

Taggarts

20001

Nine Mile Point Waste Processing Facility

Fire Suppression System

V00

Waste & Engineering

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Report

TITLE	Nine Mile Point Waste Processing Facility- Fire Suppression System
PROJECT	20001
CLIENT	Drumcastle Ltd.
DATE	February 2022
STATUS	FINAL
VERSION	00
AUTHOR	Kerry Brogan

DOCUMENT CONTROL

REVISION	DESCRIPTION	STATUS	DATE	BY	CHECKED	APPROVED
00	NMP WASTE PROCESSING FACILITY- FIRE SUPPRESSION	FINAL	FEB 2022	KB	AT	AT

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Fire Suppression System

1.1 Introduction

The NMP facility has been designed to include a modern bespoke fire suppression system. This has been undertaken in accordance with the facility insurer. Details of the system are outlined in following sections.

The full installation will be tested, certified, and commissioned prior to the first receipt of waste at the facility.

The proposed fire suppression system has been approved by Building Control.

1.2 Methodology of Expected Ignition and Spread

The most likely method of ignition is considered to be from batteries within the waste entering the pre-shredder and secondary shredder. If this was to occur, the material within the shredder and following conveyor is at high risk of ignition and therefore is considered to be the most likely cause of spreading a fire.

The NMP facility has been designed to target these high risk areas. The following sections will outline fire detection and suppression systems.

1.3 Fire Suppression Summary

Table 1.1 below summarises the fire suppression system. Drawing 20001-305 in Appendix A provides further details.

Table 1.1 Summary of Suppression systems

Area of Site	Summary of Fire Suppression
MRF Building (General)	Roof level sprinkler systems and intermediate level (over/under conveyor) sprinkler systems
MRF Building (Tipping Hall & SRF Storage Area)	Roof level sprinkler system
MRF Building Processing Area	Roof level and intermediate level (over/under conveyor) sprinkler systems and deluge sprinkler systems in high risk areas (zones 1 & 2)
MRF Building – Deluge Zone 1 (Pre-Shredder & Waste Screen)	Deluge sprinkler system that will actively target material on conveyors – conveyor heads will be designed to minimise overspray – this will include into the hood of pre-shredder, exit of pre-shredder, conveyor to waste screen and inside the waste screen

MRF Building – Deluge Zone 2 – Secondary Shredder and discharge conveyor	Deluge sprinkler system that will actively target material on conveyors – conveyor heads will be designed to minimise overspray – this will include inside the secondary shredder, exit of the shredder and conveyor to discharge location.
MRF Building (small storage bays for ferrous metals etc.)	Intermediate level (over/under conveyor) sprinkler systems
MRF Building (Picking Stations & Computer Room)	Ceiling level sprinkler system
Sprinkler Pumphouse	Internal Roof level sprinkler system

1.4 **Fire Detection**

Localised flame detection and suppression will be installed in the high-risk areas of the processing plant. These areas include the input/outputs of the pre-shredder and secondary shredder. The flame detection is a combination between 3IR and 2IR with UV detectors. There will be a total of 16 flame detectors installed, 8 in Zone 1 and 8 in Zone 2. The detectors will be installed to automatically activate the suppression system consists of “open sprinkler” heads which results in a deluge suppression in each zone separately.

The below outlines how each of the zones have been designed to operate:

Zone 1 (Pre Shredder)

If a flame detector detects a flame, the fire alarm is activated, and all processing equipment stops. A 6 minute window will start for investigation. If a second flame detector detects a flame within the 6 minute window, the deluge system will automatically activate water via sprinkler heads.

If the 6 minute window elapses without a second flame detector detecting a flame, the deluge system will automatically activate water via sprinkler heads.

The deluge system will continue to operate automatically until manually switched off by the operator.

Zone 2 (Secondary Shredder)

Zone 2 is similar to zone 1, however the 6 minute window for investigation has been removed. If a flame detector detects a flame, the deluge system will automatically activate water via sprinkler heads. The 6 minute has been removed due to the high risk of a fire reaching the SRF stockpile.

Zones 1 and 2 will have the ability to manually activate the deluge systems.

Each of the flame detectors will have a dedicated dust cowl and air wash facility connected to a compressed air supply. The air wash facility will provide an automatic pulsed air supply to the face of the flame detector to remove dust build up.

1.5 Fire Suppression

1.5.1 *Sprinkler Systems*

The fire suppression system will comprise of a dry sprinkler system at roof level and intermediate levels with an additional deluge sprinkler systems installed to the zones around the pre-shredder and secondary shredders. The sprinkler systems will be designed, supplied, and installed by Compco Fire Systems.

Drawing 20001-305 in Appendix A provides an overview of the fire sprinkler system layout and includes the sprinkler densities for each system. A summary of these systems is provided below:

- Roof level sprinkler system with a design density of 14.3mm/min over 363m²
- Under/Over conveyor & cabins with a design density of 10.2mm/min over 186m²
- Deluge systems targeting the processing equipment and conveyors with a design density of 10mm/min

Details of the sprinkler system proposal are contained within Appendix C.

1.5.2 *Fire Hydrants*

There shall be 4 No. fire hydrants installed around the perimeter of the SRF building as shown on Drawing 2778-SMK-ZZ-L0-DR-M-5001 in Appendix B. The hydrants will be fed from the via a dedicated diesel pump and the water supply will be from the sprinkler tank. The flow rate of the hydrants will be 1,890 litres/minute at 5 bar.

1.5.3 Fire Extinguishers

Potable fire extinguishers will be installed to the full facility to BS 5306 Part 8. Details of the locations and types of fire extinguishers installed can be provided in due course.

1.5.4 Wash Down Hose Reels

There shall be nine (30m length) wash down hose reels installed throughout the facility primarily for washing down purposes, however these may also be used to extinguish small fires and allow early suppression of larger fires. Appendix D contains details of the hose reels and proposed locations.

1.6 Site Water Supplies

The fire suppression systems at the NMP facility will be served by a 1,356m³ sprinkler tank. The sprinkler tank will provide water for 120 minutes system operation in a fire condition.

The pumphouse will contain 1 no. electric driven fire pump and 1 no. diesel driven fire pump complete with jockey unit for the sprinkler systems.

In addition to this, there will be 1 no. diesel pump complete with jockey unit dedicated to feeding the hydrants on site. The hydrant pump will provide 1,890 litres/minute at 5 bar fed from the sprinkler tank.

The sprinkler system pumps have been calculated based on simultaneous operation of the following:

- One main roof sprinkler installation
- One deluge system

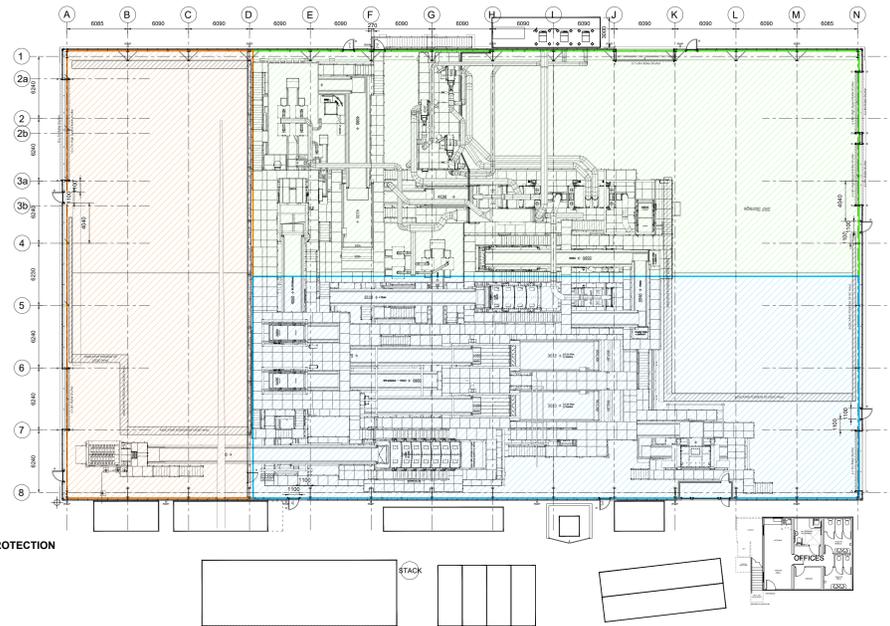
The sprinkler tank water supply has been calculated based on simultaneous operation of the following for 120mins:

- One main roof sprinkler installation;
- One deluge system; and
- One fire hydrant.

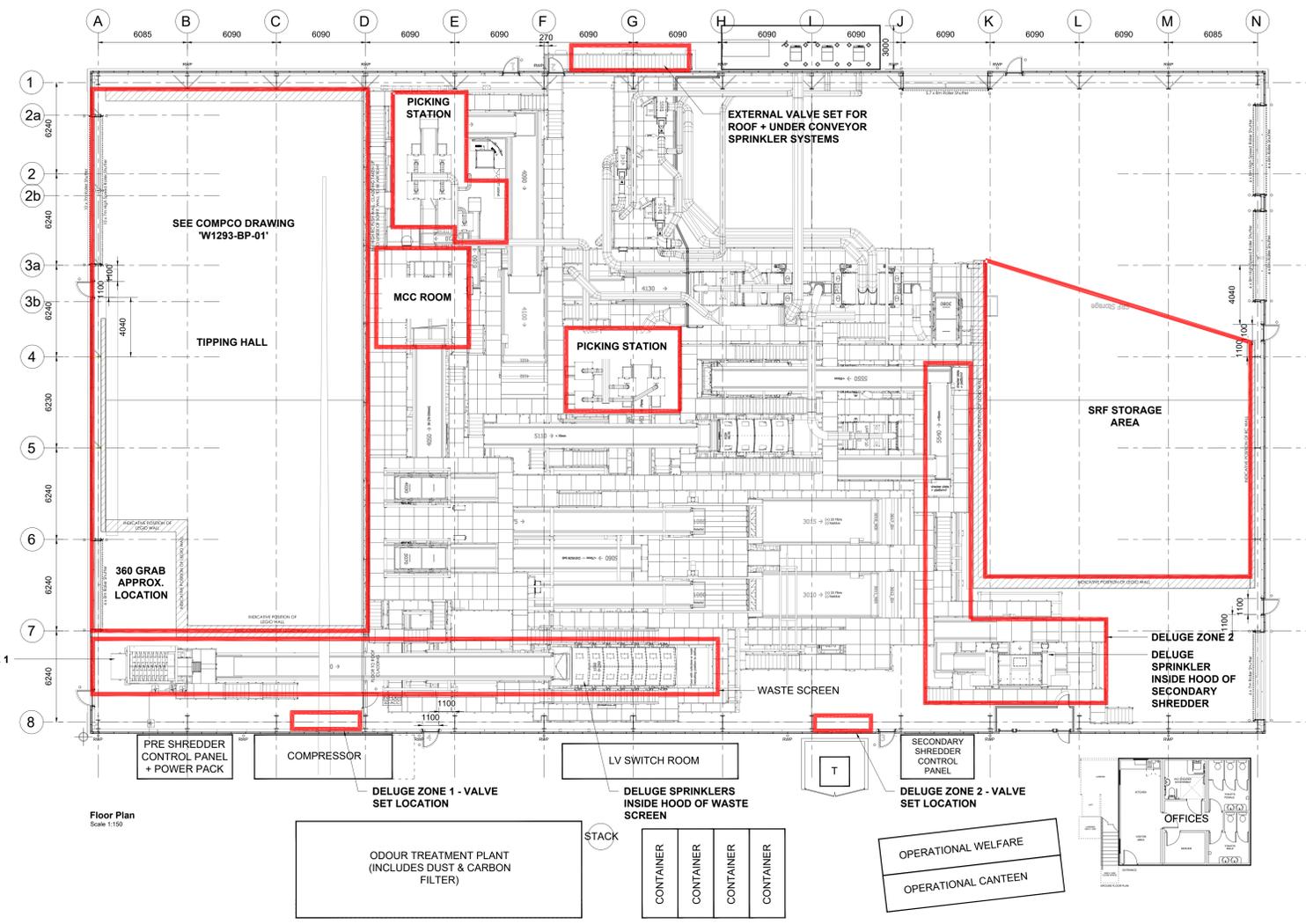
Appendix A

Drawing 20001-305

PUMP HOUSE SPRINKLER PROTECTION DESIGN
PARAMETERS: 10.2MM/MIN OPERATION FOR 120 MINUTES

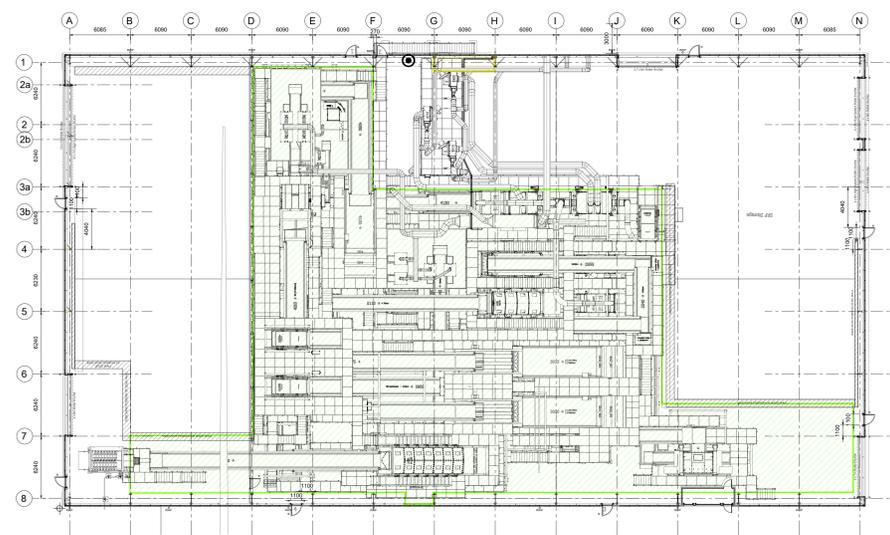


HIGH LEVEL ROOF PROTECTION

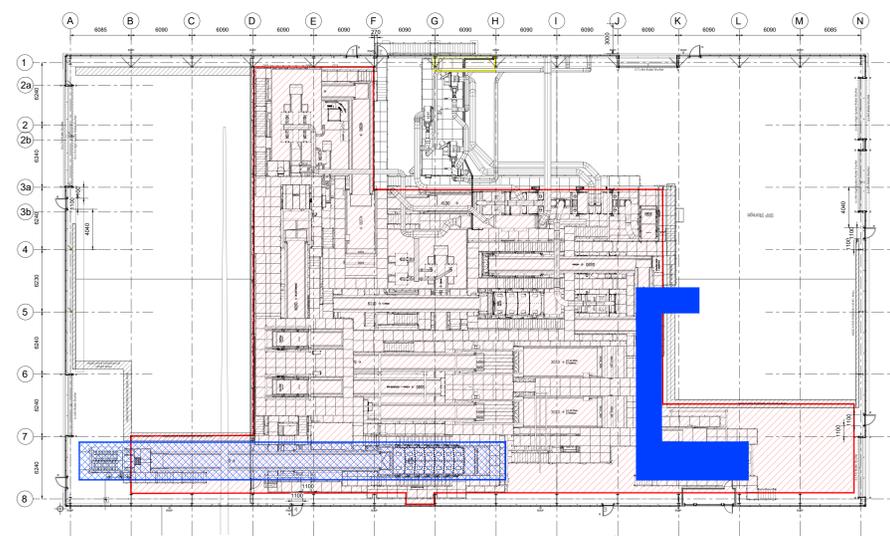


Floor Plan
Scale 1:150

WEIGHBRIDGE OFFICE FIRE ALARM = 'L4' AND WILL INCLUDE MANUAL CALL POINT, AUTOMATIC MULTI-SENSOR DETECTOR & SOUNDER BASE



LOW LEVEL PROTECTION

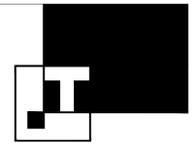


LOW LEVEL PROTECTION

LEGEND

-  INSTALLATION NO. 1 - DRY WASTE RECEPTION AREA 14.3MM/MIN OVER 363M2 OPERATION FOR 120 MINUTES
-  INSTALLATION NO. 2 - DRY SRF AREA 14.3MM/MIN OVER 363M2 OPERATION FOR 120 MINUTES
-  INSTALLATION NO. 3 - DRY CONVEYOR HALL 14.3MM/MIN OVER 363M2 OPERATION FOR 120 MINUTES
-  INSTALLATION NO. 4 - DRY BELOW CONVEYOR PROTECTION 10.2MM/MIN OVER 186M2 OPERATION FOR 120 MINUTES
-  INSTALLATION NO. 5 - DRY ABOVE CONVEYOR PROTECTION 10.2MM/MIN OVER 186M2 OPERATION FOR 120 MINUTES
-  DELUGE ZONE 1 = FRONT END SHREDDER 10.2MM/MIN ALL SPRINKLERS OPERATION FOR 120 MINUTES
-  DELUGE ZONE 2 - BACK END SHREDDER 10.2MM/MIN ALL SPRINKLERS OPERATION FOR 120 MINUTES
-  SPRINKLER RISER PIPE FROM UNDERGROUND SPRINKLER MAIN

