

NOVEC-1230 CLEAN AGENT FIRE SUPPRESSION SYSTEM

PROJECT INFORMATION	
OCCUPANCY CLASSIFICATION:	B
CONSTRUCTION TYPE:	TYPE I (REINFORCED CONCRETE)
BUILDING AREA IN SQ. FT.:	113,130.00 SQ. FT.
AREA OF WORK SQ. FT.:	SERVER ROOM = 160 SQ. FT.
SCOPE OF WORK	
THE SCOPE OF WORK CONSISTS OF REPLACING EXISTING HALON SUPPRESSION SYSTEM INCLUDING CONTROL PANEL AND DEVICES AND PROVIDING A NEW NOVEC-1230 CLEAN AGENT SYSTEM DETECTION AND CONTROLS IN THE SERVER ROOM. THE NOVEC-1230 CLEAN AGENT PANEL SHALL BE RP-2002 CONTROL PANEL. THE CONTROL PANEL IS LOCATED INSIDE SERVER ROOM.	
ACTIVATION OF THE NOVEC-1230 SYSTEM SHALL BE MANUAL OR AUTOMATIC UTILIZING CROSS-ZONE PHOTOELECTRIC SMOKE DETECTION. RP-2002 CONTROL PANEL TO BE MONITORED FOR ALARM, SUPERVISORY AND TROUBLE CONDITIONS FROM THE BUILDING FIRE ALARM SYSTEM (EXISTING BY OTHERS). FIRE PROTECTION DEVICES SHALL BE COMPATIBLE AND LISTED WITH ITS CONTROL EQUIPMENT.	
THE CLEAN AGENT CHOSEN FOR THIS APPLICATION IS NOVEC-1230 WHICH IS MANUFACTURED BY 3M AND DISTRIBUTED BY MINIMAX. NPFA STANDARD 2001 IDENTIFIES NOVEC-1230 BY THE CHEMICAL NAME OF FK-5-1-12 DODECAFLUORO-2-METHYLPENTAN-3-ONE (FK-5-1-12). THE MINIMUM DESIGN CONCENTRATION FOR NOVEC-1230 IS 4.5% FOR CLASS A AND CLASS C FIRES PER UL.	

DRAWING INDEX	
1	TITLE SHEET / BILL OF MATERIALS / GENERAL NOTES / RISER DIAGRAM / SEQUENCE OF OPERATIONS
2	PLAN LAYOUT / WIRING DETAILS / ISOMETRIC
3	NOVEC-1230 DETAILS

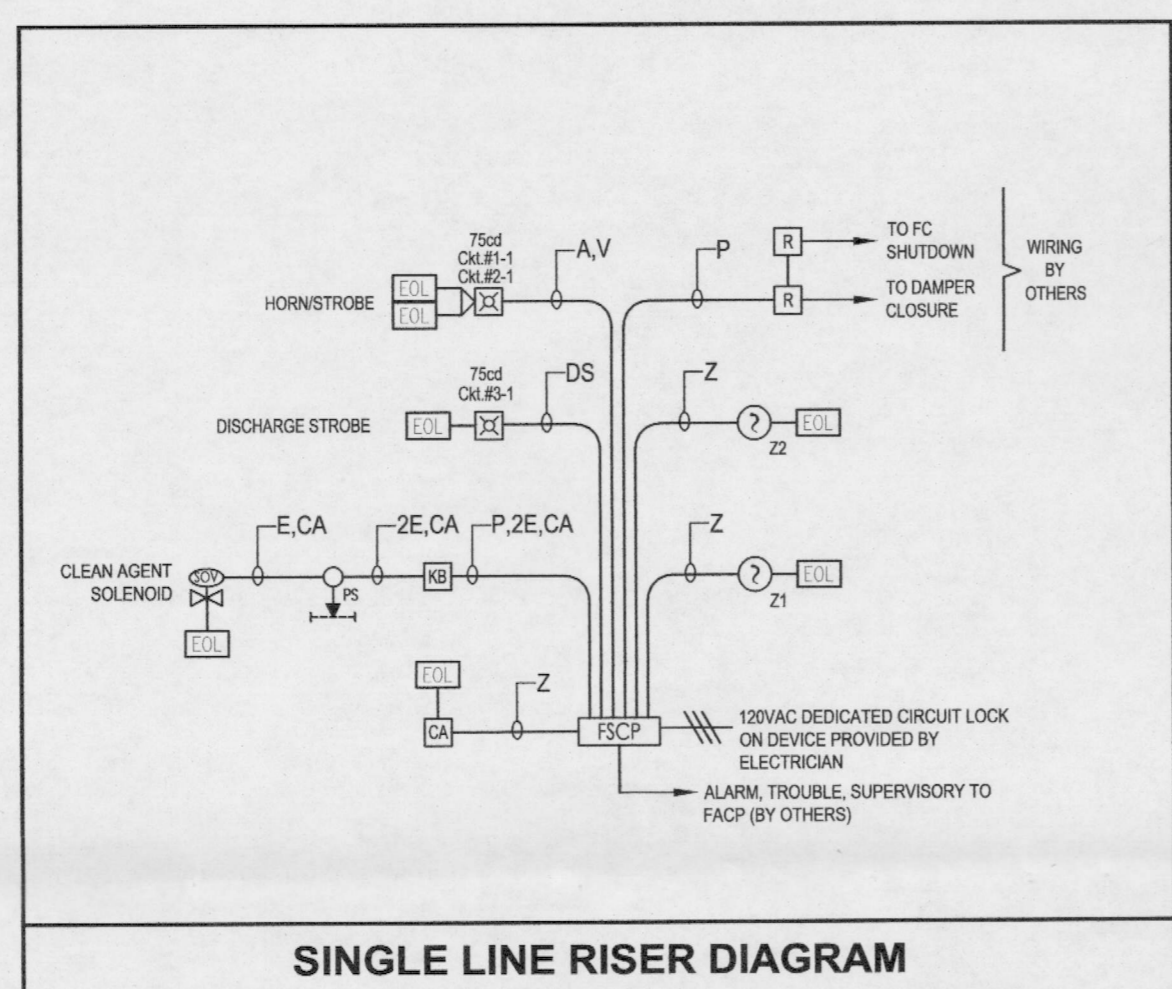
WIRE SCHEDULE		
DESIG.	WIRE/CABLE	CIRCUIT TYPE
Z	2 #16 TP (RED JACKET)	INITIATING ZONE CIRCUIT
P	2 #14 THHN/THWN STRANDED	24VDC POWER
E	2 #14 THHN/THWN STRANDED	MONITOR / CONTROL
AV	4 #14 THHN/THWN STRANDED	AUDIBLE/VISUAL CIRCUIT
CA	2 #14 THHN/THWN STRANDED	CLEAN AGENT RELEASE
DS	2 #14 THHN/THWN STRANDED	DISCHARGE STROBE CIRCUIT

WIRE FILL CHART										
DIMENSIONS AND PERCENT AREA OF (EMT) ELECTRICAL METALLIC TUBING (BASED ON NEC CHAPTER 9 TABLE 4 2014 EDITION)										
TRADE SIZE	NOMINAL INTERNAL DIAMETER (INCHES)	TOTAL AREA	60%	1 WIRE	2 WIRES	OVER 2 WIRES				
1/2	0.622	0.304	0.182	0.161	0.094	0.122				
3/4	0.824	0.533	0.320	0.283	0.185	0.213				
1	1.049	0.864	0.519	0.459	0.288	0.346				
1 1/4	1.380	1.496	0.897	0.793	0.464	0.568				
1 1/2	1.610	2.038	1.213	1.079	0.661	0.814				
2	2.067	3.596	2.101	1.778	1.040	1.242				
MAXIMUM NUMBER OF CONDUCTORS IN (EMT) ELECTRICAL METALLIC TUBING FOR OVER 2 WIRES 40% (BASED ON NEC CHAPTER 9 TABLE 4 2014 EDITION)										
MINIMUM (EMT) METALLIC TUBING SIZE FOR THIS PROJECT IS 3/4"										
CONDUIT TRADE SIZE (INCHES)	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4
TYPE LETTERS	CONDUCTOR SIZE (AWG/KCMIL)	APPROX. AREA (SQ. INCHES)	NUMBER OF CONDUCTORS	AREA OF (EMT) OVER 2 WIRES 40% (PER TABLE 4)	AREA OF CONDUCTOR (PER TABLE 5)					
T H W N	14	0.0097	12	0.122	0.0081	96	0.771	208	347	608
T H W N	12	0.0153	9	0.134	0.0129	81	101	176	286	443
T H W N	10	0.0219	6	0.146	0.0178	66	111	187	278	379
T H W N	8	0.0386	3	0.158	0.0287	48	96	96	126	161

