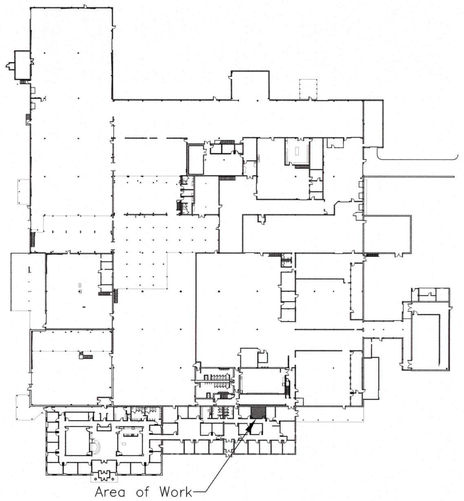
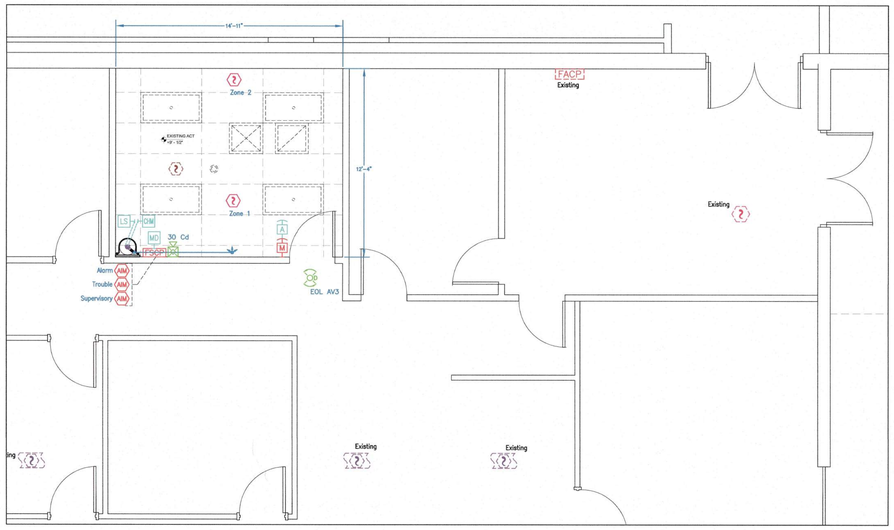
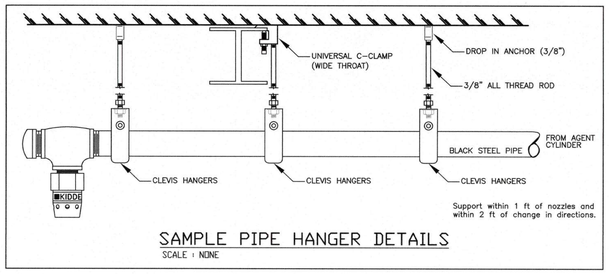
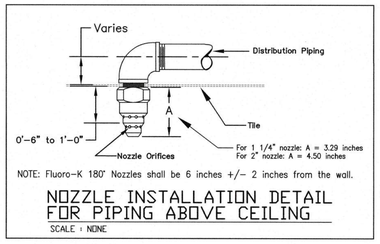




SYSTEM LAYOUT
SCALE: 1/4" = 1'-0"



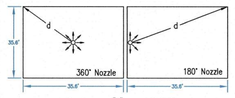
SAMPLE PIPE HANGER DETAILS
SCALE : NONE



NOTE: Fluoro-K 180° Nozzles shall be 6 inches +/- 2 inches from the wall.

NOZZLE INSTALLATION DETAIL
FOR PIPING ABOVE CEILING
SCALE : NONE

KIDDE FLUORO-K™ NOZZLE LIMITATIONS



Nozzle Type	"d" Dimension	Height Range
180°	39.8'	12" to 16'
360°	25.2'	12" to 16'

SOURCE: KIDDE FLUORO-K™ ECS 500 psi SERIES MANUAL
PN: 06-237585-001 PAGE 3-13
MAXIMUM HAZARD AREA COVERAGE
N.T.S.

LEGEND

	Agent Cylinder
	180° Discharge Nozzle – in/on Ceiling
	360° Discharge Nozzle – Above Ceiling System
	Agent Distribution Pipe – on/above Ceiling
FSCP	Suppression System Releasing Panel
	Photoelectric Smoke Detector
M	Manual Releasing Pull Station
A	Abort Switch
MD	Maintenance Disconnect Switch
LS	Cylinder Supervisory Low Pressure Switch
CHM	Electric Control Head w/ Monitor
	Releasing Solenoid Valve
xx Cd	Alarm Horn/Strobe – Candela As Noted
	Suppression System Discharge Light – ceiling mount
RL	Relay, Conventional (24 Volt)
FACP Ex	Fire Alarm Control Panel (Existing)
Existing	Photoelectric Smoke Detector (Existing)
Existing	Duct Detector (Existing)

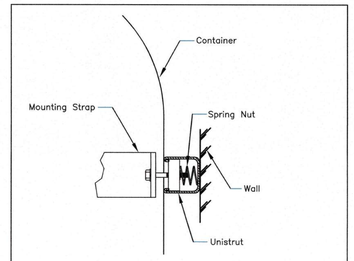
5' 0' 5' 10'

GRAPHIC SCALE
SCALE: 1/4" = 1'-0"

FLUORO-K™ PARAMETERS

Hazard	Server Rm	Temperature – at discharge	70 °F
Below Ceiling Height	9'-0.5"	Conc. – Minimum (Class C)	4.52%
Above Ceiling Height	4'-7.5"	Room Area – Sq. ft.	184.0
Fluoro-K™Required – Room	68.6 lbs	Volume added for duct	n/a
Fluoro-K™Supplied – Room	74.0 lbs	Total Vol. – cu. ft.	1,663.0
Fluoro-K™Required – Above	n/a	Discharge Time – Maximum	10.0 sec
Fluoro-K™Supplied – Above	n/a	Total Agent Supplied	74.0 lbs
Structural Strength Used	8 lb/ft	Relative Humidity	34 %
Required Outflow Leakage Area	0.1 ft²	Required Inflow Leakage Area	0.4 ft²

*See sheet FA301 for calculations.



CONTAINER MOUNTING DETAIL
SCALE : NONE

ENCLOSURE INTEGRITY NOTES

SEALING OF THE ENCLOSURE IS TO BE DONE BY OTHERS. BFPE INTERNATIONAL IS NOT RESPONSIBLE FOR THE LOSS OF FIRE EXTINGUISHING AGENT DUE TO IMPROPER ENCLOSURE INTEGRITY.

THIS ENCLOSURE IS TO BE SEALED BY MEANS INCLUDING (BUT NOT LIMITED TO):

1. WALLS MUST EXTEND FROM THE SLAB BELOW A RAISED FLOOR TO THE OVERHEAD DECK AND BE SEALED AT BOTH DECKS. ALL CRACKS, HOLES, AND PENETRATIONS LEADING OUT OF THE PROTECTED ENCLOSURE MUST BE SEALED.
2. ** WHERE WALLS DO NOT EXTEND TO THE OVERHEAD DECK AND THE CEILING IS NOT SOLID GYPSUM BOARD, VINYL-FACED GYPSUM CEILING TILES SHALL BE USED.
3. BLOCK WALLS MUST BE PAINTED WITH A MINIMUM OF 2-3 COATS OF PAINT.
4. WINDOWS SHOULD HAVE SILICONE SEALING PLACED AROUND THE GLASS AND AROUND THE FRAME.
5. DOORS MUST BE WEATHER-STRIPPED AND BE EQUIPPED WITH A DROP SEAL. BRUSH TYPE SEALS ARE GENERALLY NOT ADEQUATE. DOUBLE DOORS MUST HAVE AN ASTRAGAL SEAL. DOORS NORMALLY KEPT OPEN SHALL BE SELF-CLOSING AND BE EQUIPPED WITH A PANEL ACTUATED MAGNETIC RELEASE
6. BULKHEADS MUST BE IN PLACE BELOW DOORS WHERE THE RAISED FLOOR CONTINUES OUT OF THE PROTECTED ENCLOSURE. BULKHEADS MUST BE CAULKED AND SEALED AT BOTH LOWER SLAB AND UNDER RAISED FLOOR TILES. THE FLOOR TILES ABOVE THE BULKHEAD MUST BE OF GAS TIGHT CONSTRUCTION.
7. CEILING TILES ARE SUGGESTED TO BE CLIPPED AT A RADIUS OF 10'-0" AROUND NOZZLES (MIN).
8. FLOOR DRAINS MUST HAVE TRAPS WITH WATER IN TRAPS AT ALL TIMES.
9. EMPTY CONDUITS MUST BE SEALED AND ALL DUCTWORK AND DAMPERS SHOULD BE TIGHT FITTING.
10. ALL DAMPERS SHALL BE NEO-PRENE SEALED, POWERED OPEN FIRE/SMOKE DAMPERS.
11. ALL SEALING MATERIALS SHALL HAVE SAME FIRE RATING AS REQUIRED FOR WALL CONSTRUCTION.