REVDATE	DESCRIPTION	DRN	CHKD



WDR & RT TAGGART

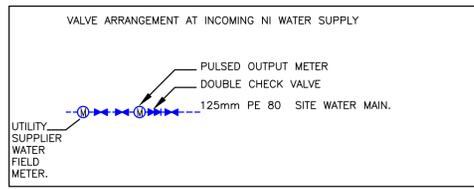
CLIENT	NINE MILE POINT		
CONTRACT	NINE MILE POINT		
DRAWING	FIRE SPRINKLER SYSTEM LAYOUT		
SCALE	NTS @ A0	DATE	SEPT 21
DRAWN		CHECKED	
DRG No.	20001-305	REVISION	O

Architects
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Appendix B

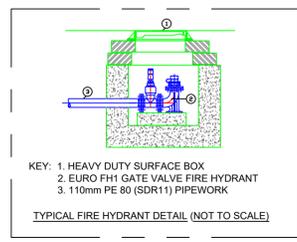
Drawing 2778-SMK-ZZ-L0-DR-M-5001



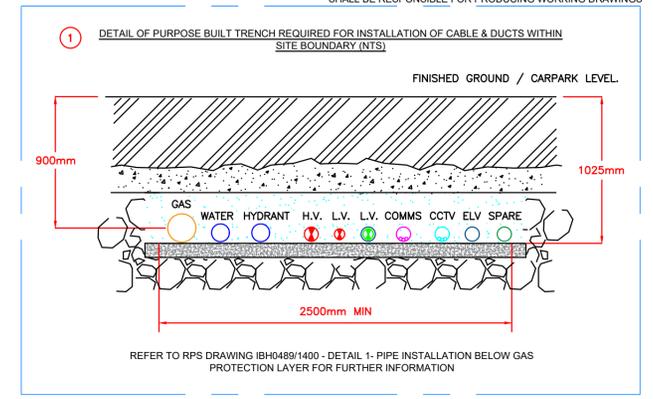
NATURAL GAS INSTALLATION NOTES:-

1. THE MECHANICAL SERVICES CONTRACTOR SHALL CO-ORDINATE THE INSTALLATION WITH REFERENCE BEING MADE TO ALL ARCHITECTURAL, CIVIL, STRUCTURAL AND ELECTRICAL DRAWINGS.
2. THE NATURAL GAS INSTALLATION MUST BE COMPLETED BY A GAS SAFE REGISTERED CONTRACTOR.
3. IT SHALL BE THE GAS SAFE REGISTERED CONTRACTORS RESPONSIBILITY TO ENSURE ALL NEW PIPEWORK AND VALVES ARE SIZED TO PROVIDE THE CORRECT PRESSURE AT EACH BURNER UNDER FULL LOAD CONDITIONS. ALL GAS PIPEWORK SIZES SHOWN ON THIS DRAWING ARE FOR TENDER PURPOSES ONLY. IT IS THE CONTRACTORS RESPONSIBILITY TO SIZE THE GAS PIPEWORK AT TENDER STAGE.
4. ALL NATURAL GAS SHALL BE INSTALLED IN MILD STEEL TO BS 1387. ALL PIPEWORK 50mm & ABOVE SHALL BE OF FULLY WELDED CONSTRUCTION. ALL GAS PIPES IN SCREED TO BE TRAC PIPE.
5. ALL GAS PIPEWORK SHALL BE PRIMED, PAINTED YELLOW & LABELLED WITH SELF ADHESIVE 'GAS' TAPE.
6. WHERE PIPEWORK PASSES THROUGH WALLS OR FLOOR SLABS, SLEEVES MANUFACTURED FROM SIMILAR MATERIAL SHALL BE PROVIDED.
7. ALL FIXED BUILDING SERVICES TO BE COMMISSIONED IN ACCORDANCE WITH CIBSE COMMISSIONING CODE M 'COMMISSIONING MANAGEMENT' AND PROCEDURES OUTLINE FOR AIR LEAKAGE TESTING OF DUCTWORK IN TECHNICAL BOOKLET.
8. A BUILDING LOGBOOK SHALL BE PROVIDED TO THE BUILDING OWNER UPON COMPLETION IN THE FORMAT GIVEN IN CIBSE TM 31 AND THE DATA USED TO CALCULATE THE TER AND BER SHALL BE RECORDED IN THE LOGBOOK PART F.
9. THE MECHANICAL CONTRACTOR SHALL ALSO REFER TO THE NATURAL GAS ELEMENTS OF THE MECHANICAL SPECIFICATION, PRIOR TO INSTALLATION.
10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR LIAISING WITH LOCAL GAS SUPPLIER TO ENSURE FULL COORDINATION AND COMPLETION OF REQUIRED WORKS WITHIN PROGRAMME.
11. ALL DIMENSIONS IN MILLIMETRES.

GENERAL LIGHTING, POWER & CABLING SYMBOLS	
	DENOTES 1200mm DIA MANHOLES 1200 DEEP C/W BISCUITS AND HEAVY DUTY MANHOLE COVERS SUITABLE FOR HGV TRAFFIC LOADING, C/W 300mm BLINDING AS SOAKAWAY FOR ISOLATING VALVE, CHAMBERS.
	DENOTES 900mm X 900mm CONCRETE CHAMBERS FOR FIRE HYDRANTS C/W BISCUIT AND HEAVY DUTY COVER SUITABLE FOR HGV TRAFFIC LOADING C/W 300mm BLINDING AS SOAKAWAY. EACH FIRE HYDRANT TO HAVE CONCRETE MARKING POST CONCRETED INTO THE GROUND A MINIMUM OF 300mm.



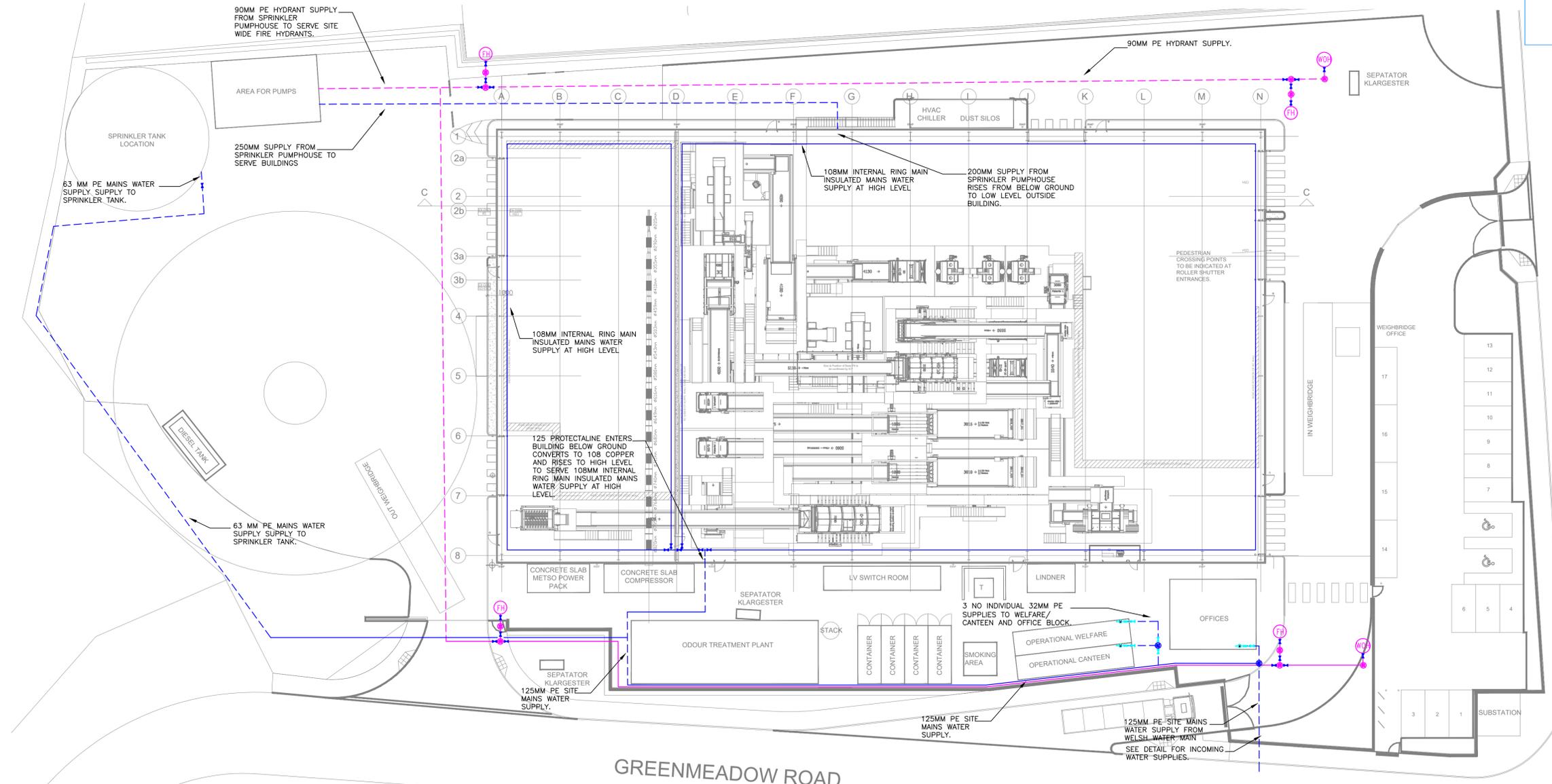
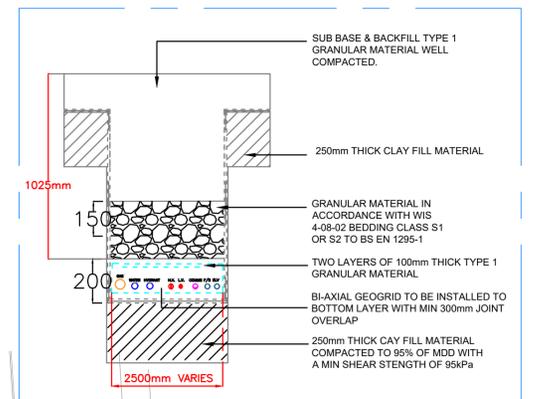
IMPORTANT NOTE:
THE SERVICE ROUTES ILLUSTRATED ON THIS DRAWING ARE FOR INDICATIVE PURPOSES ONLY AND TO CONVEY GENERAL INTENT OF TRENCHING, DUCTING, AND HYDRANT POSITIONS. FINAL ROUTES AND POSITIONS SHALL BE AGREED ON SITE WITH THE ENGINEER PRIOR TO INSTALLATION.



PLUMBING NOTES:

1. THE MECHANICAL SERVICES CONTRACTOR SHALL CO-ORDINATE THE INSTALLATION, REFERENCE BEING MADE TO ALL ARCHITECTURAL, CIVIL, STRUCTURAL AND ELECTRICAL DRAWINGS.
2. ALL EXTERNAL WATER SERVICES PIPEWORK SHALL BE PROTECTED - LINE BARRIER PIPE SUITABLE FOR TRANSPORTING POTABLE WATER EVEN WHEN BURIED IN CONTAMINATED LAND, COLOUR BLUE INSTALLED IN ACCORDANCE WITH THE MANUFACTURERS RECOMMENDATIONS.
3. ALL INTERNAL PIPEWORK SHALL BE COPPER TO BS2871 TABLE 'X'.
4. A STOPCOCK, DRAIN COCK, STRAINER, PULSED METER, PRESSURE REDUCING VALVE AND DOUBLE CHECK VALVE SHALL BE FITTED ON THE INCOMING MAINS WATER SUPPLY TO EVERY FACILITY.
5. ALL MAINS WATER CONNECTIONS DIRECT TO SANITARY WARE APPLIANCES (i.e. WITHOUT AIRGAP) SHALL BE FITTED WITH A DOUBLE CHECK VALVE.
6. ALL WATER SERVICES PIPEWORK SHALL BE HYDRAULICALLY PRESSURE TESTED TO 7 BAR FOR A PERIOD OF TWO HOURS. TEST TO BE WITNESSED BY THE ENGINEER. (TEST CERTIFICATE TO BE PROVIDED BY THE CONTRACTOR)
7. ALL PIPEWORK SHALL BE INSULATED AS DETAILED IN THE SPECIFICATION.
8. BALLOFIX VALVES SHALL BE FITTED ON THE SUPPLIES TO ALL SANITARY WARE APPLIANCES IN AN ACCESSIBLE POSITION.
9. ALL DIMENSIONS ARE IN MILLIMETRES.

