FIRE ALARM SYSTEM SPECIFICATION

PART 1.0 - GENERAL

1.1. DESCRIPTION:

A. THIS SECTION OF THE SPECIFICATION INCLUDES THE FURNISHING, INSTALLATION, CONNECTION AND TESTING OF THE MICROPROCESSOR CONTROLLED, INTELLIGENT REPORTING FIRE ALARM EQUIPMENT REQUIRED TO FORM A COMPLETE, OPERATIVE, COORDINATED SYSTEM. IT SHALL INCLUDE, BUT NOT BE LIMITED TO, ALARM INITIATING DEVICES, ALARM NOTIFICATION APPLIANCES, FIRE ALARM CONTROL PANEL (FACP), AUXILIARY CONTROL DEVICES, ANNUNCIATORS, ETHERNET AND/OR DIGITAL ALARM COMMUNICATIONS TO CENTRAL STATIONS AND WIRING AS SHOWN ON THE DRAWINGS AND SPECIFIED HEREIN.

B. THE FIRE ALARM SYSTEM SHALL COMPLY WITH REQUIREMENTS OF NFPA STANDARD NO. 72 FOR LOCAL PROTECTED PREMISES SIGNALING SYSTEMS EXCEPT AS MODIFIED AND SUPPLEMENTED BY THIS SPECIFICATION. THE SYSTEM FIELD WIRING SHALL BE SUPERVISED EITHER ELECTRICALLY OR BY SOFTWARE-DIRECTED POLLING OF FIELD DEVICES.

THE SECONDARY POWER SOURCE OF THE FIRE ALARM CONTROL PANEL WILL BE CAPABLE OF PROVIDING AT LEAST 60 HOURS OF BACKUP POWER WITH THE ABILITY TO SUSTAIN 5 MINUTES IN ALARM AT THE END OF THE BACKUP PERIOD.

C. THE FIRE ALARM SYSTEM SHALL BE MANUFACTURED BY AN ISO 9001 CERTIFIED COMPANY AND MEET THE REQUIREMENTS OF BS EN9001: ANSI/ASQC Q9001-1994.

D. THE FACP AND PERIPHERAL DEVICES SHALL BE MANUFACTURED OR SUPPLIED 100% BY A SINGLE U.S. MANUFACTURER (OR DIVISION THEREOF).

E. UNDERWRITERS LABORATORIES INC. (UL) - USA:

NO. 38 MANUALLY ACTUATED SIGNALING BOXES
NO. 50 CABINETS AND BOXES
NO. 864 CONTROL UNITS FOR FIRE PROTECTIVE SIGNALING SYSTEMS
NO. 268 SMOKE DETECTORS FOR FIRE PROTECTIVE SIGNALING SYSTEMS
NO. 268A SMOKE DETECTORS FOR DUCT APPLICATIONS
NO. 346 WATERFLOW INDICATORS FOR FIRE PROTECTIVE SIGNALING SYSTEMS
NO. 464 AUDIBLE SIGNALING APPLIANCES
NO. 521 HEAT DETECTORS FOR FIRE PROTECTIVE SIGNALING SYSTEMS
NO. 1971 VISUAL NOTIFICATION APPLIANCES

F. THE FACP SHALL MEET REQUIREMENTS OF UL ANSI 864 NINTH EDITION

G. THE INSTALLING COMPANY SHALL HAVE BEEN IN THE FIRE ALARM INSTALLATION BUSINESS FOR AT LEAST 5 YEARS AND HAVE SUCCESSFUL, PROVEN EXPERIENCE WITH BIG BOX RETAIL FIRE ALARM INSTALLATIONS.

H. THE INSTALLING COMPANY SHALL EMPLOY NICET (MINIMUM LEVEL II FIRE ALARM TECHNOLOGY) TECHNICIANS ON SITE TO PROGRAM AND GUIDE THE FINAL CHECK-OUT AND TO ENSURE THE SYSTEMS INTEGRITY AND PROPER OPERATION.

I. THE INSTALLING COMPANY TO BE CERTIFIED TO INSTALL, MAINTAIN AND PROVIDE A UL LISTING OR FM APPROVAL FOR THE INSTALLED SYSTEM.

J. THE INSTALLING COMPANY SHALL BE A LICENSED FIRE ALARM CONTRACTOR AND HAVE ALL NECESSARY LICENSES TO WORK IN THE JURISDICTION OF THE PROJECT.

K. THE INSTALLING COMPANY WILL PROVIDE 8 HOURS OF SYSTEM COMMISSIONING AND OPERATIONAL TESTING / TRAINING TO PUBLIX'S MAINTENANCE/ MONITORING COMPANY (TYCO INTEGRATED SECURITY, CONTACT STEVE SCHIAVELLO, 813-404-1025) PRIOR TO SUBSTANTIAL COMPLETION AND AFTER THE FIRE ALARM HAS BEEN OPERATIONALLY APPROVED BY THE AHJ.

L. PUBLIX'S FIRE ALARM ENGINEER (TRICON ENGINEERS, CONTACT: DENNIS VANN 813-227-9190) WILL PROVIDE ALL BUILDABLE SHOP SUBMITTAL PLANS FOR PERMIT BY THE INSTALLING FIRE ALARM CONTRACTOR. ALL PERMIT COMMENTS AND REVISIONS NECESSARY TO OBTAIN PERMITS SHALL COORDINATED WITH TRICON ENGINEERS. THE INSTALLING FIRE ALARM CONTRACTOR SHALL PROVIDE ALL MANUFACTURER LITERATURE AS REQUIRED FOR PERMIT. NO DEVIATION FROM THE FIRE ALARM SHOP DRAWINGS INSTALLATION DESIGN AND/OR COMPONENTS SHALL BE ALLOWED WITHOUT DIRECTION AND APPROVAL FROM TRICON ENGINEERS AND PUBLIX BUILDING ELECTRICAL ENGINEER OF RECORD.

M. THE INSTALLING FIRE ALARM CONTRACTOR SHALL KEEP AN ACCURATE SET OF RECORD DRAWINGS THAT ARE KEPT ON SITE AND A COPY SHALL BE SENT TO TRICON ENGINEERS FOR ANY RECORD PLANS REQUEST FOR FINAL INSPECTIONS AND PERMIT CLOSEOUT.

N. THE FIRE ALARM CONTRACTOR SHALL BE RESPONSIBLE FOR ALL PERMIT AND INSPECTION COSTS ASSOCIATED WITH THE COMPLETE FIRE ALARM INSTALLATION. THE FIRE ALARM CONTRACTOR SHALL ATTEND ALL PRE, DURING AND POST CONSTRUCTION COORDINATION MEETINGS TO UNDERSTAND ALL PROJECT PHASING AND COORDINATION WITH OTHER DISCIPLINES.

O. ALL PASSWORDS UTILIZED BY THE FIRE ALARM CONTRACTOR/SECURITY CONTRACTOR SHALL BE THE PROPERTY OF PUBLIX SUPERMARKETS AND SHALL BE GIVEN TO PUBLIX REPRESENTATIVE UPON COMPLETION OF FINAL INSPECTION AND TESTING.

1.2. SCOPE

A. AN INTELLIGENT, MICROPROCESSOR-CONTROLLED, FIRE ALARM DETECTION SYSTEM SHALL BE INSTALLED IN ACCORDANCE TO THE PROJECT SPECIFICATIONS AND DRAWINGS.

B. BASIC PERFORMANCE

1. INITIATION DEVICE CIRCUITS (IDC) SHALL BE WIRED CLASS B (NFPA STYLE B) AS PART OF AN ADDRESSABLE DEVICE CONNECTED BY THE SLC CIRCUIT.

2. NOTIFICATION APPLIANCE CIRCUITS (NAC) SHALL BE WIRED CLASS B (NFPA STYLE Y) AS PART OF AN ADDRESSABLE DEVICE CONNECTED BY THE SLC CIRCUIT.

3. ALL CIRCUITS SHALL BE POWER-LIMITED, PER UL864 REQUIREMENTS.

4. A SINGLE GROUND FAULT OR OPEN CIRCUIT ON THE SYSTEM SIGNALING LINE CIRCUIT SHALL NOT CAUSE SYSTEM MALFUNCTION, LOSS OF OPERATING POWER OR THE ABILITY TO REPORT AN ALARM.

5. ALARM SIGNALS ARRIVING AT THE MAIN FACP SHALL NOT BE LOST FOLLOWING A PRIMARY POWER FAILURE OR OUTAGE OF ANY KIND UNTIL THE ALARM SIGNAL IS PROCESSED AND RECORDED.

C. BASIC SYSTEM FUNCTIONAL OPERATION

WHEN A FIRE ALARM CONDITION IS DETECTED AND REPORTED BY ONE OF THE SYSTEM INITIATING DEVICES, THE FOLLOWING FUNCTIONS SHALL IMMEDIATELY OCCUR.

1. THE SYSTEM ALARM LED ON THE FACP SHALL FLASH.

2. A LOCAL SOUNDER WITH THE CONTROL PANEL SHALL SOUND.

3. A BACKLIT 80-CHARACTER LCD DISPLAY ON THE FACP SHALL INDICATE ALL INFORMATION ASSOCIATED WITH THE FIRE ALARM CONDITION, INCLUDING THE TYPE OF ALARM POINT AND ITS LOCATION WITHIN THE PROTECTED PREMISES.

4. IN RESPONSE TO A FIRE ALARM CONDITION, THE SYSTEM WILL PROCESS ALL CONTROL PROGRAMMING AND ACTIVATE ALL SYSTEM OUTPUTS (ALARM NOTIFICATION APPLIANCES AND/OR RELAYS) ASSOCIATED WITH THE POINT(S) IN ALARM. SEE SHOP PLANS FOR FIRE ALARM OPERATIONAL MATRIX. ADDITIONALLY, THE SYSTEM SHALL SEND EVENTS TO A CENTRAL ALARM SUPERVISING STATION VIA DIAL-UP PSTN.

1.3. SUBMITTALS

A. GENERAL:

1. TWO COPIES OF ALL SUBMITTALS SHALL BE SUBMITTED TO THE ARCHITECT/ENGINEER FOR REVIEW.

2. ALL REFERENCES TO MANUFACTURER'S MODEL NUMBERS AND OTHER PERTINENT INFORMATION HEREIN IS INTENDED TO ESTABLISH MINIMUM STANDARDS OF PERFORMANCE, FUNCTION AND QUALITY. EQUIVALENT COMPATIBLE UL-LISTED EQUIPMENT FROM OTHER MANUFACTURERS MAY BE SUBSTITUTED FOR THE SPECIFIED EQUIPMENT AS LONG AS THE MINIMUM STANDARDS ARE MET.

3. NO SUBSTITUTIONS FOR EQUIPMENT WILL BE ALLOWED. ALL EQUIPMENT NOTED IN THE TRICON ENGINEERS SHOP DRAWINGS SHALL BE PROVIDED AS SPECIFIED.

B. SHOP DRAWINGS:

SHOP DRAWINGS NEEDED FOR PERMIT AND CONSTRUCTION WILL BE DESIGNED AND SUPPLIED BY TRICON ENGINEERS. ALL BUILDING DEPARTMENT PERMIT AND ANY SUBSEQUENT REVISIONS SHALL BE COORDINATED WITH TRICON ENGINEERS FOR APPROPRIATE PLANS MODIFICATIONS.

C. MANUALS:

1. AT INSTALLATION COMPLETION AND AFTER FINAL INSPECTIONS THE FIRE ALARM CONTRACTOR SHALL PROVIDE PUBLIX TWO COMPLETE OPERATING AND MAINTENANCE MANUALS LISTING THE MANUFACTURER'S NAME(S), INCLUDING TECHNICAL DATA SHEETS AND FINAL SHOP DRAWINGS.

2. WIRING DIAGRAMS SHALL INDICATE INTERNAL WIRING FOR EACH DEVICE AND THE INTERCONNECTIONS BETWEEN THE ITEMS OF EQUIPMENT.

3. PROVIDE A CLEAR AND CONCISE DESCRIPTION OF OPERATION THAT GIVES, IN DETAIL, THE INFORMATION REQUIRED TO PROPERLY OPERATE THE EQUIPMENT AND SYSTEM.

