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SEQUENCE OF OPERATION

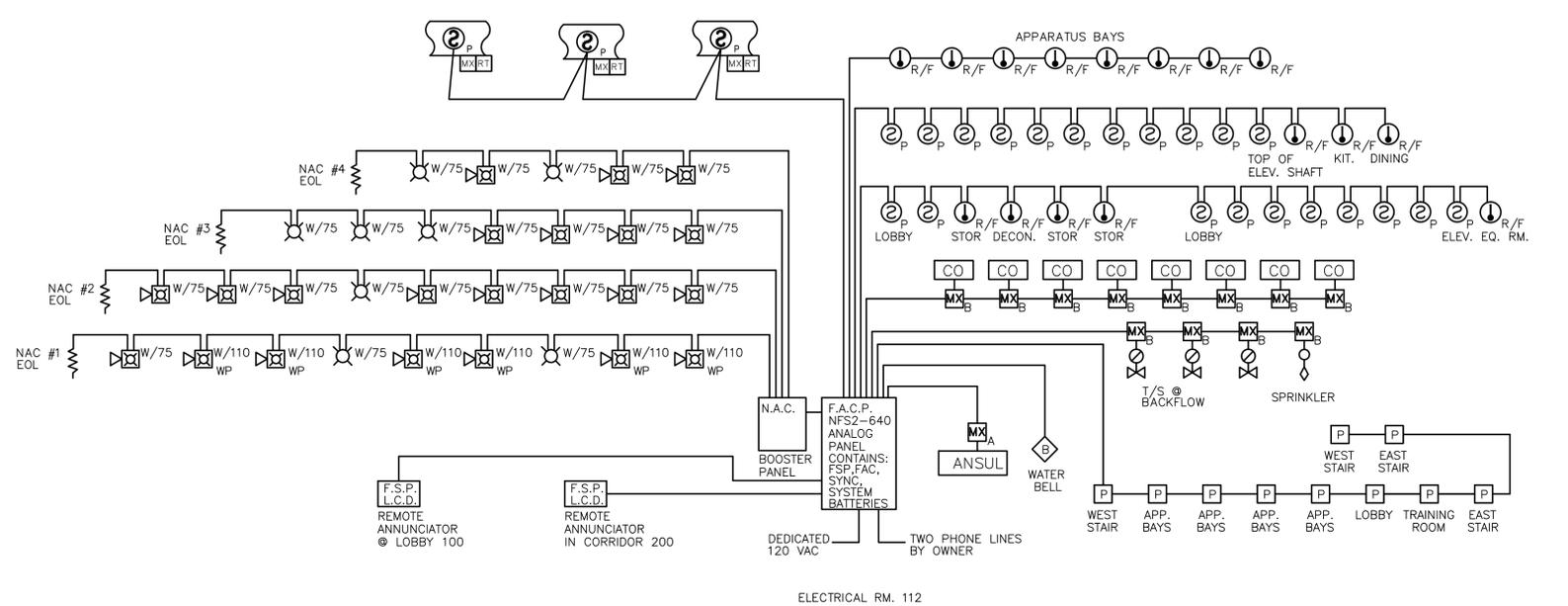
- A GENERAL ALARM SHALL BE CAUSED WHEN ANY OF THE FOLLOWING DEVICES ARE ACTIVATED.
 - MANUAL PULL STATIONS.
 - AREA SMOKE DETECTORS, IN ALL COMMON AREAS AS REQUIRED.
 - THERMAL HEAT DETECTORS, FOR SPECIFIC AREAS AS REQUIRED.
 - WATER FLOW SWITCH WHEN ACTIVATED BY WATER MOVEMENT THAT EXCEEDS THE DELAY TIME SET WITHIN THE DEVICE.
- A SUPERVISORY SIGNAL SHALL BE GENERATED WHEN ANY OF THE FOLLOWING DEVICES ARE ACTIVATED.
 - GATE VALVE TAMPER SWITCH WHEN MOVED TO AN OFF NORMAL POSITION BY THE ACTION OF THE VALVE BEING CLOSED. NO MORE THAN 2-1/2 TURNS OF THE GATE VALVE OFF NORMAL SHALL CAUSE THE SUPERVISORY SIGNAL TO SOUND.
 - P.I.V. AND BACKFLOW TAMPER SWITCHES SHALL ALSO BE REQUIRED TO MEET THE ABOVE OFF NORMAL CONDITION.
 - DUCT SMOKE DETECTORS SHALL NOT CAUSE A GENERAL ALARM AND SHALL BE CONSIDERED SUPERVISORY DEVICES.
- A TROUBLE CONDITION SHALL BE CAUSED BY ANY OPEN, SHORT AND/OR GROUND ON ANY FIELD WIRING ASSOCIATED WITH THE FIRE ALARM SYSTEM, AND SHALL COMPLY WITH NFPA 72 IN ALL ASPECTS.
- ALL CIRCUITS FOR THIS FIRE ALARM SYSTEM SHALL BE AS INDICATED IN THE GENERAL NOTES (ON THIS SHEET).