FLUORO-K™ ECS-500 GENERAL PIPING NOTES

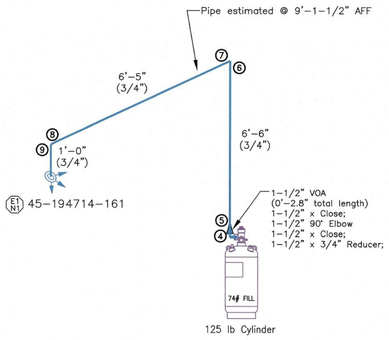
1. THE PIPING SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH NFPA 2001. PIPE FITTINGS SHALL COMPLY WITH STRENGTH REQUIREMENTS IN NFPA 2001.
2. NO CHANGES SHALL BE ALLOWED IN THE PIPE LAYOUT UNLESS APPROVED BY BFPE INTERNATIONAL.
3. MINIMUM WORKING PRESSURE OF COMPONENTS SHALL E 600 PSI.
4. MATERIALS:
   A. PIPE:
      SCHEDULE 40 BLACK PIPE CONFORMING TO ASTM A-53 SEAMLESS OR A-106, GRADE A OR B.
   B. FITTINGS:
      TO BE 300 LB. CLASS MALLEABLE OR DUCTILE, ANSI B-16.3 BLACK THREADED UP THRU 3 INCH PIPE. TO BE 1,000 LB. DUCTILE OR FORGED STEEL FITTINGS SHALL BE USED ON ALL LARGER SIZES.
      CUT-GROOVE FITTINGS ARE ACCEPTABLE WITH A MINIMUM RATING OF 620 PSIG WORKING PRESSURE. CLASS 150 LB AND ALL ORDINARY CAST IRON FITTINGS SHALL NOT BE USED.
5. ALL PIPE REDUCTION MUST BE MADE USING CONCENTRIC REDUCERS. REDUCING BUSHINGS SHALL NOT BE USED.
6. PIPE LENGTHS GIVEN ARE FROM CENTER TO CENTER OF FITTINGS.
7. ALL PIPE SECTIONS BEFORE AND AFTER A TEE SHALL BE A MINIMUM OF 10 PIPE DIAMETERS TO THE NEXT FITTING.
   EXCEPT: BACK TO BACK NOZZLES IN THE SAME HAZARD AREA.
8. ALL PIPE SHALL BE BLOWN CLEAR, AND SWABBED WITH SUITABLE SOLVENTS TO REMOVE BURRS AND CUTTING OIL BEFORE ASSEMBLY.
9. ALL PIPE TO BE RIGIDLY SUPPORTED BY U.L. HANGERS. PIPE HANGERS SHALL BE SPACED AS INDICATED IN THE CHART, NOT TO EXCEED 15 FEET.

PIPE HANGERS

1. ALL PIPE HANGERS SHALL BE INSTALLED IN ACCORDANCE WITH ASME B31.1 AND FSSA PIPE DESIGN HANDBOOK.
2. ALL PIPE SHALL BE SUPPORTED FROM THE BUILDING STRUCTURE IN A NEAT AND WORKMAN LIKE MANNER. HANGING PIPES FROM OTHER PIPES, MECHANICAL, OR ELECTRICAL DEVICES SHALL NOT MECHANICAL, CHEMICAL, VIBRATION, OR OTHER DAMAGE.
3. ALL PIPING SHOULD BE SECURELY SUPPORTED WITH DUE ALLOWANCE FOR AGENT THRUST FORCES, THERMAL EXPANSION AND CONTRACTION, AND SHOULD NOT BE SUBJECTED TO MECHANICAL, CHEMICAL, VIBRATION, OR OTHER DAMAGE.
4. ALL PIPING MUST BE SOLIDLY ANCHORED TO WALLS, CEILING STRUCTURE, FLOORS, OR COLUMNS WHERE LONGITUDINAL OR LATERAL SWAY MAY OCCUR.
5. RIGID PIPE SUPPORTS ARE REQUIRED AT EACH DIRECTIONAL CHANGE, FITTING, TEE, AND NOZZLE. ALL DROPS TO 180° NOZZLES REQUIRE BACK BRACING IN THE OPPOSITE DIRECTION OF DISCHARGE.
6. "C" CLAMPS AND CONDUIT CLAMPS ARE NOT ACCEPTABLE FOR SUPPORTING ROD HANGERS.
7. VERTICAL RISERS SHALL BE SUPPORTED AT EACH FLOOR LINE WITH STEEL PIPE CLAMPS.
8. A PIPE HANGER SHALL BE PLACED WITHIN ONE (1) FOOT OF EACH DISCHARGE NOZZLE.
8. RETAINER STRAPS SHALL BE USED WITH ALL BEAM CLAMPS.
9. MAXIMUM DISTANCE BETWEEN PIPE SUPPORTS.

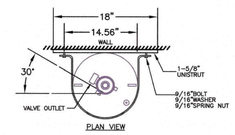
PIPE SIZE	MAX. SPACING (FT)	MIN. ROD DIAMETER
1/2"	7'-0"	3/8"
UP TO 1 1/4"	7'-0"	3/8"
1 1/2"	9'-0"	3/8"
2"	10'-0"	3/8"
2 1/2"	11'-0"	1/2"
3"	12'-0"	1/2"
4"	14'-0"	5/8"

*INFORMATION FROM FSSA PIPE DESIGN HANDBOOK

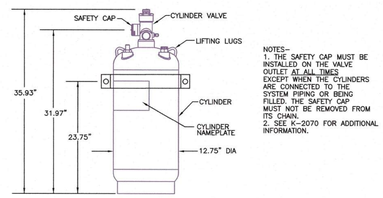


125 lb Cylinder

PIPING ISOMETRIC
SCALE: NONE



PLAN VIEW



NOTES-
1. THE SAFETY CAP MUST BE INSTALLED ON THE VALVE OUTLET AT ALL TIMES EXCEPT WHEN THE CYLINDERS ARE CONNECTED TO THE SYSTEM PIPING OR BEING FILLED. THE SAFETY CAP MUST NOT BE REMOVED FROM ITS CHAIN.
2. SEE K-2070 FOR ADDITIONAL INFORMATION.

