

DETAIL OF TANK FIXING TO FOUNDATION

PIPEWORK SHOWN THUS:
IS TO BE TRACE HEATED AND INSULATED IN ACCORDANCE LPC RECOMMENDATIONS RC38

GRP FIRE PUMP HOUSE ENCLOSURE

THE WALLS WILL BE CONSTRUCTED FROM 18mm EXTERIOR GRADE PLYWOOD ON A 50mm PERIMETER FRAME, FULLY ENCAPSULATED WITH CLASS 2 POLYESTER RESIN REINFORCED WITH 450g MATTING.

ROOF WILL BE CONSTRUCTED FROM 9mm EXTERIOR GRADE PLYWOOD AT A 5 DEGREE PITCH ENCAPSULATED AS PER THE WALLS.

THE EXTERIOR WILL BE SEMI-GLOSS TEXTURED NATURAL FINISH RAL 7016 COLOUR TBC.

THE STRUCTURE WILL PROVIDE A 60 MINUTE CLASS 2 FIRE RESISTANCE (RETENTION OF STABILITY INTEGRITY AND INSULATION) AS THE REQUIREMENTS OF BS 476 PARTS 7 AND 22.

THE STRUCTURE WILL AFFORD A U VALUE OF NOT MORE THAN 2.2 W/m²c DEGREES.

VENTILATION WILL BE PROVIDED BY 2 ALUMINIUM LOUVERED VENTS FITTED WITH INSECT MESH.

DOORS WILL BE 1 NO DOUBLE DOOR 1800 WIDE x 2150 HIGH SECURED BY YALE TYPE NIGHT LATCH, HIGH AND LOW LEVEL BOLTS AND THE DOORS WILL INCLUDE 90 DEGREE STABILISERS.

APPROXIMATE WEIGHT LOADINGS

1. WATER STORAGE TANKS AND CONTENTS = 185,000KG (185 TONNES) WITH A VERTICAL LOAD 90kN/m²
2. TWO DIESEL FIRE PUMPS 1500KG (PER PUMP) = 3000KG (3 TONNES)
3. VALVES AND PIPEWORK = 2500KG (2 TONNES)
4. GRP PUMP HOUSE ENCLOSURE = 1500KG (1.5 TONNES)

PUMP HOUSE TO BE CAPABLE OF 13.0m³/min FREE AIR FLOW FOR ASPIRATION OF DIESEL DRIVEN PUMPS

PUMP HOUSE TO BE MAINTAINED AT OR ABOVE TEMPERATURES OF 4°C FOR ELECTRIC DRIVEN PUMPS, OR 10°C FOR DIESEL DRIVEN PUMPS

PUMP HOUSE TO HAVE A 60 MINUTE CLASS 2 FIRE RESISTANCE DESIGN LIFE

WORK BY BUILDER/ STRUCTURAL ENGINEER

1. SETTING OUT AND CONSTRUCTION OF CONCRETE FOUNDATION FOR SPRINKLER WATER STORAGE TANK & GRP PUMP HOUSE. NOTE: CONCRETE FOUNDATIONS TO HAVE A SMOOTH FLOAT FINISH TO ±5mm.
2. SETTING OUT AND CONSTRUCTION OF CONCRETE PLINTH FOR FIRE PUMP WITHIN THE SPRINKLER GRP PUMP HOUSE.
3. HOLES THROUGH PLANT ROOM WALLS & MAKING GOOD.
4. PROVISION FOR DRAINAGE WITHIN THE SPRINKLER GRP PUMP HOUSE.
5. PROVISION OF AN ADEQUATE WATER SUPPLY FOR THE HYDROSTATIC TESTING OF THE UNDERGROUND MAINS.

WATER STORAGE TANK REFILL RATE CALCULATION

TOTAL VOLUME OF TANK = 185m³
185m³ x 1000 = 185,000Lts
185,000Lts / (36 x 60mins) = 85.65L/Min
MIN TOWNS MAIN FLOW AVAILABLE = 107.06L/Min

EFFECTIVE CAPACITY OF TANKS

TOTAL VOLUME OF TANK = L x W x H
∴ " " " " = 8.54m x 3.79m x 3.55m
∴ " " " " = 115m³
LESS FREE BOARD OF = 10m³
LESS DEAD WATER OF = 12.5m³
TOTAL EFFECTIVE CAPACITY = 92.5m³ (EACH TANK)

