

2 UNIT HEATER CONTROL SCHEMATIC
SCALE: NTS

UNIT HEATER SEQUENCE OF OPERATION

WHENEVER SPACE TEMPERATURE DROPS BELOW THE HEATING SET POINT (75 DEG F ADJ.) THE UNIT HEATERS FAN MOTOR SHALL CYCLE ON AND THE CONTROL VALVE SHALL MODULATE TO MAINTAIN SPACE TEMPERATURE SET POINT.

THE SPACE THERMOSTAT SHALL BE PROVIDED WITH HEAT, FAN, AUTO SWITCH TO ALLOW CONTROL OF THE UNIT HEATER FAN.

SEQUENCE OF OPERATION

WHENEVER PRODUCTS OF COMBUSTION ARE SENSED, THE FIRE ALARM SYSTEM, THE SMOKE DETECTOR(S), OR SMOKE DUCT DETECTOR(S) SHALL SHUT DOWN THE ASSOCIATED AIR HANDLING UNITS' FANS AND CLOSE ALL THE CORRESPONDING SMOKE DAMPERS OR CORRESPONDING COMBINATION FIRE SMOKE DAMPERS.

AN ADDITIONAL SETS OF CONTACTS FROM THE SMOKE DUCT DETECTOR(S), SMOKE OR COMBINATION FIRE SMOKE DAMPER(S), AND FIRE ALARM PANEL SHALL INDICATE A FIRE ALARM CONDITION TO THE ATC SYSTEM FOR SECONDARY SHUTDOWN.

