GENERAL NOTES

All initiating and signal circuits will be in a parallel loop; no parallel branches are allowed. IDNet communication, door holders and 24vdc power (when unsupervised) may be "T-Tapped". Use typical wiring diagrams as a guide to determine when circuits may be "T-Tapped".

All wires must test free of all grounds (1 meg ohm or greater).

Due to induced voltages, SimplexGrinnell does not allow line voltage to be wired in the same conduit with low voltage systems, except where specifically shown on the drawings and subject to local codes.

Wire runs are shown for connection only. Final decisions regarding actual wire or conduit runs are the responsibility of the electrical contractor and not the supplier. All field wiring will be pulled by contractor and not SimplexGrinnell.

It is recommended that 10% spare (minimum of one pair per type of wire) be run in conduit.

Contractor shall contact SimplexGrinnell if any discrepancies are noted between SimplexGrinnell drawings and field requirements.

The information contained in this document is proprietary to SimplexGrinnell and is intended for internal SimplexGrinnell use only. Such information may be distributed to others only by written permission.

Verify all wiring with shipping documents.

If ceilings are anything other than flat, smooth ceilings, consult N.F.P.A. 72, Article 5, or SimplexGrinnell for detector placement.

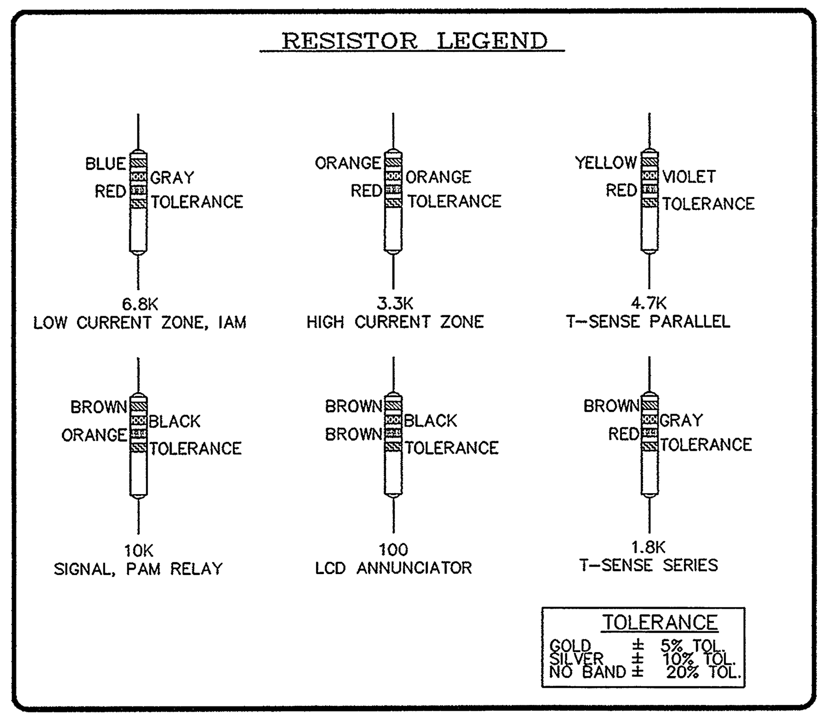
Detectors should not be located in a direct airflow, nor closer than 3 feet from a ceiling mounted air supply diffuser or 6 feet from a wall-mounted air supply diffuser. (1996 N.F.P.A. 72 A.5.3.5.1, 1999 N.F.P.A. 72 A.2.3.5.1, or 2002 N.F.P.A. 72 A.5.7.4.1)