- 1200 DIA MANHOLE FOR ACCESS TO PIPE JOINT
- ISOLATION VALVE IN 1200 DIA MANHOLE
- 90 PROTECTALINE CONNECTION TO FIRE HYDRANT C/W DUCKFOOT BEND IN MANHOLE C/W ISOLATION VALVE AND MARKING PLATE ON CONCRETE POST ADJACENT TO HYDRANT.
- DOUBLE CHECK VALVE
- WASH OUT HYDRANT IN 1200 DIA MANHOLE



P2 REVISED. FIRE HYDRANTS NOW SERVED FROM SPRINKLER SYSTEM. DG KB 28/09/21
P1 FIRST ISSUE. DG KB 27/04/21

REV DESCRIPTION DRN CKD DATE

ISSUE PRELIMINARY STAGE

NATURALLY INNOVATIVE CONSULTING ENGINEERS

ISO 9001
ISO 14001
OHSAS 18001
Registered

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PROJECT TITLE
NINE MILE POINT

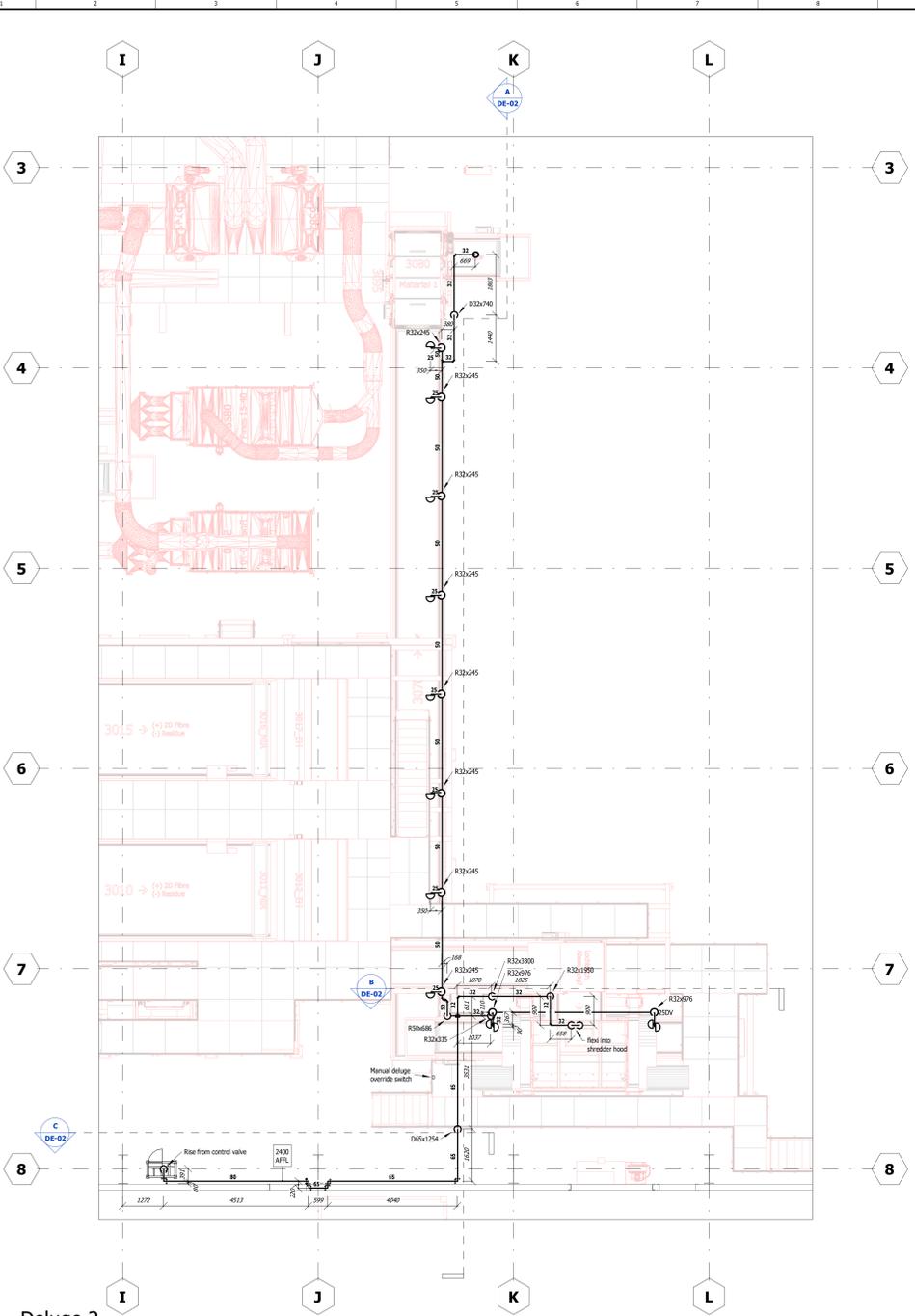
DRAWING TITLE
MECHANICAL SITE SERVICES

DRAWING REFERENCE
2778-SMK-ZZ-LO-DR-M-5001

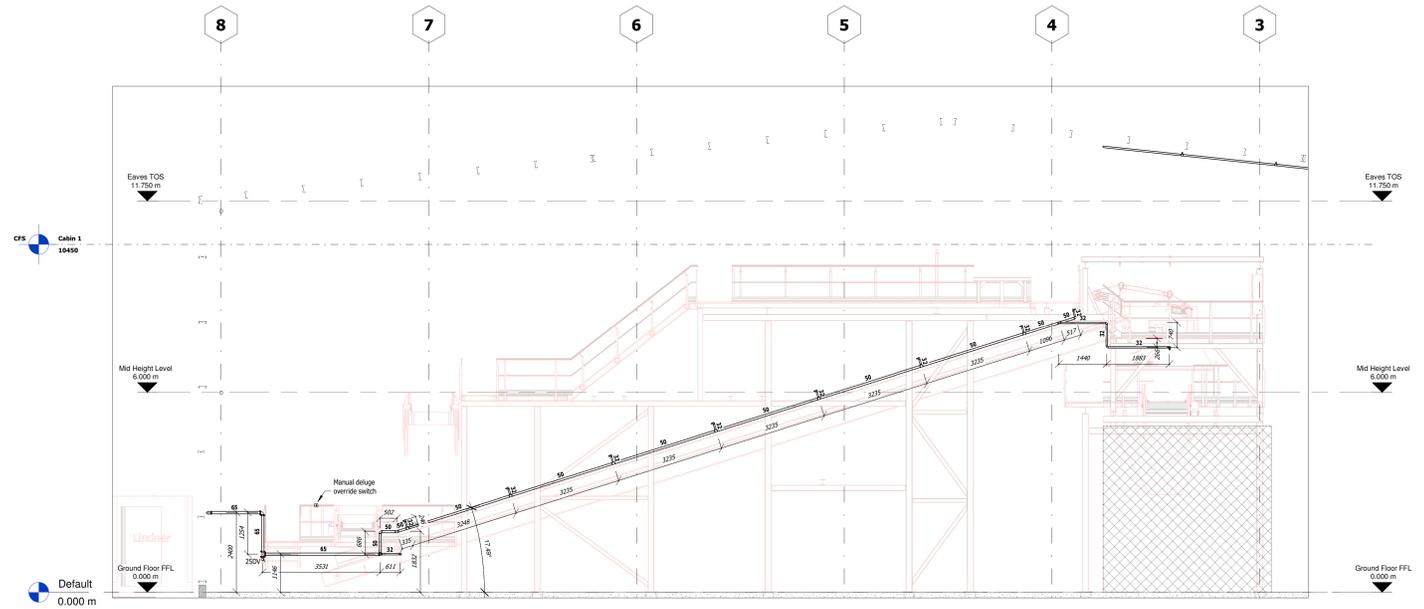
DATE APR 21 DRAWN DK CHECKED KK PAGE & SCALE A1 1:250

Appendix C

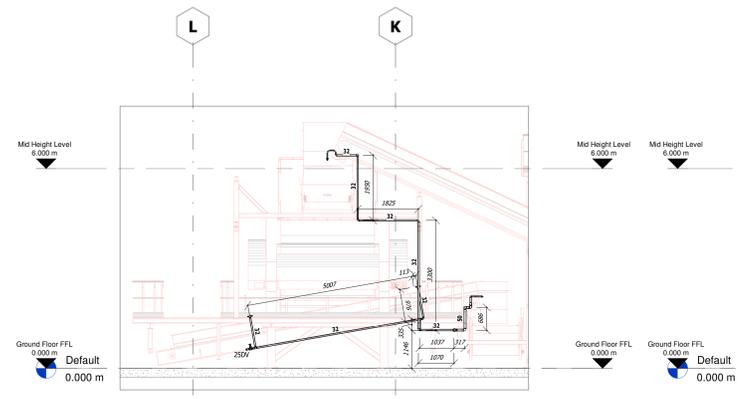
Details of the sprinkler system proposal



Deluge 2



Deluge 2 Section A



Deluge 2 Section B

Deluge 2 Section C

TO THE INSTALLER

Backsight
 Supports shall be spaced no more than 4m apart on steel pipe except in the case of pipes of over 20mm diameter, in which case the distance may be increased by 50% provided that two independent supports are fitted directly to the structure.

When mechanical pipe joints are used:
 • there shall be at least one support within 1m of each joint;
 • there shall be at least one support on each pipe section.

The distance from any terminal sprinkler to a support shall not exceed:
 • 0.6m for 25 mm diameter piping;
 • 1.2m for piping greater than 25 mm diameter.

The distance from any upright sprinkler to a support shall not be less than 0.15m. Vertical pipes shall have additional supports in the following cases:
 • pipes more than 2m long;
 • pipes more than 1m long feeding angle sprinklers.

Pipes that are at a low level or otherwise vulnerable to mechanical impact shall be supported as follows:
 • horizontal pipes less than 0.6m in dia feeding individual sprinklers, drop or riser pipe, less than 0.6m in dia feeding individual sprinklers.

BRACADEMY
MEMBER TYPE
PROFESSIONAL

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For structural engineers' guidance (height weight ratio) see table of minimum quality back supports BS EN 10255 (≤150mm dia) and BS EN 10251-1 Back supports (>200mm dia) (c):

Pipe (mm)	20	25	32	40	50	65	80	100	150	200	250	300
Minimum height (mm)	1.95	3.03	4.56	4.99	7.3	10.21	13.58	20.78	38.17	66.89	94.82	125.61
Minimum weight (mm)	2.24	3.53	4.82	5.76	8.39	11.63	15.41	23.18	44.17	66.89	94.82	125.61

SYMBOLS & ABBREVIATIONS

○	Sprinkler	○	2nd Fix Element - See Typical Detail
○	Conventional Pattern Sprinkler	○	BSF Threaded Ball Valve
○	Sprinkler with Guard	○	BSF Threaded Gate Valve
○	Sprinkler on Riser / Drop	○	Check Valve (Directional)
○	High Temp Sprinkler	○	Check Valve (BSP)
○	Sprinkler c/w Baffle	○	Air Release Valve
○	Sprinkler on Riser & Drop	○	Butterfly / Gate Valve (200mm Flange Adapter)
○	Horizontal Sidelined Sprinkler	○	Butterfly / Gate Valve (100mm)
○	Vertical Sidelined Sprinkler	○	Gate Valve Arrangement
○	Extinguisher	○	Gate Valve Arrangement
○	Special Sprinkler - See Schedule	○	Height APR
○	Standard Response Sprinkler	○	Height APR
○	Quick Response Sprinkler	○	Height Below gap
○	Open Sprinkler (Drop)	○	SPK
○	Sprinkler Nozzle Sprinkler	○	M/C
○	Target Sprinkler	○	Riser
○	Pendant Sprinkler	○	Riser from Below
○	Riser / Drop on Tee	○	ELK
○	Riser / Drop on Elbow	○	D
○	Drop at 45° on Elbow	○	DTB
○	Drop at 45° Tee Junction	○	DFA
○	Drop at 45° Tee Junction	○	TC or TC
○	Vertical Joint	○	Control Line
○	Flanged Joint	○	DV
○	Welded Outlet - Threaded	○	Test Valve (skipped)
○	Welded Outlet - Grooved	○	Flushing Valve (skipped)
○	Th & Lagged Pipework	○	Direction of Fall
○	Dry / Pre-Action Pipework	○	Hydraulic Design Point

RELATED DRAWINGS

This drawing has been produced from information received, with a cut off date of 09/23/21. All changes or additional information received after the date may constitute a variation to this contract.

DRAWINGS REFERENCED

MODELS REFERENCED

GENERAL NOTES

TOLERANCE
 Sprinkler pipe work will be installed to a +/-50mm to the stated levels shown on the drawing.

TO THE ERECTOR
 Sprinkler pipework must be installed with the following minimum slopes:
 • fire alarm systems - Nil to BS EN 52693;
 • All other systems - 2mm/m for distribution pipework.
 All other systems - 4mm/m for range pipework.
 All other systems - 2mm/m for distribution pipework.
 All other systems - 4mm/m for range pipework.
 All other systems - 2mm/m for distribution pipework.
 All other systems - 4mm/m for range pipework.
 All other systems - 2mm/m for distribution pipework.
 All other systems - 4mm/m for range pipework.

TO THE CLIENT

FREEZING
 Compro Fire Systems Limited, or its Agents, Do Not Accept any Responsibility for Damage Caused by Frost. Clients Should Take Adequate Precautions Against the Water in the Valves, Pipes, Tanks and Pipework Freezing During Storm Weather.

IT IS THE CLIENT'S RESPONSIBILITY TO PROVIDE ADEQUATE DRAINAGE AT THE INSTALLATION CONTROL VALVES. THIS CAN BE ACHIEVED WITH THE USE OF A BREAK TANK AND A SUITABLE SOFT DRAIN.

CO-ORDINATION
 It is the Client's Responsibility to Advise Compro of any Clash or Error Relating to Compro Co-ordinating within 7 Days of Issue. Compro Fire Systems Do Not Allow for Any Level Co-ordination. Any Clash on Site from a Service Not Fully Designed with Level Levels and Co-ordinations Shall be Charged to the Client.

BUILDERS WORK
 Compro Fire Systems Exclude any Builders Work Associated with the Installation of Pipework / Fittings / Valves on this Drawing. For a Full List of Works Required Refer to the Project Engineer.

ELECTRICAL SUPPLIES / MONITORING
 Please Refer to Our Tender Document for Exact Scope Allowed by Compro. Any Item Excluding or Omitted from Our Tender is Not Included in Our Scope and is Assumed to be Carried out by Others.

TUBE SPECIFICATION / FINISH

Tube Specification	BS EN 10255 HQ Galv/785 EN 10255 HQ Galv
Fitting Specification	BS EN 10242 (B) 14X125X Galv
Spot Coat	Galvanneal

BUILDING CONSTRUCTION

External finish / Partitions	Concrete / Plaster
External finish / Ceilings	Ceiling
Soft / Ceilings	Ceiling

DESIGN SCHEDULE

Area Protected/Overseas	Design 2, 80mm
Installation Number, Size & Type	Design 2, 80mm
Water Control	Pump and Tank
Hazard Classification	High Hazard
Area of Operation (m ²)	10,000
Capacity of Discharge (l/min)	10,000
Designed in Accordance	Client Spec. and NFPA 13
Fire Rating	EN 12242
Storage Category	EN 12242
Stock Specification	EN 12242
Highest Sprinkler above TC gauge	10m

REV	DESCRIPTION	DRAWN	CHECK	DATE
P01	For review and comment	RUE		23/09/2021

REVIEW & COMMENT

NOT FOR FABRICATION

CLIENT:
 Woodvale Construction

TITLE:
 Zone 2 Deluge Sprinkler System

SITE:
 Nine Mile Point
 Cwmfelinfach, Newport

DATE: 09/23/21
SCALE: 1 : 75 @ A0
STATUS: S3

DRAWN: RSE
CHECKED: RSE
MODEL NUMBER:

DRAWING NUMBER: W1293-DE-02
REV: P01

W1293-DE-02 Sprinkler Schedule

DESCRIPTION	NO. OF SPRK	MODEL	TEMP
Deluge 2	12	HSR 20mm K115	Open
Deluge 2	3	HSR 20mm K115	Open

TECHNICAL SUBMISSION

Issued By Worcester Office

		Tech Submission No.	02
Job Reference Number:	W1293		
Project Reference:	Nine Mile Point, Newport		
For the attention of:	Paul Devine		
Copy To:	Luke Wood		
Form Completed By: Aleksandra Szlachta		Date: 08.10.21	

Manufacturer / Supplier	Model	Ref N ^o	Qty
Victaulic	V3401		1198
Victaulic	V3405		139
Victaulic	V3409		35
Victaulic	V2703		20
Note:			

Description of application:	Area to be used:
Sprinkler Heads	High Level Roof
Sprinkler Heads	Zone 1 and Zone 2 Deluge
Sprinkler Heads	Under & Over Conveyor Protection

Client Specification used:	
Clause reference of specification:	
Statement of Compliance to the Specification:	Compliant <input checked="" type="checkbox"/> , Non compliant <input type="checkbox"/>

If non compliant present give details:

.

