TriTeK

Fire, Security & Communications

A Subsidiary of TriTek Fire & Security, LLC

The Integration of Technology and Life Safety

FIRE ALARM SYSTEM PROTECTION

SECTION A.10.4.5 OF THE NATIONAL FIRE ALARM CODE HANDBOOK STATES THAT SMOKE DETECTION SHALL BE PROVIDED AT THE LOCATION OF EACH FACP, NAC AND SUPERVISING STATION TRANSMITTING EQUIPMENT TO PROVIDE NOTIFICATION OF FIRE AT THAT LOCATION.

- EXCEPTION #1: WHERE AMBIENT CONDITIONS PROHIBIT INSTALLATION OF AUTOMATIC SMOKE DETECTION, AUTOMATIC HEAT DETECTORS SHALL BE PERMITTED.

SMOKE DETECTOR INSTALLATION LOCATION:

SECTION A.17.4.7 STIPULATES:

- WHERE THE CEILING IS 15ft IN HEIGHT OR LESS, THE SMOKE DETECTOR SHOULD BE LOCATED ON THE CEILING OR THE WALL WITHIN 21ft OF THE CENTERLINE OF THE FIRE ALARM CONTROL UNIT BEING PROTECTED BY THE DETECTOR.
- WHERE THE CEILING EXCEEDS 15ft IN HEIGHT, THE AUTOMATIC SMOKE DETECTOR SHOULD BE INSTALLED ON THE WALL ABOVE AND WITHIN 60in FROM THE TOP OF THE CONTROL UNIT.

SEE DETAIL 1 AND 2 ON F0.1 FOR MORE SMOKE DETECTOR LOCATION REQUIREMENTS.

NOTES

BELOW IS A LIST OF ITEMS THAT SHOULD BE REVIEWED AND/OR COMPLETED PRIOR TO THE ARRIVAL OF A TRITEK TECHNICIAN. PLEASE KEEP IN MIND THAT IF SOME ASPECTS OF SYSTEM TESTING CANNOT BE COMPLETED DURING THE TECHNICIANS SCHEDULED ON SITE DATES (i.e. DEVICES NOT IN PLACE, WIRING PROBLEMS, OR OTHER TRADES NOT ON SITE AS NEEDED TO COMPLETE INTERCONNECTION AND TESTING) IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO NOTIFY TRITEK WHEN THE TECHNICIAN WILL BE REQUIRED BACK ON SITE. PLEASE BE AWARE THAT TRITEK REQUIRES A FIVE (5) BUSINESS DAY NOTIFICATION IN ORDER TO SCHEDULE/RESCHEDULE A TECHNICIAN.

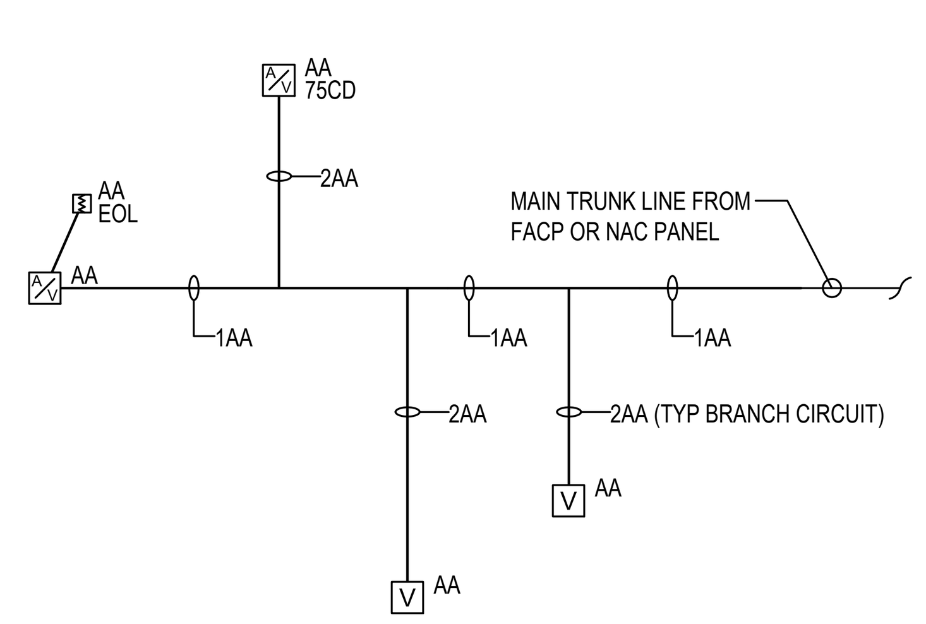
PLEASE REVIEW THE FOLLOWING ITEMS

- ALL EQUIPMENT PROVIDED BY OTHER TRADES THAT NEED TO BE MONITORED OR CONTROLLED BY THE TRITEK EQUIPMENT IS TO BE INSTALLED AND READY FOR TESTING
- PHONE LINES FOR CENTRAL STATION MONITORING INSTALLED AND A MONITORING ACCOUNT SETUP WITH EITHER TRITEK OR OTHER THIRD PARTY. (IF OTHER THAN TRITEK ALL ACCOUNT INFORMATION NEEDS TO BE ON HAND)
- FIRE MARSHALL INSPECTION *(REQUIRES A 5 BUSINESS DAY NOTICE TO TRITEK FOR TECHNICIAN SCHEDULING)*
- DHEC INSPECTION (*REQUIRES A 5 BUSINESS DAY NOTICE TO TRITEK FOR TECHNICIAN SCHEDULING*)
- ELEVATOR INSPECTION (*REQUIRES A 5 BUSINESS DAY NOTICE TO TRITEK FOR TECHNICIAN SCHEDULING*)
- CUSTOMER TRAINING (*REQUIRES A 5 BUSINESS DAY NOTICE TO TRITEK FOR TECHNICIAN SCHEDULING*)

FIRE ALARM DRAWING NOTES

FIRE ALARM DRAWING NOTES:

1. ALL FIRE ALARM SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH APPLICABLE PROVISIONS OF NFPA, FIRE CODE, BUILDING CODE AND ANSI STANDARDS.
2. ALL CONDUIT TO BE ¾" EMT UNLESS NOTED OTHERWISE.
3. FIRE ALARM DEVICES AND MASS NOTIFICATION ALERT DEVICES SHALL BE SYNCHRONIZED.
4. PRIOR TO PROGRAMMING AND ROUGH-IN, COORDINATE ROOM NUMBERS WITH OWNER AND ARCHITECT.
5. VOLTAGE DROP CALCULATIONS ARE BASED ON CONDUIT LOCATIONS SHOWN ON FIRE ALARM DRAWINGS. FINAL CONDUIT LOCATIONS TO BE PROVIDED BY ELECTRICAL CONTRACTOR.
6. JUNCTION BOXES NOT SHOWN FOR CLARITY. JUNCTION BOX LOCATIONS TO BE PROVIDED BY THE ELECTRICAL CONTRACTOR.
7. FIRE ALARM SYSTEM TO BE CLASS 'B' SUPERVISED SYSTEM (STYLE 'B' INITIATING DEVICE CIRCUITS, STYLE 4 SIGNALING LINE CIRCUITS, CLASS 'B' NOTIFICATION APPLIANCE CIRCUITS). FURNISH & INSTALL END-OF-LINE (EOL) RESISTORS WHERE SHOWN ON PLANS.
8. ALL VERTICAL WIRING AND STUB-UPS SHALL BE IN CONDUIT, RUN CONCEALED IN WALLS UP PAST DROP CEILING. ALL HORIZONTAL WIRING SHALL BE PLENUM CABLE, SECURED TO CEILING STRUCTURE BY ACCEPTABLE MEANS PER THE NFPA-70.
9. SMOKE DETECTORS SHALL BE LOCATED AS NEAR THE CENTER OF THE ROOM AS PRACTICAL. DO NOT LOCATE ANY DETECTOR WITHIN 3'-0" OF AN HVAC SUPPLY GRILLE. PROVIDE AUXILIARY CONTACT ON SMOKE DETECTORS LOCATED IN CORRIDORS AT SMOKE DOORS. WIRE MAGNETIC DOOR HOLDERS THRU AUXILIARY CONTACT TO RELEASE DOOR WHEN THOSE DETECTORS ARE ACTUATED.
10. DUCT DETECTORS SHALL BE TURNED OVER TO MECHANICAL CONTRACTOR FOR INSTALLATION. FIRE ALARM SYSTEM WIRING WILL BE BY TRITEK. CONTROL WIRING WILL BE BY THE MECHANICAL CONTRACTOR. PROVIDE AUXILIARY CONTACT ON EACH DUCT DETECTOR FOR DIVISION 23 USE. A RELAY MODULE AND REMOTE TEST STATION MAY NOT BE DISPLAYED ON PLANS FOR CLARITY. REFER TO DETAIL 3/F0.1 FOR INFORMATION.
11. LOCATE MANUAL PULL STATIONS WITHIN 5'-0" OF THE EXIT DOOR PER NFPA AND IBC REQUIREMENTS. PROVIDE ANY SPECIAL ADAPTER PLATES OR COVER PLATES REQ'D TO MOUNT PULL STATIONS IN DOOR MULLIONS WHERE APPLICABLE.
12. EACH HORN / STROBE LOCATED AT THE END OF A CORRIDOR MUST BE WITHIN 15'-0" OF THE END WALL PER NFPA 72. HORN / STROBES IN CLASSROOMS AND OFFICES MUST BE ROUGHLY CENTERED ON WALL PER NFPA 72. DO NOT ADJUST THE LOCATIONS OF ANY HORN / STROBES WITHOUT CONSULTING THE ENGINEER AND OBTAINING WRITTEN PERMISSION.
13. FIELD VERIFY LOCATION OF FIRE ALARM CONTROL PANEL "FACP" AND FIRE ALARM ANNUNCIATOR PANELS "FAAP" WITH OWNER AND AUTHORITY HAVING JURISDICTION PRIOR TO ROUGH-IN.
14. LETTERS "I" AND "O" ARE NOT USED IN SCHEDULES DUE TO CONFLICTS WITH NUMBERS THAT LOOK SIMILAR.
15. PER NFPA 72 (2019), 17.4.3 STATES: INITIATING DEVICES SHALL BE INSTALLED IN A MANNER THAT PROVIDES ACCESSIBILITY FOR PERIODIC INSPECTION, TESTING, AND MAINTENANCE.
16. ALL NOTIFICATION APPLIANCES ARE SUPERVISED, THEREFORE REQUIRING A FULL CIRCUIT BETWEEN DEVICES UP UNTIL THE LAST DEVICE WHERE THE END OF LINE RESISTER IS GENERALLY LOCATED. WIRE PATHS THAT ARE BRANCHED OFF FROM THE MAIN TRUNK LINE AND ARE NOT LABELED WITH A CIRCUIT TAG ARE ASSUMED TO HAVE (2) PAIRS OF WIRE IN THE WIRE PATH. SEE EXAMPLE BELOW: (SYMBOLS SHOWN ON EXAMPLE MAY NOT REFLECT EXACT SYMBOLS SHOWN ON PLANS).



OPERATION SEQUENCE MATRIX

OPERATING SEQUENCE MATRIX

SYSTEM INPUTS		A: DISPLAY MESSAGE ON FACP LCD	B: ACTIVATE ALL HORN/STROBE DEVICES	C: ACTIVATE TROUBLE SIGNAL ON THE FACP	D: ACTIVATE SUPERVISORY SIGNAL ON THE FACP	E: ACTIVATE ALARM SIGNAL ON THE FACP	F: ACTIVATE HVAC SHUTDOWN
1	MANUAL PULL STATION	●	●			●	●
2	SMOKE DETECTOR	●	●			●	●
3	HEAT DETECTOR	●	●			●	●
4	DUCT SMOKE DETECTOR	●	●			●	●
5	CO DETECTOR	●			●		
6	SPRINKLER TAMPER	●			●		
7	SPRINKLER WATER FLOW	●	●			●	●
8	OPEN CIRCUIT SLC/IDC (TROUBLE)	●		●			
9	OPEN CIRCUIT - NAC (TROUBLE)	●		●			
10	GROUND FAULT (TROUBLE)	●		●			
11	WIRE TO WIRE SHORT (TROUBLE)	●		●			
12	REMOVAL OF DEVICE (TROUBLE)	●		●			
13	FACP TROUBLE	●		●			
14	LOSS OF FIRE ALARM SYSTEM 120V OPERATING POWER	●		●			

SYSTEM OUTPUTS

SCHEDULES

BACKBOX SCHEDULE

DEVICE TYPE	PART #	MOUNT	BACKBOX	QTY.
FACP	ES-200X	SURFACE	INCLUDED	1
FAAP	ANN-80	FLUSH	SINGLE GANG	1
HORN/STROBE	P2RLED	WALL	4"x4"x1½"	1
HORN/STROBE	PC2RLED	CEILING	4"x4"x1½"	19
STROBE	SCRLED	CEILING	4"x4"x1½"	8
SMOKE DETECTOR	SD365	CEILING	3.5" OCTAGON	1
PULL STATION	BG-12LX	SURFACE	SINGLE GANG	4
RELAY MODULE	CRF-300	SURFACE	4"x4"x1½" **	7
MONITOR MODULE	MDF-300	SURFACE	4"x4"x1½" **	3
REMOTE INDICATOR	RA100Z	CEILING	SINGLE GANG	7

BACKBOX NOTES:

* = PROVIDE PLASTER RING
** = PROVIDE WITH EXTENSION OR 2⅛" BOX

WIRE LEGEND

LABEL	DESCRIPTION	PANEL	USE
A	18-02 SOL UNS FPLP	FACP	SLC
B	18-04 SOL UNS FPLP	FAAP	PWR/DATA
AA	14-02 SOL UNS FPLP	FACP	NAC #1
AB	14-02 SOL UNS FPLP	FACP	NAC #2
AC	14-02 SOL UNS FPLP	FACP	NAC #3

LEGENDS

DEVICE LEGEND

SYMBOL	DESCRIPTION
FACP	FIRE ALARM CONTROL PANEL
FAAP	FIRE ALARM ANNUNCIATOR PANEL
NAC	FIRE ALARM REMOTE POWER SUPPLY PANEL
SD	SMOKE DETECTOR
HD	HEAT DETECTOR
DD	DUCT DETECTOR
F	PULL STATION
XX	AUDIO / VISUAL INDICATING DEVICE - WALL MOUNT
A/V XX	AUDIO / VISUAL INDICATING DEVICE - CEILING MOUNT
XX	VISUAL ONLY INDICATING DEVICE - WALL MOUNT
V XX	VISUAL ONLY INDICATING DEVICE - CEILING MOUNT
M T,F,P	MONITOR MODULE (T = TAMPER, F = FLOW, P = PRESSURE)
C	CONTROL MODULE
R	RELAY MODULE
I	ISOLATION MODULE
T	REMOTE INDICATOR WITH TEST STATION (KEYED) FOR DUCT DETECTOR
I	REMOTE INDICATOR FOR DUCT DETECTOR
DH	DOOR HOLDER
J	JUNCTION BOX (HORIZONTAL WIRING)
J	JUNCTION BOX (VERTICAL WIRING / RISER)
	END OF LINE (EOL) RESISTOR
	REPRESENTS WIRE OR CIRCUIT GOING "OUT"
	REPRESENTS WIRE OR CIRCUIT COMING "IN"