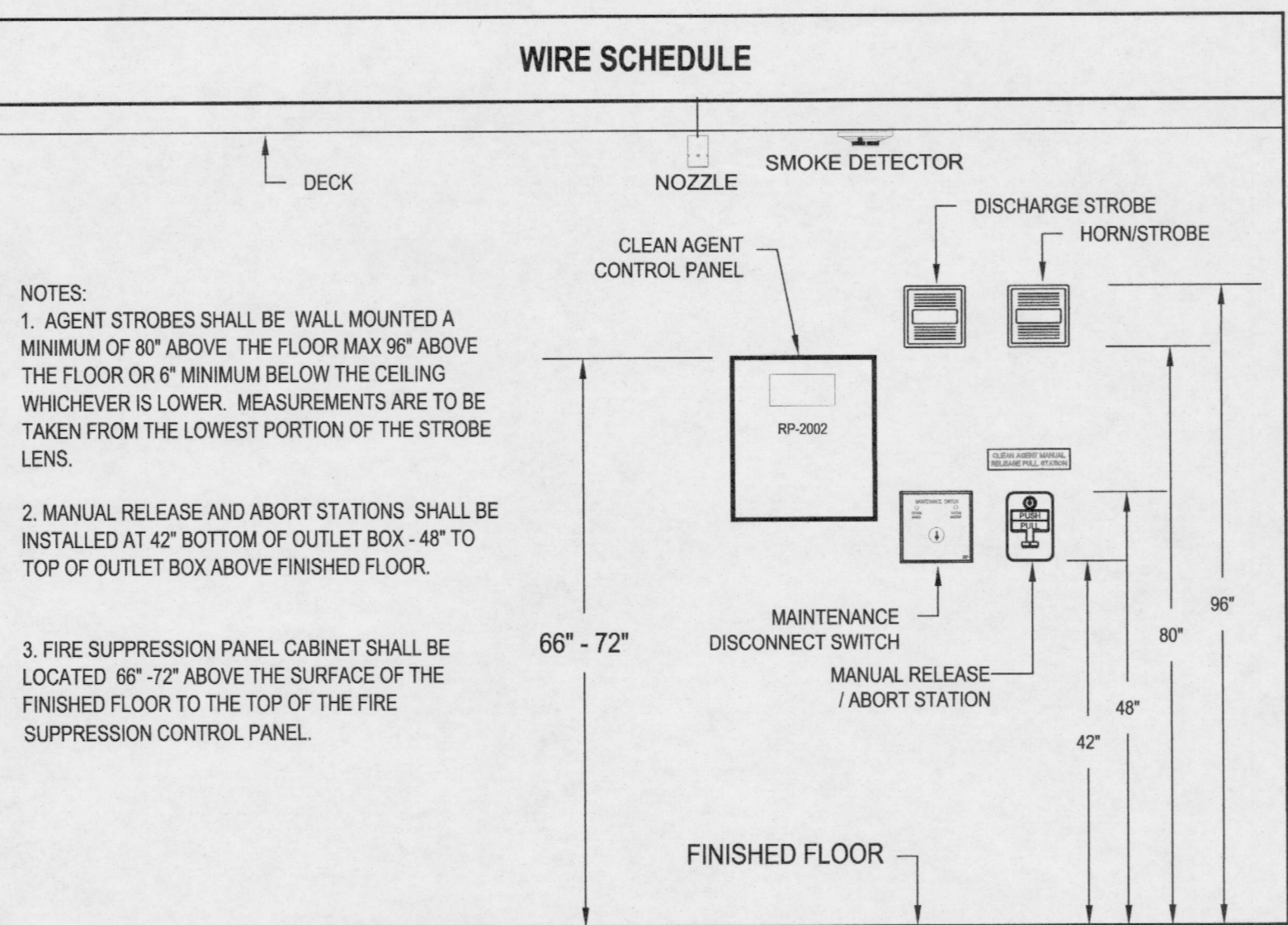
NOVEC-1230 CLEAN AGENT INPUTS		SEQUENCE OF OPERATIONS	
ANNUNCIATE ALARM AT BLDG. FIRE ALARM CONTROL PANEL	X	X	X
ANNUNCIATE SUPERVISORY AT BLDG. FIRE ALARM CONTROL PANEL	X	X	X
ANNUNCIATE TROUBLE AT BLDG. FIRE ALARM CONTROL PANEL	X	X	X
ANNUNCIATE ALARM AT CLEAN AGENT CONTROL PANEL	X	X	X
ANNUNCIATE SUPERVISORY AT CLEAN AGENT CONTROL PANEL	X	X	X
ANNUNCIATE TROUBLE AT CLEAN AGENT CONTROL PANEL	X	X	X
1ST ALARM HORNSTROBE (20 BPM)	X	X	X
2ND ALARM HORNSTROBE (120 BPM)	X	X	X
SHUTDOWN AHU & DAMPERS WITHIN PROTECTED AREA**	X	X	X
START DISCHARGE TIME DELAY (30 SECONDS)	X	X	X
*HOLDS DISCHARGE UNTIL RELEASED	X	X	X
PREVENT RELEASE CIRCUIT ACTIVATION (DISCONNECT)	X	X	X
RELEASE OF NOVEC-1230 CLEAN AGENT	X	X	X
ACTIVATE DISCHARGE STROBE	X	X	X
DISCHARGE HORNSTROBE (CONTINUOUS)	X	X	X

* THE TIME DELAY IS SET FOR A NOMINAL 30 SECONDS. MANUAL RELEASE OVERRIDES TIME DELAY AND ABORT.
 ** AIR MOVEMENT IN AND OUT OF THE PROTECTED SPACE IS STOPPED VIA SIGNAL FROM THE CLEAN AGENT CONTROL. AHUS SERVING THE PROTECTED SPACE ARE SHUTDOWN, DAMPERS IN DUCTWORK ENTERING OR LEAVING THE SPACE ARE CLOSED.

APPLICABLE CODES & STANDARDS	
AS OF JANUARY 1, 2017	
CONSTRUCTION SHALL COMPLY WITH THE FOLLOWING PARTS OF TITLE 24 OF THE CALIFORNIA CODE OF REGULATIONS (CCR)	
2016 BUILDING STANDARDS ADMINISTRATIVE CODE, PART 1 TITLE 24 C.C.R.	
2016 CALIFORNIA BUILDING CODE (CBC), PART 2, TITLE 24 C.C.R. (BASED ON THE 2015 INTERNATIONAL BUILDING CODE (IBC))	
2016 CALIFORNIA ELECTRICAL CODE (CEC), PART 3, TITLE 24 C.C.R. (BASED ON THE 2014 NATIONAL ELECTRICAL CODE (NEC))	
2016 CALIFORNIA MECHANICAL CODE (CMC), PART 4, TITLE 24 C.C.R. (BASED ON THE 2015 UNIFORM MECHANICAL CODE (UMC))	
2016 CALIFORNIA PLUMBING CODE (CPC), PART 5, TITLE 24 C.C.R. (BASED ON THE 2015 UNIFORM PLUMBING CODE (UPC))	
2016 CALIFORNIA FIRE CODE (CFC), PART 9, TITLE 24 C.C.R. (BASED ON THE 2015 INTERNATIONAL FIRE CODE (IFC))	
2016 CALIFORNIA REFERENCED STANDARDS CODE, PART 12, TITLE 24 C.C.R.	
2016 NFPA 13 - AUTOMATIC SPRINKLER SYSTEMS	2016 EDITION
2016 NFPA 14 - STAIRWELL SYSTEMS	2016 EDITION
2016 NFPA 17 - DRY CHEMICAL EXTINGUISHING SYSTEMS	2016 EDITION
2016 NFPA 17A - WET CHEMICAL SYSTEMS	2016 EDITION
2016 NFPA 20 - STATIONARY PUMPS	2016 EDITION
2016 NFPA 24 - PRIVATE FIRE MAINS	2016 EDITION
2016 NFPA 72 - NATIONAL FIRE ALARM CODES (AS AMENDED IN CHAPTER 10 OF THE 2016 CFC)	2016 EDITION
2016 NFPA 2001 - CLEAN AGENT FIRE EXTINGUISHING SYSTEMS	2016 EDITION