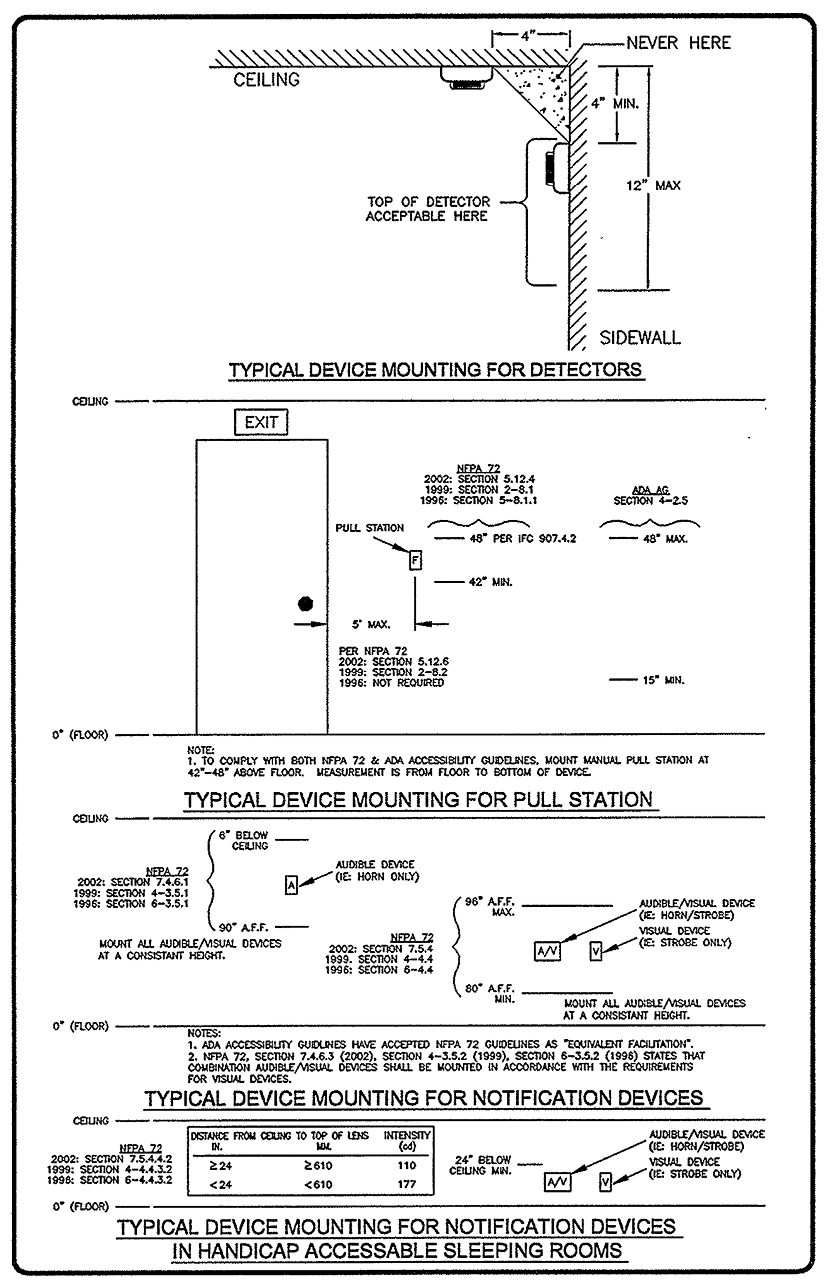
DO NOT CONNECT THE POWER TO THE SYSTEM WITHOUT A SIMPLEXGRINNELL TECHNICAL REPRESENTATIVE PRESENT, OR WITHOUT PRIOR VERIFICATION OF THE SYSTEM BY SIMPLEXGRINNELL.