1.4. GUARANTY:

ALL WORK PERFORMED AND ALL MATERIAL AND EQUIPMENT FURNISHED UNDER THIS CONTRACT SHALL BE FREE FROM DEFECTS AND SHALL REMAIN SO FOR A PERIOD OF AT LEAST ONE (1) YEAR FROM THE DATE OF ACCEPTANCE. THE LABOR AND MATERIALS REQUIRED TO CORRECT ANY DEFECT DURING THIS ONE YEAR PERIOD SHALL BE INCLUDED IN THE SUBMITTAL BID.

DUE TO THE CRITICAL NATURE OF THIS SYSTEM, PUBLIX RESERVES THE RIGHT TO REPAIR ANY DEFECTIVE INSTALLED FIRE ALARM DEVICE/SYSTEM DURING THE FIRST YEAR WARRANTY PERIOD BY PUBLIX'S FIRE ALARM MAINTENANCE VENDOR. PUBLIX RESERVES THE RIGHT TO BACK CHARGE THE INSTALLING FIRE ALARM CONTRACTOR FOR THE FULL COSTS INCURRED DUE TO THE REPAIR, INCLUDING LABOR AND MATERIAL.

1.5. MAINTENANCE:

PUBLIX WILL UTILIZE IT'S FIRE ALARM MAINTENANCE VENDOR (TYCO INTEGRATED SECURITY) TO PERFORM ALL POST INSTALLATION ROUTINE MAINTENANCE.

1.6. APPLICABLE STANDARDS AND SPECIFICATIONS:

THE SPECIFICATIONS AND STANDARDS LISTED BELOW FORM A PART OF THIS SPECIFICATION. THE SYSTEM SHALL FULLY COMPLY WITH THE LATEST ISSUE OF THESE STANDARDS, IF APPLICABLE.

A. NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) - USA:

NO. 13 SPRINKLER SYSTEMS
NO. 70 NATIONAL ELECTRIC CODE (NEC)
NO. 72 NATIONAL FIRE ALARM CODE
NO. 101 LIFE SAFETY CODE
NO. 38 MANUALLY ACTUATED SIGNALING BOXES
NO. 217 SMOKE DETECTORS, SINGLE AND MULTIPLE STATION
NO. 228 DOOR CLOSERS-HOLDERS FOR FIRE PROTECTIVE SIGNALING SYSTEMS
NO. 268 SMOKE DETECTORS FOR FIRE PROTECTIVE SIGNALING SYSTEMS
NO. 268A SMOKE DETECTORS FOR DUCT APPLICATIONS
NO. 346 WATERFLOW INDICATORS FOR FIRE PROTECTIVE SIGNALING SYSTEMS
NO. 464 AUDIBLE SIGNALING APPLIANCES
NO. 521 HEAT DETECTORS FOR FIRE PROTECTIVE SIGNALING SYSTEMS
NO. 864 CONTROL UNITS FOR FIRE PROTECTIVE SIGNALING SYSTEMS
NO. 1481 POWER SUPPLIES FOR FIRE PROTECTIVE SIGNALING SYSTEMS
NO. 1610 CENTRAL STATION BURGLAR ALARM UNITS
NO. 1638 VISUAL SIGNALING APPLIANCES
NO. 1971 VISUAL SIGNALING APPLIANCES
NO. 2017 GENERAL-PURPOSE SIGNALING DEVICES AND SYSTEMS CAN/ULC S524-01 STANDARD FOR INSTALLATION OF FIRE ALARM SYSTEMS

1. THE FACP SHALL BE ANSI 864, 9TH EDITION LISTED. SYSTEMS LISTED TO ANSI 864, 8TH EDITION (OR PREVIOUS REVISIONS) SHALL NOT BE ACCEPTED.

B. THE SYSTEM AND ITS COMPONENTS SHALL BE UNDERWRITERS LABORATORIES, INC. LISTED UNDER THE APPROPRIATE UL TESTING STANDARD AS LISTED HEREIN FOR FIRE ALARM APPLICATIONS AND THE INSTALLATION SHALL BE IN COMPLIANCE WITH THE UL LISTING.

C. LOCAL AND STATE BUILDING CODES.

D. ALL REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION (AHJ).

1.7. APPROVALS:

A. THE SYSTEM SHALL HAVE PROPER LISTING AND/OR APPROVAL FROM THE FOLLOWING NATIONALLY RECOGNIZED AGENCIES:

UL UNDERWRITERS LABORATORIES INC

FM FACTORY MUTUAL

2.0 PRODUCTS

2.1. EQUIPMENT AND MATERIAL, GENERAL:

A. ALL EQUIPMENT AND COMPONENTS SHALL BE NEW, AND THE MANUFACTURER'S CURRENT MODEL. THE MATERIALS, APPLIANCES, EQUIPMENT AND DEVICES SHALL BE TESTED AND LISTED BY A NATIONALLY RECOGNIZED APPROVALS AGENCY FOR USE AS PART OF A FIRE PROTECTIVE SIGNALING SYSTEM, MEETING THE NATIONAL FIRE ALARM CODE.

B. ALL EQUIPMENT AND COMPONENTS SHALL BE INSTALLED IN STRICT COMPLIANCE WITH MANUFACTURERS' RECOMMENDATIONS. CONSULT THE MANUFACTURER'S INSTALLATION MANUALS FOR ALL WIRING DIAGRAMS, SCHEMATICS, PHYSICAL EQUIPMENT SIZES, ETC., BEFORE BEGINNING SYSTEM INSTALLATION.

C. ALL EQUIPMENT SHALL BE ATTACHED TO WALLS AND CEILING/FLOOR ASSEMBLIES AND SHALL BE HELD FIRMLY IN PLACE (E.G., DETECTORS SHALL NOT BE SUPPORTED SOLELY BY SUSPENDED CEILINGS). ALL DEVICES TO BE SUPPORTED BY A J-BOX AND HAVE CONDUIT STUBBED TO THE BAR JOIST OR ACCESSIBLE CEILING. ALL DEVICES ON WALLS SHALL HAVE THE J-BOX RECESSED WITH CONDUIT IN THE WALLS. FASTENERS AND SUPPORTS SHALL BE ADEQUATE TO SUPPORT THE REQUIRED LOAD. ALL J -BOXES/CONDUIT TO BE INSTALLED PER THE NEC AND ALL CONDUIT STUB UPS TO HAVE BUSHINGS INSTALLED TO AVOID WIRE DAMAGE.

D. ALL EQUIPMENT MUST BE AVAILABLE "OVER THE COUNTER" THROUGH THE SECURITY EQUIPMENT DISTRIBUTOR (SED) MARKET AND CAN BE INSTALLED BY DEALERSHIPS INDEPENDENT OF THE MANUFACTURER.

2.2. CONDUIT AND WIRE:

A. CONDUIT:

1. CONDUIT SHALL BE IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE (NEC), LOCAL AND STATE REQUIREMENTS AND WHERE SHOWN ON THE PLANS.

2. WHERE REQUIRED, ALL WIRING SHALL BE INSTALLED IN CONDUIT OR RACEWAY. CONDUIT FILL SHALL NOT EXCEED 40 PERCENT OF INTERIOR CROSS SECTIONAL AREA WHERE THREE OR MORE CABLES ARE CONTAINED WITHIN A SINGLE CONDUIT.

3. CABLE MUST BE SEPARATED FROM ANY OPEN CONDUCTORS OF POWER, OR CLASS 1 CIRCUITS, AND SHALL NOT BE PLACED IN ANY CONDUIT, JUNCTION BOX OR RACEWAY CONTAINING THESE CONDUCTORS, PER NEC ARTICLE 760-29.

4. WIRING FOR 24 VOLT DC CONTROL, ALARM NOTIFICATION, EMERGENCY COMMUNICATION AND SIMILAR POWER-LIMITED AUXILIARY FUNCTIONS MAY BE RUN IN THE SAME CONDUIT AS INITIATING AND SIGNALING LINE CIRCUITS. ALL CIRCUITS SHALL BE PROVIDED WITH TRANSIENT SUPPRESSION DEVICES AND THE SYSTEM SHALL BE DESIGNED TO PERMIT SIMULTANEOUS OPERATION OF ALL CIRCUITS WITHOUT INTERFERENCE OR LOSS OF SIGNALS.

5. CONDUIT SHALL NOT ENTER THE FIRE ALARM CONTROL PANEL, OR ANY OTHER REMOTELY MOUNTED CONTROL PANEL EQUIPMENT OR BACKBOXES, EXCEPT WHERE CONDUIT ENTRY IS SPECIFIED BY THE FACP MANUFACTURER.

6. CONDUIT SHALL BE 3/4 INCH (19.1 MM) MINIMUM.

B. WIRE:

1. ALL FIRE ALARM SYSTEM WIRING SHALL BE NEW.

2. WIRING SHALL BE IN ACCORDANCE WITH LOCAL, STATE AND NATIONAL CODES (E.G., NEC ARTICLE 760) AND AS RECOMMENDED BY THE MANUFACTURER OF THE FIRE ALARM SYSTEM. NUMBER AND SIZE OF CONDUCTORS SHALL BE AS RECOMMENDED BY THE FIRE ALARM SYSTEM MANUFACTURER, BUT NOT LESS THAN 18 AWG (1.02 MM) FOR INITIATING DEVICE CIRCUITS AND SIGNALING LINE CIRCUITS, AND 14 AWG (1.63 MM) FOR NOTIFICATION APPLIANCE CIRCUITS.

3. ALL WIRE AND CABLE SHALL BE LISTED AND/OR APPROVED BY A RECOGNIZED TESTING AGENCY FOR USE WITH A PROTECTIVE SIGNALING SYSTEM.

4. WIRE AND CABLE NOT INSTALLED IN CONDUIT SHALL HAVE A FIRE RESISTANCE RATING SUITABLE FOR THE INSTALLATION AS INDICATED IN NEC 760 (E.G., FPLP).

5. WIRING USED FOR THE MULTIPLEX COMMUNICATION CIRCUIT (SLC) SHALL BE TWISTED AND SUPPORT A MINIMUM WIRING DISTANCE OF 10,000 FEET WHEN SIZED AT 12 AWG. THE DESIGN OF THE SYSTEM SHALL PERMIT USE OF IDC (AND/OR SLC) AND NAC WIRING SHALL NOT BE IN THE SAME CONDUIT WITH THE SLC COMMUNICATION CIRCUIT. SHIELDED WIRE SHALL NOT BE REQUIRED.

6. ALL FIELD WIRING (WITH EXCEPTION OF EXTERNAL COMMUNICATIONS ETHERNET) SHALL BE ELECTRICALLY SUPERVISED FOR OPEN CIRCUIT AND GROUND FAULT.

7. T-TAPS ARE NOT ACCEPTABLE.

C. TERMINAL BOXES, JUNCTION BOXES AND CABINETS:

ALL BOXES AND CABINETS SHALL BE UL LISTED FOR THEIR USE AND PURPOSE. ALL JUNCTION BOXES TO BE SUPPORTED PER THE NEC.

D. THE FIRE ALARM CONTROL PANEL SHALL BE CONNECTED TO A SEPARATE DEDICATED BRANCH CIRCUIT, MAXIMUM 20 AMPERES. THIS CIRCUIT SHALL BE LABELED AT THE MAIN POWER DISTRIBUTION PANEL AS FIRE ALARM. FIRE ALARM CONTROL PANEL PRIMARY POWER WIRING SHALL BE 12 AWG. THE CONTROL PANEL CABINET SHALL BE GROUNDED SECURELY TO EITHER A COLD WATER PIPE OR GROUNDING ROD. THE CONTROL PANEL ENCLOSURE SHALL FEATURE A QUICK REMOVAL CHASSIS TO FACILITATE RAPID REPLACEMENT OF THE FACP ELECTRONICS.

2.3. MAIN FIRE ALARM CONTROL PANEL:

A. THE FACP SHALL BE A FIRE-LITE MODEL MS-9200UDLS AND SHALL CONTAIN A MICROPROCESSOR-BASED CENTRAL PROCESSING UNIT (CPU). THE CPU SHALL COMMUNICATE WITH AND CONTROL THE FOLLOWING TYPES OF EQUIPMENT USED TO MAKE UP THE SYSTEM: INTELLIGENT ADDRESSABLE SMOKE AND THERMAL (HEAT) DETECTORS, ADDRESSABLE MODULES, PRINTER, ANNUNCIATORS, DIGITAL DIALER AND ETHERNET COMMUNICATORS AND OTHER SYSTEM CONTROLLED DEVICES.