Submitted By: Name:

Signature:

Date:

Date Issued: 08/10/21	Date approval / comments required:	Date approval / comments received:
--------------------------	---------------------------------------	---------------------------------------

Client Review:

Approved

Approved with comments

Re-submit

Comments:

--

Review By: Name:

Signature:

Date:

Victaulic® FireLock™ Series FL-SR

Standard Coverage, Standard Response

Upright Pendent and Recessed Pendent Sprinklers, K2.8 (4.0), K4.2 (6.1), K5.6 (8.1), K8.0 (11.5)



1.0 PRODUCT DESCRIPTION

STANDARD RESPONSE UPRIGHT SPRINKLERS				
SIN	V2861	V4261	V2703	V3401
ORIENTATION	UPRIGHT	UPRIGHT	UPRIGHT	UPRIGHT
K-FACTOR ¹	2.8 Imp./4.0 S.I.	4.2 Imp./6.1 S.I.	5.6 Imp./8.1 S.I.	8.0 Imp./11.5 S.I.
CONNECTION	½" NPT/15mm BSPT	½" NPT/15mm BSPT	½" NPT/15mm BSPT/IGS	¾" NPT/20mm BSPT/IGS
MAX. WORKING PRESSURE	175 psi (1200 kPa)	175 psi (1200 kPa)	175 psi (1200 kPa) cULus 250 psi (1725 kPa)	175 psi (1200 kPa)
GLOBE RE-DESIGNATION	GL2861	GL4261		
GLOBE EQUIVALENT			GL5661	GL8164

STANDARD RESPONSE PENDENT SPRINKLERS				
SIN	V2851	V4251	V2707	V3405
ORIENTATION	PENDENT	PENDENT	PENDENT	PENDENT
K-FACTOR ¹	2.8 Imp./4.0 S.I.	4.2 Imp./6.1 S.I.	5.6 Imp./8.1 S.I.	8.0 Imp./11.5 S.I.
CONNECTION	½" NPT/15mm BSPT	½" NPT/15mm BSPT	½" NPT/15mm BSPT/IGS	¾" NPT/20mm BSPT/IGS
MAX. WORKING PRESSURE	175 psi (1200 kPa)	175 psi (1200 kPa)	175 psi (1200 kPa) cULus 250 psi (1725 kPa)	175 psi (1200 kPa)
GLOBE RE-DESIGNATION	GL2851	GL4251		
GLOBE EQUIVALENT			GL5651	GL8156

STANDARD RESPONSE RECESSED PENDENT SPRINKLERS				
SIN	V2851	V4251	V2707	V3405
ORIENTATION	PENDENT	PENDENT	PENDENT	PENDENT
K-FACTOR ¹	2.8 Imp./4.0 S.I.	4.2 Imp./6.1 S.I.	5.6 Imp./8.1 S.I.	8.0 Imp./11.5 S.I.
CONNECTION	½" NPT/15mm BSPT	½" NPT/15mm BSPT	½" NPT/15mm BSPT	¾" NPT/20mm BSPT
MAX. WORKING PRESSURE	175 psi (1200 kPa)	175 psi (1200 kPa)	175 psi (1200 kPa) cULus 250 psi (1725 kPa)	175 psi (1200 kPa)
ESCUTCHEON	Recessed	Recessed	Recessed	Recessed
GLOBE RE-DESIGNATION	GL2851	GL4251		
GLOBE EQUIVALENT			GL5651	GL8156

AVAILABLE GUARDS/SHIELDS				
SPRINKLER	V28	V42	V27	V34
UPRIGHT			■	■
PENDENT			■	■

ALWAYS REFER TO ANY NOTIFICATIONS AT THE END OF THIS DOCUMENT REGARDING PRODUCT INSTALLATION, MAINTENANCE OR SUPPORT.

1.0 PRODUCT DESCRIPTION (CONTINUED)

AVAILABLE WRENCHES							
SPRINKLER	V56-2 Recessed	V56 Open End	V27-2 Recessed	V27 Open End	V34-2 Recessed	V34 Open End	3/16 Hex-Bit
V2861 and V4261		■					
V2703 and V2707				■			■
V3401						■	■
V2851 and V4251	■	■					
V2707			■	■			■
V3405					■	■	■

Factory Hydrostatic Test: 100% @ 500 psi/3447 kPa/34 bar

Min. Operating Pressure: UL/FM: 7psi/48 kPa/.5 bar
 VdS: 5psi/35 kPa/.35 bar (Upright only)

Temperature Rating: See tables in section 2.0

¹ For K-Factor when pressure is measured in bar, multiply S.I. units by 10.0.

2.0 CERTIFICATION/LISTINGS



UPRIGHT APPROVALS/LISTINGS				
SIN	V2861	V4261	V2703	V3401
Nominal K Factor Imperial	2.8	4.2	5.6	8.0
Nominal K Factor S.I. ²	4.0	6.1	8.1	11.5
Orientation	UPRIGHT	UPRIGHT	UPRIGHT	UPRIGHT
Approved Temperature Ratings F°/C°				
cULus	135°F/57°C 155°F/68°C 175°F/79°C 200°F/93°C 286°F/141°C 360°F/182°C	135°F/57°C 155°F/68°C 175°F/79°C 200°F/93°C 286°F/141°C 360°F/182°C	135°F/57°C 155°F/68°C 175°F/79°C 200°F/93°C 286°F/141°C 360°F/182°C 500°F/260°C	135°F/57°C 155°F/68°C 175°F/79°C 200°F/93°C 286°F/141°C 360°F/182°C
FM	-	-	135°F/57°C 155°F/68°C 175°F/79°C 200°F/93°C 286°F/141°C 360°F/182°C	135°F/57°C 155°F/68°C 175°F/79°C 200°F/93°C 286°F/141°C 360°F/182°C
LPCB	-	-	135°F/57°C 155°F/68°C 175°F/79°C 200°F/93°C 286°F/141°C 360°F/182°C	135°F/57°C 155°F/68°C 175°F/79°C 200°F/93°C 286°F/141°C 360°F/182°C
CE	-	-	135°F/57°C 155°F/68°C 175°F/79°C 200°F/93°C 286°F/141°C	135°F/57°C 155°F/68°C 175°F/79°C 200°F/93°C 286°F/141°C
VdS	-	-	135°F/57°C 155°F/68°C 175°F/79°C 200°F/93°C 286°F/141°C	135°F/57°C 155°F/68°C 175°F/79°C 200°F/93°C 286°F/141°C
CCC ZSTZ-15	-	-	155°F/68°C 175°F/79°C 200°F/93°C 286°F/141°C	155°F/68°C - - 286°F/141°C

² For K-Factor when pressure is measured in Bar, multiply S.I. units by 10.

NOTES

- Listings and approval as of printing.
- Where cULus Listed, Polyester and VC-250 Coatings Listed as Corrosion Resistant (V3401 with VC-250 Only)
- Where FM Approved, VC-250 Coating Approved as Corrosion Resistant
- New York City Acceptance - All UL Listed and/or FM Approved sprinklers acceptable to NYC per section 28-113 of the Administrative Code and the OTCR Rule.

2.0 CERTIFICATION/LISTINGS (CONTINUED)



PENDENT APPROVALS/LISTINGS				
SIN	V2851	V4251	V2707	V3405
Nominal K Factor Imperial	2.8	4.2	5.6	8.0
Nominal K Factor S.I. ²	4.0	6.1	8.1	11.5
Orientation	PENDENT	PENDENT	PENDENT	PENDENT
Escutcheon	Flush Extended	Flush Extended	Flush Extended	Flush Extended
Approved Temperature Ratings F°/C°				
cULus	135°F/57°C 155°F/68°C 175°F/79°C 200°F/93°C 286°F/141°C 360°F/182°C	135°F/57°C 155°F/68°C 175°F/79°C 200°F/93°C 286°F/141°C 360°F/182°C	135°F/57°C 155°F/68°C 175°F/79°C 200°F/93°C 286°F/141°C 360°F/182°C 500°F/260°C	135°F/57°C 155°F/68°C 175°F/79°C 200°F/93°C 286°F/141°C 360°F/182°C
FM	-	-	135°F/57°C 155°F/68°C 175°F/79°C 200°F/93°C 286°F/141°C 360°F/182°C	135°F/57°C 155°F/68°C 175°F/79°C 200°F/93°C 286°F/141°C 360°F/182°C
CCC ZSTX-15	-	-	155°F/68°C 175°F/79°C 200°F/93°C 286°F/141°C	155°F/68°C - - 286°F/141°C

RECESSED PENDENT APPROVALS/LISTINGS				
SIN	V2851	V4251	V2707	V3405
Nominal K Factor Imperial	2.8	4.2	5.6	8.0
Nominal K Factor S.I. ²	4.0	6.1	8.1	11.5
Orientation	PENDENT	PENDENT	PENDENT	PENDENT
Escutcheon	Recessed	Recessed	Recessed	Recessed
Approved Temperature Ratings F°/C°				
cULus	135°F/57°C 155°F/68°C 175°F/79°C 200°F/93°C 286°F/141°C	135°F/57°C 155°F/68°C 175°F/79°C 200°F/93°C 286°F/141°C	135°F/57°C 155°F/68°C 175°F/79°C 200°F/93°C	135°F/57°C 155°F/68°C 175°F/79°C 200°F/93°C
FM With ½" Adjustment Escutcheon Only	-	-	135°F/57°C 155°F/68°C 175°F/79°C 200°F/93°C	135°F/57°C 155°F/68°C 175°F/79°C 200°F/93°C
CCC ZSTX-15	-	-	155°F/68°C 175°F/79°C 200°F/93°C 286°F/141°C	155°F/68°C - - 286°F/141°C

² For K-Factor when pressure is measured in Bar, multiply S.I. units by 10.

NOTES

- Listings and approval as of printing.
- Where cULus Listed, Polyester and VC-250 Coatings Listed as Corrosion Resistant (V3401 with VC-250 Only)
- Where FM Approved, VC-250 Coating Approved as Corrosion Resistant
- New York City Acceptance - All UL Listed and/or FM Approved sprinklers acceptable to NYC per section 28-113 of the Administrative Code and the OTCR Rule.

3.0 SPECIFICATIONS – MATERIAL

Deflector: Bronze

Bulb Nominal Diameter: 5.0mm

Load Screw: Bronze

Pip Cap: Bronze

Spring Seal: PTFE coated Beryllium nickel alloy

Frame: Brass

Lodgement Spring: Stainless steel

Installation Wrench: Ductile iron

Sprinkler Frame Finishes:

- Plain brass
- Chrome plated
- White polyester painted^{3, 4}
- Flat black polyester painted^{3, 4}
- Custom polyester painted^{3, 4}
- VC-250⁵

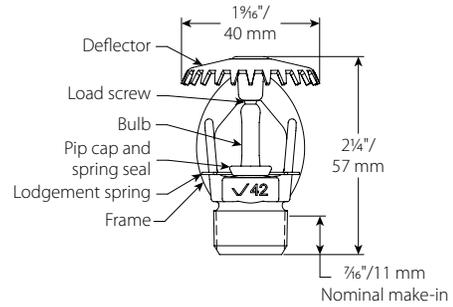
³ Not available on the Intermediate Level Style Pendant.

⁴ UL Listed for corrosion resistance.

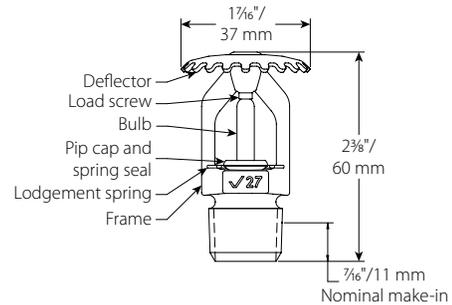
⁵ UL Listed and FM Approved for corrosion resistance.

NOTE

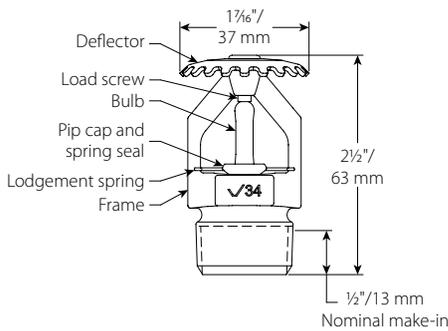
- For cabinets and other accessories refer to separate sheet.



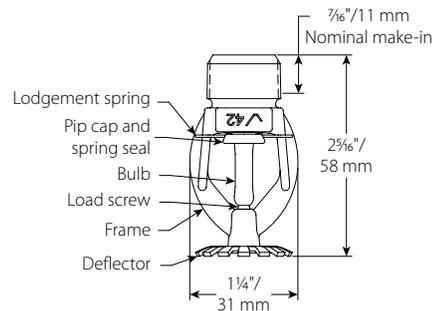
V2861, V4261



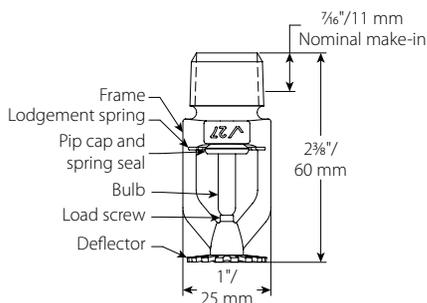
V2703



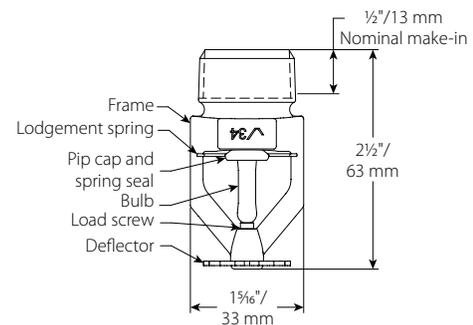
V3401



V2851, V4251

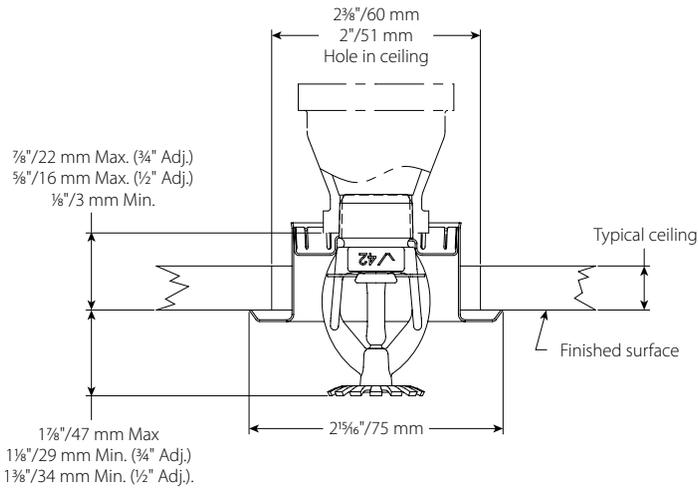


V2707

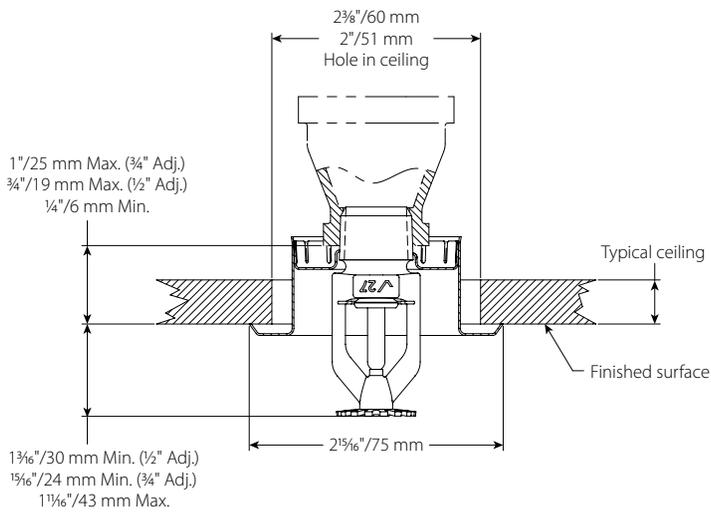


V3405

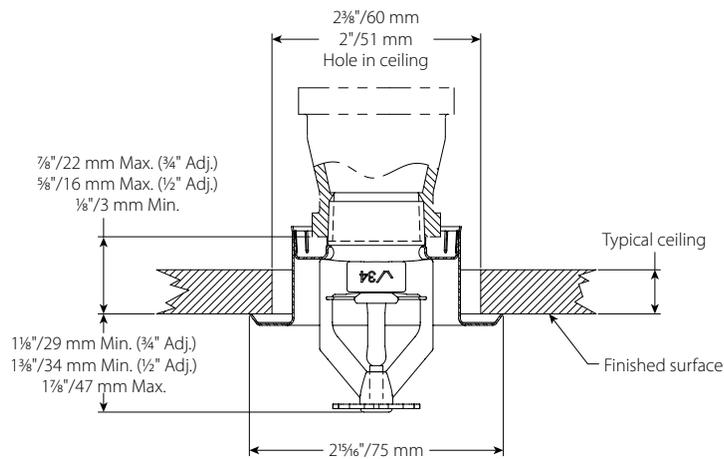
4.0 DIMENSIONS



V2851, V4251



V2707



V3405

5.0 PERFORMANCE

Sprinkler is to be installed and designed as per NFPA, FM Datasheets, or any local standards.