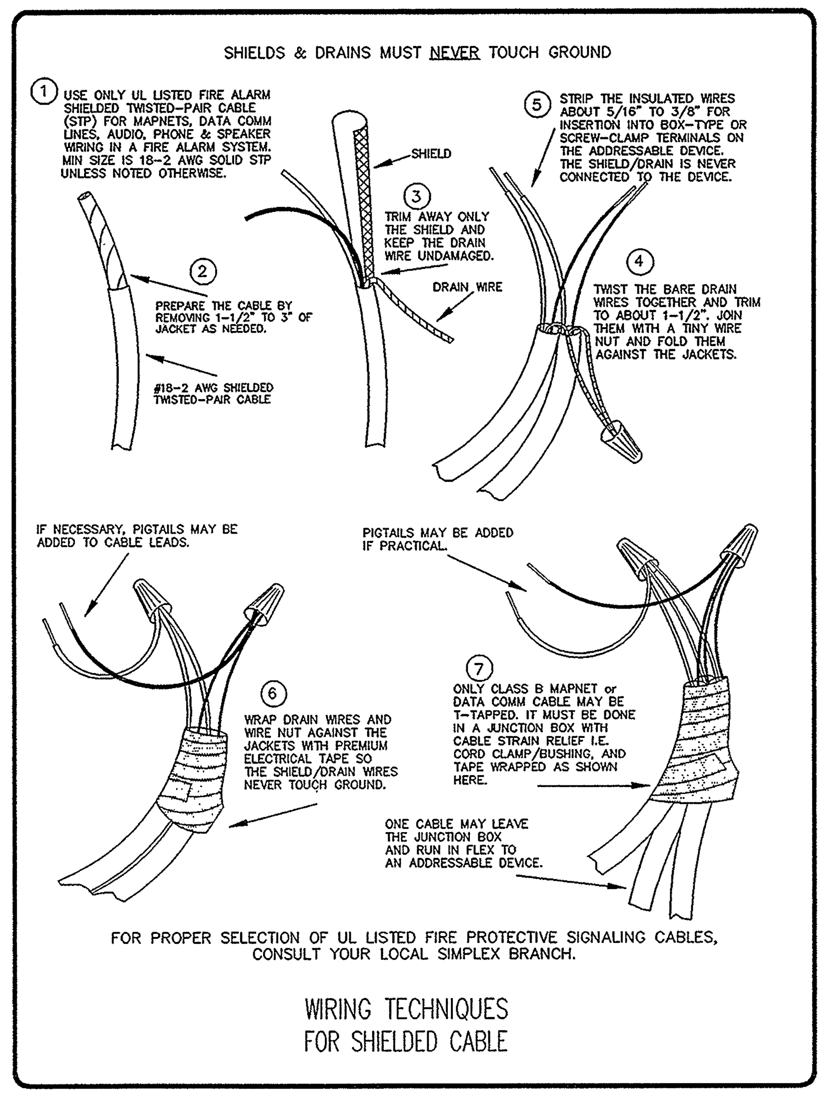
PANEL MUST BE CONNECTED TO A DEDICATED 120VAC EMERGENCY CIRCUIT, 20 AMP MAXIMUM, WITH A SEPARATE UNIFIED EARTH GROUND PER NEC ARTICLE 250.

ALL SHIELDED WIRE USED WITHIN THIS SYSTEM MUST HAVE PROPERLY DRESSED SHIELDS AND DRAIN WIRES. SHIELDS AND DRAINS MUST BE A CONTINUOUS CONDUCTOR, TAPED COMPLETELY AT EVERY JUNCTION AND TERMINATED ONLY AT THE TERMINAL DESIGNATED "SHIELD". UNDER NO CONDITION SHALL THE SHIELDS BE EXPOSED TO CONDUIT, OTHER WIRING, OR EQUIPMENT CABINETS.