LPCB APPROVED LPS 1276
REF: 037c/08e WATER STORAGE TANK
8.54m LONG x 3.79m WIDE x 3.55m HIGH
EFFECTIVE CAPACITY 185m³ (2 TANKS)
MANUFACTURED BY FRANKLIN HODGE

PIPEWORK SHOWN THUS:
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ALL FLANGES TO BE PN16 UNLESS OTHERWISE STATED

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ARMSTRONG FIRE PUMPS

PUMPS DESIGNED TO SUIT OH4 45m SYSTEM WITH A NOMINAL DUTY OF 3350L/min.@ 3bar POSITIVE SUCTION HEAD
PUMP TYPE END SUCTION WITH 184mm IMPELLER. (L.P.C. LISTED)
DIESEL FIRE PUMP MODEL No - 5x4x11.5 END SUCTION PUMP
DIESEL ENGINE RATED AT 101kW AT 2960 RPM

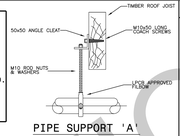
DIESEL ENGINE PUMP CLARKE MODEL No JU4H-LPL4 - LPCB LPS 1239 LISTED.

JOCKEY PUMP VMS2-14B VERTICAL MULTISTAGE PUMP
MOTOR RATED AT 1.1kW - 415VOLT, 50Hz,3 Phase SUPPLY.
LPCB REF. NO. 197a/03

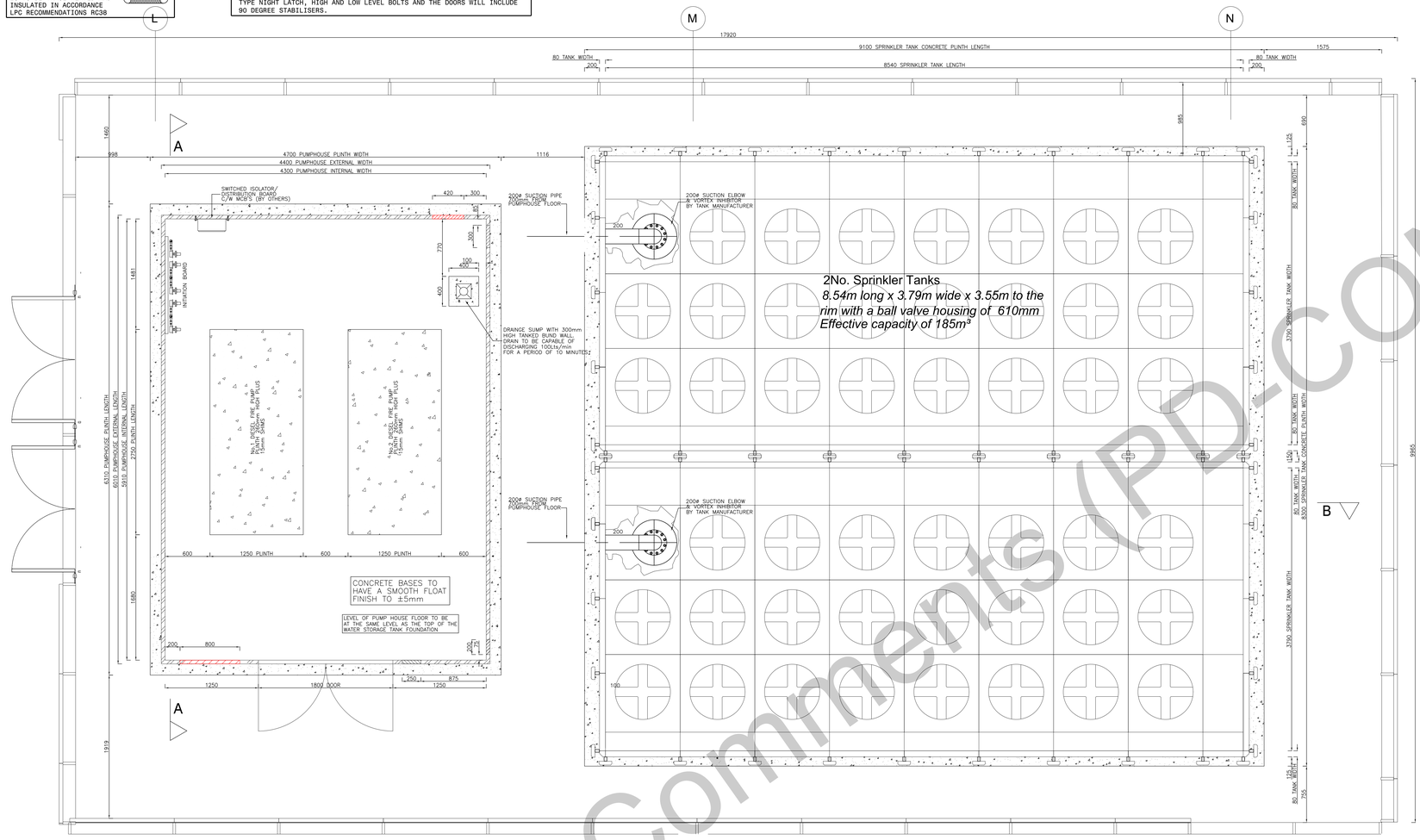
SUCTION PIPE DIAMETER & VELOCITY

SUCTION PIPE DIAMETER FOR POSITIVE SUCTION = 3.43 x √("Q" MAX. / 2670)
∴ " " " " " " = 3.43 x √2670
= 177.23

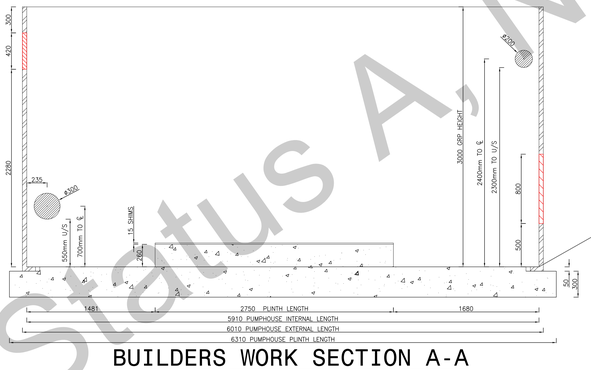
VELOCITY THROUGH SUCTION PIPE Ø "Q" MAX.
V = FLOW (m3/sec.) / AREA (m2)
"Q" MAX. = 2670L/min. (2.670m3/min. or 0.0445m3/sec.)
AREA OF 0.200 dia. SUCTION PIPE = π r²
∴ " " " " " = π r² x 0.011 = 0.0380m2
∴ V = 0.0445 / 0.0380
∴ V = 1.171 m/sec.



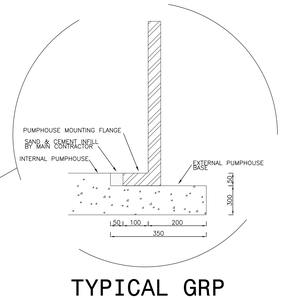
PIPE SUPPORT 'A'



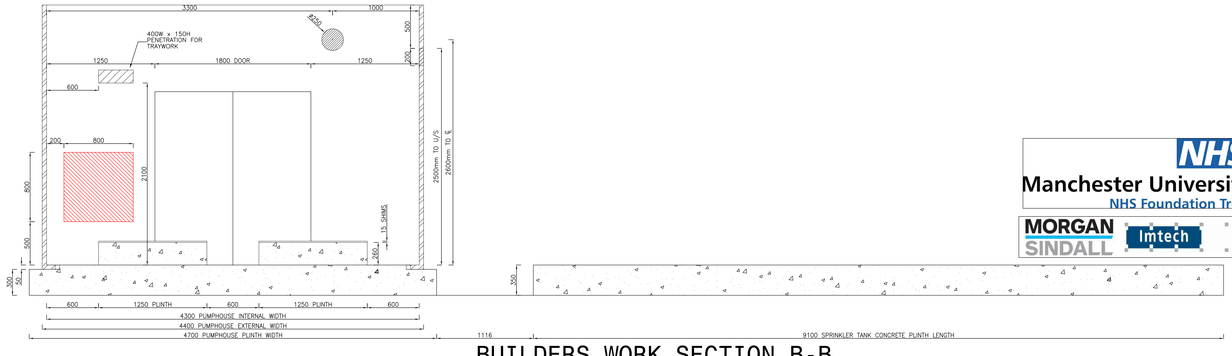
BUILDERS WORK LAYOUT PLAN VIEW



BUILDERS WORK SECTION A-A



TYPICAL GRP MOUNTING SECTION



BUILDERS WORK SECTION B-B

Status A, No Comments
nts (PD-CONSTRUCTION)

