SEQUENCE OF OPERATION

ACTION \ DEVICE	MANUAL PULL STATION	SMOKE DETECTOR	120VAC POWER FAILURE	HEAT DETECTOR	FLOW SWITCH	TAMPER SWITCH	DUCT SMOKE DETECTOR
SOUND CONTROL PANEL TROUBLE BUZZER	ON WIRING FAULT	ON WIRING FAULT	YES	ON WIRING FAULT	ON WIRING FAULT	ON WIRING FAULT	ON WIRING FAULT
ANNUCIATE AT ADMINISTRATION BUILDING	YES	YES	YES	YES	YES	YES	YES
ANNUNCIATE AT FIRE CONTROL PANEL (ALARM OR TROUBLE)	YES	YES	YES	YES	YES	YES	YES
ACTIVATE AUDIBLE/ VISUAL ALARM SIGNAL THROUGH-OUT BUILDINGS	YES	YES	NO	YES	YES	NO	YES
SHUT DOWN HVAC UNITS & CLOSE FIRE/ SMOKE DAMPERS	NO	YES	NO	NO	NO	NO	YES
NOTIFY OFF-SITE MONITORING COMPANY	YES	YES	NO	YES	YES	YES	YES
ELEVATOR POWER SHUT DOWN	N/A	N/A	N/A	N/A	N/A	N/A	NO

FIRE ALARM WIRE LEGEND

SYMBOL	DESCRIPTION	TYPE
D	DATA LINE – INITIATING DEVICE	16/4 TWISTED SHIELDED PR (TSP) DATA LOOP
P	POWER CIRCUIT	2#12 THWN
V	SIGNAL CIRCUIT	2#12 THWN

FIRE ALARM LEGEND

SYMBOL	DESCRIPTION	MANUFACTURER
FACP	FIRE ALARM CONTROL PANEL	EDWARDS: EST3 CSFM #7165–1591:186
FAA	FIRE ALARM REMOTE ANNUNCIATOR PANEL.	EDWARDS: 3–LCDANN CSFM #7120–1591:193
FAPS	REMOTE POWER SUPPLY	EDWARDS: BPS–6 CSFM #7300–1591:200
F	FIRE ALARM MANUAL PULL STATION, MOUNT AT +48". STI 1200 OR 1230 WITH OUT HORN	EDWARDS: SIGA–278 CSFM #7150–1591:129
SD	PHOTOELECTRIC SMOKE DETECTOR & BASE ("✳" ADJACENT INDICATES RELAY BASE).	EDWARDS: SIGA–IPHS CSFM #7258–1591:123 CSFM #7300–1591:120
HD	HEAT DETECTOR ("✳" ADJACENT INDICATES RELAY BASE).	EDWARDS: SIGA–HRS CSFM #7270–1591:125
HD C	SAME AS ABOVE. "C" ADJACENT INDICATES CEILING MOUNT,	EDWARDS: SIGA–HRS CSFM #7270–1591:125
DD	DUCT SMOKE DETECTOR AND HOUSING.	EDWARDS: SIGA–SD CSFM #3242–1501:153
FSD	COMBINATION FIRE/SMOKE DAMPER PER MECHANICAL MAKE CONNECTION TO MOTOR OPERATOR PER MANUFACTURERS REQUIREMENTS	
15	FIRE ALARM STROBE LIGHT MOUNT AT +80"A.F.F. OR 6" BELOW CEILING, WHICHEVER IS LOWER.	EDWARDS: G1–VM15 CSFM #7125–1591:202
30	FIRE ALARM STROBE LIGHT MOUNT AT +80"A.F.F. OR 6" BELOW CEILING, WHICHEVER IS LOWER.	EDWARDS: G1–VM30 CSFM #7125–1591:202
75	FIRE ALARM STROBE LIGHT MOUNT AT +80"A.F.F. OR 6" BELOW CEILING, WHICHEVER IS LOWER.	EDWARDS: G1–VM75 CSFM #7125–1591:202
110	FIRE ALARM STROBE LIGHT MOUNT AT +80"A.F.F. OR 6" BELOW CEILING, WHICHEVER IS LOWER.	EDWARDS: G1–VM110 CSFM #7125–1591:202
15	COMBINATION HORN/STROBE LIGHT, MOUNT AT +80"A.F.F. OR 6" BELOW CEILING, WHICHEVER IS LOWER.	EDWARDS: G1–HDVM15 CSFM #7125–1591:202
30	COMBINATION HORN/STROBE LIGHT, MOUNT AT +80"A.F.F. OR 6" BELOW CEILING, WHICHEVER IS LOWER.	EDWARDS: G1–HDVM30 CSFM #7125–1591:202
75	COMBINATION HORN/STROBE LIGHT, MOUNT AT +80"A.F.F. OR 6" BELOW CEILING, WHICHEVER IS LOWER.	EDWARDS: G1–HDVM75 CSFM #7125–1591:202
110	COMBINATION HORN/STROBE LIGHT, MOUNT AT +80"A.F.F. OR 6" BELOW CEILING, WHICHEVER IS LOWER.	EDWARDS: G1–HDVM110 CSFM #7125–1591:202
H WP	FIRE ALARM HORN WEATHERPROOF, MOUNT AT +80"A.F.F.	EDWARDS: 757–1A–T CSFM #7125–1591:189
TS	TAMPER SWITCH (CONNECT TO MONITOR MODULE)	EDWARDS: SIGA–WTM CSFM #7300–1657:121
FS	FLOW SWITCH (CONNECT TO MONITOR MODULE)	EDWARDS: SIGA–WTM CSFM #7300–1657:121
C	INPUT/OUTPUT MODULE	EDWARDS: SIGA–IO CSFM #7300–1591:210
DH	ELECTROMAGNETIC DOOR HOLDERS (SURFACE WALL MOUNTED)	EDWARDS: 1508–AQN5 CSFM #3550–1501:137
EOL	END OF LINE RESISTOR (10 OHMS)	
S1	INDICATES SIGNAL CIRCUIT NUMBER ONE	
Z1–XX	INDICATES ADDRESS NUMBER	
—F—	FIRE ALARM SYSTEM CONDUIT RUN (3/4" CONDUIT MINIMUM UNLESS INDICATED OTHERWISE ON DRAWINGS) AND REQUIRED WIRING.	
FATC	24"L X 24"W X 6"D MAIN FIRE ALARM TERMINAL CABINET	
R	CONTROL MODULE	EDWARDS: SIGA–CR CSFM #7300–1657:121

