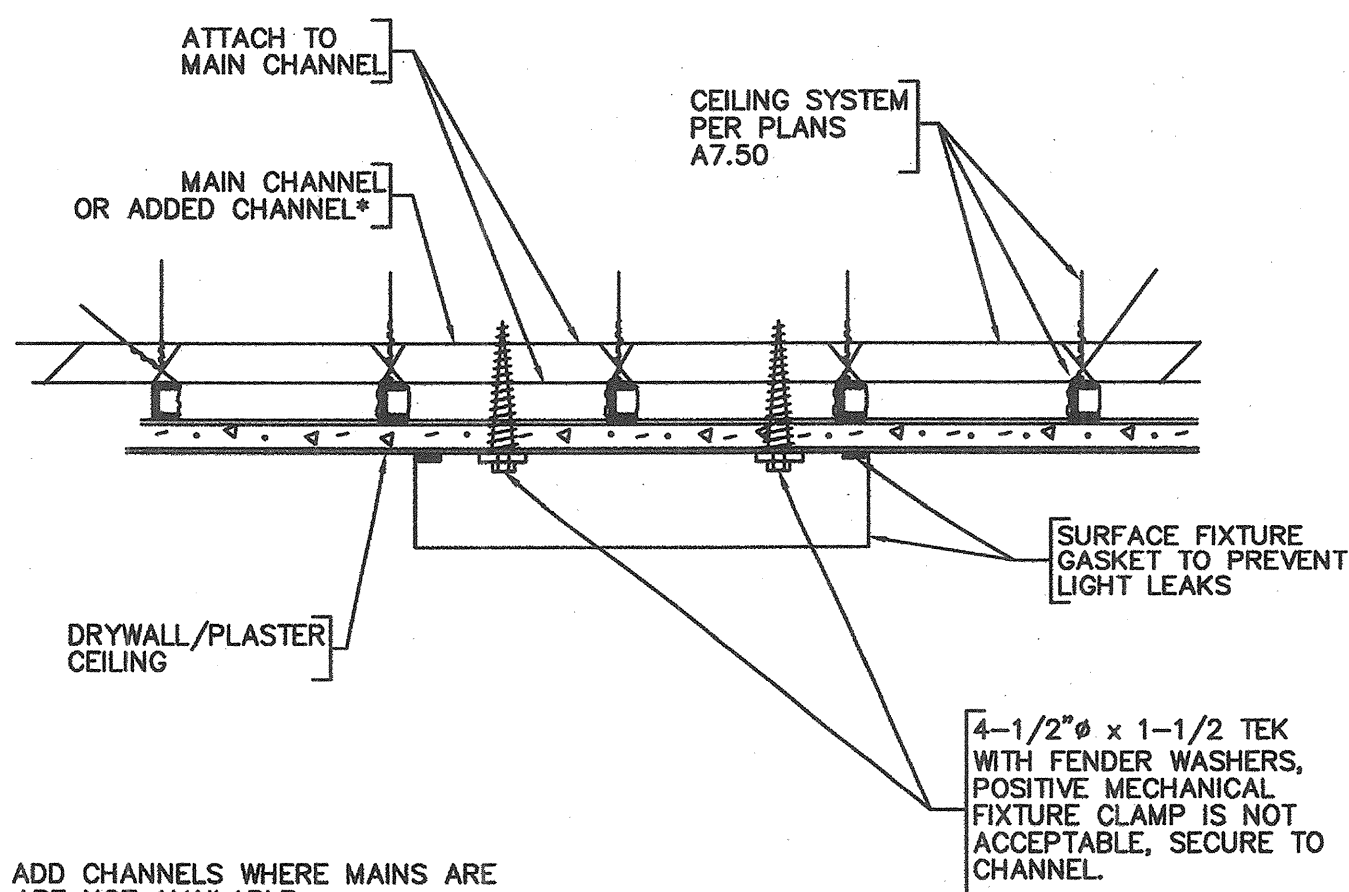
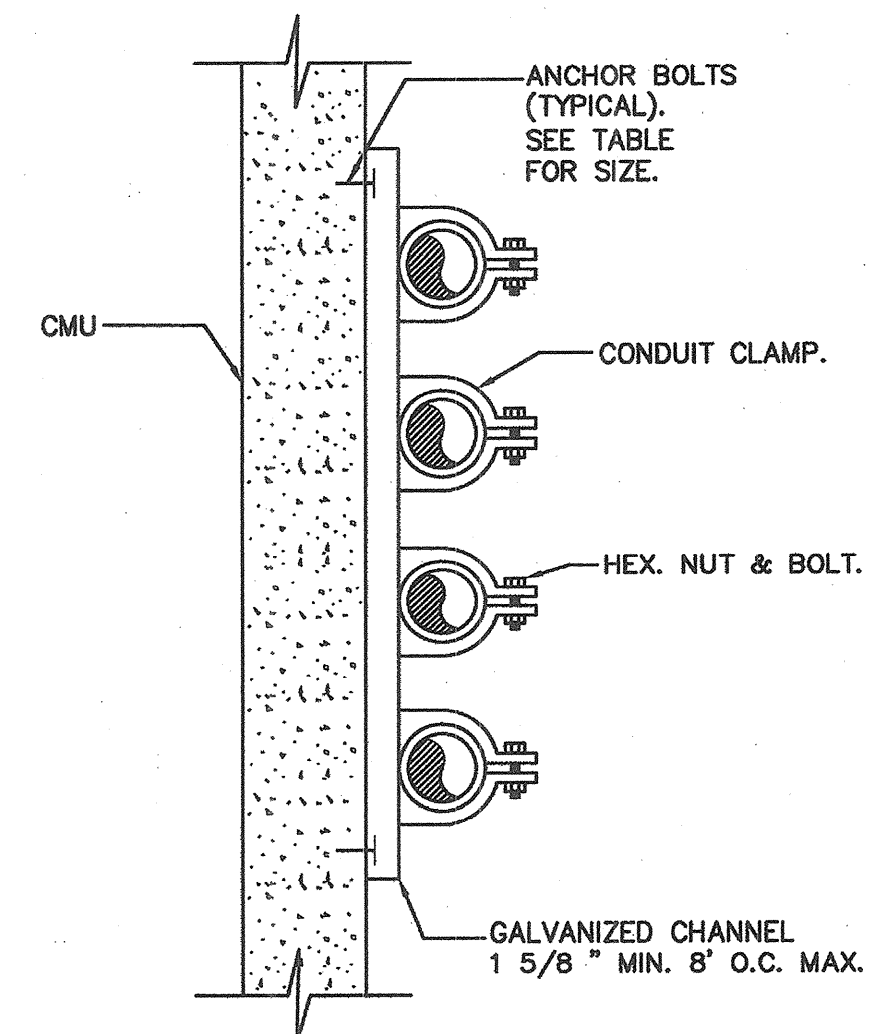


- NOTES:**
- ATTACH WIRE TO FIXTURE (3 TIGHT TURNS MIN. IN 1 1/2" MAX.).
  - "TEK" SCREW GRID TO FIXTURE @ EACH CORNER.
  - ATTACH HANGER WIRES TO STRUCTURE AS PER & ARCHITECTURAL DETAILS ON DWG. A9.5 (K6/N7).
  - CEILING SYSTEM SPLAY/HANGER WIRES AS OCCURS, SEE PLANS.
  - MAXIMUM FIXTURE WEIGHT NOT TO EXCEED 50 LBS.



\* ADD CHANNELS WHERE MAINS ARE NOT AVAILABLE.  
WT = 50 LBS. MAX.



CONDUIT TRADE SIZE	SIZE & EMBEDMENT OF WEDGE ANCHOR BOLTS
1/2" C.	2 1/2" C. 1/4" Ø x 1 3/8"
3" C.	4" C. 5/16" Ø x 1 1/2"

**RECESSED LAY-IN CEILING FIXT. MTG.**

NOT TO SCALE **1**

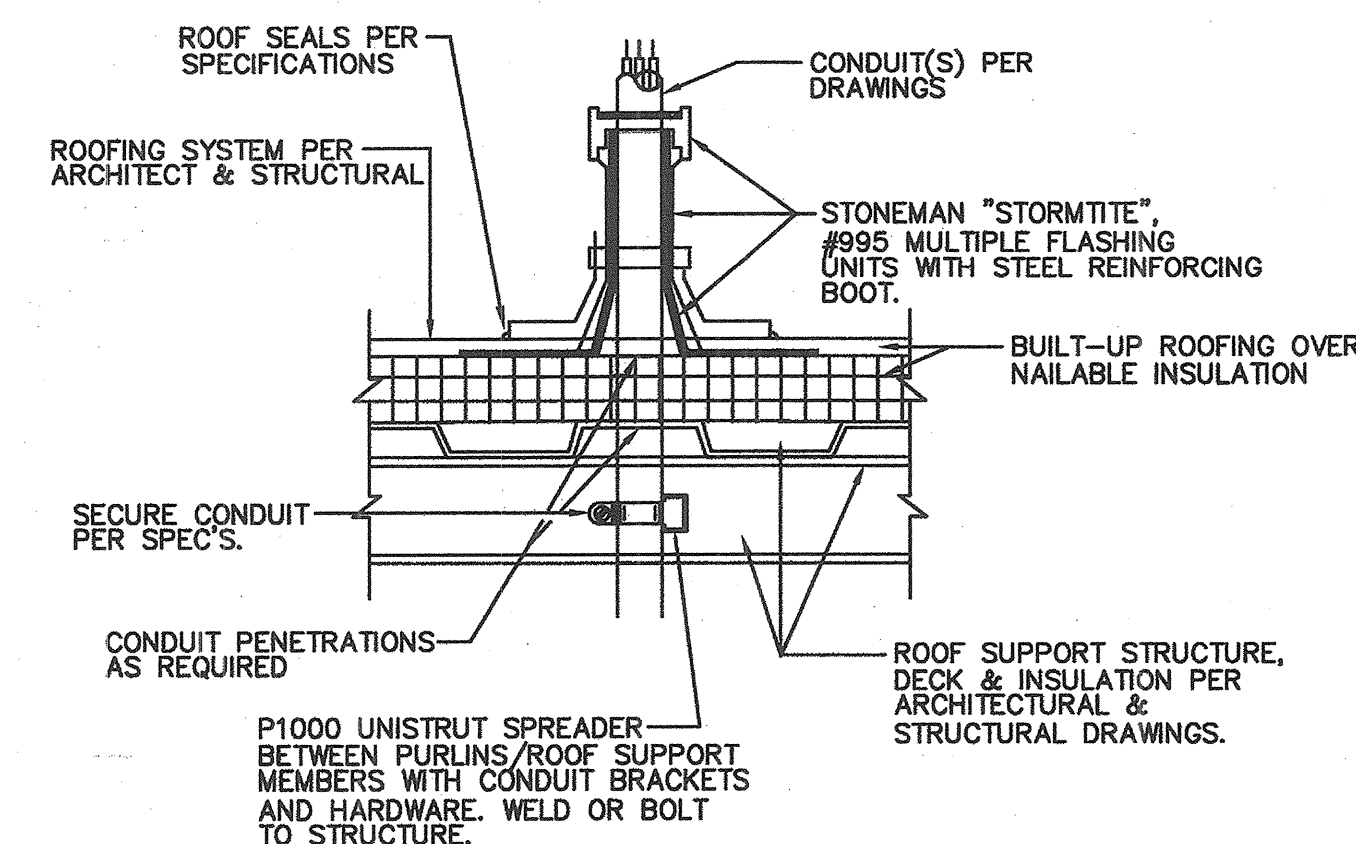
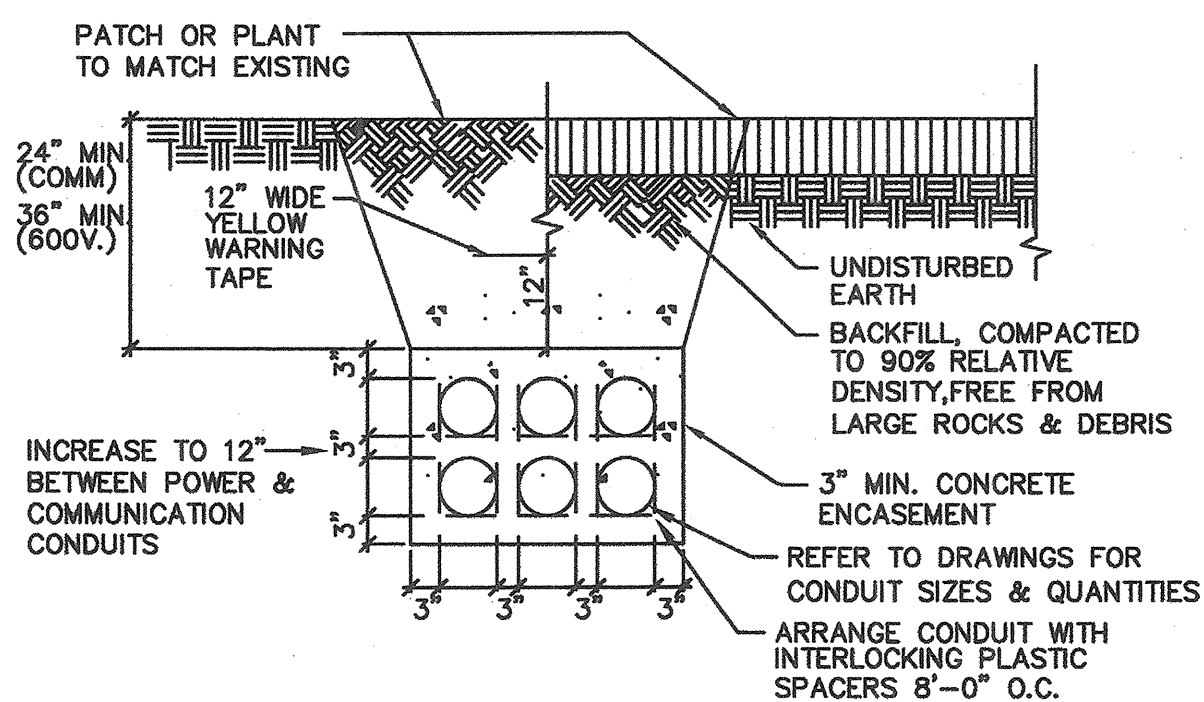
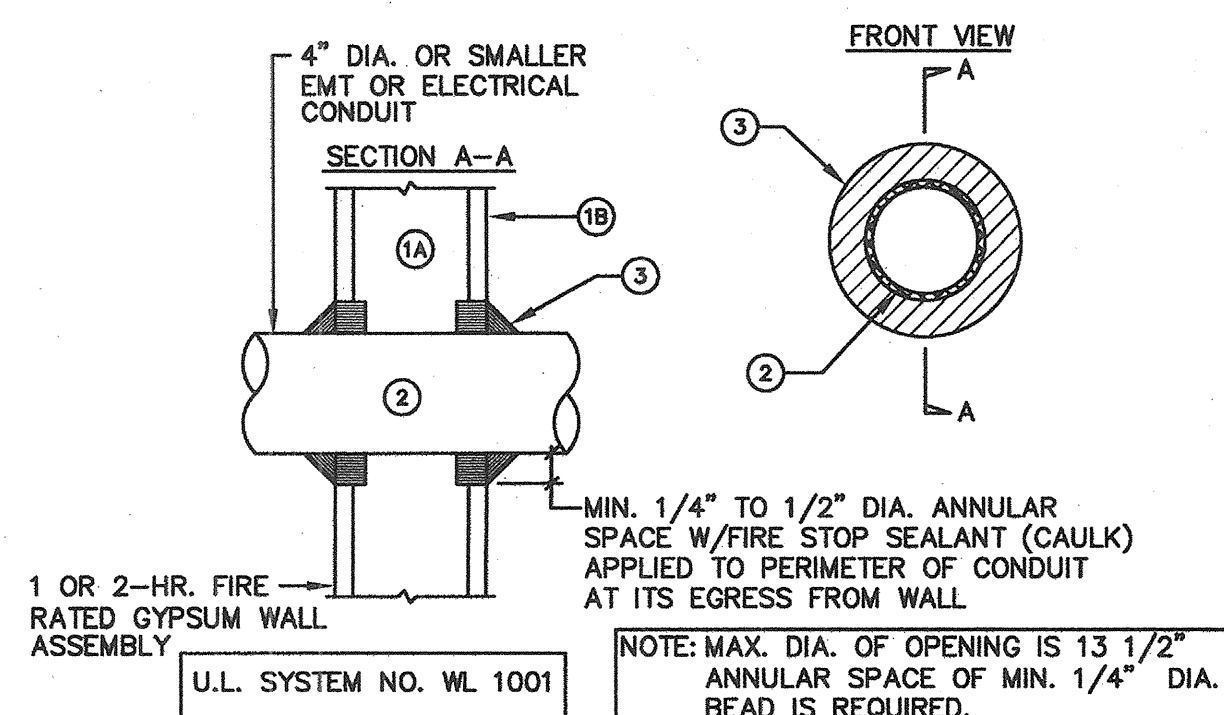
**SURFACE MOUNTED FIXTURE DETAIL**

NOT TO SCALE **2**

**CONDUIT WALL ARRANGEMENT DETAIL**

NOT TO SCALE **3**

- KEY NOTES:**
- WALL CONSTRUCTION:
    - STEEL STUDS PER ARCHITECTURAL/STRUCTURAL
    - 5/8" TYPE X GYPSUM BOARD PER ARCHITECTURAL
  - CONDUIT SIZE PER DRAWINGS
  - FIRE STOP SYSTEM - ONE HOUR CAULK. APPLY TO INTERFACE WITH WALL SURFACE. CAULK AS MANUFACTURED BY 3M CO. #CP-25 S/L.