DO NOT SCALE

NOTES FOR CLIENT:

PROTEC CAMERFIELD LTD DO NOT ACCEPT ANY RESPONSIBILITY FOR DAMAGE CAUSED BY FROST. IT IS THE CLIENTS RESPONSIBILITY TO TAKE ADEQUATE PRECAUTIONS AGAINST WATER IN THE EQUIPMENT FREEZING DURING COLD WEATHER. IT IS THE RESPONSIBILITY OF THE CLIENT TO CARRY OUT ALL PAINTING, ELECTRICAL, BUILDING WORK ON THIS CONTRACT. THIS INCLUDES CUTTING HOLES FOR HANGERS AND PIPEWORK, GROUTING IN, MAKING GOOD CONCRETE BASES, DRAINAGE TRENCHING, BACKFILLING, HAUNCHING PIPES, THRUST BLOCKS, MAINTAINING TRENCHES FREE FROM WATER ETC. CLIENTS TO ENSURE THAT THE BUILDING STRUCTURE IS CAPABLE OF CARRYING ALL SPRINKLER PIPEWORK WHEN FILLED WITH WATER.
SPRINKLER HEADS, CONTROLS, SPRAY NOZZLES MUST NOT BE PAINTED.

IT IS THE RESPONSIBILITY OF THE CLIENT TO INFORM PROTEC CAMERFIELD LTD OF AREAS WHERE THE AMBIENT TEMPERATURE WILL EXCEED 38ºc

NOTES FOR FABRICATOR:

PIPEWORK TO BE FABRICATED IN ACCORDANCE WITH ISSUED DRAWINGS.
A SET OF DRAWINGS MARKED UP WITH FABRICATIONS SECTIONS NUMBERS TO BE SUPPLIED.
ALL PIPEWORK TO BE MEDIUM QUALITY BLACK TO BS EN10255 UNLESS OTHERWISE STATED.
ALL WELDINGS TO BS2971 UNLESS OTHERWISE STATED.
ALL MALLEABLE FITTINGS TO BS1436/1256, BS EN10241 & BS EN10242 UNLESS OTHERWISE STATED.
FOR WELDING GALVANISED PIPE, BEFORE WELDING, ON BOTH ENDS, REMOVE ZINC COATING ON THE ENDS AND OUTSIDES OVER A DISTANCE OF 25mm FROM THE JOINT BY GRINDING. AFTER WELDING, APPLY TWO COATS OF A ZINC RICH PAINT TO THE EXPOSED METAL AND WELD.
FOR PIPEWORK REQUIRED TO BE GALVANISED, STATE PIPE TO BE HOT DIP GALVANISED.
SET-IN TYPE BRANCHES OR SOCKETS ARE NOT PERMITTED.
CUT-AND-SHUT BENDS ARE NOT PERMITTED.
USE OF LPCB APPROVED MECHANICAL FITTINGS AND COUPLINGS.
OPEN ENDS TO BE CAPPED OR PLUGGED TO PREVENT INGRESS.

ALL PIPEWORK TO BE SUPPLIED WITH 1 COAT RED OXIDE PRIMER UNLESS OTHERWISE STATED.

NOTES FOR INSTALLATION:

ALL INSTALLATION PIPEWORK ABOVE GROUND TO BE ARRANGED WITH THE FOLLOWING SLOPES TO DRAIN:-

WET PIPE SYSTEMS (ALL PIPES)	: LEVEL
DRY & ALTERNATE DISTRIBUTION PIPES	:-2mm/m
DRY & ALTERNATE RANGE PIPES	:-4mm/m

THE SPRINKLER SYSTEM SHALL BE INSTALLED STRICTLY IN ACCORDANCE WITH THE LATEST DRAWING REVISION AND ALL PIPEWORK CHANGES TO BE REFERED TO THE DESIGN OFFICE FOR APPROVAL. ALL PIPEWORK CHANGES TO BE RECORDED ON SITE RECORD DRAWINGS.
ONLY APPROPRIATELY TRAINED AND COMPETENT INSTALLATION PERSONNEL SHOULD CARRY OUT THE INSTALLATION AND TESTING OF THE SPRINKLER SYSTEM.
FABRICATED PIPEWORK SHALL BE CHECKED AGAINST THE INSTALLATION DRAWINGS FOR CORRECT PIPE DIAMETERS, DIMENSIONS AND FITTINGS.
ALL ROLLED GROOVES SHALL BE CHECKED FOR CORRECT DEPTH USING CALLIPERS OR TAPES.
SPRINKLERS, MULTI-JET CONTROLS AND SPRAYERS ARE TO BE KEPT IN PACKAGING UNTIL IMMEDIATELY PRIOR TO FITTING. THEY SHOULD PREFERABLY BE FITTED TO PIPES IN SITU, OR FITTED IMMEDIATELY PRIOR TO THE INSTALLATION OF PIPEWORK.
COMPONENTS SHALL BE STORED SO THEY ARE NOT DAMAGED BY BUILDING OPERATIONS.
UNLOADING, STACKING AND STORAGE OF EQUIPMENT AND MATERIALS SHOULD BE CARRIED OUT WITH CARE TO PREVENT DAMAGE.
PIPES SHALL BE INTERNALLY INSPECTED FOR DEBRIS IMMEDIATELY PRIOR TO ERECTION.
COMPANY QUALITY PROCEDURES SHALL BE FOLLOWED.

TESTING PROCEDURE:

ALL INSTALLATION PIPEWORK SHALL BE TESTED PNEUMATICALLY TO 2.5 BAR FOR A PERIOD OF 1 HOUR AND HYDRAULICALLY TO NOT LESS THAN 15 BAR OR 1.5 TIMES THE WORKING PRESSURE, WHICHEVER IS THE GREATER FOR NOT LESS THAN 2 HOURS.

PRESSURE TESTS TO BE WITNESSED BY THE CLIENT AND CERTIFICATES TO BE COMPLETE AND SIGNED OFF.

LEGEND:

CONV SPRINKLERS IN UPRIGHT POSITION
CONV SPRINKLERS IN PENDENT POSITION
SPRINKLER HEADS ON RISE PIPES
SPRINKLER HEADS ON DROP PIPES
SPRINKLER HEADS PROTECTED BY BAFFLE
HANGER DETAIL
PIPEWORK DRAIN — DRAIN
VICTAULIC DETAIL — OR
EXISTING PIPEWORK

SPRINKLER SCHEDULE

LOCATION	No.	MAKE & MODEL	TEMP	CONSTRUCTION

DESIGN SPECIFICATION:

AREA PROTECTED	SPRINKLER PUMPHOUSE
REGULATIONS	LPC RS EN 12845
HAZARD CLASS	ORDINARY HAZARD OPH
CATEGORY OF STORAGE	CAT 2
STORAGE METHOD/HEIGHT	S1 FREE STANDING (3.0m)
AREA OF OPERATION	216m²
DISCHARGE DENSITY	5.0mm/min/m²
DESIGN SPACING	12m²
FLOW RATE	1000Lts/min
PIPEWORK SIZING	TABLES 30&31
SPRINKLER HEAD SIZE	15mm
SPRINKLER HEIGHT FROM 'C' GAUGE	30m
INSTALLATION No. SIZE/TYPE	VARIES/150mm DRY
PROPERTY OR LIFE SAFETY PROTECTION	PROPERTY

REV	DRAWN	DATE	DESCRIPTION	CHK BY	DATE
C01	AL	24.10.22	CONSTRUCTION	MM	24.10.22
C02	AL	08.12.22	CONSTRUCTION	MM	08.12.22
C03	AL	19.01.23	CONSTRUCTION	MM	19.01.23

STATUS: CONSTRUCTION

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NHS Manchester University NHS Foundation Trust
MORGAN SINDALL Imtech

PROJECT TITLE:
NMGH MSCP
MANCHESTER

DRAWING TITLE:
BUILDERS WORK DETAILS FOR SPRINKLER WATER STORAGE TANKS AND PUMP HOUSE

STATUS:	PURPOSE OF ISSUE:
S4	FOR CONSTRUCTION

DRAWN BY: AJLANCASTER	SCALE: 1:25@A0
CHECKED BY: M.MONKHOUSE	DATE: DEC-2022

DRAWING No: 20200-IES-NM110-00-DR-M-5806 REV: C03

ISO 9001:2015 Quality Management FM12857 EMS 527634
ISO 14001:2015 Environmental Management EMS 527634
LPCB LPS 1048-1 Approved Sprinkler Contractor Certificate No. ASC-056
LPCB LPS 1254 Certificated Fixed System Installer Certificate Number CFS-015