MATERIAL:
VALVE BODY: BRASS
CYLINDER: STEEL, PAINTED RED

CYLINDER AND VALVE ASSEMBLY
125 LB. (56.7 KG.) CAPACITY
SCALE : NONE

MARK	REVISION	BY	DATE

Seal

Seal

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 028412 ENGINEER BRIAN S. DONNELLY 1/23/24

Clean Agent Fire Suppression System
Armtec Defense Technologies
608 East McNeil Street
Lillington, North Carolina 27546

BFPE INTERNATIONAL
FIRE SAFETY SECURITY
115 BESTWOOD DRIVE
CLAYTON, NC 27520
Ph: 919-550-8699 Web: www.bfpe.com
BFPE International NC Firm License No. O-0205

DRAWN BY: BSD
CHECKED BY:
SCALE: As Noted
SHEET NO. 1 OF 4 SHEETS
DATE: 1-23-24
PROJECT NO: RA-A7132-A-23

Sheet Contents:
Clean Agent Suppression System
System Layout
Mechanical Installation Notes
w/ Piping Isometric

DRAWING NO.:
FP101

Armtec Defense Technologies
608 East McNeil St
Lillington, NC

Fluoro-K™ Suppression System Sequence of Operation Matrix

	SMOKE DETECTOR; FIRST IN ALARM	SMOKE DETECTOR; SECOND IN ALARM	MANUAL PULL STATION; RELEASING	ABORT SWITCH - BUTTON BEING HELD	DISCHARGE COUNTDOWN - BUTTON BEING HELD	MAINTENANCE SWITCH ACTIVATION	TIMER REACHES ZERO	CYLINDER SUPERVISORY LOW PRESSURE SWITCH	CONTROL HEAD MONITOR	TROUBLE CONDITION ON FACP	AC POWER LOSS	GROUND FAULT	OPEN CIRCUIT
ACTIVATE LED ON AEGIS PANEL ALM1, ALM2, OR ALM3 ZONE	X	X											
ACTIVATE LED ON AEGIS PANEL MAN REL ZONE			X										
ACTIVATE LED ON AEGIS PANEL ABORT ZONE				X									
ACTIVATE LED ON AEGIS PANEL SUP1 ZONE						X	X						
ACTIVATE LED ON AEGIS PANEL SUP2 ZONE							X						
ACTIVATE SYSTEM PRE-RELEASE LED ON AEGIS PANEL	X												
ACTIVATE SYSTEM RELEASING LED ON AEGIS PANEL			X		X								
ACTIVATE SYSTEM ALARM LED ON AEGIS PANEL	X	X	X		X								
SEND ALARM SIGNAL TO FACP	X	X	X		X								
ACTIVATE SYSTEM TROUBLE LED ON AEGIS PANEL				X						X	X	X	X
SEND TROUBLE SIGNAL TO FACP				X						X	X	X	X
ACTIVATE SYSTEM SUPERVISORY LED ON AEGIS PANEL					X	X	X	X	X				
SEND SUPERVISORY SIGNAL TO FACP					X	X	X	X	X				
ACTIVATE SUPPRESSION SYSTEM HORN - SLOW PULSING *	X												
ACTIVATE SUPPRESSION SYSTEM HORN - FAST PULSING *		X											
ACTIVATE SUPPRESSION SYSTEM HORN - STEADY TONE *			X		X								
ACTIVATE DISCHARGE LIGHT			X		X								
BEGIN DISCHARGE TIMER COUNTDOWN - 30 SECONDS		X											
PAUSE AGENT DISCHARGE COUNTDOWN AT 10 SECONDS				X									
ACTIVATE SUPPRESSION SYSTEM AGENT RELEASE (10 SEC DELAY)			X										
ACTIVATE SUPPRESSION SYSTEM AGENT RELEASE					X								
PREVENT AGENT DISCHARGE							X						
CLOSE DAMPERS		X	X										

* VISUAL ALARM IS BY EXISTING BUILDING FA HORN/STROBE IN ROOM.

608 East McNeil St
Lillington, Nc

RA-A7132-CA-23
1/24/2024

AEGIS 2.0 Control Panel

Current Draw Required

Device	Quantity	Current	Total Current
Control Panel	1.0	3.2	3.2

AC Branch Current Required (Amps) **3.2**

Regulated Load in Standby

Device Type	Module/System	Current (Amps)	Total Current
AEGIS	1	0.100	0.100
Auxiliary Output 1	1	0.050	0.050
Conventional Detectors	2	0.0001	0.000
Duct Detector, SD2W		0.0002	0.000
		Standby Load Current	*0.150*

Required Standby Time (hours) 48
Standby Amp-Hrs Required **7.208**

AUXILIARY POWER

	Quantity	Standby	Net Current	Alarm	Net Alarm (Amps)
Maintenance Switch	1	0.01	0.010	0.01	0.010
R20E	1	0.04	0.040		0.000
			0.000		0.000
		Total Standby Current	0.050	Total Alarm	0.010
			Alarm Load Available = 1.5 A		LOAD OK

NAC 1

	Quantity	Current (Amps)	Net Current	Alarm Load Available = 1.5 A
ELMTSR (30Cd)	1	0.138	0.138	
	0	0	0.000	
	0	0	0.000	
		Total Current	0.138	LOAD OK

NAC 2

	Quantity	Current (Amps)	Net Current	Alarm Load Available = 1.5 A
	0	0	0.000	
	0	0	0.000	
	0	0	0.000	
		Total Current	0.000	LOAD OK

NAC 3

	Quantity	Current (Amps)	Net Current	Alarm Load Available = 1.5 A
		0	0.000	
		0	0.000	
VSS Light	1	0.096	0.096	
		Total Current	0.096	LOAD OK

Page 1

608 East McNeil St
Lillington, Nc

RA-A7132-CA-23
1/24/2024

RELEASE 1

Quantity	Current (Amps)	Net Current
1	0.24	0.240

RELEASE 2

Quantity	Current (Amps)	Net Current
1	0.24	0.240

Regulated Load in Alarm

Device Type	Module/System	Current (Amps)	Total Current
AEGIS	1	0.240	0.240
Auxiliary Output 1	1	0.010	0.010
Relays in use	1	0.020	0.020
NAC 1	1	0.138	0.138
NAC 2	1	0.000	0.000
NAC 3	1	0.096	0.096
RELEASE 1	1	0.2400	0.240
RELEASE 2	0	0.2400	0.000
Conventional Detectors	2	0.0600	0.120
Duct Detector, SD2W	0	0.1000	0.000
		Alarm Load Current (Amps)	*0.864*

Alarm Load Available = 5.4 A Per Power Supply
LOAD OK

Required Alarm Time (MIN) 5
Alarm Amp-Hrs Required **0.072**

SUBTOTAL AMP-HOURS *7.280*
DERATING FACTOR 1.2
TOTAL AMP-HOURS REQUIRED **8.737**

REQUIRED BATTERY SIZE ***12.0 Amp-Hours***

Page 2

BATTERY CALCULATIONS

SCALE : NONE

ITEM	QTY	PART NO.	MATERIAL DESCRIPTION	MANU
1	1	45-550121-901	125 lb Fluoro-K™ Cylinder w/ (74 lb Fill)	*KFS*
2	74	n/a	Fluoro-K™	*KFS*
3	1	85-486500-020	Electric Control Head, Stackable, w/ Control Head Monitor	*KFS*
4	1	06-235317-001	125 lb Cylinder Mounting Strap	*KFS*
5	1	06-118262-001	Cylinder Low Pressure Switch	*KFS*
6	1	WK-283904-000	1-1/2" Valve Outlet Adapter	*KFS*
7	1	45-194714-161	3/4" 180° Pendant Nozzle, 0.3008 sq. in.	*KFS*
8	1	85-909300-001	Entrance Warning Sign	*KFS*
9	1	85-909300-002	Exit Warning Sign	*KFS*
10	1	84-878752-010	Abort Switch	*KFS*
11	1	84-732001-901	Aegis 2.0 Agent Release Control Panel	*KFS*
12	1	84-330001-001	Agent Release Pull Station, 3300 Double Action	*KFS*
13	2	KC2-OS-CD	Photoelectric Smoke Detector	*KFS*
14	2	KC2-SB	Detector Base	*KFS*
15	1	06-220023-001	In-Line Releasing Diode	*KFS*
16	1	ELMTSR	Candela Selectable Horn/Strobe, Wall Mount	*Eaton*
17	1	IAVFLM24R	V33 Flashing Incandescent Light	*SpAE*
18	1	IGP1R	Red Plate and Lens	*SpAE*
19	1	GEM MAINT	Keyed Maintenance Switch, 3 Pole	*Gemcom*
20	2	PRB1212	12 AmpHour, 12 VDC Battery	*PRite*
21	1	R20E	24V Relay	*PRite*
22	3	FMM-1	Addressable Monitor Module	*Not*

SIGNS

WARNING

This area is protected by a
Clean Agent Fire Suppression System.
Do not enter area when alarm is sounding.
Area must be purged prior to re-entry.

