

SUB-LEVEL NO.5 (242' ELEVATION)

(25 ZONES, 54 DETECTORS)

SCHEDULE OF FANS TO BE SHUT DOWN					
DETECTOR	FAN	DETECTOR	FAN	DETECTOR	FAN
55-1	VS-55-11	55-8	ACR-55-8	55-17	VS-55-5
55-2A,B	VS-55-10	55-9	ACS-55-4	55-18	ACR-55-2
55-3A,B,C,D,E	VS-58-9A	55-0	ACS-55-1	55-19	ACS-55-3
F,G,H,I	VS-55-9B	55-11	VS-55-2	55-20	ACR-55-3
	VS-55-9C	55-12	VS-55-1	55-21	E-55-8
55-4	ACR-55-5	55-13	VS-55-3	55-22A,B	VS-55-6
55-5	ACS-55-5	55-14	VS-55-4	55-23	VS-SL-1
55-6A,B	VS-55-8	55-15	E-55-7		
55-7	VS-55-7	55-16	ACS-55-2		

NOTE: PROVIDE SPARES FOR 4 FUTURE DETECTOR ZONES & 4 FAN SHUT-DOWNS.

7TH FLOOR

(26 ZONES, 57 DETECTORS)

SCHEDULE OF FANS TO BE SHUT DOWN					
DETECTOR	FAN	DETECTOR	FAN	DETECTOR	FAN
7-1A,B,5-7-24,B	ACR-7-5	7-7A,B	ACS-7-6	7-17	ACS-7-4
	ACR-7-6	7-8	ACS-7-10	7-18A,B	ACS-7-16
	ACR-7-7	7-9	ACS-7-5	7-19	E-7-18
↓	ACR-7-8	7-10A,B	ACS-7-7	7-20	E-7-19
7-3A,B,5-7-4,B	ACR-7-1	7-11A,B	ACS-7-12	7-21	E-7-17
	ACR-7-2	7-12	ACS-7-13	7-22	ACR-7-10
	ACR-7-3	7-13A,B	ACS-7-5	7-23	ACR-7-11
↓	ACR-7-4	7-14	ACS-7-1	7-24	ACR-7-9
7-5A,B	ACS-7-11	7-15	ACS-7-9	7-25	E-7-20
7-6	ACS-7-4	7-16A,B	ACS-7-6	7-26	E-7-21

41ST FLOOR

(25 ZONES, 54 DETECTORS)

SCHEDULE OF FANS TO BE SHUT DOWN					
DETECTOR	FAN	DETECTOR	FAN	DETECTOR	FAN
	ACR-41-7	41-5	ACS-41-4	41-17A,B	ACS-41-6
	ACR-41-8	41-6A,B	ACS-41-8	41-18	ACS-41-2
41-1A,B,C,D,E,F	ACR-41-9	41-7A,B	ACS-41-12	41-19	E-41-16
41-2A,B,C,D,E,F	ACR-41-10	41-8	ACS-41-3	41-20	E-41-15
	ACR-41-11	41-9A,B	ACS-41-11	41-21	E-41-19
	ACR-41-12	41-10A,B	ACS-41-7	41-22	E-41-17
	ACR-41-1	41-11	ACS-41-14	41-23	E-41-16
	ACR-41-2	41-12A,B	ACS-41-15	41-24	E-41-20
41-3A,B,C,D,E,F	ACR-41-3	41-13A,B	ACS-41-5	41-25	E-41-21
41-4A,B,C,D,E,F	ACR-41-4	41-14A,B	ACS-41-1		
	ACR-41-5	41-15	ACS-41-9		
	ACR-41-6	41-16A,B	ACS-41-10		

75TH FLOOR

(26 ZONES, 57 DETECTORS)