FIRE ALARM SYMBOL LIST

	FIRE ALARM SYSTEM PHOTOELECTRIC SMOKE DETECTOR NOTIFIER # FSP-851 WITH NOTIFIER #B710LP BASE
	DUCT SMOKE DETECTOR PHOTO ELECTRIC W/SAMPLING TUBE. NOTIFIER #FSD-751PL FLASHSCAN ADDRESSABLE. MOUNTED IN ACCORDANCE WITH NFPA 90A .
	FIRE ALARM SYSTEM HEAT DETECTOR - RATE-OF-RISE. NOTIFIER # FST-851R WITH B710LP BASE, APPROX. 140" ANALOG ADDRESSABLE.
	FIRE ALARM SYSTEM NOTIFIER "NBG-12LX" ADDRESSABLE DOUBLE ACTION PULL STATION. MOUNT AS PER DETAILS.
	FIRE ALARM SYSTEM MULTI-CANDELA STROBE LIGHT, W = WALL MOUNTED, GENTEX # GES3-24WR, A.D.A. COMPLIANT.
	FIRE ALARM SYSTEM COMBINATION MULTI-CANDELA HORN/STROBE LIGHT, W = WALL MOUNTED. GENTEX # GEC3-24WR, A.D.A. COMPLIANT
	FIRE ALARM SYSTEM COMBINATION MULTI-CANDELA HORN/STROBE LIGHT, C = CEILING MOUNTED. GENTEX # GEC3-24CR, A.D.A. COMPLIANT
	FIRE ALARM SYSTEM WATER FLOW SWITCH, WITH NOTIFIER "FM-101" MONITOR MODULE, SWITCH PROVIDED BY SPRINKLER CONTRACTOR.
	FIRE ALARM SYSTEM TAMPER SWITCH, WITH NOTIFIER "FM-101" MONITOR MODULE. SWITCH PROVIDED BY SPRINKLER CONTRACTOR.
	FIRE ALARM SYSTEM CARBON MONOXIDE SENSOR, SYSTEM SENSOR #C01224 W/"FM-101" MONITOR MODULE.
	FIRE ALARM SYSTEM REMOTE TEST STATION MATCH DUCT SMOKE DETECTOR.
	FIRE ALARM SYSTEM MONITOR MODULE, CLASS "A" INTERFACE. NOTIFIER # "FM-101"
	FIRE ALARM SYSTEM MONITOR MODULE, CLASS "B" INTERFACE. NOTIFIER # "FM-101"
	FIRE ALARM SYSTEM MANUAL ADDRESSABLE DUAL MONITOR MODULE. NOTIFIER # "FM-101"
	FIRE ALARM SYSTEM WATERFLOW BELL "SSM-24-10", AS REQUIRED BY LOCAL CODE.
	FIRE ALARM SYSTEM CONTROL PANEL; NOTIFIER NFS2-640
	FIRE ALARM SYSTEM ANNUNCIATOR PANEL, L.E.D POINT "ID" REQUIRED AT FIRE ALARM CONTROL PANEL.
	FIRE ALARM SYSTEM DIGITAL COMMUNICATOR, U.L. LISTED DEVICES WITH BUILT IN SYNC MODULES.
	NOTIFICATION APPLIANCE CIRCUIT BOOSTER PANEL TO MATCH DEVICES WITH BUILT IN SYNC MODULES.
	RECESSED KNOX BOX FURNISHED BY OWNER & INSTALLED BY GENERAL CONTRACTOR. MOUNT AT +60" TO BOTTOM OF BOX.
	BACKFLOW PREVENTER - DOUBLE CHECK TYPE.