**CONDUIT PENETRATION THRU 1 HR.**

NOT TO SCALE **4**

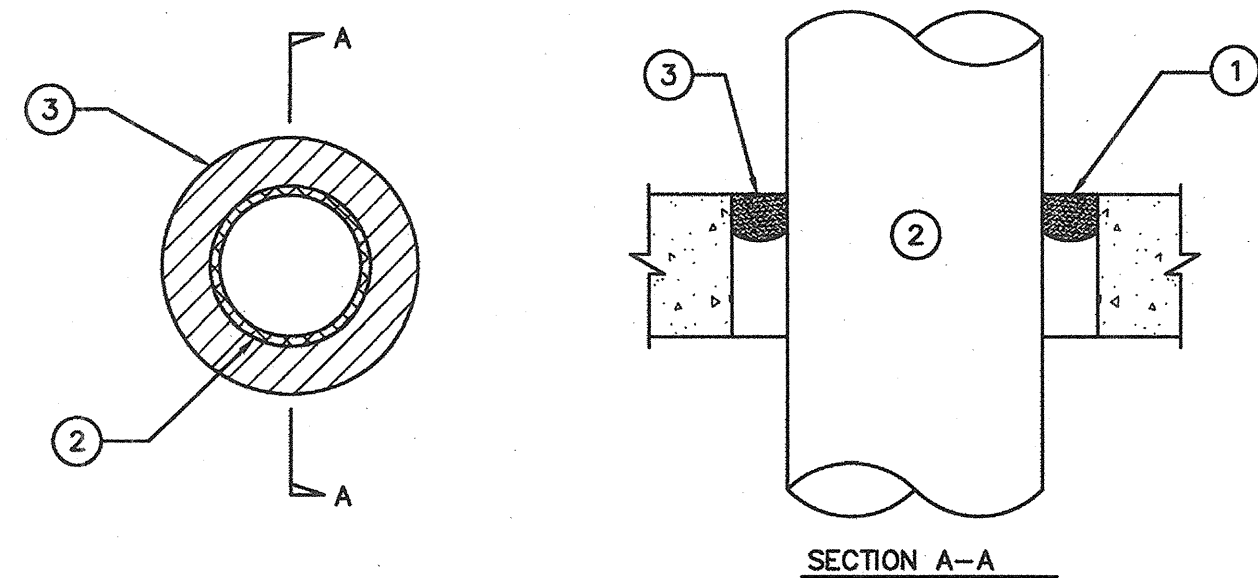
**UNDERGROUND MULTI-CONDUIT PLACEMENT DETAIL**

NOT TO SCALE **5**

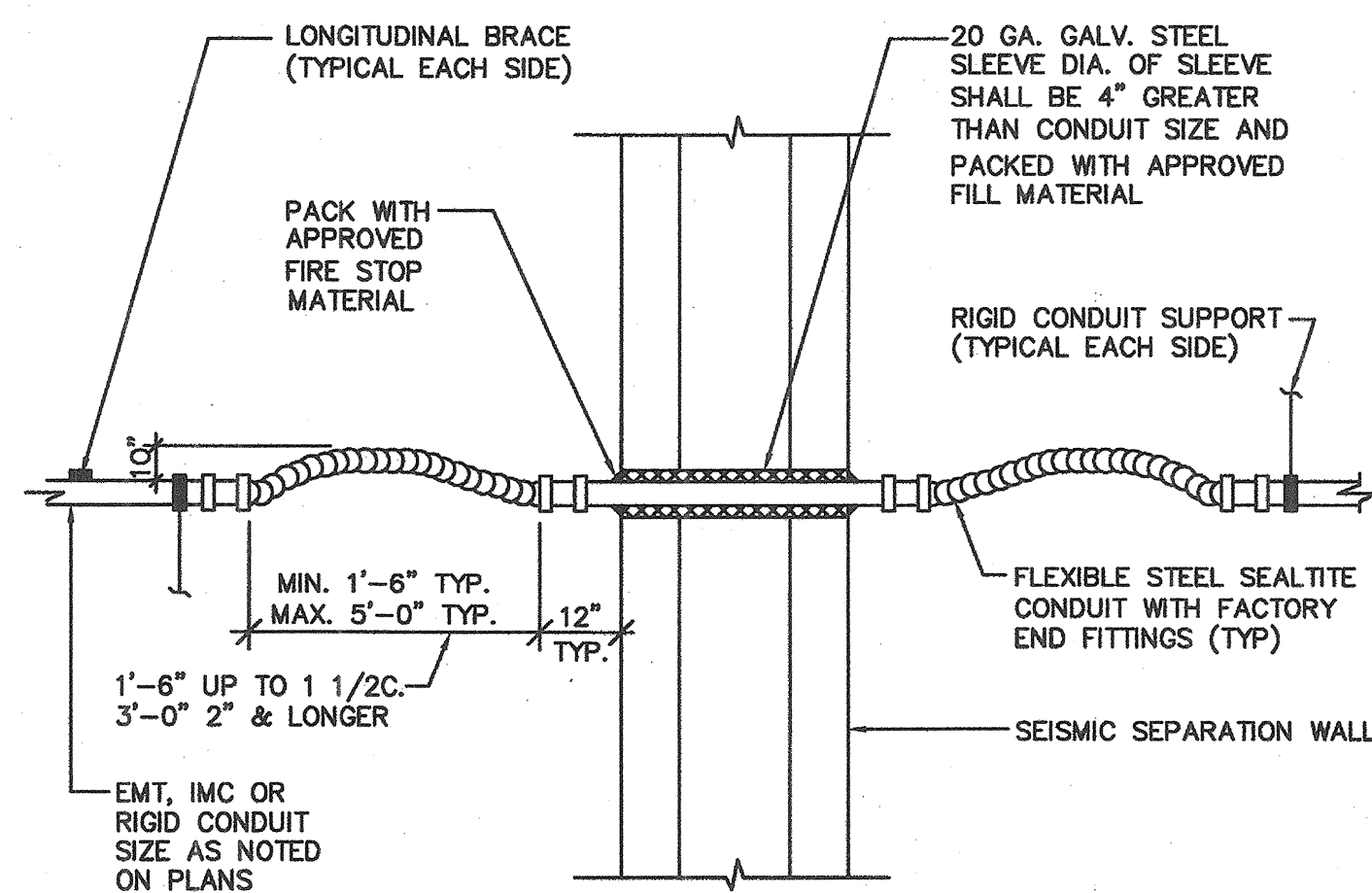
**ROOF PENETRATION DETAIL FOR CONDUIT**

NOT TO SCALE **6**

- KEY NOTES:**
- CONCRETE FLOOR OR WALL PER ARCHITECTURAL/STRUCTURAL DRAWINGS. MAX. DIA. OF THROUGH OPENING IS 12 1/4".
  - CONDUIT SIZE PER DRAWINGS.
  - FIRE STOP SYSTEM-TWO HOUR MOLDABLE PUTTY MATERIAL KNEADED BY HAND AND PACKED TIGHTLY INTO ANNULAR SPACE FLUSH WITH FLOOR. IN WALL ASSEMBLIES, REQUIRED PUTTY THICKNESS TO BE INSTALLED SYMMETRICALLY ON BOTH SIDES OF WALL.



NOTE: MAX. DIA. OF OPENING IS 12 1/4". MINIMUM FILL MATERIAL THICKNESS OF 1/2" IS REQUIRED.  
U.L. SYSTEM NO. CAJ1027

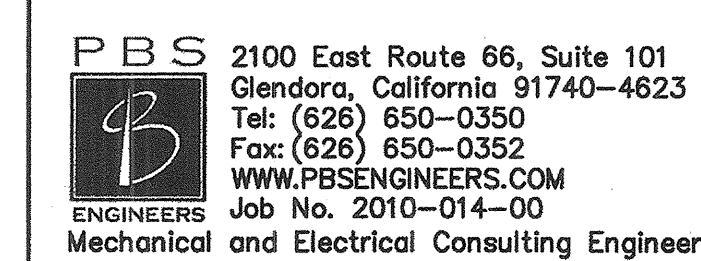
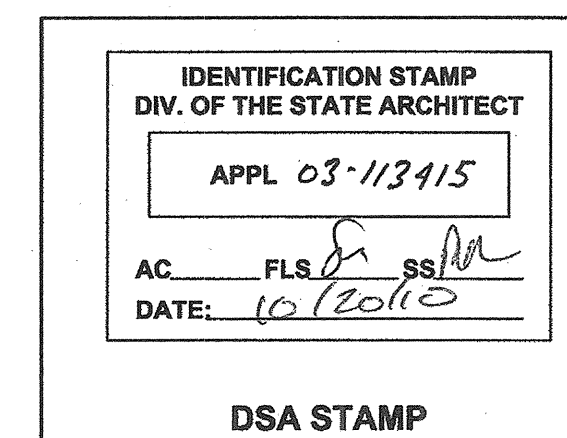


**CONDUIT PENETRATION THRU 2 HR.**

NOT TO SCALE **7**

**CONDUIT SEISMIC SEPARATION JOINT DETAIL**

NOT TO SCALE **8**

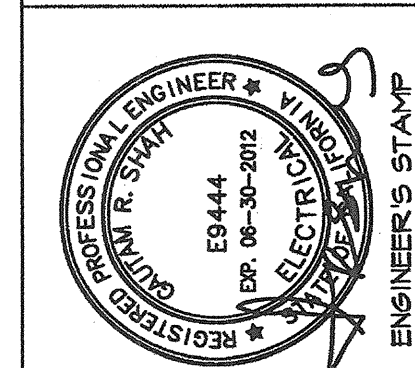
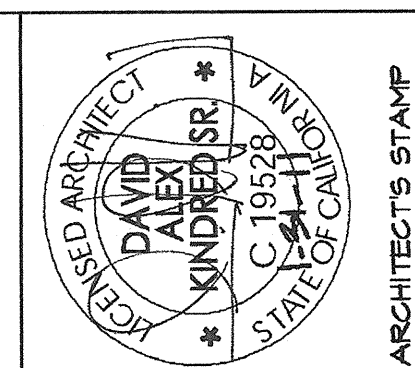


PROJECT NO.: 234800 DATE: 09-02-09

DETAILS

13-01R

**E5.1**



OAK PARK UNIFIED SCHOOL DISTRICT  
BROOKSIDE ELEMENTARY SCHOOL  
MODERNIZATION

Oak Park UNIFIED SCHOOL DISTRICT

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650 East Partridge Avenue, Suite 105  
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**barnhart, inc.**  
A HEERY INTERNATIONAL COMPANY

FIRE ALARM LIST OF EQUIPMENT			
DESCRIPTION	MFG	MODEL #	CSFM LISTING #
ADDRESSABLE FIRE ALARM CONTROL PANEL	NOTIFIER	NFS2-640	7165-0028-0243
DIGITAL ALARM COMMUNICATOR TRANSMITTER	NOTIFIER	UDACT	7300-0028-0174
REMOTE ANNUNCIATOR SURFACE MOUNTED RED	NOTIFIER	LCD-80	7120-0028-0156
FIRE ALARM POWER SUPPLY	NOTIFIER	FCPS24-56	7315-0028-0225
POWER - SONIC SEALED CONSTRUCTION BATTERIES, 18AH, 24VDC	NOTIFIER	PS-12180	N/A
POWER - SONIC SEALED CONSTRUCTION BATTERIES, 7AH, 24VDC	NOTIFIER	PS-12070	N/A
DUAL SYNCHRONIZATION MODULE	WHEELLOCK	DSM-12/24R	7300-0785-0132
ADDRESSABLE MANUAL PULL STATION	NOTIFIER	NBG-12LX	7150-0028-0199
ADDRESSABLE SMOKE DETECTOR	NOTIFIER	FSP-851	7272-0028-0206
ADDRESSABLE HEAT DETECTOR	NOTIFIER	FST-851	7272-0028-0196
SMOKE DETECTOR/HEAT DETECTOR MOUNTING BASE	NOTIFIER	B710LPPB	7300-0028-0173
DUCT SMOKE DETECTOR ***	NOTIFIER	FSD-751PL	3240-0028-0205
KEYED REMOTE TEST STATION FOR DUCT DETECTOR	NOTIFIER	RTS451KEY	3240-0028-0205
ADDRESSABLE MONITOR MODULE	NOTIFIER	FMM-1	7300-0028-0219
ADDRESSABLE CONTROL MODULE	NOTIFIER	FCM-1	7300-0028-0219
ADDRESSABLE CONTROL DEVICE FOR REMOTE CONTROL	NOTIFIER	FRM-1	7300-0028-0219
ADDRESSABLE LINE ISOLATOR MODULE	NOTIFIER	ISO-X	7300-0028-0161
MULTI-CANDELA HORN/STROBE WITH 15 CANDELA SETTING	WHEELLOCK	AS-24MOW-FR**	7125-0785-0131
MULTI-CANDELA HORN/STROBE WITH 30 CANDELA SETTING	WHEELLOCK	AS-24MOW-FR**	7125-0785-0131
MULTI-CANDELA HORN/STROBE WITH 75 CANDELA SETTING	WHEELLOCK	AS-24MOW-FR**	7125-0785-0131
MULTI-CANDELA HORN/STROBE WITH 110 CANDELA SETTING	WHEELLOCK	AS-24MOW-FR**	7125-0785-0131
MULTI-CANDELA WPT STROBE WITH 15 CANDELA SETTING	WHEELLOCK	RSSVP-24MOW-FR**	7125-0785-0154
MULTI-CANDELA STROBE WITH 15 CANDELA SETTING	WHEELLOCK	RSS-24MOW-FR**	7125-0785-0141
MULTI-CANDELA STROBE WITH 30 CANDELA SETTING	WHEELLOCK	RSS-24MOW-FR**	7125-0785-0141
MULTI-CANDELA STROBE WITH 75 CANDELA SETTING	WHEELLOCK	RSS-24MOW-FR**	7125-0785-0141
MULTI-CANDELA STROBE WITH 110 CANDELA SETTING	WHEELLOCK	RSS-24MOW-FR**	7125-0785-0141
EXTERIOR HORN WITH WEATHER PROOF BACK BOX #WWB	WHEELLOCK	AH-24W**	7125-0785-0131
** PROVIDE BACK BOX MANUFACTURED BY WHEELLOCK. SUBSTITUTION WILL NOT BE PERMITTED			
*** EXACT TUBE LENGTH SHALL BE DETERMINED IN THE FIELD			

**CONSTRUCTION GENERAL NOTES**

- ANY FIRE RESISTIVE WALL OR ASSEMBLY DAMAGED OR CUT DURING CONSTRUCTION SHALL BE REPAIRED OR FIRE-STOPPED TO MAINTAIN THE ORIGINAL FIRE RESISTIVE RATING. ALL NEW PENETRATIONS SHALL BE 2 HOUR FIRE-RATED.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING AND VERIFYING ALL EXISTING UNDERGROUND UTILITIES IN ALL AREAS OF NEW WORK PRIOR TO COMMENCEMENT OF ANY EXCAVATION. EXISTING UTILITIES SHOWN ON DRAWINGS ARE APPROXIMATE AS DETERMINED FROM EXISTING DRAWINGS AND FROM SCHOOL DISTRICT DOCUMENTATION. THE DRAWINGS SHOULD NOT BE CONSTRUED TO REPRESENT ALL EXISTING UTILITIES OR EXACT LOCATION OF UTILITIES.
- ALL EXISTING ITEMS SUCH AS CABINETS, ELECTRICAL COMPONENTS, FIXTURES, FURNISHINGS AND EQUIPMENT MAY NOT BE ACCOUNTED FOR OR CORRECTLY SHOWN ON THE DRAWINGS AND IT WILL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY ALL EXISTING CONDITIONS IN EACH ROOM SO THAT THE WORK CAN BE ACCOMPLISHED.
- NOT ALL MECHANICAL, PLUMBING AND ELECTRICAL ITEMS MAY BE SHOWN ON THE ARCHITECTURAL DRAWINGS. REFER TO THE MECHANICAL, PLUMBING AND ELECTRICAL DRAWINGS PROVIDED FOR THIS PROJECT.
- THE TERM TYPICAL DETAIL OR TYPICAL MEANS THE DETAIL OR CONDITION SHOWN APPLIES TO WHEREVER THE DETAIL OR CONDITION OCCURS.
- FIELD VERIFY (F.V.) MEANS THE CONTRACTOR IS REQUIRED TO FIELD SURVEY THE NOTED CONDITION AND/OR DIMENSION PRIOR TO CONSTRUCTION OR PREPARATION OF SUBMITTAL SHOP DRAWINGS AND INTEGRATE FIELD SURVEY INFORMATION INTO THE CONSTRUCTION.
- ALL EXISTING ITEMS ON A WALL OR CEILING THAT IS SCHEDULED TO RECEIVE PAINT SHALL BE PAINTED ALSO, WHETHER INDICATED ON DRAWINGS OR NOT UNLESS OTHERWISE NOTED. THIS INCLUDES BUT IS NOT LIMITED TO MECHANICAL DIFFUSERS, VENTS, PIPING, CONDUIT, PULL BOXES, JUNCTION BOXES, BEAMS, FURR-DOWNS AND SOFFITS.
- IN THE EVENT OF CONFLICT BETWEEN DRAWINGS OR BETWEEN A DRAWING AND A SPECIFICATION ITEM THE DRAWING OR SPECIFICATION ITEM REQUIRING GREATER EXTENT, LARGER NUMBER OR HIGHER QUALITY SHALL GOVERN.

**FIRE SAFETY DURING CONSTRUCTION AND DEMOLITION**

- COMPLY WITH 2007 CFC CHAPTER 14.
- ALL EXISTING BUILDING FIRE RESISTIVE ASSEMBLIES AND CONSTRUCTION SHALL BE MAINTAINED.
- ALL EXISTING AUTOMATIC FIRE SPRINKLER AND AUTOMATIC FIRE-EXTINGUISHING SYSTEMS SHALL BE MAINTAINED DURING CONSTRUCTION IN BUILDINGS IN THE SCOPE OF WORK UNLESS OTHERWISE NOTED.
- ALL EXISTING MEANS OF EGRESS SHALL BE KEPT OPEN AND CLEAR OF MATERIALS, EQUIPMENT AND DEBRIS.
- PROVIDE EMERGENCY TELEPHONE ON SITE. THE STREET ADDRESS OF THE CONSTRUCTION SITE AND THE EMERGENCY NUMBER OF THE FIRE DEPARTMENT SHALL BE POSTED ADJACENT TO THE TELEPHONE.
- PROVIDE FIRE EXTINGUISHER CONFORMING TO CFC SECTION 906 IN EACH BUILDING AND EVERY FLOOR LEVEL IN THE SCOPE OF WORK.
- COMBUSTIBLE DEBRIS SHALL NOT BE ACCUMULATED WITHIN BUILDINGS.
- COMBUSTIBLE DEBRIS, WASTE MATERIAL AND/OR TRASH SHALL NOT BE BURNED ON SITE.
- SMOKING IS PROHIBITED WITHIN ALL BUILDINGS AND ON CAMPUS.
- EXISTING BUILDINGS SHALL BE VACATED OR CONTRACTOR SHALL PROVIDE A FIRE WATCH AT ALL TIMES WHEN THE EXISTING FIRE ALARM IS NOT OPERATIONAL. WHEN UTILIZED, FIRE WATCHES SHALL BE PROVIDED WITH AT LEAST ONE APPROVED MEANS FOR NOTIFICATION OF THE FIRE DEPARTMENT AND THE SCHOOL OFFICE. THEIR DUTY SHALL BE TO PERFORM CONSTANT PATROLS OF THE PROTECTED PREMISES AND KEEP WATCH FOR FIRE. COMPLY WITH CFC SECTION 901.7.
- THE BUILDING OWNER SHALL ASSIGN AN IMPAIRMENT COORDINATOR TO COMPLY WITH THE REQUIREMENTS OF CFC SECTION 901.7 (FIRE ALARM SYSTEMS OUT OF SERVICE). IN ABSENCE OF A SPECIFIC DESIGNEE, THE OWNER SHALL BE CONSIDERED THE IMPAIRMENT COORDINATOR.

**EXISTING STRUCTURAL MEMBERS**

UNLESS SPECIFICALLY SHOWN ON THESE DRAWINGS NO STRUCTURAL MEMBER SHALL BE CUT, DRILLED OR NOTCHED WITHOUT PRIOR WRITTEN AUTHORIZATION FROM THE STRUCTURAL ENGINEER AND THE DISTRICT STRUCTURAL ENGINEER FROM THE DSA.

**FIRE ALARM MONITORING NOTE:**

THE NEW FIRE ALARM SYSTEM WILL TRANSMIT THE FIRE ALARM, SUPERVISORY AND TROUBLE SIGNALS TO AN APPROVED UL CERTIFIED SUPERVISING STATION REQUIRED PER NFPA-72 AS AMENDED IN ARTICLE 91. THE SUPERVISING STATION SHALL BE LISTED AS EITHER UUF (CENTRAL STATION) BY THE UNDERWRITERS LABORATORY INC. (UL) OR SHALL MEET THE REQUIREMENTS OF ARTICLE 91. REFERENCE STANDARD, FM 3011- APPROVAL STANDARD FOR CENTRAL STATION SERVICE FOR FIRE ALARM AND PROTECTIVE EQUIPMENT SUPERVISION, 2002 EDITION. THE INSTALLING CONTRACTOR SHALL PROVIDE SYSTEM PROGRAMMING FOR OFFSITE MONITORING AND SHALL BE RESPONSIBLE FOR ESTABLISHING A FIRE SYSTEM MONITORING CONTRACT.