SCHEDULE OF FANS TO BE SHUT DOWN					
DETECTOR	FAN	DETECTOR	FAN	DETECTOR	FAN
	ACR-75-7	75-15	ACS-75-4	75-17A,B	ACS-75-6
	ACR-75-8	75-16A,B	ACS-75-12	75-18	ACS-75-2
75-1A,B,C,D,E,F	ACR-75-9	75-19A,B	ACS-75-15	75-19	ACC-75-1F
75-2A,B,C,D,E,F	ACR-75-10	75-6	ACS-75-5	75-20	ACS-75-16
	ACR-75-11	75-9A,B	ACS-75-11	75-21	E-75-15
	ACR-75-2	75-10A,B	ACS-75-7	75-22	E-75-19
	ACR-75-1	75-11	ACS-75-14	75-23	E-75-17
	ACR-75-2	75-12A,B	ACS-75-13	75-24	E-75-18
	ACR-75-3	75-13A,B	ACS-75-5	75-25	E-75-16
75-3A,B,C,D,E,F	ACR-75-4	75-14A,B	ACS-75-9	75-26	E-75-21
75-4A,B,C,D,E,F	ACR-75-5	75-15	ACS-75-1	75-27	E-75-22
	ACR-75-6	75-16A,B	ACS-75-10	75-28	E-75-16

108TH FLOOR

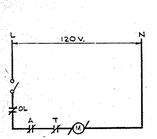
(22 ZONES, 30 DETECTORS)

SCHEDULE OF FANS TO BE SHUT DOWN					
DETECTOR	FAN	DETECTOR	FAN	DETECTOR	FAN
105-1A,B,5-105-2A,B	ACR-108-5	108-6	ACS-108-4	108-15	ACS-108-2
	ACR-108-6	108-7A,B	ACS-108-8	108-16	ACS-108-11
	ACR-108-7	108-8	ACS-108-3	108-17	E-108-12
	ACR-108-8	108-9A,B	ACS-108-7	108-18	E-108-11
108-3A,B,4-106-4A,B	ACR-108-1	108-10	ACS-108-12	108-19	E-108-10
	ACR-108-2	108-11	ACS-108-9	108-20	E-108-13
	ACR-108-3	108-12A,B	ACS-108-5	108-21	E-108-14
	ACR-108-4	108-13	ACS-108-1	108-22	E-108-15
108-5	ACR-108-10	108-14A,B	ACS-108-6		

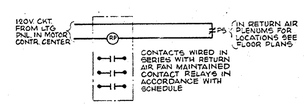
NOTE: PROVIDE SPARES FOR 2 FUTURE DETECTOR ZONES & 2 FAN SHUT-DOWNS.

SMOKE DETECTION SYSTEMS

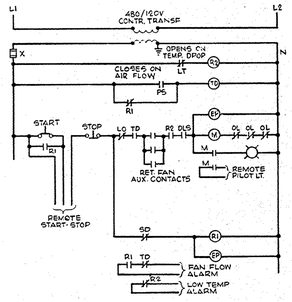
SEE NOTE #7



TYPICAL FOR UNIT HEATERS

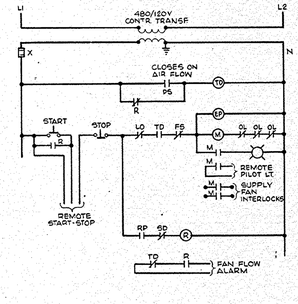


TYPICAL FOR PRESSURE SWITCHES LOCATED IN RETURN AIR PLENUMS



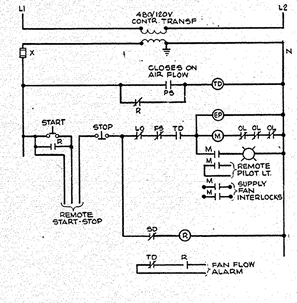
TYPICAL FOR A.C. SUPPLY FANS

NOTE: FOR NUMBER OF RETURN FANS TO BE INTERLOCKED WITH EACH SUPPLY FAN SEE SCHEDULE.



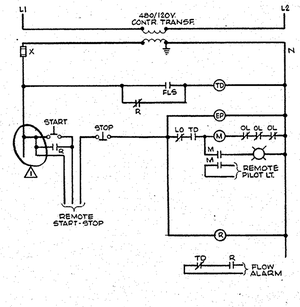
TYPICAL FOR RETURN AIR FANS

NOTE: FOR NUMBER OF SUPPLY FAN INTERLOCKS SEE SCHEDULE.