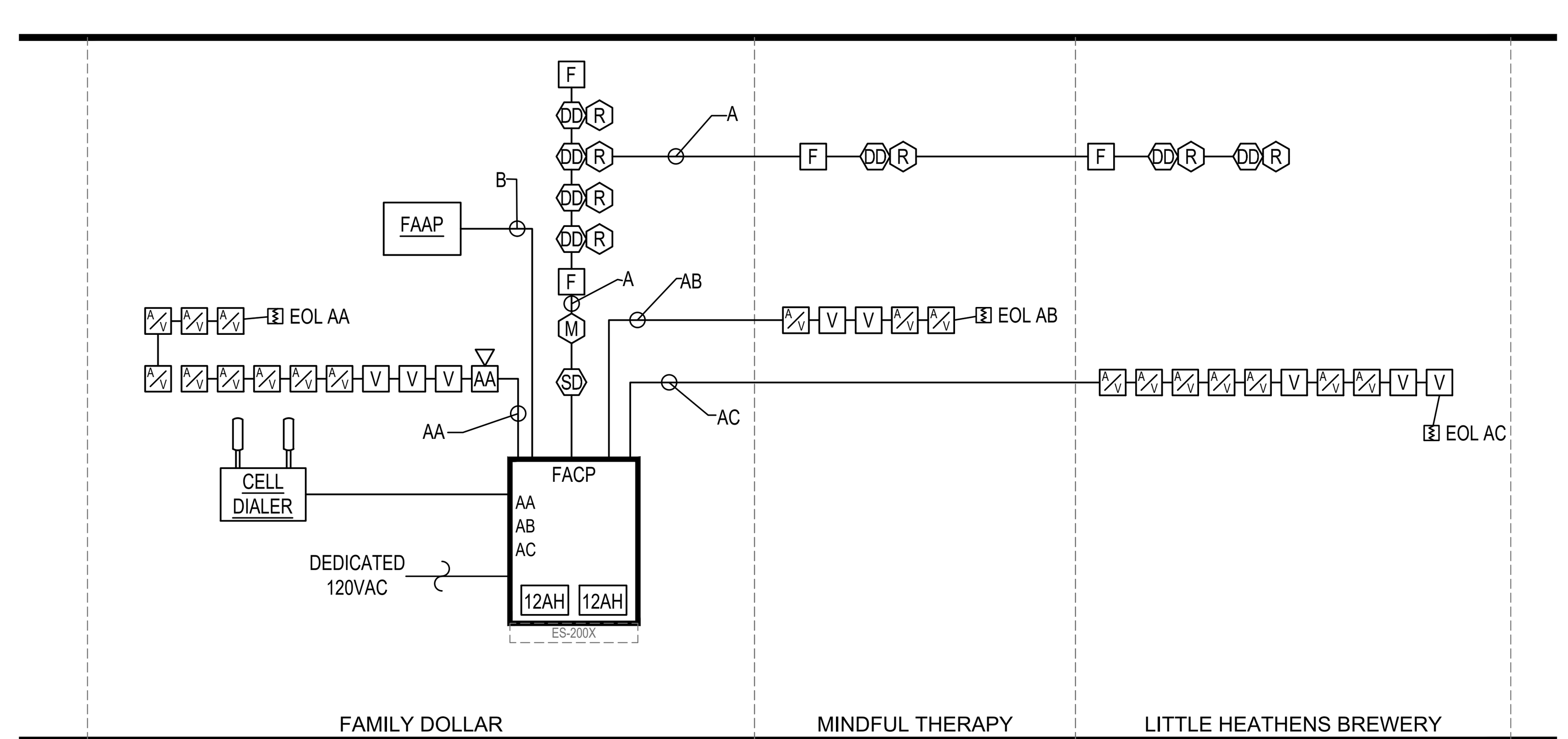
DEVICE LEGEND NOTES:

1. SEE DETAIL 1/F0.1 FOR TYPICAL MOUNTING HEIGHTS.
2. SEE F0.1 FOR STANDARD WIRING & INSTALLATION DETAILS.
3. ALL VISUAL NOTIFICATION DEVICES SHALL HAVE A 15 CANDELA RATING UNLESS SHOWN OTHERWISE ON PLANS (i.e. 30cd, 75cd, etc...).
4. "XX" SHOWN ON NOTIFICATION APPLIANCES NOTATES NAC CIRCUIT, SEE WIRE LEGEND FOR LIST OF CIRCUITS.

ABBREVIATIONS

A / O	AUDIO / ONLY
A / V	AUDIO / VISUAL
ADA	AMERICANS WITH DISABILITES ACT
ADJ	ADJACENT
AFF	ABOVE FINISHED FLOOR
AHU	AIR HANDLING UNIT
ALT	ALTERNATIVE
ANNUN	ANNUNCIATOR
APPROX	APPROXIMATE
ARCH	ARCHITECT
BLDG	BUILDING
BTM	BOTTOM
CCTV	CLOSED CIRCUIT TELEVISION
℄	CENTER LINE
CLG	CEILING
CM	CONTROL MODULE
CONN	CONNECTION
CONST	CONSTRUCTION
CONT	CONTINUOUS
COORD	COORDINATE
CTL	CONTROL
DC	DOOR CONTACT
DD	DUCT DETECTOR
DEMO	DEMOLITION
DH	DOOR HOLDER
DWG	DRAWING
EA	EACH
EC	ELECTRICAL CONTRACTOR
ELEC	ELECTRICAL
ELEV	ELEVATOR
ENGR	ENGINEER
EQ	EQUAL
ES	EACH SIDE
EW	EACH WAY
EXIST	EXISTING
EXT	EXTERIOR
FAAP	FIRE ALARM ANNUNCIATOR PANEL
FACP	FIRE ALARM CONTROL PANEL
FAEP	FIRE ALARM EVACUATION PANEL
FE	FIRE EXTINGUISHER
FLR	FLOOR
FP	FIRE PROTECTION
FT	FOOT / FEET
GA	GAGE
GC	GENERAL CONTRACTOR
HD	HEAT DETECTOR
HORIZ	HORIZONTAL
HR	HOUR
HT	HEIGHT
HVAC	HEATING, VENTILATING AND AIR CONDITIONING
INFO	INFORMATION
INSUL	INSULATION
INT	INTERIOR
LOC	LOCATED / LOCATION
MAX	MAXIMUM
MC	MECHANICAL CONTRACTOR
MD	MOTION DETECTOR
MFR	MANUFACTURER
MIN	MINIMUM
MISC	MISCELANEOUS
MM	MONITOR MODULE
MS	MOTION SENSOR
N / A	NOT APPLICABLE
NAC	NOTIFICATION APPLIANCE CIRCUIT
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
NIC	NOT IN CONTRACT
NTS	NOT TO SCALE
OPP	OPPOSITE
PNL	PANEL
REQ'D	REQUIRED
REV	REVISE / REVISION
RM	ROOM
RTU	ROOF TOP UNIT
SCHED	SCHEDULE
SD	SMOKE DETECTOR
SHT	SHEET
SIM	SIMILAR
SLC	SIGNALING LINE CIRCUITS
SPECS	SPECIFICATIONS
SPKR	SPEAKER
TEMP	TEMPORARY
TV	TELEVISION
TYP	TYPICAL
UNO	UNLESS NOTED OTHERWISE
V / O	VISUAL ONLY
VERT	VERTICAL
VIF	VERIFY IN FIELD
WG	WIRE GUARD
WP	WEATHER PROOF
W /	WITH
W / O	WITH OUT
&	AND
@	AT

FIRE ALARM RISER DIAGRAM



DRAWING INDEX

TRITEK PROJECT TEAM

ENGINEERING MANAGER
JAMES ADAMS

SALES PERSON
JIMMY RUSS

SYSTEM DESIGNER
EDDIE STEVENS (NICET 4 - #98485)