FIRE ALARM SYSTEM GENERAL NOTES

- SYSTEM SHALL BE U.L. LISTED AS POWER LIMITED AND OF GENERAL ALARM PER NFPA 72, AND FBC-2010; CH.1-4.28; NON-CODED, ELECTRICALLY SUPERVISED, ADDRESSABLE, POWER LIMITED, BATTERY BACK-UP TELEPHONE AUTODIALER TO SEND SIGNALS TO CENTRAL STATION FACILITY, TROUBLE BELL, TROUBLE LIGHT, & SILENCING SWITCH. S.L.C. CIRCUIT SHALL BE "CLASS B-STYLE 4", STYLE 4", AND "T" TAPPING ALLOWED. NOTIFICATION CIRCUIT SHALL BE "CLASS B-STYLE Y", NO "T" TAPPING ALLOWED.
- FIRE ALARM CONTROL PANEL SHALL BE NOTIFIER 'NFS2-640', INCLUDING ALL MODULES, CARDS, COMPONENTS REQUIRED FOR A FULLY OPERATIONAL SYSTEM. PANEL SHALL BE EXPANDABLE. FIRE ALARM ANNUNCIATOR PANEL SHALL BE NOTIFIER "ACM/AEM" (EXPANDABLE) WITH LED'S TO ANNUNCIATE BY POINT - I.D. ALL MANUAL & AUTOMATIC DEVICES. APPROVED EQUAL BRANDS EXCEPTABLE.
- SUPPLEMENTARY APPLIANCE INDICATING PANEL SHALL HAVE TWO 1.25 AMP-24VOLT (30 VA) NOTIFICATION APPLIANCE CIRCUITS, WITH SELF-CONTAINED POWER AND 7 AMP-HOUR BACK-UP BATTERY CHARGER AND BATTERIES.
- EACH FIRE ALARM PANEL SHALL HAVE MAINTAINANCE FREE BATTERY BACK-UP WITH MINIMUM 24 HOURS STANDBY AND ADDITIONAL 5 MINUTES ALARM. FIRE ALARM SUPPLIER/INSTALLER SHALL SUBMIT BATTERY CALCULATIONS BASED UPON DEVICES ACTUALLY INSTALLED FOR SHELL SHELL BUILDING, AND PROVIDE FOR 100% SPARE CAPACITY FOR FUTURE DEVICES.
- MAKE ALL SPLICES/CONNECTIONS ON TERMINAL STRIPS, TAPED OR WIRE NUT SPLICES NOT ALLOWED. WIRING COLOR CODES HIGHLY RECOMMENDED FOR EASE OF TERMINATIONS IF COLOR CODE IS NOT USED, LABEL WIRES WITH CORRESPONDING LETTER DESIGNATION.
- AT START OF JOB AND PRIOR TO ANY INSTALLATION, SUBMIT COMPLETE WIRING DIAGRAMS INCLUDING WIRE AND CONDUIT SIZES, EQUIPMENT LISTS AND CATALOGUE CUTS OF EACH ITEM OF EQUIPMENT TO ARCHITECT AND TO LOCAL FIRE INSPECTION AUTHORITY FOR APPROVALS.
- INSTALLER SHALL BE U.L. LISTED + STATE LICENSED FIRE ALARM SYSTEMS CONTRACTOR. AT COMPLETION OF JOB, TEST SYSTEM IN PRESENCE OF FIRE INSPECTOR. SYSTEM SHALL BE U.L. CERTIFICATED.
- ALL WIRE COUNTS ARE BASED ON EQUIPMENT NEEDS, THE TYPE OF WIRE USED (SIZE, INSULATION, # OF STRANDS, ETC.) AND HOW IT IS INSTALLED IS THE SOLE RESPONSIBILITY OF THE ELECT CONTRACTOR. IT MUST MEET ALL APPLICABLE CODES AND SPECIFICATIONS. ALL WIRE SHALL BE #14 THWN - CU.
- ALL CONDUIT SIZES SHALL BE 3/4", UNLESS NOTED OTHERWISE. THE INSTALLATION OF THE FIRE ALARM RACEWAY SYSTEM IS THE SOLE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR.
- ALL COMPONENTS SHALL REFLECT 'UL' LISTING FOR FIRE SERVICE USE, MEET NFPA 72 REQUIREMENTS, AND SHALL BE COMPATIBLE. FIRE ALARM SYSTEM TO BE INSTALLED IN ACCORDANCE WITH NFPA .
- A BREAK IN ANY FIELD WIRING OR GROUNDING OF ANY CONDUCTOR WILL RESULT IN THE ACTIVATION OF THE FIRE ALARM PANEL TROUBLE BUZZER, WHICH CAN BE SILENCED BY OPERATING THE "TROUBLE SILENCE" BUTTON ON THE FIRE ALARM PANEL.
- PULL STATIONS TO BE MOUNTED AT 48" AFF PER THE ADA CODE.
- WALL MOUNTED HORNS AND STROBES TO BE AT 80" TO BOTTOM OR 6" FROM CEILING WHICH EVER IS LOWER.
- CEILING MOUNTED SMOKE DETECTORS SHALL BE LOCATED IN A DIRECT AIRFLOW, NOT CLOSER THAN 3 FEET FROM AN AIR SUPPLY DIFFUSER. NFPA 72 A-5-3.6.1 AND A-5-5.7.1.
- THE CONTROL RELAY MODULE FOR RTU SHUTDOWN SHALL BE LOCATED WITHIN 3 FEET OF THE DEVICE BEING CONTROLLED. NFPA 101 A-7-6.5.5. THE RELAY CONTACTS HAVE A MAXIMUM CAPABILITY OF 1.0 AMPS @ 24V AND 0.3 AMPS AT 120VAC. CONTRACTOR MUST VERIFY THAT THE SHUTDOWN CIRCUIT DOES NOT EXCEED THESE MAXIMUM CURRENT RATINGS RATINGS.
- THE DUCT SMOKE DETECTOR AND REMOTE TEST IS PROVIDED BY THE FIRE ALARM CONTRACTOR. THE MECHANICAL CONTRACTOR IS RESPONSIBLE FOR THE INSTALLATION OF THE DUCT SMOKE DETECTOR IN THE DUCT WORK. FOR THE FIRE ALARM CONTRACTOR IS RESPONSIBLE FOR ALL WIRING.
- THE INSTALLING CONTRACTOR SHALL SET THE DEVICE ADDRESS AS IDENTIFIED ON THE INSTALLATION WIRING DIAGRAMS.
- THE 120VAC POWER FEED FOR THE FIRE PANEL AND BOOSTER POWER SUPPLIES MUST BE FROM A DEDICATED EMERGENCY BREAKER, AND THE BREAKER MUST BE LOCKABLE, RED IN COLOR, AND IDENTIFIED THAT IT IS FOR THE 'FIRE ALARM SYSTEM'.
- POWER UP AND POWER DOWN OF THE FIRE ALARM PANEL MUST BE DONE IN THE PROPER SEQUENCE:
POWER DOWN: DISCONNECT THE BATTERY AND THEN TURN OFF THE BREAKER IN POWER PANEL.
POWER UP: TURN ON THE BREAKER IN THE PANEL AND THEN CONNECT THE BATTERY.
NOTE: DO NOT DISCONNECT THE 120VAC POWER FEED FROM THE TERMINAL BLOCK TO DISCONNECT POWER.
- ALL SOUNDERS SHALL BE SET TO THE "TEMPORAL MODE" AND SHALL BE SYNCHRONIZED FOR UNIFORM SIGNALLING. ALL STROBE SHALL BE SYNCHRONIZED PER ADA REQUIREMENTS. SOUNDERS SHALL BE SET TO THE "TEMPORAL MODE" AND SHALL BE SYNCO'D FOR UNIFORM SIGNALLING. ALL STROBE SHALL BE SYNCHRONIZED PER ADA REQUIREMENTS.
- PLEASE REFER TO THE WIRING LEGEND FOR THIS PROJECT FOR TYPES AND GAUGES. PLEASE CONFIRM TO THESE REQUIREMENTS SINCE THEY ARE REQUIRED BY THE MANUFACTURER. PIPE FILLS AND TERMINATIONS SHALL MEET NEC CODES.