TYPICAL FOR EXHAUST FANS AND TRANSFER FANS

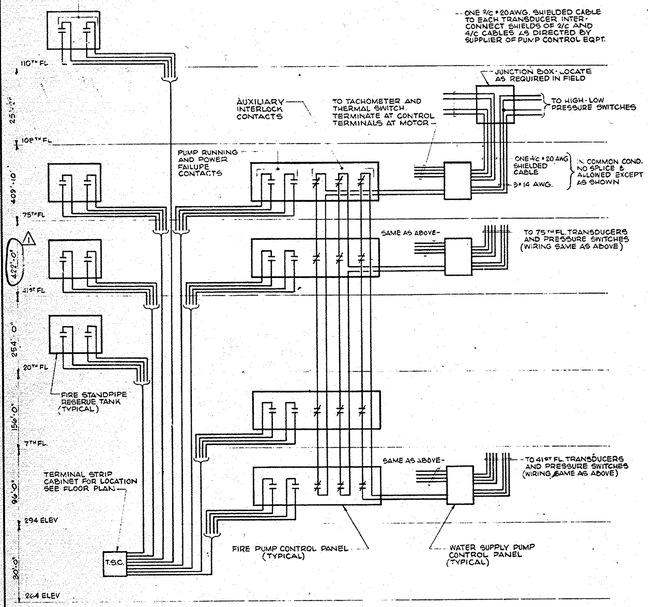
NOTE: FOR SMOKE DETECTOR AND SUPPLY FAN INTERLOCKS SEE RESPECTIVE SCHEDULE.



TYPICAL FOR REHEAT & SECONDARY WATER PUMPS

SMOKE DETECTOR SYSTEM & SCHEMATIC DIAGRAM SYMBOLS

- (M) STARTER AND AUXILIARY INTERLOCK CONTACT HOLDING COIL.
- (A) (R) MAINTAINED CONTACT RELAYS.
- (S) FREEZESTAT RELAY - IN MOTOR CONTROL CENTER.
- (TD) TIME DELAY RELAY - IN MOTOR CONTROL CENTER.
- (PS) PLENUM SAFETY PRESSURE RELAY- IN MOTOR CONTROL CENTER
- (P) ELECTRIC-PNEUMATIC RELAY- IN RESPECTIVE SYSTEM CONTROL PANEL. ⚠
- PILOT LIGHT.
- LO LOCK-OUT PUSH BUTTON STATION - NEAR MOTOR.
- OL OVERLOAD RELAY.
- PS PRESSURE SWITCH - IN HVAC DUCT AT DISCHARGE SIDE OF RETURN AIR FANS AND EXHAUST FANS OR DOWNSTREAM OF DISCHARGE DAMPER OF SUPPLY FANS UNLESS OTHERWISE NOTED.
- SD AUXILIARY CONTACT - IN SMOKE DETECTOR CONTROL PANEL.
- FS FIRESTAT - IN HVAC DUCTS AT SUCTION SIDE OF FAN.
- LT FREEZESTAT - LOCATED NEAR COOLING COIL.
- DLS DAMPER LIMIT SWITCH - AT MINIMUM OUTDOOR AIR DAMPER.
- FLS FLOW SWITCH - IN DISCHARGE PIPE NEAR PUMP. ⚠
- A AQUASTAT - IN WATER LINE LEAVING SIDE OF FEEDER.
- T THERMOSTAT - WALL MOUNTED IN RESPECTIVE ROOM. ⚠
- (M) SINGLE - PHASE MOTOR.
- (S) CEILING TYPE SMOKE DETECTOR.
- (S) DUCT TYPE SMOKE DETECTOR.
- PE PNEUMATIC - ELECTRIC SWITCH - IN LOCAL TEMP. CONTROL PANEL (FOR 3-9 COIL FREEZE PUMPS) MOUNTED AT MOTOR (FOR 1-9 COIL FREEZE PUMPS) ⚠
- FAS FILTER ADVANCE SWITCH - AT FAN FILTER.
- (R) RELAY FOR AUTO. ROLL FILTER - IN MOTOR CONTROL CENTER. ⚠