FOR REVIEW

CURRENT PHASE:
☐ PROGRAMMING ☒ SUBMITTAL ☐ ROUGH-IN ☐ INSTALL
☐ PUNCH LIST ☐ AS BUILT ☐ INSPECTION
PRINTED: XX/XX/XX RETURNED: XX/XX/XX TECHNICIAN: XX

NO.	REVISION	DATE	BY

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DocuSigned by: Robby Locklear
A6802EA21F9A4D5...
NORTH CAROLINA PROFESSIONAL SEAL 028880 12/10/2024 ENGINEER ROBBY LOCKLEAR

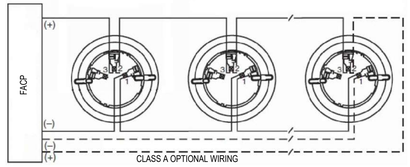
3266 RAY ROAD
SPRING LAKE, NORTH CAROLINA

FIRE ALARM TITLE PAGE & RISER

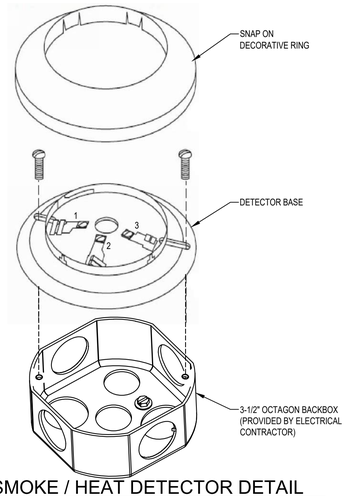
DRAWN BY: JA
CHECKED BY: ES
PROJECT NUMBER: 30784
DATE 12-10-24

F0.0

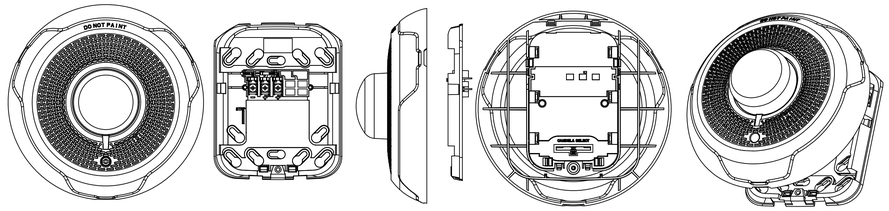
TYPICAL WIRING DIAGRAM FOR 2-WIRE LOOP



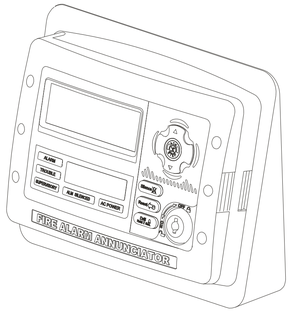
NOTES:
1. NO EOL RESISTOR REQUIRED FOR SLC APPLICATION.
2. EOL REISISTOR REQUIRED FOR HARD WIRE APPLICATION.
3. DO NOT LOOP WIRE UNDER TERMINAL 1 OR 2. BREAK WIRE RUN TO PROVIDE SUPERVISION OF CONNECTIONS.



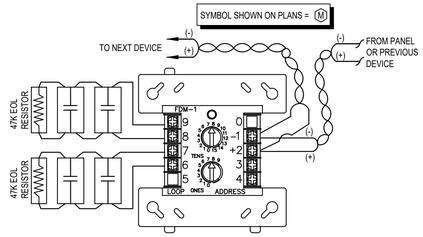
7 F0.1 SMOKE / HEAT DETECTOR DETAIL
SCALE: NO SCALE



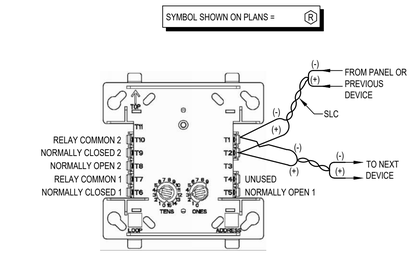
9 F0.1 NOTIFICATION APPLIANCE DETAIL - CEILING STROBE
SCALE: NO SCALE



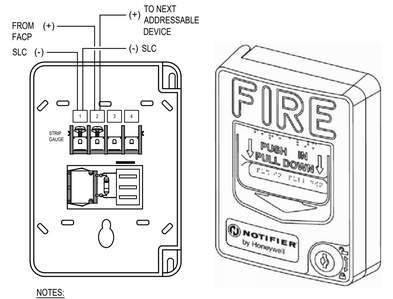
6 F0.1 ANNUNCIATOR
SCALE: NO SCALE



5 F0.1 DUAL MONITOR MODULE (MDF-300)
SCALE: NO SCALE



8 F0.1 RELAY MODULE (CRF-300)
SCALE: NO SCALE



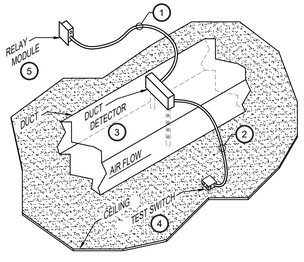
NOTES:
1. REFER TO DETAIL 1/F0.1 FOR MOUNTING HEIGHTS.

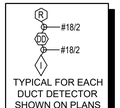
4 F0.1 BG-12LX - PULL STATION DETAIL
SCALE: NO SCALE

KEY NOTE SCHEDULE

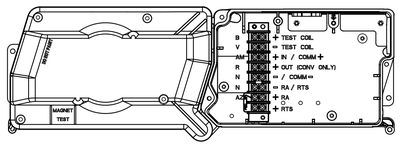
SYMBOL	DESCRIPTION
1	#18 / 2 WIRE (SLC) IN ¾" CONDUIT.
2	(2) #18 / 2 WIRE IN ¾" CONDUIT (TEST STATION), OR #18 / 2 WIRE IN 3/4" CONDUIT (REMOTE INDICATOR)
3	DUCT DETECTOR MOUNTED IN MECHANICAL DUCTWORK. SEE MECHANICAL DRAWINGS FOR INSTALLATION INFORMATION.
4	TEST SWITCH WITH INDICATOR LIGHT. SEE PLANS FOR MOUNTING LOCATION (CEILING, WALL).
5	RELAY MODULE INSTALLED BY MECH. (TO BE WITHIN 3'-0" FROM DUCT DETECTOR).

NOTES:
1. REFER TO FIRE ALARM DRAWINGS FOR LOCATION AND QUANTITY OF DUCT DETECTORS.
2. REFER TO PLANS FOR SPECIFIED COMBINATIONS (DUCT DETECTOR + TEST SWITCH, DUCT DETECTOR + TEST SWITCH + RELAY MODULE)
3. DUCT DETECTOR TO BE INSTALLED BY MECHANICAL CONTRACTOR.