FIRE ALARM SYSTEM RISER DIAGRAM MAIN FCP PANEL (NFS2-640) VOLTAGE DROP CALCULATION

FORMULAS: $V=2K \times I \times L / \text{cir mil}$, $V=2R \times I \times L$
 RESISTIVITY OF CONDUCTOR: K=12 FOR COPPER
 CIR MILS: #18=1620, #16=2580, #14=4110, #12=6530, #10=10380

FIRE ALARM NOTES, RISER, AND LEGEND N.T.S.

DRAWING NUMBER	DRAWING NAME
F-01	FIRE ALARM NOTES, RISER, AND LEGEND
F-11	FIRE ALARM FIRST FLOOR PLAN
F-12	FIRE ALARM SECOND FLOOR PLAN
F-21	FIRE ALARM CALCULATIONS AND DETAILS

TYEC HVAC PLUMBING ELECTRICAL
 THOMPSON & YOUNGROSS ENGINEERING CONSULTANTS, LLC
 DANIEL E. THOMPSON
 ANDREW J. YOUNGROSS
 FLA. REG. NO. 33289
 FLA. REG. NO. 51758
 CERTIFICATE OF AUTHORIZATION NO. 25996

CURRIE SOWARDS AGUILA ARCHITECTS
 Architects, Planners & Interior Designers

AA26001584
 134 N.E. 1st Avenue
 Delray Beach, Florida 33444
 TEL: 561 276-4951
 FAX: 561 243-8184
 E-mail: office@csa-architects.com

ISSUED FOR : DRC 11.29.2011
 AAC 01.18.2012
 AAC (RESUBMITTAL) 03.21.2012
 P&Z 08.06.2012
 BIDS 08.06.2012

PERMIT 08.06.2012

CONSTRUCTION

SEAL

ANDREW J. YOUNGROSS
 LICENSE NO. 51758
 STATE OF FLORIDA
 PROFESSIONAL ENGINEER

PROJECT TITLE
**CITY OF POMPANO BEACH
 FIRE STATION 103**

3721 N.E. 12th Avenue
 POMPANO BEACH, FL 33064

REVISIONS

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FILE NUMBER
11127-F-0.1.DWG

DRAWING TITLE
FIRE ALARM NOTES, RISER, AND LEGEND

DATE
 08.06.2012

DRAWN BY
 DJM

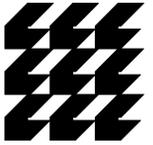
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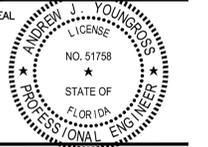
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**FIRE ALARM
FIRST FLOOR
PLAN**