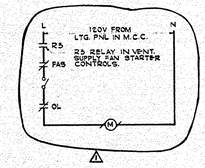


FIRE PUMPS, FIRE STANDPIPE RESERVE TANKS AND WATER SUPPLY PUMPS

NOTE: FOR WATER SUPPLY PUMPS ALSO PROVIDE WIRING TO LOCK-OUT BUTTONS AT MOTORS AS SHOWN ON FL. PLANS. ALARM WIRING FOR THESE PUMPS WILL BE PROVIDED UNDER ANOTHER CONTRACT. SEE NOTE #10 ⚠

SCHEDULE OF FAN INTERLOCKS

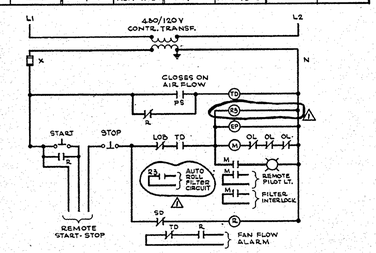
242' ELEV.		7TH FLOOR		41ST FLOOR		75TH FLOOR		108TH FOOR	
SUPPLY FAN	RETURN AIR OR EXH. FAN	SUPPLY FAN	RETURN AIR OR EXH. FAN	SUPPLY FAN	RETURN AIR OR EXH. FAN	SUPPLY FAN	RETURN AIR OR EXH. FAN	SUPPLY FAN	RETURN AIR OR EXH. FAN
ACS-55-1	ACR-55-1	ACS-7-1	ACR-7-2	ACS-41-1	ACR-41-3	ACS-75-1	ACR-75-3	ACS-108-1	ACR-108-7
ACS-55-2	ACR-55-2	ACS-7-2	ACR-7-4	ACS-41-2	ACR-41-6	ACS-75-2	ACR-75-6	ACS-108-2	ACR-108-4
ACS-55-3	ACR-55-3	ACS-7-3	ACR-7-6	ACS-41-3	ACR-41-9	ACS-75-3	ACR-75-9	ACS-108-3	ACR-108-6
ACS-55-4	ACR-55-4	ACS-7-4	ACR-7-8	ACS-41-4	ACR-41-12	ACS-75-4	ACR-75-12	ACS-108-4	ACR-108-8
ACS-55-5	ACR-55-5	ACS-7-5	ACR-7-1	ACS-41-5	ACR-41-1	ACS-75-5	ACR-75-1	ACS-108-5	ACR-108-1
——	——	ACS-7-6	ACR-7-3	ACS-41-6	ACR-41-5	ACS-75-6	ACR-75-5	ACS-108-6	ACR-108-3
——	——	ACS-7-7	ACR-7-5	ACS-41-7	ACR-41-7	ACS-75-7	ACR-75-7	ACS-108-7	ACR-108-5
——	——	ACS-7-8	ACR-7-7	ACS-41-8	ACR-41-11	ACS-75-8	ACR-75-10	ACS-108-8	ACR-108-7
——	——	ACS-7-9	ACR-7-1	ACS-41-9	ACR-41-2	ACS-75-9	ACR-75-2	ACS-108-9	ACR-108-1
——	——	↓	ACR-7-2	ACS-41-10	ACR-41-4	ACS-75-10	ACR-75-4	↓	ACR-108-2
——	——	ACS-7-10	ACR-7-5	ACS-41-11	ACR-41-8	ACS-75-11	ACR-75-8	ACS-108-10	E-108-11
——	——	↓	ACR-7-6	ACS-41-12	ACR-41-10	ACS-75-12	ACR-75-11	ACS-108-11	ACR-108-3
——	——	ACS-7-11	ACR-7-10	ACS-41-13	ACR-41-1	ACS-75-13	ACR-75-1	↓	ACR-108-4
——	——	ACS-7-12	ACR-7-11	↓	ACR-41-2	↓	ACR-75-2	ACS-108-12	ACR-108-5
——	——	ACS-7-13	ACR-7-12	↓	ACR-41-3	↓	ACR-75-3	↓	ACR-108-6
——	——	ACS-7-14	ACR-7-13	ACS-41-14	ACR-41-7	ACS-75-14	ACR-75-7	——	——
——	——	——	——	——	ACR-41-8	——	ACR-85-8	——	——
——	——	——	——	——	ACR-41-9	——	ACR-76-9	——	——
——	——	——	——	ACS-41-15	E-41-17	E-75-17	——	——	——
——	——	——	——	ACS-41-16	↓	E-75-16	E-75-10	——	——