PART NO. 85-909300-001

WARNING

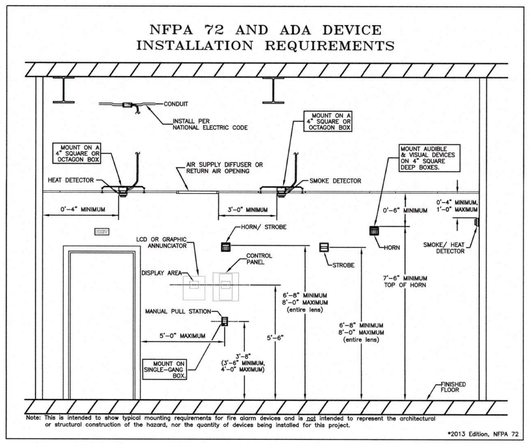
This area is protected by a
Clean Agent Fire Suppression System.
Leave area immediately when alarm sounds.
Do not enter area after
the system is discharge unless purged.

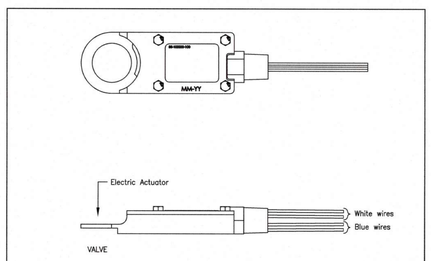
PART NO. 85-909300-002

SIGN NOTES:
1. SEE DATA SHEETS IN SUBMITTAL BOOK FOR EXAMPLES.

Component Sizes

Component	Width (in.)	Height (in.)	Depth (in.)	Junction Box
FSCP	14.25	19	5	n/a
Pull Station	4.25	3.25	1.081	single gang
Abort Switch	4.5	4.5	3.05 total (1.70 contacts)	4" square
Maintenance Switch				4" square
Horn/strobe	4.5	5	2.5	4" square
Discharge Light	1.71	3.33	1.5	single gang





CONTROL HEAD MONITOR INSTALLATION

SCALE : NONE

PROJECT SPECIFIC INSTALLATION NOTES

A.) FLUORO-K 180° NOZZLES SHALL BE 6 INCHES ± 2 INCHES FROM ANY SIDE WALL.

B.) ALL EQUIPMENT MUST BE LABELD AS TO THEIR INTENDED USE AND LABELED FOR THE NOVEC 1230 SUPPRESSION SYSTEM.

C.) VERIFY LOCATIONS OF ALL EQUIPMENT.

D.) THIS CLEAN AGENT FIRE SUPPRESSION SYSTEM IS DESIGNED IN ACCORDANCE WITH NFPA 72(2013), NFPA 2001(2015) AND HAS BEEN DESIGNED USING ALL UL LISTED AND FM APPROVED EQUIPMENT.

E.) ALL PROJECT SPECIFIC NOTES SHALL TAKE PRECEDENCE OVER ANY AND ALL NOTES CONTAINED WITHIN THESE PLANS.

CLASS 'B' WIRING NOTES

1.) ALL WIRING SHALL BE IN ACCORDANCE WITH LOCAL AND NATIONAL CODES, INCLUDING NFPA 72 (2013 EDITION), NEC, AND ADA.

2.) ALL WIRING FROM CONTROL PANEL TO ANY DEVICE SHALL BE RUN IN MINIMUM 1/2" CONDUIT. SURFACE METAL RACEWAY IS ACCEPTABLE. PENETRATIONS IN RATED WALLS SHALL BE MADE IN CONDUIT PER APPROPRIATE U.L. SYSTEM.

3.) DETECTORS ARE TO BE MOUNTED ON A STANDARD 4" OCTAGON BOX, SEE TYPICAL SUBFLOOR MOUNTING DETAILS IF APPLICABLE.

4.) NO PARALLEL BRANCHING OF WIRES ON SUPERVISED CIRCUITS IS PERMISSIBLE, AND POLARITY MUST BE OBSERVED. NO SPLICES SHALL BE MADE OTHER THAN AT TERMINAL BLOCKS. WIRE NUTS AND CRIMP SPLICES SHALL NOT BE PERMITTED.

5.) ALL FIELD WIRING SHALL BE CHECKED FOR SHORTS, OPENS, AND GROUNDS BEFORE CONNECTING TO THE CONTROL PANEL.

6.) A.C. WIRES SHALL BE RUN IN SEPARATE CONDUIT FROM D.C. WIRING, SUCH THAT A SYSTEM ALARM DOES NOT DE-ENERGIZE THE CONTROL PANEL. MINIMUM SIZE WIRE TO BE AWG 12 THHN. PROTECTION AGAINST VOLTAGE TRANSIENTS AND SURGES SHALL BE INSTALLED AT THE ELECTRICAL PANELBOARD AND INSTALLED BY THE ELECTRICAL CONTRACTOR. ALL AC POWER TO FIRE ALARM EQUIPMENT (i.e. CONTROL PANEL, REMOTE POWER SUPPLY, ETC.) SHALL BE A DEDICATED CIRCUIT.
CIRCUIT DISCONNECTING MEANS SHALL BE PERMANENTLY IDENTIFIED BY THE SYSTEM TYPE:
i.e. 'FIRE ALARM', 'EMERGENCY COMMUNICATIONS', 'FIRE ALARM/ECS'.

7.) NO POWER, INCLUDING EMERGENCY BATTERY SUPPLY, SHALL BE CONNECTED TO THE CONTROL PANEL UNTIL BFPE INTERNATIONAL'S TECHNICIAN IS ON THE JOB SITE.

8.) SEE MANUFACTURER'S DATA SHEETS FOR MOUNTING DETAILS.

9.) ALL JUNCTION BOX COVERS SHALL BE RED IN COLOR. THOSE IN FINISHED AREAS ARE PERMITTED TO MATCH THE FINISH COLOR.

10.) ALL NON-ADDRESSABLE WIRE SHALL BE AWG 14 MINIMUM SOLID OR STRANDED COPPER, TYPE THHN/THWN.

11.) ALL INITIATING DEVICE CIRCUITS SHALL BE A CLASS "B" PATHWAY AS DEFINED IN TABLE A.12.3 (a) OF NFPA 72; WHERE A SINGLE GROUND SHALL NOT PREVENT THE RECEIPT OF AN ALARM AT THE FACP. THIS CONDITION AS WELL AS A SINGLE OPEN SHALL SIGNAL A TROUBLE CONDITION AT THE FACP AND A SINGLE SHORT SHALL SIGNAL AN ALARM.

12.) THE AUDIBLE EVACUATION SIGNAL SHALL BE THE ANSI S3.41 THREE-PULSE TEMPORAL PATTERN AS DESCRIBED IN NFPA 72.

13.) ALARM NOTIFICATION CIRCUITS SHALL BE A CLASS 'B' PATHWAY AS DEFINED IN TABLE A.12.3 (c) OF NFPA 72; WHERE A SINGLE GROUND SHALL NOT PREVENT THE RECEIPT OF AN ALARM AT THE FACP. A SINGLE OPEN, SINGLE GROUND, OR A WIRE TO WIRE SHORT SHALL SIGNAL A TROUBLE CONDITION AT THE FACP. EACH CIRCUIT SHALL NOT EXCEED ITS RATED OUTPUT. CIRCUITS SHALL NOT EXCEED 3 FLOORS OF COVERAGE.

14.) ALL WIRE COLORS SHALL BE MAINTAINED FROM DEVICE TO DEVICE AND SHALL NOT BE TRANSPOSED NOR CHANGED AT ANY DEVICE OR TERMINAL BLOCK. PERMANENT WIRE MARKERS SHALL BE USED TO IDENTIFY ALL CONNECTIONS AT THE FACP, OTHER CONTROL EQUIPMENT, POWER SUPPLIES, AND TERMINAL CABINETS.

15.) NOTIFICATION CIRCUIT BOOSTER POWER SUPPLIES OR 24 VDC POWER CIRCUITS SERVING ADDRESSABLE CONTROL RELAYS SHALL BE INDIVIDUALLY MONITORED FOR INTEGRITY.

16.) SPOT TYPE DETECTOR MUST HAVE THE DETECTOR ADDRESS LOOP AND DEVICE NUMBERS PERMANENTLY MOUNTED TO THEIR BASES, SO IT IS READABLE FROM THE FLOOR. THE ADDRESS MUST BE SHOWN ON THE AS-BUILT PLANS.

17.) SMOKE DETECTORS SHALL BE A MINIMUM OF THREE FEET FROM ANY AIR SUPPLY DIFFUSER OR AIR RETURN OPENING.

