

FAN SCHEDULE										
UNIT DES.	SERVICE	LOCATION	CFM	E.S.P. IN W.G.	RPM	MOTOR HP (WATTS)	ELECTRICAL VOLTS/PHASE	TYPE	GREENHECK MODEL #	REMARKS
EF-1	BAYS 1, 2, 3, 4, 5 & MECH. MEZZANINE	CLEAR STORY WALL	5240	0.35	963	3/4	208/3	WALL MOUNTED PROPELLER	SBE-3L24-7	3, 4, 5
EF-2	BAYS 1, 2, 3, 4, 5 & MECH. MEZZANINE	CLEAR STORY WALL	5240	0.35	963	3/4	208/3	WALL MOUNTED PROPELLER	SBE-3L24-7	3, 4, 5
EF-3	PARTS MEZZANINE & PARTS STORAGE	WALL	2310	0.3	968	1/4	208/3	WALL MOUNTED PROPELLER	SBE-1H20-4	3, 5, 10
EF-4	BATTERY ROOM	MECHANICAL MEZZANINE	65	0.3	1501	1/40	115/1	DIRECT DRIVE IN-LINE CENTRIFUGAL EXHAUST	8Q-60-D	1, 2, 3, 6, 7, 14, 15
EF-5	MECHANICAL ROOM	MECHANICAL MEZZANINE	90	0.3	1511	1/30	115/1	DIRECT DRIVE IN LINE CENTRIFUGAL EXHAUST	8Q-65-D	1, 2, 3, 10
EF-6	BREAK ROOM	CEILING	245	0.25	1013	(8)	115/1	CEILING MOUNTED PROPELLER	8P-A290	1, 2, 3, 11, 12
EF-7	MECH. MEZZANINE	WALL	285	0.2	1528	1/30	115/1	WALL MOUNTED PROPELLER	SEI-10-428-P-1	3, 13
VEF-1	VEHICLE EXHAUST SYSTEM	PLATFORM	2400	4.25	2335	5	208/3	BELT DRIVE BACKWARD IN-LINE FAN	BI-150	8, 9

- REMARKS:
- PROVIDE MOUNTING SPRING VIBRATION ISOLATORS, BACKDRAFT DAMPER, AND FACTORY MOUNTED SPEED CONTROLLER.
 - PROVIDE FLEXIBLE CONNECTION AT DISCHARGE AND INLET OF FAN AS APPLICABLE.
 - PROVIDE DISCONNECT SWITCH.
 - FAN CONTROLLED BY COOLING ONLY, TWO STAGE THERMOSTAT LOCATED AS SHOWN ON PLANS.
 - PROVIDE WALL HOUSING WITH OSHA GUARD, LOUVER (GREENHECK MODEL EDJ-430) WITH BIRDSCREEN, ADJUSTABLE MOTOR PULLEY, MOTORIZED DAMPER, END SWITCHES, AND SINGLE POINT WIRING.
 - PROVIDE FAN WITH HI-PRO COATING, TOTALLY ENCLOSED MOTOR AND SPARK RESISTANT/EXPLOSION PROOF CONSTRUCTION.
 - FAN SHALL OPERATE CONTINUOUSLY.
 - PROVIDE FACTORY SUPPLIED HANGING PLATFORM, DISCONNECT SWITCH, AND BACKDRAFT DAMPER AT FAN DISCHARGE.
 - BASIS OF DESIGN IS MONOVOLVENT.
 - FAN CONTROLLED BY COOLING ONLY THERMOSTAT LOCATED AS SHOWN ON PLANS.
 - FAN CONTROLLED BY WALL SWITCH.
 - PROVIDE WALL CAP AND ALUMINUM CEILING GRILLE.
 - PROVIDE WALL HOUSING WITH OSHA GUARD, DAMPER GUARD, GRAVITY DAMPER, AND SPEED CONTROLLER.
 - FAN CONTROLLED BY AUTO CHANGE OVER THERMOSTAT.
 - REVERSE MOUNT, FLUSH EXTERIOR, 2B-R EXHAUST ARRANGEMENT TO ALLOW FOR MOUNTING OF FIRE DAMPER IN WALL.

ENERGY RECOVERY VENTILATOR SCHEDULE													
UNIT NUMBER	SUPPLY FAN			RETURN / EXHAUST FAN			SUMMER		WINTER		GREENHECK MODEL #	REMARKS	
	CFM	E.S.P. (N. W.G.)	RPM	CFM	E.S.P. (N. W.G.)	RPM	H.P.	EAT (DB/WB)	LAT (DB/WB)	EAT			LAT
ERV-1	460	0.45	1654	715	415	1555	0.45	91.0 / 77.0	81.6 / 69.1	16	48.9	MINV-450	1 THRU 5

- REMARKS:
- UNIT TO BE 120 VOLT, SINGLE PHASE, WITH SINGLE POINT CONNECTION.
 - UNIT TO HAVE INTEGRAL DESICCANT WHEEL AND PACKAGED CONTROLS.
 - UNIT TO BE PROVIDED WITH 1" OUTDOOR AND EXHAUST AIR FILTERS; SPRING TYPE VIBRATION ISOLATORS, SPARE BELTS AND FILTERS AND WHEEL FROST CONTROL.
 - UNIT SHALL OPERATE PER ITS PACKAGED CONTROLS, INTERLOCK ERV WITH AC-1 AND ASSOCIATED MOTORIZED DAMPERS.
 - UNIT TO BE PROVIDED WITH SOLID STATE SPEED CONTROLLERS FOR BOTH FANS.