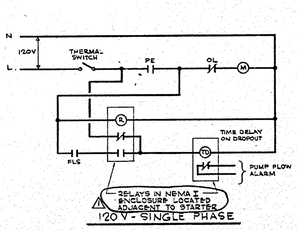
TYPICAL FOR AUTO. ROLL FILTERS

SCHEDULE OF RETURN AIR FANS CONTROLLED BY PRESSURE SWITCHES IN RETURN AIR PLENUMS

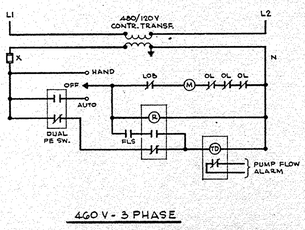
7TH FLOOR		41ST FLOOR		75TH FLOOR		108TH FLOOR	
PRESSURE SWITCH	RETURN AIR FAN	PRESSURE SWITCH ⚠	RETURN AIR FAN	PRESSURE SWITCH	RETURN AIR FAN	PRESSURE SWITCH	RETURN AIR FAN
PS-7-1	ACR-7-7	PS-41-1	ACR-41-10	PS-75-1	ACR-75-10	PS-108-1	ACR-108-7
↓	ACR-7-8	↓	ACR-41-11	↓	ACR-75-11	↓	ACR-108-8
PS-7-2	ACR-7-5	↓	ACR-41-12	↓	ACR-75-12	PS-108-2	ACR-108-5
↓	ACR-7-6	PS-41-2	ACR-41-7	PS-75-2	ACR-75-7	↓	ACR-108-6
PS-7-3	ACR-7-1	↓	ACR-41-8	↓	ACR-75-8	PS-108-3	ACR-108-1
↓	ACR-7-2	↓	ACR-41-9	↓	ACR-75-9	↓	ACR-108-2
PS-7-4	ACR-7-3	PS-41-3	ACR-41-1	PS-75-3	ACR-75-1	PS-108-4	ACR-108-3
↓	ACR-7-4	↓	ACR-41-2	↓	ACR-75-2	↓	ACR-108-4
——	——	↓	ACR-41-3	↓	ACR-75-3	——	——
——	——	PS-41-4	ACR-41-4	PS-75-4	ACR-75-4	——	——
——	——	↓	ACR-41-5	↓	ACR-75-5	——	——
——	——	↓	ACR-41-6	↓	ACR-75-6	——	——



