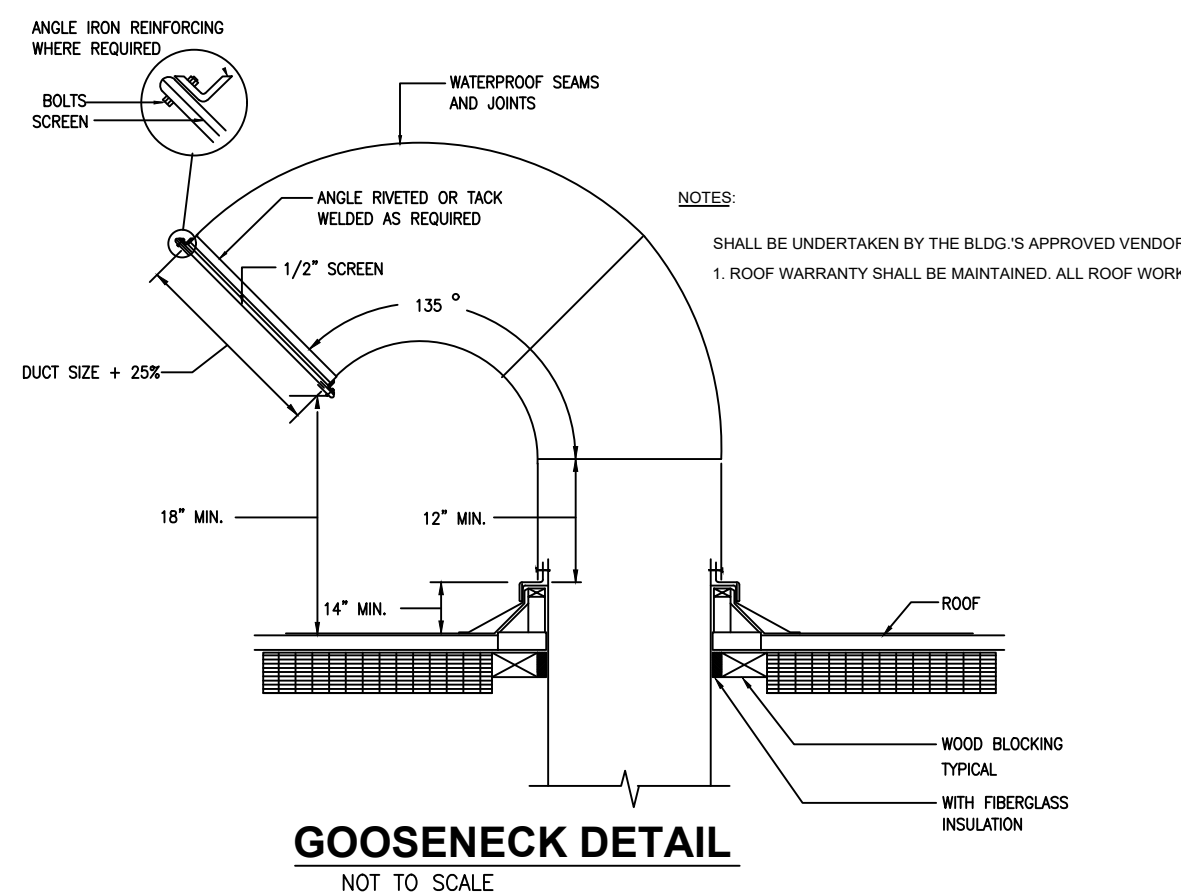
HORIZONTAL VENT TERMINAL/COMBUSTION AIR INLET

NOT TO SCALE
UL-PLASTIC PIPE AND FITTINGS USED TO VENT APPLIANCES SHALL BE INSTALLED IN ACCORDANCE WITH THE APPLIANCE MANUFACTURER'S INSTRUCTIONS. PLASTIC PIPE VENTING MATERIALS LISTED AND LABELED IN ACCORDANCE WITH UL 1738 SHALL BE INSTALLED IN ACCORDANCE WITH THE VENT MANUFACTURER'S INSTALLATION INSTRUCTIONS. FLUID PVC PIPING SHALL NOT BE USED FOR COMBUSTION GAS VENTING.



AHU MOUNTING DETAIL

NOT TO SCALE



GOOSENECK DETAIL

NOT TO SCALE



Designed By Engr. Al Amin (MEP Engineer | Director - Engineer's Team LTD)

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 <https://engrteam.com>

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