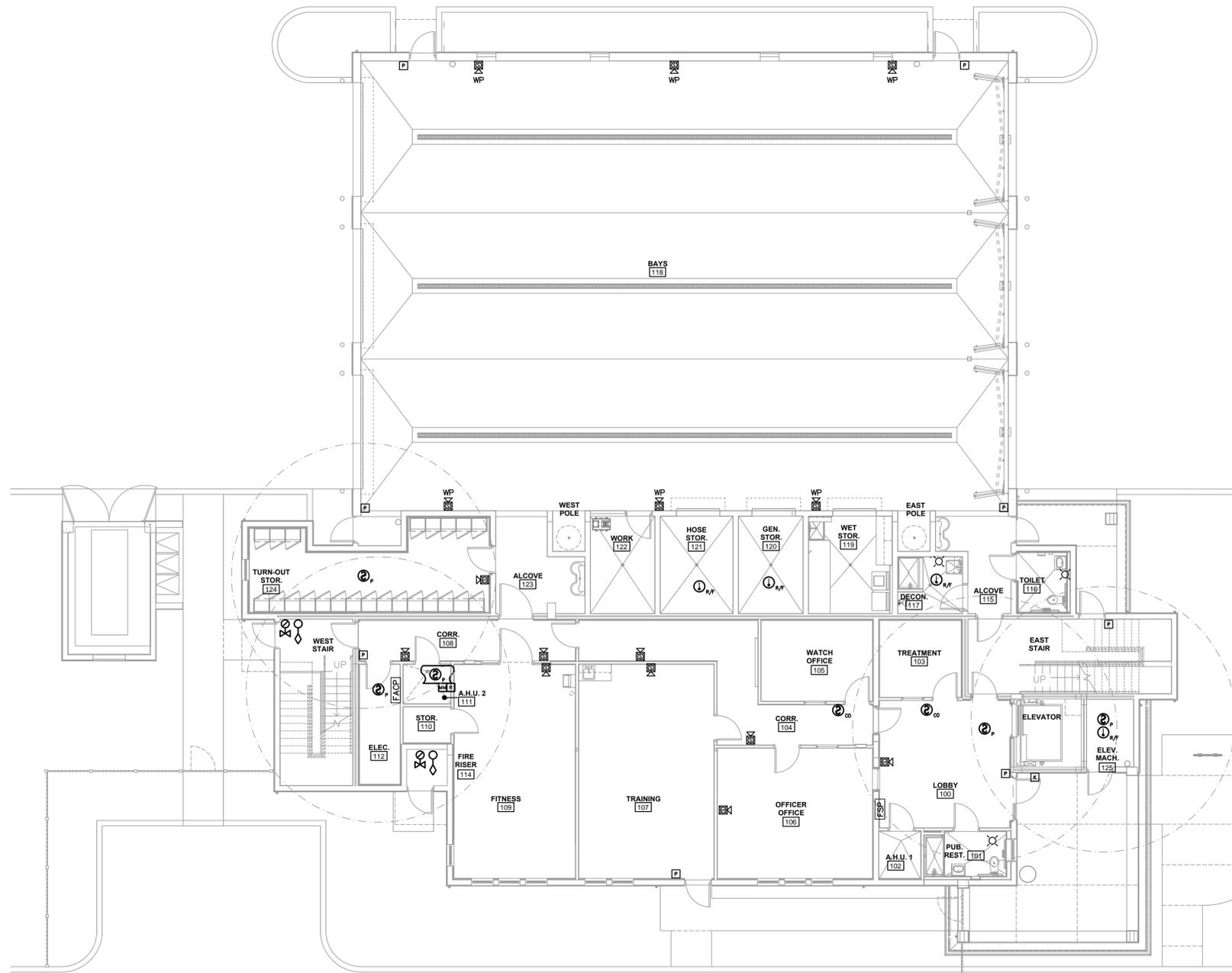
DATE 08.06.2012 | DRAWN BY DJM

JOB NUMBER
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DRAWING NUMBER

F-1.1

NOTE:
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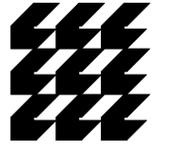
FIRE ALARM FIRST FLOOR PLAN

SCALE: 1/8"=1'-0"

TYEC HVAC PLUMBING ELECTRICAL
THOMPSON & YOUNGROSS ENGINEERING CONSULTANTS, LLC
TO THE BEST OF MY KNOWLEDGE, THE PLANS AND SPECIFICATIONS COMPLY WITH THE MINIMUM APPLICABLE BUILDING CODE.
DANIEL E. THOMPSON
FLA. REG. NO. 33289
ANDREW J. YOUNGROSS
FLA. REG. NO. 51758
CERTIFICATE OF AUTHORIZATION NO. 25996

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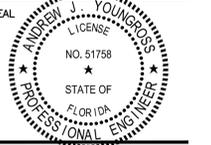
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FILE NUMBER
11127-F-1.2.DWG