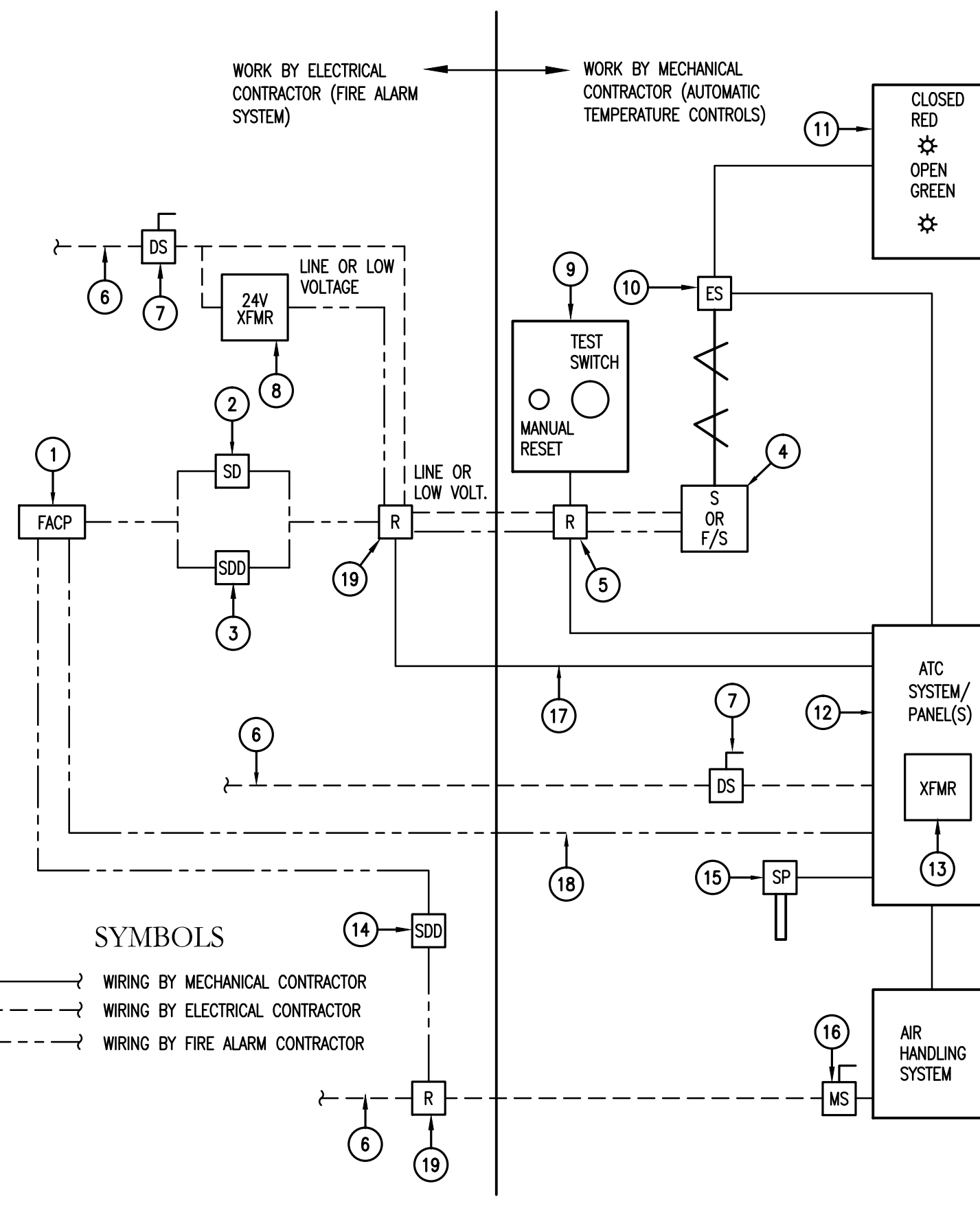
HIGHLIGHTS OF THE INTERNATIONAL MECHANICAL CODE 2003 - KEY NOTES

- A 607.2 INSTALLATION. SMOKE DAMPERS AND COMBINATION FIRE/SMOKE DAMPERS LOCATED WITHIN AIR DISTRIBUTION AND SMOKE CONTROL SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF THE INTERNATIONAL MECHANICAL CODE 2003, AND THE MANUFACTURER'S INSTALLATION INSTRUCTIONS AND LISTING.
- B 607.3 DAMPER TESTING AND RATINGS. DAMPERS SHALL BE LISTED AND BEAR THE LABEL OF AN APPROVED TESTING AGENCY INDICATING COMPLIANCE WITH THE STANDARDS OF THE INTERNATIONAL MECHANICAL CODE. FIRE DAMPERS SHALL COMPLY WITH THE REQUIREMENTS OF UL555. SMOKE DAMPERS SHALL COMPLY WITH THE REQUIREMENTS OF UL555S. COMBINATION FIRE/SMOKE DAMPERS SHALL COMPLY WITH THE REQUIREMENTS OF BOTH UL555 AND UL555S.
- C 607.3.1 FIRE PROTECTION RATING. FIRE DAMPERS SHALL HAVE THE MINIMUM FIRE PROTECTION RATING SPECIFIED IN TABLE 607.3.1 FOR THE TYPE OF PENETRATION.

TABLE 607.3.1
FIRE DAMPER RATING

TYPE OF PENETRATION	MINIMUM DAMPER RATING (HOUR)
LESS THAN 3-HOUR FIRE-RESISTANCE-RATED ASSEMBLIES.	1 1/2
3-HOUR OR GREATER FIRE-RESISTANCE-RATED ASSEMBLIES.	3