B. OPERATOR CONTROL

1. ACKNOWLEDGE SWITCH:

A. ACTIVATION OF THE CONTROL PANEL ACKNOWLEDGE SWITCH IN RESPONSE TO NEW ALARMS AND/OR TROUBLES SHALL SILENCE THE LOCAL PANEL PIEZO ELECTRIC SIGNAL AND CHANGE THE ALARM AND TROUBLE LEDS FROM FLASHING MODE TO STEADY-ON MODE. IF MULTIPLE ALARM OR TROUBLE CONDITIONS EXIST, DEPRESSION OF THIS SWITCH SHALL ADVANCE THE 80-CHARACTER LCD DISPLAY TO THE NEXT ALARM OR TROUBLE CONDITION.

B. DEPRESSION OF THE ACKNOWLEDGE SWITCH SHALL ALSO SILENCE ALL REMOTE ANNUNCIATOR PIEZO SOUNDERS.

2. ALARM SILENCE SWITCH:

ACTIVATION OF THE ALARM SILENCE SWITCH SHALL CAUSE ALL PROGRAMMED ALARM NOTIFICATION APPLIANCES AND RELAYS TO RETURN TO THE NORMAL CONDITION AFTER AN ALARM CONDITION. THE SELECTION OF NOTIFICATION CIRCUITS AND RELAYS THAT ARE SILENCEABLE BY THIS SWITCH SHALL BE FULLY FIELD PROGRAMMABLE WITHIN THE CONFINES OF ALL APPLICABLE STANDARDS. THE FACP SOFTWARE SHALL INCLUDE SILENCE INHIBIT AND AUTO-SILENCE TIMERS.

3. ALARM ACTIVATE (DRILL) SWITCH:

THE ALARM ACTIVATE SWITCH SHALL ACTIVATE ALL NOTIFICATION APPLIANCE CIRCUITS. THE DRILL FUNCTION SHALL LATCH UNTIL THE PANEL IS SILENCED OR RESET.

4. SYSTEM RESET SWITCH:

ACTIVATION OF THE SYSTEM RESET SWITCH SHALL CAUSE ALL ELECTRONICALLY-LATCHED INITIATING DEVICES, APPLIANCES, SOFTWARE ZONES, AS WELL AS ALL ASSOCIATED OUTPUT DEVICES AND CIRCUITS, TO RETURN TO THEIR NORMAL CONDITION.

5. LAMP TEST:

THE LAMP TEST SWITCH SHALL ACTIVATE ALL SYSTEM LEDS AND LIGHT EACH SEGMENT OF THE LIQUID CRYSTAL DISPLAY.

C. SYSTEM CAPACITY AND GENERAL OPERATION

1. THE CONTROL PANEL SHALL PROVIDE, OR BE CAPABLE OF, EXPANSION TO 198 INTELLIGENT/ADDRESSABLE DEVICES.

2. THE CONTROL PANEL SHALL INCLUDE FORM-C ALARM, TROUBLE AND SUPERVISORY RELAYS RATED AT A MINIMUM OF 2.0 AMPS @ 30 VDC. IT SHALL ALSO INCLUDE PROGRAMMABLE NOTIFICATION APPLIANCE CIRCUITS (NACS) WIRED PER THE SUBMITTAL PLANS.

3. THE FIRE ALARM CONTROL PANEL SHALL INCLUDE AN OPERATOR INTERFACE CONTROL AND ANNUNCIATION PANEL THAT SHALL INCLUDE A BACKLIT LIQUID CRYSTAL DISPLAY (LCD), INDIVIDUAL COLOR-CODED SYSTEM STATUS LEDS, AND AN ALPHANUMERIC KEYPAD FOR THE FIELD PROGRAMMING AND CONTROL OF THE FIRE ALARM SYSTEM.

4. ALL PROGRAMMING OR EDITING OF THE EXISTING PROGRAM IN THE SYSTEM SHALL BE ACHIEVED WITHOUT SPECIAL EQUIPMENT AND WITHOUT INTERRUPTING THE ALARM MONITORING FUNCTIONS OF THE FIRE ALARM CONTROL PANEL. THE SYSTEM SHALL BE FULLY PROGRAMMABLE, CONFIGURABLE, AND EXPANDABLE IN THE FIELD WITHOUT THE NEED FOR SPECIAL TOOLS, PROM PROGRAMMERS OR PC BASED PROGRAMMERS. IT SHALL NOT REQUIRE REPLACEMENT OF MEMORY ICS TO FACILITATE PROGRAMMING CHANGES. THE CONTROL UNIT WILL SUPPORT THE ABILITY TO UPGRADE ITS OPERATING PROGRAM USING FLASH MEMORY TECHNOLOGY. THE UNIT SHALL PROVIDE THE USER WITH THE ABILITY TO PROGRAM FROM EITHER THE INCLUDED KEYPAD, A STANDARD PS2-STYLE PC KEYBOARD OR FROM A COMPUTER RUNNING UPLOAD/DOWNLOAD SOFTWARE. ALL SOFTWARE PASSWORDS/INSTALLATION DOCUMENTATION SHALL BE GIVEN TO PUBLIX%%S FIRE ALARM MAINTENANCE VENDOR AT THE TIME OF THE FIRE ALARM MONITORING/TRAINING MEETING NOTED IN SECTION 1.1 PART K OF THIS SPECIFICATION.

5. THE SYSTEM SHALL ALLOW THE PROGRAMMING OF ANY INPUT TO ACTIVATE ANY OUTPUT OR GROUP OF OUTPUTS. SYSTEMS WHICH HAVE LIMITED PROGRAMMING (SUCH AS GENERAL ALARM), HAVE COMPLICATED PROGRAMMING (SUCH AS A DIODE MATRIX), ARE NOT CONSIDERED SUITABLE SUBSTITUTES.

6. THE FACP SHALL PROVIDE THE FOLLOWING FEATURES:

A. DRIFT COMPENSATION TO EXTEND DETECTOR ACCURACY OVER LIFE. DRIFT COMPENSATION SHALL ALSO INCLUDE A SMOOTHING FEATURE, ALLOWING TRANSIENT NOISE SIGNALS TO BE FILTERED OUT.

B. DETECTOR SENSITIVITY TEST, MEETING REQUIREMENTS OF NFPA 72, MAINTENANCE ALERT, WITH TWO LEVELS (MAINTENANCE ALERT/MAINTENANCE URGENT), TO WARN OF EXCESSIVE SMOKE DETECTOR DIRT OR DUST ACCUMULATION.

C. THE ABILITY TO DISPLAY OR PRINT SYSTEM REPORTS.

D. ALARM VERIFICATION, WITH COUNTERS AND A TROUBLE INDICATION TO ALERT MAINTENANCE PERSONNEL WHEN A DETECTOR ENTERS VERIFICATION AN EXCESSIVE NUMBER OF TIMES.

E. POSITIVE ALARM SEQUENCE (PAS PRESIGNAL), MEETING NFPA 72 REQUIREMENTS.

F. RAPID MANUAL STATION REPORTING.

G. NON-ALARM POINTS FOR GENERAL (NON-FIRE) CONTROL.

H. PERIODIC DETECTOR TEST, CONDUCTED AUTOMATICALLY BY THE SOFTWARE.

I. WALK TEST, WITH A CHECK FOR TWO DETECTORS SET TO SAME ADDRESS.

7. THE FACP SHALL BE CAPABLE OF CODING NOTIFICATION APPLIANCE CIRCUITS IN MARCH TIME CODE (120 PPM), AND TEMPORAL (NFPA 72). MAIN PANEL NOTIFICATION CIRCUITS SHALL ALSO AUTOMATICALLY SYNCHRONIZE ANY OF THE FOLLOWING MANUFACTURER%%S NOTIFICATION APPLIANCES CONNECTED TO THEM: SYSTEM SENSOR, WHEELOCK, OR GENTEX WITH NO NEED FOR ADDITIONAL SYNCHRONIZATION MODULES.

D. CENTRAL MICROPROCESSOR

1. THE MICROPROCESSOR SHALL BE A STATE-OF-THE-ART AND IT SHALL COMMUNICATE WITH, MONITOR AND CONTROL ALL EXTERNAL INTERFACES. A "WATCH DOG" TIMER CIRCUIT TO DETECT AND REPORT MICROPROCESSOR FAILURE.

2. THE MICROPROCESSOR SHALL CONTAIN AND EXECUTE ALL SPECIFIC ACTIONS TO BE TAKEN IN THE CONDITION OF AN ALARM. CONTROL PROGRAMMING SHALL BE HELD IN NON-VOLATILE PROGRAMMABLE MEMORY, AND SHALL NOT BE LOST EVEN IF SYSTEM PRIMARY AND SECONDARY POWER FAILURE OCCURS.

3. THE MICROPROCESSOR SHALL ALSO PROVIDE A REAL-TIME CLOCK FOR TIME ANNOTATION OF SYSTEM DISPLAYS, PRINTER, AND HISTORY FILE.

4. A SPECIAL PROGRAM CHECK FUNCTION SHALL BE PROVIDED TO DETECT COMMON OPERATOR ERRORS.

5. AN AUTO-PROGRAMMING CAPABILITY (SELF-LEARN) SHALL BE PROVIDED TO QUICKLY IDENTIFY DEVICES CONNECTED ON THE SLC AND MAKE THE SYSTEM OPERATIONAL.

6. FOR FLEXIBILITY AND TO ENSURE PROGRAM VALIDITY, AN OPTIONAL WINDOWS(TM) BASED PROGRAM UTILITY SHALL BE AVAILABLE. THIS PROGRAM SHALL BE USED TO OFF-LINE PROGRAM THE SYSTEM WITH BATCH UPLOAD/DOWNLOAD. THIS PROGRAM SHALL ALSO HAVE AVERIFICATION UTILITY WHICH SCANS THE PROGRAM FILES, IDENTIFYING POSSIBLE ERRORS. IT SHALL ALSO HAVE THE ABILITY TO COMPARE OLD PROGRAM FILES TO NEW ONES, IDENTIFYING DIFFERENCES IN THE TWO FILES TO ALLOW COMPLETE TESTING OF ANY SYSTEM OPERATING CHANGES. THIS SHALL BE IN INCOMPLIANCE WITH THE NFPA 72 REQUIREMENTS FOR TESTING AFTER SYSTEM MODIFICATION.

E. LOCAL KEYBOARD INTERFACE

1. IN ADDITION TO AN INTEGRAL KEYPAD, THE FIRE ALARM CONTROL PANEL WILL ACCEPT A STANDARD PS2-STYLE KEYBOARD FOR PROGRAMMING, TESTING, AND CONTROL OF THE SYSTEM. THE KEYBOARD WILL BE ABLE TO EXECUTE THE SYSTEM FUNCTIONS ACKNOWLEDGE, SIGNALS SILENCED, DRILL AND RESET.

F. DISPLAY

1. THE DISPLAY SHALL PROVIDE ALL THE CONTROLS AND INDICATORS USED BY THE SYSTEM OPERATOR AND MAY ALSO BE USED TO PROGRAM ALL SYSTEM OPERATIONAL PARAMETERS.

2. THE DISPLAY SHALL INCLUDE STATUS INFORMATION AND CUSTOM ALPHANUMERIC LABELS FOR ALL INTELLIGENT DETECTORS, ADDRESSABLE MODULES, INTERNAL PANEL CIRCUITS, AND SOFTWARE ZONES.

3. THE DISPLAY SHALL CONTAIN AN ALPHANUMERIC, TEXT-TYPE DISPLAY AND DEDICATED LEDS FOR THE ANNUNCIATION OF AC POWER, FIRE ALARM, SUPERVISORY, TROUBLE, MAINTENANCE, ALARM SILENCED, DISABLED, BATTERY, AND GROUND CONDITIONS.

4. THE DISPLAY KEYPAD SHALL BE PART OF THE STANDARD SYSTEM AND HAVE THE CAPABILITY TO COMMAND ALL SYSTEM FUNCTIONS, ENTRY OF ANY ALPHABETIC OR NUMERIC INFORMATION, AND FIELD PROGRAMMING. TWO DIFFERENT PASSWORD LEVELS SHALL BE PROVIDED TO PREVENT UNAUTHORIZED SYSTEM CONTROL OR PROGRAMMING.