RESISTOR LEGEND







WIRING TECHNIQUES FOR SHIELDED CABLE

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SOUTHWIND MIDDLE SCHOOL - 4002 FIRE ALARM CONTROL PANEL

Module	Qty	Description		Standby Current	Total Standby	Alarm Current	Total Alarm
Panel Equipment							
4002-5002	5	ZONE MOD 4 PT CLASS "B"		0.030000	0.150000	0.000000	0.000000
4002-4101	2	DUAL SIGNAL MODULE		0.008000	0.016000	0.025000	0.050000
				Total Panel Stby	0.166000	Total Panel Alarm	0.050000
Peripheral Devices							
Existing Equipment							
4602-8001	1	SCU/RCU ANNUNCIATOR ENCLOSURE		0.000000	0.000000	0.000000	0.000000
4009-9001	1	FOUR CIRCUIT NAC EXTENDER, 120 VAC		0.000000	0.000000	0.015000	0.015000
2099-9756	18	DOUBLE ACTION PULL STATION, 1N/O		0.000000	0.000000	0.000000	0.000000
2099-9754	10	SINGLE ACTION PULL STATION, 1N/O		0.000000	0.000000	0.000000	0.000000
2098-9201	20	PHOTO SMOKE DETECTOR		0.000100	0.002000	0.000000	0.000000
2098-9211	20	DETECTOR BASE 2-WIRE	1	0.000000	0.000000	0.000000	0.000000
4098-9404	6	HEAT DETECTOR RATE OF RISE 200 DIRECT CONNECT	1	0.000080	0.000480	0.000000	0.000000
4098-9686	2	DUCT DETECTOR 4 WIRE W/ SUPERVISED RELAY OUTPUT		0.012000	0.024000	0.045000	0.090000
4098-9843	2	ENCAPSULATED RELAY PAM-SD		0.000000	0.000000	0.015000	0.030000
4098-9830	2	REMOTE LED		0.000000	0.000000	0.000000	0.000000
2098-9806	12	REMOTE TEST STATION W/ LED AND KEY SWITCH		0.000000	0.000000	0.000000	0.000000
2081-9027	2	TRANSIENT CUBE		0.000000	0.000000	0.000000	0.000000
2081-9028	4	TRANSIENT CUBE FOR MAPNET I,II		0.000000	0.000000	0.000000	0.000000
2088-9588	8	DOOR HOLDER		0.015000	0.120000	0.000000	0.000000
4901-9805	22	HORN		0.000000	0.000000	0.016000	0.352000
Project #922278601 - Addition							
4009-9201	1	4009 IDNET NAC EXTENDER, 120 VAC		0.000000	0.000000	0.009000	0.009000
2099-9754	3	SINGLE ACTION PULL STATION, 1N/O		0.000000	0.000000	0.000000	0.000000
4098-9601	4	PHOTO SMOKE DETECTOR SSD	1	0.000100	0.000400	0.000000	0.000000
4098-9612	4	HEAT DETECTOR FIXED 135	1	0.000080	0.000320	0.000000	0.000000
4098-9788	4	2 WIRE DETECTOR BASE	1	0.000000	0.000000	0.000000	0.000000
4098-9686	2	DUCT DETECTOR 4 WIRE W/ SUPERVISED RELAY OUTPUT		0.012000	0.024000	0.045000	0.090000
4098-9843	2	ENCAPSULATED RELAY PAM-SD		0.000000	0.000000	0.015000	0.030000
4098-9830	2	REMOTE LED		0.000000	0.000000	0.000000	0.000000
2081-9027	1	TRANSIENT CUBE		0.000000	0.000000	0.000000	0.000000
2088-9608	2	MAGNETIC DOOR HOLDER, SEMI-FLUSH		0.015000	0.030000	0.000000	0.000000
				Total Periph Stby	0.201	Total Periph Alarm	0.616
				Total Standby Amps	0.367	Total Alarm Amps	0.666

* Additional Current Draw Included Below With Device Addresses Used
1. 2-wire detector alarm current is included in the alarm current of the Initiating Device Circuit.