6.0 NOTIFICATIONS

 WARNING	
    	<ul style="list-style-type: none">• Read and understand all instructions before attempting to install any Victaulic products.• Always verify that the piping system has been completely depressurized and drained immediately prior to installation, removal, adjustment, or maintenance of any Victaulic products.• Wear safety glasses, hardhat, and foot protection. <p>Failure to follow these instructions could result in death or serious personal injury and property damage.</p>
<ul style="list-style-type: none">• These products shall be used only in fire protection systems that are designed and installed in accordance with current, applicable National Fire Protection Association (NFPA 13, 13D, 13R, etc.) standards, or equivalent standards, and in accordance with applicable building and fire codes. These standards and codes contain important information regarding protection of systems from freezing temperatures, corrosion, mechanical damage, etc.• The installer shall understand the use of this product and why it was specified for the particular application.• The installer shall understand common industry safety standards and potential consequences of improper product installation.• It is the system designer's responsibility to verify suitability of materials for use with the intended fluid media within the piping system and external environment.• The material specifier shall evaluate the effect of chemical composition, pH level, operating temperature, chloride level, oxygen level, and flow rate on materials to confirm system life will be acceptable for the intended service. <p>Failure to follow installation requirements and local and national codes and standards could compromise system integrity or cause system failure, resulting in death or serious personal injury and property damage.</p>	

7.0 REFERENCE MATERIALS

Ratings: All glass bulbs are rated for temperatures from -67°F/-55°C.

[1-40: Victaulic FireLock™ Automatic Sprinklers Installation and Maintenance Instructions](#)

[1-V9: Style V9 Victaulic FireLock™ IGS™ Installation-Ready™ Sprinkler Coupling Installation Instructions](#)

User Responsibility for Product Selection and Suitability

Each user bears final responsibility for making a determination as to the suitability of Victaulic products for a particular end-use application, in accordance with industry standards and project specifications, as well as Victaulic performance, maintenance, safety, and warning instructions. Nothing in this or any other document, nor any verbal recommendation, advice, or opinion from any Victaulic employee, shall be deemed to alter, vary, supersede, or waive any provision of Victaulic Company's standard conditions of sale, installation guide, or this disclaimer.

Intellectual Property Rights

No statement contained herein concerning a possible or suggested use of any material, product, service, or design is intended, or should be construed, to grant any license under any patent or other intellectual property right of Victaulic or any of its subsidiaries or affiliates covering such use or design, or as a recommendation for the use of such material, product, service, or design in the infringement of any patent or other intellectual property right. The terms "Patented" or "Patent Pending" refer to design or utility patents or patent applications for articles and/or methods of use in the United States and/or other countries.

Note

This product shall be manufactured by Victaulic or to Victaulic specifications. All products to be installed in accordance with current Victaulic installation/assembly instructions. Victaulic reserves the right to change product specifications, designs and standard equipment without notice and without incurring obligations.

Installation

Reference should always be made to the Victaulic installation handbook or installation instructions of the product you are installing. Handbooks are included with each shipment of Victaulic products, providing complete installation and assembly data, and are available in PDF format on our website at www.victaulic.com.

Warranty

Refer to the Warranty section of the current Price List or contact Victaulic for details.

Trademarks

Victaulic and all other Victaulic marks are the trademarks or registered trademarks of Victaulic Company, and/or its affiliated entities, in the U.S. and/or other countries.

Victaulic® FireLock™ Series FL-SR/SW

Standard Coverage, Standard Response

Horizontal Sidewall and Recessed Horizontal Sidewall Sprinklers, K2.8 (4.0), K4.2 (6.1), K5.6 (8.1), K8.0 (11.5)



1.0 PRODUCT DESCRIPTION

STANDARD RESPONSE HORIZONTAL SIDEWALL				
SIN	V2870	V4270	V2709	V3409
ORIENTATION	Horizontal Sidewall	Horizontal Sidewall	Horizontal Sidewall	Horizontal Sidewall
K-FACTOR ¹	2.8 Imp./4.0 S.I.	4.2 Imp./6.1 S.I.	5.6 Imp./8.1 S.I.	8.0 Imp./11.5 S.I.
CONNECTION	½" NPT/15mm BSPT	½" NPT/15mm BSPT	½" NPT/15mm BSPT/IGS	¾" NPT/ 20mm BSPT/IGS
MAX WORKING PRESSURE	175 psi (1200 kPa)	175 psi (1200 kPa)	175 psi (1200 kPa)	175 psi (1200 kPa)
GLOBE RE-DESIGNATION	GL2870	GL4270	-	-
GLOBE EQUIVALENT	-	-	GL5670	GL8171

STANDARD RESPONSE RECESSED HORIZONTAL SIDEWALL				
SIN	V2870	V4270	V2709	V3409
ORIENTATION	Horizontal Sidewall	Horizontal Sidewall	Horizontal Sidewall	Horizontal Sidewall
K-FACTOR ¹	2.8 Imp./4.0 S.I.	4.2 Imp./6.1 S.I.	5.6 Imp./8.1 S.I.	8.0 Imp./11.5 S.I.
CONNECTION	½" NPT/15mm BSPT	½" NPT/15mm BSPT	½" NPT/15mm BSPT	¾" NPT/ 20mm BSPT
MAX WORKING PRESSURE	175 psi (1200 kPa)			
ESCUTCHEON	Recessed	Recessed	Recessed	Recessed
GLOBE RE-DESIGNATION	GL2870	GL4270	-	-
GLOBE EQUIVALENT	-	-	GL5670	GL8171

AVAILABLE GUARDS				
SPRINKLER	V28	V42	V27	V34
HORIZONTAL SIDEWALL			■	

AVAILABLE WRENCHES							
SPRINKLER	V56-2 Recessed	V56 Open End	V27-2 Recessed	V27 Open End	V34-2 Recessed	V34 Open End	¾" Hex-Bit
V2870 and V4270	■	■					
V2709			■	■			■
V3409					■	■	■

Factory Hydrostatic Test: 100% @ 500 psi/3447 kPa/34 bar

Min. Operating Pressure: UL/FM: 7psi/48 kPa/.5 bar

Temperature Rating: See tables in section 2.0

¹ For K-Factor when pressure is measured in bar, multiply S.I. units by 10.0.

ALWAYS REFER TO ANY NOTIFICATIONS AT THE END OF THIS DOCUMENT REGARDING PRODUCT INSTALLATION, MAINTENANCE OR SUPPORT.

2.0 CERTIFICATION/LISTINGS



HORIZONTAL SIDEWALL APPROVALS/LISTINGS				
SIN	V2870	V4270	V2709	V3409
Nominal K Factor Imperial	2.8	4.2	5.6	8.0
Nominal K Factor S.I. ²	4.0	6.1	8.1	11.5
Orientation	Horizontal Sidewall	Horizontal Sidewall	Horizontal Sidewall	Horizontal Sidewall
Escutcheon	Flush Extended	Flush Extended	Flush Extended	Flush Extended
Approved Temperature Ratings F°/C°				
cULus 4" – 12" Deflector Distance	135°F/57°C 155°F/68°C 175°F/79°C 200°F/93°C 286°F/141°C	135°F/57°C 155°F/68°C 175°F/79°C 200°F/93°C 286°F/141°C	135°F/57°C 155°F/68°C 175°F/79°C 200°F/93°C 286°F/141°C 360°F/182°C 500°F/260°C	135°F/57°C 155°F/68°C 175°F/79°C 200°F/93°C 286°F/141°C 360°F/182°C
FM	-	-	135°F/57°C 155°F/68°C 175°F/79°C 200°F/93°C 286°F/141°C 360°F/182°C	-
LPCB	-	-	135°F/57°C 155°F/68°C 175°F/79°C 200°F/93°C 286°F/141°C 360°F/182°C	-
CE	-	-	135°F/57°C 155°F/68°C 175°F/79°C 200°F/93°C 286°F/141°C 360°F/182°C	-
CCC ZSTBS-15	-	-	155°F/68°C	-

Recessed Horizontal Sidewall Approvals/Listings				
SIN	V2870	V4270	V2709	V3409
Nominal K Factor Imperial	2.8	4.2	5.6	8.0
Nominal K Factor S.I. ²	4.0	6.1	8.1	11.5
Orientation	Horizontal Sidewall	Horizontal Sidewall	Horizontal Sidewall	Horizontal Sidewall
Escutcheon	RECESSED	RECESSED	RECESSED	RECESSED
Approved Temperature Ratings F°/C°				
cULus 4" – 12" Deflector Distance ½" and ¾" Escutcheon	135°F/57°C 155°F/68°C 175°F/79°C 200°F/93°C 286°F/141°C	135°F/57°C 155°F/68°C 175°F/79°C 200°F/93°C 286°F/141°C	135°F/57°C 155°F/68°C 175°F/79°C 200°F/93°C	135°F/57°C 155°F/68°C 175°F/79°C 200°F/93°C
FM ½" Escutcheon Only	-	-	135°F/57°C 155°F/68°C 175°F/79°C 200°F/93°C	-
CCC ZSTBS-15	-	-	155°F/68°C	-

² For K-Factor when pressure is measured in Bar, multiply S.I. units by 10.

NOTES

- Listings and approval as of printing.
- Where cULus Listed, Polyester and VC-250 Coatings Listed as Corrosion Resistant
- Where FM Approved, VC-250 Coating Approved as Corrosion Resistant
- New York City Acceptance - All UL Listed and/or FM Approved sprinklers acceptable to NYC per section 28-113 of the Administrative Code and the OTCR Rule

3.0 SPECIFICATIONS – MATERIAL

Deflector: Bronze

Bulb Nominal Diameter: 5.0mm

Load Screw: Bronze

Pip Cap: Bronze

Spring Seal: PTFE coated Beryllium nickel alloy

Frame: Brass

Lodgement Spring: Stainless steel

Installation Wrench: Ductile iron

Sprinkler Frame Finishes:

- Plain brass
- Chrome plated
- White polyester painted^{3, 4}
- Flat black polyester painted^{3, 4}
- Custom polyester painted^{3, 4}
- VC-250⁵

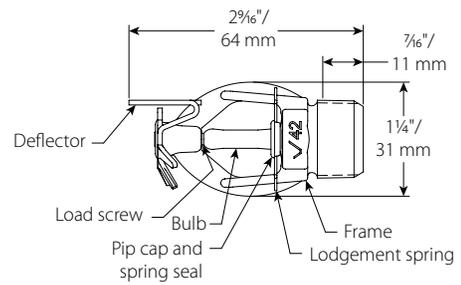
³ Not available on the Intermediate Level Style Pendant.

⁴ UL Listed for corrosion resistance.

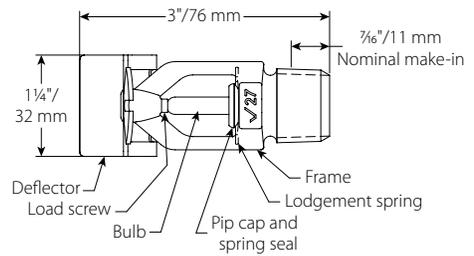
⁵ UL Listed and FM Approved for corrosion resistance.

NOTE

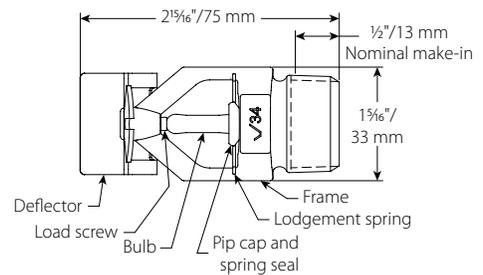
- For cabinets and other accessories refer to separate sheet.



V2870, V4270

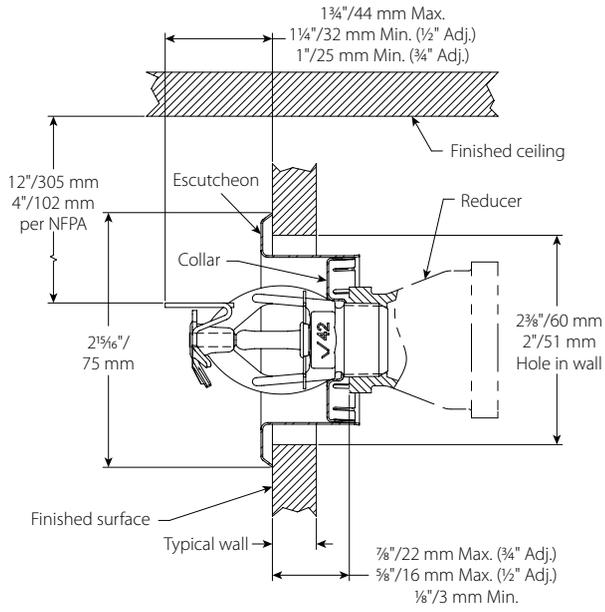


V2709

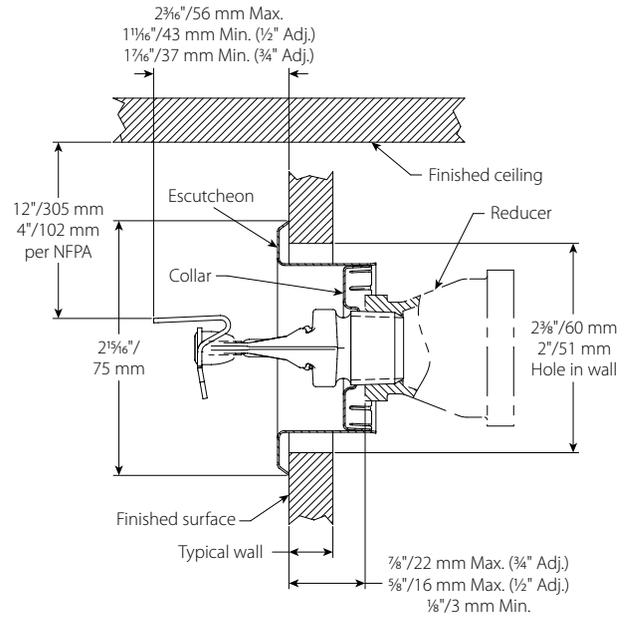


V3409

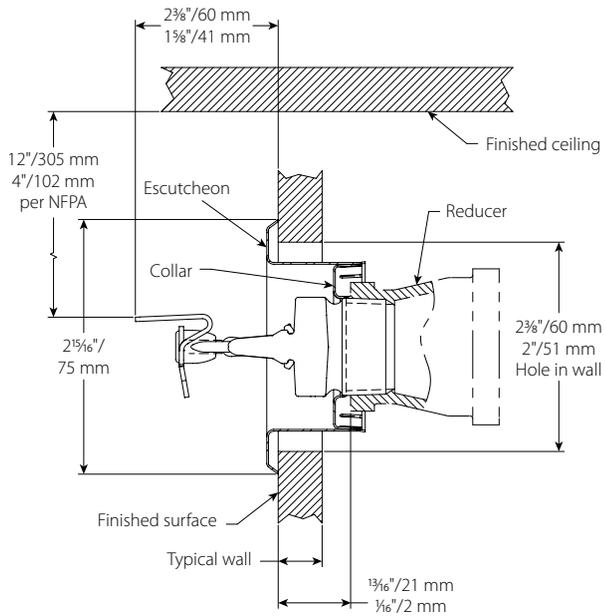
4.0 DIMENSIONS



V2870, V2790



V2709



V3409

5.0 PERFORMANCE

Sprinkler is to be installed and designed as per NFPA, FM Datasheets, or any local standards.