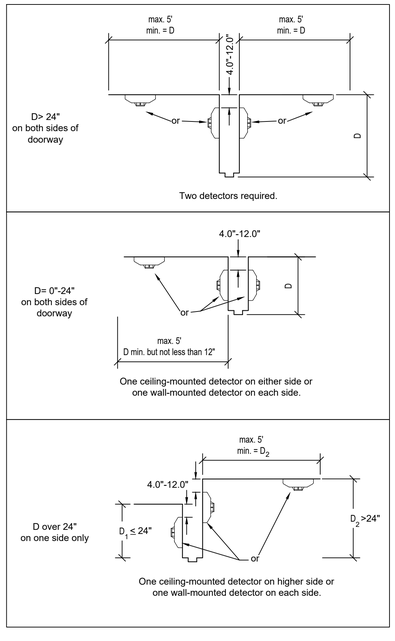




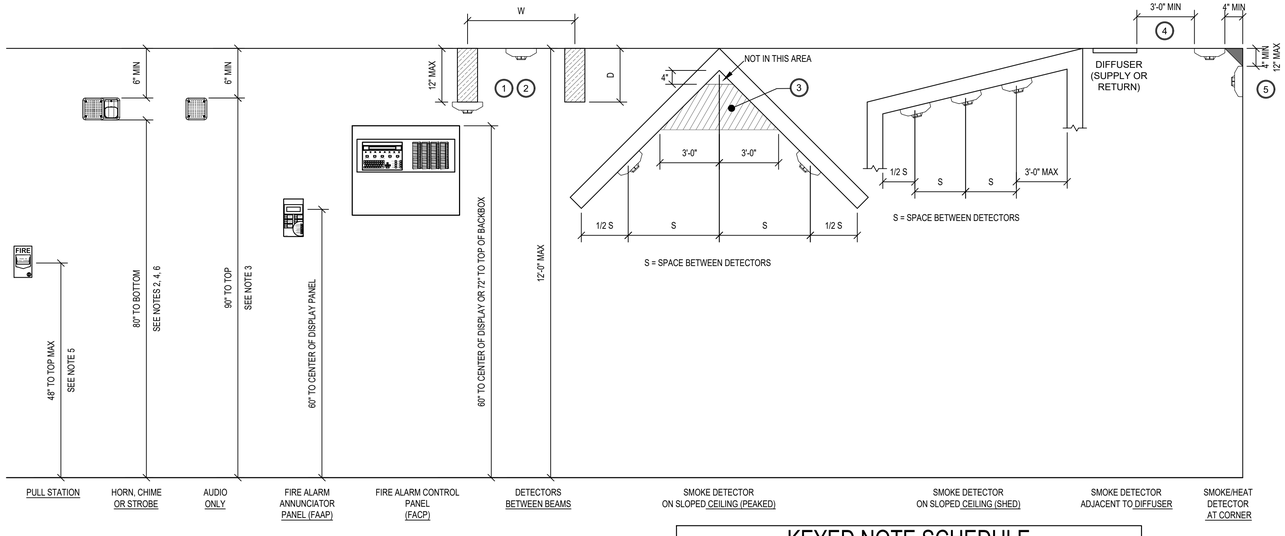
TYPICAL FOR EACH DUCT DETECTOR SHOWN ON PLANS



3 F0.1 NOTIFIER DNR - DUCT DETECTOR WIRING DETAIL
SCALE: NO SCALE



2 F0.1 DETECTOR LOCATION REQUIREMENTS FOR WALL SECTIONS
SCALE: NO SCALE



FIRE ALARM DEVICE MOUNTING NOTES:

1. ALL MOUNTING HEIGHTS SHOWN ARE TYPICAL UNLESS NOTED OTHERWISE ON PLANS.
2. VISUAL UNIT (NOTIFICATION): DEVICE 80" ABOVE HIGHEST FLOOR LEVEL OR 6" BELOW CEILING, WHICHEVER IS LOWER (ADA 1993). BOTTOM OF DEVICE 80 AFF (NFPA).
3. AUDIO UNIT (NOTIFICATION): TOP OF UNIT AT LEAST 90" AFF OR 6" BELOW CEILING, WHICH EVER IS LOWER (NFPA).
4. AUDIO / VISUAL UNIT (NOTIFICATION): LOCATION DETERMINED BY VISUAL UNIT REQUIRMENTS (NFPA).
5. PULL STATION (ACTIVATION): HIGHEST OPERABLE PART SHALL NOT BE MORE THAN 48" ABOVE THE FLOOR (FRONT APPROACH) ADA 1993. OPERABLE PART (T-HANDLE) SHALL BE NOT LESS THAN 42" AFF (NFPA).
6. WHERE LOW CEILING HEIGHTS DO NOT PERMIT WALL MOUNTING AT A MINIMUM OF 80", WALL MOUNTED VISIBLE APPIANCES SHALL BE MOUNTED WITHIN 6" OF THE CEILING. (2016 NFPA 72 18.5.5.2)

KEYED NOTE SCHEDULE

MARK	DESCRIPTION
1	LOCATE SMOKE DETECTORS AT BOTTOM OF BEAMS (OR JOISTS) OR AT CEILING. (REDUCE SPACING BY .5 PERPENDICULAR TO BEAM OR JOIST DIRECTION). PER NFPA 72-2016 17.6.3.3.2
2	LOCATE HEAT DETECTORS AT BOTTOM OF BEAMS IF EITHER D/H < .1 OR W/H < .4: OTHERWISE LOCATE IN BEAM POCKET.
3	LOCATE SMOKE DETECTOR ANYWHERE IN SHADED AREA. PER NFPA 72-2016 17.6.3.4
4	PER NFPA 72-2016 A.17.7.4.1
5	PER NFPA 72-2016 17.7.3.2.1

1 F0.1 TYPICAL FIRE ALARM MOUNTING DETAILS
SCALE: NO SCALE

FOR REVIEW

CURRENT PHASE:
☐ PROGRAMMING
☒ SUBMITTAL
☐ PUNCH LIST
PRINTED: XX/XX/XX

☐ ROUGH-IN
☐ AS BUILT
RETURNED: XX/XX/XX

☐ INSTALL
☐ INSPECTION
TECHNICIAN: XX

NO.	REVISION	DATE	BY

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The Integration of Technology and Life Safety