Battery Calculations

	Standby Current		Alarm Current
Control Panel Card Power	0.166		0.050
Power For External Peripheral Devices	0.20120		0.61600
	0.367	<-- Totals -->	0.666
Standby Time = 24 Hrs	8.813	Standby Ah	
Alarm Time = 5 Mins.	0.056	Alarm Ah	
Standby + Alarm =	8.868		
Battery Required 2081-9288 12.7AH	10.378	Total Ah Required (see note below)	
Battery Supplied EXISTING			

Note: The total Ah required takes into account any physical and chemical properties of battery discharge rates, high alarm current draw of a battery after a long (standby) low current draw, and reflects the manufacturers discharge rates per their recommendations and UL standards.

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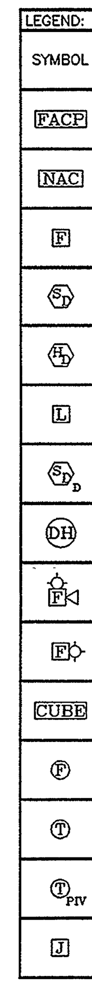
LEGEND:



SYMBOL	DESCRIPTION	PART #	MOUNTING
FACP	EXISTING 4002 FIRE ALARM CONTROL PANEL	EXISTING	EXISTING
NAC	4009 NAC EXTENDER PANEL WITH 6.2AH BATTERIES	4009-9201 2081-9272	MOUNT ON WALL BACKBOX INCLUDED
F	SINGLE ACTION MANUAL PULL STATION	2099-9754	4" SQUARE BOX 2-1/8" DEEP W/SINGLE GANG EXTENSION RING
SD	PHOTO SENSOR IN SSD SENSOR BASE	4098-9601 4098-9788	4" OCTAGONAL OUTLET BOX
H	HEAT SENSOR IN SSD SENSOR BASE	4098-9612 4098-9788	4" OCTAGONAL OUTLET BOX
L	REMOTE LED ON PLATE	4098-9830	SINGLE GANG OUTLET BOX
SD D	4-WIRE DUCT DETECTOR WITH SAMPLING TUBES AND ENCAPSULATED PAM RELAY	4098-9686 2098-9798 4098-9843	DIRECTLY TO DUCTWORK
DH	WALL MOUNTED DOOR HOLDERS	2088-9608	SINGLE GANG BOX 2" DEEP
	WALL MOUNT HORN WITH MULTI-CANDELA STROBE UNIT SET AT INDICATED CANDELA	4906-9127	4" SQUARE BOX 1-1/2" DEEP
	WALL MOUNT MULTI-CANDELA STROBE UNIT SET AT INDICATED CANDELA	4906-9101	4" SQUARE BOX 1-1/2" DEEP
CUBE	ISOLATED LOOP CIRCUIT PROTECTOR	2081-9027	4" SQUARE BOX 2-1/8" DEEP
F	WATERFLOW SWITCH	BY OTHERS	BY OTHERS
T	VALVE TAMPER SWITCH	BY OTHERS	BY OTHERS
T PIV	POST INDICATOR VALVE	BY OTHERS	BY OTHERS
J	JUNCTION BOX	BY OTHERS	NOT APPLICABLE

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FIRE ALARM WIRE TYPE CHART

CODE	DESCRIPTION	WIRE TYPE	REC. WIRE - PLENUM	REC. WIRE - CONDUIT
			TYPE PER NEC	-
AC	120VAC POWER WIRING	3#12 AWG SOLID (WITH GREEN GROUND)		
D	24VDC DOOR HOLDER WIRING	2#14 AWG SOLID	WEST PENN #60993	WEST PENN #994
E	EXTERIOR WIRING	#16 AWG TWISTED/SHIELDED PAIR	WEST PENN #60990	WEST PENN #D991
H	NOTIFICATION APPLIANCE (HORNS) WIRING	2#14 AWG SOLID	WEST PENN #60993	WEST PENN #994
L	REMOTE LIGHT WIRING	2#18 AWG SOLID	WEST PENN #60980B	WEST PENN #970
P	24VDC POWER WIRING	2#14 AWG SOLID	WEST PENN #60993	WEST PENN #994
R	AUXILIARY CIRCUIT (RELAY) WIRING	2#14 AWG SOLID	WEST PENN #60993	WEST PENN #994
V	NOTIFICATION APPLIANCE (STROBE) WIRING	2#14 AWG SOLID	WEST PENN #60993B	WEST PENN #994
Z	INITIATING DEVICE CIRCUIT (ZONE) WIRING	2#16 AWG SOLID	WEST PENN #60991	WEST PENN #990