DRAWING TITLE

**FIRE ALARM
SECOND FLOOR
PLAN**

DATE 08.06.2012 | DRAWN BY DJM

JOB NUMBER 110102 / 11127

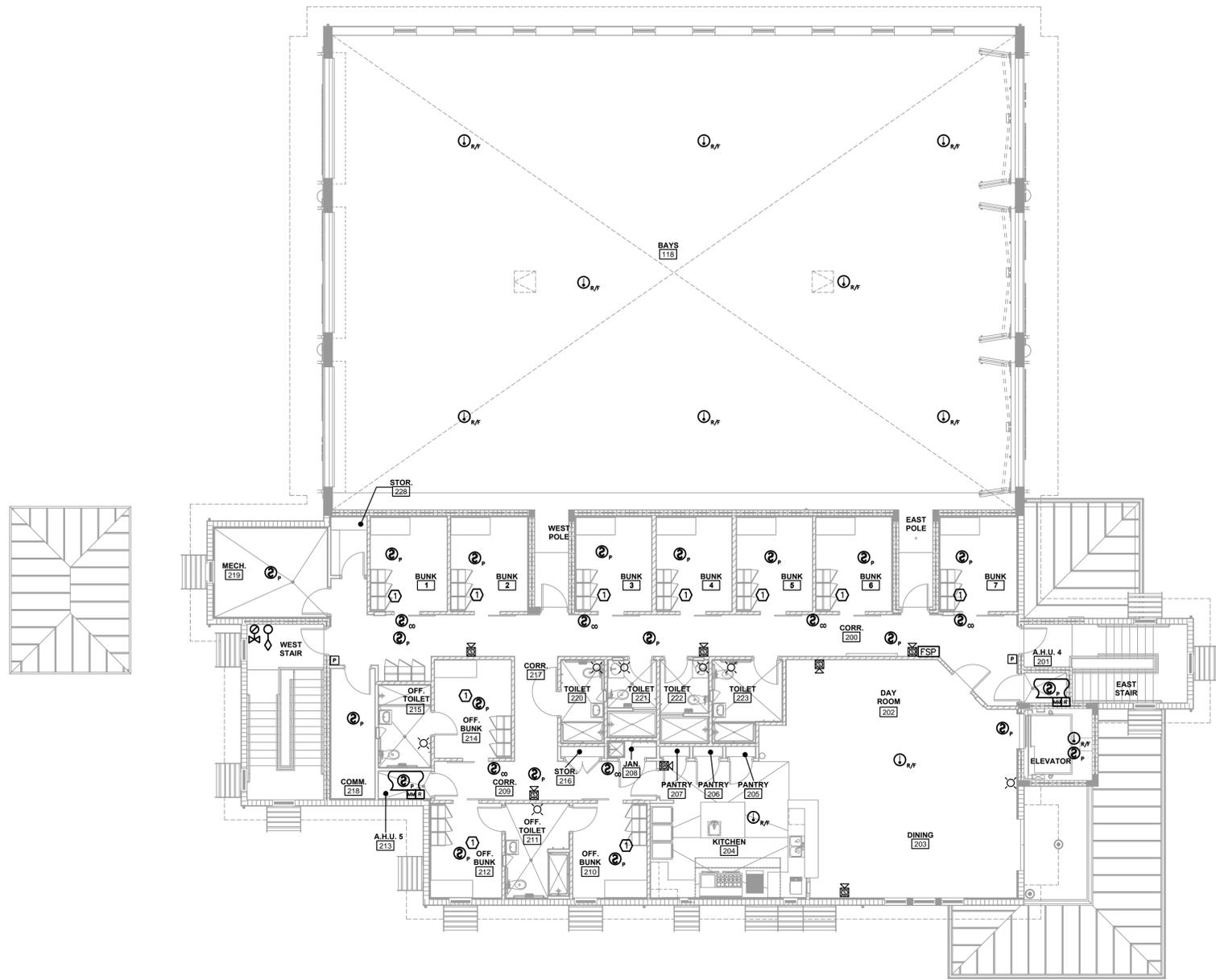
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F-1.2

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PLAN KEY NOTES

① CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING dB REQUIRED FOR AUDIBLE FIRE ALARM SIGNALS IN SLEEPING AREAS. THEY SHALL HAVE A SOUND LEVEL OF AT LEAST 15 dB ABOVE THE AVERAGE AMBIENT SOUND LEVEL OR 5 dB ABOVE THE MAXIMUM SOUND LEVEL HAVING A DURATION OF AT LEAST 60 SECONDS OR A SOUND LEVEL OF AT LEAST 75 dB, WHICHEVER IS GREATER, MEASURED AT THE PILLOW LEVEL IN THE OCCUPIABLE AREA, USING THE A-WEIGHTED SCALE (dBA). SEE NFPA 72, 2002ed Ch. 7 SECTION 7.4.4. CONTRACTOR SHALL ADD ADDITIONAL AUDIBLE DEVICES IF REQUIRED.



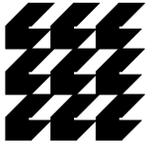
FIRE ALARM SECOND FLOOR PLAN

SCALE: 1/8"=1'-0"

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FLA. REG. NO. 51758
CERTIFICATE OF AUTHORIZATION NO. 25996

112 S.E. 10th STREET
DELRAY BEACH, FL 33483
TEL: 561-274-0200
FAX: 561-274-0222
E-MAIL: tyec@tyec.com

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ARCHITECTS**

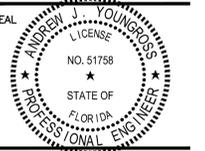
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DRAWING TITLE

**FIRE ALARM
CALCULATIONS
AND LEGEND**

DATE

08.06.2012 | DJM

JOB NUMBER

110102 / 11127

DRAWING NUMBER

F-2.1

ITEM	DESCRIPTION	STANDBY CURRENT PER UNIT (AMPS)		QTY	TOTAL STANDBY CURRENT (AMPS) PER ITEM	ALARM CURRENT PER UNIT (AMPS)		QTY	TOTAL ALARM CURRENT (AMPS)		
1	NOTIFIER NFS2-640 CONTROL PANEL	0.290		1	0.290	0.250		1	0.250		
2	NOTIFIER FSP-851 PHOTO SMOKE DETECTOR	0.00036	X	19	0.00684	0.0065	X	19	0.1235		
3	NOTIFIER FRM-1 RELAY MODULE	0.00023	X	1	0.00023	0.0065	X	1	0.0065		
4	NOTIFIER FMM-101 MINI MONITOR MODULE	0.000375	X	10	0.00375	0.000375	X	10	0.00375		
5	NOTIFIER FCM-1 CONTROL MODULE	0.00035	X	2	0.0007	0.0065	X	2	0.013		
6	NOTIFIER NBG-12LX PULL STATION	0.000375	X	10	0.00375	0.000375	X	10	0.00375		
7	NOTIFIER FST-851R HEAT DETECTOR	0.0003	X	11	0.0033	0.0065	X	11	0.0715		
8	NOTIFIER FSD 751P DUCT DETECTOR W/RTS	0.0003	X	3	0.0009	0.0078	X	3	0.0234		
9	NOTIFIER ACM-24/32AT ANNUNCIATOR	0.016	X	2	.032	0.070	X	2	0.14		
10	NOTIFIER UDAC2 COMMUNICATOR	0.040	X	1	0.040	0.075	X	1	0.075		
11	NOTIFIER FMM-1 MONITOR MODULE (FULL)	0.000375	X	1	0.000375	0.0051	X	1	0.0051		
					TOTAL SYSTEM STANDBY CURRENT (AMPS)	0.3684				TOTAL SYSTEM	0.7229