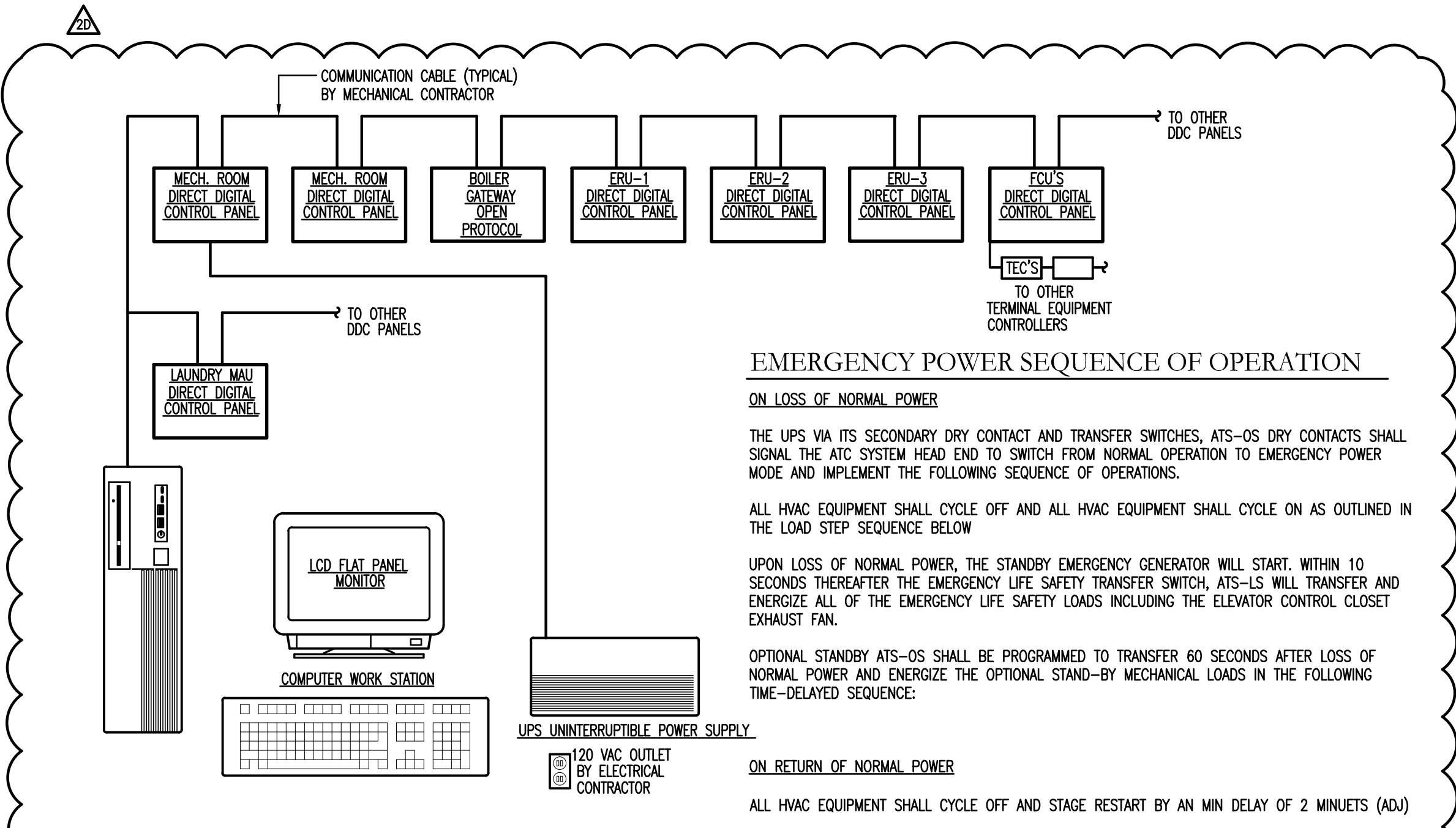
- D 607.3.2 SMOKE DAMPER RATINGS. SMOKE DAMPER LEAKAGE RATINGS SHALL NOT BE LESS THAN CLASS 8. ELEVATED TEMPERATURE RATINGS SHALL NOT BE LESS THAN 250°F.
- E 607.4 ACCESS AND IDENTIFICATION. FIRE AND SMOKE DAMPERS SHALL BE PROVIDED WITH AN APPROVED MEANS OF ACCESS, LARGE ENOUGH TO PERMIT INSPECTION AND MAINTENANCE OF THE DAMPER AND ITS OPERATING PARTS. THE ACCESS SHALL NOT AFFECT THE INTEGRITY OF THE FIRE-RESISTANCE-RATED ASSEMBLIES. THE ACCESS OPENING SHALL NOT REDUCE THE FIRE-RESISTANCE RATING OF THE ASSEMBLY. ACCESS POINTS SHALL BE PERMANENTLY IDENTIFIED ON THE EXTERIOR BY A LABEL HAVING LETTERS NOT LESS THAN 0.5 INCH IN HEIGHT READING: SMOKE DAMPER OR FIRE DAMPER OR FIRE SMOKE DAMPER. ACCESS DOORS IN DUCTS SHALL BE TIGHT FITTING AND SUITABLE FOR THE REQUIRED DUCT CONSTRUCTION.