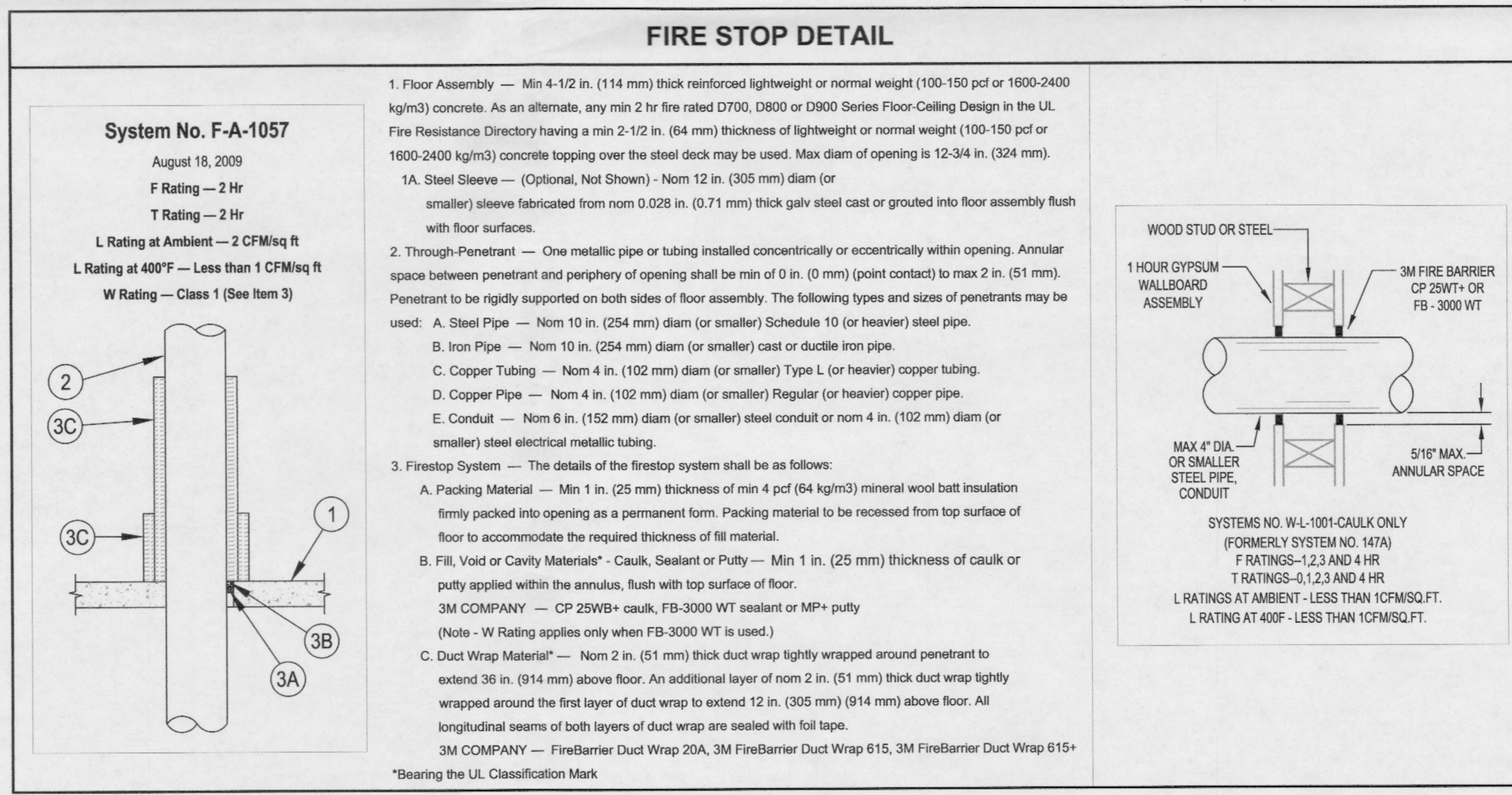


WORST CASE VOLTAGE DROP			
RP-2002, INDICATING CIRCUIT #3			
(1) AGENT DISCHARGE STROBE			
35 FEET OF 14 AWG			
I = TOTAL CURRENT FLOW IN ALARM CONDITION			
L = LENGTH OF CIRCUIT FROM SUPPLY TO LAST DEVICE (IN FEET)			
3.14 = RESISTIVITY OF STRANDED COPPER CONDUCTOR PER 1000 FT.			
QUANTITY	ENCLOSURE DRAWS	DESCRIPTION	TOTAL DEVICE CURRENT
(1)	0.135 A	STR-A	0.135 A
TOTAL CIRCUIT CURRENT DRAW = 0.135A			
0.135A X	358	X 3.14 =	0.015V = VOLTS DROPPED
			1000
VOLTS DROPPED			0.015V
			(240VDC SUPPLY) X 100 = 0.06 %



BILL OF MATERIAL							
SYMBOL	MODEL #	MANUFACTURER	DESCRIPTION	C.S.F.M. #	MOUNTING	ROUGH-IN BOX CONDUIT	QTY.
FCP	RP-2002	NOTIFIER	PREACTION CONTROL PANEL	7165-0028/0245	---	---	1
SD	2W-B	SYSTEM SENSOR	PHOTOELECTRIC SMOKE DETECTOR	7272-1653/0152	CEILING MOUNTED	4S, 2-1/8" DEEP W/ 3-0 RING	2
MS	NBG-12LRA	NOTIFIER	COMMON MOUNTING BASE	---	---	---	1
MS	17121	MINIMAX	MANUAL PULL STATION / ABORT STATION	7150-0028/0199	48" TO TOP A.F.F.	4S, 2-1/8" DEEP W/ SINGLE GANG RING	1
MS	17121	MINIMAX	MAINTENANCE KEY SWITCH	---	48" TO CENTER A.F.F.	4S, 2-1/8" DEEP W/ DOUBLE GANG RING	1
MS	PR-1	SYSTEM SENSOR	CONTROL RELAY	7300-1653/0172	---	4S, 2-1/8" DEEP	2
MS	STR-A	WHEELLOCK	750d STROBE-MULTI CANDELA-AGENT, RED (75 Candela)	7125-0785/0168	80" TO BOTTOM A.F.F.	4S, 2-1/8" DEEP W/ 1-1/2" EXTENSION BOX	1
MS	MT-24MCW-AR	WHEELLOCK	MULTI TONE HORNSTROBE - AGENT, RED (75 Candela)	7125-0785/0155	80" TO BOTTOM A.F.F.	4S, 2-1/8" DEEP W/ 1-1/2" EXTENSION BOX	1
MS	885869	MINIMAX	SAFETY MALFUNCTION DEVICE	---	ON CYLINDER	4S, 2-1/8" DEEP	1
MS	889109	MINIMAX	NOVEC-1230 140LB CYLINDER WITH 80# - (SERVER ROOM)	---	---	---	1
MS	888054	MINIMAX	NOVEC-1230 (CLEAN AGENT)	---	---	---	80LB
MS	17562	MINIMAX	SWIVEL VALVE OUTLET ADAPTER	---	---	---	1
MS	889323	MINIMAX	RELEASING DEVICE	---	---	CLOSE NIPPLE TO SOLENOID	1
MS	17096	MINIMAX	ELECTRIC RELEASE SCREW RESET TOOL	---	---	---	1
MS	1936RWB	MINIMAX	CYLINDER STRAP FOR 140 LB. CYLINDER	---	---	---	2
MS	889062	MINIMAX	DISCHARGE NOZZLE, 180", 1" NPT - ORIFICE 0.528 (SERVER ROOM 110A)	---	---	---	1