3266 RAY ROAD
SPRING LAKE, NORTH CAROLINA

FIRE ALARM DETAILS

DRAWN BY: JA
CHECKED BY: ES
PROJECT NUMBER: 30784
DATE 12-10-24

F0.1
DRAWING NO 2 OF 4

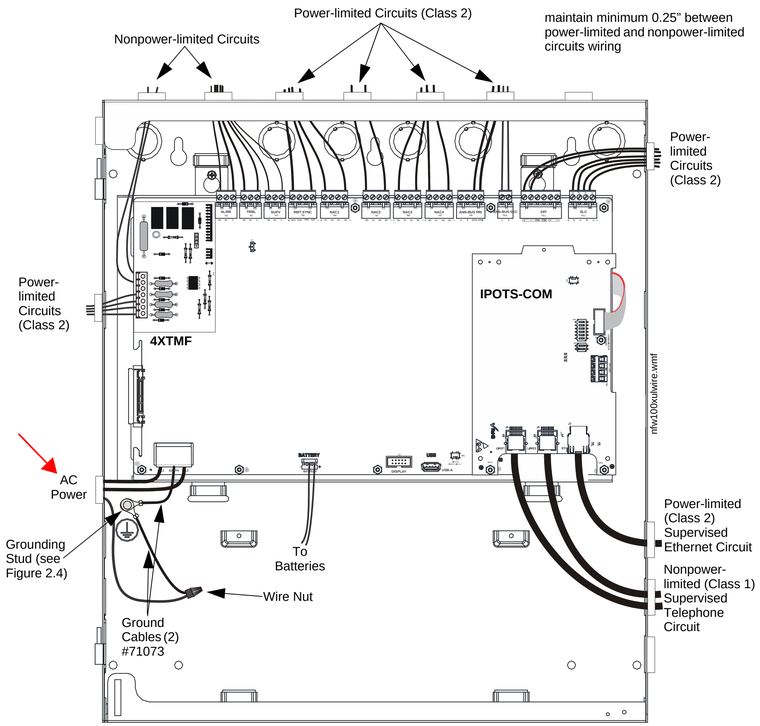
FACP BATTERY CALCULATIONS

Project #: 30784	Project Name: 3266 RAY ROAD							Date: 12/10/2024
Panel Label: FACP	Model Number: ES-200X							Calculations provided by Tritek Fire & Security
Standby Hours: 24	Alarm Minutes: 5							
Device Type	STANDBY CURRENT PER UNIT (AMPS)		QTY		TOTAL STANDBY CURRENT PER ITEM	ALARM CURRENT PER UNIT (AMPS)		QTY		TOTAL ALARM CURRENT PER ITEM
ES-200X	0.18100	x	1	=	0.18100	0.29800	x	1	=	0.29800
STARLINK	0.10000	x	1	=	0.10000	0.20000	x	1	=	0.20000
N-ANN-80	0.01500	x	1	=	0.01500	0.04000	x	1	=	0.04000
MAX SLC	0.00000	x	1	=	0.00000	0.40000	x	1	=	0.40000
P2RLED75	0.00000	x	1	=	0.00000	0.08700	x	1	=	0.08700
PC2RLED15	0.00000	x	8	=	0.00000	0.03500	x	8	=	0.28000
PC2RLED30	0.00000	x	2	=	0.00000	0.03800	x	2	=	0.07600
PC2RLED75	0.00000	x	9	=	0.00000	0.08700	x	9	=	0.78300
SCRLED15	0.00000	x	8	=	0.00000	0.01800	x	8	=	0.14400
	0.00000	x	0	=	0.00000	0.00000	x	0	=	0.00000
				TOTAL SYSTEM STANDBY CURRENT (AMPS)	0.2960				TOTAL SYSTEM ALARM CURRENT (AMPS)	2.3080

REQUIRED STANDBY TIME (HRS) NFPA 72		TOTAL SYSTEM STANDBY CURRENT (AMPS)		REQUIRED STANDBY CAPACITY (AMP-HOURS)	REQUIRED ALARM TIME (HOURS) NFPA 72		TOTAL SYSTEM ALARM CURRENT (AMPS)		REQUIRED ALARM CAPACITY (AMP-HOURS)
24	x	0.2960	=	7.1040	0.083	x	2.3080	=	0.1916

REQUIRED STANDBY CAPACITY (AMP-HOURS)		REQUIRED ALARM CAPACITY (AMP-HOURS)		TOTAL CAPACITY (AMP-HOURS)		SAFETY FACTOR		ADJUSTED BATTERY CAPACITY (AMP-HOURS)
7.10	+	0.1916	=	7.2956	x	120%	=	8.755

BATTERY SUPPLIED FOR PROJECT: 12AH



2 PANEL DETAILS
F0.2 SCALE: NO SCALE

VOLTAGE DROP CALCULATIONS

Project #: 30784	Project Name: 3266 RAY ROAD							Date: 12/10/2024	Calculations provided by Tritek Fire & Security		
Panel Label: FACP	Model #: ES-200X							Point to Point Method	End of Line Method		Load Centering Method
Circuit Number as noted on drawings: AA	Location of Circuit: FAMILY DOLLAR							CIRCUIT IS WITHIN LIMITS	CIRCUIT IS WITHIN LIMITS		CIRCUIT IS WITHIN LIMITS
Total Amp Per Ckt: 2 Amps								Totals: Current 0.935, Distance 571, Voltage Drop 1.66	Totals: Current 0.935, Distance 571, Voltage Drop 1.348		Totals: Current 0.935, Distance 571, Voltage Drop 1.348
Nominal System Voltage: 20.4 Volts								End of Line Voltage 18.74	End of Line Voltage 19.05		End of Line Voltage 19.05
Minimum Device Voltage: 16 Volts								Percent Drop 8.13%	Percentage Drop 6.61%		Percentage Drop 6.61%
Total Circuit Current: 0.935 Amps								End of Line and Load Centering Methods use only the wire guage for the first device to source			
Distance from source to 1st device: 55 Ft								Standard Wire Resistance in Ohms per 1000 feet.			
Standby: 24 Hours								18=6.385 16=4.016 14=2.525 12=1.59 10=0.99			
Alarm: 5 Minutes								18-14 Awg = Solid Conductors 12-10 Awg = Stranded Conductors			
Wire Gauge for balance of circuit: 14								Notes: Wire resistance is doubled in the calculations for two wires (Positive and Negative). The voltage calculated to the last device in any method must not be lower than the manufacturers listed minimum operating voltage (IE: rated operating voltage 20-32 VDC).			

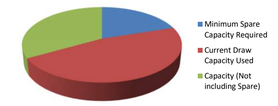
Wire Gauge	Ohm's Per 1000
14	2.525
14	2.525

Enter current in amps .150 = 150 ma

Device Number	Part Number	Candela	Device Current	Distance from previous device	Voltage: At Device	Voltage: Drop from source	Voltage: Percent Drop
Device 1	P2RLED	75	0.087	55	20.14	0.260	1.27%
Device 2	SCRLED	15	0.018	75	19.82	0.581	2.85%
Device 3	SCRLED	15	0.018	20	19.74	0.665	3.26%
Device 4	SCRLED	15	0.018	25	19.63	0.767	3.76%
Device 5	PC2RLED	75	0.087	45	19.45	0.948	4.64%
Device 6	PC2RLED	75	0.087	45	19.29	1.108	5.43%
Device 7	PC2RLED	75	0.087	45	19.15	1.249	6.12%
Device 8	PC2RLED	75	0.087	40	19.04	1.357	6.65%
Device 9	PC2RLED	75	0.087	45	18.94	1.458	7.15%
Device 10	PC2RLED	75	0.087	45	18.86	1.540	7.55%
Device 11	PC2RLED	75	0.087	40	18.81	1.595	7.82%
Device 12	PC2RLED	75	0.087	45	18.76	1.637	8.02%
Device 13	PC2RLED	75	0.087	45	18.74	1.659	8.13%
Device 14	EOL 4.7K		0.011	1	18.74	1.659	8.13%
None					18.74	1.659	8.13%
None					18.74	1.659	8.13%
None					18.74	1.659	8.13%
None					18.74	1.659	8.13%
None					18.74	1.659	8.13%
None					18.74	1.659	8.13%
		Totals:	0.935	571	End of Line Voltage		18.74

Spare Capacity

Minimum Spare Capacity Required	20%
Current Draw Capacity Used	47%
Capacity (Not including Spare)	33%



VOLTAGE DROP CALCULATIONS

Project #: 30784	Project Name: 3266 RAY ROAD							Date: 12/10/2024	Calculations provided by Tritek Fire & Security		
Panel Label: FACP	Model #: ES-200X							Point to Point Method	End of Line Method		Load Centering Method
Circuit Number as noted on drawings: AB	Location of Circuit: MINDFUL THERAPY							CIRCUIT IS WITHIN LIMITS	CIRCUIT IS WITHIN LIMITS		CIRCUIT IS WITHIN LIMITS
Total Amp Per Ckt: 2 Amps								Totals: Current 0.158, Distance 266, Voltage Drop 0.16	Totals: Current 0.158, Distance 266, Voltage Drop 0.106		Totals: Current 0.158, Distance 266, Voltage Drop 0.106
Nominal System Voltage: 20.4 Volts								End of Line Voltage 20.24	End of Line Voltage 20.29		End of Line Voltage 20.29
Minimum Device Voltage: 16 Volts								Percent Drop 0.79%	Percentage Drop 0.52%		Percentage Drop 0.52%
Total Circuit Current: 0.158 Amps								End of Line and Load Centering Methods use only the wire guage for the first device to source			
Distance from source to 1st device: 130 Ft								Standard Wire Resistance in Ohms per 1000 feet.			
Standby: 24 Hours								18=6.385 16=4.016 14=2.525 12=1.59 10=0.99			
Alarm: 5 Minutes								18-14 Awg = Solid Conductors 12-10 Awg = Stranded Conductors			
Wire Gauge for balance of circuit: 14								Notes: Wire resistance is doubled in the calculations for two wires (Positive and Negative). The voltage calculated to the last device in any method must not be lower than the manufacturers listed minimum operating voltage (IE: rated operating voltage 20-32 VDC).			