KEY NOTES

- 1 FIRE ALARM SYSTEM/CONTROL PANEL.
- 2 SMOKE DETECTOR(S).
- 3 SMOKE DUCT DETECTOR(S), INSTALLED IN THE DUCTWORK BY THE MECHANICAL CONTRACTOR, FURNISHED BY THE ELECTRICAL CONTRACTOR.
- 4 SMOKE DAMPER OR COMBINATION FIRE/SMOKE DAMPER (1.5 OR 3 HR RATINGS), WITH FACTORY INSTALLED/UL LISTED ACTUATOR, COORDINATE LINE OF LOW VOLTAGE REQUIREMENTS BETWEEN MC/ATC/EC/FAC.
- 5 RELAY MODULE WITH INTERFACE TO ATC TO SHUT DAMPER WHEN ASSOCIATED AIR HANDLER FAN IS NOT OPERATING AS REQUIRED BY 2006MC SECTION 607.3.2.1.
- 6 POWER WIRING BY ELECTRICAL CONTRACTOR.
- 7 DISCONNECT SWITCH.
- 8 TRANSFORMER. (ONLY REQUIRED FOR 24 VOLT DAMPERS, NOT 120 VOLT DAMPERS).
- 9 MOMENTARY TEST SWITCH WITH MANUAL RESET BUTTON. THE SWITCH ENABLES MAINTENANCE AND INSPECTION OF DAMPER BY ALLOWING DAMPER TO BE TESTED AND CYCLED BY ONE PERSON, RIGHT AT THE DAMPER LOCATION BY HOLDING THE TEST SWITCH DOWN.
- 10 FACTORY INSTALLED DAMPER END SWITCHES.
- 11 DAMPER INDICATOR LIGHTS. (REMOTE CONTROL PANEL BY MECHANICAL CONTRACTOR). MOUNT NEAR DAMPER AT CEILING.
- 12 AUTOMATIC TEMPERATURE CONTROL SYSTEM/PANEL.
- 13 TRANSFORMER INTERNAL TO ATC PANEL.
- 14 MAIN SYSTEM RETURN DUCT SMOKE DETECTOR.
- 15 HIGH LIMIT STATIC PRESSURE SENSOR. (TO PROTECT AGAINST HIGH STATIC PRESSURE WHEN DAMPERS CLOSE AND FAN IS RUNNING).
- 16 ASSOCIATED AIR HANDLING UNIT MOTOR STARTER/FAN CONTROL CIRCUIT.
- 17 AUXILIARY CONTACTS IN DUCT SMOKE DETECTOR RELAY FOR FIRE ALARM INDICATION TO ATC SYSTEM. WIRING BY MECHANICAL CONTRACTOR.
- 18 FIRE ALARM SYSTEM ALARM INPUT TO ATC SYSTEM/PANEL.
- 19 FIRE ALARM CONTROL, OR RELAY MODEL (SEE ELECTRICAL DRAWINGS FOR ADDRESSABLE MODELS).

1 SMOKE OR COMBINATION FIRE SMOKE DAMPER CONTROL SCHEMATIC
NOT TO SCALE



EMERGENCY POWER SEQUENCE OF OPERATION

ON LOSS OF NORMAL POWER

THE UPS VIA ITS SECONDARY DRY CONTACT AND TRANSFER SWITCHES, ATS-OS DRY CONTACTS SHALL SIGNAL THE ATC SYSTEM HEAD END TO SWITCH FROM NORMAL OPERATION TO EMERGENCY POWER MODE AND IMPLEMENT THE FOLLOWING SEQUENCE OF OPERATIONS.

ALL HVAC EQUIPMENT SHALL CYCLE OFF AND ALL HVAC EQUIPMENT SHALL CYCLE ON AS OUTLINED IN THE LOAD STEP SEQUENCE BELOW.

UPON LOSS OF NORMAL POWER, THE STANDBY EMERGENCY GENERATOR WILL START. WITHIN 10 SECONDS THEREAFTER THE EMERGENCY LIFE SAFETY TRANSFER SWITCH, ATS-LS WILL TRANSFER AND ENERGIZE ALL OF THE EMERGENCY LIFE SAFETY LOADS INCLUDING THE ELEVATOR CONTROL, CLOSET EXHAUST FAN.