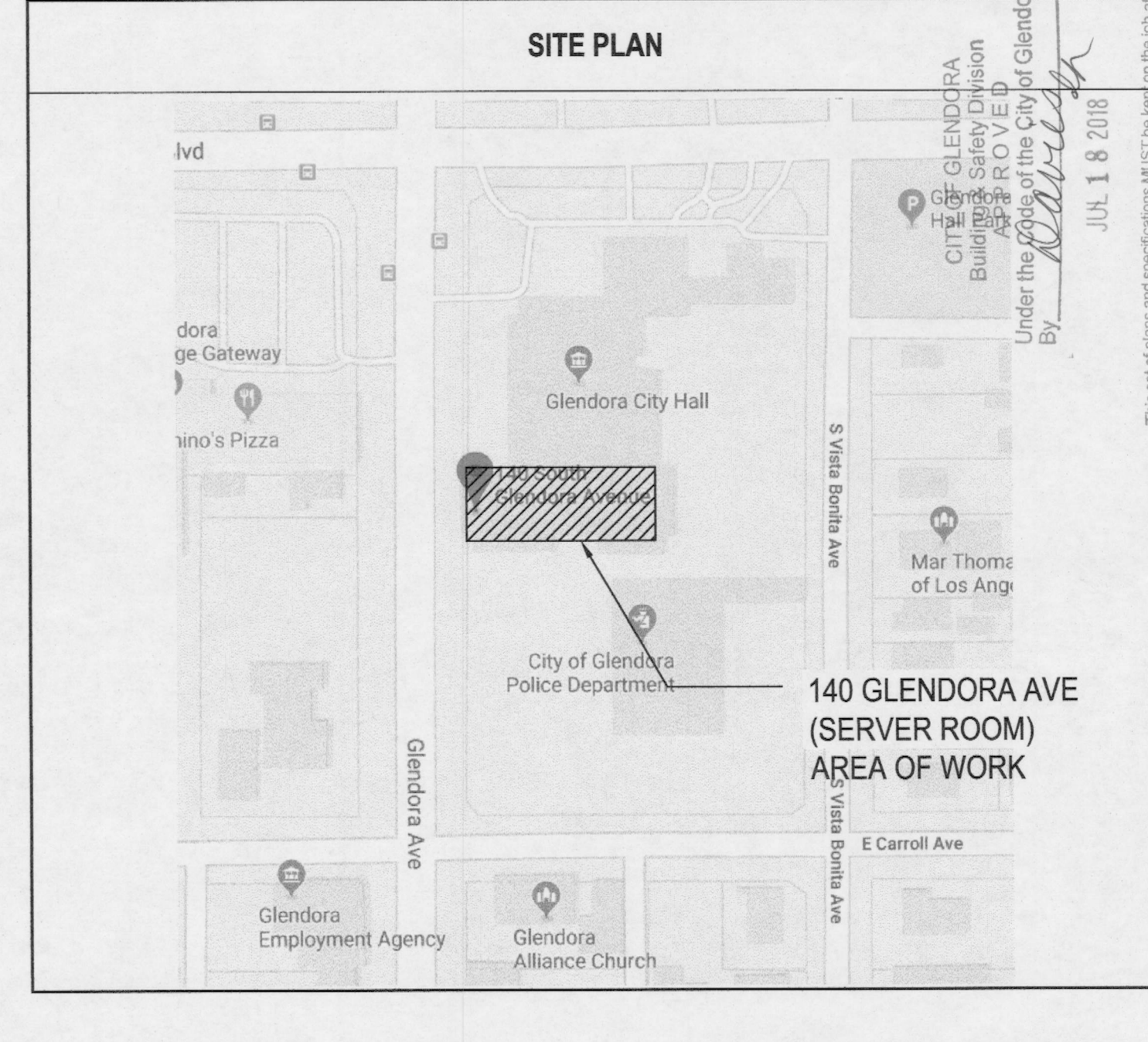
COUNTY OF LOS ANGELES
 FIRE DEPARTMENT
 FIRE PREVENTION ENGINEERING
APPROVED
 FIRE ALARM SYSTEM
 By: [Signature]
 Fire Prevention Engineer
 Date: 7/10/18



BATTERY CALCULATIONS				NEW "RP-2002" CONTROL PANEL			
EQUIPMENT MODEL	QUANTITY	SUPERVISORY CURRENT	ALARM CURRENT	UNIT	TOTAL	UNIT	TOTAL
RP-2002 CONTROL PANEL (MAIN BOARD)	1	0.121	0.121	0.274	0.274		
PROGRAMMABLE RELAY	1	0	0	0.020	0.02		
RCDS (RELEASING CIRCUIT DISABLE SWITCH)	1	0.050	0.05	0.050	0.05		
2W-SPHOTOELECTRIC SMOKE DETECTOR	2	0.00005	0.0001	0.130	0.26		
STR-A (DISCHARGE STROBE)	1	0	0	0.0135	0.0135		
MT-24MCW-AR (HORNSTROBE)	1	0	0	0.0170	0.017		
PR-1 (CONTROL RELAY)	2	0.015	0.03	0	0		
NOVEC-1230 SOLENOID	1	0	0	0.5	0.5		
SUB TOTAL		0.2011 A	SUB TOTAL	1.1345 A			
STANDBY	4.826400 AH		STANDBY	24 HRS.	ALARM	0.083 HRS.	
ALARM	0.094542 AH			4.8264 AH		0.094542 AH	
4.920942 AH REQUIRED			X 1.20 = 5.905 AH REQUIRED (20% DE-RATING FACTOR)				
			(2) BATTERIES TO BE PROVIDED AT 12AH				
			(0.083 HRS. = 5 MIN)				

GENERAL NOTES	
1.	ALL FIRE ALARM WIRING AND CONDUIT SHALL BE IN ACCORDANCE WITH NFPA 72, 2016 TITLE 24 BUILDING CODE, NEC, THE AUTHORITY HAVING JURISDICTION AND THE MANUFACTURERS REQUIREMENTS.
2.	ALL FIRE ALARM EQUIPMENT SHALL BE C.S.F.M AND U.L. LISTED.
3.	ALL JUNCTION BOXES SHALL BE SIZED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE.
4.	ELECTRICAL CONTRACTOR SHALL PROVIDE ALL 120VAC POWER REQUIREMENTS FOR THE FIRE ALARM SYSTEM UNLESS OTHERWISE NOTED.
5.	ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL ALL FIRE ALARM TERMINAL CABINETS, CONDUIT, JUNCTION BOXES, DEVICE BACK BOXES, UNLESS OTHERWISE NOTED.
6.	ALL BACKBOXES PROVIDED BY CONTRACTOR SHALL BE INSTALLED BY THE ELECTRICAL CONTRACTOR.
7.	WIRING SHALL NOT BE LOOPED THROUGH DEVICES. ALL WIRING SHALL BE CUT FOR IN AND OUT.
8.	ALL DEVICE WIRING, AND ANNUNCIATOR PANELS SHALL BE SUPERVISED TO THE PRINCIPAL POINT OF ANNUNCIATION.
9.	ALL DEVICES TO BE INSTALLED IN AN APPROVED RACEWAY OR OPEN WIRE.
10.	THE FIRE ALARM CONTROL PANEL AND POWER SUPPLIES ARE NOT TO BE USED AS A TERMINAL CABINET OR WIREWAY.
11.	ALL FIELD WIRING MUST ENTER AT THE TOP AND NO LOWER THAN 8" FROM BOTTOM ON THE SIDES OF THE FIRE ALARM CONTROL PANEL.
12.	ALL FIRE ALARM WIRING MUST TEST FREE OF GROUNDS, SHORTS AND OPENS.
13.	T-TAPPING IS PROHIBITED FOR ALL CLASS A AND CLASS B CIRCUITS.
14.	ALL INDICATING APPLIANCE CIRCUITS SHALL BE WIRED WITH #14 AWG FPLR WIRE.
15.	ALL INITIATING DEVICES (ADDRESSABLE) SHALL BE WIRED WITH #16 AWG TP WIRE.
16.	ALL AUDIO/VISUAL DEVICES TO ACTIVATE UPON GENERAL ALARM.
17.	ALL DEVICES IN THE ALARM SYSTEM SHALL BE COMPATIBLE WITH THE FIRE ALARM CONTROL PANEL AND INSTALLED TO MANUFACTURERS SPECIFICATIONS.
18.	ALL FIRE ALARM WIRING MUST TEST FREE OF GROUNDS, SHORTS AND OPENS.
19.	CONDUIT SHALL BE 3/4" MINIMUM.