**FIRE ALARM GENERAL NOTES:**

- FINAL FIRE ALARM TEST SHALL BE MADE IN THE PRESENCE OF THE INSPECTOR OF RECORD (IOR) FROM THE DIVISION OF THE STATE ARCHITECT. LOCAL FIRE AUTHORITY SHALL BE NOTIFIED OF DATE AND TIME OF FINAL FIRE ALARM TESTING AND SHALL ASSIST/ WITNESS SUCH TESTING WHEN ABLE.
- FIRE ALARM DEVICE MOUNTING HEIGHT:
  - PULL STATION: + 48" ABOVE FINISHED FLOOR TO THE HIGHEST POINT OF OPERATING HANDLE OR LEVER.
  - WALL MOUNTED INTERIOR HORN: NOT LESS THAN +90" TO THE TOP OF DEUCE A.F.F. AND, NOT MORE THAN 100" A.F.F. AND NOT LESS THAN 6" BELOW THE FINISHED CEILING TO THE TOP OF DEUCE (NFPA-72 SECTION 7-4.6.1)
  - WALL MOUNTED STROBE OR HORN/STROBE: ENTIRE LENS OF THE VISIBLE APPLIANCE MUST BE AT LEAST 80" ABOVE THE FINISHED FLOOR BUT NOT MORE THAN 96" ABOVE FINISHED FLOOR (NFPA-72 SECTION 7-5.4) AND NOT LESS THAN 6" BELOW CEILING TO THE TOP OF LENS.
- AUDIBLE NOTIFICATION APPLIANCES SHALL HAVE A SOUND LEVEL AT LEAST 15 DBA ABOVE AVERAGE AMBIENT SOUND LEVEL BUT NOT LESS THAN 75 DBA AT 10' FROM DEVICE OR MORE THAN 110 DBA AT THE MINIMUM HEARING DISTANCE. A MINIMUM SOUND LEVEL OF 5 DBA SHALL BE MAINTAINED FOR A DURATION OF AT LEAST 60 SECONDS IN THE OCCUPABLE AREA.
- ALL AUDIBLE NOTIFICATION FIRE ALARM DEVICES SHALL SOUND CALIFORNIA UNIFORM FIRE ALARM SIGNAL IN TEMPORAL CODE 3 MODE.
- FOR THE VISUAL NOTIFICATION FIRE ALARM DEVICES THE FLASH RATE SHALL NOT EXCEED TWO FLASHES PER SECOND (2 HZ) NOR BE LESS THAN ONE FLASH EVERY SECOND (1 HZ) THROUGHOUT THE LISTED VOLTAGE RANGE OF THE APPLIANCE (NFPA72 SECTION 7-5.2). THE DEVICE SHALL HAVE A PULSING LIGHT SOURCE OF NOT LESS THAN 15 CANDELLA. DEVICES WITHIN 55' OF EACH OTHER SHALL BE SYNCHRONIZED.
- THE INSTALLATION OF ALL WIRING, CABLE, RACEWAY AND EQUIPMENT SHALL BE IN ACCORDANCE WITH CEC, AND SPECIFICALLY WITH ARTICLES 760, 770, AND 800, WHERE APPLICABLE.
- THE INSTALLATION OF ALL FIRE ALARM SYSTEM WIRING SHOULD TAKE INTO ACCOUNT THE FIRE ALARM SYSTEM MANUFACTURER'S PUBLISHED INSTALLATION INSTRUCTIONS AND THE LIMITATIONS OF THE APPLICABLE PRODUCT.
- ALL CIRCUITS SHALL BE SUPERVISED AGAINST OPENS, SHORTS AND GROUNDS. REFERENCE CEC/C.C.R-T-24/CHAPTER 3-2007.
- ALL SYSTEMS SHALL TEST FREE OF GROUNDS. NEW FIRE ALARM SYSTEM SHALL BE GROUNDED AS PER MANUFACTURER'S RECOMMENDATIONS AND PER CEC.
- INSTALLATION OF ALL FIRE ALARM DEVICES AND EQUIPMENT SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND INSTRUCTIONS. POWER LIMITED AND NON-POWER LIMITED WIRING WITHIN THE FIRE ALARM CONTROL PANEL ENCLOSURE MUST BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS AND CEC.
- THE SECONDARY POWER SUPPLY (BACK UP BATTERIES) SHALL AUTOMATICALLY SUPPLY THE ENERGY TO THE SYSTEM, AND WITHOUT LOSS OF SIGNAL. THE SECONDARY POWER SUPPLY SHALL HAVE SUFFICIENT CAPACITY TO OPERATE SYSTEM FOR 24 HOURS UNDER MAXIMUM QUIESCENT LOAD AND SHALL BE CAPABLE OF OPERATING ALL ALARM NOTIFICATION APPLIANCES USED FOR EVACUATION FOR 5 MINUTES.
- THE INSTALLATION OF THE SYSTEM SHALL NOT BE STARTED UNTIL DETAILED DESIGN DOCUMENTS AND SPECIFICATIONS, INCLUDING CSFM LISTING NUMBERS FRO EACH COMPONENT OF THE SYSTEM HAVE BEEN APPROVED BY DSA.
- ANY DISCREPANCIES BETWEEN THE DRAWINGS AND RECOGNIZED CODES OR STANDARDS SHALL BE BROUGHT TO THE ATTENTION OF DSA AND THE A/E OF THE PROJECT.
- EXISTING CAMPUS FIRE ALARM SYSTEM SHALL NOT BE DISCONNECTED OR TAKEN OUT OF SERVICE WITHOUT WRITTEN PERMISSION FROM THE OWNER. THE FIRE ALARM SYSTEM SHALL BE OPERATIONAL AT ALL TIMES DURING CONSTRUCTION.
- DSA, ARCHITECT AND ENGINEER OF RECORD, LOCAL FIRE AUTHORITY AND CENTRAL MONITORING STATION SHALL BE NOTIFIED A MINIMUM OF 48 HOURS IN ADVANCE OF ANY FIRE ALARM SYSTEM TESTING OR SHUTDOWN.
- ALL FIRE ALARM WIRING SHALL BE CONTINUOUS WITHOUT SPLICES AND SHALL BE TERMINATED IN TERMINAL BLOCKS OF FIRE ALARM DEVICE OR FA APPROVED TERMINAL BLOCKS IN FIRE ALARM TERMINAL CABINETS OR JUNCTION BOXES. SPLICES WILL NOT BE PERMITTED IN UNDERGROUND PULL BOXES. A MINIMUM OF 8' OF LEAD WIRE FROM EACH DEVICE TO THE ASSOCIATED BACKBOX. ALL BACKBOXES SHALL BE SIZED PER CEC ARTICLE 370-16A, MINIMUM.
- ALL INTERIOR AND EXTERIOR FIRE ALARM WIRING SHALL BE OF TYPE AS SPECIFIED ON RESPECTIVE FIRE ALARM PLANS AND DRAWINGS. SUBSTITUTIONS WILL NOT BE PERMITTED.
- ALL FIRE ALARM WIRING INSTALLED IN UNDERGROUND CONDUITS OR OTHER WET LOCATIONS SHALL BE UL LISTED FOR DIRECT BURIAL. ALL FIRE ALARM WIRING INSTALLED EXPOSED SHALL BE TYPE FPL TWISTED.
- ALL UNDERGROUND CONDUITS SHALL HAVE WATER TIGHT FITTING (CEC SECTIONS 300 AND 314).
- FIRE ALARM CIRCUITS EXTENDING BEYOND ONE BUILDING AND RUN OUTDOOR SHALL BE INSTALLED IN ACCORDANCE WITH NFPA-70 ARTICLES 760-11, 770, 725 & 800 WHERE APPLICABLE.
- FIRE ALARM DATA LOOP CABLE INSTALLED IN DUCTS, PLENUMS OR OTHER ENVIRONMENTAL AIR SHALL BE TYPE FPLP. FIRE ALARM CABLES INSTALLED IN VERTICAL RUNS AND DUCTS OR PENETRATIONS THRU MORE THAN ONE FLOOR SHALL BE TYPE FPLP.
- FIRE ALARM CONTRACTOR SHALL PROVIDE:
  - A COMPLETE AND SIGNED "RECORD OF COMPLETION" TO ARCHITECT, DSA, PROJECT INSPECTOR, OWNER, AND LOCAL FIRE AUTHORITY AFTER COMPLETION OF OPERATIONAL ACCEPTANCE TEST (NFPA 72 SECTION 4-5.2.1).
  - REVISED ORIGINAL RECORD OF COMPLETION TO SHOW ALL CHANGES FROM THE ORIGINAL INFORMATION INCLUDING A REVISION DATE
  - A RECORD COPY OF THE REVISED SOFTWARE.
- AREA SMOKE DETECTORS SHALL BE INSTALLED PER NFPA-72 AND SHALL LOCATED TO MAINTAIN A MINIMUM 3'-0" SEPARATION FROM ANY SOURCE OF AIR SUPPLY REGISTER AND 1' FT. SEPARATION FROM ANY FIRE SPRINKLER.
- A STAMPED SET OF THE DSA APPROVED FIRE ALARM DRAWINGS SHALL BE AT THE JOB SITE AND SHALL BE USED FOR INSTALLATION. THE ARCHITECT OF RECORD SHALL APPROVE IN WRITING ANY DEVIATIONS FROM THE APPROVED PLANS, INCLUDING THE SUBSTITUTIONS OF COMPONENTS AND/OR DEVICES.
- POWER CIRCUIT TO FIRE ALARM CONTROL PANEL AND TO FIRE ALARM POWER SUPPLIES SHALL BE ON DEDICATED 120V/20A BRANCH CIRCUIT BREAKER WITH RED MARKING, LOCK ON PROVISION AND SHALL BE IDENTIFIED AS "FIRE ALARM CIRCUIT CONTROL". THE LOCATION OF THE CIRCUIT DISCONNECT MEANS (CIRCUIT BREAKER) SHALL BE PERMANENTLY IDENTIFIED ON THE FRONT OF THE FIRE ALARM CONTROL PANEL/ OR FIRE ALARM POWER SUPPLY ENCLOSURE (NFPA 72 SECTION 4-4.1.4.2).
- THE A/E OF RECORD SHALL BE NOTIFIED A MIN. OF ONE WEEK PRIOR TO FINAL INSPECTION FOR FINAL PUNCH LIST. ALL PUNCH LIST ITEMS MUST BE COMPLETED FOR PROJECT CLOSE OUT.

**NEW FIRE ALARM SYSTEM SCOPE OF WORK:**

- IT IS THIS CONTRACTORS RESPONSIBILITY TO PROVIDE ALL NECESSARY FIRE ALARM EQUIPMENT, DEVICES, RACEWAYS, AND CABLES, PULL BOXES AND OTHER MATERIALS AND EQUIPMENT AS NECESSARY FOR A COMPLETE IN PLACE AND OPERATIONAL FIRE ALARM SYSTEM.
- DISCONNECT AND REMOVE ALL EXISTING FIRE ALARM SYSTEM COMPONENTS THROUGHOUT THE CAMPUS, UNLESS OTHERWISE INDICATED ON THE PLANS. INSTALL A COMPLETE NEW FIRE ALARM SYSTEM PER PLANS AND SPECIFICATIONS.
- PROVIDE NEW INITIATING AND NOTIFICATION FIRE ALARM DEVICES AT THE LOCATIONS AS SHOWN ON RESPECTIVE FIRE ALARM FLOOR PLANS. CONNECT NEW INITIATING AND NOTIFICATION FIRE ALARM DEVICES TO THE NEW FIRE ALARM SYSTEM AS SHOWN ON FIRE ALARM RISER DIAGRAMS.
- PROGRAM THE NEW FIRE ALARM CONTROL PANEL AS REQUIRED TO INDICATE EACH DEVICE TYPE AND LOCATION. THE CONTRACTOR SHALL COORDINATE THE EXACT DEVICE ADDRESS AND DESCRIPTION WITH THE OWNER AND PROGRAM THE SYSTEM TO THE OWNER'S SATISFACTION. PROVIDE AS-BUILT RECORD DRAWINGS, AN AS-BUILT ADDRESSABLE LOOP PRINT-OUT AND A RECORD COPY OF THE SOFTWARE PROGRAMMING DATA AT THE FAC LOCATION.
- ALL INITIATING ADDRESSABLE FIRE ALARM DEVICES AND MODULES SHALL BE LABELED WITH THEIR RESPECTIVE ADDRESSES, INCLUDING ADDRESSABLE LOOP NUMBER AND ADDRESSABLE POINT NUMBER. ALL DEVICE LABELS SHALL BE MADE USING AN ELECTRONIC LABELING SYSTEM WITH BLACK LETTERS ON WHITE BACKGROUND.
- ALL PENETRATIONS THROUGH THE FIRE RATED WALLS SHALL COMPLY WITH CALIFORNIA BUILDING CODE REQUIREMENTS AND SHALL BE MADE AS INDICATED ON DRAWING FA0.2.
- ALL EXTERIOR FIRE ALARM PULL BOXES SHALL BE WEATHER PROOF TYPE NEMA-3R MINIMUM WITH TAMPER PROOF SCREWS. ELECTRICAL CONTRACTOR SHALL LABEL PULL BOXES "FA".
- ALL FIRE ALARM WIRING SHALL BE INSTALLED IN COMPLIANCE WITH CEC 2007 EDITION SECTION #760. ALL FIRE ALARM WIRING SHALL BE INSTALLED IN 3/4" CONDUIT MINIMUM. IN ALL FINISHED AREAS FIRE ALARM WIRING SHALL BE INSTALLED IN CONDUIT SIZED PER PLANS CONCEALED IN WALLS OR CEILING SPACES.
- ALL EXTERIOR AND INTERIOR NOTIFICATION FIRE ALARM DEVICES INSTALLED THROUGHOUT THE CAMPUS SHALL BE SYNCHRONIZED. CONNECT NEW NOTIFICATION ALARM DEVICES TO FIRE ALARM POWER SUPPLIES VIA DUAL SYNCHRONIZATION MODULE (DSM) WHEELLOCK # DSM-12/24-R. PROVIDE WIRING BETWEEN ALL DUAL SYNCHRONIZATION MODULES AS SHOWN ON FIRE ALARM RISER DIAGRAM
- FIRE ALARM CONDUIT AND RACEWAY ROUTING SHOWN ON THE FIRE ALARM PLANS IS DIAGRAMMATIC. THE EXACT CONDUIT AND RACEWAY ROUTING SHALL BE DETERMINED IN THE FIELD TO SUIT FIELD CONDITIONS AND SHALL BE REVIEWED BY THE OWNER PRIOR TO INSTALLATION.
- POWER SUPPLIES AND FIRE ALARM CONTROL PANEL SHALL BE PERMANENTLY LABELED WITH THEIR MONTH AND YEAR OF MANUFACTURE (FOR EXAMPLE: 06-02-2010).
- ALL AUDIBLE FIRE ALARM DEVICES INSTALLED IN THE CLASSROOMS AND IN THE OFFICE SPACES SHALL BE SET FOR LOW SOUND LEVEL. IF DBA LEVEL 15 MET. PROJECT INSPECTOR SHALL FIELD VERIFY. CONTRACTOR SHALL PROVIDE dB METER FOR TESTING
- CONNECT ALL NEW ADDRESSABLE INITIATING DEVICES AND MODULES TO DATA INITIATING CIRCUIT AS REQUIRED PER MANUFACTURER'S OPERATION AND INSTALLATION MANUAL
- PRIOR TO BID ELECTRICAL CONTRACTOR SHALL VISIT THE SITE AND FIELD VERIFY IF ADDITIONAL MODULES OR DEVICES ARE REQUIRED IN ORDER TO ACCOMMODATE THE COMPLETE INSTALLATION OF THE NEW SYSTEM.
- UPON COMPLETION, THE DIGITAL ALARM COMMUNICATOR SHALL BE TESTED IN THE PRESENCE OF IOR. IT SHALL TRANSMIT TO THE CENTRAL MONITORING STATION THE FOLLOWING DISTINGUISH SIGNALS:
  - "TEST" SIGNAL AT LEAST ONCE EVERY 24 HOURS TO VERIFY TELEPHONE LINES.
  - DISTINGUISH SIGNAL BETWEEN:
    - MANUAL PULL STATIONS ALARM SIGNAL
    - AUTOMATIC DETECTORS ALARM SIGNAL
    - GENERAL TROUBLE SIGNAL.
    - AC POWER FAILURE
    - WATERFLOW SWITCH ALARM SIGNAL
    - TAMPER SWITCH SUPERVISORY SIGNAL
    - LOW BATTERY AND EARTH FAULT
    - PHONE LINES FAILURE
- UPON COMPLETION OF SYSTEM INSTALLATION, THE SYSTEM SHALL BE TESTED IN THE PRESENCE OF AND IN A MANNER ACCEPTABLE TO DSA/PROJECT INSPECTOR. THE CONTRACTOR MUST SUPPLY NECESSARY TESTING EQUIPMENT INCLUDING "SOUND LEVEL METER" TO CHECK ACCEPTABLE DECIBEL LEVELS OF AUDIBLE DEVICES.
- NOTIFICATION CIRCUIT VOLTAGE DROP CALCULATIONS HAVE BEEN MADE BASED UPON THE CIRCUIT ROUTING SHOWN ON THE PLANS. THE VOLTAGE DROP AT THE END-OF-LINE FOR EACH NOTIFICATION ALARM CIRCUIT SHALL BE TESTED IN THE PRESENCE OF THE PROJECT INSPECTOR AND SHALL NOT EXCEED A MAXIMUM OF 3% OF THE 24 VOLT SYSTEM. CIRCUIT TESTING IN EXCESS OF THE 3% LIMIT DUE TO A DEVIATION OF CIRCUIT ROUTING IN THE FIELD SHALL BE MODIFIED BY THE CONTRACTOR AS REQUIRED, AT THE CONTRACTORS EXPENSE, TO MEET THE MAXIMUM GUIDELINES. EACH COMPONENT IN THE CIRCUIT SHALL BE WITHIN THE LISTED MANUFACTURER'S MINIMUM OPERATING VOLTAGE. RESISTANCE OF ALL INITIATING AND NOTIFICATION ALARM CIRCUITS SHALL BE MEASURED AND RECORDED AS REQUIRED PER NFPA-72 SECTION 10.1.2.2. IT SHALL BE VERIFIED THAT THE SIGNALING LINE CIRCUIT (SLC LOOP) RESISTANCE DOES NOT EXCEED THE INSTALLED EQUIPMENT MANUFACTURERS SPECIFIED LIMITS

**FIRE ALARM APPLICABLE CODES AND STANDARDS:**

- CALIFORNIA BUILDING CODE (CBC), PART 2, TITLE 24 C.C.R. 2007 EDITION.
- CALIFORNIA ELECTRICAL CODE (CEC), PART 3, TITLE 24 C.C.R., 2007 EDITION.
- CALIFORNIA FIRE CODE (CFC), PART 9, TITLE 24 C.C.R., WITH CALIFORNIA AMENDMENTS, 2007 EDITION.
- CALIFORNIA ENERGY CODE (CEC), PART 6, TITLE 24 C.C.R., 2008 EDITION.
- TITLE 19 C.C.R., PUBLIC SAFETY, CALIFORNIA STATE FIRE MARSHAL.
- NFPA 72- FIRE ALARM CODE WITH CALIFORNIA AMENDMENTS, 2007 EDITION.
- 2007 CBC (SFM) 3504.1 REFERENCE CODE SECTION FOR NFPA STANDARDS.
- UL (UNDERWRITERS LABORATORIES, INC.)