18.) DUCT DETECTOR SAMPLING TUBES SHALL EXTEND THE FULL WIDTH OF THE DUCT. ANY TUBES EXCEEDING 36 INCHES SHALL PROTRUDE THROUGH THE FAR END AND ANY TUBES EXCEEDING FIVE FEET SHALL BE SUPPORTED IN THE MIDDLE. INSTALL DETECTOR HOUSING AND SAMPLING TUBES PER MANUFACTURER'S RECOMMENDATIONS.

19.) SURGE SUPPRESSORS SHALL BE USED ON A CIRCUIT ANYTIME IT EXITS (OR ENTERS) A BUILDING TO/ FROM THE OUTSIDE.

20.) ALL PENETRATIONS THROUGH RATED WALLS SHALL BE SEALED USING THE APPROPRIATE U.L. SYSTEM.

21.) PERMANENT WIRE MARKERS SHALL BE USED TO IDENTIFY ALL TERMINATIONS AND SPLICES FOR EVERY CIRCUIT.

22.) DO NOT INSTALL CONDUIT INTO THE BOTTOM OF THE FIRE ALARM CONTROL PANEL(S).

23.) ALL WIRE SHALL BE INSTALLED PER THE WIRE SCHEDULE IN THESE PLANS.

AEGIS PANEL INSTALLATION NOTES

1.) ALL INITIATING/ INPUT CIRCUITS HAVE A MAXIMUM LINE RESISTANCE OF 100 OHMS.

2.) ALL PROGRAMMABLE RELAYS HAVE A RATING OF 3 AMPS AT 30 VDC OR 120 VAC.

3.) TOTAL POWER SUPPLY CURRENT IS 5.4 AMPS.

4.) POWER SUPPLY CAN CHARGE UP TO 68 AMPHOURS AND THE CABINET CAN HOLD UP TO 12 AMPHOURS.

5.) AUXILIARY CONTACTS ARE A MAXIMUM OF 1.0 AMPS AND THE NAC'S ARE A MAXIMUM OF 1.5 AMPS AND A 2 VOLT DROP.

REVISIONS:

MARK	REVISION	BY	DATE

Seal

Seal

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 028412 BRIAN S. DONNELLY

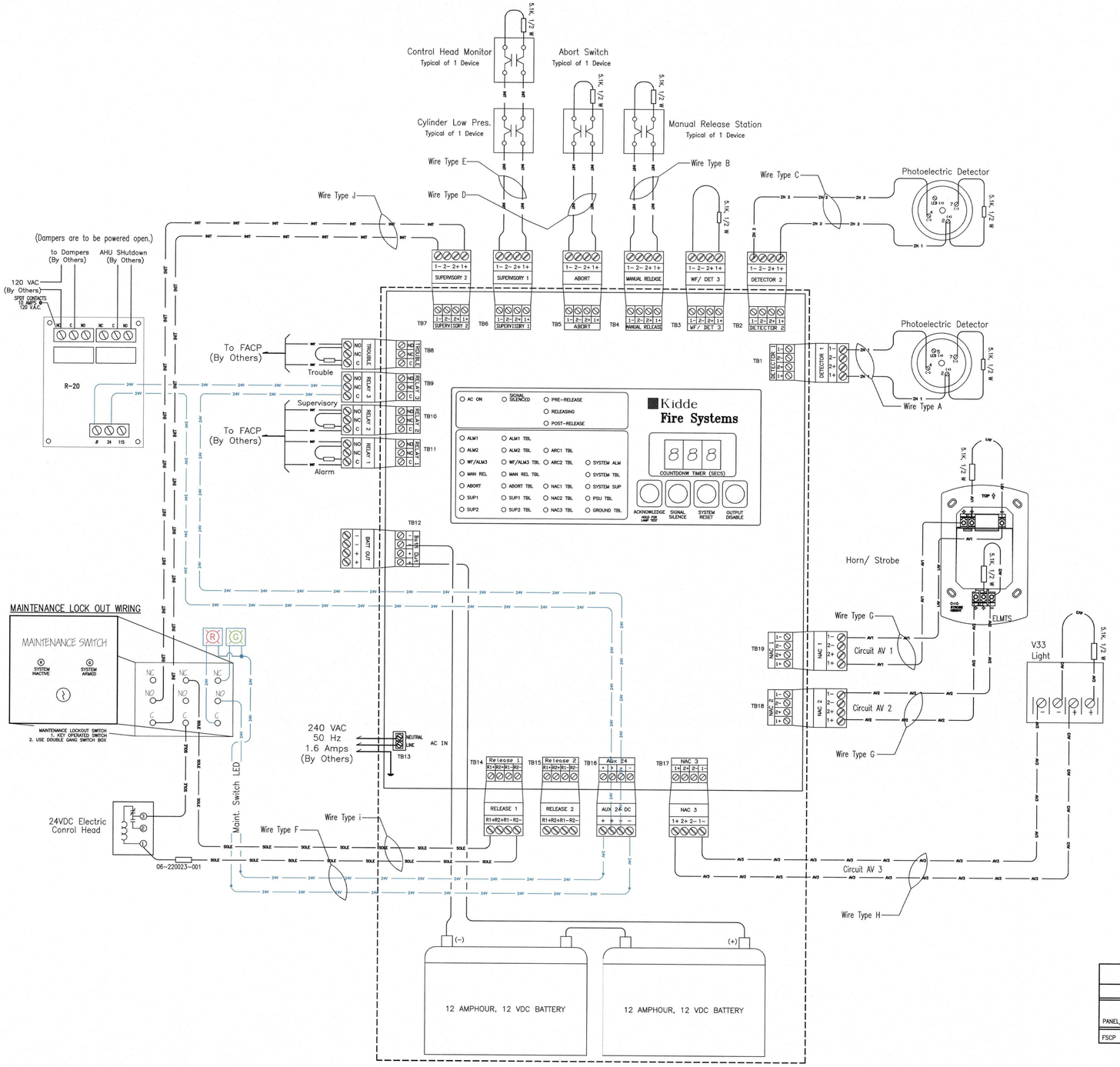
Clean Agent Fire Suppression System
Armtec Defense Technologies
608 East McNeil Street
Lillington, North Carolina 27546

BFPE INTERNATIONAL
FIRE SAFETY SECURITY
115 BESTWOOD DRIVE
CARY, NC 27513
Ph: 919-550-2699 • Web: www.bfpe.com
BFPE International NC Fire License No. D-0205

DRAWN BY: BSD
CHECKED BY:
SCALE: N.T.S.
SHEET NO. 2 OF 4 SHEETS
DATE: 1-23-24
PROJECT NO: RA-A7132-A-23

Sheet Contents:
Clean Agent Suppression System
Electrical Installation Notes
w/ SEQ

DRAWING NO.:
FP201



AEGIS 2.0 FIRE ALARM PANEL
SCALE: NONE

AEGIS CONFIGURATION		
CONFIG No. – 1&2	ITEM	CONFIG. No. – 3
03	AGENT REL CKT 1	05
04	AGENT REL CKT 2	01
05	ABORT BOTH?	02
06	ABORT	01
07	INPUT CKT 3	01
08	REL1	02
09	REL2	04
10	REL3	09
11	TROUBLE RELAY	04
12	MANUAL DELAY ARC1	02
13	MANUAL DELAY ARC2	~~01~~ n/a
14	ARC1 TIME DELAY	04
15	ARC2 TIME DELAY	~~01~~ n/a
16	ARC1 TIME	01
17	ARC1 LIMITED	03
18	ARC2 TIME	~~01~~ n/a
19	ARC2 LIMITED	~~03~~ n/a
20	TROUBLE LATCHING	01
21	SUPV 1 LATCHING	01
22	SUPV 2 LATCHING	01
23	OUTPUTS DISABLED	04
24	NAC1 TO ARC'S	01
25	NAC2 TO ARC'S	01
26	NAC3 TO ARC'S	01
27	NAC1 FIRST ALARM	01
28	NAC1 PRE-RELEASE	03
29	NAC1 RELEASING	07
30	NAC2 FIRST ALARM	07
31	NAC2 PRE-RELEASE	07
32	NAC2 RELEASING	05
33	NAC3 FIRST ALARM	C
34	NAC3 PRE-RELEASE	C
35	NAC3 RELEASING	04
36	NAC USED GENERAL ALARM	08
37	NAC1 GENERAL ALARM	09
38	NAC2 GENERAL ALARM	09
39	NAC3 GENERAL ALARM	09
40	SERIAL CABLE TROUBLE	~~02~~ n/a