5. THE DISPLAY SHALL INCLUDE THE FOLLOWING OPERATOR CONTROL SWITCHES: ACKNOWLEDGE, ALARM SILENCE, DRILL (ALARM ACTIVATE), AND SYSTEM RESET.

G. SIGNALING LINE CIRCUIT (SLC)

1. THE SLC INTERFACE SHALL PROVIDE POWER TO AND COMMUNICATE WITH UP TO 99 INTELLIGENT DETECTORS (IONIZATION, PHOTOELECTRIC OR THERMAL) ADDRESSABLE BEAM DETECTORS, AND 99 ADDRESSABLE PULL STATIONS, INTELLIGENT MODULES (MONITOR OR CONTROL) FOR A SYSTEM CAPACITY OF 198 DEVICES. REFER TO THE SHOP SUBMITTAL PLANS FOR WIRING REQUIREMENTS AND OPERATIONAL MATRIX.

2. THE CPU SHALL RECEIVE INFORMATION FROM ALL INTELLIGENT DETECTORS TO BE PROCESSED TO DETERMINE WHETHER NORMAL, ALARM, PRE-ALARM, OR TROUBLE CONDITIONS EXIST FOR EACH DETECTOR. THE SOFTWARE SHALL AUTOMATICALLY COMPENSATE FOR THE ACCUMULATION OF DUST IN EACH DETECTOR UP TO ALLOWABLE LIMITS. THE INFORMATION SHALL ALSO BE USED FOR AUTOMATIC DETECTOR TESTING AND FOR THE DETERMINATION OF DETECTOR MAINTENANCE CONDITIONS.

3. THE DETECTOR SOFTWARE SHALL MEET NFPA 72, CHAPTER 10 REQUIREMENTS AND BE CERTIFIED BY UL AS A CALIBRATED SENSITIVITY TEST INSTRUMENT.

H. SERIAL INTERFACES

1. THE SYSTEM SHALL PROVIDE A MEANS OF INTERFACING TO UL LISTED ELECTRONIC DATA PROCESSING (EDP) PERIPHERALS USING THE EIA-232 COMMUNICATIONS STANDARD.

I. THE CONTROL PANEL WILL HAVE THE CAPABILITY OF REVERSE POLARITY TRANSMISSION OR CONNECTION TO A MUNICIPAL BOX FOR COMPLIANCE WITH APPLICABLE NFPA STANDARDS.

J. DIGITAL ALARM COMMUNICATOR TRANSMITTER (DACT). THE DACT IS AN INTERFACE FOR COMMUNICATING DIGITAL INFORMATION BETWEEN A FIRE ALARM CONTROL PANEL AND A UL- LISTED CENTRAL STATION.

1. COMMUNICATION SHALL INCLUDE VITAL SYSTEM STATUS SUCH AS:

- INDEPENDENT ZONE (ALARM, TROUBLE, NON-ALARM, SUPERVISORY)
- INDEPENDENT ADDRESSABLE DEVICE STATUS
- AC (MAINS) POWER LOSS
- LOW BATTERY AND EARTH FAULT
- SYSTEM OFF NORMAL
- 12 AND 24 HOUR TEST SIGNAL
- ABNORMAL TEST SIGNAL (PER UL REQUIREMENTS)

K. ENCLOSURES:

1. THE CONTROL PANEL SHALL BE HOUSED IN A UL-LISTED CABINET SUITABLE FOR SURFACE OR SEMI-FLUSH MOUNTING. THE CABINET AND FRONT SHALL BE CORROSION PROTECTED AND PAINTED RED VIA THE POWDER COAT METHOD WITH MANUFACTURER'S STANDARD FINISH.

2. THE BACK BOX AND DOOR SHALL BE CONSTRUCTED OF STEEL WITH PROVISIONS FOR ELECTRICAL CONDUIT CONNECTIONS INTO THE SIDES AND TOP.

3. THE DOOR SHALL PROVIDE A KEY LOCK AND SHALL PROVIDE FOR THE VIEWING OF ALL INDICATORS.

4. THE CABINET SHALL ACCEPT A CHASSIS CONTAINING THE PCB AND TO ASSIST IN QUICK REPLACEMENT OF ALL THE ELECTRONICS INCLUDING POWER SUPPLY SHALL REQUIRE NO MORE THAN TWO BOLTS TO SECURE THE PANEL TO THE ENCLOSURE BACK BOX.

L. FIELD CHARGING POWER SUPPLY: THE FCPS IS A DEVICE DESIGNED FOR USE AS EITHER A REMOTE 24-VOLT POWER SUPPLY OR AS A BOOSTER FOR POWERING NOTIFICATION APPLIANCES.

1. THE FCPS SHALL OFFER UP TO 8.0 AMPS (6.0 AMPS CONTINUOUS) OF REGULATED 24 VOLT POWER. IT SHALL INCLUDE AN INTEGRAL CHARGER DESIGNED TO CHARGE 18.0 AMP HOUR BATTERIES.

2. THE FIELD CHARGING POWER SUPPLY SHALL HAVE TWO INPUT TRIGGERS. THE INPUT TRIGGER SHALL BE A NOTIFICATION APPLIANCE CIRCUIT (FROM THE FIRE ALARM CONTROL PANEL) OR A CONTROL RELAY. FOUR NAC OUTPUTS, WIRED NFPA STYLE Y OR Z, SHALL BE AVAILABLE FOR CONNECTION TO THE NOTIFICATION DEVICES.

3. THE FCPS SHALL OPTIONALLY PROVIDE SYNCHRONIZATION OF ALL CONNECTED STROBES OR HORN STROBE COMBINATIONS WHEN EITHER SYSTEM SENSOR, WHEELOCK OR GENTEX DEVICES ARE INSTALLED.

4. THE FCPS SHALL FUNCTION AS A SYNC FOLLOWER AS WELL AS A SYNC GENERATOR.

5. THE FCPS SHALL INCLUDE A SURFACE MOUNT BACKBOX.

6. THE FIELD CHARGING POWER SUPPLY SHALL INCLUDE THE ABILITY TO DELAY THE REPORTING OF AN AC FAIL CONDITION PER NFPA REQUIREMENTS.

7. THE FCPS SHALL PROVIDE 24 VDC REGULATED AND POWER-LIMITED CIRCUITRY PER UL STANDARDS.

M. POWER SUPPLY:

1. THE MAIN POWER SUPPLY FOR THE FIRE ALARM CONTROL PANEL SHALL PROVIDE UP TO 6.0 AMPS OF AVAILABLE POWER FOR THE CONTROL PANEL AND PERIPHERAL DEVICES.

2. PROVISIONS WILL BE MADE TO ALLOW THE AUDIO-VISUAL POWER TO BE INCREASED AS REQUIRED BY ADDING MODULAR EXPANSION AUDIO-VISUAL POWER SUPPLIES.

3. POSITIVE-TEMPERATURE-COEFFICIENT (PTC) THERMISTORS, CIRCUIT BREAKERS, OR OTHER OVER-CURRENT PROTECTION SHALL BE PROVIDED ON ALL POWER OUTPUTS. THE POWER SUPPLY SHALL PROVIDE AN INTEGRAL BATTERY CHARGER OR MAY BE USED WITH AN EXTERNAL BATTERY AND CHARGER SYSTEMS. BATTERY ARRANGEMENT MAY BE CONFIGURED IN THE FIELD.

4. THE MAIN POWER SUPPLY SHALL CONTINUOUSLY MONITOR ALL FIELD WIRES FOR EARTH GROUND CONDITIONS.

5. THE MAIN POWER SUPPLY SHALL OPERATE ON 120 VAC, 60 HZ, AND SHALL PROVIDE ALL NECESSARY POWER FOR THE FACP.

N. PROGRAMMABLE ELECTRONIC SOUNDERS:

1. ELECTRONIC SOUNDERS SHALL OPERATE ON 24 VDC NOMINAL.

2. ELECTRONIC SOUNDERS SHALL BE FIELD PROGRAMMABLE WITHOUT THE USE OF SPECIAL TOOLS, TO PROVIDE SLOW WHOOP, CONTINUOUS, OR INTERRUPTED TONES WITH AN OUTPUT SOUND LEVEL OF AT LEAST 90 DBA MEASURED AT 10 FEET FROM THE DEVICE.

3. ELECTRONIC SOUNDERS SHALL BE FLUSH OR SURFACE MOUNTED AS SHOWN ON PLANS.

O. STROBE LIGHTS SHALL MEET THE REQUIREMENTS OF THE ADA, UL STANDARD 1971 AND SHALL MEET THE FOLLOWING CRITERIA:

1. THE MAXIMUM PULSE DURATION SHALL BE 2/10 OF ONE SECOND.

2. STROBE INTENSITY SHALL MEET THE REQUIREMENTS OF UL 1971.

3. THE FLASH RATE SHALL MEET THE REQUIREMENTS OF UL 1971.

P. AUDIBLE/VISUAL COMBINATION DEVICES:

1. SHALL MEET THE APPLICABLE REQUIREMENTS OF SECTION A LISTED ABOVE FOR AUDIBILITY.

2. SHALL MEET THE REQUIREMENTS OF SECTION B LISTED ABOVE FOR VISIBILITY.

Q. SPECIFIC SYSTEM OPERATIONS

1. ALARM VERIFICATION: EACH OF THE INTELLIGENT ADDRESSABLE SMOKE DETECTORS IN THE SYSTEM MAY BE INDEPENDENTLY PROGRAMMED FOR VERIFICATION OF ALARM SIGNALS. THE ALARM VERIFICATION TIME PERIOD SHALL NOT EXCEED 2 MINUTES.

2. POINT DISABLE: ANY ADDRESSABLE DEVICE OR CONVENTIONAL CIRCUIT IN THE SYSTEM MAY BE ENABLED OR DISABLED THROUGH THE SYSTEM KEYPAD.

3. POINT READ: THE SYSTEM SHALL BE ABLE TO DISPLAY THE FOLLOWING POINT STATUS DIAGNOSTIC FUNCTIONS:

A. DEVICE STATUS
B. DEVICE TYPE
C. CUSTOM DEVICE LABEL
D. DEVICE ZONE ASSIGNMENTS

4. SYSTEM STATUS REPORTS: UPON COMMAND FROM AN OPERATOR OF THE SYSTEM, A STATUS REPORT WILL BE GENERATED AND PRINTED, LISTING ALL SYSTEM STATUS.

5. SYSTEM HISTORY RECORDING AND REPORTING: THE FIRE ALARM CONTROL PANEL SHALL CONTAIN A HISTORY BUFFER THAT WILL BE CAPABLE OF STORING UP TO 1000 EVENTS. EACH OF THESE ACTIVATIONS WILL BE STORED AND TIME AND DATE STAMPED WITH THE ACTUAL TIME OF THE ACTIVATION. THE CONTENTS OF THE HISTORY BUFFER MAY BE MANUALLY REVIEWED, ONE EVENT AT A TIME, OR PRINTED IN ITS ENTIRETY. THE HISTORY BUFFER SHALL USE NON-VOLATILE MEMORY. SYSTEMS THAT USE VOLATILE MEMORY FOR HISTORY STORAGE ARE NOT ACCEPTABLE SUBSTITUTES.

6. AUTOMATIC DETECTOR MAINTENANCE ALERT: THE FIRE ALARM CONTROL PANEL SHALL AUTOMATICALLY INTERROGATE EACH INTELLIGENT DETECTOR AND SHALL ANALYZE THE DETECTOR RESPONSES OVER A PERIOD OF TIME. IF ANY INTELLIGENT DETECTOR IN THE SYSTEM RESPONDS WITH A READING THAT IS ABOVE OR BELOW NORMAL LIMITS, THEN THE SYSTEM WILL ENTER THE TROUBLE MODE, AND THE PARTICULAR DETECTOR WILL BE ANNUNCIATED ON THE SYSTEM DISPLAY. THIS FEATURE SHALL IN NO WAY INHIBIT THE RECEIPT OF ALARM CONDITIONS IN THE SYSTEM, NOR SHALL IT REQUIRE ANY SPECIAL HARDWARE, SPECIAL TOOLS OR COMPUTER EXPERTISE TO PERFORM.