6.0 NOTIFICATIONS

 WARNING	
    	<ul style="list-style-type: none">• Read and understand all instructions before attempting to install any Victaulic products.• Always verify that the piping system has been completely depressurized and drained immediately prior to installation, removal, adjustment, or maintenance of any Victaulic products.• Wear safety glasses, hardhat, and foot protection. <p>Failure to follow these instructions could result in death or serious personal injury and property damage.</p>
<ul style="list-style-type: none">• These products shall be used only in fire protection systems that are designed and installed in accordance with current, applicable National Fire Protection Association (NFPA 13, 13D, 13R, etc.) standards, or equivalent standards, and in accordance with applicable building and fire codes. These standards and codes contain important information regarding protection of systems from freezing temperatures, corrosion, mechanical damage, etc.• The installer shall understand the use of this product and why it was specified for the particular application.• The installer shall understand common industry safety standards and potential consequences of improper product installation.• It is the system designer's responsibility to verify suitability of materials for use with the intended fluid media within the piping system and external environment.• The material specifier shall evaluate the effect of chemical composition, pH level, operating temperature, chloride level, oxygen level, and flow rate on materials to confirm system life will be acceptable for the intended service. <p>Failure to follow installation requirements and local and national codes and standards could compromise system integrity or cause system failure, resulting in death or serious personal injury and property damage.</p>	

7.0 REFERENCE MATERIALS

Ratings: All glass bulbs are rated for temperatures from -67°F/-55°C.

[1-40: Victaulic FireLock™ Automatic Sprinklers Installation and Maintenance Instructions](#)

[1-V9: Style V9 Victaulic FireLock™ IGS™ Installation-Ready™ Sprinkler Coupling Installation Instructions](#)

User Responsibility for Product Selection and Suitability

Each user bears final responsibility for making a determination as to the suitability of Victaulic products for a particular end-use application, in accordance with industry standards and project specifications, as well as Victaulic performance, maintenance, safety, and warning instructions. Nothing in this or any other document, nor any verbal recommendation, advice, or opinion from any Victaulic employee, shall be deemed to alter, vary, supersede, or waive any provision of Victaulic Company's standard conditions of sale, installation guide, or this disclaimer.

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Note

This product shall be manufactured by Victaulic or to Victaulic specifications. All products to be installed in accordance with current Victaulic installation/assembly instructions. Victaulic reserves the right to change product specifications, designs and standard equipment without notice and without incurring obligations.

Installation

Reference should always be made to the Victaulic installation handbook or installation instructions of the product you are installing. Handbooks are included with each shipment of Victaulic products, providing complete installation and assembly data, and are available in PDF format on our website at www.victaulic.com.

Warranty

Refer to the Warranty section of the current Price List or contact Victaulic for details.

Trademarks

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TECHNICAL SUBMISSION

Issued By Worcester Office

	Tech Submission No.	07
Job Reference Number:	CFSQ-19442	
Project Reference:	Nine Mile Point	
For the attention of:	Paul Devine	
Copy To:	Luke Wood	
Form Completed By: Aleksandra Szlachta	Date: 22.09.2021	

Manufacturer / Supplier	Model	Ref N ^o	Qty
Armstrong	FM Diesel Pump - 8x6x15 NF	JU6H-UF50	1
Armstrong	FM Electric Pump 10x8x11 MF 200KW IP55 & Controller	GPY-FM	1
Armstrong	Jockey Pump 415v 3ph 50hz & Starter	VMS2-18B	1
Note:			

Description of application:	Area to be used:
Sprinkler Pump	Water Supplies

Client Specification used:	TS01
Clause reference of specification:	
Statement of Compliance to the Specification:	Compliant <input checked="" type="checkbox"/> , Non compliant <input type="checkbox"/>

If non compliant present give details:

Submitted By: Compco Fire Name: _____
 Date: _____

Signature: _____

Date Issued: 06.10.21	Date approval / comments required: 13.10.21	Date approval / comments received:
--------------------------	--	------------------------------------



Midlands Office

Cleeve House, Malvern Road, Worcester, WR2 4YX
Tel: 01905 741600 Fax: 01905 741620

London Office

High Banks House, Lawn Lane, Hemel Hempstead, HP3 9HR
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Northern Office

Park Hill Business Centre, Walton Road, Wetherby, LS22 5DZ
T: +44 (0)1905 741600

Scotland Office

Cadzow House, Cadzow Industrial Estate, Hamilton. ML3 7QU
Tel: 01698 368790 Fax: 01698 426211

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Client Review:

Approved

Approved with comments

Re-submit

Comments:

Review By: Name:

Signature:

Date:

Submittal

Series: HSC, Diesel Engine

Model: HSC 8x6x15NF 210 hp

Project name: undefined

Representative:

Location:

Phone number:

Date submitted:

e-mail:

Engineer:

Submitted by:

PROJECT DETAILS

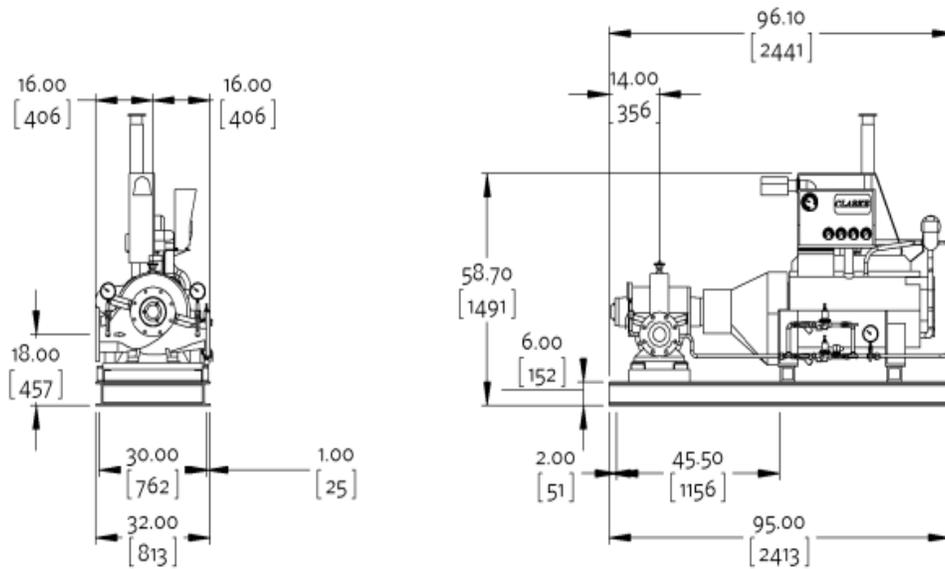
Tag Num:	Qty: 1
Service:	Location:

PUMP DESIGN DATA

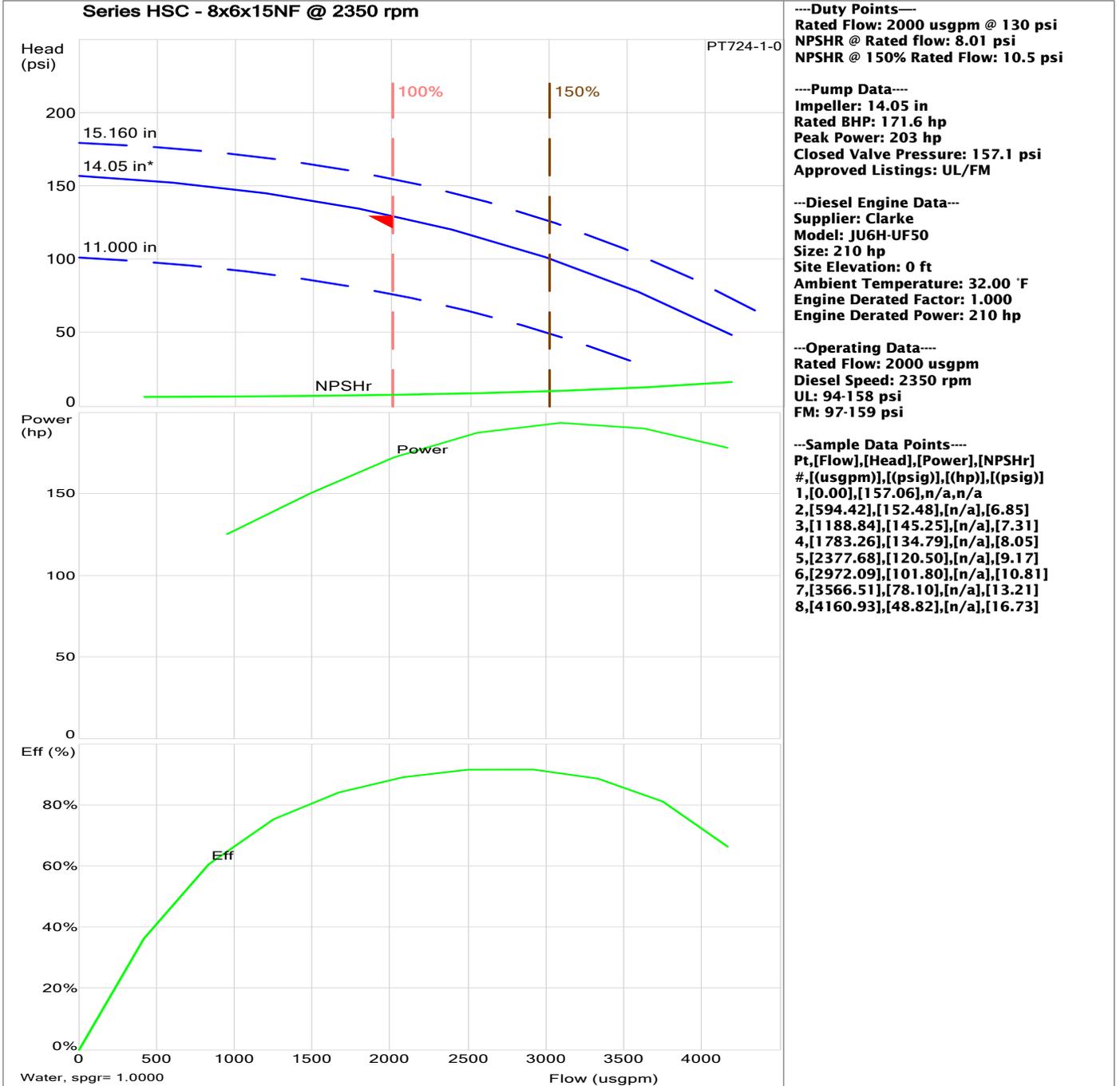
Pump Size	8x6x15NF		
Fire Pump Listing	UL/FM	Flange Rating	ANSI 125lb/125lb
Rated Flow	2000 usgpm	Rated Head	130 psi
Maximum Suction Pressure	8 m	Maximum Working Pressure	168.48 psi
NPSHR @ Rated Flow	8.01 psi	Rated BHP	171.6 hp
NPSHR @ 150% Rated Flow	10.5 psi	Peak Power BHP	203 hp
Pump Construction	BF	Motor Service Factor	NA

ENGINE DESIGN DATA

Engine Model	JU6H-UF50	Fuel Tank Size	240 US Gallon
Engine HP	210 hp	Diesel Heater Cycle(Hz)	50 Hz
Engine Speed (RPM)	2350 rpm	Diesel Heater Voltage (V)	115 V
Battery Voltage	12V Battery System	Engine Approval	UL/FM
Fuel Tank Type	Double Wall	Engine Emission Level	Tier 1



DIMENSIONAL DATA (in, lb) NOT for CONSTRUCTION		
Pump Weight	Driver Weight	Total Weight
665 lb	2359 lb	3039 lb [1378.46 kg]



ACCESSORIES

- Exhaust system (Silencer and Flexible connection)
- FM Approved Cooling Loop installed on engine per NFPA20
- Fuel system (Fuel Tank with flame arrestor and fittings)
(Tank sized for 1Gal. per HP + 10% extra for sump and expansion per NFPA20)
- Battery system (cables, rack and batteries)

Submittal

Product: NFPA - Fire Pump Controller

Model: GPD-12-120

Project name: undefined

Representative:

Location:

Phone number:

Date submitted:

e-mail:

Engineer:

Submitted by:

Controller Details	
Manufacturer	Tornatech
Model Number	GPD-12-120
Control Panel Type	Diesel
Power Rating	115/1/50
Approvals	UL/FM

The submittal drawings for Tornatech controller model # GPD-12-120 can be found on their web page, see the link below:

<https://www.tornatech.com/>

Submittal

Series: HSC, Electric Motor

Model: HSC 10x8x11MF 300 hp

Project name: undefined

Representative:

Location:

Phone number:

Date submitted:

e-mail:

Engineer:

Submitted by:

PROJECT DETAILS

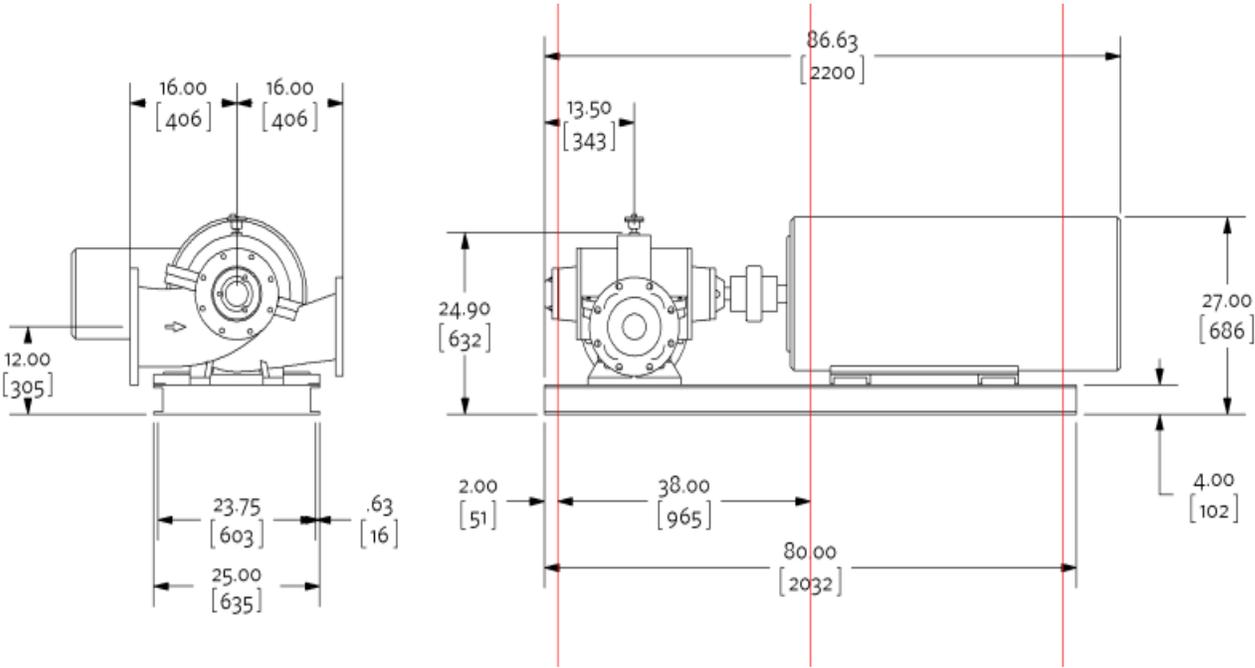
Tag Num:	Qty: 1
Service:	Location:

PUMP DESIGN DATA

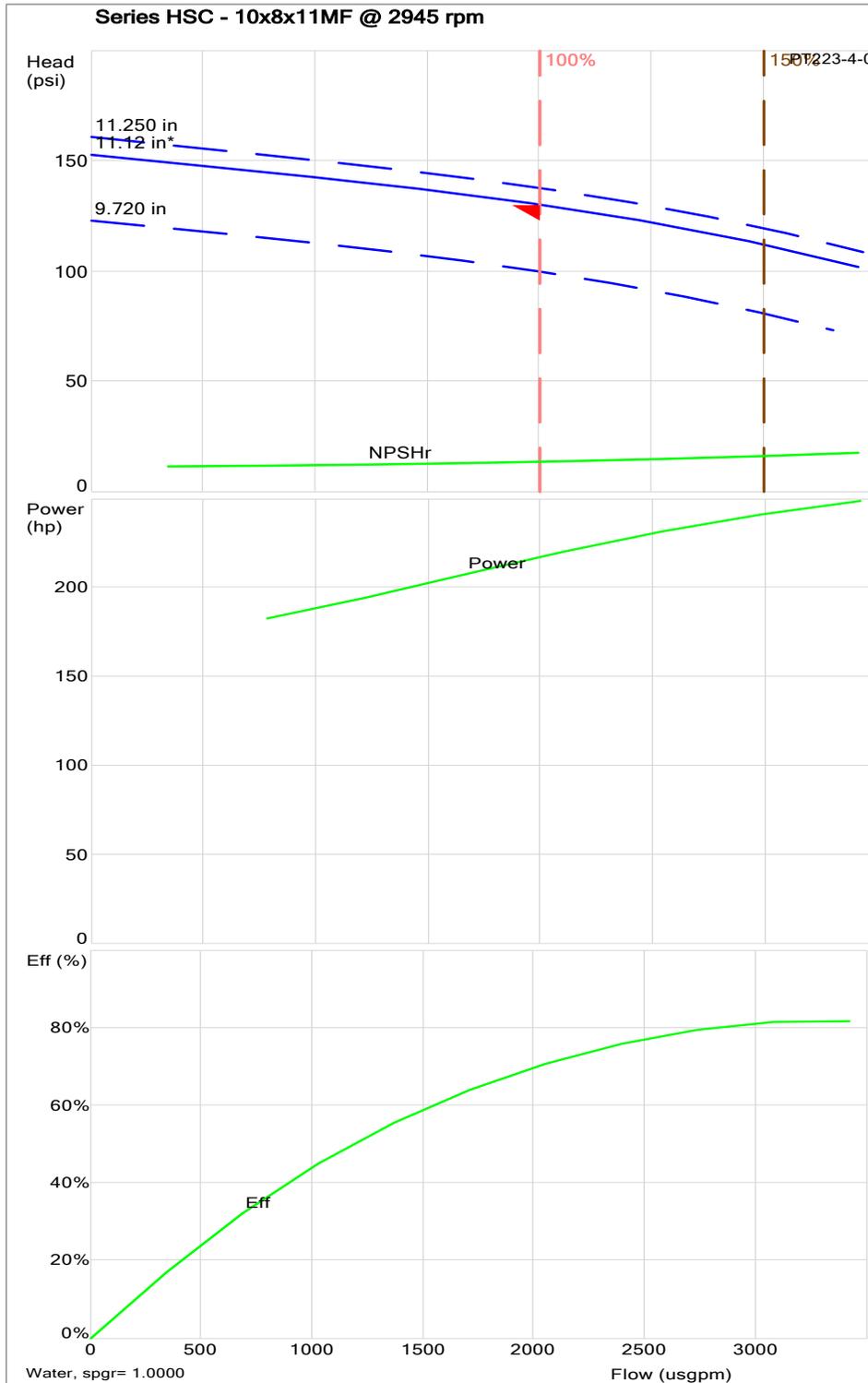
Pump Size	10x8x11MF		
Fire Pump Listing	UL/FM	Flange Rating	ANSI 125lb/125lb
Rated Flow	2000 usgpm	Rated Head	130 psi
Maximum Suction Pressure	8 m	Maximum Working Pressure	164.18 psi
NPSHR @ Rated Flow	13.6 psi	Rated BHP	230.15 hp
NPSHR @ 150% Rated Flow	16.2 psi	Peak Power BHP	264 hp
Pump Construction	BF	Motor Service Factor	1.00

MOTOR DESIGN DATA

Motor Voltage	415 Volts	Motor Cycle	50 Hz
Motor Phase	3 Phase	Motor Type	Electric
Motor Frame Size	449TS	Motor RPM	3000 rpm
Motor Enclosure	TEFC	Motor HP	300 hp



DIMENSIONAL DATA (in, lb) NOT for CONSTRUCTION		
Pump Weight	Driver Weight	Total Weight
985 lb	2400 lb	3400 lb [1542.21 kg]



---Duty Points---
Rated Flow: 2000 usgpm @ 130 psi
NPSHR @ Rated flow: 13.6 psi
NPSHR @ 150% Rated Flow: 16.2 psi

---Pump Data---
Impeller: 11.12 in
Rated BHP: 230.15 hp
Peak Power: 264 hp
Closed Valve Pressure: 152.8 psi
Approved Listings: UL/FM

---Electric Motor Data---
Motor Supplier: Factory Choice
Size: 300 hp
Motor Service Factor: 1.00

---Operating Data---
Rated Flow: 2000 usgpm
Motor Speed: 3000 rpm
UL: 100-146 psi
FM: 100-146 psi

---Sample Data Points---
Pt,[Flow],[Head],[Power],[NPSHR]
#, [(usgpm)], [(psig)], [(hp)], [(psig)]
1, [0.00], [152.82], [n/a], [n/a]
2, [488.62], [147.86], [n/a], [11.84]
3, [977.24], [142.85], [n/a], [12.33]
4, [1465.86], [137.35], [n/a], [12.99]
5, [1954.48], [130.94], [n/a], [13.84]
6, [2443.10], [123.19], [n/a], [14.89]
7, [2931.73], [113.68], [n/a], [16.16]
8, [3420.35], [101.97], [n/a], [17.7]

Submittal

Product: NFPA - Fire Pump Controller

Model: GPA-415/300/3/50

Project name: undefined

Representative:

Location:

Phone number:

Date submitted:

e-mail:

Engineer:

Submitted by:

Controller Details	
Manufacturer	Tornatech
Model Number	GPA-415/300/3/50
Control Panel Type	Across-the-Line
Transfer Switch	Not Included
Power Rating	415/3/50
Horsepower	300 hp
Withstand Rating (amps rms)	100,000
Approvals	UL/FM

The submittal drawings for Tornatech controller model # GPA-415/300/3/50 can be found on their web page, see the link below:

<https://www.tornatech.com/>



Midlands Office

London Office

Northern Office

Scotland Office

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Cadzow House, Cadzow Industrial Estate, Hamilton. ML3 7QU

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TECHNICAL SUBMISSION

Issued By Worcester Office

		Tech Submission No.	06
Job Reference Number:	W1293		
Project Reference:	Nine Mile Point		
For the attention of:	Paul Devine		
Copy To:	Luke Wood		
Form Completed By: Aleksandra Szlachta		Date: 05.10.21	

Manufacturer / Supplier	Model	Ref N ^o	Qty
CST Storage	Fire Sprinkler Tank - 1356m3 effective capacity		1
Note:			

Description of application:	Area to be used:
Sprinkler Tanks	Water Supplies

Client Specification used:	
Clause reference of specification:	
Statement of Compliance to the Specification:	Compliant <input checked="" type="checkbox"/> , Non compliant <input type="checkbox"/>
If non compliant present give details:	
.	

Submitted By: Compco Fire Name: _____
Date: _____

Signature: _____

Date Issued:	Date approval / comments required:	Date approval / comments received:
--------------	------------------------------------	------------------------------------

Client Review:

Approved Approved with comments Re-submit

Comments:

Review By: Name: _____

Signature: _____

Date: _____

- NOTES:**
- 1: ALL STRUCTURAL STEEL PLATES UP TO 5mm TO BE BS EN 10346:2009 GRADE S355. ALL STEEL PLATES ABOVE 5mm HOT ROLLED SECTIONS TO BE EN 10025 GRADE S355.
 - 2: ALL NUTS, BOLTS & WASHERS TO BE SPUN GALVANIZED.
 - 3: STEEL ITEMS TO BE HOT DIP GALVANIZED B.S.EN ISO 1461:2009
 - 4: ALL PIPE FLANGES TO BE PN16 U.G.S.
 - 5: ALL FOUNDATION DETAILS TO BE USED AS A GUIDE ONLY. FOUNDATION DESIGN MAY ALTER DUE TO GROUND CONDITIONS.
 - 6: RECOMMENDED MAX FLOW VELOCITY 3m/s AS PER MANUFACTURER'S DATA SHEET.
 - 7: HEATER TO BE INSTALLED 1M DOWN FROM THE TANK EAVE AND TO THE SIDE OF THE INFILL LINE.
 - 8: LEVEL SWITCH TO BE SUPPLIED ONLY.

SHEET THICKNESS TABLE

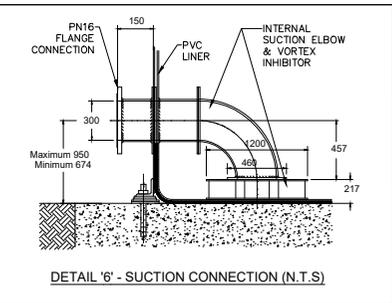
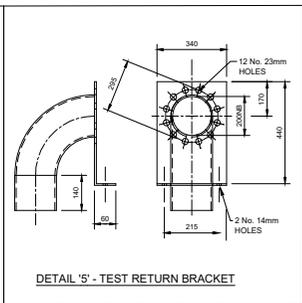
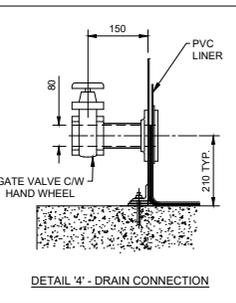
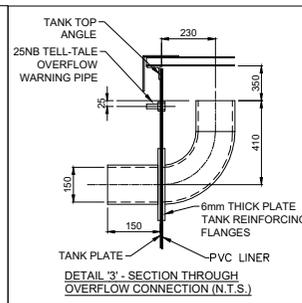
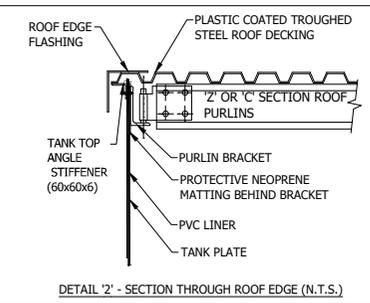
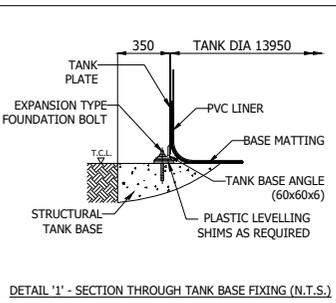
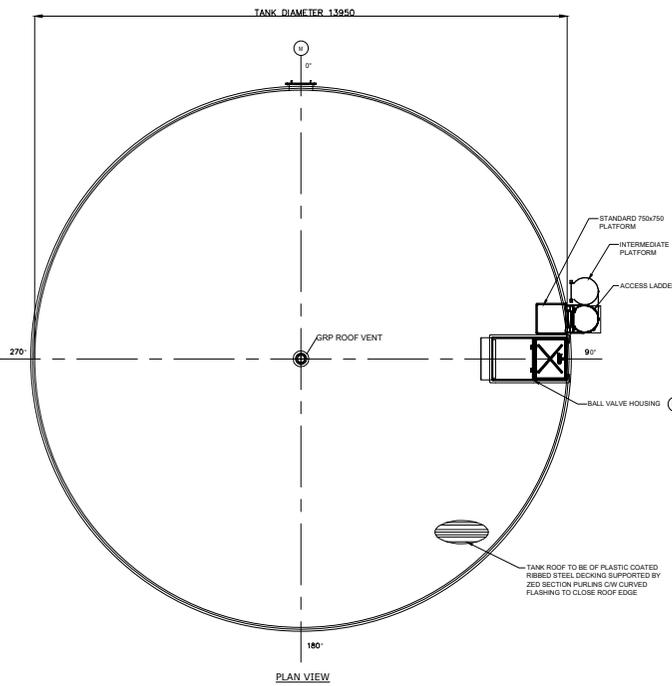
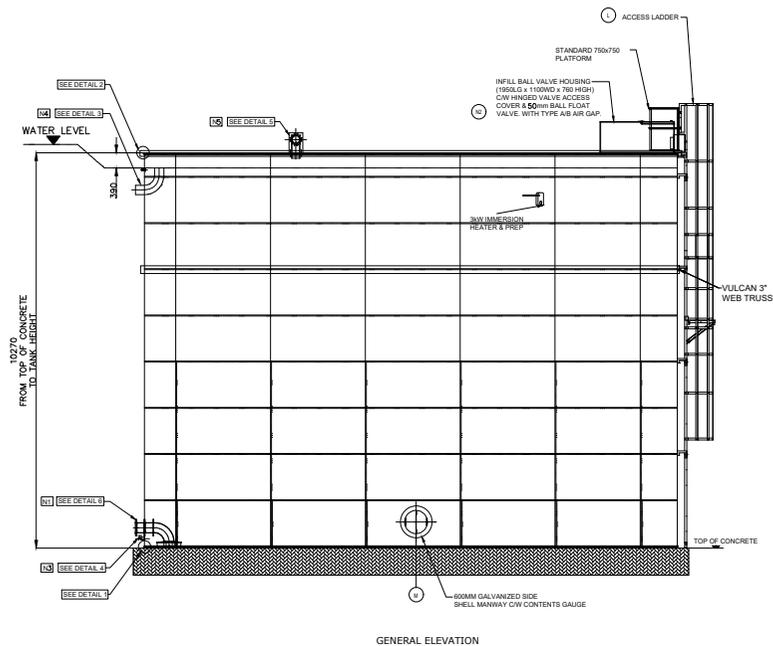
SHEET NO.	SHEET THICKNESS(MM)	SHEET THICKNESS(IN)	Bolt Seam "V" Reference
1	2.5	0.098	V1
2	2.5	0.098	V1
3	2.5	0.098	V1
4	2.5	0.098	V1
5	2.5	0.098	V2
6	3.0	0.118	V2
7	4.0	0.157	V2
8	4.0	0.157	V2
FDN	5.0	0.197	V3

PART/FLANGE CONNECTION SCHEDULE ON ROOF

ITEM NO.	DESCRIPTION	SIZE	QTY	RADIUS	ORIENTATION
V	ROOF VENT	STD	1	-	-
N2	BALL VALVE HOUSING	DN50	1	STD	TBC
N5	TEST RETURN	DN200	1	TO ROOF	TBC

PART/FLANGE CONNECTION SCHEDULE ON SHELL

ITEM NO.	DESCRIPTION	SIZE	QTY	ELEVATION	ORIENTATION
N1	SUCTION	DN300	1	TBC	TBC
N3	DRAIN	DN80	1	210MM	TBC
N4	OVERFLOW WITH TELL TALE PIPE	DN150	1	TBC	TBC
M	SHELL MANWAY WITH CONTENTS GAUGE	DN600	1	STD	TBC
L	LADDER	N/A	1	TO ROOF	TBC
1	3KW IMMERSION HEATER	N/A	1	-	-
2	PIPE BRACKETS	DN50	4	-	-
3	PIPE BRACKETS	DN200	4	-	-
4	LOW LEVEL SWITCH (SUPPLY ONLY)	STD	1	-	-



1. ALL DIMENSIONS IN MILLIMETERS U.O.S.
2. GENERAL FABRICATION TOLERANCE FOR DIMENSIONS UP TO 1.0 METER TO BE (+/-) 1 mm TOLERANCE FOR DIMENSIONS OVER 1.0 METER TO BE (+/-) 2 mm. GENERAL DIMENSION TOLERANCE FOR HOLES UP TO 6 mm TO BE (+/-) 0.1 mm TOLERANCE FOR HOLES UP TO 30 mm TO BE (+/-) 0.2 mm.
- * WELDING NOTE: ALL WELD TO BE QUALITY C ACCORDING TO BS EN ISO 5817. ALL WELD SHOULD BE SAME AS THE THICKNESS OF THE THINNEST PLATE WELDED FILLET OR SQUARE, CONTINUOUS UNLESS OTHERWISE NOTED. USE "MIG" FOR ALL MILD STEEL PLATES AND "TIG" FOR STAINLESS STEEL PLATES.
- * CONFIDENTIAL/TRADE SECRETS: BY ACCEPTING POSSESSION OF THIS DOCUMENT, RECIPIENT AGREES THAT ITS CONTENTS ARE CONFIDENTIAL, PROPRIETARY TRADE SECRETS OF CST STORAGE. NO PORTION OF THIS DOCUMENT MAY BE REPRODUCED, DISTRIBUTED, OR USED IN ANY MANNER WITHOUT WRITTEN PERMISSION FROM CST STORAGE.