SYSTEM BATTERY CALCULATIONS								
	Calculation Basis	Standby time	48 hours	Alarm time	0.084 hours			
PANEL/ P.S.	Standby Load (Amps)	Standby subtotal (AmpHours)	Alarm Load (Amps)	Alarm subtotal (AmpHours)	Secondary Load (AmpHours)	Safety derating factor	Required Battery (AmpHours)	Battery Size Supplied (AmpHours)
FSCP	0.15	7.21	0.86	0.07	7.28	x1.2	8.74	12

WIRE SCHEDULE

Conductor	Description	Wire Size	Wire Type	Wire Color	
				Positive(+)	Negative(–)
A	INITIATING, ZONE 1	14 AWG	THHN STRANDED	RED	BLACK
B	MANUAL RELEASE CIRCUIT	14 AWG	THHN STRANDED	WHITE	RED
C	INITIATING, ZONE 2	14 AWG	THHN STRANDED	WHITE	BLUE
D	ABORT SWITCH CIRCUIT	14 AWG	THHN STRANDED	BLUE	BLACK
E	SUPERVISORY – LOW PRESSURE SWITCH	14 AWG	THHN STRANDED	ORANGE	ORANGE
F	24 VOLT POWER	14 AWG	THHN STRANDED	YELLOW	BROWN
G	NOTIFICATION CIRCUIT – PREDISCHARGE	14 AWG	THHN STRANDED	ORANGE	BROWN
H	NOTIFICATION CIRCUIT – DISCHARGE	14 AWG	THHN STRANDED	YELLOW	GREY
i	AGENT RELEASE CIRCUIT (SOLENOID)	14 AWG	THHN STRANDED	PINK	PURPLE
J	SUPERVISORY – MAINTENANCE SWITCH	14 AWG	THHN STRANDED	YELLOW	YELLOW

ALL CONDUCTORS ARE TAGGED BY LETTER.

REVISIONS:	REVISION	BY	DATE
	MARK		

Seal

Seal

NORTH CAROLINA PROFESSIONAL SEAL 028412 ENGINEER BRIAN S. DONNELLY 1-23-24

Clean Agent Fire Suppression System

Armtec Defense Technologies

608 East McNeil Street

Lillington, North Carolina 27546

BFPE INTERNATIONAL
FIRE SAFETY · SECURITY
115 BESTWOOD DRIVE
CARY, NC 27513
Ph: 919-550-2699 • Web: www.bfpe.com
BFPE International NC Firm License No. P-0105

DRAWN BY: BSD

CHECKED BY:

SCALE: N.T.S.

SHEET NO. 3 OF 4 SHEETS

DATE: 1–23–24

PROJECT NO: RA-A7132-A-23

Sheet Contents:

Clean Agent Suppression System

Detailed Riser

DRAWING NO.:

FP202

Kidde Fire Systems

KFS Hydraulic Flow Calculation Program v4.00
KFS - ECS-500 with Fluoro-K™ Fire Suppression Clean Agent
UL: EX4674 / Component of FM Approved System

BFPE International
115 Bestwood Drive
Clayton, NC 27520
File Name: 7132.FC4

Consolidated Report

Customer Information

Company Name: Armtec Defense Technologies
Address: 608 East McNeil St
Lillington, NC 27546

Phone:
Contact:
Title:

Project Data

Project Name: Server Room
Designer: Brian S. Donnelly, PE
Number: RA-A7132-CA-23
Account:
Location:
Description: Area = 14'-11" x 12'-4" = 183.96 sq. ft.
Vol = 183.96 sq. ft. x 9'-1/2" = 1,663.0 cu. ft.

Enclosure Report

Elevation: 0 ft (relative to sea level)
Atmospheric Correction Factor: 1 (NFPA 2001)

Enclosure 1 Server Room

Enclosure Temperature: Number of Nozzles: 1

Consolidated Report

Minimum: 67 F
Maximum: 73 F
Max. Concentration: 4.92% (At 73 F)

Design Concentration:
Adjusted: 4.86 %
Minimum: 4.52 %
Min. Agent Required: 68.6 lb
Adjusted Agent Required: 74.0 lb
Concentration Profile: UL/FM Class C, (4.52 %)

Width: 0.0 ft
Length: 0.0 ft
Height: 0.0 ft
Volume: 1663.0 ft³
Non-permeable: 0.0 ft³
Total Volume: 1663.0 ft³

Agent Source Report

Agent: Fluoro-K™ Fire Suppression Clean Agent
Cylinder Name: 125 lb Cylinder w/LLI
Cylinder Part Number: 45-550121-901
Agent Per Cylinder: 74.0 lb
Fill Density: 41.4 lb / cubic ft
Number of Main Cylinders: 1
Number of Reserve Cylinders: 0

Cylinder Empty Weight: 98.0 lb
Weight, All Cylinders + Agent: 172.0 lb
Floor Area Per Cylinder: 0.89 ft²
Floor Loading Per Cylinder: 193 lb / ft²

Consolidated Report

Parts Report

Total Agent Required: 74.0 lb

Cylinder Name: 125 lb Cylinder w/LLI (Part: 45-550121-901)

Number of Cylinders: 1

Nozzle	Type	Nozzle Diameter	Nozzle Area	Part Number
E1-N1	180-BR	3/4 in	0.3008 in²	45-194714-161

Pipe & Fittings	Type	Diameter	Length	Elbows (90)	Elbows (45)	Tees	Unions
	40T	3/4 in	13.42 ft	2	0	0	0
	40T	1-1/2 in	0.50 ft	1	0	0	0

Other Objects	Name	Quantity	Part Number
	1-1/2 in. Valve Outlet Adapter	1	WK-283904-000

System Acceptance Report

System Discharge Time: 6.6 seconds
Percent Agent In Pipe: 11.8%
Percent Agent Before First Tee: 0.0%
Dead Volume: 0.0% (0.0 lb)

Enclosure Number: 1
Enclosure Name: Server Room
Minimum Design Concentration: 4.52%
Adjusted Design Concentration: 4.86%
Predicted Concentration: 4.87%

Consolidated Report

Maximum Expected Agent Concentration: 4.92% (At 73 F)
Concentration Profile: UL/FM Class C, (4.52 %)
Maximum Allowed Enclosure Pressure: 8.00 lb / ft²
Estimated Free Vent Area Required (Negative): 0.4 ft²
Estimated Free Vent Area Required (Positive): 0.1 ft²
Installed Vent Area: 0.0 ft²
Predicted Enclosure Pressure (Negative): N/A
Predicted Enclosure Pressure (Positive): N/A
Maximum Enclosure Flow Rate: 14.78 lb/s

Nozzle	Minimum Agent Required	Adjusted Agent Required	Predicted Agent Delivered	Average Nozzle Pressure
E1-N1	68.6 lb	74.0 lb	74.0 lb	187 psig
Total	68.6 lb	74.0 lb	74.0 lb	

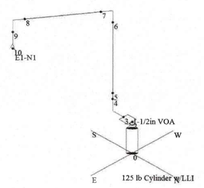
Consolidated Report

Pipe Network Report

Description	Pipe Section	Start Node	End Node	Pipe Type	Pipe Diameter	Pipe Length	Union	Total Elevation Change	Total Equivalent Length	Nozzle Name	Nozzle Size	Nozzle Type	Nozzle Area
Cylinder - On	Man./End	0	2		1-1/2 in	2.67 ft	0	2.67 ft	50.00 ft				
Adapter	System	2	3		1-1/2 in	0.22 ft	0	------	11.80 ft				
Elbow (90)	System	3	4	40T	1-1/2 in	------	0	------	4.30 ft				
Pipe	System	4	5	40T	1-1/2 in	0.50 ft	0	0.50 ft	0.50 ft				
Pipe	System	5	6	40T	3/4 in	6.00 ft	0	6.00 ft	6.00 ft				
Elbow (90)	System	6	7	40T	3/4 in	------	0	------	2.20 ft				
Pipe	System	7	8	40T	3/4 in	6.42 ft	0	------	6.40 ft				
Elbow (90)	System	8	9	40T	3/4 in	------	0	------	2.20 ft				
Pipe&Nozzle	System	9	10	40T	3/4 in	1.00 ft	0	-1.00 ft	1.00 ft	E1-N1	3/4 in	180-BR	0.3008 in²