7. PRE-ALARM FUNCTION: THE SYSTEM SHALL PROVIDE TWO LEVELS OF PRE-ALARM WARNING TO GIVE ADVANCE NOTICE OF A POSSIBLE FIRE SITUATION. BOTH PRE-ALARM LEVELS SHALL BE FULLY FIELD ADJUSTABLE. THE FIRST LEVEL SHALL GIVE AN AUDIBLE INDICATION AT THE PANEL. THE SECOND LEVEL SHALL GIVE AN AUDIBLE INDICATION AND MAY ALSO ACTIVATE CONTROL RELAYS. THE SYSTEM SHALL ALSO HAVE THE ABILITY TO ACTIVATE LOCAL DETECTOR SOUNDER BASES AT THE PRE-ALARM LEVEL, TO ASSIST IN AVOIDING NUISANCE ALARMS.

8. THE FIRE ALARM CONTROL PANEL SHALL INCLUDE SILENT AND AUDIBLE WALK TEST FUNCTIONS - SILENT AND AUDIBLE. IT SHALL INCLUDE THE ABILITY TO TEST INITIATING DEVICE CIRCUITS AND NOTIFICATION APPLIANCE CIRCUITS FROM THE FIELD WITHOUT RETURNING TO THE PANEL TO RESET THE SYSTEM. THE OPERATION SHALL BE AS FOLLOWS:

A. THE SILENT WALK TEST WILL NOT SOUND NACS BUT WILL STORE THE WALK TEST INFORMATION IN HISTORY FOR LATER VIEWING.

B. ALARMING AN INITIATING DEVICE SHALL ACTIVATE PROGRAMMED OUTPUTS, WHICH ARE SELECTED TO PARTICIPATE IN WALK TEST.

C. INTRODUCING A TROUBLE INTO THE INITIATING DEVICE SHALL ACTIVATE THE PROGRAMMED OUTPUTS.

D. WALK TEST SHALL BE SELECTABLE ON A PER DEVICE/CIRCUIT BASIS. ALL DEVICES AND CIRCUITS WHICH ARE NOT SELECTED FOR WALK TEST SHALL CONTINUE TO PROVIDE FIRE PROTECTION AND IF AN ALARM IS DETECTED, WILL EXIT WALK TEST AND ACTIVATE ALL PROGRAMMED ALARM FUNCTIONS.

E. ALL DEVICES TESTED IN WALK TEST SHALL BE RECORDED IN THE HISTORY BUFFER.

F. ALL DEVICES NOT TESTED IN WALK TEST SHALL BE RECORDED IN THE HISTORY BUFFER.

9. WATERFLOW OPERATION

AN ALARM FROM A WATERFLOW DETECTION DEVICE SHALL ACTIVATE THE APPROPRIATE ALARM MESSAGE ON THE CONTROL PANEL DISPLAY; TURN ON ALL PROGRAMMED NOTIFICATION APPLIANCE CIRCUITS AND SHALL NOT BE AFFECTED BY THE SIGNAL SILENCE SWITCH.

10. SUPERVISORY OPERATION

AN ALARM FROM A SUPERVISORY DEVICE SHALL CAUSE THE APPROPRIATE INDICATION ON THE CONTROL PANEL DISPLAY, LIGHT A COMMON SUPERVISORY LED, BUT WILL NOT CAUSE THE SYSTEM TO ENTER THE TROUBLE MODE.

11. SIGNAL SILENCE OPERATION

THE FACP SHALL HAVE THE ABILITY TO PROGRAM EACH OUTPUT CIRCUIT (NOTIFICATION CIRCUIT OR RELAY) TO DEACTIVATE UPON DEPRESSION OF THE SIGNAL SILENCE SWITCH.

12. NON-ALARM INPUT OPERATION

ANY ADDRESSABLE INITIATING DEVICE IN THE SYSTEM MAY BE USED AS A NON-ALARM INPUT TO MONITOR NORMALLY OPEN CONTACT TYPE DEVICES. NON-ALARM FUNCTIONS ARE A LOWER PRIORITY THAN FIRE ALARM INITIATING DEVICES.

2.4. SYSTEM COMPONENTS:

A. ADDRESSABLE PULL BOX (MANUAL STATION)

1. ADDRESSABLE PULL BOXES SHALL, ON COMMAND FROM THE CONTROL PANEL, SEND DATA TO THE PANEL REPRESENTING THE STATE OF THE MANUAL SWITCH AND THE ADDRESSABLE COMMUNICATION MODULE STATUS. THEY SHALL USE A KEY OPERATED TEST-RESET LOCK, AND SHALL BE DESIGNED SO THAT AFTER ACTUAL EMERGENCY OPERATION, THEY CANNOT BE RESTORED TO NORMAL USE EXCEPT BY THE USE OF A KEY.

2. ALL OPERATED STATIONS SHALL HAVE A POSITIVE, VISUAL INDICATION OF OPERATION AND UTILIZE A KEY TYPE RESET.

3. MANUAL PULL STATIONS SHALL BE CONSTRUCTED OF LEXAN WITH CLEARLY VISIBLE OPERATING INSTRUCTIONS PROVIDED ON THE COVER. THE WORD FIRE SHALL APPEAR ON THE FRONT OF THE STATIONS IN RAISED LETTERS, 1.75 INCHES (44 MM) OR LARGER.

B. INTELLIGENT MULTI-SENSING DETECTOR

1. THE INTELLIGENT DETECTOR SHALL BE AN ADDRESSABLE DEVICE WHICH IS CAPABLE OF DETECTING MULTIPLE THREATS BY USING PHOTOELECTRIC AND THERMAL TECHNOLOGIES IN A SINGLE UNIT. THIS DETECTOR SHALL UTILIZE ADVANCED ELECTRONICS WHICH REACT TO SLOW SMOLDERING FIRES (PHOTOELECTRIC) AND HEAT (THERMAL) ALL WITHIN A SINGLE SENSING DEVICE.

2. THE MULTI-DETECTOR SHALL INCLUDE TWO BICOLOR LEDS FOR 360-DEGREE VIEWING.

3. AUTOMATICALLY ADJUSTS SENSITIVITY LEVELS WITHOUT THE NEED FOR OPERATOR INTERVENTION OR PROGRAMMING. SENSITIVITY INCREASES WITH HEAT.

C. INTELLIGENT PHOTOELECTRIC SMOKE DETECTOR

1. THE DETECTORS SHALL USE THE PHOTOELECTRIC (LIGHT -SCATTERING) PRINCIPAL TO MEASURE SMOKE DENSITY AND SHALL, ON COMMAND FROM THE CONTROL PANEL, SEND DATA TO THE PANEL REPRESENTING THE ANALOG LEVEL OF SMOKE DENSITY.

2. THE DETECTORS SHALL BE CEILING-MOUNTED AND AVAILABLE IN AN ALTERNATE MODEL WITH AN INTEGRAL FIXED 135-DEGREE HEAT-SENSING ELEMENT.

3. EACH DETECTOR SHALL CONTAIN A REMOTE LED OUTPUT AND A BUILT-IN TEST SWITCH.

4. DETECTOR SHALL BE PROVIDED ON A TWIST-LOCK BASE.

5. IT SHALL BE POSSIBLE TO PERFORM A CALIBRATED SENSITIVITY AND PERFORMANCE TEST ON THE DETECTOR WITHOUT THE NEED FOR THE GENERATION OF SMOKE. THE TEST METHOD SHALL TEST ALL DETECTOR CIRCUITS.

6. A VISUAL INDICATION OF AN ALARM SHALL BE PROVIDED BY DUAL LATCHING LIGHT EMITTING DIODES (LEDS), ON THE DETECTOR, WHICH MAY BE SEEN FROM GROUND LEVEL OVER 360 DEGREES. THESE LEDS SHALL PERIODICALLY FLASH TO INDICATE THAT THE DETECTOR IS IN COMMUNICATION WITH THE CONTROL PANEL.

7. THE DETECTOR SHALL NOT GO INTO ALARM WHEN EXPOSED TO AIR VELOCITIES OF UP TO 1500 FEET PER MINUTE (FPM).

8. THE DETECTOR SCREEN AND COVER ASSEMBLY SHALL BE EASILY REMOVABLE FOR FIELD CLEANING OF THE DETECTOR CHAMBER.

9. ALL FIELD WIRE CONNECTIONS SHALL BE MADE TO THE BASE THROUGH THE USE OF A CLAMPING PLATE AND SCREW.

D. INTELLIGENT IONIZATION SMOKE DETECTOR

1. THE DETECTORS SHALL USE THE DUAL-CHAMBER IONIZATION PRINCIPAL TO MEASURE PRODUCTS OF COMBUSTION AND SHALL, ON COMMAND FROM THE CONTROL PANEL, SEND DATA TO THE PANEL REPRESENTING THE ANALOG LEVEL OF PRODUCTS OF COMBUSTION.

E. INTELLIGENT THERMAL DETECTORS

1. THERMAL DETECTORS SHALL BE INTELLIGENT ADDRESSABLE DEVICES RATED AT 135 DEGREES FAHRENHEIT (58 DEGREES CELSIUS) AND HAVE A RATE-OF-RISE ELEMENT RATED AT 15 DEGREES F (9.4 DEGREES C) PER MINUTE. IT SHALL CONNECT VIA TWO WIRES TO THE FIRE ALARM CONTROL PANEL SIGNALING LINE CIRCUIT.

F. INTELLIGENT DUCT SMOKE DETECTOR

1. THE SMOKE DETECTOR HOUSING SHALL ACCOMMODATE EITHER AN INTELLIGENT IONIZATION DETECTOR OR AN INTELLIGENT PHOTOELECTRIC DETECTOR, OF THAT PROVIDES CONTINUOUS ANALOG MONITORING AND ALARM VERIFICATION FROM THE PANEL.

2. THE DUCT SMOKE DETECTORS SHALL BE FIRE LITE D335PL SUPPLIED AND POWERED/WIRED BY THE FIRE ALARM CONTRACTOR, INSTALLED BY THE MECHANICAL CONTRACTOR. THE FIRE ALARM CONTRACTOR SHALL COORDINATE ALL REQUIREMENTS AND INSTALLATION REQUIREMENTS (INCLUDING SAMPLING TUBE REQUIREMENTS) WITH THE MECHANICAL CONTRACTOR FOR THE INSTALLATION. THE INSTALLATION SHALL INCLUDE ANY FIRE ALARM CONTROL RELAYS AND NECESSARY FOR A/C SHUTDOWN AND REMOTE TEST UNITS FOR DUCT SMOKE DETECTORS AS SHOWN ON THE SHOP SUBMITTAL PLANS.

3. WHEN SUFFICIENT SMOKE IS SENSED, AN ALARM SIGNAL IS INITIATED AT THE FACP, AND APPROPRIATE ACTION TAKEN TO CHANGE OVER AIR HANDLING SYSTEMS TO HELP PREVENT THE RAPID DISTRIBUTION OF TOXIC SMOKE AND FIRE GASES THROUGHOUT THE AREAS SERVED BY THE DUCT SYSTEM.

G. ADDRESSABLE DRY CONTACT MONITOR MODULE

1. ADDRESSABLE MONITOR MODULES SHALL BE PROVIDED TO CONNECT ONE SUPERVISED IDC ZONE OF CONVENTIONAL ALARM INITIATING DEVICES (ANY NORMALLY OPEN DRY CONTACT DEVICE) TO ONE OF THE FIRE ALARM CONTROL PANEL SLCS.

2. THE MONITOR MODULE SHALL MOUNT IN A 4-INCH SQUARE (101.6 MM SQUARE), 2-1/8 INCH (54 MM) DEEP ELECTRICAL BOX.

3. THE IDC ZONE SHALL BE SUITABLE FOR STYLE D OR STYLE B OPERATION. AN LED SHALL BE PROVIDED THAT SHALL FLASH UNDER NORMAL CONDITIONS, INDICATING THAT THE MONITOR MODULE IS OPERATIONAL AND IN REGULAR COMMUNICATION WITH THE CONTROL PANEL.

4. FOR DIFFICULT TO REACH AREAS, THE MONITOR MODULE SHALL BE AVAILABLE IN A MINIATURE PACKAGE AND SHALL BE NO LARGER THAN 2-3/4 INCH (70 MM) X 1-1/4 INCH (31.7 MM) X 1/2 INCH (12.7 MM). THIS VERSION NEED NOT INCLUDE STYLE D OR AN LED.