MECHANICAL NOTES	
1.	PIPING DIMENSIONS ON THE PIPING ISOS AND FLOOR PLANS ARE APPROXIMATE AND SHALL BE FIELD VERIFIED BY PIPE INSTALLER. IF THE PIPE LENGTHS CHANGE BY MORE THAN 1'-0", FITTINGS ARE ADDED TO THE SYSTEM OR AN ADJUSTMENT IN THE INSTALLATION FEE IS MADE, THE PIPING INSTALLER SHALL BE RESPONSIBLE FOR COMMUNICATING CHANGES TO COSCO FIRE PROTECTION IN WRITING.
2.	ALL PIPING SHALL BE BLACK SCHEDULE 40 ASTM A-53A DUCTILE OR FORGED STEEL AS REQUIRED IN THE CURRENT NFPA STANDARD 2001. THE USE OF COPPER TUBING, NON-FERROUS PIPE OR CAST IRON PIPING IS NOT ACCEPTABLE.
3.	ACCEPTABLE PIPE JOINT METHODS INCLUDE THREADED, WELDED, FLANGED AND ROLL-CUT-GROOVE FITTINGS.
4.	ALL PIPE SIZE REDUCTIONS ARE TO BE MADE USING CONCENTRIC REDUCING FITTINGS. REDUCING BUSHINGS AND FITTINGS WITH REDUCING "PLATES" ARE NOT ACCEPTABLE.
5.	PER NFPA 2001 CURRENT EDITION SECTION 2-2.3 AND MANUFACTURERS RECOMMENDATIONS CLASS 300 MALLEABLE OR DUCTILE IRON FITTINGS ARE ACCEPTABLE THROUGH 3" NPT. 1000 LB. DUCTILE OR FORGED STEEL FITTINGS ARE REQUIRED FOR SIZES GREATER THAN 3" NPT. CLASS 300 FLANGED JOINTS ARE ACCEPTABLE FOR ALL PIPE SIZES. ROLL-CUT-GROOVE FITTINGS THAT ARE RATED FOR A MINIMUM OF 300 PSI JOINT WORKING PRESSURE OR HIGHER ARE ACCEPTABLE.
6.	PIPE DOPE SHALL BE USED ON ALL THREADED PIPE CONNECTIONS. ALL PIPE DOPE, TAPE OR THREAD LUBRICANT SHALL BE APPLIED TO THE MALE THREADS OF THE JOINT ONLY.
7.	ALL PIPING SHALL BE THOROUGHLY CLEANED WITH A SUITABLE CLEANING SOLVENT SUCH AS SIMPLE GREEN, OR EQUIVALENT AFTER CUTTING AND THREADING.
8.	ALL PIPE SHALL BE SECURELY SWAYED BRACED TO THE BUILDING USING RIGID PIPE HANGERS, BRACES, AND SUPPORTS. THE PIPE SYSTEM SHALL BE FREE FROM ANY LATERAL OR VERTICAL MOVEMENT DURING SYSTEM DISCHARGE. SPECIAL ATTENTION SHALL BE PAID TO ALL CHANGE OF PIPE DIRECTION.
9.	ALL PIPE AND BRACING INSTALLATION IS TO BE DONE IN ACCORDANCE WITH THE CURRENT NFPA STANDARD 2001 AND ANSI 831.1 POWER PIPING CODE.
10.	DISCHARGE NOZZLES SHALL NOT BE ORDERED OR INSTALLED UNTIL "AS BUILT" CALCULATIONS HAVE BEEN PERFORMED FOR EACH PIPE SYSTEM.
11.	CYLINDER MOUNTING SHALL MEET THE REQUIREMENTS BY STATE AND LOCAL AHJ FOR THE LOCAL SEISMIC FACTORS.
12.	PERFORM "PUFF" TEST ON SYSTEM PIPING USING NITROGEN.
13.	ROOM INTEGRITY
1.	ROOM INTEGRITY TESTING SHALL BE DONE IN ACCORDANCE WITH THE NFPA 2001, APPENDIX "B" (DOOR FAN TEST). ALL OTHER TESTING SHALL BE DONE IN ACCORDANCE WITH NFPA 72.
2.	ALL WALLS WITHIN ZONES SHALL BE FULL HEIGHT CONSTRUCTION "SLAB TO SLAB" WITH ALL PENETRATIONS SEALED. FOR AREAS WITH GYPSUM BOARD CEILINGS, FULL HEIGHT WALL CONSTRUCTION IS NOT NECESSARY.
3.	ITEMS WHICH MUST BE COMPLETED PRIOR TO AN ACCEPTABLE ROOM INTEGRITY TEST ARE AS FOLLOWS:
A.	ALL AIR HANDLING WITHIN THE NOVEC-1230 PROTECTED AREA MUST SHUTDOWN AUTOMATICALLY UPON SYSTEM ALARM.
B.	LOCAL CODES MAY REQUIRE POWER TO THE NOVEC-1230 PROTECTED AREA TO AUTOMATICALLY SHUTDOWN UPON SYSTEM ALARM. IF THIS FUNCTION IS REQUIRED THE CONDUIT AND WIRE TO THE NOVEC-1230 CONTROL PANEL SHALL BE PROVIDED AND INSTALLED BY THE ELECTRICAL CONTRACTOR.
C.	ALL DOORS MUST BE SELF-CLOSING AND BE EQUIPPED WITH DOOR SWEEPS AND SEALS, PROVIDED AND INSTALLED BY GENERAL CONTRACTOR.
D.	ALL CABLE AND PIPE PENETRATIONS AS WELL AS ANY OTHER OPENINGS WHICH WOULD CAUSE LOSS OF AGENT, MUST BE SEALED WITH APPROVED METHODS BY GENERAL CONTRACTOR.



REVISIONS	DATE	BY

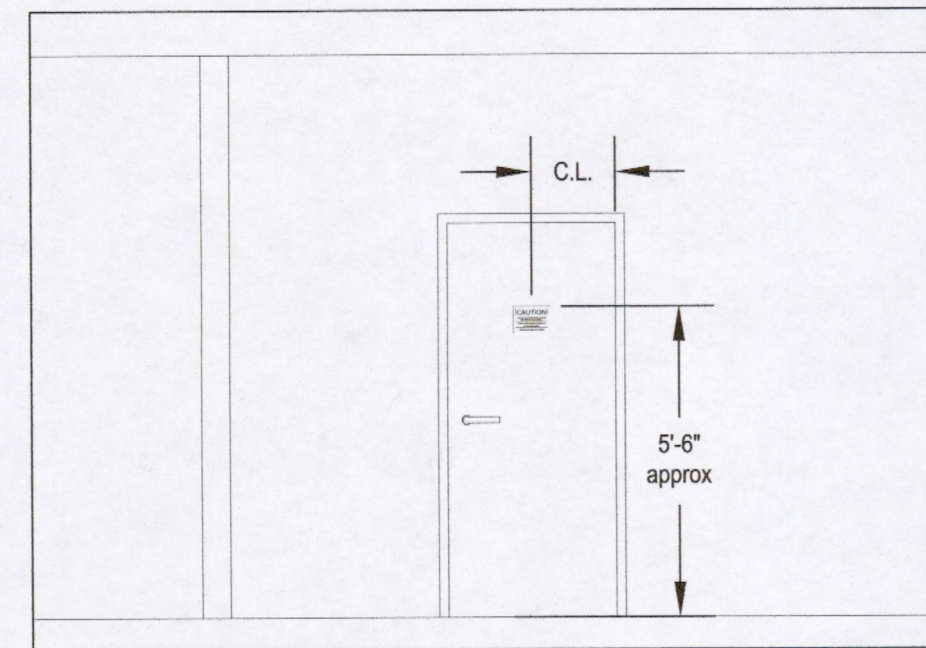
THIS INFORMATION EMBODIES A PROPRIETARY DESIGN OR INVENTION OF COSCO FIRE PROTECTION. THE MANUFACTURING REPRODUCTION (EXCEPTING WHERE RECIPIENT HAS BEEN GIVEN EXPRESS WRITTEN AGREEMENT TO REPRODUCE THE DRAWING), USE AND SALES RIGHTS REGARDING THE SAME ARE EXPRESSLY RESERVED. IT IS SUBMITTED UNDER CONFIDENTIALITY AND RECEIPT AGREES BY ACCEPTING THIS NOT TO SUPPLY OR DISCLOSE ANY INFORMATION REGARDING IT TO ANY UNAUTHORIZED PERSON OR TO INCORPORATE IN OTHER PROJECTS ANY SPECIAL FEATURE SPECIFIC TO THIS DESIGN.

COSCO Fire Protection
 FIRE PROTECTION AND LIFE SAFETY SPECIALISTS
 CALIFORNIA LICENSE # 87782
 LOS ANGELES COUNTY OFFICE
 1075 W. Leimert Road, Suite 10
 Los Angeles, CA 90024
 (714) 998-8000 ext. 114, 988-1818
 www.coscofire.com

LICENSED ELECTRICAL CONTRACTOR
 C-10 & C-16
 RECEIVED JUL 18 2018
 BUILDING DIVISION
 STATE OF CALIFORNIA

PROJECT: CITY OF GLENORA (HALON FIRE SUPPRESSION SYSTEM REPLACEMENT)
 140 GLENORA AVE
 GLENORA, CA 91741
 CONTRACTOR: CITY OF GLENORA
 118 E. FOOTHILL BLVD.
 GLENORA, CA 91741
 SHEET TITLE: COVER SHEET / GENERAL NOTES / SEQUENCE OF OPERATIONS

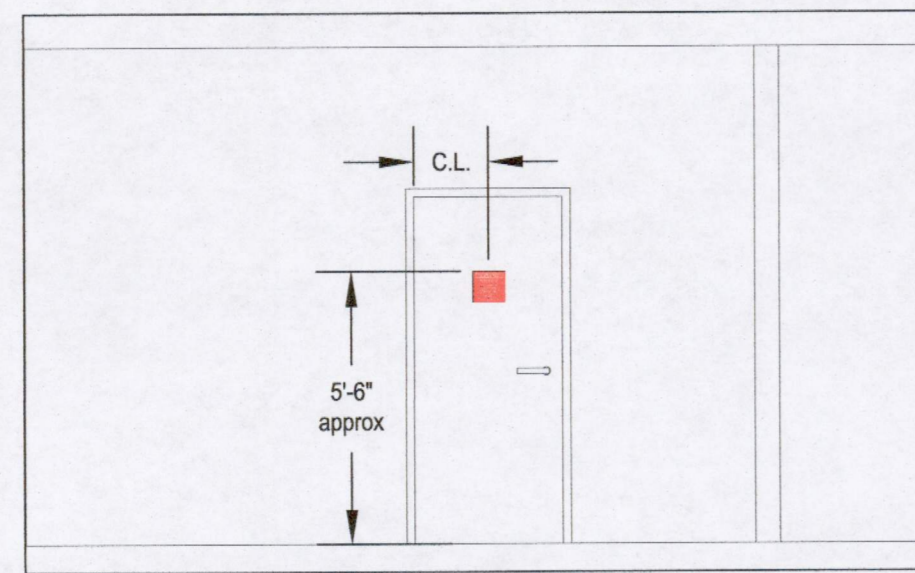
NOVEC-1230 CLEAN AGENT SUPPRESSION SYSTEM
 DRAWN BY: I.G.
 CHECK BY: R.S.
 APPROVED BY: R.C.
 DATE: 06 / 27 / 18
 SCALE: AS NOTED
 JOB NO: 1418132
 SHEET: 1 OF 3