Consolidated Report

View #: 1 - Isometric View-Node



REVISIONS:	REVISION	BY	DATE
MARK			

Seal

Seal

NORTH CAROLINA PROFESSIONAL SEAL 028412 ENGINEER BRIAN S. DONNELLY 1-23-24

Clean Agent Fire Suppression System

Armtec Defense Technologies
608 East McNeil Street
Lillington, North Carolina 27546

BFPE INTERNATIONAL
FIRE SAFETY : SECURITY
115 BESTWOOD DRIVE
CLAYTON, NC 27520
Ph: 919-550-2699 • Web: www.bfpe.com
BFPE International NC Firm License No.: C-0259

DRAWN BY: BSD
CHECKED BY:
SCALE: N.T.S.
SHEET NO. 4 OF 4 SHEETS
DATE: 1-23-24
PROJECT NO: RA-A7132-A-23

Sheet Contents:
Clean Agent Suppression System
Calculations

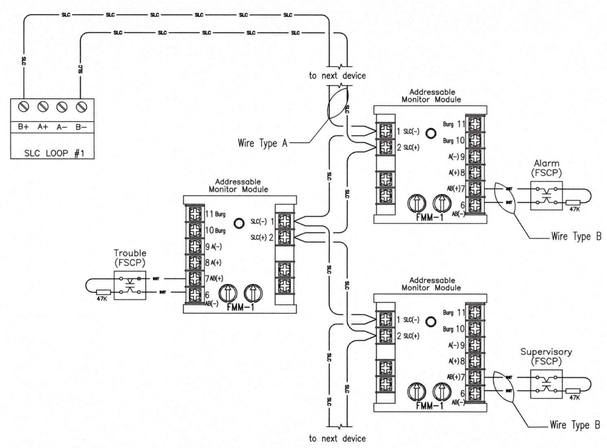
DRAWING NO.:
FP301

All initiating devices are exisitng

Armtec
608 East McNeil St
Lillington, North Carolina

Fire Alarm System Sequence of Operation Matrix

	MANUAL PULL STATION	SMOKE DETECTOR	WATERFLOW SWITCH	TROUBLE CONDITION ON FACP	AC POWER LOSS	GROUND FAULT	OPEN CIRCUIT
ACTIVATE HORN/ STROBES GENERAL ALARM	X	X	X				
DISPLAY DEVICE ACTUATED ON FACP LCD.	X	X	X	X	X	X	X
ACTIVATE SYSTEM ALARM LED ON FACP.	X	X	X				
SEND ALARM SIGNAL TO DIGITAL COMMUNICATOR.	X	X	X				
ACTIVATE SYSTEM TROUBLE ON FACP.				X	X	X	X
SEND TROUBLE SIGNAL TO DIGITAL COMMUNICATOR.				X	X	X	X
ACTIVATE SYSTEM SUPERVISORY ON FACP.			X				
SEND SUPERVISORY SIGNAL TO DIGITAL COMMUNICATOR.			X				
SHUTDOWN AHU			X				



TYPICAL DEVICE WIRING

SCALE: N.T.S.

WIRE SCHEDULE

Conductor	Description	Wire Size	Wire Type	Wire Color	
				Positive(+)	Negative(–)
A	ADDRESSABLE LOOP	16 AWG	TWISTED, UNSHIELDED	RED	BLACK

MINIMUM NOTIFIER WIRE NOTES

THIS CHART IS TO PROVIDE GUIDANCE IN SIZING WIRE BASED ON THE ALLOWABLE LENGTH TO BE USED IF OTHERWISE NOT SPECIFIED.

CIRCUIT TYPE	WIRE TYPE & LIMITATIONS	DISTANCE FT.	TYPICAL WIRE GAUGE
1. SLC LOOP (POWER LIMITED)	TWISTED (UNSHIELDED) PAIR 40 OHMS MAX PER LENGTH OF STYLE 6 AND 7 LOOPS. 40 OHMS PER BRANCH MAX FOR STYLE 4 LOOPS.	8,000 6,000 3,500	12 AWG BELDEN 5020UL, 6020UL 14 AWG BELDEN 5120UL, 6120UL 16 AWG BELDEN 5220UL, 6220UL
	UNTWISTED, UNSHIELDED PAIR	2,000	12–18 AWG
2. EIA–485, ACS TERM (POWER LIMITED)	TWISTED SHIELDED PAIR WITH A CHARACTERISTIC IMPEDANCE OF 120 OHMS.	5,000	18 AWG
2. EIA–232 (PWR LIMITED)	TWISTED SHIELDED PAIR	50	18 AWG
3. MONITOR MODULES	MAXIMUM LOOP WIRE RESISTANCE IS 40 OHMS FOR MONITOR & 20 OHMS FOR MINI MONITOR.	2,500	12–18 AWG – SOLID THHN
3. MONITOR MODULES FOR 2 WIRE SMOKES	MAXIMUM 2.4 VOLT DROP ALLOWED AT END OF CKT. MAX. RESISTANCE IS 25 OHMS	2,500	12–18 AWG – SOLID THHN
4. CONTROL MODULE (POWER LIMITED)	IN ALARM, MAXIMUM OF 1.2 VOLT DROP AT END OF CKT.	TO MEET 1.2V MAX DROP. PERFORM CALCULATIONS	12–18 AWG – SOLID THHN
5. 24VDC POWER RUN (POWER LIMITED)	IN ALARM, MAXIMUM OF 1.2 VOLT DROP FROM SOURCE TO END OF ANY BRANCH.	TO MEET 1.2V MAX DROP. PERFORM CALCULATIONS	12–18 AWG – SOLID THHN
6. CHG–120 OR CHG–75	12 AWG IN CONDUIT	20	12–18 AWG – SOLID THHN

CLASS 'B' (SLC) WIRING NOTES

1.) ALL WIRING SHALL BE IN ACCORDANCE WITH LOCAL AND NATIONAL CODES, INCLUDING NFPA 72 (2013 EDITION), NEC, AND ADA.

2.) ALL WIRING FROM CONTROL PANEL TO ANY DEVICE SHALL BE RUN IN MINIMUM 3/4" CONDUIT. SURFACE METAL RACEWAY IS ACCEPTABLE. FPLP CABLE IS ACCEPTABLE IN AREAS OTHER THAN WHERE WATERPROOF DEVICES ARE REQUIRED. CONDUIT SHALL BE USED TO DROP TO WALL MOUNTED DEVICES AND PENETRATIONS IN RATED WALLS SHALL BE MADE IN CONDUIT PER APPROPRIATE U.L. SYSTEM.

3.) DETECTORS ARE TO BE MOUNTED ON A STANDARD 4" OCTAGON BOX, SEE TYPICAL SUBFLOOR MOUNTING DETAILS IF APPLICABLE.

4.) NO PARALLEL BRANCHING OF WIRES ON SUPERVISED CIRCUITS IS PERMISSIBLE, AND POLARITY MUST BE OBSERVED. NO SPLICES SHALL BE MADE OTHER THAN AT TERMINAL BLOCKS. WIRE NUTS AND CRIMP SPLICES SHALL NOT BE PERMITTED.

5.) ALL FIELD WIRING SHALL BE CHECKED FOR SHORTS, OPENS, AND GROUNDS BEFORE CONNECTING TO THE CONTROL PANEL.