H. TWO-WIRE DETECTOR MONITORING

1. MEANS SHALL BE PROVIDED FOR THE MONITORING OF CONVENTIONAL INITIATING DEVICE CIRCUITS POPULATED WITH 2-WIRE SMOKE DETECTORS AS WELL AS NORMALLY-OPEN CONTACT ALARM INITIATING DEVICES (PULL STATIONS, HEAT DETECTORS, ETC).

2. EACH IDC OF CONVENTIONAL DEVICES WILL BE MONITORED AS A DISTINCT ADDRESS ON THE POLLING CIRCUIT BY AN ADDRESSABLE MODULE. THE MODULE WILL SUPERVISE THE IDC FOR ALARMS AND CIRCUIT INTEGRITY (OPENS).

3. THE MONITORING MODULE WILL BE COMPATIBLE, AND LISTED AS SUCH, WITH ALL DEVICES ON THE SUPERVISED CIRCUIT.

4. THE IDC ZONE SHALL BE CLASS B WIRING AND OPERATION. AN LED SHALL BE PROVIDED THAT SHALL FLASH UNDER NORMAL CONDITIONS, INDICATING THAT THE MONITOR MODULE IS OPERATIONAL AND IN REGULAR COMMUNICATION WITH THE CONTROL PANEL.

5. THE MONITORING MODULE SHALL BE CAPABLE OF MOUNTING IN A 4-INCH SQUARE (101.6 MM SQUARE), 2-1/8 INCH (54 MM) DEEP ELECTRICAL BOX OR IN AN SURFACE MOUNT BACKBOX.

I. ADDRESSABLE CONTROL RELAY MODULE

1. ADDRESSABLE CONTROL RELAY MODULES SHALL BE PROVIDED TO CONTROL THE OPERATION OF FAN SHUTDOWN AND OTHER AUXILIARY CONTROL FUNCTIONS.

2. THE CONTROL MODULE SHALL MOUNT IN A STANDARD 4-INCH SQUARE, 2-1/8 INCH DEEP ELECTRICAL BOX, OR TO A SURFACE MOUNTED BACKBOX.

3. THE CONTROL RELAY MODULE WILL PROVIDE A DRY CONTACT, FORM-C RELAY. THE RELAY COIL SHALL BE MAGNETICALLY LATCHED TO REDUCE WIRING CONNECTION REQUIREMENTS, AND TO INSURE THAT 100% OF ALL AUXILIARY RELAYS MAY BE ENERGIZED AT THE SAME TIME ON THE SAME PAIR OF WIRES.

4. THE CONTROL RELAY MODULE SHALL BE SUITABLE FOR PILOT DUTY APPLICATIONS AND RATED FOR A MINIMUM OF 0.6 AMPS AT 30 VDC.

J. MULTIPLE TWO-WIRE DETECTOR MONITORING

1. A SINGLE MULTI INPUT MODULE SHALL BE PROVIDED FOR THE MONITORING OF UP TO 10 CONVENTIONAL INITIATING DEVICE CIRCUITS POPULATED WITH 2-WIRE SMOKE DETECTORS AS WELL AS NORMALLY-OPEN CONTACT ALARM INITIATING DEVICES (PULL STATIONS, HEAT DETECTORS, ETC).

2. EACH IDC OF CONVENTIONAL DEVICES WILL BE MONITORED AS A DISTINCT ADDRESS ON THE POLLING CIRCUIT BY AN ADDRESSABLE POINT. THE MODULE WILL SUPERVISE THE IDC FOR ALARMS AND CIRCUIT INTEGRITY (OPENS).

3. THE FIRST ADDRESS ON THE 10 INPUT BOARDS SHALL BE SET FROM 01 TO 90 AND THE REMAINING MODULE ADDRESSES SHALL BE AUTOMATICALLY ASSIGNED TO THE NEXT NINE HIGHER ADDRESSES.

4. PROVISION SHALL BE INCLUDED FOR DISABLING A MAXIMUM OF TWO UNUSED ADDRESSES.

5. THE SUPERVISED STATE (NORMAL, OPEN, OR SHORT) OF THE MONITORED DEVICE SHALL BE SENT BACK TO THE PANEL. A COMMON SLC INPUT SHALL BE USED FOR ALL MODULES, AND THE INITIATING DEVICE LOOPS SHALL SHARE A COMMON SUPERVISORY SUPPLY AND GROUND.

6. THE IDC ZONE MAY BE WIRED FOR STYLE D OR STYLE B (CLASS A OR B) OPERATION. A GREEN LED FOR EACH CIRCUIT SHALL BE PROVIDED THAT SHALL FLASH UNDER NORMAL CONDITIONS, INDICATING THAT THE MONITOR MODULE IS OPERATIONAL AND IN REGULAR COMMUNICATION WITH THE CONTROL PANEL. LEDS SHALL LATCH ON WHEN A CIRCUIT IS IN ALARM.

K. ISOLATOR MODULE

1. ISOLATOR MODULES SHALL BE PROVIDED TO AUTOMATICALLY ISOLATE WIRE-TO-WIRE SHORT CIRCUITS ON AN SLC STYLE 6 (CLASS A) OR STYLE 4 (CLASS B BRANCH). THE ISOLATOR MODULE SHALL LIMIT THE NUMBER OF MODULES OR DETECTORS THAT MAY BE RENDERED INOPERATIVE BY A SHORT CIRCUIT FAULT ON THE SLC LOOP SEGMENT OR BRANCH. AT LEAST ONE ISOLATOR MODULE SHALL BE PROVIDED FOR EACH FLOOR OR PROTECTED ZONE OF THE BUILDING.

2. IF A WIRE-TO-WIRE SHORT OCCURS, THE ISOLATOR MODULE SHALL AUTOMATICALLY OPEN- CIRCUIT (DISCONNECT) THE SLC. WHEN THE SHORT CIRCUIT CONDITION IS CORRECTED, THE ISOLATOR MODULE SHALL AUTOMATICALLY RECONNECT THE ISOLATED SECTION.

3. THE ISOLATOR MODULE SHALL NOT REQUIRE ANY ADDRESS-SETTING, AND ITS OPERATIONS SHALL BE TOTALLY AUTOMATIC. IT SHALL NOT BE NECESSARY TO REPLACE OR RESET AN ISOLATOR MODULE AFTER ITS NORMAL OPERATION.

4. THE ISOLATOR MODULE SHALL MOUNT IN A STANDARD 4-INCH (101.6 MM) DEEP ELECTRICAL BOX OR IN A SURFACE MOUNTED BACKBOX. IT SHALL PROVIDE A SINGLE LED THAT SHALL FLASH TO INDICATE THAT THE ISOLATOR IS OPERATIONAL AND SHALL ILLUMINATE STEADILY TO INDICATE THAT A SHORT CIRCUIT CONDITION HAS BEEN DETECTED AND ISOLATED.

L. ACS SERIALLY CONNECTED ANNUNCIATOR

1. THE ANNUNCIATOR SHALL COMMUNICATE WITH THE FIRE ALARM CONTROL PANEL VIA A TWO WIRE EIA 485 (MULTI-DROP) COMMUNICATIONS CIRCUIT.

2. THE ANNUNCIATOR SHALL REQUIRE NO MORE THAN FOUR WIRES FOR OPERATION. ANNUNCIATION SHALL INCLUDE INTELLIGENT ADDRESSABLE POINTS, SYSTEM SOFTWARE ZONES, CONTROL RELAYS AND NOTIFICATION APPLIANCE CIRCUITS. THE FOLLOWING OPERATIONS SHALL ALSO BE PROVIDED:

A. UP TO 32 ANNUNCIATORS, EACH WITH UP TO 64 POINTS MAY BE INSTALLED ON THE SYSTEM.

B. THE ANNUNCIATOR SHALL INCLUDE A SINGLE ELECTRICAL KEY SWITCH TO DISABLE ALL SWITCH FUNCTIONS.

C. THE ANNUNCIATOR SHALL PROVIDE ALARM AND TROUBLE LEDS WITH FLASH FOR NEW CONDITIONS.

D. THIS UNIT SHALL PROVIDE FOR EACH ZONE: ALARM INDICATIONS, USING A RED ALARM AND YELLOW TROUBLE LEDS, AND SWITCHES FOR THE CONTROL OF FIRE ALARM CONTROL PANEL FUNCTIONS. THE ANNUNCIATOR WILL ALSO HAVE AN ON-LINE LED, LOCAL PIEZO ELECTRIC SIGNAL, LOCAL ACKNOWLEDGE/LAMP TEST SWITCH, AND CUSTOM SLIDE-IN ZONE/FUNCTION IDENTIFICATION LABELS.

E. SWITCHES SHALL BE AVAILABLE FOR REMOTE ANNUNCIATION AND CONTROL OF OUTPUT POINTS IN THE SYSTEM, SYSTEM ACKNOWLEDGE, TELEPHONE ZONE SELECT, SPEAKER SELECT, GLOBAL SIGNAL SILENCE, AND GLOBAL SYSTEM RESET WITHIN THE CONFINES OF ALL APPLICABLE STANDARDS.

3. THIS SYSTEM SHALL PROVIDE A MEANS OF INTERFACING TO A GRAPHIC STYLE ANNUNCIATOR.

4. THE GRAPHIC ANNUNCIATOR INTERFACE WILL POSSESS THE CAPABILITY OF INDIVIDUALLY ANNUNCIATING EACH INDIVIDUAL ADDRESSABLE DEVICE IN THE SYSTEM.

M. ALPHANUMERIC LCD TYPE ANNUNCIATOR (TERMINAL MODE):

1. THE ALPHANUMERIC DISPLAY ANNUNCIATOR SHALL BE A SUPERVISED, REMOTELY LOCATED BACK-LIT LCD DISPLAY CONTAINING A MINIMUM OF EIGHTY (80) CHARACTERS FOR ALARM ANNUNCIATION IN CLEAR ENGLISH TEXT.

2. THE LCD ANNUNCIATOR SHALL DISPLAY ALL ALARM AND TROUBLE CONDITIONS IN THE SYSTEM.

3. AN AUDIBLE INDICATION OF ALARM SHALL BE INTEGRAL TO THE ALPHANUMERIC DISPLAY.

4. THE DISPLAY SHALL BE UL LISTED FOR FIRE ALARM APPLICATION.

5. IT SHALL BE POSSIBLE TO CONNECT UP TO 32 LCD DISPLAYS AND BE CAPABLE OF WIRING DISTANCES UP TO 6,000 FEET FROM THE CONTROL PANEL.

6. THE ANNUNCIATOR SHALL CONNECT TO A SEPARATE, DEDICATED "TERMINAL MODE" EIA-485 INTERFACE. THIS IS A TWO-WIRE LOOP CONNECTION AND SHALL BE CAPABLE OF DISTANCES TO 6,000 FEET. EACH TERMINAL MODE LCD DISPLAY SHALL MIMIC THE MAIN CONTROL PANEL.

N. ALPHANUMERIC LCD TYPE ANNUNCIATOR (ANN-BUS MODE):

1. THE ALPHANUMERIC DISPLAY ANNUNCIATOR SHALL BE A SUPERVISED, REMOTELY LOCATED BACK-LIT EIGHTY (80) CHARACTERS LCD DISPLAY FOR ALARM ANNUNCIATION IN CLEAR ENGLISH TEXT.

2. THE LCD ANNUNCIATOR SHALL DISPLAY ALL ALARM AND TROUBLE CONDITIONS IN THE SYSTEM.

3. AN AUDIBLE INDICATION OF ALARM SHALL BE INTEGRAL TO THE ALPHANUMERIC DISPLAY.

4. IT SHALL BE POSSIBLE TO CONNECT UP TO 8 LCD DISPLAYS AND BE CAPABLE OF WIRING DISTANCES UP TO 6,000 FEET FROM THE CONTROL PANEL.

5. UP TO 8 TOTAL DEVICES OF ANY KIND, LCD, PRINTER GATEWAY, LED, RELAY OR I/O MODULE MAY BE INSTALLED ON THE ANN-BUS.

2.5. SYSTEM COMPONENTS - ADDRESSABLE DEVICES

A. ADDRESSABLE DEVICES - GENERAL

1. ADDRESSABLE DEVICES SHALL EMPLOY THE SIMPLE-TO-SET DECADE ADDRESSING SCHEME. ADDRESSABLE DEVICES WHICH USE A BINARY-CODED ADDRESS SETTING METHOD, SUCH AS A DIP SWITCH, ARE NOT AN ALLOWABLE SUBSTITUTE.