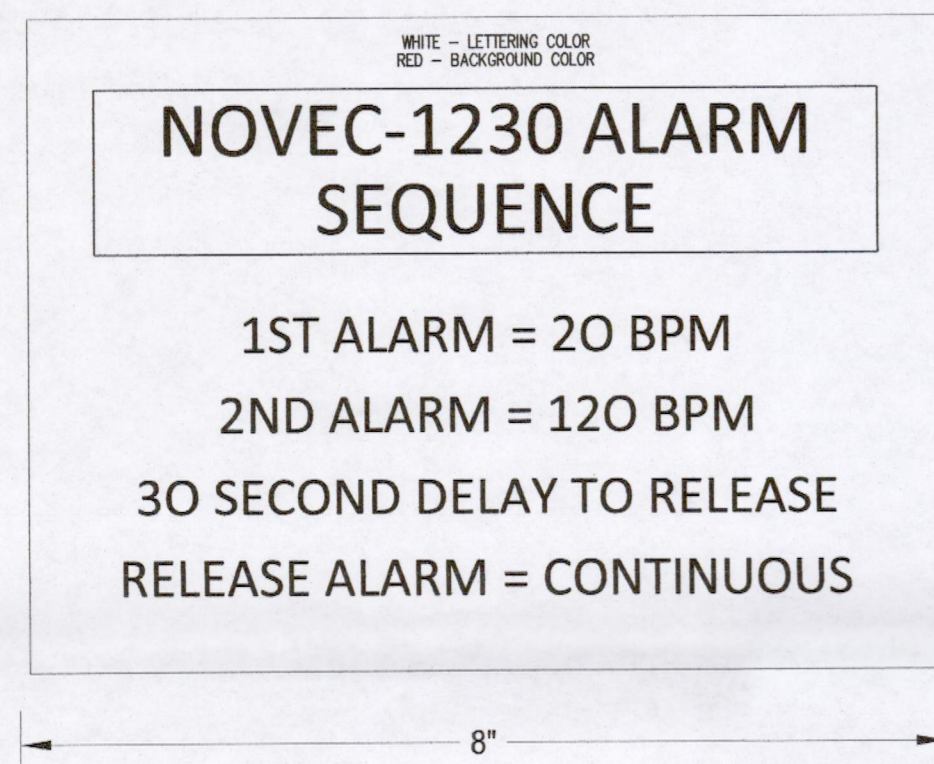
CAUTION

THIS AREA IS PROTECTED BY A NOVEC-1230 FIRE EXTINGUISHING SYSTEM
DO NOT ENTER AREA DURING OR AFTER DISCHARGE
 KEEP DOOR CLOSED AT ALL TIMES

SIGNAGE OUTSIDE AREA PROTECTED WITH CLEAN AGENT
 YELLOW - BACKGROUND COLOR
 BLACK - LETTERING COLOR

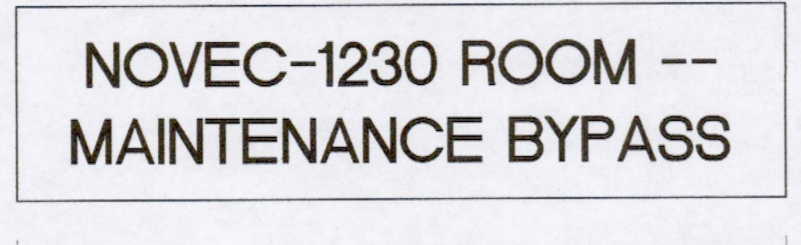


SIGNAGE INSIDE AREA PROTECTED WITH CLEAN AGENT
 RED - BACKGROUND COLOR
 WHITE - LETTERING COLOR



NOVEC-1230 ALARM SEQUENCE

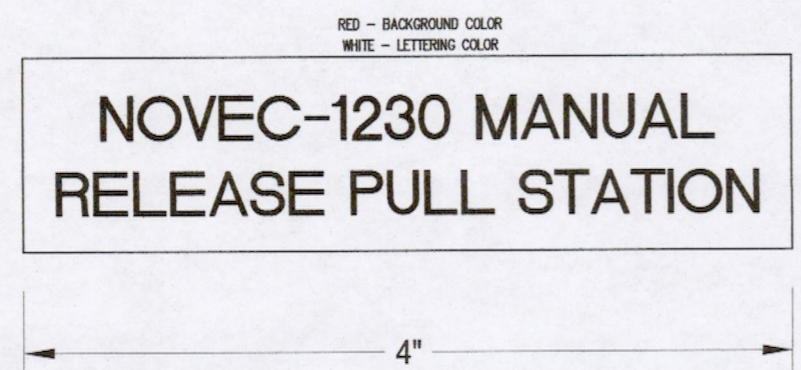
1ST ALARM = 20 BPM
 2ND ALARM = 120 BPM
 30 SECOND DELAY TO RELEASE
 RELEASE ALARM = CONTINUOUS