FIRE ALARM REQUIREMENTS

1. THE CONTRACTOR SHALL PROVIDE AND SUBMIT THE FIRE ALARM SHOP DRAWINGS TO THE ARCHITECT FOR REVIEW AND APPROVAL PRIOR TO INSTALLATION OF THE FIRE ALARM SYSTEM. THE SUBMITTAL SHALL CONTAIN THE FOLLOWING:
   - A. SHOP DRAWINGS: COMPLETE 1/8" SCALE FLOOR PLANS SHOWING ALL DEVICES, COMPONENTS, CONDUIT AND WIRING INDICATING A COMPLETE AND OPERABLE SYSTEM AS DESIGNED AND SPECIFIED. REPRODUCED COPIES OF BID SET FIRE ALARM PLANS ARE NOT ACCEPTABLE AS SHOP DRAWINGS. SHOP DRAWINGS MUST ALSO INDICATE DEVICE MOUNTING HEIGHTS, ROOM NAMES AND NUMBERS AND THE LOCATION OF ALL FIRE RATED WALLS.
   - B. ELECTRICAL CONTRACTOR'S AND FIRE ALARM SYSTEM INSTALLER'S NAME, ADDRESS, PHONE NUMBER AND C–10 LICENSE NUMBER.
   - C. LIST OF SYSTEM COMPONENTS, EQUIPMENT AND DEVICES, INCLUDING MANUFACTURERS' MODEL NUMBER(S) AND CALIFORNIA STATE FIRE MARSHALL LISTING NUMBERS.
   - D. ORIGINAL COPIES OF MANUFACTURERS' SPECIFICATION SHEETS FOR ALL EQUIPMENT AND DEVICES INDICATED.
   - E. VOLTAGE DROP CALCULATIONS –– INCLUDE THE FOLLOWING INFORMATION FOR THE WORST CASE:
     1. POINT–TO–POINT OR OHMS LAW CALCULATIONS.
     2. IDENTIFICATION OF ZONE USED IN CALCULATIONS.
     3. VOLTAGE DROP PERCENT (NOT TO EXCEED MANUFACTURERS' REQUIREMENTS).