2. DETECTORS SHALL BE ADDRESSABLE AND INTELLIGENT, AND SHALL CONNECT WITH TWO WIRES TO THE FIRE ALARM CONTROL PANEL SIGNALING LINE CIRCUITS.

3. ADDRESSABLE SMOKE AND THERMAL (HEAT) DETECTORS SHALL PROVIDE DUAL ALARM AND POWER/POLLING LEDS. BOTH LEDS SHALL FLASH UNDER NORMAL CONDITIONS, INDICATING THAT THE DETECTOR IS OPERATIONAL AND IN REGULAR COMMUNICATION WITH THE CONTROL PANEL, AND BOTH LEDS SHALL BE PLACED INTO STEADY ILLUMINATION BY THE CONTROL PANEL, INDICATING THAT AN ALARM CONDITION HAS BEEN DETECTED. AN OUTPUT CONNECTION SHALL ALSO BE PROVIDED IN THE BASE TO CONNECT AN EXTERNAL REMOTE ALARM LED.

4. USING SOFTWARE IN THE FACP, DETECTORS SHALL AUTOMATICALLY COMPENSATE FOR DUST ACCUMULATION AND OTHER SLOW ENVIRONMENTAL CHANGES THAT MAY AFFECT THEIR PERFORMANCE. THE DETECTORS SHALL BE LISTED BY UL AS MEETING THE CALIBRATED SENSITIVITY TEST REQUIREMENTS OF NFPA STANDARD 72, CHAPTER 10.

5. DETECTORS SHALL BE CEILING-MOUNT AND SHALL INCLUDE A SEPARATE TWIST-LOCK BASE WITH TAMPER PROOF FEATURE. BASE OPTIONS SHALL INCLUDE A BASE WITH A BUILT-IN (LOCAL) SOUNDER RATED FOR A MINIMUM OF 85 DBA, A RELAY BASE AND AN ISOLATOR BASE DESIGNED FOR STYLE 7 APPLICATIONS.

6. DETECTORS SHALL PROVIDE A TEST MEANS WHEREBY THEY WILL SIMULATE AN ALARM CONDITION AND REPORT THAT CONDITION TO THE CONTROL PANEL.

7. DETECTORS SHALL ALSO STORE AN INTERNAL IDENTIFYING TYPE CODE THAT THE CONTROL PANEL SHALL USE TO IDENTIFY THE TYPE OF DEVICE (ION, PHOTO, THERMAL).

8. DETECTORS SHALL PROVIDE ADDRESS-SETTING MEANS USING DECIMAL SWITCHES.

2.6. BATTERIES:

A. UPON LOSS OF PRIMARY (AC) POWER TO THE CONTROL PANEL, THE BATTERIES SHALL HAVE SUFFICIENT CAPACITY TO POWER THE FIRE ALARM SYSTEM FOR REQUIRED STANDBY TIME 60 HOURS FOLLOWED BY 5 MINUTES OF ALARM.

B. THE BATTERIES ARE TO BE COMPLETELY MAINTENANCE FREE. NO LIQUIDS ARE REQUIRED. FLUID LEVEL CHECKS FOR REFILLING, SPILLS, AND LEAKAGE SHALL NOT BE REQUIRED.

C. IF NECESSARY TO MEET STANDBY REQUIREMENTS, EXTERNAL BATTERY/CHARGER SYSTEMS MAY BE USED.

PART 3.0 - EXECUTION

3.1. INSTALLATION:

A. INSTALLATION SHALL BE IN ACCORDANCE WITH THE NEC, NFPA 72, LOCAL AND STATE CODES, AS SHOWN ON THE DRAWINGS, AND AS RECOMMENDED BY THE MAJOR EQUIPMENT MANUFACTURER.

B. ALL CONDUIT, JUNCTION BOXES, CONDUIT SUPPORTS AND HANGERS SHALL BE CONCEALED IN FINISHED AREAS AND MAY BE EXPOSED IN UNFINISHED AREAS. SMOKE DETECTORS SHALL NOT BE INSTALLED PRIOR TO THE SYSTEM PROGRAMMING AND TEST PERIOD. IF CONSTRUCTION IS ONGOING DURING THIS PERIOD, MEASURES SHALL BE TAKEN TO PROTECT SMOKE DETECTORS FROM CONTAMINATION AND PHYSICAL DAMAGE.

C. ALL FIRE DETECTION AND ALARM SYSTEM DEVICES, CONTROL PANELS AND REMOTE ANNUNCIATORS SHALL BE FLUSH MOUNTED WHEN LOCATED IN FINISHED AREAS AND MAY BE SURFACE MOUNTED WHEN LOCATED IN UNFINISHED AREAS.

D. MANUAL PULL STATIONS SHALL BE SUITABLE FOR SURFACE MOUNTING OR SEMI FLUSH MOUNTING AS SHOWN ON THE PLANS, AND SHALL BE INSTALLED NOT LESS THAN 42 INCHES (1067 MM), NOR MORE THAN 48 INCHES (122 MM) ABOVE THE FINISHED FLOOR.

3.2. TEST:

THE SERVICE OF A COMPETENT, NICET LEVEL II TECHNICIAN SHALL BE PROVIDED TO TECHNICALLY SUPERVISE AND PARTICIPATE DURING ALL OF THE ADJUSTMENTS AND TESTS FOR THE SYSTEM. ALL TESTING SHALL BE IN ACCORDANCE WITH NFPA 72, CHAPTER 10.

A. BEFORE ENERGIZING THE CABLES AND WIRES, CHECK FOR CORRECT CONNECTIONS AND TEST FOR SHORT CIRCUITS, GROUND FAULTS, CONTINUITY, AND INSULATION.

B. CLOSE EACH SPRINKLER SYSTEM FLOW VALVE AND VERIFY PROPER SUPERVISORY ALARM AT THE FACP.

C. VERIFY ACTIVATION OF ALL WATERFLOW SWITCHES.

D. OPEN INITIATING DEVICE CIRCUITS AND VERIFY THAT THE TROUBLE SIGNAL ACTUATES.

E. OPEN AND SHORT SIGNALING LINE CIRCUITS AND VERIFY THAT THE TROUBLE SIGNAL ACTUATES.

F. OPEN AND SHORT NOTIFICATION APPLIANCE CIRCUITS AND VERIFY THAT TROUBLE SIGNAL ACTUATES.

G. GROUND ALL CIRCUITS AND VERIFY RESPONSE OF TROUBLE SIGNALS.

H. CHECK PRESENCE AND AUDIBILITY OF TONE AT ALL ALARM NOTIFICATION DEVICES.

I. CHECK INSTALLATION, SUPERVISION, AND OPERATION OF ALL INTELLIGENT SMOKE DETECTORS USING THE WALK TEST.

J. EACH OF THE ALARM CONDITIONS THAT THE SYSTEM IS REQUIRED TO DETECT SHOULD BE INTRODUCED ON THE SYSTEM. VERIFY THE PROPER RECEIPT AND THE PROPER PROCESSING OF THE SIGNAL AT THE FACP AND THE CORRECT ACTIVATION OF THE CONTROL POINTS.

K. WHEN THE SYSTEM IS EQUIPPED WITH OPTIONAL FEATURES, THE MANUFACTURER'S MANUAL SHALL BE CONSULTED TO DETERMINE THE PROPER TESTING PROCEDURES. THIS IS INTENDED TO ADDRESS SUCH ITEMS AS VERIFYING CONTROLS PERFORMED BY INDIVIDUALLY ADDRESSED OR GROUPED DEVICES, SENSITIVITY MONITORING, VERIFICATION FUNCTIONALITY AND SIMILAR.

3.3. FINAL INSPECTION:

A. AT THE FINAL INSPECTION, A MINIMUM NICET LEVEL II TECHNICIAN SHALL DEMONSTRATE THAT THE SYSTEM FUNCTIONS PROPERLY IN EVERY RESPECT TO PUBLIX AND PUBLIX'S FIRE ALARM MAINTENANCE VENDOR (TYCO INTEGRATED SECURITY). SEE PART 1.1 SECTION M.

3.4. INSTRUCTION:

A. INSTRUCTION SHALL BE PROVIDED AS REQUIRED FOR OPERATING THE SYSTEM. HANDS-ON DEMONSTRATIONS OF THE OPERATION OF ALL SYSTEM COMPONENTS AND THE ENTIRE SYSTEM INCLUDING PROGRAM CHANGES AND FUNCTIONS SHALL BE PROVIDED.

B. THE CONTRACTOR OR INSTALLING DEALER SHALL PROVIDE A USER MANUAL INDICATING "SEQUENCE OF OPERATION", AS SHOWN IN THE SUBMITTAL PLANS OPERATIONAL MATRIX.

SECURITY SYSTEM SPECIFICATION

PART 1.0 - GENERAL

1.1. DESCRIPTION:

A. THIS SECTION OF THE SPECIFICATION INCLUDES THE FURNISHING, INSTALLATION, CONNECTION AND TESTING OF THE MICROPROCESSOR CONTROLLED SECURITY SYSTEM WITH A COMPLETE, OPERATIVE, COORDINATED SYSTEM.

B. THE INSTALLING COMPANY SHALL HAVE BEEN IN THE SECURITY INSTALLATION BUSINESS FOR AT LEAST 5 YEARS AND HAVE SUCCESSFUL, PROVEN EXPERIENCE WITH BIG BOX RETAIL SECURITY INSTALLATIONS.

C. THE INSTALLING COMPANY WILL PROVIDE 4 HOURS OF SYSTEM COMMISSIONING AND OPERATIONAL TESTING / TRAINING TO PUBLIX'S MAINTENANCE/ MONITORING COMPANY (TYCO INTEGRATED SECURITY, CONTACT STEVE SCHIAVELLO, 813-404-1025) PRIOR TO SUBSTANTIAL COMPLETION AND AFTER THE SECURITY SYSTEM HAS BEEN OPERATIONALLY APPROVED BY THE AHJ.

D. PUBLIX'S SECURITY ALARM ENGINEER (TRICON ENGINEERS, CONTACT: DENNIS VANN 813-227-9190) WILL PROVIDE ALL BUILDABLE SHOP SUBMITTAL PLANS FOR PERMIT BY THE INSTALLING SECURITY ALARM CONTRACTOR. ALL PERMIT COMMENTS AND REVISIONS NECESSARY TO OBTAIN PERMITS SHALL COORDINATED WITH TRICON ENGINEERS. THE INSTALLING SECURITY ALARM CONTRACTOR SHALL PROVIDE ALL MANUFACTURER LITERATURE AS REQUIRED FOR PERMIT. NO DEVIATION FROM THE SECURITY ALARM SHOP DRAWINGS INSTALLATION DESIGN AND/OR COMPONENTS SHALL BE ALLOWED WITHOUT DIRECTION AND APPROVAL FROM TRICON ENGINEERS AND PUBLIX BUILDING ELECTRICAL ENGINEER OF RECORD.

E. THE INSTALLING SECURITY ALARM CONTRACTOR SHALL KEEP AN ACCURATE SET OF RECORD DRAWINGS THAT ARE KEPT ON SITE AND A COPY SHALL BE SENT TO TRICON ENGINEERS FOR ANY RECORD PLANS REQUEST FOR FINAL INSPECTIONS AND PERMIT CLOSEOUT.

F. THE SECURITY ALARM CONTRACTOR SHALL BE RESPONSIBLE FOR ALL PERMIT AND INSPECTION COSTS ASSOCIATED WITH THE COMPLETE SECURITY ALARM INSTALLATION. THE SECURITY ALARM CONTRACTOR SHALL ATTEND ALL PRE, DURING AND POST CONSTRUCTION COORDINATION MEETINGS TO UNDERSTAND ALL PROJECT PHASING AND COORDINATION WITH OTHER DISCIPLINES.

1.2. SCOPE

A. INSTALLATION OF A COMPLETE BOSCH MODEL D7412G SECURITY SYSTEM AND ALL ASSOCIATED PERIPHERAL FIELD DEVICES AND WIRING INSTALLED IN ACCORDANCE TO THE PROJECT SPECIFICATIONS AND DRAWINGS.