REQUIRED OPERATING TIME OF SECONDARY POWER SOURCE FROM NFPA 72 4.4.1.5
STANDBY: 24 HOURS ALARM: 5 MINUTES X 1/60 = .083 HOURS

REQUIRED STANDBY TIME (HOURS)	TOTAL SYSTEM STANDBY CURRENT (AMPS)	REQUIRED STANDBY CAPACITY (AMP-HOURS)	REQUIRED ALARM TIME (HOURS)	TOTAL SYSTEM ALARM CURRENT (AMPS)	REQUIRED ALARM CAPACITY (AMP-HOURS)			
24	X	0.3684	=	8.842	X	0.7229	=	0.0600

REQUIRED STANDBY CAPACITY (AMP-HOURS)	REQUIRED ALARM CAPACITY (AMP-HOURS)	REQUIRED AMPERE HOUR BATTERY	DERATING FACTOR @ 1.2	MINIMUM AMP-HOUR BATTERY REQUIRED	MINIMUM 12 AHR. BATTERY NEEDED			
8.842	+	0.0600	=	8.902	X	1.2	=	10.683

FIRE ALARM SYSTEM BATTERY CALCULATIONS
NOTIFIER FIRE ALARM SYSTEM PANEL 'AFP-200'

**TOTAL CIRCUIT AMP LOAD
N.A. CIRCUIT #1**

DEVICE TYPE	DEVICE COUNT	DEVICE AMP LOAD	TOTAL DEVICE AMP LOAD
HORN/STROBE GEC24-75CD	1	.133	.133
STROBE GES24-75CD	2	.112	.224
GEH24WR MINI HORN	0	.021	.000
HORN/STROBE 110CD-WR	0	.143	.000
HORN/STROBE 75CD-WP	6	.157	.942
TOTAL CIRCUIT AMP LOAD (MAX AMP LOAD PER CIRCUIT = 2.0AMPS)			1.299 A

**TOTAL CIRCUIT AMP LOAD
N.A. CIRCUIT #2**

DEVICE TYPE	DEVICE COUNT	DEVICE AMP LOAD	TOTAL DEVICE AMP LOAD
HORN/STROBE GEC24-75CD	7	.133	.931
STROBE GES24-75CD	1	.112	.112
GEH24WR MINI HORN	0	.021	.000
HORN/STROBE 110CD-WR	0	.157	.000
HORN/STROBE 75CD-WP	0	.143	.000
TOTAL CIRCUIT AMP LOAD (MAX AMP LOAD PER CIRCUIT = 2.0AMPS)			1.043 A

**TOTAL CIRCUIT AMP LOAD
N.A. CIRCUIT #1**

DEVICE TYPE	DEVICE COUNT	DEVICE AMP LOAD	TOTAL DEVICE AMP LOAD
HORN/STROBE GEC24-75CD	6	.133	.798
STROBE GES24-75CD	1	.112	.112
GEH24WR MINI HORN	0	.021	.000
HORN/STROBE 110CD-WR	0	.143	.000
HORN/STROBE 75CD-WP	0	.157	.000
TOTAL CIRCUIT AMP LOAD (MAX AMP LOAD PER CIRCUIT = 2.0AMPS)			0.91 A

**TOTAL CIRCUIT AMP LOAD
N.A. CIRCUIT #2**

DEVICE TYPE	DEVICE COUNT	DEVICE AMP LOAD	TOTAL DEVICE AMP LOAD
HORN/STROBE GEC24-75CD	6	.133	.798
STROBE GES24-75CD	2	.112	.224
GEH24WR MINI HORN	0	.021	.000
HORN/STROBE 110CD-WR	0	.157	.000
HORN/STROBE 75CD-WP	0	.143	.000
TOTAL CIRCUIT AMP LOAD (MAX AMP LOAD PER CIRCUIT = 2.0AMPS)			1.022 A