        NOTE: IF VOLTAGE DROP EXCEEDS 10% INDICATE MANUFACTURERS' LISTED OPERATING VOLTAGE RANGE(S) OR EQUIPMENT AND DEVICES.
     4. NOTE CIRCUIT NUMBER FOR WORST CASE CALCULATION.
   - F. BATTERY TYPE(S), AMP HOURS AND LOAD CALCULATIONS –– INCLUDE THE FOLLOWING INFORMATION:
     1. NORMAL OPERATION: 100% OF APPLICABLE DEVICES FOR 24 HOURS = CONTROL PANEL AMPS PLUS LIST OF AMPS PER DEVICE WHICH DRAW POWER FROM THE PANEL DURING STANDBY POWER CONDITION –– I.E.:
        - A. ZONE MODULES
        - B. DETECTORS
        - C. OTHER DEVICES (IDENTIFY)
     2. ALARM CONDITION: 100% OF APPLICABLE DEVICES FOR 5 MINUTES = CONTROL PANEL AMPS PLUS LIST OF AMPS PER DEVICE WHICH DRAW POWER FROM THE PANEL DURING ALARM CONDITION –– I.E.:
        - A. ZONE MODULES
        - B. SIGNAL MODULES
        - C. DETECTORS
        - D. SIGNAL DEVICES
        - E. ANNUNCIATOR
        - F. OTHER DEVICES (IDENTIFY)
     3. NORMAL OPERATION + ALARM OPERATION
        - A. TOTAL AMP HOURS REQUIRED.
        - B. TOTAL AMP HOURS PROVIDED.
2. THE MANUFACTURERS INDICATED ON DRAWINGS AND IN SPECIFICATIONS ARE THE ORS/DSA APPROVED MANUFACTURER OF THIS PROJECT. THE NOTIFIER SYSTEM INDICATED IS THE DISTRICT STANDARD AND NO SUBSTITUTIONS WILL BE ACCEPTED.

FIRE ALARM NOTES

1. SCOPE OF WORK: PROVIDE A COMPLETE AUTOMATIC FIRE ALARM SYSTEM WITH SUPPLEMENTAL SMOKE DETECTION. FIRE ALARM SYSTEM IN ACCORDANCE TO NFPA–72 AND CCR TITLE 24, PART 2, SECTION 305.9
2. A FIRE ALARM SYSTEM IS BEING INSTALLED IN OCCUPANCIES LISTED, PER DSA POLICY 95–3. PROVIDE NEW NOTIFIER FIRE ALARM CONTROL PANEL AS INDICATED.
3. PLANS AND SPECIFICATIONS FOR THE SYSTEM SHALL BE APPROVED BY DSA–FIRE AND LIFE SAFETY PRIOR TO SYSTEM INSTALLATION.
4. UPON RECEIPT OF THE CERTIFICATE OF COMPLIANCE, THE MANUFACTURER AND OR INSTALLER SHALL SUPPLY THE OWNER WITH WRITTEN OPERATING, TESTING AND MAINTENANCE INSTRUCTIONS, POINT–TO–POINT AS–BUILT DRAWINGS, AND EQUIPMENT SPECIFICATIONS.
5. THE SYSTEM SHALL CONFORM TO TITLE 19 AND TITLE 24 AS APPLICABLE TO THIS PROJECT.
6. ALL THE DEVICES OF THE FIRE ALARM SYSTEM SHALL BE APPROVED AND LISTED BY THE CALIFORNIA FIRE ALARM MARSHALL.
7. A STAMPED SET OF APPROVED PLANS SHALL BE ON THE JOB SITE AND USED FOR INSTALLATION. ANY DEVIATION FROM APPROVED PLANS, SHALL BE APPROVED AND SIGNED BY THE DSA INSPECTOR OF RECORD.
8. ANY DISCREPANCIES BETWEEN THE DRAWINGS AND THE CODE OR RECOGNIZED STANDARDS SHALL BE BROUGHT TO THE ATTENTION OF THE INSPECTOR OR RECORD.
9. CONDUIT SYSTEM TO BE FURNISHED AND INSTALLED PER PLANS AND SPECIFICATIONS.
10. UPON COMPLETION OF SYSTEM INSTALLATION, THE SYSTEM SHALL BE TESTED IN THE PRESENCE OF AND IN A MANNER ACCEPTABLE TO THE ENFORCING AGENCY.
11. PENETRATIONS OF FIRE–RATED WALLS SHALL BE PROTECTED IN ACCORDANCE WITH 2001 EDITION CALIFORNIA BUILDING CODE, CHAPTER 7.
12. ALL EQUIPMENT SHALL BE U.L. AND C.S.F.M. LISTED.
13. ALL WIRING SHALL BE IN ACCORDANCE WITH THE C.E.C. AND AUTHORITIES HAVING JURISDICTION.
14. ALL FIRE ALARM CONDUIT SHALL BE 3/4"C MIN., U.O.N. ALL FIRE ALARM CONDUIT INSTALLED UNDERGROUND SHALL BE 1"C MIN. U.O.N. ALL FIRE ALARM CONDUCTORS SHALL BE INSTALLED IN AN APPROVED RACEWAY.
15. ALL AUDIBLE DEVICES SHALL BE IN SYNCHRONOUS.
16. VISUAL DEVICES SHALL NOT EXCEED 3 FLASHES PER SECOND AND SHALL NOT BE SLOWER THAN 1 FLASH EVERY SECOND. THEY SHALL BE SYNCHRONOUS.
17. UNDERGROUND AND EXTERIOR CONDUITS SHALL HAVE WATERTIGHT FITTINGS.
18. AUDIBLE DEVICES SHALL BE AT LEAST 15dBA ABOVE THE EQUIVALENT SOUND LEVEL BUT NOT LESS THAN 75dBA AT 10' OR MORE THAN 110dBA AT THE MINIMUM HEARING DISTANCE.
19. AUDIBLE DEVICES SHALL SOUND THE CALIFORNIA TEMPORAL FIRE ALARM SIGNAL.
20. COORDINATE EXACT LOCATION OF ALL CEILING FIRE ALARM DEVICES IN FIELD.
21. CIRCUIT LENGTH INDICATED ON DRAWING IS FOR PLAN CHECK PURPOSES ONLY. CONTRACTOR SHALL FIELD VERIFY EXACT LENGTH.
22. ALL JUNCTION BOXES SHALL BE SIZED IN ACCORDANCE WITH THE C.E.C.
23. ELECTRICAL CONTRACTOR SHALL FURNISH ACCESS PANELS TO AREAS THAT REQUIRE SERVICING, TROUBLE SHOOTING, ETC., AS REQUIRED. COORDINATE WITH ARCHITECT FOR ACCESS PANEL.
24. ALL 120VAC POWER REQUIREMENTS FOR THE FIRE ALARM SYSTEM SHALL BE FURNISHED BY CONTRACTOR AND SHALL MEET ALL REQUIREMENTS OF THE AUTHORITIES HAVING JURISDICTION.
25. ALL WIRING, ANNUNCIATING DEVICES AND ANNUNCIATOR PANEL SHALL BE SUPERVISED TO THE PRINCIPLE POINT OF ANNUNCIATION. THE FIRE ALARM CONTROL PANEL TO SUPERVISE THE ANNUNCIATOR PANEL, ALL INITIATING AND INDICATING DEVICE CIRCUITS.
26. ALL WIRING SHALL BE CUT FOR IN AND OUT. WIRING SHALL NOT BE LOOPED THROUGH DEVICES.
27. DEMO ALL EXISTING FIRE ALARM DEVICES INCLUDING PANELS, POWER SUPPLIES, DETECTORS, ETC. WHETHER SHOWN OR NOT.