1.3. SUBMITTALS

A. GENERAL:

1. TWO COPIES OF ALL SUBMITTALS SHALL BE SUBMITTED TO THE ARCHITECT/ENGINEER FOR REVIEW.

2. ALL REFERENCES TO MANUFACTURER'S MODEL NUMBERS AND OTHER PERTINENT INFORMATION HEREIN IS INTENDED TO ESTABLISH MINIMUM STANDARDS OF PERFORMANCE, FUNCTION AND QUALITY. EQUIVALENT COMPATIBLE UL-LISTED EQUIPMENT FROM OTHER MANUFACTURERS MAY BE SUBSTITUTED FOR THE SPECIFIED EQUIPMENT AS LONG AS THE MINIMUM STANDARDS ARE MET.

3. NO SUBSTITUTIONS FOR EQUIPMENT WILL BE ALLOWED. ALL EQUIPMENT NOTED IN THE TRICON ENGINEERS SHOP DRAWINGS SHALL BE PROVIDED AS SPECIFIED.

B. SHOP DRAWINGS:

SHOP DRAWINGS NEEDED FOR PERMIT AND CONSTRUCTION WILL BE DESIGNED AND SUPPLIED BY TRICON ENGINEERS. ALL BUILDING DEPARTMENT PERMIT AND ANY SUBSEQUENT REVISIONS SHALL BE COORDINATED WITH TRICON ENGINEERS FOR APPROPRIATE PLANS MODIFICATIONS.

C. MANUALS:

1. AT INSTALLATION COMPLETION AND AFTER FINAL INSPECTIONS THE SECURITY ALARM CONTRACTOR SHALL PROVIDE PUBLIX TWO COMPLETE OPERATING AND MAINTENANCE MANUALS LISTING THE MANUFACTURER'S NAME(S), INCLUDING TECHNICAL DATA SHEETS AND FINAL SHOP DRAWINGS.

2. WIRING DIAGRAMS SHALL INDICATE INTERNAL WIRING FOR EACH DEVICE AND THE INTERCONNECTIONS BETWEEN THE ITEMS OF EQUIPMENT.

3. PROVIDE A CLEAR AND CONCISE DESCRIPTION OF OPERATION THAT GIVES, IN DETAIL, THE INFORMATION REQUIRED TO PROPERLY OPERATE THE EQUIPMENT AND SYSTEM.

1.4. GUARANTY:

ALL WORK PERFORMED AND ALL MATERIAL AND EQUIPMENT FURNISHED UNDER THIS CONTRACT SHALL BE FREE FROM DEFECTS AND SHALL REMAIN SO FOR A PERIOD OF AT LEAST ONE (1) YEAR FROM THE DATE OF ACCEPTANCE. THE LABOR AND MATERIALS REQUIRED TO CORRECT ANY DEFECT DURING THIS ONE YEAR PERIOD SHALL BE INCLUDED IN THE SUBMITTAL BID.

DUE TO THE CRITICAL NATURE OF THIS SYSTEM, PUBLIX RESERVES THE RIGHT TO REPAIR ANY DEFECTIVE INSTALLED SECURITY ALARM DEVICE/SYSTEM DURING THE FIRST YEAR WARRANTY PERIOD BY PUBLIX'S SECURITY ALARM MAINTENANCE VENDOR. PUBLIX RESERVES THE RIGHT TO BACK CHARGE THE INSTALLING SECURITY ALARM CONTRACTOR FOR THE FULL COSTS INCURRED DUE TO THE REPAIR, INCLUDING LABOR AND MATERIAL.

1.5. MAINTENANCE:

PUBLIX WILL UTILIZE IT'S SECURITY ALARM MAINTENANCE VENDOR (TYCO INTEGRATED SECURITY) TO PERFORM ALL POST INSTALLATION ROUTINE MAINTENANCE.

1.6. APPLICABLE STANDARDS AND SPECIFICATIONS:

THE SPECIFICATIONS AND STANDARDS LISTED BELOW FORM A PART OF THIS SPECIFICATION. THE SYSTEM SHALL FULLY COMPLY WITH THE LATEST ISSUE OF THESE STANDARDS, IF APPLICABLE.

A. THE SYSTEM AND ITS COMPONENTS SHALL BE UNDERWRITERS LABORATORIES, INC. LISTED UNDER THE APPROPRIATE UL TESTING STANDARD AS LISTED HEREIN FOR FIRE ALARM APPLICATIONS AND THE INSTALLATION SHALL BE IN COMPLIANCE WITH THE UL LISTING.

B. LOCAL AND STATE BUILDING CODES.

C. ALL REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION (AHJ).

1.7. APPROVALS:

A. THE SYSTEM (INCLUDING ALL DEVICES) SHALL HAVE PROPER LISTING AND/OR APPROVAL FROM UNDERWITER'S LABORATORY.

2.0 PRODUCTS

2.1. EQUIPMENT AND MATERIAL, GENERAL:

A. ALL EQUIPMENT AND COMPONENTS SHALL BE NEW, AND THE MANUFACTURER'S CURRENT MODEL. THE MATERIALS, APPLIANCES, EQUIPMENT AND DEVICES SHALL BE TESTED AND LISTED BY A NATIONALLY RECOGNIZED APPROVALS AGENCY FOR USE AS PART OF A SECURITY SIGNALING SYSTEM.

B. ALL EQUIPMENT AND COMPONENTS SHALL BE INSTALLED IN STRICT COMPLIANCE WITH MANUFACTURERS' RECOMMENDATIONS. CONSULT THE MANUFACTURER'S INSTALLATION MANUALS FOR ALL WIRING DIAGRAMS, SCHEMATICS, PHYSICAL EQUIPMENT SIZES, ETC., BEFORE BEGINNING SYSTEM INSTALLATION.

C. ALL EQUIPMENT SHALL BE ATTACHED TO WALLS AND CEILING/FLOOR ASSEMBLIES AND SHALL BE HELD FIRMLY IN PLACE (E.G., DETECTORS SHALL NOT BE SUPPORTED SOLELY BY SUSPENDED CEILINGS). ALL DEVICES TO BE SUPPORTED BY A J-BOX AND HAVE CONDUIT STUBBED TO THE BAR JOIST OR ACCESSIBLE CEILING. ALL DEVICES ON WALLS SHALL HAVE THE J-BOX RECESSED WITH CONDUIT IN THE WALLS. FASTENERS AND SUPPORTS SHALL BE ADEQUATE TO SUPPORT THE REQUIRED LOAD. ALL J -BOXES/CONDUIT TO BE INSTALLED PER THE NEC AND ALL CONDUIT STUB UPS TO HAVE BUSHINGS INSTALLED TO AVOID WIRE DAMAGE.

D. ALL EQUIPMENT MUST BE AVAILABLE "OVER THE COUNTER" THROUGH THE SECURITY EQUIPMENT DISTRIBUTOR (SED) MARKET AND CAN BE INSTALLED BY DEALERSHIPS INDEPENDENT OF THE MANUFACTURER.

2.2. CONDUIT AND WIRE:

A. CONDUIT:

1. CONDUIT SHALL BE IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE (NEC), LOCAL AND STATE REQUIREMENTS AND WHERE SHOWN ON THE PLANS.

2. WHERE REQUIRED, ALL WIRING SHALL BE INSTALLED IN CONDUIT OR RACEWAY. CONDUIT FILL SHALL NOT EXCEED 40 PERCENT OF INTERIOR CROSS SECTIONAL AREA WHERE THREE OR MORE CABLES ARE CONTAINED WITHIN A SINGLE CONDUIT.

3. CABLE MUST BE SEPARATED FROM ANY OPEN CONDUCTORS OF POWER, OR CLASS 1 CIRCUITS, AND SHALL NOT BE PLACED IN ANY CONDUIT, JUNCTION BOX OR RACEWAY CONTAINING THESE CONDUCTORS.

4. CONDUIT SHALL NOT ENTER THE SECURITY ALARM CONTROL PANEL, OR ANY OTHER REMOTELY MOUNTED CONTROL PANEL EQUIPMENT OR BACKBOXES, EXCEPT WHERE CONDUIT ENTRY IS SPECIFIED BY THE FACP MANUFACTURER.

5. CONDUIT SHALL BE 3/4 INCH (19.1 MM) MINIMUM.

B. WIRE:

1. ALL SECURITY ALARM SYSTEM WIRING SHALL BE NEW.

2. WIRING SHALL BE IN ACCORDANCE WITH LOCAL, STATE AND NATIONAL CODES (E.G., NEC ARTICLE 800) AND AS RECOMMENDED BY THE MANUFACTURER OF THE FIRE ALARM SYSTEM. NUMBER AND SIZE OF CONDUCTORS SHALL BE AS RECOMMENDED BY THE SECURITY ALARM SYSTEM MANUFACTURER, BUT NOT LESS THAN 18 AWG (1.02 MM) FOR INITIATING DEVICE CIRCUITS AND SIGNALING LINE CIRCUITS, AND 14 AWG (1.63 MM) FOR NOTIFICATION APPLIANCE CIRCUITS.

3. ALL WIRE AND CABLE SHALL BE LISTED AND/OR APPROVED BY A RECOGNIZED TESTING AGENCY FOR SECURITY SIGNALING SYSTEM.

4. WIRE AND CABLE NOT INSTALLED IN CONDUIT SHALL BE RATED FOR THE APPLICATION. (IE PLENUM RATED, WET LOCATION RATED)

C. TERMINAL BOXES, JUNCTION BOXES AND CABINETS:

ALL BOXES AND CABINETS SHALL BE UL LISTED FOR THEIR USE AND PURPOSE. ALL JUNCTION BOXES TO BE SUPPORTED PER THE NEC.

D. THE SECURITY ALARM CONTROL PANEL SHALL BE CONNECTED TO A SEPARATE DEDICATED BRANCH CIRCUIT, MAXIMUM 20 AMPERES. THIS CIRCUIT SHALL BE LABELED AT THE MAIN POWER DISTRIBUTION PANEL AS SECURITY ALARM. SECURITY ALARM CONTROL PANEL PRIMARY POWER WIRING SHALL BE 12 AWG. THE CONTROL PANEL CABINET SHALL BE GROUNDED.

2.3. MAIN SECURITY ALARM CONTROL PANEL:

A. THE CONTROL SHALL BE A BOSCH MODEL D7412G AND SHALL CONTAIN A MICROPROCESSOR-BASED CENTRAL PROCESSING UNIT (CPU). THE CPU SHALL COMMUNICATE WITH AND CONTROL THE PHERIPHAL DEVICES MONITORED BY THE SYSTEM.

PART 3.0 - EXECUTION

3.1. INSTALLATION:

A. INSTALLATION SHALL BE IN ACCORDANCE WITH THE NEC, LOCAL AND STATE CODES, AS SHOWN ON THE DRAWINGS, AND AS RECOMMENDED BY THE MAJOR EQUIPMENT MANUFACTURER.

B. ALL CONDUIT, JUNCTION BOXES, CONDUIT SUPPORTS AND HANGERS SHALL BE CONCEALED IN FINISHED AREAS AND MAY BE EXPOSED IN UNFINISHED AREAS.

C. ALL ALARM DETECTION AND ALARM SYSTEM DEVICES, CONTROL PANELS AND REMOTE ANNUNCIATORS SHALL BE FLUSH MOUNTED WHEN LOCATED IN FINISHED AREAS AND MAY BE SURFACE MOUNTED WHEN LOCATED IN UNFINISHED AREAS.

3.2. FINAL INSPECTION:

A. AT THE FINAL INSPECTION, THE SECURITY ALARM CONTRACTOR SHALL DEMONSTRATE THAT THE SYSTEM FUNCTIONS PROPERLY IN EVERY RESPECT TO PUBLIX AND PUBLIX%%S SECURITY ALARM MAINTENANCE VENDOR (TYCO INTEGRATED SECURITY). SEE PART 1.1 SECTION C.

3.3. INSTRUCTION:

A. INSTRUCTION SHALL BE PROVIDED AS REQUIRED FOR OPERATING THE SYSTEM. HANDS-ON DEMONSTRATIONS OF THE OPERATION OF ALL SYSTEM COMPONENTS AND THE ENTIRE SYSTEM INCLUDING PROGRAM CHANGES AND FUNCTIONS SHALL BE PROVIDED.

B. THE CONTRACTOR OR INSTALLING DEALER SHALL PROVIDE A USER MANUAL INDICATING "SEQUENCE OF OPERATION", AS SHOWN IN THE SUBMITTAL PLANS OPERATIONAL MATRIX.

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