NOTES:
1. West Penn Wire part numbers are given for reference only. All wire manufacturer types which are equal to the recommended wire are acceptable. Contact the local SimplexGrinnell engineering department for a complete list of acceptable wire manufacturers.
2. All wires should be clearly tagged for identification. If desired, different wire conductor colors can be used. When applicable match existing wire colors and sizes to maintain consistency. Contact SimplexGrinnell if existing wire is to be reused.
3. All wire sizes shown are minimum recommendations. All Fire Alarm wire must meet NEC Article 760 requirements. If different wire is desired, please contact the local SimplexGrinnell engineering department to determine compliance with U.L. listings.
4. Where contract documents and shop drawing wiring is at variance, contact engineer for clarification before proceeding.
5. Indoors only - call for other applications.

SOUTHWIND MIDDLE SCHOOL - ADDITION - 4009 NAC EXTENDER PANEL

NAC SCHEDULE / VOLTAGE DROP CALCULATION
17 % MAXIMUM VOLTAGE DROP
CIRCUIT OUTPUT VOLTAGE = 19.5 (FOR CALCULATIONS)

CIRCUIT	DESCRIPTION	CIRCUIT TYPE	V/O 4906-9101 15cd 0.060	V/O 4906-9101 30cd 0.094	V/O 4906-9101 75cd 0.186	V/O 4906-9101 110cd 0.252	A/V 4906-9127 15cd 0.075	A/V 4906-9127 30cd 0.116	A/V 4906-9127 75cd 0.221	A/V 4906-9127 110cd 0.285	TOTAL CKT. LOAD (AMPS)	WIRE GAUGE (18, 16, 14, 12)	ESTIMATED CIRCUIT LENGTH	ACTUAL VOLTAGE DROP %	ACTUAL VOLTAGE DROP (VOLTS)	TOTAL CIRCUIT RESISTANCE	MAXIMUM ALLOWABLE CKT. LENGTH
NAC 1	GROUND LEVEL ADDITION SOUTHWEST	A/V	0	0	0	0	0	7	0	0	0.812	14	300 ft.	6.74%	1.375	1.7 Ohms	764 ft.
NAC 2	GROUND LEVEL ADDITION SOUTHEAST	A/V	0	2	0	0	0	7	0	0	1.000	14	350 ft.	9.68%	1.975	2.0 Ohms	620 ft.
NAC 3	GROUND LEVEL ADDITION NORTH	A/V	0	2	0	0	0	7	0	0	1.000	14	300 ft.	8.30%	1.693	1.7 Ohms	620 ft.
NAC 4	SPARE		0	0	0	0	0	0	0	0	0.000	14	0 ft.	0.00%	0.000	0.0 Ohms	0 ft.
	Appliance Summary		0	4	0	0	0	21	0	0	Total Load (AMPS) 2.812						

METHOD USED TO CALCULATE VOLTAGE DROP:
[(CIRCUIT LENGTH IN FEET X 2) (AMPS) (OHMS / FT)]

Wire Resistance At
50 Degrees Celsius
122 Degrees Fahrenheit
Ohms / ft
10GA = 0.001112
12GA = 0.001774
14GA = 0.002822
16GA = 0.004495
18GA = 0.007143
WIRE RESISTANCE BASED ON TABLE 8 FROM NATIONAL ELECTRICAL CODE (UNCOATED SOLID COPPER WIRE)

NOTE:
LUMP SUM METHOD WAS USED TO CALCULATE ALLOWABLE VOLTAGE DROP. THIS METHOD ALLOWS FOR A SMALL MARGIN OF SAFETY, TAKING INTO CONSIDERATION THE ACTUAL INSTALLED CIRCUIT ROUTING MAY DIFFER FROM WHAT IS SHOWN ON THE SHOP DRAWINGS. IF THE ACTUAL CIRCUIT LENGTH IS GOING TO EXCEED THE MAXIMUM ALLOWABLE CIRCUIT LENGTH, CONTACT YOUR LOCAL SIMPLEXGRINNELL DISTRICT OFFICE.