TYPICAL FOR VENT. SUPPLY FANS



TYPICAL FOR COIL FREEZE PUMPS



460 V - 3 PHASE

NOTES

1. FOR LOCATION OF SMOKE DETECTORS AND CONTROL EQUIPMENT AND DEVICES SEE ELECTRICAL, H/AC AND PLUMBING DRAWINGS.
2. ALL CONTROL AND INDICATING DEVICES SHOWN IN SCHEMATIC DIAGRAMS ARE LOCATED IN MOTOR STARTERS UNLESS OTHERWISE NOTED IN SYMBOL LIST.
3. WIRING TO LOCK-OUT BUTTONS NEAR MOTORS SHALL BE RUN IN COMMON CONDUIT AND WIREWAY WITH THE MOTOR BRANCH CIRCUIT CONDUCTORS.
4. ALL WIRING FOR REMOTE START-STOP, REMOTE PILOT LIGHTS & FLOW ALARM CIRCUITS SHALL BE TERMINATED AT TERMINAL STRIPS IN RESPECTIVE SYSTEM CONTROL PANELS SHOWN ON FLOOR PLANS. ALSO WIRING TO ALL FIRESTATS, FREEZESTATS, DAMPER LIMIT SWITCHES, FLOW SWITCHES AND PRESSURE SWITCHES LOCATED IN DUCTS SHALL BE INSTALLED VIA TERMINAL STRIPS IN THESE CONTROL PANELS. STRIPS WILL BE PROVIDED BY OTHERS. ⚠
5. FOR RETURN FANS IN GENERAL USE THE TEMPERATURE CONTROL PANEL OF THE ASSOCIATED SUPPLY FAN. HOWEVER, WHERE A RETURN FAN IS INTERLOCKED WITH TWO OR MORE SUPPLY FANS, USE THE TEMPERATURE CONTROL PANEL OF THE SUPPLY FAN WHICH HAS NO OTHER FAN INTERLOCKS. THE SAME RULE SHALL APPLY REGARDING LOCATION OF EP SWITCHES.
6. ALL CONTROL WIRING SHALL BE RUN IN CONDUIT, SIZED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE.
7. THE FOLLOWING APPLIES TO SMOKE DETECTION SYSTEMS:
   A.....FOR POWER SUPPLY CIRCUITS SEE FLOOR PLANS.
   B.....IN DETECTOR DESIGNATIONS, NUMERALS INDICATE FLOOR AND ZONE NUMBERS, LETTERS INDICATE INDIVIDUAL DUCT DETECTORS (E.G. 108-1A, B) INDICATES THAT THERE ARE 2 DETECTORS, 1 & B, IN ZONE #1 OF 108FLOOR.)
   C.....BY-PASS WIRING BETWEEN COUTROL PANELS AND TERMINAL STRIP CABINETS (SEE SPECS.) SHALL BE PROVIDED FOR THESE ELEVATOR MACH. RM. EXHAUST FANS: E-108-10, E-108-11, E-75-16, E-75-14, E-75-17, E-75-18, E-41-16-E-41-16, E-41-17, E-7-17.
8. PROVIDE A 15A, 120V CKT. TO ALL TEMP., FAN & PUMP CONTROL PANELS IN MECHANICAL EQPT. RMS.- USE ONE COMMON CKT. FROM MOTOR CONTROL CENTER LTG. PANELS (SEE SCHEDULES) FOR ALL PANELS IN THE SAME QUARTER OF THE FLOOR AS THE MCC.
9. TRANSFER FANS SHALL IN ADDITION BE INTERLOCKED WITH SPRINKLER FLOW SWITCHES.
10. PROVIDE CABLE SUPPORT BOXES FOR ALL VERTICAL RISERS IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE.

DRAWING NR E-A-108 NOT PART OF THIS CONTRACT

CONTRACT BID DRAWING date OCT. 16, 1967

NO.	DATE	BUL. NO.	BY
⚠ 1	12-18-67		

REVISIONS

APPROVED

CHIEF, PLANNING DIVISION

DATE

THE WORLD TRADE CENTER
THE PORT OF NEW YORK AUTHORITY

MINORU YAMASAKI & ASSOCIATES
MINORU YAMASAKI, ARCHITECT

EMERY ROTH & SONS
RICHARD ROTH, ARCHITECT

WORTHINGTON, SKILLING, HELLE & JACKSON
STRUCTURAL ENGINEERS

JAROS, BAUM & BOLLES
MECHANICAL ENGINEERS

JOSEPH R. LORING & ASSOCIATES
ELECTRICAL ENGINEERS

THE PORT OF NEW YORK AUTHORITY
PAVING, UTILITIES, FOUNDATIONS

TITLE: MOTOR, FIRE STANDPIPE & SMOKE DETECTOR SYSTEM, WIRING DIAGRAMS & SCHEDULES

DRAWN	R.F.H.	CHECKED	J.R.L.
SCALE	NONE	DATE	OCT. 16, 1967
PROJECT NUMBER		SHEET NO.	90 OF 114
DRAWING NUMBER	E-A-107		

FileJuicer