**FIRE ALARM SYMBOL LIST**

	NEW FIRE ALARM EXTERIOR HORN x = NOTIFICATION ALARM CIRCUIT NUMBER y = NOTIFICATION DEVICE NUMBER WP = WEATHERPROOF
	NEW FIRE ALARM VISUAL STROBE x = NOTIFICATION ALARM CIRCUIT NUMBER y = NOTIFICATION DEVICE NUMBER # = CANDELA SETTING
	NEW FIRE ALARM HORN/STROBE x = NOTIFICATION ALARM CIRCUIT NUMBER y = NOTIFICATION DEVICE NUMBER # = CANDELA SETTING
	NEW FIRE ALARM ADDRESSABLE MANUAL PULL STATION x = ZONE # y = DEVICE #
	NEW FIRE ALARM ADDRESSABLE SMOKE DETECTOR Zx = ZONE # y = DEVICE #
	NEW FIRE ALARM ADDRESSABLE HEAT DETECTOR - 195°F FIXED TEMPERATURE "A" INDICATES ABOVE CEILING SPACE, BLANK INDICATES ON CEILING Zx = ZONE # y = DEVICE #
	SAME AS ABOVE EXCEPT WITH ACUDOR PRODUCTS #UF-88PC 8"x8" ACCESS DOOR. PRIME COATED STEEL, PAINTED TO MATCH ADJACENT CEILING SURFACE.
	NEW FIRE ALARM ADDRESSABLE DUCT SMOKE DETECTOR Zx = ZONE # y = DEVICE #
	REMOTE TEST STATION FOR DUCT SMOKE DETECTOR
	RELAY MODULE
	ADDRESSABLE VISUAL MODULE
	ADDRESSABLE CONTROL MODULE
	FIRE ALARM CONTROL PANEL
	FIRE ALARM TERMINAL CABINET
	DUAL SYNCHRONOUS MODULE - WHEELLOCK #DSM-12/24-R
	END OF LINE RESISTOR
	FIRE ALARM FEEDER NUMBER. SEE FIRE ALARM CONDUIT AND WIRE SCHEDULE

**NEW FIRE ALARM SYSTEM DESCRIPTION:**

- THIS PROJECT INCLUDES THE REMOVAL OF ALL EXISTING FIRE ALARM PANELS, POWER SUPPLIES, INITIATION DEVICES, NOTIFICATION DEVICES, WIRING, HARDWARE AND RACEWAYS AND THE INSTALLATION OF A COMPLETE NEW FIRE ALARM SYSTEM FOR THE ENTIRE CAMPUS. EXISTING RACEWAYS MAY BE RE-USED WHERE APPLICABLE. PATCH AND REPAIR ALL ALTERED SURFACES.
- THE NEW FIRE ALARM SYSTEM IS AN ADDRESSABLE AUTOMATIC FIRE ALARM SYSTEM DESIGNED AS A TOTAL COVERAGE AUTOMATIC HEAT AND SMOKE DETECTION SYSTEM.
- NEW INITIATING AND NOTIFICATION FIRE ALARM DEVICES WILL BE INSTALLED AT THE LOCATIONS SHOWN ON THE RESPECTIVE FIRE ALARM FLOOR PLANS AND CONNECTED AS SHOWN ON THE FIRE ALARM RISER DIAGRAMS.
- THE FIRE ALARM SYSTEM WILL BE MONITORED BY A UL CERTIFIED CENTRAL MONITORING STATION.
- NEW NOTIFICATION FIRE ALARM CIRCUITS ARE CLASS B, STYLE Y.

**FIRE ALARM DRAWING INDEX**

FA0.1	FIRE ALARM TITLE SHEET
FA0.2	FIRE ALARM DETAILS
FA0.3	FIRE ALARM DETAILS
FA1.1	FIRE ALARM SITE PLAN
FA2.1a	BUILDING A FIRE ALARM INITIATION FLOOR PLAN
FA2.1b	BUILDING A FIRE ALARM NOTIFICATION FLOOR PLAN
FA2.2a	BUILDING B FIRE ALARM INITIATION FLOOR PLAN
FA2.2b	BUILDING B FIRE ALARM NOTIFICATION FLOOR PLAN
FA2.3a	BUILDING C FIRE ALARM INITIATION FLOOR PLAN
FA2.3b	BUILDING C FIRE ALARM NOTIFICATION FLOOR PLAN
FA2.4	BUILDINGS R1 THRU R3 & D FIRE ALARM FLOOR PLANS
FA3.1, 3.2 & 3.3	PARTIAL FIRE ALARM RISER DIAGRAMS
FA4.1	FIRE ALARM CALCULATIONS

**NOTE TO PROJECT INSPECTOR AND CONTRACTOR:**

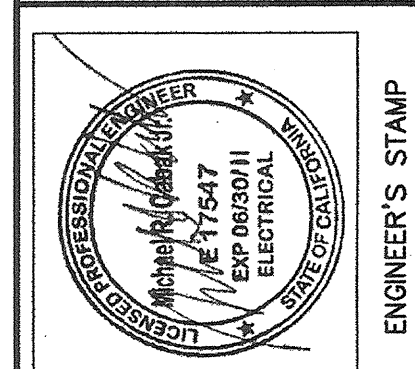
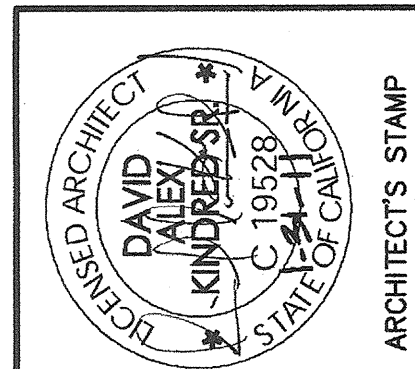
PROJECT INSPECTOR SHALL FIELD VERIFY THE CANDELA SETTING FOR EACH VISUAL NOTIFICATION APPLIANCE (I.E. STROBES AND HORN/STROBES) DUE TO FIELD ADJUSTABILITY. THE CONTRACTOR SHALL INSTALL/ADJUST ALL DEVICES TO MAXIMIZE PERFORMANCE AND MINIMIZE FALSE ALARMS.

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PDG PROJECT NO.: 10102.00

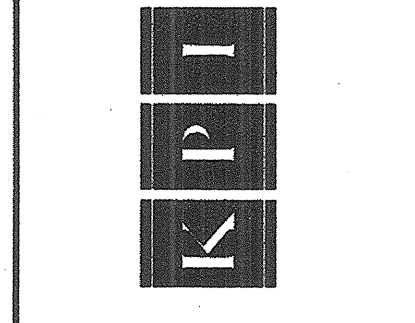
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AG # PLS. S. S. S. S. S.  
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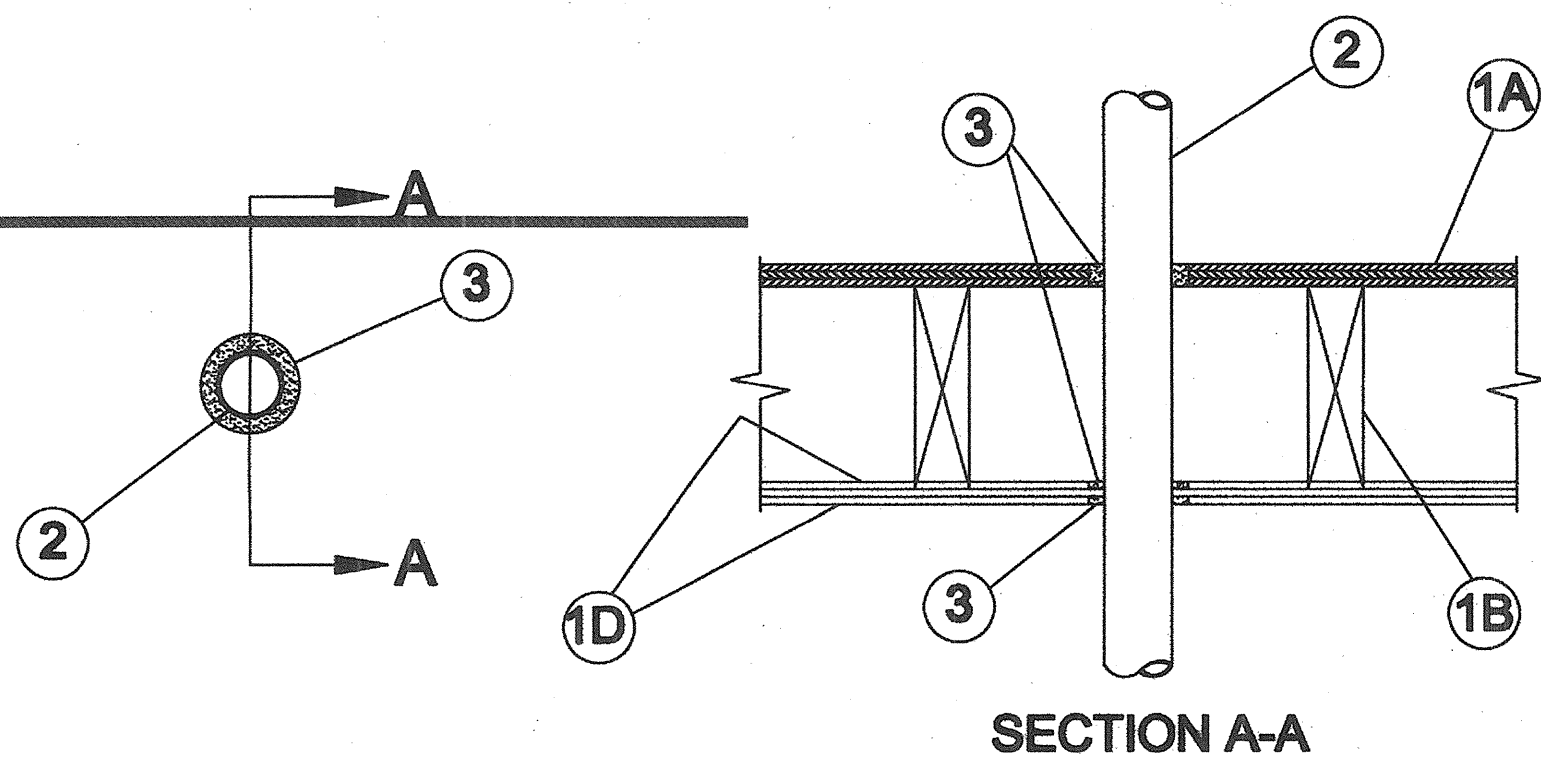
PROJECT NO.: 234000 DATE: 08-02-09  
FIRE ALARM TITLE SHEET  
13-02R  
FA0.1



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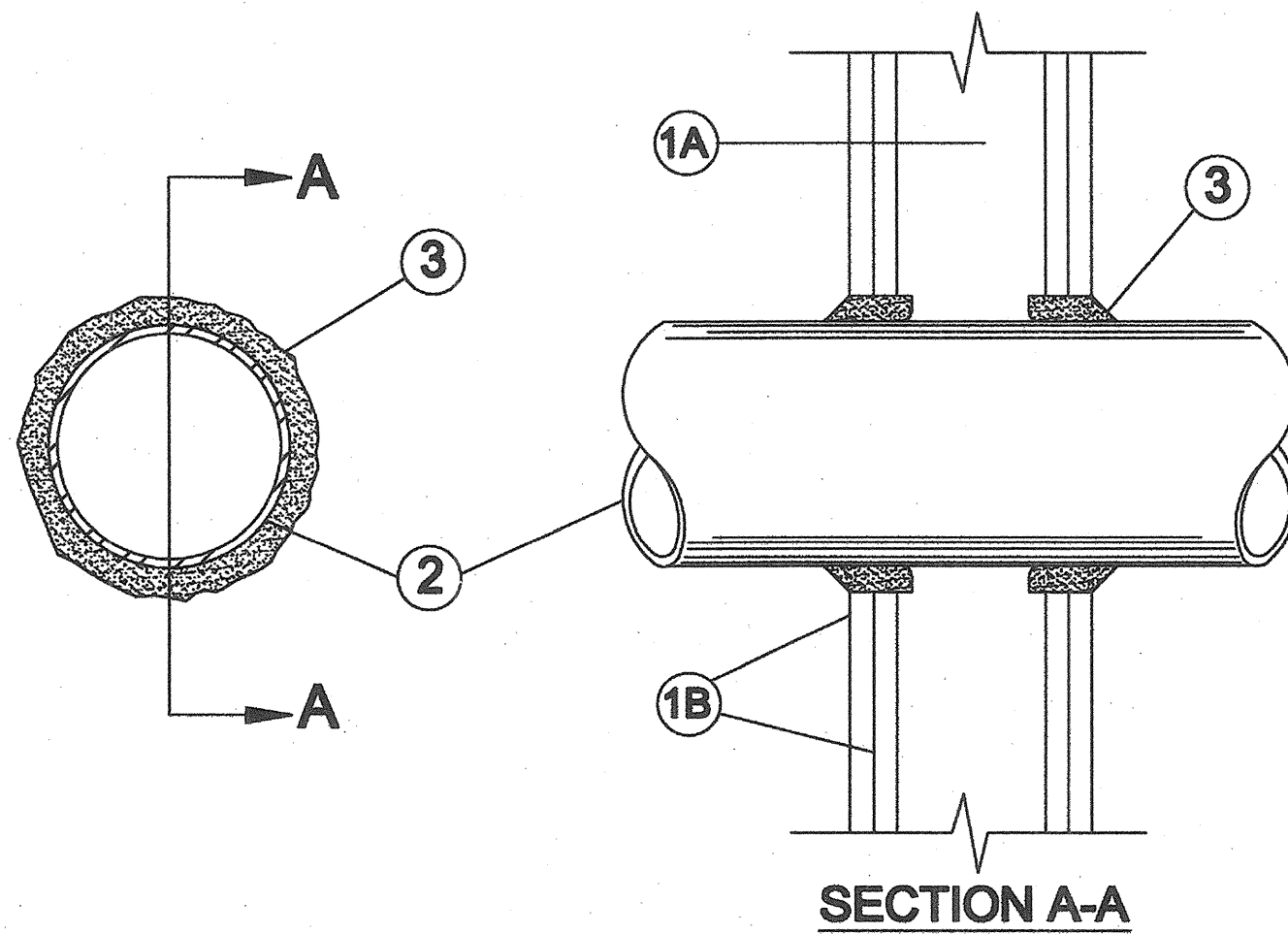


**6 2 HOUR FIRE RATED CEILING PENETRATION**  
NOT TO SCALE

SYSTEM NO. F-C-1003  
F RATING - 2 HR  
L RATING AT AMBIENT - LESS THAN 1 CFM/sq ft (SEE ITEM 3)  
L RATING AT 400 ° F - LESS THAN 1 CFM/sq ft (SEE ITEM 3)

- Floor-Ceiling Assembly** - The fire rated wood joist floor-ceiling assembly shall be constructed of the materials and in the manner specified in Design No. L505, L511 or L536 in the UL Fire Resistance Directory, as summarized below:
  - Flooring System** - Lumber or plywood subfloor with finish floor of lumber, plywood or Floor Topping Mixture\* as specified in the individual Floor-Ceiling Design.
  - Wood Joists** - Nom 2 by 10 in. lumber joists spaced 16 in. OC with nom 1 by 3 in. lumber bridging and with ends firestopped.
  - Furring Channels** (Not shown) - Resilient galv steel furring channels installed perpendicular to wood joists between first and second layers of wallboard (item 1D) and spaced max 24 in. OC.
  - Gypsum Board\*** - Nom 4 ft wide by 5/8 in. thick as specified in the individual Floor-Ceiling Design. First layer of wallboard nailed to wood joists. Second layer of wallboard screw-attached to furring channels. Max diam of ceiling opening is 3/8 in. greater than the outside diameter of pipe.
- Through Penetrants** - One metallic pipe, conduit or tubing to be centered within the firestop system. Pipe, conduit or tubing to be rigidly supported on both sides of floor and ceiling. The following types and sizes of metallic pipes, conduits or tubing may be used:
  - Steel Pipe** - Nom 3 in. diam (or smaller) Schedule 5 (or heavier) steel pipe.
  - Conduit** - Nom 3 in. diam (or smaller) electrical metallic tubing or steel conduit.
- Fill/Void or Cavity Material\*** - Sealant material forced into annular spaces to fill space to max extent possible. Sealant shall be installed flush with floor and ceiling.  
MINNESOTA MINING & MFG CO - Types FB-2000, FB-2000+.  
(Note: L Ratings apply only when FB-2000+ is used).  
\*Bearing the UL Classification Marking

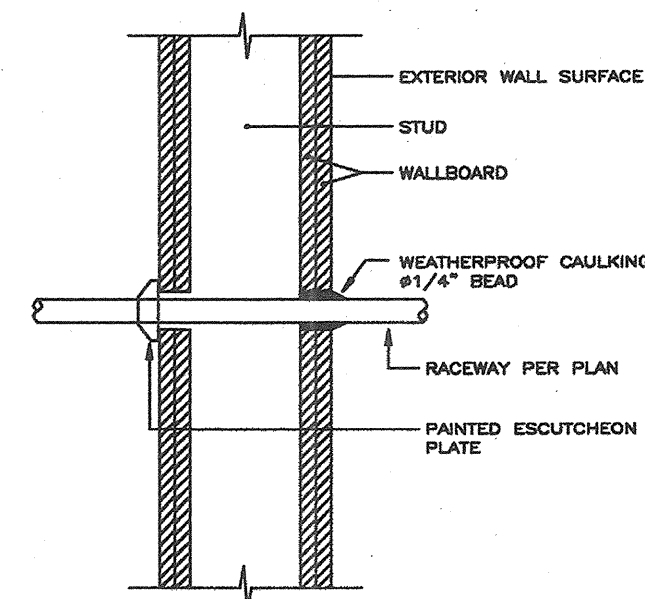
Max Pipe or Conduit Diam in. (mm)	F Rating Hr
1 (25)	1 or 2
1 (25)	3 or 4
4 (102)	1 or 2
6 (152)	3 or 4
12 (305)	1 or 2



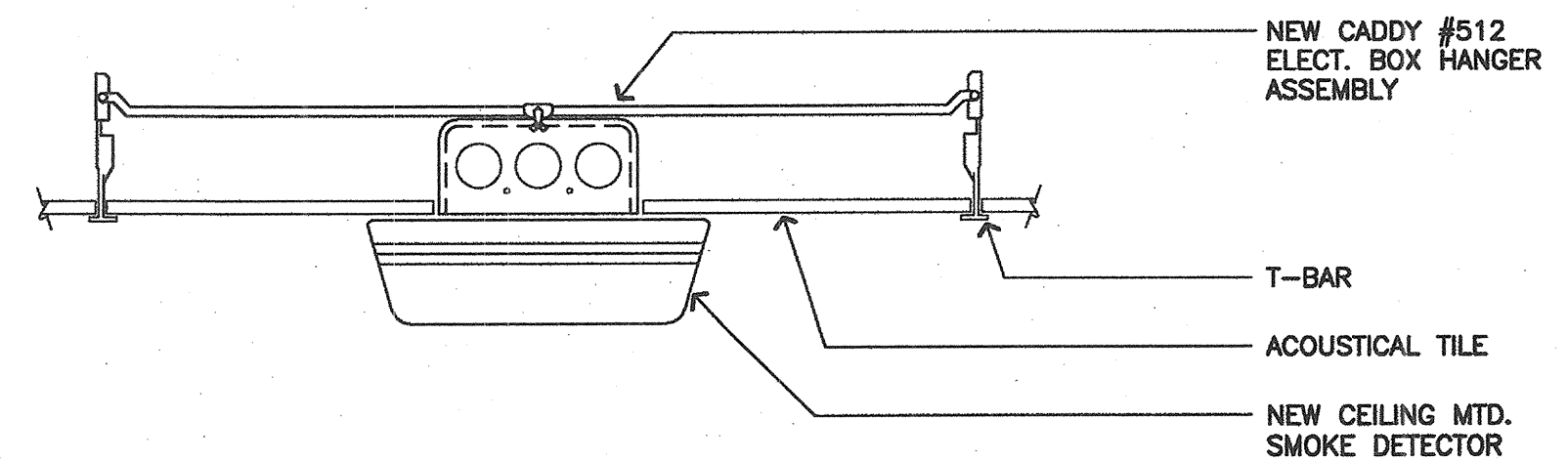
**5 2 HOUR FIRE RATED WALL PENETRATION**  
NOT TO SCALE

System No. W-L-1001  
F Ratings - 1, 2, 3 and 4 Hr (See Items 2 and 3)  
T Ratings - 0, 1, 2, 3, and 4 Hr (See Item 3)  
L Rating At Ambient - less than 1 CFM/sq ft  
L Rating At 400 F - less than 1 CFM/sq ft