FIRE ALARM SYSTEM BATTERY CALCULATIONS
NOTIFIER FCP8-2488 POWER SUPPLY

FIRE ALARM CALCULATIONS AND DETAILS

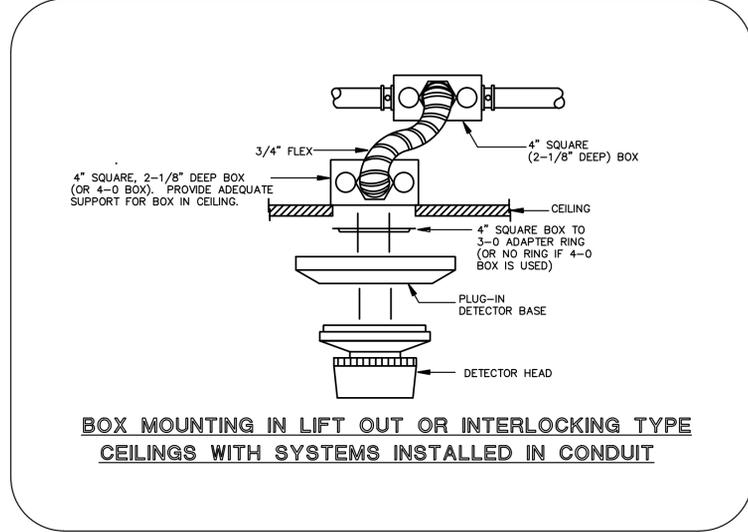
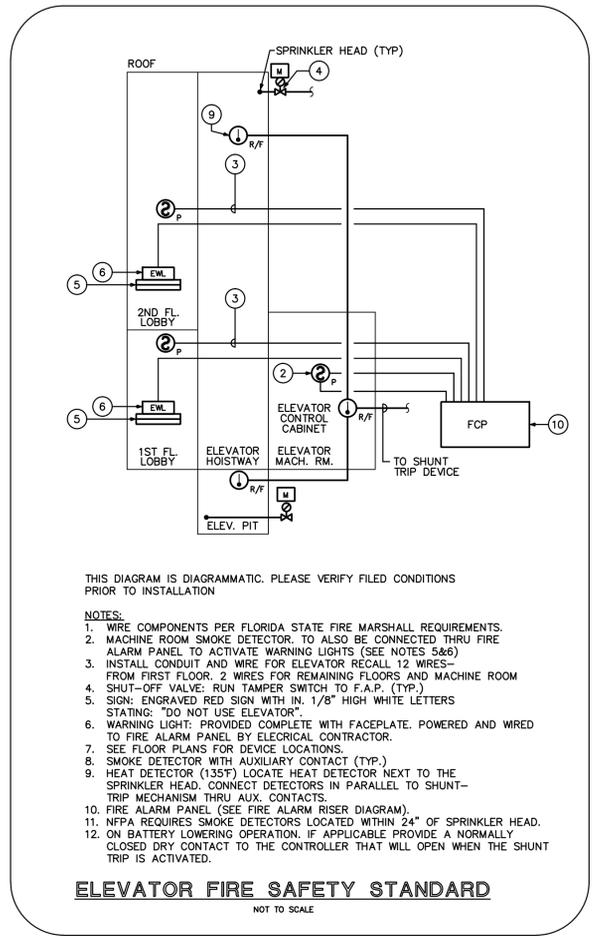
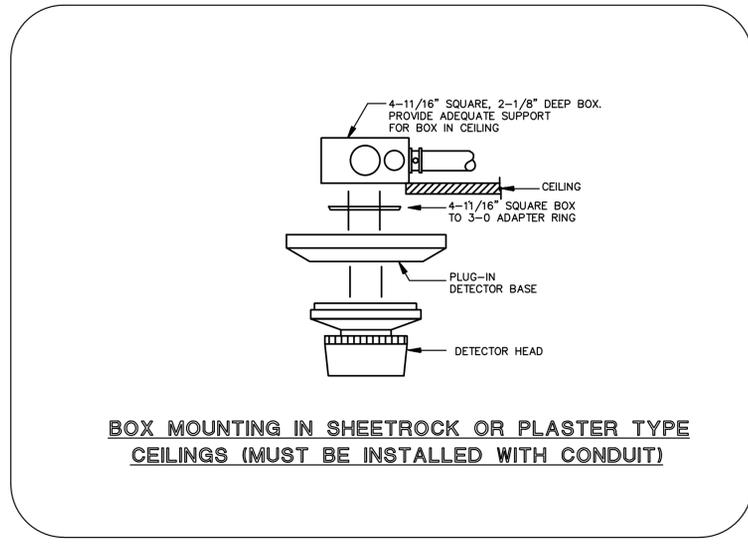
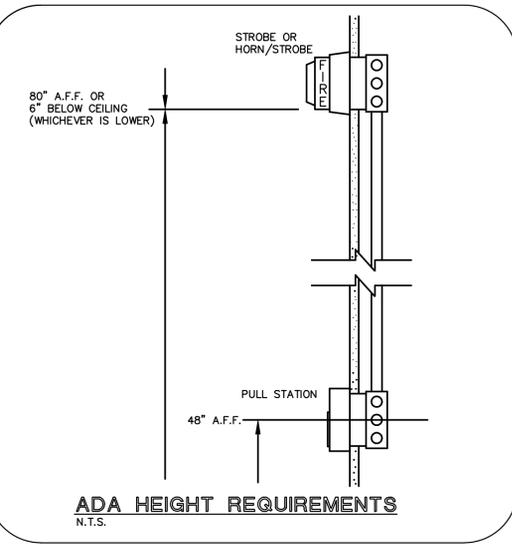
N.T.S.



THOMPSON & YOUNGROSS ENGINEERING CONSULTANTS, LLC
"TO THE BEST OF MY KNOWLEDGE, THE PLANS AND SPECIFICATIONS COMPLY WITH THE MINIMUM APPLICABLE BUILDING CODE."
DANIEL E. THOMPSON
FLA. REG. NO. 33289
ANDREW J. YOUNGROSS
FLA. REG. NO. 51758
CERTIFICATE OF AUTHORIZATION NO. 25996

113 S.E. 10th STREET
DELRAY BEACH, FL 33483
TEL: 561-274-4500
FAX: 561-274-0222
E-MAIL: teo@tyec.com www.tyec.com

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