6.) A.C. WIRES SHALL BE RUN IN SEPARATE CONDUIT FROM D.C. WIRING, SUCH THAT A SYSTEM ALARM DOES NOT DE–ENERGIZE THE CONTROL PANEL. MINIMUM SIZE WIRE TO BE AWG 12 THHN. PROTECTION AGAINST VOLTAGE TRANSIENTS AND SURGES SHALL BE INSTALLED AT THE ELECTRICAL PANELBOARD AND INSTALLED BY THE ELECTRICAL CONTRACTOR. ALL AC POWER TO FIRE ALARM EQUIPMENT (i.e. CONTROL PANEL, REMOTE POWER SUPPLY, ETC.) SHALL BE A DEDICATED CIRCUIT.
CIRCUIT DISCONNECTING MEANS SHALL BE PERMANENTLY IDENTIFIED BY THE SYSTEM TYPE:
i.e. 'FIRE ALARM', 'EMERGENCY COMMUNICATIONS', 'FIRE ALARM/ECS'.

7.) NO POWER, INCLUDING EMERGENCY BATTERY SUPPLY, SHALL BE CONNECTED TO THE CONTROL PANEL UNTIL BFPE INTERNATIONAL'S TECHNICIAN IS ON THE JOB SITE.

8.) SEE MANUFACTURER'S DATA SHEETS FOR MOUNTING DETAILS.

9.) ALL JUNCTION BOX COVERS SHALL BE RED IN COLOR. THOSE IN FINISHED AREAS ARE PERMITTED TO MATCH THE FINISH COLOR.

10.) ALL ADDRESSABLE LOOP WIRE SHALL BE AWG 16 MINIMUM, LOW CAPACITANCE, TWISTED UNSHIELDED COPPER PAIR. TYPE TO BE FPL, FPLR, OR FPLP SOLID OR STRANDED COPPER. CABLE JACKET COLOR SHALL BE RED (+) AND BLACK (–) CONDUCTOR INSULATION. REFER TO THE MINIMUM WIRE NOTES REQUIREMENTS NOTE TO DETERMINE MINIMUM REQUIREMENTS OF SIZE AND LENGTH.

11.) ALL NON–ADDRESSABLE WIRE SHALL BE AWG 14 MINIMUM SOLID OR STRANDED COPPER, TYPE THHN/THWN.

12.) ALL ADDRESSABLE SIGNALING LINE CIRCUITS SHALL BE A CLASS 'B' PATHWAY AS DEFINED IN TABLE A.12.3 (b) OF NFPA 72; WHERE A SINGLE GROUND SHALL NOT PREVENT THE RECEIPT OF AN ALARM AT THE FACP. THESE CONDITIONS AS WELL AS A SINGLE OPEN, AN OPEN AND GROUND, A SHORT, A SHORT AND OPEN, OR A SHORT AND GROUND SHALL SIGNAL A TROUBLE CONDITION AT THE FACP. NO "T" TAPS SHALL BE MADE.

13.) THE AUDIBLE EVACUATION SIGNAL SHALL BE THE ANSI S3.41 THREE–PULSE TEMPORAL PATTERN AS DESCRIBED IN NFPA 72.

14.) ALARM NOTIFICATION CIRCUITS SHALL BE A CLASS 'B' PATHWAY AS DEFINED IN TABLE A.12.3 (c) OF NFPA 72; WHERE A SINGLE GROUND SHALL NOT PREVENT THE RECEIPT OF AN ALARM AT THE FACP. A SINGLE OPEN, SINGLE GROUND, OR A WIRE TO WIRE SHORT SHALL SIGNAL A TROUBLE CONDITION AT THE FACP. EACH CIRCUIT SHALL NOT EXCEED ITS RATED OUTPUT. CIRCUITS SHALL NOT EXCEED 3 FLOORS OF COVERAGE.

15.) ALL WIRE COLORS SHALL BE MAINTAINED FROM DEVICE TO DEVICE AND SHALL NOT BE TRANSPOSED NOR CHANGED AT ANY DEVICE OR TERMINAL BLOCK. PERMANENT WIRE MARKERS SHALL BE USED TO IDENTIFY ALL CONNECTIONS AT THE FACP, OTHER CONTROL EQUIPMENT, POWER SUPPLIES, AND TERMINAL CABINETS.

16.) ALL RIGID OR IMC CONDUIT TERMINATING AT SHEET METAL BOXES OR CABINETS SHALL UTILIZE INSULATING BUSHINGS AND DOUBLE LOCK NUTS. EMT CONNECTORS MUST BE STEEL COMPRESSING TYPE WITH INSULATING THROATS.

17.) NOTIFICATION CIRCUIT BOOSTER POWER SUPPLIES OR 24 VDC POWER CIRCUITS SERVING ADDRESSABLE CONTROL RELAYS SHALL BE INDIVIDUALLY MONITORED FOR INTEGRITY.

18.) SPOT TYPE DETECTOR MUST HAVE THE DETECTOR ADDRESS LOOP AND DEVICE NUMBERS PERMANENTLY MOUNTED TO THEIR BASES, SO IT IS READABLE FROM THE FLOOR. THE ADDRESS MUST BE SHOWN ON THE AS–BUILT PLANS.

19.) DUCT DETECTOR SAMPLING TUBES SHALL EXTEND THE FULL WIDTH OF THE DUCT. ANY TUBES EXCEEDING 36 INCHES SHALL PROTRUDE THROUGH THE FAR END AND ANY TUBES EXCEEDING FIVE FEET SHALL BE SUPPORTED IN THE MIDDLE. INSTALL DETECTOR HOUSING AND SAMPLING TUBES PER MANUFACTURER'S RECOMMENDATIONS.

20.) SPOT TYPE SMOKE DETECTORS SHALL HAVE THEIR SENSITIVITIES SET TO NORMAL/MEDIUM UNLESS OTHERWISE DIRECTED BY THE AHJ OR ENGINEER'S SPECIFICATION.

21.) SMOKE DETECTORS SHALL BE A MINIMUM OF THREE FEET FROM ANY AIR SUPPLY DIFFUSER OR AIR RETURN OPENINGS.

22.) SURGE SUPPRESSORS SHALL BE USED ON A CIRCUIT ANYTIME IT EXITS (OR ENTERS) A BUILDING TO/ FROM THE OUTSIDE.

23.) ALL PENETRATIONS THROUGH RATED WALLS SHALL BE SEALED USING THE APPROPRIATE U.L. SYSTEM.

24.) PERMANENT WIRE MARKERS SHALL BE USED TO IDENTIFY ALL TERMINATIONS AND SPLICES FOR EVERY CIRCUIT.

25.) ALL ADDRESSABLE DEVICES SHALL BE LOCATED INSIDE THE BUILDING, NOT OUTSIDE WHERE THEY WOULD BE EXPOSED TO EXTREME TEMPERATURE AND HUMIDITY. (i.e. THOSE WHICH ARE TO MONITOR DEVICES OR PERFORM SHUTDOWNS.)

26.) DO NOT INSTALL CONDUIT INTO THE BOTTOM OF THE FIRE ALARM CONTROL PANEL(S).

27.) ALL WIRE SHALL BE INSTALLED PER THE WIRE SCHEDULE IN THESE PLANS.

28.) PER 23.6 IN NFPA 72, SIGNALING LINE CIRCUITS SHALL BE CONFIGURED SO THAT A SINGLE FAULT ON THE PATHWAY SHALL NOT CAUSE THE LOSS OF MORE THAN 50 ADDRESSABLE DEVICES. REFER TO THE WIRING DIAGRAMS/RISER, PROJECT SPECIFIC NOTES, AND NOTES ON THE LAYOUT SHEETS IN THIS PLAN SET AS DESIGNED TO MAKE SLC INSTALLATION COMPLY WITH THIS NFPA 72 REQUIREMENT.

MARK	REVISION	BY	DATE

REVISIONS

Seal

Seal

NORTH CAROLINA PROFESSIONAL SEAL 028412 ENGINEER BRIAN S. DONNELL

Clean Agent Fire Suppression System
Armtec Defense Technologies
608 East McNeil Street
Lillington, North Carolina 27546

BFPE INTERNATIONAL
FIRE • SAFETY • SECURITY
115 BESTWOOD DRIVE
CLAYTON, NC 27520
Ph: 919-550-2699 • Web: www.bfpe.com
BFPE International NC Firm License No. C-0305

DRAWN BY: BSD
CHECKED BY:
SCALE: N.T.S.
SHEET NO. 1 OF SHEETS
DATE: 1-23-24
PROJECT NO: RA-A7132-A-23

Sheet Contents:
Fire Alarm System
Electrical Installation Notes

DRAWING NO.:
FA101