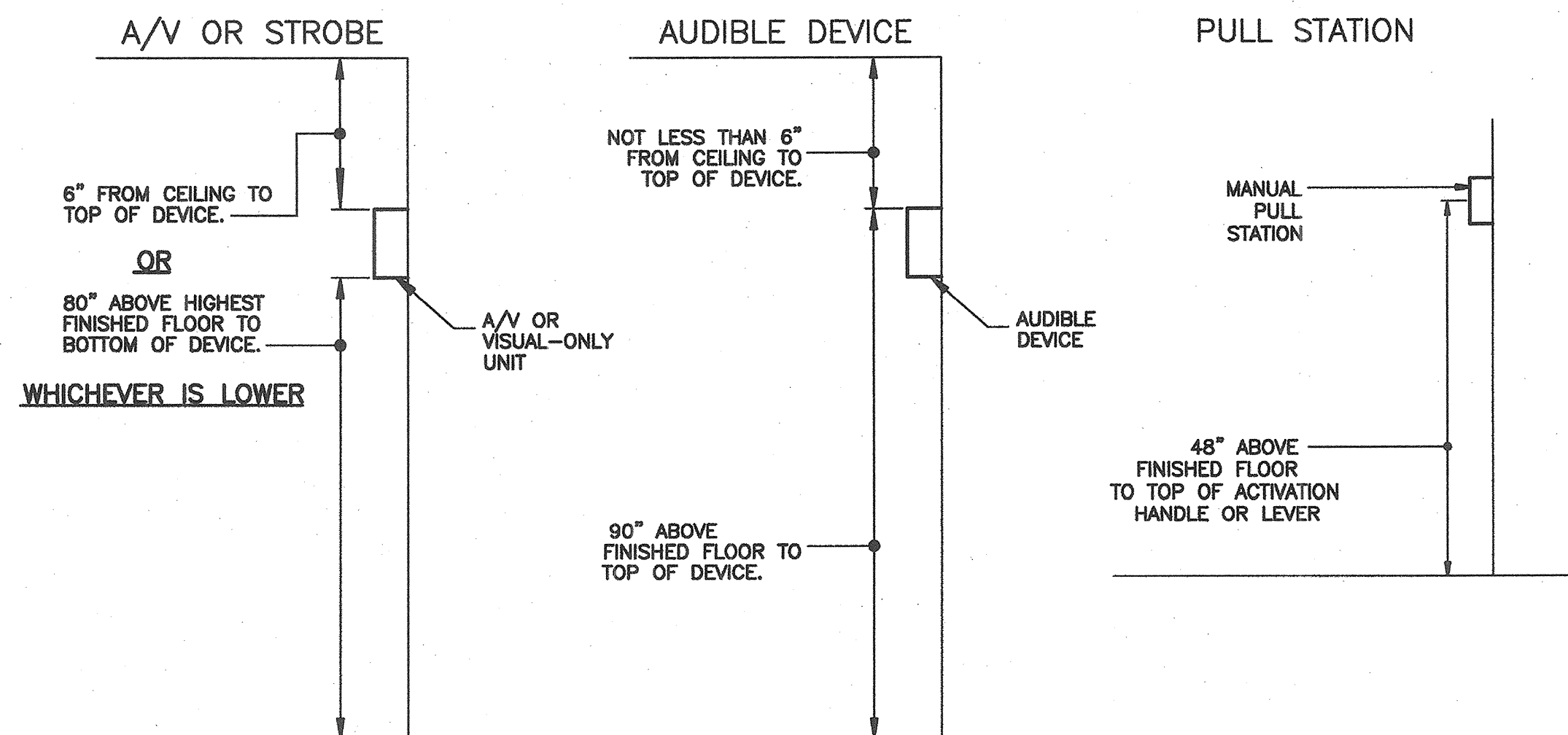
- Wall Assembly** - The 1, 2, 3 or 4 hr fire-rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner described in the individual U300 or U400 Series Wall or Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:
  - Studs** - Wall framing may consist of either wood studs (max 2 hr fire rated assemblies). Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced 16 in. (406 mm) OC with nom 2 by 4 in. (51 by 102 mm) lumber end plates and cross braces.
  - Gypsum Board** Nom 1/2 or 5/8 in. (13 or 16 mm) thick, 4 ft. (122 cm) wide with square or tapered edges. The gypsum wallboard type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual U300 or U400 Series Design in the UL Fire Resistance Directory. Max diam of opening is 26 in. (660 mm).
- Through Penetrant** - One metallic pipe, conduit or tubing installed either concentrically or eccentrically within the firestop system. The annular space between pipe, conduit or tubing and periphery of opening shall be min of 0 in. (0 mm) (point contact) to max 2 in. (51 mm). Pipe, conduit or tubing to be rigidly supported on both sides of wall assembly. The following types and sizes of metallic pipes, conduits or tubing may be used:
  - Conduit** - Nom 6 in. (152 mm) diam (or smaller) steel conduit or nom 4 in. (102 mm) diam (or smaller) steel electrical metallic tubing
- Fill/Void or Cavity Material\*** - Caulk or Sealant - Min 5/8, 1-1/4, 1-7/8 and 2-1/2 in. (16, 32, 48 and 64 mm) thickness of caulk for 1, 2, 3 and 4 hr rated assemblies, respectively, applied within annulus, flush with both surfaces of wall, min 1/4 in. (6 mm) diam bead of caulk applied to gypsum board/penetrant interface at point contact location on both sides of wall. The hourly F Rating of the firestop system is dependent upon the hourly fire rating of the wall assembly in which it is installed, as shown in the table.  
3M COMPANY - CP 25WB+ caulk or FB-3000 WT sealant.



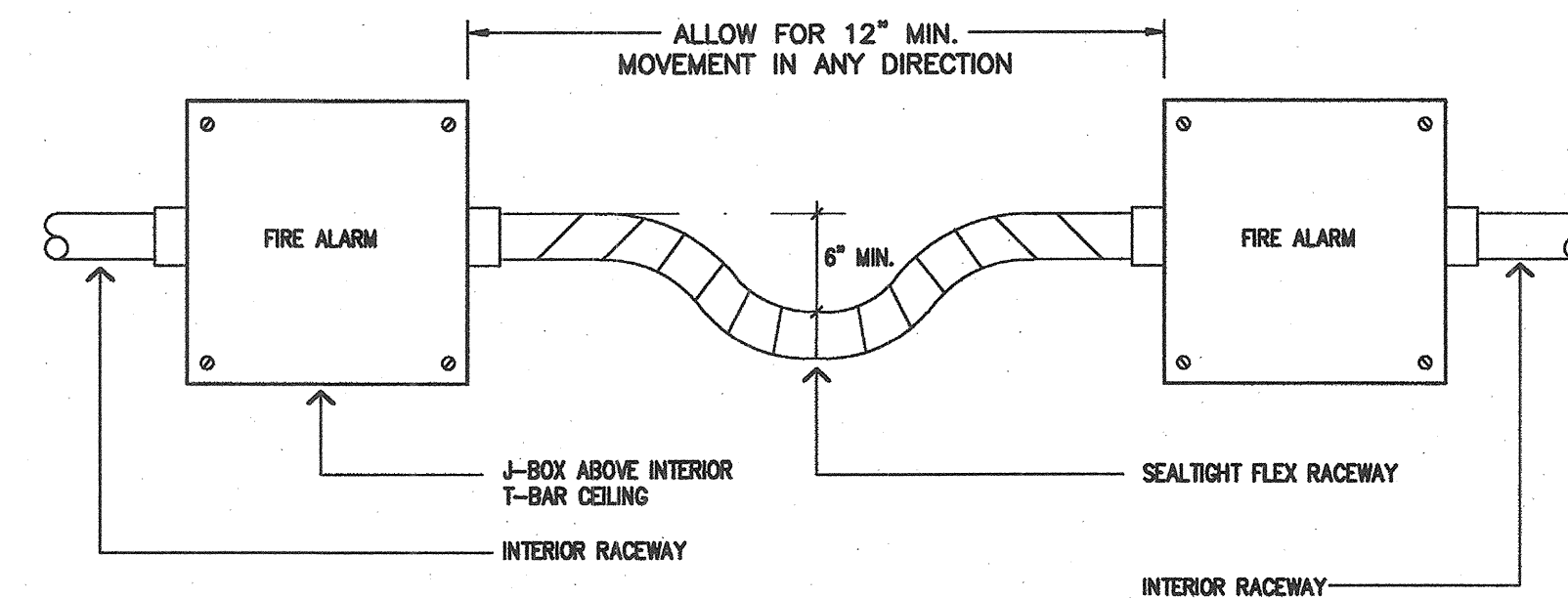
**4 EXTERIOR WP RACEWAY PENETRATION**  
NOT TO SCALE



**1 CEILING SMOKE DETECTOR MOUNTING**  
NOT TO SCALE



**2 DEVICE INSTALLATION DETAILS**  
NOT TO SCALE



**3 RACEWAY DETAIL AT SEISMIC JOINT**  
NOT TO SCALE

SYSTEM OPERATIONAL MATRIX										
(BLANK BOXES INDICATE NOT APPLICABLE)										
SYSTEM INPUT	FACP ALARM	FACP TROUBLE	FACP SUPERVISORY	ANNUNCIATOR ALARM	ANNUNCIATE AT BUILDING FACP	SYSTEM TO RUN BACKUP BATTERY	SEND SIGNAL TO CENTRAL STATION	ACTIVATE HORNS & STROBES	ANNUNCIATOR TROUBLE	SHUT DOWN HVAC UNIT
SMOKE DETECTOR	X			X	X		X	X		
HEAT DETECTOR	X			X	X		X	X		
DUCT SMOKE DETECTOR	X			X	X		X	X		X
MANUAL PULL STATION	X			X	X		X	X		
SYSTEM TROUBLE		X					X		X	
POWER FAILURE			X		X	X	X			
OPEN WIRE		X					X		X	
GROUNDING WIRE		X					X		X	
NOTIFICATION CIRCUIT SHORTED WIRE		X					X		X	
INITIATION CIRCUIT SHORT	X			X			X			
LOSS OF CARRIER		X					X		X	
FIRE ALARM LOW BATTERY		X					X		X	

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IDENTIFICATION STAMP  
DIV. OF THE STATE ARCHITECT  
APPL 03-113415  
AC: [Signature]  
DATE: 10/20/10  
DSA STAMP

PROJECT NO.: 234000 DATE: 03-02-09

FIRE ALARM DETAILS

13-02R

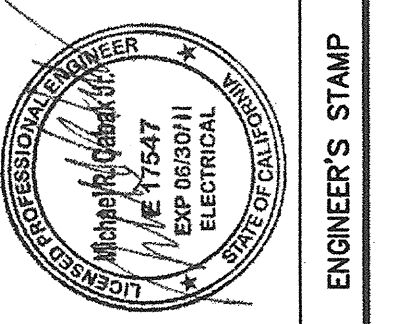
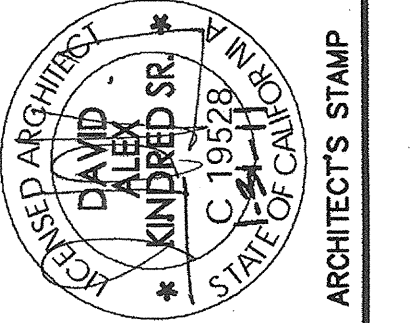
**FA0.2**

Oak Park Unified School District  
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Modernization  
UNIFIED SCHOOL DISTRICT

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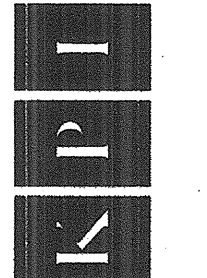
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DAVID ALEXANDER  
REGISTERED ARCHITECT  
STATE OF CALIFORNIA  
C. 19278

ENGINEER'S STAMP  
ELECTRICAL ENGINEER  
STATE OF CALIFORNIA  
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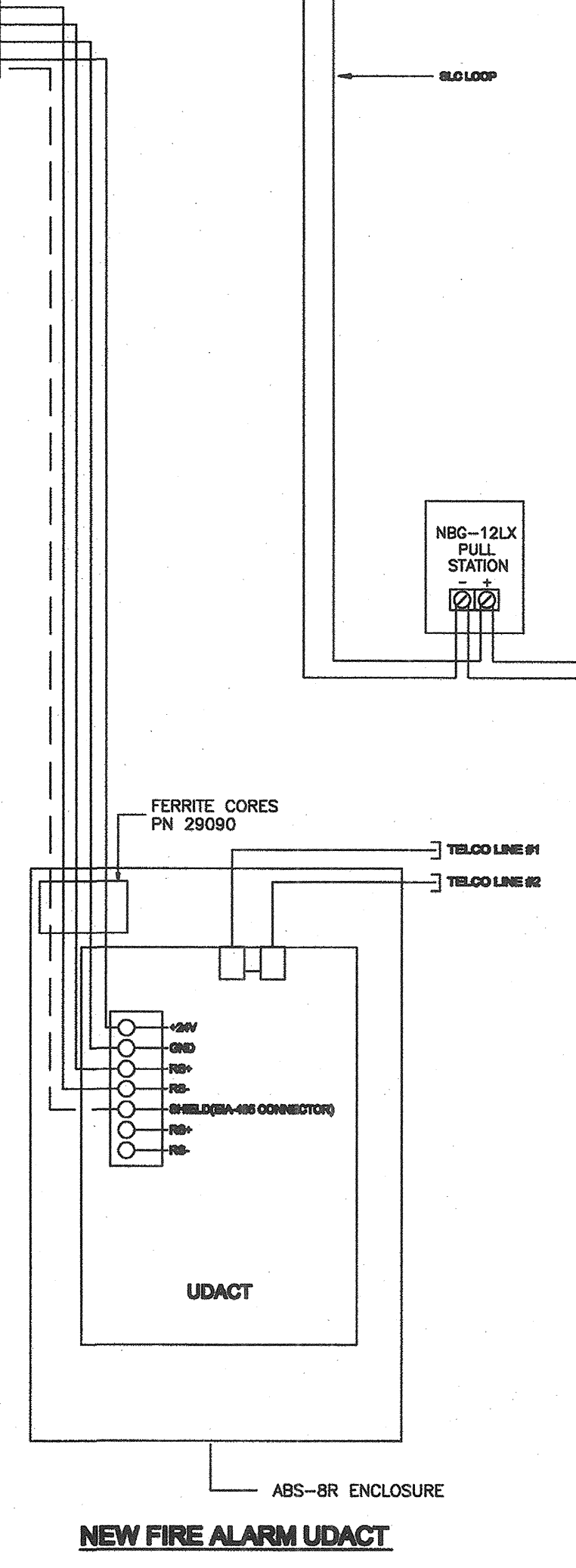
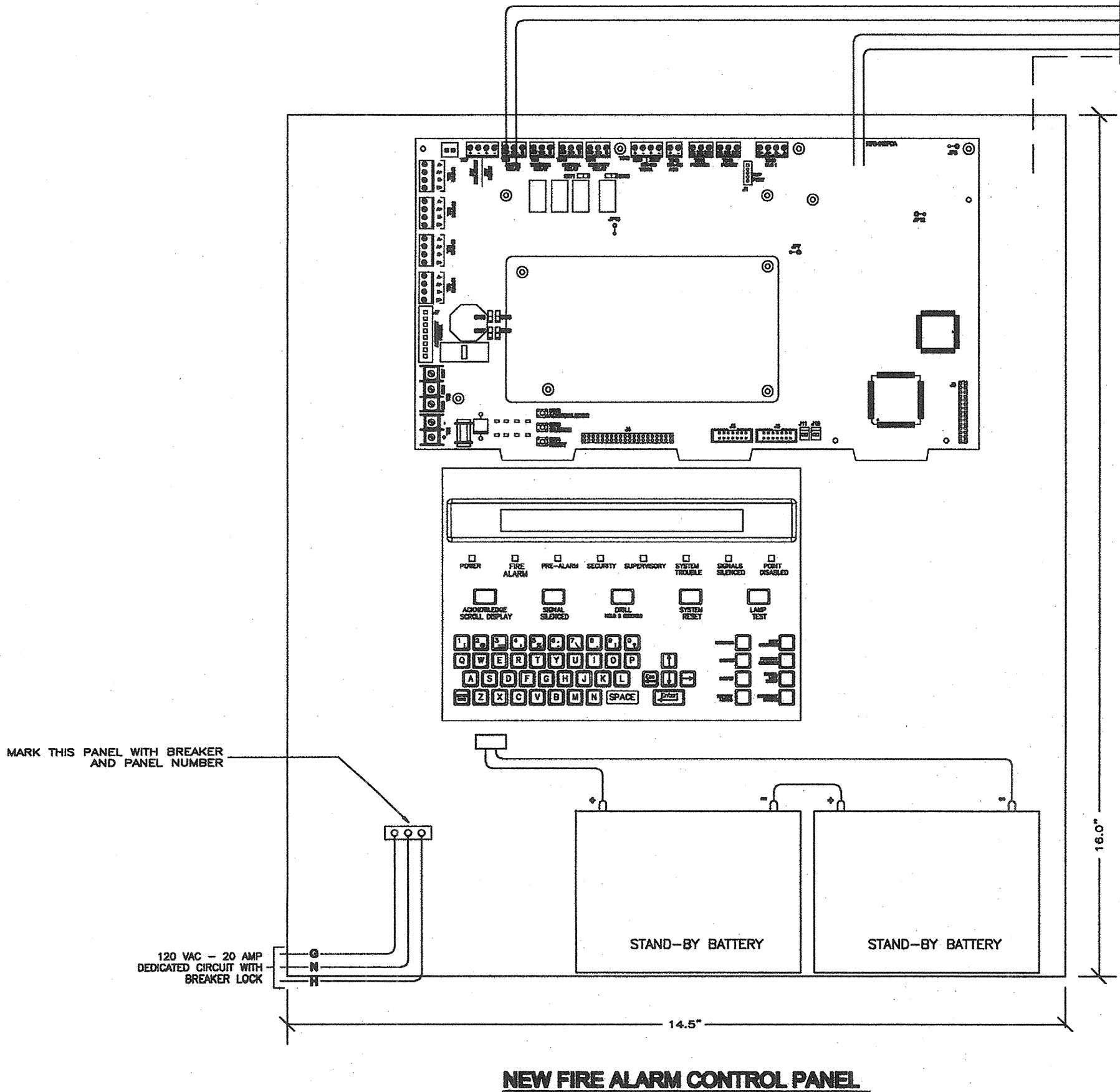
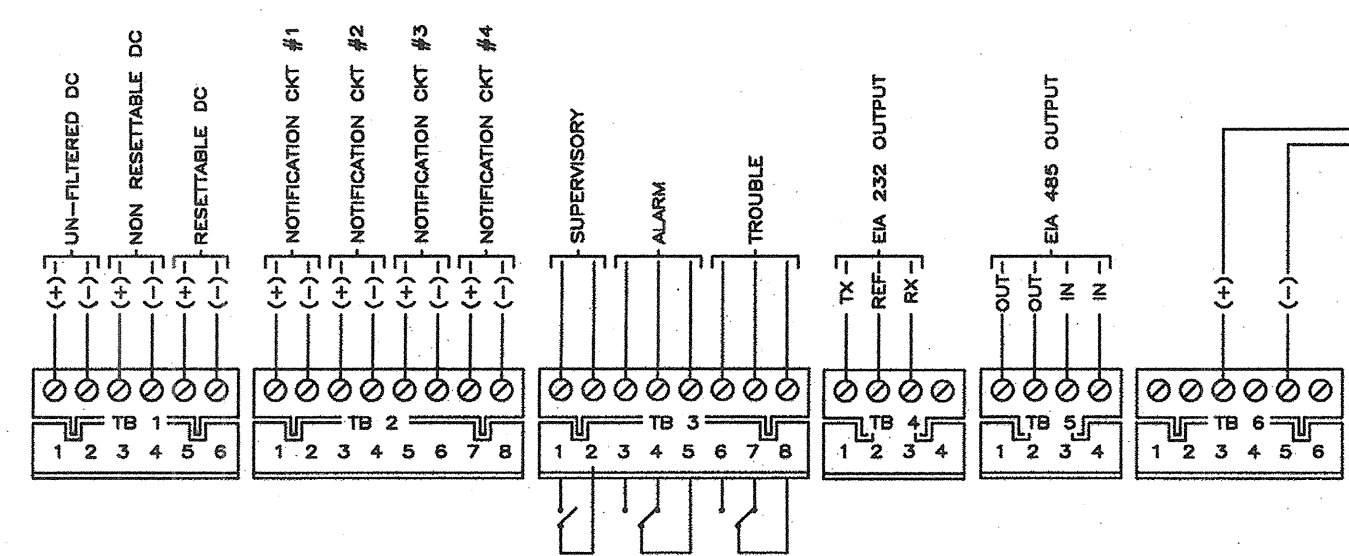
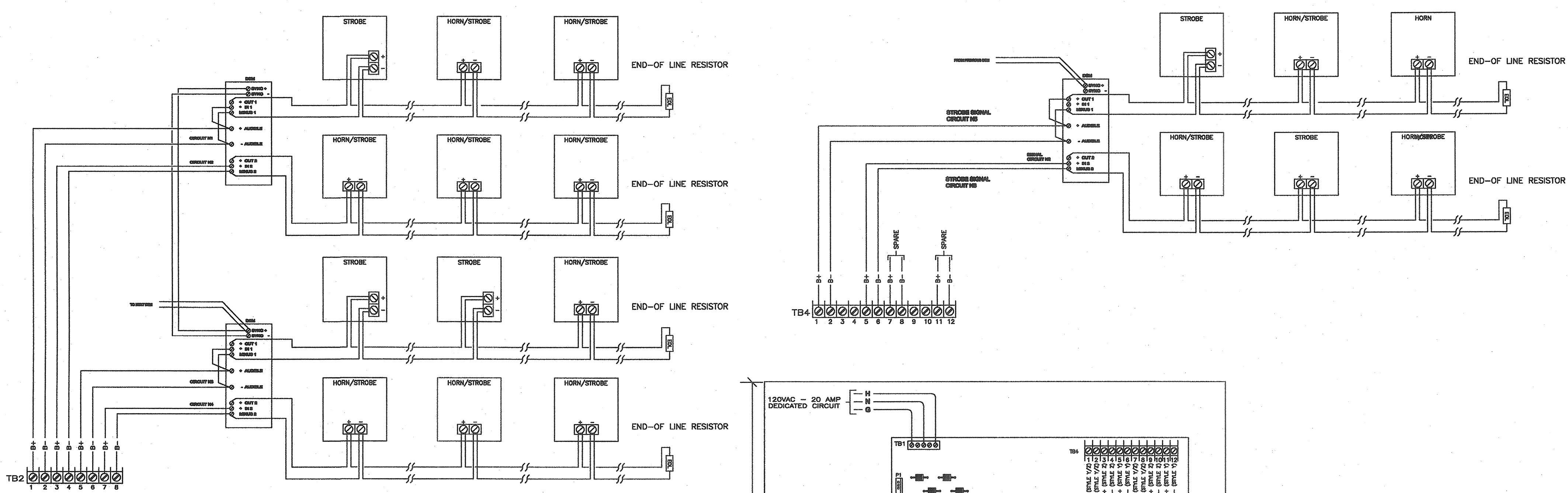
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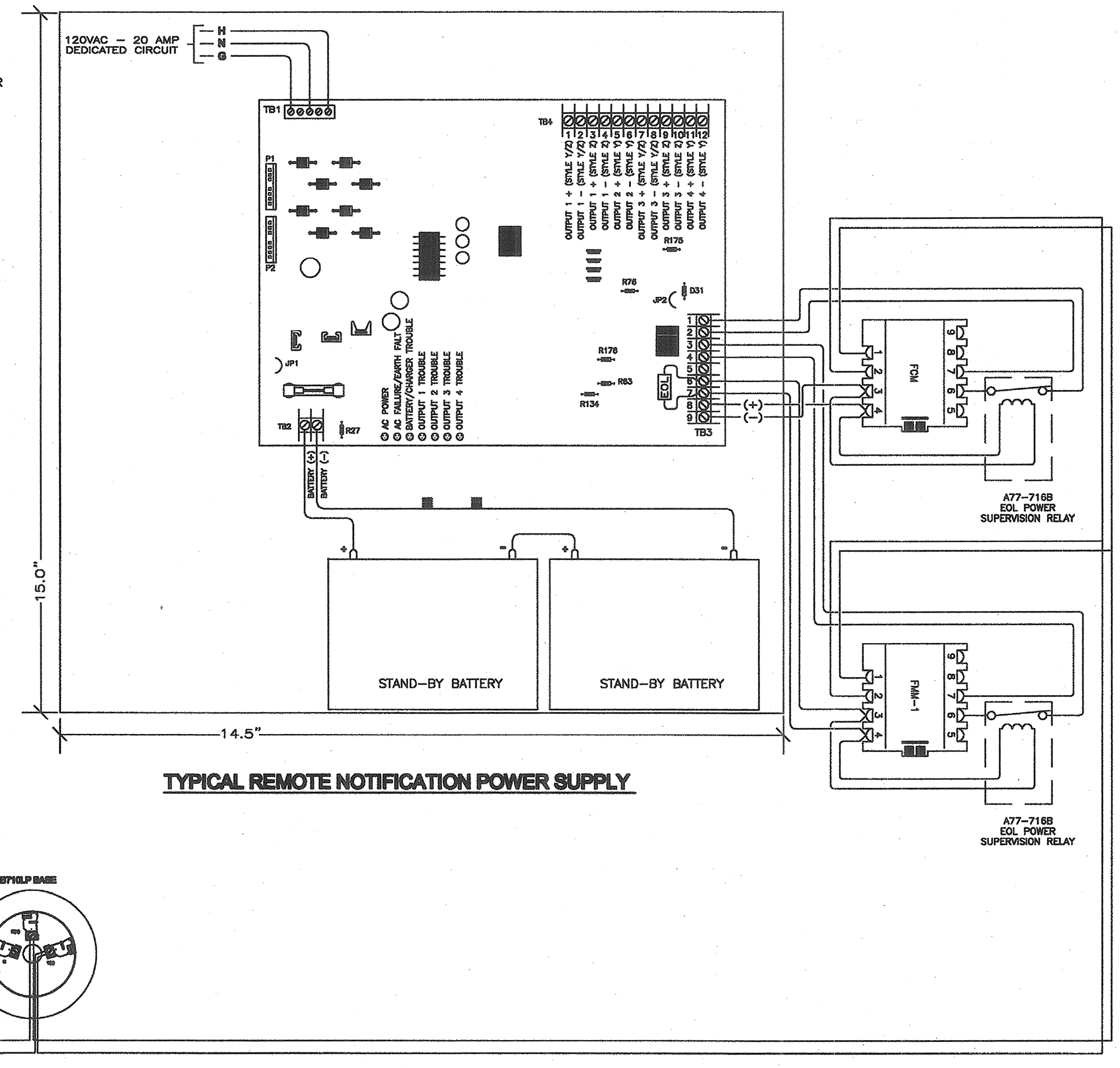
NOTES:

1. SHIELD DRAM WIRE MUST BE CONTINUOUS THROUGHOUT SLO LOOP, SPLICES AND TAPED AT ALL DEVICES AND JUNCTION SPLICES.
2. NO CONDUIT TO BE RUN IN THE BOTTOM OF FIRE ALARM CONTROL PANEL CABINET.
3. ONLY NOTIFIED CERTIFIED TECHNICIAN SHALL APPLY THE POWER TO THE FIRE ALARM CONTROL PANEL.

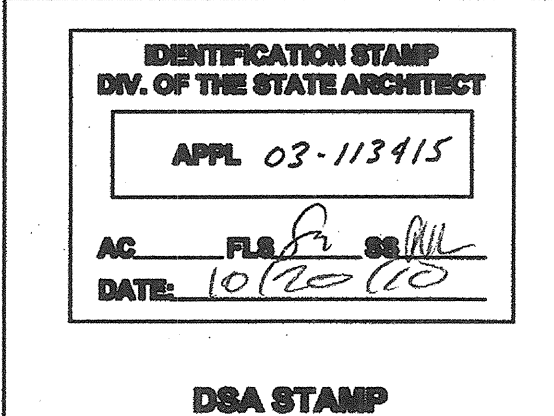


DEVICE QUANTITIES AND ARRANGEMENT SHOWN ON THIS SHEET ARE FOR REFERENCE ONLY. SEE FIRE ALARM RISER DIAGRAM AND FIRE ALARM FLOOR PLANS FOR ACTUAL DEVICE TYPES, QUANTITIES AND CIRCUIT ARRANGEMENTS

1 FIRE ALARM WIRING DETAIL  
NO SCALE



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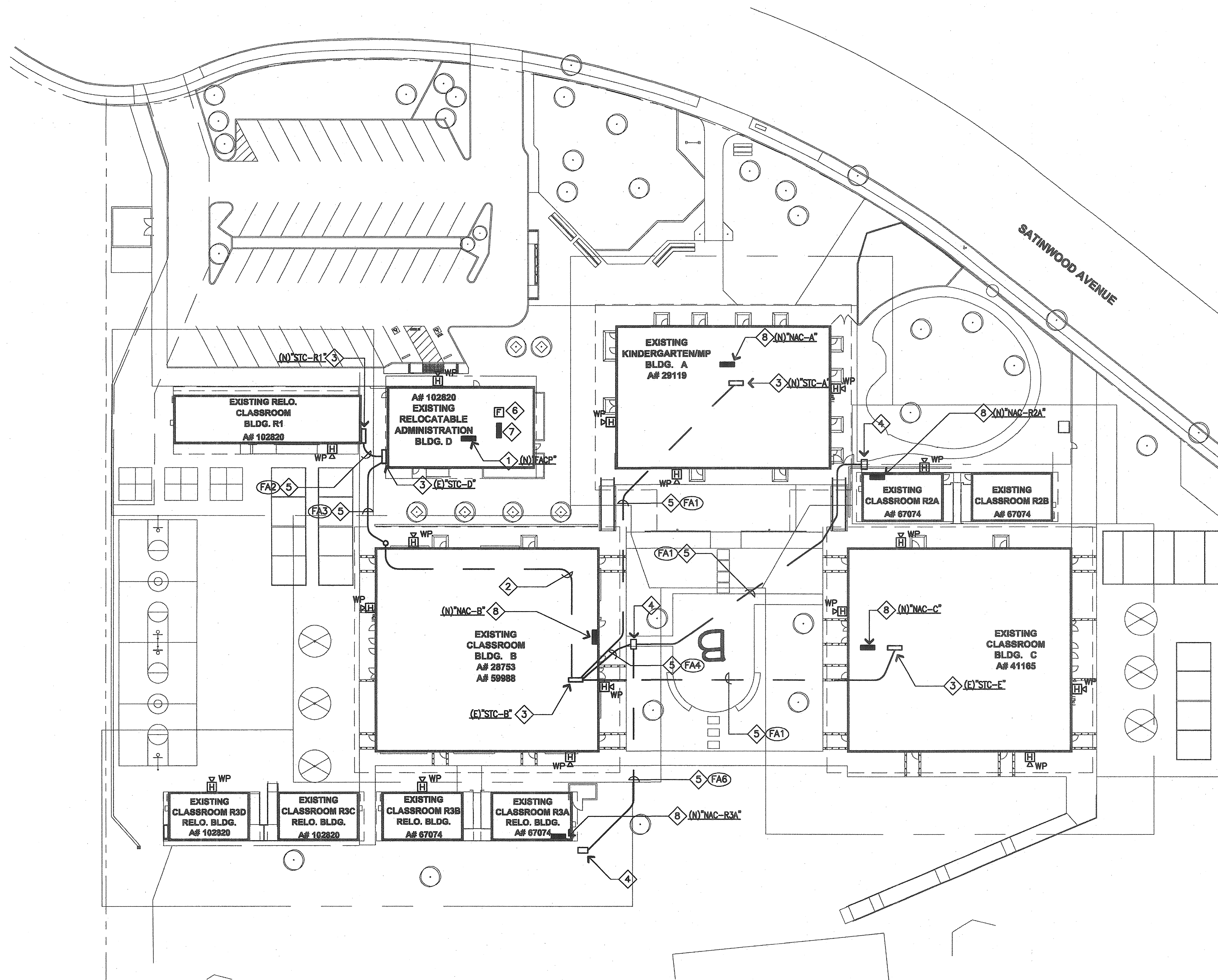


PROJECT NO.: 234000 DATE: 03-02-09

FIRE ALARM DETAILS

13-01R

**FA0.3**

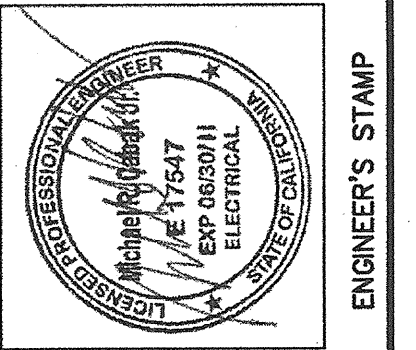
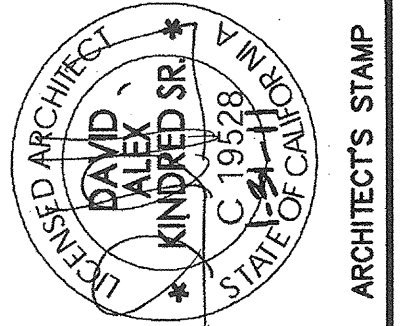


**1 FIRE ALARM SITE PLAN**  
SCALE: 1" = 30'-0"  
PLAN NORTH

EXTERIOR FIRE ALARM CONDUIT AND WIRE SCHEDULE				
TAG	CONDUIT	WIRE		REMARKS
		QUANTITY	SIZE/DESCRIPTION	
FA1	EXISTING CONDUIT	1	1 PAIR #14 FPL TWISTED OVERALL SHIELDED UL LISTED FOR DIRECT BURIAL	FIRE ALARM DATA INITIATING CIRCUIT-DATA LOOP WEST PENN # AQ -295
FA2	EXISTING CONDUIT	1	#14 AWG THWN CU	DSM INTERLOCK
FA2	EXISTING CONDUIT	1	1 PAIR #14 FPL TWISTED OVERALL SHIELDED UL LISTED FOR DIRECT BURIAL	FIRE ALARM DATA INITIATING CIRCUIT-DATA LOOP WEST PENN # AQ -295
FA2	EXISTING CONDUIT	1	1 PAIR #12 FPL TWISTED NON-SHIELDED UL LISTED FOR DIRECT BURIAL	FIRE ALARM NOTIFICATION CIRCUIT WEST PENN # 998
FA3	EXISTING CONDUIT	3	1 PAIR #14 FPL TWISTED OVERALL SHIELDED UL LISTED FOR DIRECT BURIAL	FIRE ALARM DATA INITIATING CIRCUIT-DATA LOOP WEST PENN # AQ -295
FA4	EXISTING CONDUIT	5	#14 AWG THWN CU	DSM INTERLOCK
FA4	EXISTING CONDUIT	2	1 PAIR #14 FPL TWISTED OVERALL SHIELDED UL LISTED FOR DIRECT BURIAL	FIRE ALARM DATA INITIATING CIRCUIT-DATA LOOP WEST PENN # AQ -295
FA5	EXISTING CONDUIT	2	#14 AWG THWN CU	DSM INTERLOCK
FA5	EXISTING CONDUIT	1	1 PAIR #14 FPL TWISTED OVERALL SHIELDED UL LISTED FOR DIRECT BURIAL	FIRE ALARM DATA INITIATING CIRCUIT-DATA LOOP WEST PENN # 995
FA5	EXISTING CONDUIT	1	#14 AWG THWN CU	DSM INTERLOCK
FA5	EXISTING CONDUIT	1	1 PAIR #12 FPL TWISTED NON-SHIELDED UL LISTED FOR DIRECT BURIAL	FIRE ALARM NOTIFICATION CIRCUIT WEST PENN # 998
FA6	EXISTING CONDUIT	1	1 PAIR #14 FPL TWISTED OVERALL SHIELDED UL LISTED FOR DIRECT BURIAL	FIRE ALARM DATA INITIATING CIRCUIT-DATA LOOP WEST PENN # 995
FA6	EXISTING CONDUIT	1	#14 AWG THWN CU	DSM INTERLOCK
FA6	EXISTING CONDUIT	3	1 PAIR #12 FPL TWISTED NON-SHIELDED UL LISTED FOR DIRECT BURIAL	FIRE ALARM NOTIFICATION CIRCUIT WEST PENN # 998
FA7	EXISTING CONDUIT	1	1 PAIR #14 FPL TWISTED OVERALL SHIELDED UL LISTED FOR DIRECT BURIAL	FIRE ALARM DATA INITIATING CIRCUIT-DATA LOOP WEST PENN # AQ -295
FA7	EXISTING CONDUIT	3	1 PAIR #12 FPL TWISTED NON-SHIELDED UL LISTED FOR DIRECT BURIAL	FIRE ALARM NOTIFICATION CIRCUIT WEST PENN # 998

**SHEET NOTES**

- 1 NEW MAIN FIRE ALARM PANEL "FAOP". SEE PLANS FOR REQUIREMENTS.
- 2 EXISTING FIRE ALARM RACEWAY AND CONDUCTORS. REMOVE (E) CONDUCTORS AND PULL THRU NEW CONDUCTORS PER RISER DIAGRAM.
- 3 APPROXIMATE LOCATION OF (E) FIRE ALARM TERMINAL CABINET.
- 4 APPROXIMATE LOCATION OF (E) FIRE ALARM PULL BOX.
- 5 EXISTING UNDERGROUND FIRE ALARM RACEWAY AND CONDUCTORS. REMOVE (E) CONDUCTORS AND PULL THRU NEW CONDUCTORS PER EXTERIOR FIRE ALARM CONDUIT AND WIRE SCHEDULE THIS SHEET. PROVIDE INNERDUCT FOR NEW FA CONDUCTORS WHERE CONDUCTORS OF OTHER SYSTEMS EXIST IN (E) RACEWAY.
- 6 NEW FIRE ALARM PULL STATION IN RECEPTION AREA.
- 7 NEW FIRE ALARM ANNUNCIATOR.
- 8 NEW FIRE ALARM EXTENDER (NAC) PANEL. SEE PLANS FOR REQUIREMENTS.