CST STORAGE

UNIT 11A FARMWELL LANE
CASTLEWOOD BUSINESS PARK
SOUTH NORMANTON, DE55 2JX

REV.	FIRST ISSUE	ECN.	BY	CHKD.	APPR.	DATE
0	FIRST ISSUE		KN	BT	EG	04/10/21

GENERAL ARRANGEMENT FOR WATER STORAGE TANK 4534 LPCB NON_APPROVED COMPCO NEWPORT

BY: KN	DATE: 04/10/21	NEXT ASSY: -	ORDER NO.:
CHKD: BT	DATE: 04/10/21	SUPERSEDES: -	
APPR: EG	DATE: 04/10/21	DWG #:	
SCALE: NTS	SHEET: 1 OF 1	Q80120	REV: 0

REL.: 0

DATE: April 27, 2021

BY: BT

SUMMARY OF TANK DESIGN INPUT DATA

STRUCTURE MODEL	46 33	
FOUNDATION TYPE	Flange Mount	
SPECIFIC GRAVITY	1.000	
H/V PRESSURE RATIO	1.000	
FREEBOARD	15.750 in	400.000 mm
ROOF TYPE	Light Weight TDR	
ROOF WEIGHT	5.200 psf	25.386 kg/m ²
SC ROOF HEIGHT	0.000 in	0.000 mm
DC ROOF PROJ AREA	0.000 sq ft	0.000 sq m
DC ROOF CENTROID	0.000 in	0.000 mm
TOTAL ROOF HEIGHT	0.000 in	0.000 mm
ROOF SNOW LOAD	15.700 psf	0.752 kPa
WIND DESIGN	ASCE 7-05/CST Standard*(7.87 psf)*	
EXPOSURE FACTOR	B	
IMPORTANCE FACTOR	1.000	
WIND SPEED	100.000 mph	45.000 m/s
WIND STIFFENER DESIGN PRESSURE	7.87 psf	
WIND PRESSURE ROOF SINGLE CURVATURE	N/A	
WIND PRESSURE ROOF DOUBLE CURVATURE	7.865 psf	
SEISMIC DESIGN	None	
SEISMIC ZONE	NA	
ALLOWABLES USED	LPCB	
DESIGN METHOD	ALLOWABLE STRESS DESIGN	
AQUA2 VERSION	5.0.0.1	
TANK PART LIST REVISION No.	N/A	
FND. PART LIST REVISION No.	N/A	

REL.: 0

DATE: April 27, 2021

BY: BT

SUMMARY OF INTERNALLY ASSIGNED PARAMETERS

BOLT DIAMETER	0.500 in	12.700 mm
HOLE DIAMETER	0.551 in	14.000 mm
TOP COURSE EDGE DIST	0.984 in	25.000 mm
CONCRETE IN FNDN	0.000 in	0.000 mm
DIST T/FTG TO B/FLR	0.000 in	0.000 mm
TOTAL FNDN THICKNESS	0.000 in	0.000 mm
STEEL FLOOR MATERIAL	Not Applicable	
SHEET DENSITY	590.000 pcf	9451 kg/m3
STEEL ELASTIC MODULUS	30000000 psi	206843 MPa
CONCRETE DENSITY	0 pcf	0 kg/m3
NET SHEET WIDTH	95.827 in	2434.000 mm
NET STANDARD SHEET HT.	47.244 in	1200.000 mm
OTHER STANDARD SHEET HT.	21.457 in	545.000 mm
STARTER PANEL HEIGHT	48.632 in	1235.000 mm
INVENTORY USED	1223(71223)	

46 33 GALVANISED TANK STRUCTURE DESIGN SUMMARY (18 FULL LENGTH SHEETS PER RING/COURSE)

COURSE NUMBER	THICKNESS (in)	THICKNESS (mm)	SHEET CODES	MATERIAL CODE	LIMITING FACTOR(S)
1	0.0980	2.489	1102	20	
2	0.0980	2.489	1101	20	
3	0.0980	2.489	1101	20	
4	0.0980	2.489	1101	20	
5	0.0980	2.489	1201	20	[16]
6	0.1180	2.997	1201	20	[15]
7	0.1570	3.988	1201	20	[15]
8	0.1570	3.988	1201	20	
FND	0.1970	5.004	1370	20	[15]

WIND STIFF REQUIRED	REQUIRED / ACTUAL SECT MOD	DESCRIPTION
STIFFENER AT BOTTOM OF COURSE 3	= 0.891 cu in / 1.146 cu in	Vulcan 3" Web Truss
STRUCTURE DIAMETER	= 45.75 ft	13945.80 mm
HEIGHT OF STRUCTURE TO EAVE	= 33.48 ft	10205.26 mm
VOLUME OF STRUCTURE TO EAVE	= 55050 cu ft	1559 m3
VOLUME OF CONTENTS	= 52892 cu ft	1498 m3
VOLUME OF CONTENTS	= 395658 gal	1497729 L
VOLUME OF CONCRETE FND.	= 0 cu ft	0 m3
WEIGHT OF EMPTY CYLINDER ABOVE FLOOR	= 29807 lb	13520 kg
WEIGHT OF ROOF	= 8550 lb	3878 kg
SNOW (LIVE) LOAD	= 25813 lb	11709 kg
WEIGHT OF CONTENTS	= 3300449 lb	1497057 kg
FOUNDATION WEIGHT	= 0 lb	0 kg
TOTAL WEIGHT ON FOOTING	= 3364619 lb	1526164 kg
WIND SHEAR AT TOP OF FOOTING	= 12049 lb	53597 N
WIND MOMENT AT TOP OF FOOTING	= 201713 ft-lb	274 kN-m
SEISMIC SHEAR AT TOP OF FOOTING	= 0 lb	0 N
SEISMIC MOMENT AT TOP OF FOOTING	= 0 ft-lb	0 kN-m
SEISMIC MOMENT MAT FOUNDATION	= 0 ft-lb	0 kN-m

HOOP STRESS ANALYSIS

--STRESS-(PSI)--

Course Number	Depth (ft)	Press (PSI)	Net Tensile	Allowable Tensile	Hole Bearing	Allowable Bearing	Bolt Shear	Allowable Shear
1	0.6	0.2	911	26752	2907	69000	725	30000
2	4.5	1.9	7340	26752	23433	69000	5848	30000
3	8.4	3.7	13769	26752	43959	69000	10970	30000
4	12.4	5.4	20198	26752	64485	69000	16093	30000
5	16.3	7.1	24960	27864	52705	69000	13153	30000
6	20.2	8.8	25734	27864	54341	69000	16329	30000
7	24.2	10.5	23104	27864	48785	69000	19504	30000
8	28.1	12.2	26865	27864	56729	69000	22680	30000
FND	32.2	13.9	26133	29862	42686	69000	21414	30000

AXIAL STRESS ANALYSIS

--STRESS-(PSI)--

Course Number	Axial Compressive	Allowable Compressive	Hole Bearing	Allowable Bearing	Bolt Shear	Allowable Shear
1	211	705	2124	69000	530	30000
2	227	705	2287	69000	571	30000
3	243	705	2450	69000	611	30000
4	259	705	2613	69000	652	30000
5	275	705	2775	69000	693	30000
6	245	847	2468	69000	741	30000
7	200	1122	2017	69000	807	30000
8	216	1122	2180	69000	872	30000
FND	189	1401	1905	69000	956	30000

WIND STRESS ANALYSIS

--STRESS-(PSI)--

Course Number	Axial Comp	Wind Bend	Total Comp	Allowable Comp	Hole Bear	Allowable Bear	Bolt Shear	Allowable Shear
1	58	0	58	941	587	91000	147	40000
2	74	3	77	941	778	91000	194	40000
3	90	9	99	941	999	91000	249	40000
4	106	17	124	941	1248	91000	311	40000
5	122	29	151	941	1526	91000	381	40000
6	118	36	154	1130	1550	91000	466	40000
7	105	38	142	1496	1437	91000	574	40000
8	121	50	171	1496	1726	91000	690	40000
FND	113	52	165	1868	1662	91000	834	40000

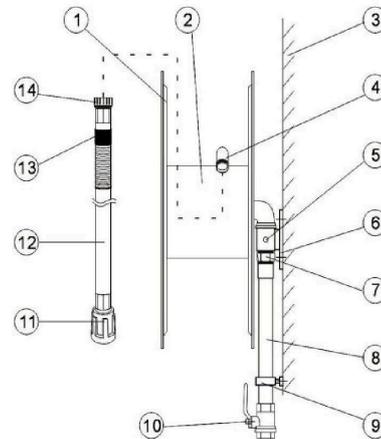
Appendix D

Hose reels and proposed locations.

REELMAX FIXED MANUAL FIRE HOSE REELS

Features

- Hose reel with powder coated and anti-ultraviolet side discs
- Corrosion resistant full brass waterway
- Leak proof hose fitting used to connect fire hose to water outlet
- High pressure resistance; maximum working pressure, 12 bar
- Robust leak free design providing over 3000 rotations of the hose reel with no leakage
- High pressure spray. The nozzle can be adjusted to jet/spray
- This type of hose reel can be used in a fire hose reel cabinet
- Supplied with LPBC approved EN694 fire hose, ideal for applications where long intervals can occur between use



Parts

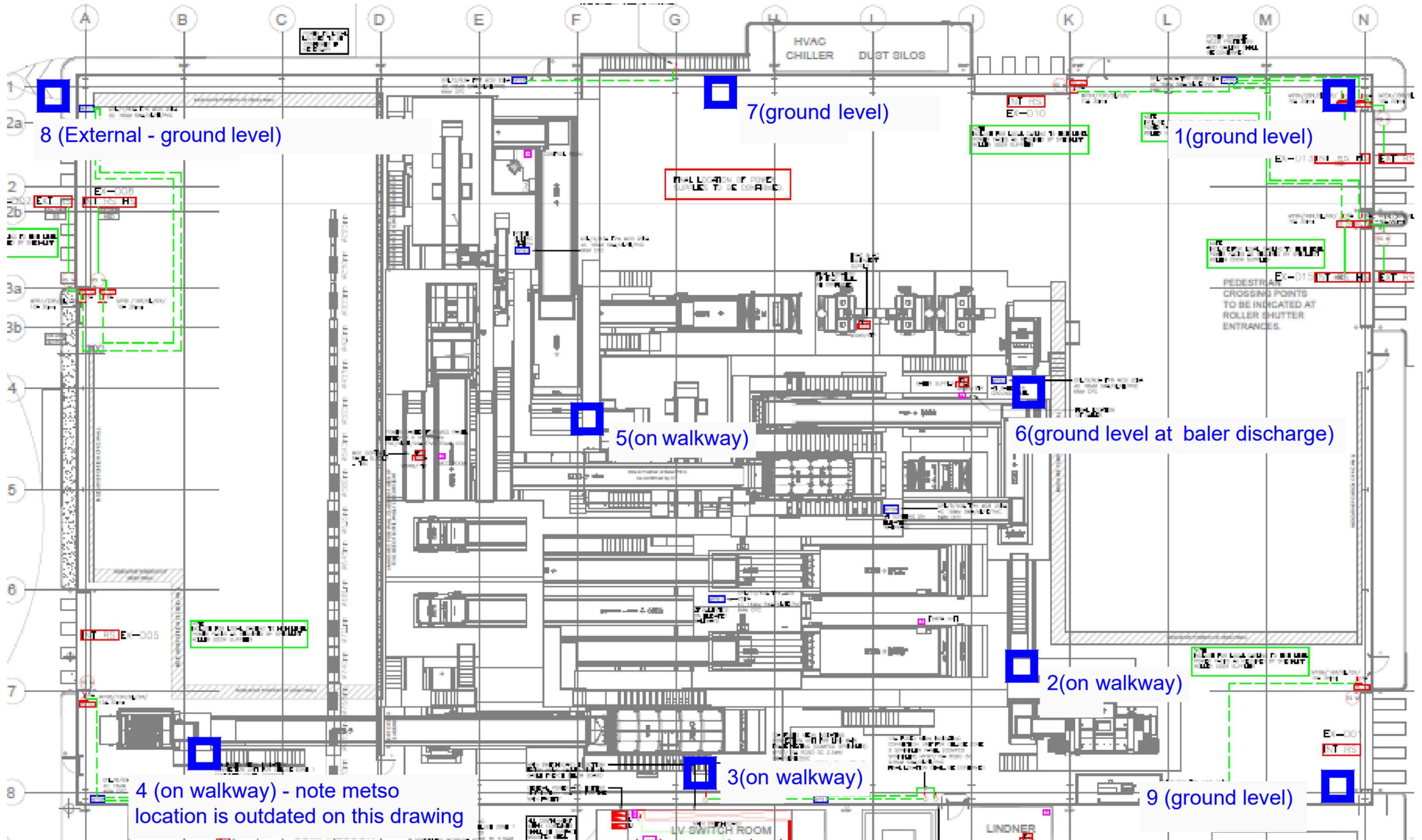
1. Hose Reel Disc	9. Pipe Bracket
2. Hose Drum	10. Gate Valve
3. Wall Mounting Surface	11. Nozzle
4. Water Inlet	12. Fire Hose
5. Locking Screw	13. Spring Wire Hose Support
6. Fixed Bracket	14. Connector
7. Inlet Joint	
8. Inlet Pipe	

Usage

1. Open the valve (10), pull hose towards fire, open nozzle (11) to spray/jet and aim at base of fire.
2. After use, close the valve (10), drain water from hose, rewind the hose and close nozzle (11).

Code	Model	Description	Hose Nominal Bore (mm)	Hose Maximum Length (m)	Nozzle Type	LPCB Ref. No.
102-1075	81/02352.	Manual, fixed, wall mounted	19	30	Rotary operated jet/spray	1093e/05

NMP - PROPOSED HOSE REEL (30m LENGTH) LOCATIONS



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