FIRE ALARM SYSTEM SCOPE

A COMPLETE AUTOMATIC FIRE ALARM SYSTEM WITH SUPPLEMENTAL SMOKE DETECTION DEVICES IN ACCORDANCE WITH 2001 CALIFORNIA CODE OF REGULATIONS, TITLE 24, PART 2, SECTION 305.9.

COMPLETE AUTOMATIC FIRE ALARM SYSTEM PLAN SUBMITTAL PER DSA POLICY 95–03(FLS)

HMC ARHCITECTS
Architecture Interiors Planning
300 Capitol Mall, Suite 1230
Sacramento, California 95814
Telephone: 916 . 325 . 1100
Fax: 916 . 325 . 1118

CONSULTANT SEAL

REGISTERED PROFESSIONAL ENGINEER JOSEPH ROGOWICZ No. E 1179 Exp. 9-30-0 ELECTRICAL STATE OF CALIFORNIA

CONSULTANT
DONN C. GILMORE & ASSOCIATES, INC.
Consulting Mechanical and Electrical Engineers
531 N. Euclid Avenue
Ontario, Ca. 91762
Ph.909.983.8822
Fax 909.988.2220

KEY PLAN

AGENCY APPROVAL

IDENTIFCATION STAMP
DIV. OF THE STATE ARCHITECT
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DATE DEC 2 8 2007

PROJECT TITLE

SAN BERNARDINO CITY UNIFIED SCHOOL DISTRICT
777 NORTH "F" STREET
SAN BERNARDINO, CA. 92410

RAMONA-ALESSANDRO ELEMENTARY SCHOOL MODERNIZATION
670 RAMONA AVENUE
SAN BERNARDINO, CA 92411

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NO.	REVISIONS	DATE	NO.	REVISIONS	DATE

DRAWING TITLE

FIRE ALARM LEGEND AND GENERAL NOTES

ARCHITECT SEAL

LICENSED ARCHITECT CHRISTOPHER RICHARD TAYLOR NO. C–19759 REN. 02–24–09 STATE OF CALIFORNIA

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DATE	

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