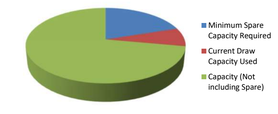
Wire Gauge	Ohm's Per 1000
14	2.525
14	2.525

Enter current in amps .150 = 150 ma

Device Number	Part Number	Candela	Device Current	Distance from previous device	Voltage: At Device	Voltage: Drop from source	Voltage: Percent Drop
Device 1	PC2RLED	15	0.035	130	20.30	0.104	0.51%
Device 2	SCRLED	15	0.018	25	20.28	0.119	0.58%
Device 3	SCRLED	15	0.018	25	20.27	0.132	0.65%
Device 4	PC2RLED	30	0.038	45	20.25	0.152	0.75%
Device 5	PC2RLED	30	0.038	40	20.24	0.162	0.79%
Device 6	EOL 4.7K	1	0.011	1	20.24	0.162	0.79%
None					20.24	0.162	0.79%
None					20.24	0.162	0.79%
None					20.24	0.162	0.79%
None					20.24	0.162	0.79%
None					20.24	0.162	0.79%
None					20.24	0.162	0.79%
None					20.24	0.162	0.79%
None					20.24	0.162	0.79%
None					20.24	0.162	0.79%
None					20.24	0.162	0.79%
None					20.24	0.162	0.79%
None					20.24	0.162	0.79%
None					20.24	0.162	0.79%
None					20.24	0.162	0.79%
None					20.24	0.162	0.79%
		Totals:	0.158	266	End of Line Voltage		20.24

Spare Capacity

Minimum Spare Capacity Required	20%
Current Draw Capacity Used	8%
Capacity (Not including Spare)	72%



VOLTAGE DROP CALCULATIONS

Project #: 30784	Project Name: 3266 RAY ROAD							Date: 12/10/2024	Calculations provided by Tritek Fire & Security		
Panel Label: FACP	Model #: ES-200X							Point to Point Method	End of Line Method		Load Centering Method
Circuit Number as noted on drawings: AC	Location of Circuit: LITTLE HEATHENS BREWERY							CIRCUIT IS WITHIN LIMITS	CIRCUIT IS WITHIN LIMITS		CIRCUIT IS WITHIN LIMITS
Total Amp Per Ckt: 2 Amps								Totals: Current 0.310, Distance 446, Voltage Drop 0.47	Totals: Current 0.310, Distance 446, Voltage Drop 0.349		Totals: Current 0.310, Distance 446, Voltage Drop 0.349
Nominal System Voltage: 20.4 Volts								End of Line Voltage 19.93	End of Line Voltage 20.05		End of Line Voltage 20.05
Minimum Device Voltage: 16 Volts								Percent Drop 2.30%	Percentage Drop 1.71%		Percentage Drop 1.71%
Total Circuit Current: 0.310 Amps								End of Line and Load Centering Methods use only the wire guage for the first device to source			
Distance from source to 1st device: 145 Ft								Standard Wire Resistance in Ohms per 1000 feet.			
Standby: 24 Hours								18=6.385 16=4.016 14=2.525 12=1.59 10=0.99			
Alarm: 5 Minutes								18-14 Awg = Solid Conductors 12-10 Awg = Stranded Conductors			
Wire Gauge for balance of circuit: 14								Notes: Wire resistance is doubled in the calculations for two wires (Positive and Negative). The voltage calculated to the last device in any method must not be lower than the manufacturers listed minimum operating voltage (IE: rated operating voltage 20-32 VDC).			

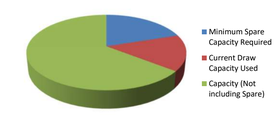
Wire Gauge	Ohm's Per 1000
14	2.525
14	2.525

Enter current in amps .150 = 150 ma

Device Number	Part Number	Candela	Device Current	Distance from previous device	Voltage: At Device	Voltage: Drop from source	Voltage: Percent Drop
Device 1	PC2RLED	15	0.035	145	20.17	0.227	1.11%
Device 2	PC2RLED	15	0.035	45	20.11	0.289	1.42%
Device 3	PC2RLED	15	0.035	40	20.06	0.338	1.66%
Device 4	PC2RLED	15	0.035	35	20.03	0.374	1.83%
Device 5	PC2RLED	15	0.035	40	19.99	0.408	2.00%
Device 6	SCRLED	15	0.018	30	19.97	0.429	2.10%
Device 7	PC2RLED	15	0.035	30	19.95	0.447	2.19%
Device 8	PC2RLED	15	0.035	30	19.94	0.459	2.25%
Device 9	SCRLED	15	0.018	25	19.94	0.465	2.28%
Device 10	SCRLED	15	0.018	25	19.93	0.469	2.30%
Device 11	EOL 4.7K	1	0.011	1	19.93	0.469	2.30%
None					19.93	0.469	2.30%
None					19.93	0.469	2.30%
None					19.93	0.469	2.30%
None					19.93	0.469	2.30%
None					19.93	0.469	2.30%
None					19.93	0.469	2.30%
None					19.93	0.469	2.30%
None					19.93	0.469	2.30%
None					19.93	0.469	2.30%
		Totals:	0.310	446	End of Line Voltage		19.93

Spare Capacity

Minimum Spare Capacity Required	20%
Current Draw Capacity Used	15%
Capacity (Not including Spare)	65%



1 CALCULATIONS
F0.2 SCALE: NO SCALE

FOR REVIEW
CURRENT PHASE: ☐ PROGRAMMING ☐ SUBMITTAL ☐ PUNCH LIST ☐ RETURNED ☐ INSTALL ☐ INSPECTION ☐ ROUGH-IN ☐ AS BUILT
PRINTED: XX/XX/XX XX/XX/XX XX/XX/XX TECHNICIAN: XX
NO. REVISION DATE BY

TriTeK
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The Integration of Technology and Life Safety
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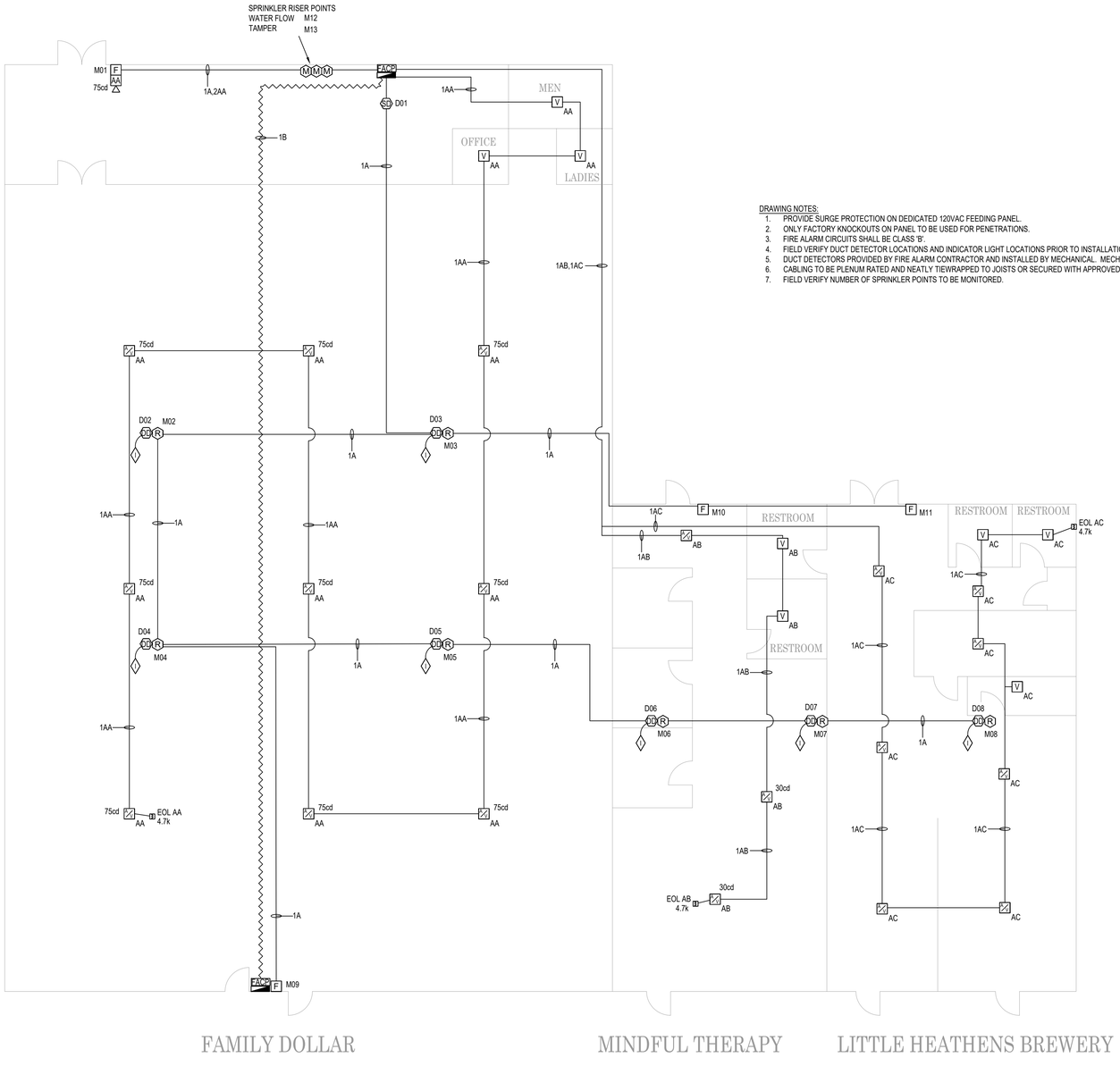
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 028880 Kathy Taylor 12/10/2024 Registered Professional Engineer ROBERT LOCKLEAR