**Oak Park Unified School District Brookside Elementary School Modernization**

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PDG PROJECT NO.: 10102.00

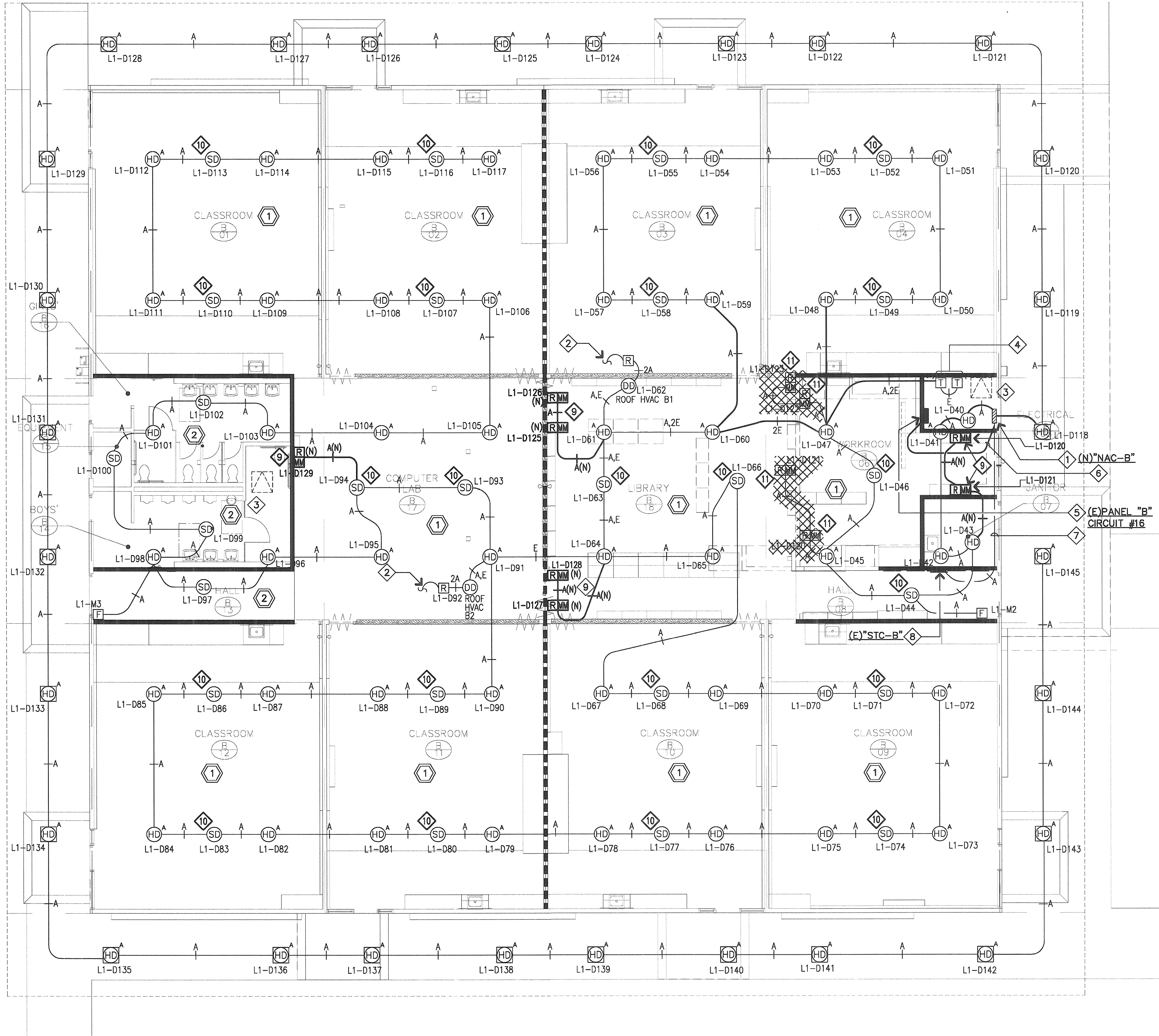
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DIV. OF THE STATE ARCHITECT  
APPL 03-113415  
AC: [Signature] FLR: [Signature] OR: [Signature]  
DATE: 10/20/10  
DSA STAMP

PROJECT NO.: 234000 DATE: 06-02-09

**FIRE ALARM SITE PLAN**

13-02R

**FA1.1**



**1 FIRE ALARM INITIATION FLOOR PLAN**  
SCALE: 1/8" = 1'-0" BUILDING B



**SHEET NOTES**

- 1 EXISTING FIRE ALARM EXTENDER(NAC) PANEL. SEE PLANS FOR REQUIREMENTS.
- 2 EXISTING RELAY MODULE IN NEMA 3R ENCLOSURE, PAINTED RED IN COLOR, WITHIN 3' OF HVAC UNIT CONTROLLER. PROGRAM RELAY MODULE SUCH THAT ACTIVATION OF DUCT SMOKE DETECTOR WILL CAUSE SHUTDOWN OF THE ASSOCIATED HVAC UNIT AND WILL ACTIVATE ALL FIRE ALARM NOTIFICATION DEVICES THROUGHOUT THE CAMPUS. PROVIDE 1/2" CONDUIT ONLY TO HVAC UNIT CONTROLLER FOR LOW VOLTAGE CONDUCTORS BY MECHANICAL CONTRACTOR FOR UNIT SHUTDOWN.
- 3 INSTALL A NEW FLUSH ACCESS DOOR: KARP MODEL #22X22. VERIFY EXACT LOCATION AND MOUNTING REQUIREMENTS WITH ARCHITECT.
- 4 EXISTING FIRE ALARM DUCT DETECTOR TEST STATIONS(S).
- 5 (E) PANELBOARD. WITH 20A-1P CIRCUIT BREAKER AT EXISTING OR NEWLY CREATED SPACE NOTED. BREAKER SHALL BE DISTINGUISHABLE, LABELED, RED IN COLOR WITH A LOCK-ON DEVICE PER NFPA STANDARDS.
- 6 EXISTING 1/2" C. WITH 2/ #12 THHN CU AND (1) #12 CU GRD. ROUTE CONCEALED IN CEILING AND WALL SPACE.
- 7 EXISTING 1/2" C. WITH NEW FA CONDUCTORS PER RISER DIAGRAM.
- 8 APPROXIMATE LOCATION OF (E) SIGNAL TERMINAL CABINET.
- 9 NEW RELAY AND MONITOR MODULE IN NEMA 1 ENCLOSURE, PAINTED RED IN COLOR, WITHIN 3' OF FIRE/SMOKE DAMPER ACTUATOR. PROGRAM THE FIRE ALARM SYSTEM SUCH THAT ACTIVATION OF ANY AREA SMOKE DETECTOR WITHIN THE ROOMS ON EITHER SIDE OF THIS SMOKE DAMPER SHALL ACTIVATE THE RELAY. THE ACTUATOR POWER CIRCUIT, PROVIDED BY THE ELECTRICAL CONTRACTOR, SHALL ROUTE THRU THIS RELAY TO CAUSE CLOSURE OF THE SMOKE DAMPER. COORDINATE WITH THE ELECTRICAL CONTRACTOR. THE MONITOR MODULE SHALL BE WIRED TO MONITOR THE DUAL POSITION DAMPER INDICATOR SWITCH AND SHALL ANNUNCIATE THE DAMPER POSITION AT THE MAIN FIRE ALARM PANEL. COORDINATE WITH THE MECHANICAL CONTRACTOR.
- 10 CONTRACTOR SHALL REMOVE CEILING MOUNTED SMOKE DETECTOR AND RE-INSTALL IN NEW CEILING TILE. DETECTOR MAY REQUIRE RELOCATION. CONTRACTOR SHALL EXTEND RACEWAYS AND PULL NEW CONDUCTORS AS REQUIRED. COORDINATE EXACT LOCATION WITH ARCHITECT.
- 11 EXISTING EMPTY FA CONDUIT AND J-BOX (FOR FUTURE FIRE/SMOKE DAMPER) TO BE REMOVED TO ALLOW FOR WALL DEMOLITION.

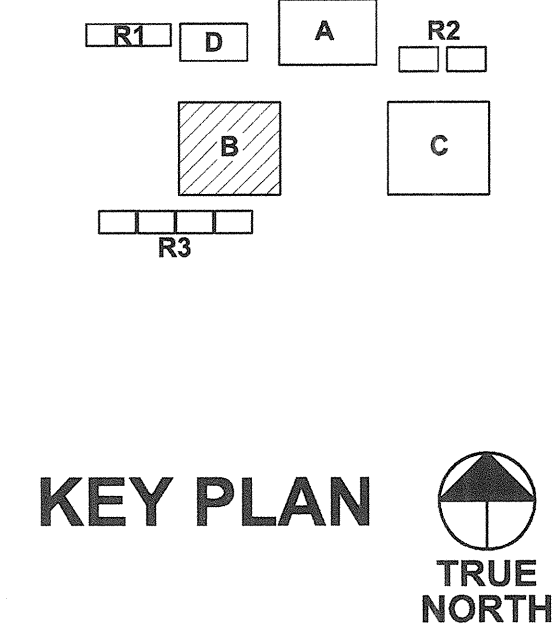
**CEILING SCHEDULE**

- 1 THE CEILING IN THIS ROOM IS A T-BAR LAY-IN CEILING WITH ACCESSIBLE SPACE ABOVE THE CEILING. THE SPACE ABOVE THE CEILING IS DIVIDED BY BEAMS AS INDICATED ON THE PLAN.
- 2 THE CEILING IN THIS ROOM IS A GYPBD OR TILE CEILING WITH SPACE ABOVE THE CEILING. THIS SPACE SHALL BE MADE ACCESSIBLE.

**WALL & CEILING THROUGH-PENETRATION FIRESTOP REQUIREMENTS**

LEGEND DESIGNATES ONE HOUR FIRE RATED WALL  
 DESIGNATES TWO HOUR FIRE RATED WALL  
 ALL NEW PENETRATIONS THROUGH INTERIOR WALLS AND CEILINGS SHALL BE PROVIDED WITH MINIMUM 2 HOUR FIRESTOP ASSEMBLY. SEE FIRE RESISTIVE PENETRATION DETAIL 5 ON SHEET FA0.2 FOR WALL PENETRATION REQUIREMENTS. SEE FIRE RESISTIVE PENETRATION DETAIL 6 ON SHEET FA0.2 FOR CEILING PENETRATION REQUIREMENTS.

**NOTE:** ALL FIRE ALARM PANELS, DEVICES, RACEWAYS AND CONDUCTORS NOTED ON THIS DRAWING ARE EXISTING U.O.N.



**PRIME DESIGN GROUP**  
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FAX: (831)430-9490  
PDG PROJECT NO.: 12179.00

IDENTIFICATION STAMP  
DIV. OF THE STATE ARCHITECT  
APPL 03-113415  
AC: \_\_\_\_\_ FLS: \_\_\_\_\_ SS: \_\_\_\_\_  
DATE: \_\_\_\_\_  
**DSA STAMP**

PROJECT NO.: 234808 DATE: 01-07-13

**FIRE ALARM INITIATION FLOOR PLAN - BUILDING B**

13-02R

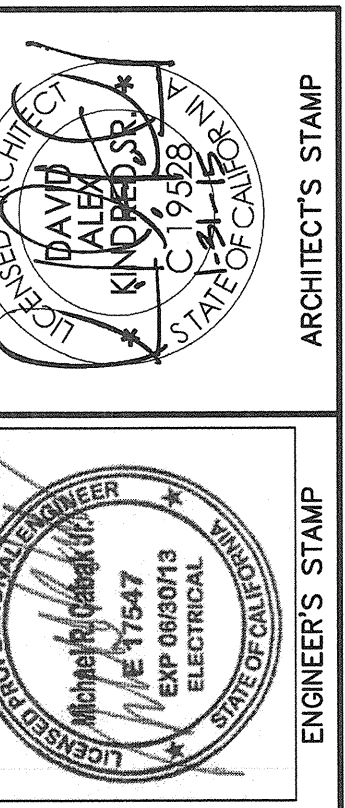
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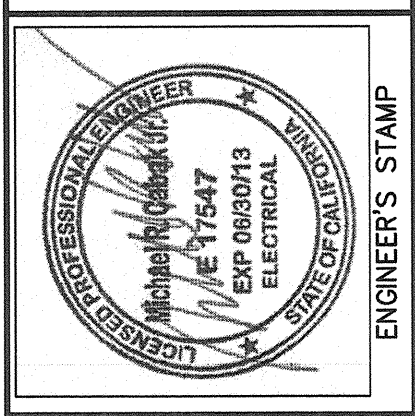
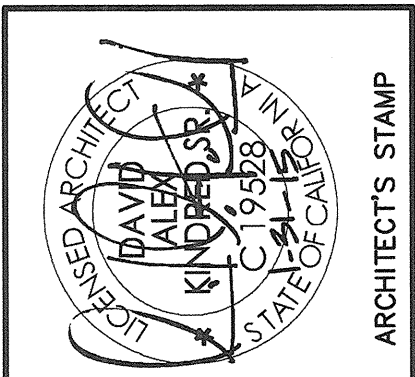
**OAK PARK UNIFIED SCHOOL DISTRICT**  
**BROOKSIDE ELEMENTARY SCHOOL**  
**BUILDING B/200 (BID AND CA)**

**Oak Park**  
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A HEERY INTERNATIONAL COMPANY





OAK PARK UNIFIED  
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BROOKSIDE ELEMENTARY SCHOOL  
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A HERRY INTERNATIONAL COMPANY

### SHEET NOTES

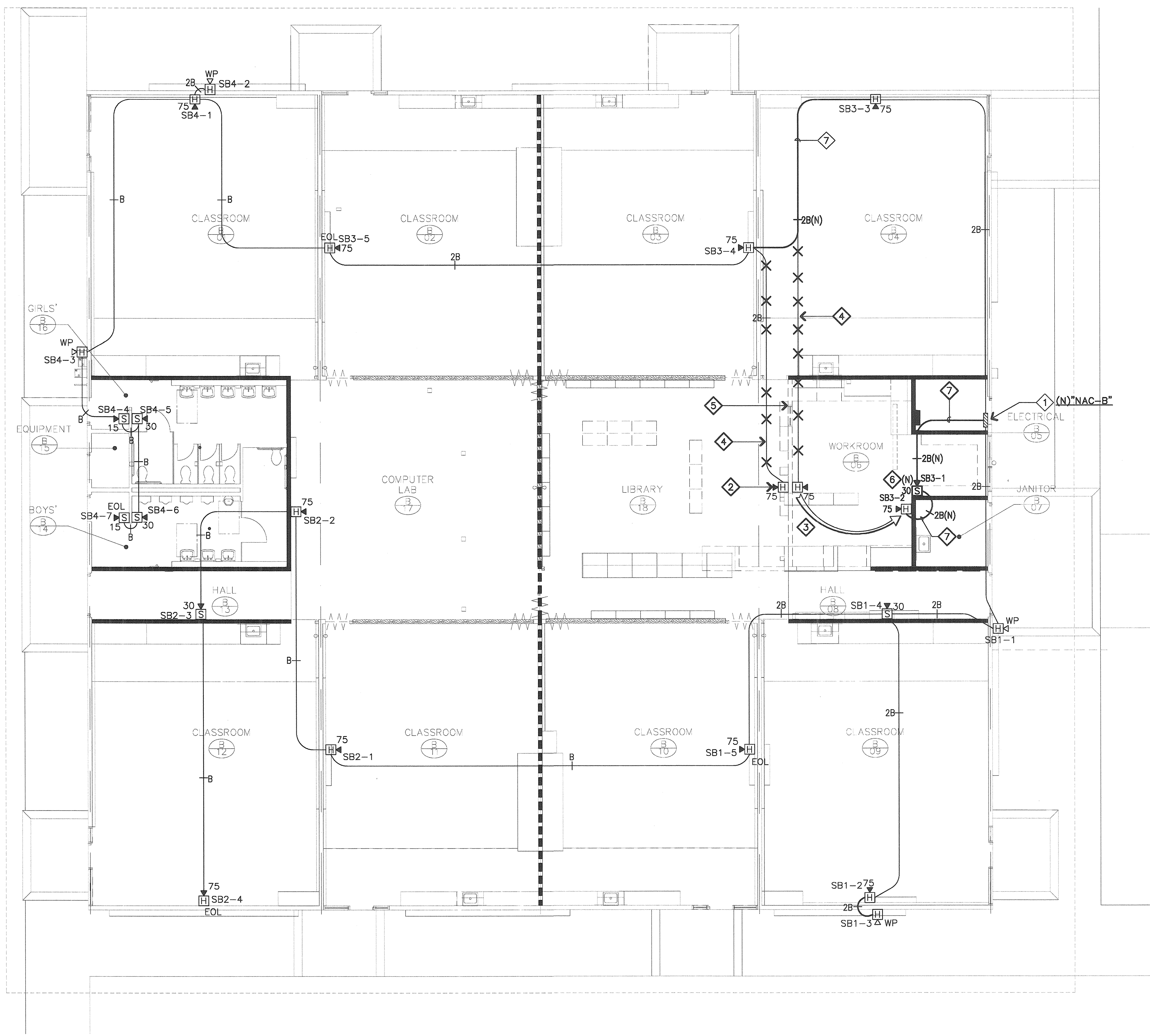
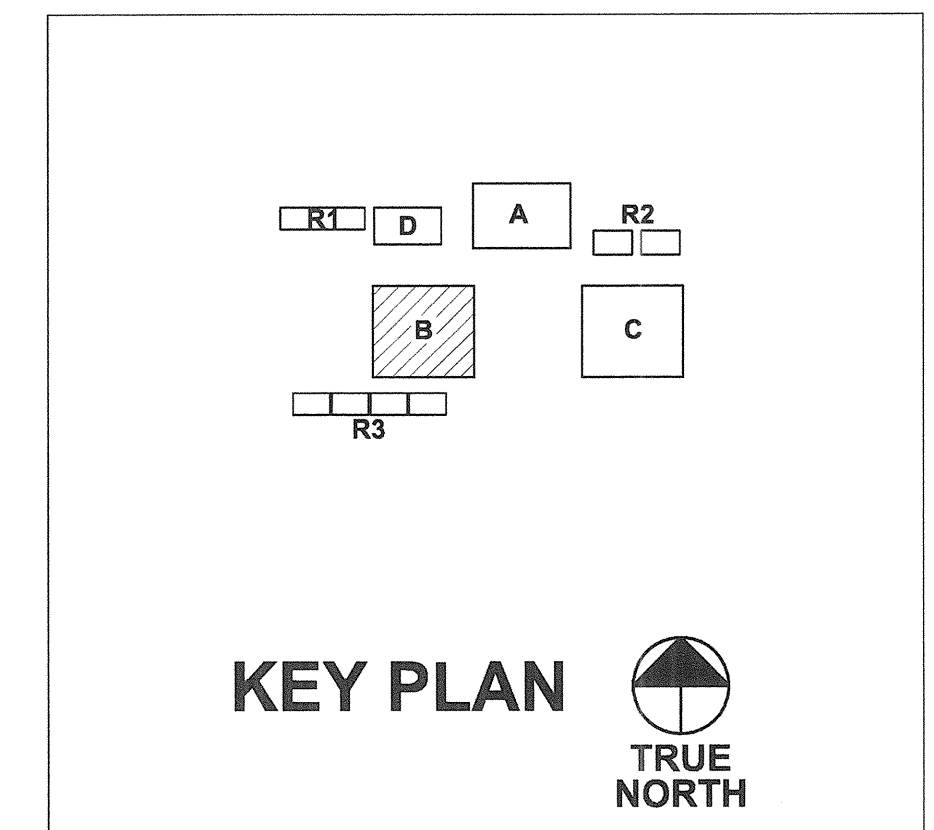
- 1 EXISTING FIRE ALARM EXTENDER(NAC) PANEL. SEE PLANS FOR REQUIREMENTS.
- 2 EXISTING HORN/STROBE TO BE REMOVED.
- 3 RELOCATE EXISTING HORN/STROBE TO NEW LOCATION SHOWN.
- 4 REMOVE EXISTING RACEWAY AND CONDUCTORS.
- 5 REMOVE WALL BEING REMOVED.
- 6 NEW FIRE ALARM NOTIFICATION DEVICE IN FLUSH BACKBOX.
- 7 NEW 3/4" RACEWAY AND CONDUCTORS NOTED.

**WALL & CEILING THROUGH-PENETRATION FIRESTOP REQUIREMENTS**

LEGEND  
 ——— DESIGNATES ONE HOUR FIRE RATED WALL  
 - - - - - DESIGNATES TWO HOUR FIRE RATED WALL

ALL NEW PENETRATIONS THROUGH INTERIOR WALLS AND CEILINGS SHALL BE PROVIDED WITH MINIMUM 2 HOUR FIRESTOP ASSEMBLY. SEE FIRE RESISTIVE PENETRATION DETAIL 5 ON SHEET FA0.2 FOR WALL PENETRATION REQUIREMENTS. SEE FIRE RESISTIVE PENETRATION DETAIL 6 ON SHEET FA0.2 FOR CEILING PENETRATION REQUIREMENTS.