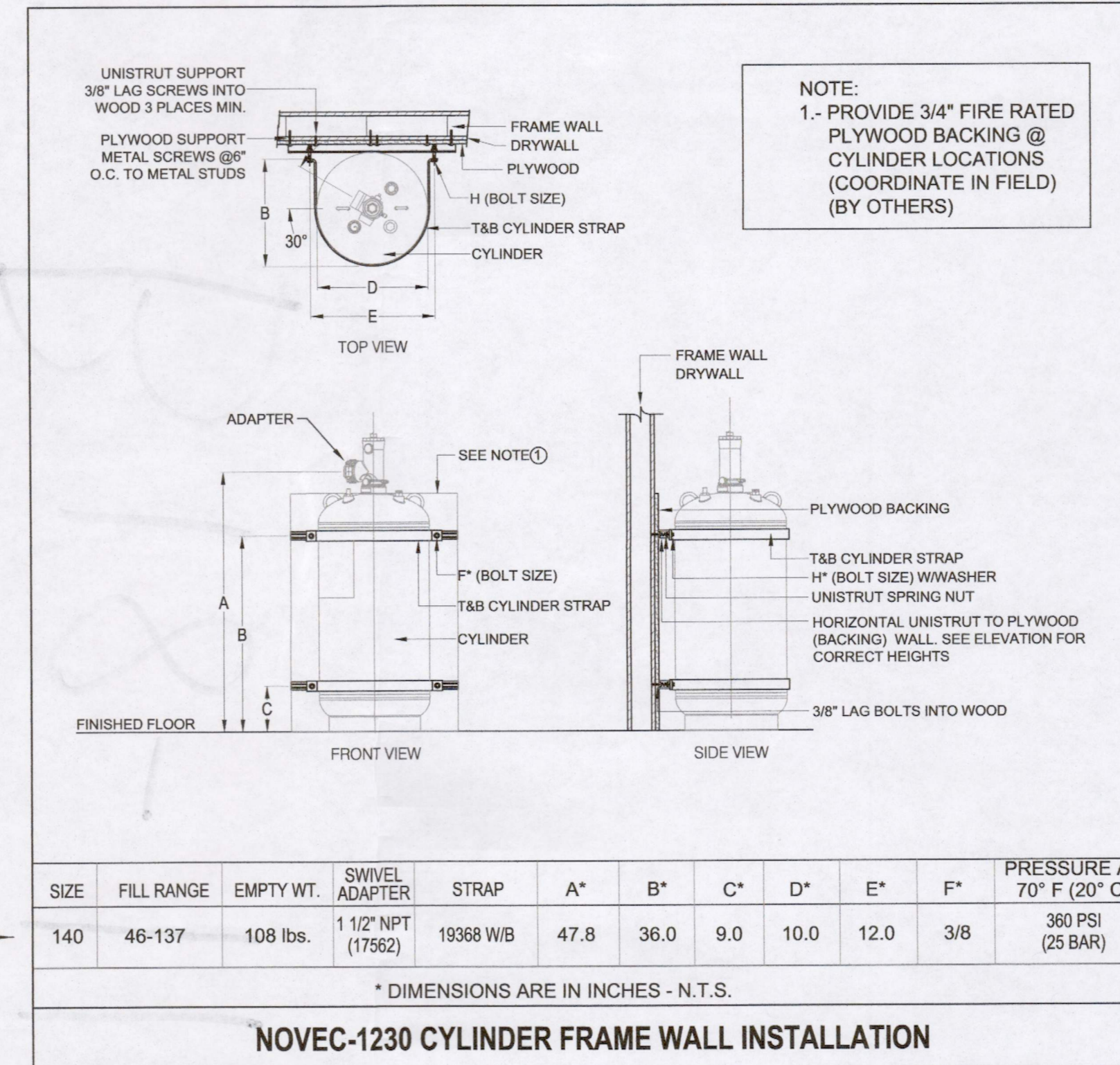
NOVEC-1230 ROOM -- MAINTENANCE BYPASS



NOVEC-1230 ROOM -- ABORT STATION



NOVEC-1230 MANUAL RELEASE PULL STATION



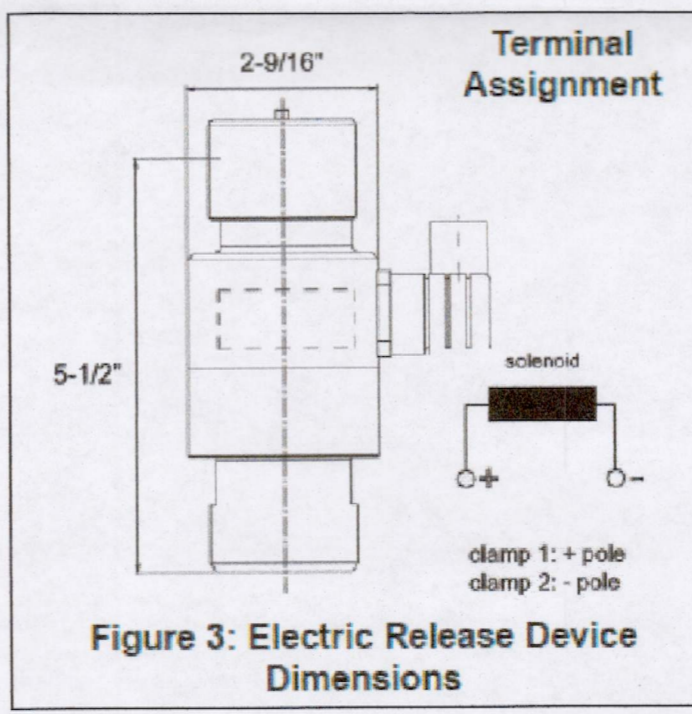
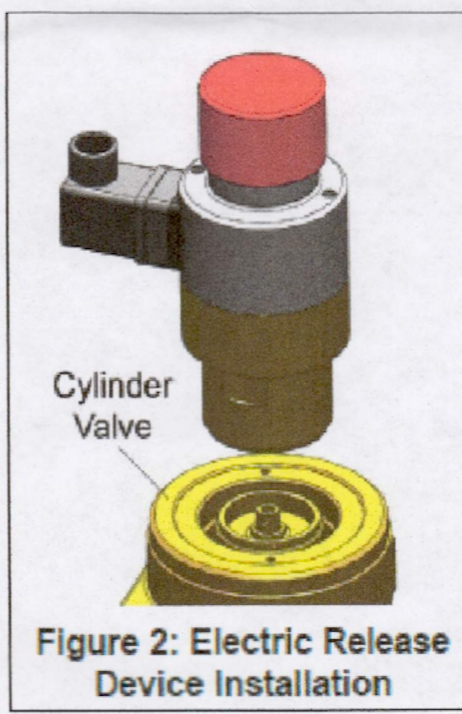
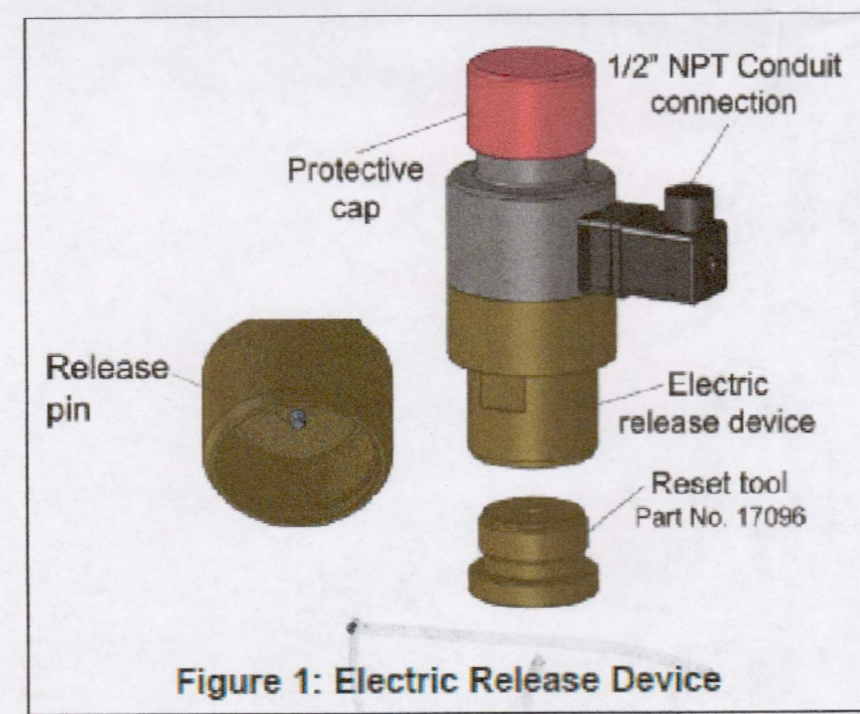
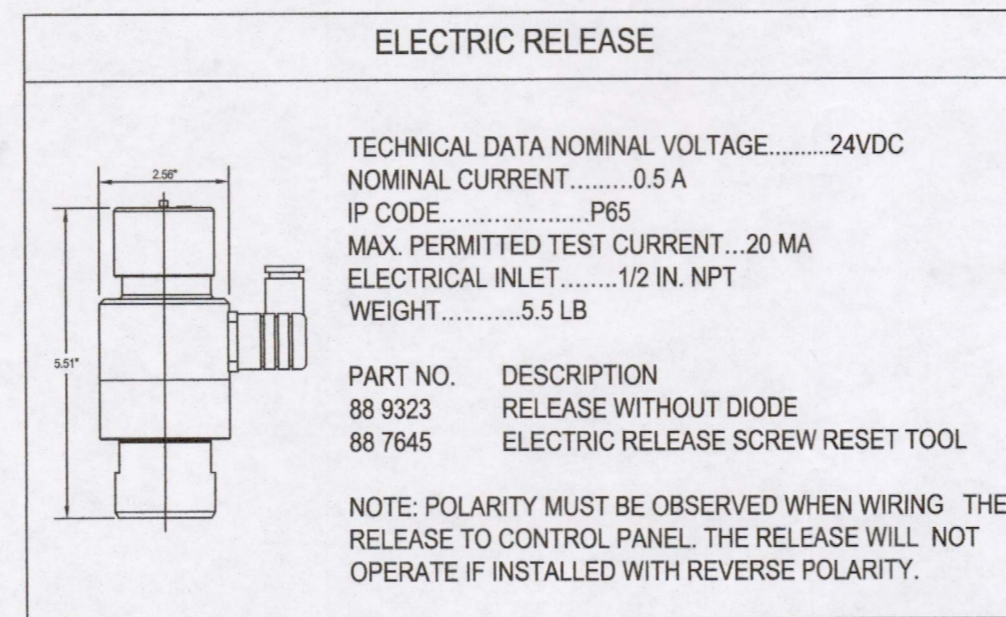
CYLINDER MOUNTING BRACKET

SIZE TANK USED ON	SHIPPING ASSEMBLY PART NO.	RADIUS (R)	H"	WEIGHT
60 LB...380 PSI	15068WB	5.3 IN.	4.72 IN.	3.2 LB
140 LB...380 PSI				
280 LB...380 PSI	88 7639	8.1 IN.	7.87 IN.	4.8 LB
380 LB...380/725 PSI				
320 LB...725 PSI				
500 LB...725 PSI				