SOUTHWIND MIDDLE SCHOOL - ADDITION - 4009 NAC EXTENDER PANEL

Module	Qty	Description		Standby Current	Total Standby	Alarm Current	Total Alarm
Panel Equipment							
4009-9201	1	4009 IDNET NAC EXTENDER, 120 VAC		0.085	0.085	0.185	0.185
				Total Panel Stby	0.085	Total Panel Alarm	0.185
Peripheral Devices							
4906-9101	0	V/O M-C NON-ADDRESS, RED, WALL	15cd	0.000	0.000	0.060	0.000
4906-9101	4	V/O M-C NON-ADDRESS, RED, WALL	30cd	0.000	0.000	0.094	0.376
4906-9101	0	V/O M-C NON-ADDRESS, RED, WALL	75cd	0.000	0.000	0.186	0.000
4906-9101	0	V/O M-C NON-ADDRESS, RED, WALL	110cd	0.000	0.000	0.252	0.000
4906-9127	0	A/V M-C NON-ADDRESS, RED, WALL	15cd	0.000	0.000	0.075	0.000
4906-9127	21	A/V M-C NON-ADDRESS, RED, WALL	30cd	0.000	0.000	0.116	2.436
4906-9127	0	A/V M-C NON-ADDRESS, RED, WALL	75cd	0.000	0.000	0.221	0.000
4906-9127	0	A/V M-C NON-ADDRESS, RED, WALL	110cd	0.000	0.000	0.285	0.000
				Total Periph Stby	0.000	Total Periph Alarm	2.812
				Total Standby Amps	0.085	Total Alarm Amps	2.997

Battery Calculations

	Standby Current		Alarm Current
Control Panel Card Power	0.085		0.185
Power For External Peripheral Devices	0.000		2.812
	0.085	<-- Totals -->	2.997
Standby Time = 24 Hrs	2.040	Standby Ah	
Alarm Time = 5 Mins.	0.250	Alarm Ah	
Standby + Alarm =	2.290		
Battery Required 2081-9272 6.2	2.876	Total Ah Required (see note below)	
Battery Supplied 2081-9272 6.2AH			

Note: The total Ah required takes into account any physical and chemical properties of battery discharge rates, high alarm current draw of a battery after a long (standby) low current draw, and reflects the manufacturers discharge rates per their recommendations and UL standards.

NO.	DATE	REVISION DESCRIPTION
△A	09-28-06	SPRINKLER POINT AND DOOR HOLDER ADDS (LL)

tyco / Fire & Security / SimplexGrinnell
6423 SHELBY VIEW, SUITE 107
MEMPHIS, TN 38134
SALES: 901-386-0532
SERVICE: 901-386-0532
FAX: 901-388-1756

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FIRE ALARM SYSTEM
GENERAL NOTES, LEGEND, & SYSTEM INFORMATION

SOUTHWIND MIDDLE SCHOOL ADDITION
7740 LOWRANCE
MEMPHIS, TENNESSEE 38125

ENGINEER: FRANCES BEECH	DATE:
SALES: ROGER CONNELL	DATE:
INSTALL: CHRIS BRAESE	DATE:
DRAWN BY: LIEM LE	DATE: 09-12-06

SimplexGrinnell
PROJ# 922278601
MF# 235-406573-01
SCALE: N.T.S.

SHEET NUMBER: FA1.01
1 OF 5