**NOTE:** ALL FIRE ALARM PANELS, DEVICES, RACEWAYS AND CONDUCTORS NOTED ON THIS DRAWING ARE EXISTING U.O.N.



**1 FIRE ALARM NOTIFICATION FLOOR PLAN**  
SCALE: 1/8" = 1'-0" BUILDING B

**PLAN NORTH**

**PRIME DESIGN GROUP**  
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PDG PROJECT NO.: 12179.00

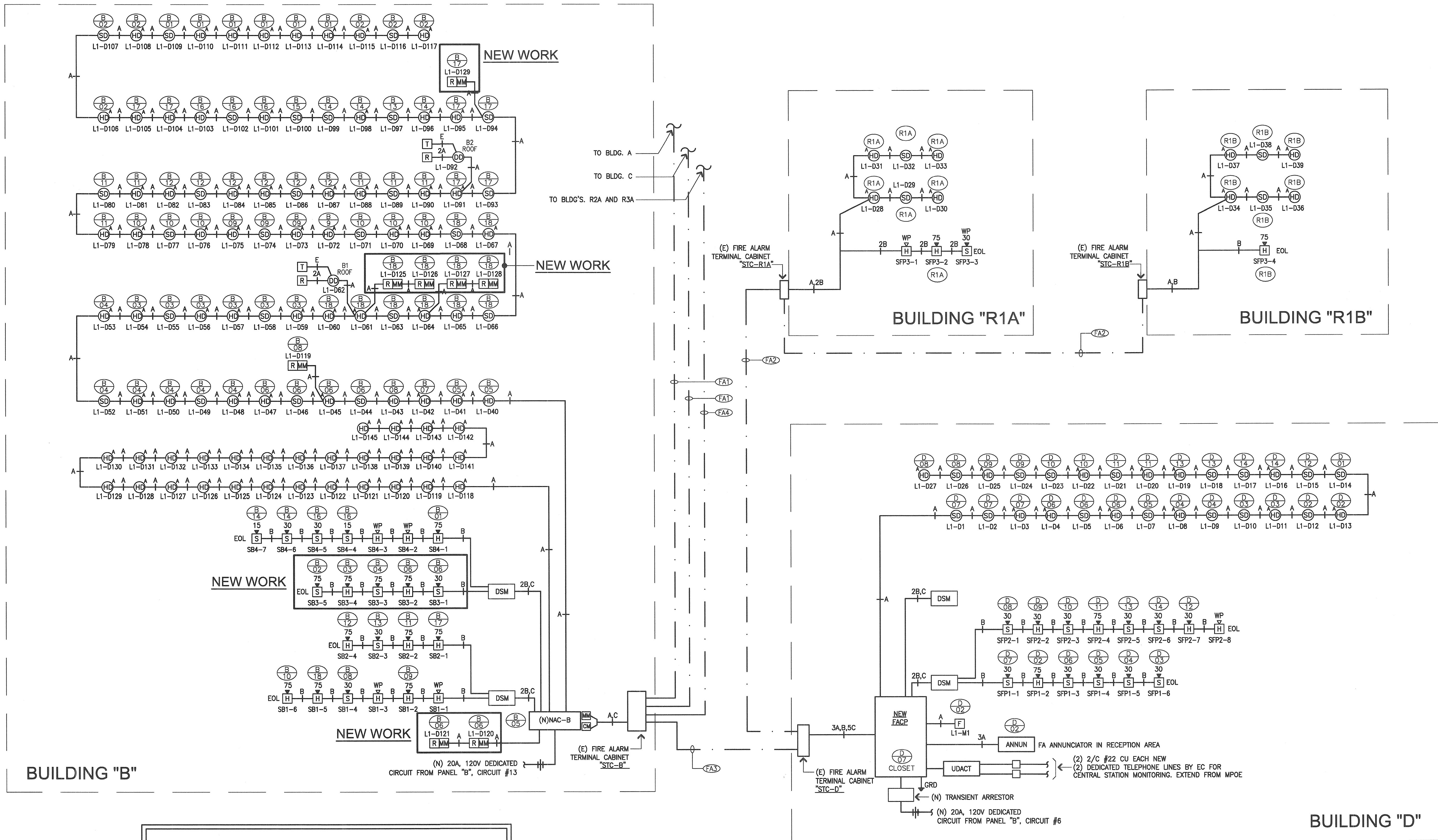
IDENTIFICATION STAMP  
DIV. OF THE STATE ARCHITECT  
APPL 03-113415  
AC: \_\_\_\_\_ FLS: \_\_\_\_\_ SS: \_\_\_\_\_  
DATE: \_\_\_\_\_  
**DSA STAMP**

PROJECT NO.: 234808 DATE: 01-07-13

**FIRE ALARM NOTIFICATION FLOOR PLAN - BUILDING B**

13-02R

**AD1FA2.2b**



NOTE: ALL FIRE ALARM PANELS, DEVICES, RACEWAYS AND CONDUCTORS NOTED ON THIS DRAWING ARE EXISTING U.O.N.

1 PARTIAL FIRE ALARM RISER DIAGRAM  
NO SCALE

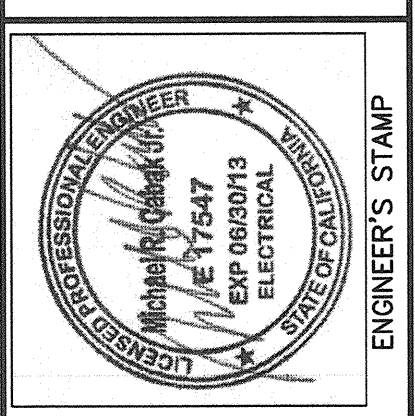
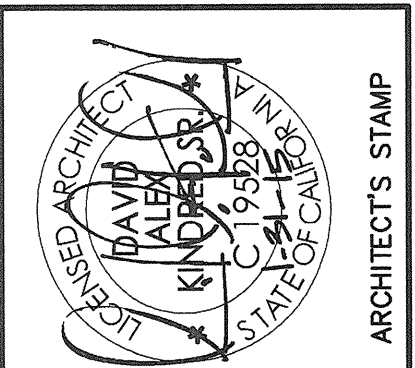
INTERIOR FIRE ALARM CABLE

TYPE	DESCRIPTION	USE(S)
A	1 TWISTED PAIR #16 AWG, FPL WITH OVERALL SHIELD. LOW CAPACITANCE	FIRE ALARM DATA & INITIATING CIRCUIT - DATA LOOP WEST PENN #D991
B	1 TWISTED PAIR #12 AWG, FPL UNSHIELDED.	FIRE ALARM NOTIFICATION CIRCUIT WEST PENN #998
C	2 #14 THWN CU	SYNCHRONIZATION WIRING (DSM INTERLOCK)

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DATE: \_\_\_\_\_  
DSA STAMP

PROJECT NO.: 234408 DATE: 01-07-13  
FIRE ALARM RISER DIAGRAM  
13-01R  
AD1FA3.1



OAK PARK UNIFIED SCHOOL DISTRICT  
BROOKSIDE ELEMENTARY SCHOOL  
BUILDING B/200 (BID AND CA)

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650 East Parkside Avenue Suite 105  
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Phone: (800) 368-6381 Fax: (877) 493-2059  
**barnhart, inc.**  
A HEERY INTERNATIONAL COMPANY

QTY	PRODUCT ID	DESCRIPTION	STANDBY		ALARM	
			EACH	TOTAL	EACH	TOTAL
1	NFS2-640	MAIN FIRE ALARM PANEL	0.100000	0.100000	0.240000	0.240000
1	CHG-120	BATTERY CHARGER	0.006000	0.006000	0.006000	0.006000
1	UDACT	COMMUNICATOR	0.040000	0.040000	0.100000	0.100000
5	FCM-1	CONTROL MODULE	0.003750	0.018750	0.003750	0.018750
13	FRM-1	MONITOR MODULE	0.003750	0.048750	0.003750	0.048750
4	FRM-1	RELAY MODULE	0.002550	0.010200	0.002550	0.010200
2	DSM 12/24-R	DUAL SYNC MODULE	0.000000	0.000000	0.038000	0.076000
PANEL STANDBY CURRENT			0.223700			
PANEL ALARM CURRENT					0.494300	

QTY	PRODUCT ID	DESCRIPTION	STANDBY		ALARM	
			EACH	TOTAL	EACH	TOTAL
7	NBG-12S	PULL STATION	0.000375	0.002625	0.000375	0.002625
123	FSP-851	SMOKE DETECTOR	0.000360	0.044280	0.006500	0.799500
4	FSD-751PL	DUCT SMOKE DETECTOR	0.012360	0.049440	0.007500	0.030000
261	FST-851	HEAT DETECTOR	0.000300	0.078300	0.006500	1.696500
2	AH-24WP-R	WEATHERPROOF HORN	0.000000	0.000000	0.041000	0.082000
0	RSS-24MCW-FR	STROBE 15CD	0.000000	0.000000	0.060000	0.000000
10	RSS-24MCW-FR	STROBE 30CD	0.000000	0.000000	0.092000	0.000000
0	RSS-24MCW-FR	STROBE 75CD	0.000000	0.000000	0.165000	0.000000
0	RSS-24MCW-FR	STROBE 110CD	0.000000	0.000000	0.220000	0.000000
0	AS-24MCW-FR	HORN/STROBE 15CD	0.000000	0.000000	0.088000	0.000000
2	AS-24MCW-FR	HORN/STROBE 30CD	0.000000	0.000000	0.125000	0.250000
4	AS-24MCW-FR	HORN/STROBE 75CD	0.000000	0.000000	0.200000	0.800000
0	AS-24MCW-FR	HORN/STROBE 110CD	0.000000	0.000000	0.287000	0.000000
DEVICE STANDBY CURRENT			0.174645			
DEVICE ALARM CURRENT					4.580625	

DESCRIPTION	STANDBY	ALARM
CONTROL PANEL	0.223700 Amps	0.494300
FIELD DEVICES	0.174645 Amps	4.580625
TOTAL STANDBY CURRENT	0.398345 Amps	
X24 HOUR STANDBY	9.560280 Amp Hrs	
TOTAL ALARM CURRENT		5.074925
5 MINUTES OF ALARM (X .083)		0.421219
BATTERY REQUIREMENT		9.961499
20% SAFETY FACTOR		1.996300
TOTAL BATTERY REQUIREMENT		11.977799
BATTERY SUPPLIED		12.8AH

QTY	MODEL NO.	DESCRIPTION	STANDBY		ALARM	
			EACH	TOTAL	EACH	TOTAL
1	FCPS-24S6	NOTIFIER FA POWER SUPPLY	0.065000	0.065000	0.145000	0.145000
PANEL STANDBY CURRENT			0.065000			
PANEL ALARM CURRENT					0.145000	

QTY	MODEL NO.	DESCRIPTION	STANDBY		ALARM	
			EACH	TOTAL	EACH	TOTAL
7	RSS-24MCW-FR	WHEELOCK STROBE 15 CD	0.000000	0.000000	0.060000	0.420000
11	RSS-24MCW-FR	WHEELOCK STROBE 30 CD	0.000000	0.000000	0.092000	1.012000
1	RSS-24MCW-FR	WHEELOCK STROBE 75 CD	0.000000	0.000000	0.165000	0.165000
0	RSS-24MCW-FR	WHEELOCK STROBE 110 CD	0.000000	0.000000	0.220000	0.000000
0	AS-24MCW-FR	WHEELOCK HORN-STROBE 15 CD	0.000000	0.000000	0.088000	0.000000
1	AS-24MCW-FR	WHEELOCK HORN-STROBE 30 CD	0.000000	0.000000	0.125000	0.125000
2	AS-24MCW-FR	WHEELOCK HORN-STROBE 75 CD	0.000000	0.000000	0.200000	0.400000
0	AS-24MCW-FR	WHEELOCK HORN-STROBE 110 CD	0.000000	0.000000	0.287000	0.534000
3	AH-24WP-FR	WHEELOCK EXTERIOR HORN WP	0.000000	0.000000	0.080000	0.240000
2	DSM	WHEELOCK DUAL SYNC MODULE	0.000000	0.000000	0.055000	0.110000
DEVICE STANDBY CURRENT			0.000000			
DEVICE ALARM CURRENT					3.008000	

DESCRIPTION	STANDBY	ALARM
CONTROL PANEL	0.065000 Amps	0.145000
FIELD DEVICES	0.000000 Amps	3.008000
TOTAL STANDBY CURRENT	0.065000 Amps	
X24 HOUR STANDBY	1.560000 Amps	
TOTAL ALARM CURRENT		3.151000
5 MINUTES OF ALARM (X .083)		0.261533
BATTERY REQUIREMENT		1.821533
20% SAFETY FACTOR		0.364307
TOTAL BATTERY REQUIREMENT		2.185840
BATTERY SUPPLIED		(2) 7Ah

QTY	MODEL NO.	DESCRIPTION	STANDBY		ALARM	
			EACH	TOTAL	EACH	TOTAL
1	FCPS-24S6	NOTIFIER FA POWER SUPPLY	0.065000	0.065000	0.145000	0.145000
PANEL STANDBY CURRENT			0.065000			
PANEL ALARM CURRENT					0.145000	

QTY	MODEL NO.	DESCRIPTION	STANDBY		ALARM	
			EACH	TOTAL	EACH	TOTAL
5	RSS-24MCW-FR	WHEELOCK STROBE 15 CD	0.000000	0.000000	0.080000	0.120000
5	RSS-24MCW-FR	WHEELOCK STROBE 30 CD	0.000000	0.000000	0.092000	0.460000
0	RSS-24MCW-FR	WHEELOCK STROBE 75 CD	0.000000	0.000000	0.165000	0.000000
0	RSS-24MCW-FR	WHEELOCK STROBE 110 CD	0.000000	0.000000	0.220000	0.000000
0	AS-24MCW-FR	WHEELOCK HORN-STROBE 15 CD	0.000000	0.000000	0.088000	0.000000
0	AS-24MCW-FR	WHEELOCK HORN-STROBE 30 CD	0.000000	0.000000	0.125000	0.000000
11	AS-24MCW-FR	WHEELOCK HORN-STROBE 75 CD	0.000000	0.000000	0.200000	2.200000
0	AS-24MCW-FR	WHEELOCK HORN-STROBE 110 CD	0.000000	0.000000	0.287000	0.000000
4	AH-24WP-FR	WHEELOCK EXTERIOR HORN WP	0.000000	0.000000	0.080000	0.320000
2	DSM	WHEELOCK DUAL SYNC MODULE	0.000000	0.000000	0.055000	0.110000
DEVICE STANDBY CURRENT			0.000000			
DEVICE ALARM CURRENT					3.210000	

DESCRIPTION	STANDBY	ALARM
CONTROL PANEL	0.065000 Amps	0.145000
FIELD DEVICES	0.000000 Amps	3.210000
TOTAL STANDBY CURRENT	0.065000 Amps	
X24 HOUR STANDBY	1.560000 Amps	
TOTAL ALARM CURRENT		3.355000
5 MINUTES OF ALARM (X .083)		0.278465
BATTERY REQUIREMENT		1.839465
20% SAFETY FACTOR		0.367993
TOTAL BATTERY REQUIREMENT		2.206158
BATTERY SUPPLIED		(2) 7Ah

REVISED CALCULATION

QTY	MODEL NO.	DESCRIPTION	STANDBY		ALARM	
			EACH	TOTAL	EACH	TOTAL
1	FCPS-24S6	NOTIFIER FA POWER SUPPLY	0.065000	0.065000	0.145000	0.145000
PANEL STANDBY CURRENT			0.065000			
PANEL ALARM CURRENT					0.145000	

QTY	MODEL NO.	DESCRIPTION	STANDBY		ALARM	
			EACH	TOTAL	EACH	TOTAL
4	RSS-24MCW-FR	WHEELOCK STROBE 15 CD	0.000000	0.000000	0.060000	0.240000
4	RSS-24MCW-FR	WHEELOCK STROBE 30 CD	0.000000	0.000000	0.092000	0.368000
0	RSS-24MCW-FR	WHEELOCK STROBE 75 CD	0.000000	0.000000	0.165000	0.000000
0	RSS-24MCW-FR	WHEELOCK STROBE 110 CD	0.000000	0.000000	0.220000	0.000000
0	AS-24MCW-FR	WHEELOCK HORN-STROBE 15 CD	0.000000	0.000000	0.088000	0.000000
0	AS-24MCW-FR	WHEELOCK HORN-STROBE 30 CD	0.000000	0.000000	0.125000	0.000000
11	AS-24MCW-FR	WHEELOCK HORN-STROBE 75 CD	0.000000	0.000000	0.200000	2.200000
0	AS-24MCW-FR	WHEELOCK HORN-STROBE 110 CD	0.000000	0.000000	0.287000	0.000000
4	AH-24WP-FR	WHEELOCK EXTERIOR HORN WP	0.000000	0.000000	0.080000	0.320000
2	DSM	WHEELOCK DUAL SYNC MODULE	0.000000	0.000000	0.055000	0.110000
DEVICE STANDBY CURRENT			0.000000			
DEVICE ALARM CURRENT					3.238000	

DESCRIPTION	STANDBY	ALARM
CONTROL PANEL	0.065000 Amps	0.145000
FIELD DEVICES	0.000000 Amps	3.238000
TOTAL STANDBY CURRENT	0.065000 Amps	
X24 HOUR STANDBY	1.560000 Amps	
TOTAL ALARM CURRENT		3.383000
5 MINUTES OF ALARM (X .083)		0.280789
BATTERY REQUIREMENT		1.840789
20% SAFETY FACTOR		0.366158
TOTAL BATTERY REQUIREMENT		2.208947
BATTERY SUPPLIED		(2) 7Ah

(N) NOTIFICATION CIRCUIT "SA1"

DEVICE #	SA1-1	SA1-2	SA1-3	SA1-4	SA1-5
WIRE GAUGE	12	12	12	12	12
DISTANCE (FT)	4	23	16	27	22
AMPS @ DEVICE	0.2	0.092	0.092	0.06	0.092
AMPS DEVELOPED	0.536	0.336	0.244	0.152	0.092
VOLT. DROP	0.009	0.031	0.018	0.016	0.008

(N) NOTIFICATION CIRCUIT "SB1"

DEVICE #	SB1-1	SB1-2	SB1-3	SB1-4	SB1-5
WIRE GAUGE	12	12	12	12	12
DISTANCE (FT)	36	64	6	56	38
AMPS @ DEVICE	0.08	0.2	0.08	0.092	0.2
AMPS DEVELOPED	0.652	0.572	0.372	0.292	0.200
VOLT. DROP	0.084	0.147	0.009	0.066	0.031

(N) NOTIFICATION CIRCUIT "SC2"

DEVICE #	SC2-1	SC2-2	SC2-3	SC2-4
WIRE GAUGE	12	12	12	12
DISTANCE (FT)	88	6	36	6
AMPS @ DEVICE	0.2	0.2	0.092	0.2
AMPS DEVELOPED	0.692	0.492	0.292	0.200
VOLT. DROP	0.245	0.012	0.042	0.005

(N) NOTIFICATION CIRCUIT "SFP2"

DEVICE #	SFP2-1	SFP2-2	SFP2-3	SFP2-4	SFP2-5	SFP2-6	SFP2-7	SFP2-8
WIRE GAUGE	12	12	12	12	12	12	12	12
DISTANCE (FT)	24	22	6	42	38	6	19	6
AMPS @ DEVICE	0.092	0.092	0.125	0.092	0.2	0.092	0.2	0.08
AMPS DEVELOPED	0.973	0.881	0.789	0.664	0.572	0.372	0.280	0.080
VOLT. DROP	0.094	0.078	0.019	0.112	0.087	0.009	0.021	0.002

(N) NOTIFICATION CIRCUIT "R3A1"

DEVICE #	R3A1-1
WIRE GAUGE	12
DISTANCE (FT)	55
AMPS @ DEVICE	0.2
AMPS DEVELOPED	0.200
VOLT. DROP	0.044

(N) NOTIFICATION CIRCUIT "R3A2"

DEVICE #	R3A2-1	R3A2-2
WIRE GAUGE	12	12
DISTANCE (FT)	218	46
AMPS @ DEVICE	0.08	0.2
AMPS DEVELOPED	0.380	0.200
VOLT. DROP	0.245	0.037

(N) NOTIFICATION CIRCUIT "R3A3"

DEVICE #	R3A3-1	R3A3-2
WIRE GAUGE	12	12
DISTANCE (FT)	200	53
AMPS @ DEVICE	0.2	0.2
AMPS DEVELOPED	0.400	0.200
VOLT. DROP	0.322	0.043

(N) NOTIFICATION CIRCUIT "R3A4"

DEVICE #	R3A4-1	R3A4-2	R3A4-3	R3A4-4
WIRE GAUGE	12	12	12	12
DISTANCE (FT)	296	18	64	18
AMPS @ DEVICE	0.092	0.08	0.125	0.092
AMPS DEVELOPED	0.389	0.297	0.217	0.092
VOLT. DROP	0.463	0.021	0.056	0.