NOVEC-1230 NOZZLES

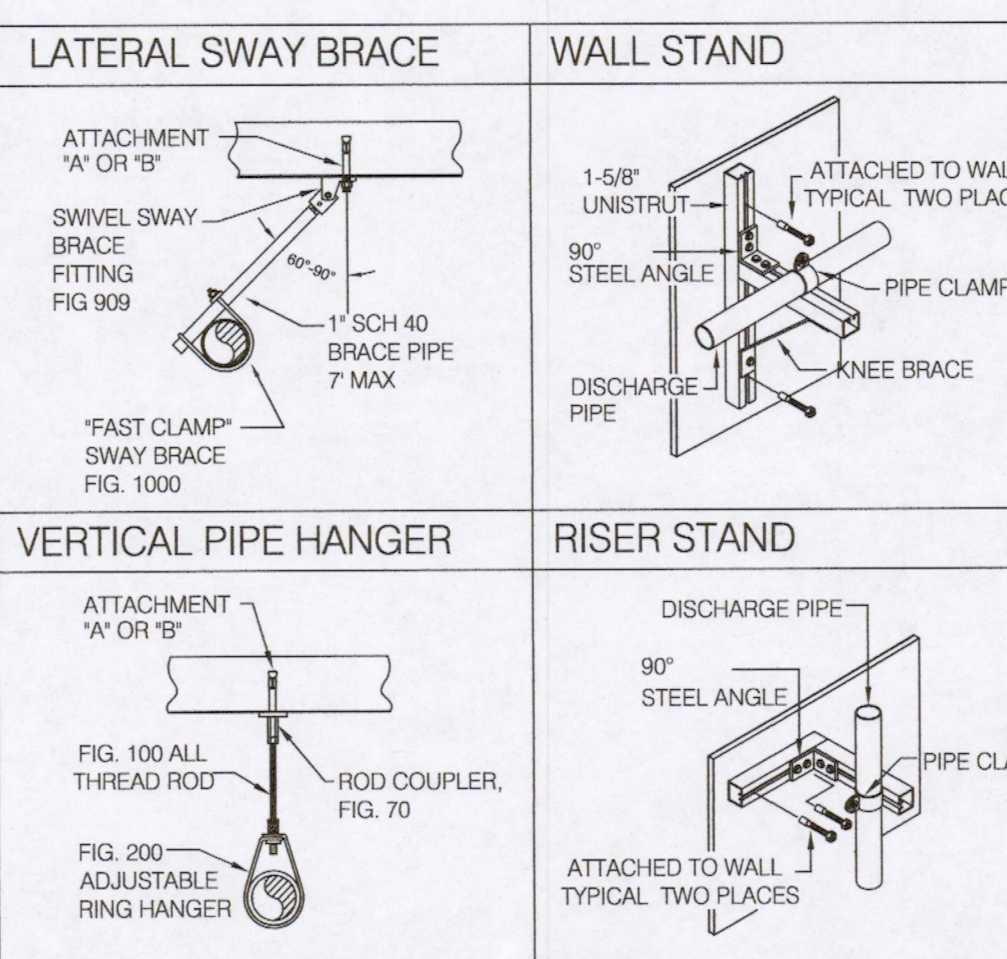
TABLE 1: DISCHARGE NOZZLE PART NUMBERS

NOZZLE SIZE	NOZZLE PART NO.	NOZZLE PART NO.	NOZZLE PART NO.	NOZZLE PART NO.
1/2" NPT	88 7645	88 7646	88 7647	88 7648
3/4" NPT	88 7649	88 7650	88 7651	88 7652
1" NPT	88 7653	88 7654	88 7655	88 7656
1 1/2" NPT	88 7657	88 7658	88 7659	88 7660
2" NPT	88 7661	88 7662	88 7663	88 7664



P1100 Series Pipe Clamps & Design Loads

Part No.	Pipe Size	Strip Thickness	Screw Size	Vertical Force	Horizontal Force	Longitudinal Force
P1111	1/2"	18	1/4"	150	150	200
P1112	3/4"	18	3/8"	200	200	250
P1113	1"	24	1/2"	300	300	400
P1114	1 1/4"	30	5/8"	400	400	500
P1115	1 1/2"	36	3/4"	500	500	600
P1116	2"	42	7/8"	600	600	700
P1117	2 1/2"	48	1"	700	700	800
P1118	3"	54	1 1/8"	800	800	900
P1119	3 1/2"	60	1 1/4"	900	900	1000
P1120	4"	66	1 1/2"	1000	1000	1100
P1121	4 1/2"	72	1 3/8"	1100	1100	1200
P1122	5"	78	1 1/2"	1200	1200	1300
P1123	5 1/2"	84	1 3/4"	1300	1300	1400
P1124	6"	90	1 7/8"	1400	1400	1500
P1125	6 1/2"	96	2"	1500	1500	1600
P1126	7"	102	2 1/8"	1600	1600	1700



NOVEC PIPING NOTES

ALL PIPING SCHEDULE 40 ASTM A53 BLACK STEEL PIPE WITH 300 LB. CLASS THREADED FITTINGS. ALL UNSPECIFIED LENGTHS ARE CLOSE NIPPLES. NO BUSHING REDUCERS ALLOWED.

ALL THREADS USED IN JOINTS AND FITTINGS SHALL CONFORM TO ANSI B1.20.1 STANDARD FOR PIPE THREADS, GENERAL PURPOSE, OR ISOVEC GUIDE 7, REQUIREMENTS FOR STANDARDS SUITABLE FOR USE FOR CONFORMITY ASSESSMENT. JOINT COMPOUND, TAPE, OR THREAD SHALL BE APPLIED ONLY TO THE MALE THREADS OF THE JOINT.

NOVEC PIPE - PER NFPA 2001 EDITION 2012 EACH PIPE SECTION SHALL BE CLEANED INTERNALLY AFTER PREPARATION AND BEFORE ASSEMBLY BY MEANS OF SWABBING, UTILIZING A SUITABLE NONFLAMMABLE CLEANER. THE PIPE NETWORK SHALL BE FREE OF PARTICULATE MATTER AND OIL RESIDUE BEFORE INSTALLATION OF NOZZLES OR DISCHARGE DEVICES.

NOTE: ALL NOZZLE ORIFICES ARE LOCATED 6" TO 12" (+ OR -) FROM THE CEILING AND 6" (+ OR -) FROM THE WALL.

ELBOWS BEFORE OR AFTER A TEE WHICH SPLIT TO A DIFFERENT HAZARD MUST BE SPACED A MINIMUM OF 10 PIPE DIAMETERS (NOMINAL) APART.

BRACING DATA

PIPE SIZE	3/4"	1"	1-1/4"	1-1/2"	2"	2-1/2"	3"
MAXIMUM DISTANCE BETWEEN HANGERS	6-0	7-0	8-0	9-0	10-0	11-0	12-0

UNISTRUT 1-5/8"	BEAM SPAN	UNIFORM BEAM LOAD & DEFLECTION	
		X-AXIS	Y-AXIS
36"	30'	1,350 lbs.	2,107 lbs.
	36"	1,125 lbs.	1,756 lbs.
	48"	855 lbs.	1,317 lbs.

SPRING NUT 3/8"	THREADS	PULLOUT	SLIP RESISTANCE TORQUE	
			19 lb. lbs.	19 lb. lbs.
ROD 3/8"	16	1100 lbs.	800 lbs.	19 lb. lbs.
	610 lbs.			

CITY OF GLENORA
 Building Department
 APPROVED
 By: [Signature]
 JUL 18 2018

COUNTY OF LOS ANGELES
 FIRE DEPARTMENT
 FIRE PREVENTION ENGINEERING
APPROVED
 [Signature]
 Date: 7/10/18

REVISIONS	DATE	BY

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COSCO Fire Protection
 FIRE PROTECTION AND LIFE SAFETY SPECIALISTS
 CALIFORNIA C-16 LIC. # 477621
 1075 W. Lambert Road, Bldg. D
 LOS ANGELES, CA 90061
 www.coscofire.com
 call (714) 995-1800 ext. 7141 995-1818

LICENSED ELECTRICAL CONTRACTOR
 C-10 & C-16
COSCO Fire Protection
 LICENSE NUMBER 57821
 STATE OF CALIFORNIA

PROJECT: CITY OF GLENORA (HALON FIRE SUPPRESSION SYSTEM REPLACEMENT)
 140 GLENORA AVE
 GLENORA, CA 91741

CONTRACTOR: CITY OF GLENORA
 118 E. FOOTHILL BLVD.
 GLENORA, CA 91741

SHEET TITLE: FM-200 PIPING SYSTEM/ DETAILS

NOVEC-1230 CLEAN AGENT SUPPRESSION SYSTEM

DRAWN BY: I.G.
 CHECK BY: R.S.
 APPROVED BY: R.C.
 DATE: 06/27/18
 SCALE: AS NOTED
 JOB NO: 1418132
 SHEET: 3 OF 3

140 S GLENDORA
FIRE SUPPRESSION SYSTEM
(SERVER ROOM-LIBRARY)

B18-1151

140 S. GLENDORA
FIRE SUPPRESSION SYSTEM
(REPLACEMENT)
@ SERVER ROOM-LIBRARY

B18-1151

140 S. GLENDORA

FIRE SUPPRESSION/
SERVER ROOM

18-1151

140 S. GLENDORA

FIRE SUPPRESSION/
SERVER ROOM

18-1151