OPTIONAL STANDBY ATS-OS SHALL BE PROGRAMMED TO TRANSFER 60 SECONDS AFTER LOSS OF NORMAL POWER AND ENERGIZE THE OPTIONAL STAND-BY MECHANICAL LOADS IN THE FOLLOWING TIME-DELAYED SEQUENCE:

ON RETURN OF NORMAL POWER

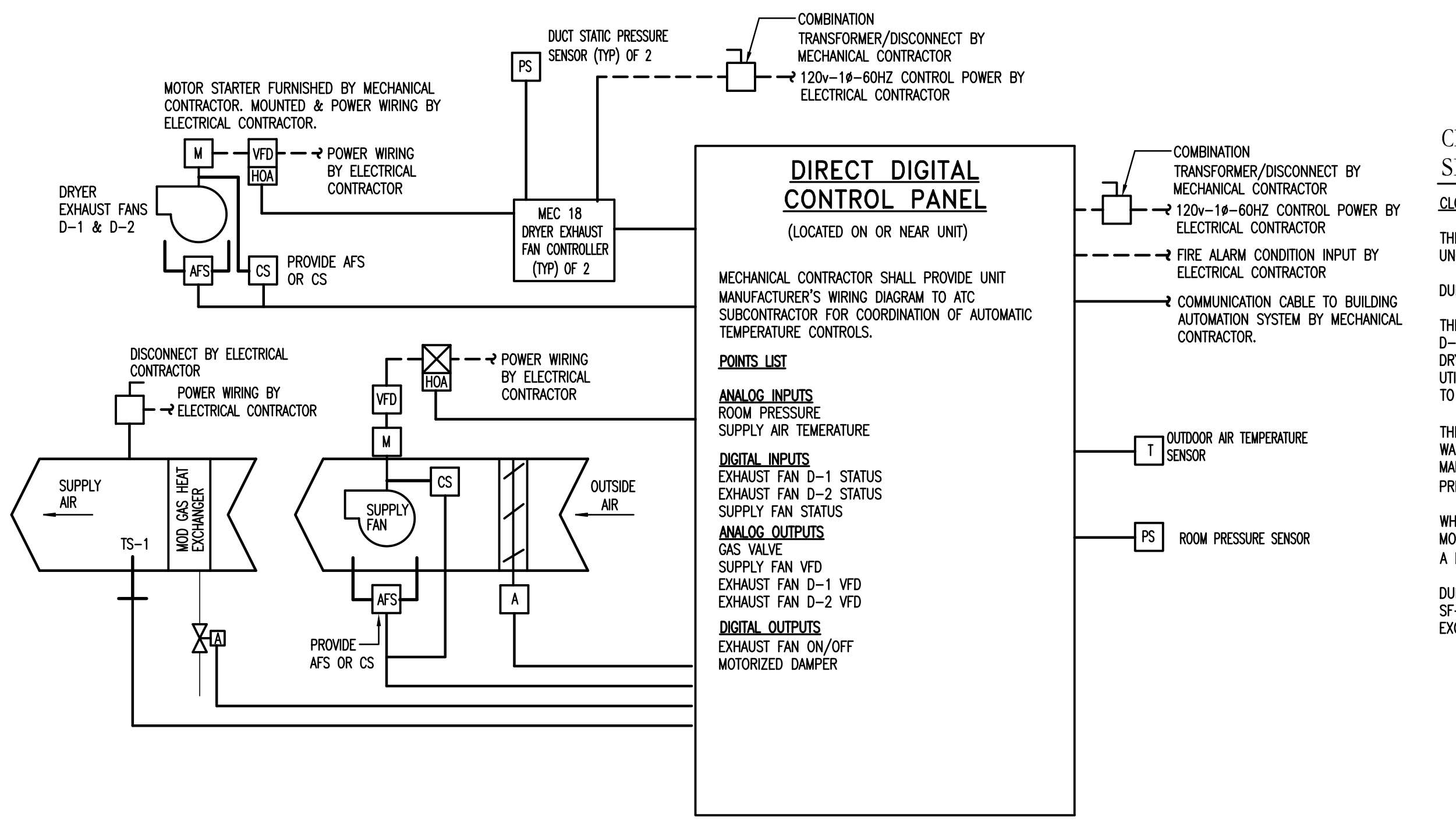
ALL HVAC EQUIPMENT SHALL CYCLE OFF AND STAGE RESTART BY AN MIN DELAY OF 2 MINUETS (ADJ)