3266 RAY ROAD
SPRING LAKE, NORTH CAROLINA
PANEL AND CALCULATIONS

DRAWN BY: JA
CHECKED BY: ES
PROJECT NUMBER: 30784
DATE 12-10-24

F0.2
DRAWING NO 3 OF 4



1 FIRE ALARM PLAN
F1.0 SCALE: 1/8" = 1'-0"

PLAN NORTH

DRAWING NOTES:
1. PROVIDE SURGE PROTECTION ON DEDICATED 120VAC FEEDING PANEL.
2. ONLY FACTORY KNOCKOUTS ON PANEL TO BE USED FOR PENETRATIONS.
3. FIRE ALARM CIRCUITS SHALL BE CLASS 'B'.
4. FIELD VERIFY DUCT DETECTOR LOCATIONS AND INDICATOR LIGHT LOCATIONS PRIOR TO INSTALLATION.
5. DUCT DETECTORS PROVIDED BY FIRE ALARM CONTRACTOR AND INSTALLED BY MECHANICAL. MECHANICAL TO PROVIDE SHUT DOWN WIRES AT FIRE ALARM RELAYS.
6. CABLING TO BE PLENUM RATED AND NEATLY TIEWRAPPED TO JOISTS OR SECURED WITH APPROVED HANGERS.
7. FIELD VERIFY NUMBER OF SPRINKLER POINTS TO BE MONITORED.

SCHEDULES / LEGENDS

DEVICE LEGEND

SYMBOL	DESCRIPTION
FACP	FIRE ALARM CONTROL PANEL
FAAP	FIRE ALARM ANNUNCIATOR PANEL
NAC	FIRE ALARM REMOTE POWER SUPPLY PANEL
SD	SMOKE DETECTOR
HD	HEAT DETECTOR
DD	DUCT DETECTOR
F	PULL STATION
XX	AUDIO / VISUAL INDICATING DEVICE - WALL MOUNT
XX	AUDIO / VISUAL INDICATING DEVICE - CEILING MOUNT
XX	VISUAL ONLY INDICATING DEVICE - WALL MOUNT
V XX	VISUAL ONLY INDICATING DEVICE - CEILING MOUNT
M T,F,P	MONITOR MODULE (T = TAMPER, F = FLOW, P = PRESSURE)
C	CONTROL MODULE
R	RELAY MODULE
I	ISOLATION MODULE
	REMOTE INDICATOR WITH TEST STATION (KEYED) FOR DUCT DETECTOR
	REMOTE INDICATOR FOR DUCT DETECTOR
DH	DOOR HOLDER
J	JUNCTION BOX (HORIZONTAL WIRING)
J	JUNCTION BOX (VERTICAL WIRING / RISER)
	END OF LINE (EOL) RESISTOR
	REPRESENTS WIRE OR CIRCUIT GOING "OUT"
	REPRESENTS WIRE OR CIRCUIT COMING "IN"

DEVICE LEGEND NOTES:

1. SEE DETAIL 1/F0.1 FOR TYPICAL MOUNTING HEIGHTS.
2. SEE F0.1 FOR STANDARD WIRING & INSTALLATION DETAILS.
3. ALL VISUAL NOTIFICATION DEVICES SHALL HAVE A 15 CANDELA RATING UNLESS SHOWN OTHERWISE ON PLANS (i.e. 30cd, 75cd, etc...).
4. "XX" SHOWN ON NOTIFICATION APPLIANCES NOTATES NAC CIRCUIT, SEE WIRE LEGEND FOR LIST OF CIRCUITS.

BACKBOX SCHEDULE

DEVICE TYPE	PART #	MOUNT	BACKBOX	QTY.
FACP	ES-200X	SURFACE	INCLUDED	1
FAAP	ANN-80	FLUSH	SINGLE GANG	1
HORN/STROBE	P2RLED	WALL	4"x4"x1½"	1
HORN/STROBE	PC2RLED	CEILING	4"x4"x1½"	19
STROBE	SCRLED	CEILING	4"x4"x1½"	8
SMOKE DETECTOR	SD365	CEILING	3.5" OCTAGON	1
PULL STATION	BG-12LX	SURFACE	SINGLE GANG	4
RELAY MODULE	CRF-300	SURFACE	4"x4"x1½" ★★	7
MONITOR MODULE	MDF-300	SURFACE	4"x4"x1½" ★★	3
REMOTE INDICATOR	RA100Z	CEILING	SINGLE GANG	7

BACKBOX NOTES:

★ = PROVIDE PLASTER RING
★★ = PROVIDE WITH EXTENSION OR 2½" BOX

WIRE LEGEND

LABEL	DESCRIPTION	PANEL	USE
A	18-02 SOL UNS FPLP	FACP	SLC
B	18-04 SOL UNS FPLP	FAAP	PWR/DATA
AA	14-02 SOL UNS FPLP	FACP	NAC #1
AB	14-02 SOL UNS FPLP	FACP	NAC #2
AC	14-02 SOL UNS FPLP	FACP	NAC #3

FOR REVIEW

CURRENT PHASE:
☐ PROGRAMMING
PRINTED: XX/XX/XX

☐ SUBMITTAL ☐ PUNCH LIST
☐ ROUGH-IN ☐ AS BUILT
RETURNED: XX/XX/XX

☐ INSTALL ☐ INSPECTION
TECHNICIAN: XX

NO.	REVISION	DATE	BY

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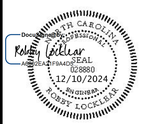
Fire, Security & Communications
The Integration of Technology and Life Safety



3266 RAY ROAD
SPRING LAKE, NORTH CAROLINA

FIRE ALARM PLAN

DRAWN BY: JA
CHECKED BY: ES
PROJECT NUMBER: 30784
DATE 12-10-24

F1.0
DRAWING NO 4 OF 4