LOAD STEPS

TIME DELAY AFTER LOSS OF POWER	MECHANICAL EQUIPMENT TO BE SIGNALLED FOR START	NOTES
90	DSS 1-1, DSS 1-2, DSS 2-1, DSS 3-1, DSS 4-1 & DSS 5-1	
120	ERU-1 SUPPLY FAN ERU-1 RETURN FAN	1
150	ERU-2 SUPPLY FAN ERU-2 RETURN FAN	1
180	ERU-3 SUPPLY FAN ERU-3 RETURN FAN	1
210	COMMON ARE FCU'S 26 UNITS FCU 1-1 THRU FCU 5-4	
240	RA, 2ND & 5TH FLOOR FCU'S 51 UNITS FCU A	
270	3RD FLOOR FCU'S 48 UNITS FCU A	
300	4TH FLOOR FCU'S 48 UNITS FCU A	
330	DTWP-1&2	
360	B-1,B-2&B-3 BP-1,BP-2&BP-3	

NOTES
1. COOLING IS LOCKED OUT

4 DIRECT DIGITAL CONTROL ARCHITECTURE
SCALE: NTS



CLOTHES DRYER EXHAUST FAN SEQUENCE OF OPERATION

CLOTHES DRYER EXHAUST FANS - GENERAL

THE CLOTHES DRYER EXHAUST FANS SHALL BE INDEXED FOR OCCUPIED - UNOCCUPIED MODES OF OPERATION THROUGH THE ATC SYSTEM.

DURING THE OCCUPIED CYCLE:
THE OUTDOOR AIR DAMPER SHALL BE OPEN AND EXHAUST FANS D-1 AND D-2 SHALL BE MODULATED TO MAINTAIN NEGATIVE PRESSURE WITHIN THE DRYER EXHAUST DUCTWORK. THE MFR PROVIDED MEC-18 CONTROLLER SHALL UTILIZE A DUCT MOUNTED STATIC PRESSURE SENSOR AND ASSOCIATED VFD TO MODULATE THE EXHAUST FANS.

THE BMS SHALL MONITOR THE LAUNDRY ROOM'S STATIC PRESSURE VIA A WALL MOUNTED PRESSURE SENSOR AND MODULATE THE LAUNDRY ROOM MAKE-UP AIR SUPPLY FAN TO MAINTAIN THE ROOM AT A POSITIVE PRESSURE PRESSURE OF .05"WC (ADJ) WITH RESPECT TO THE ADJACENT AREAS.

WHEN OUTDOOR AIR TEMPERATURE IS BELOW 60 DEGREES F THE BMS SHALL MODULATE THE MAKE UP AIR UNITS GAS FIRED HEAT EXCHANGER TO PROVIDE A DISCHARGE SUPPLY AIR TEMPERATURE OF 70 DEGREES F (ADJ).

DURING THE UNOCCUPIED CYCLE: EXHAUST FANS D-1, D-2 SUPPLY FAN SF-1, OUTDOOR AIR DAMPER SHALL BE CLOSED AND THE GAS FIRED HEAT EXCHANGER SHALL BE OFF.

3 DRYER EXHAUST FAN CONTROL SCHEMATIC
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SUBMISSIONS

NO.	DATE	DESCRIPTION
1	07/14/13	CONSTRUCTION DOCUMENTS
2	08/07/13	FINAL CONSTR. DOCUMENTS

REVISIONS

NO.	DATE	DESCRIPTION
1A	AS NOTED	CONSTR. DOC. REVISIONS
2A	AS NOTED	ADDENDUM 1
2B	08/24/17	ADDENDUM 2
2D	09/08/17	ADDENDUM 6

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