WASTE OIL-FIRED HORIZONTAL UNIT HEATER SCHEDULE (GRAVITY VENTED)							
UNIT DES.	BTU INPUT	BTU OUTPUT	CFM	FAN MOTOR HP	ELECTRICAL VOLTS / PHASE	BASIS OF DESIGN	REMARKS
WOH-1	148,000	118,400	2050	1/4	120/1	REZNR MODEL RA-150	1, 2, 3, 4, 5, 6
WOH-2	148,000	118,400	2050	1/4	120/1	REZNR MODEL RA-150	1, 2, 3, 4, 5, 6
WOH-3	148,000	118,400	2050	1/4	120/1	REZNR MODEL RA-150	1, 2, 3, 4, 5, 6

- REMARKS:
- PROPELLER FAN WITH OVERLOAD PROTECTION.
 - PROVIDE WITH TERMINAL STRIP CONNECTOR AND REMOTE 24 VOLT THERMOSTAT. PROVIDE LOW VOLTAGE CONTROL WIRING.
 - PROVIDE HANGER KITS TO SUSPEND HEATER FROM CEILING STRUCTURE.
 - PROVIDE TYPE 'B' FLUE WITH VENT CAP AND BAROMETRIC DRAFT REGULATOR.
 - PROVIDE WITH REMOTE PUMP SYSTEM, OIL PREHEATING SYSTEM, DISCONNECT SWITCHES, AND SUPPLY LINE FILTER SYSTEM.
 - SET THERMOSTAT BELOW INFRARED HEATER THERMOSTAT TO ALLOW WASTE OIL HEATERS TO ACT AS THE FIRST STAGE OF HEATING.

GAS-FIRED HORIZONTAL UNIT HEATER SCHEDULE (GRAVITY VENTED)							
UNIT DES.	BTU INPUT	BTU OUTPUT	CFM	FAN MOTOR HP	ELECTRICAL VOLTS / PHASE	BASIS OF DESIGN	REMARKS
GUH-1	25,000	20,000	380	1/50	120/1Ø	REZNR MODEL F-25	1, 2, 3, 4
GUH-2	25,000	20,000	380	1/50	120/1Ø	REZNR MODEL F-25	1, 2, 3, 4

- REMARKS:
- PROPELLER FAN WITH OVERLOAD PROTECTION.
 - PROVIDE WITH TERMINAL STRIP CONNECTOR AND REMOTE 24 VOLT THERMOSTAT. PROVIDE LOW VOLTAGE CONTROL WIRING.
 - PROVIDE HANGER KITS TO SUSPEND HEATER FROM STRUCTURE.
 - PROVIDE TYPE 'B' FLUE WITH VENT CAP.

FURNACE SCHEDULE															
UNIT DES.	AREA SERVED	CFM	FURNACE				CONDENSING UNIT			CASED COIL		BASIS OF DESIGN YORK MODEL	REMARKS		
			OA CFM	E.S.P. IN. W.G.	ARJF	INPUT MBH	OUTPUT MBH	TONS	TOTAL MBH	SEER @ ARI	TONS			PRESSURE DROP	
AC-1 CU-1 COIL-1	OFFICES AND BREAK ROOM	2015	460	0.6	97.7	100	97	5	55.3	15.50		5	0.2	YP9C100C20MP12C CZH0601C FC64D3XN1	1 THRU 18

- REMARKS:
- PROVIDE INSULATED CONDENSATE DRAIN PIPING FROM FURNACE AND CASED COIL AS PER MANUFACTURER'S RECOMMENDATIONS. PROVIDE OVERFLOW SENSOR IN THE PRIMARY CONDENSATE CONNECTION OF THE COOLING COIL TO SHUT DOWN UNIT UPON SENSING CONDENSATION.
 - PROVIDE INSULATED REFRIGERANT PIPING BETWEEN INDOOR AND OUTDOOR UNITS PER MANUFACTURER'S RECOMMENDATIONS. SIZE R410A REFRIGERANT LINES AND INSTALL PER MANUFACTURER'S RECOMMENDATIONS.
 - PROVIDE CONCRETE PAD FOR MOUNTING CONDENSING UNIT.
 - INSTALL FURNACE FLUE & VENT PIPING THRU ROOF PER MANUFACTURER'S RECOMMENDATIONS AND TERMINATE FLUE/VENT WITH MANUFACTURER SUPPLIED CONCENTRIC TERMINATION FLUE/VENT KIT.
 - NATURAL GAS.
 - PROVIDE CONDENSATE DRAIN PIPE FROM FLUE AS PER MANUFACTURER'S RECOMMENDATIONS AND PROVIDE NEUTRALIZER KIT AND INSTALL IN DRAIN LINE BEFORE CONNECTING TO COOLING COIL CONDENSATE DRAIN PIPE. INSULATE ALL CONDENSATE DRAIN PIPING.
 - PROVIDE FLEXIBLE CONNECTION AT INLET AND DISCHARGE OF AC UNITS. USE HEAT RESISTANT MATERIAL FOR FLEXIBLE CONNECTORS.
 - INTERLOCK FURNACE WITH ASSOCIATED CONDENSING UNIT.
 - PROVIDE PROGRAMMABLE THERMOSTAT WITH LOCKING COVER. THERMOSTAT SHALL SHUT OFF O.A. SUPPLY DURING UNOCCUPIED MODE.
 - ATTACH MATCHING COOLING COIL TO UNIT SUPPLY AND SEAL AIR TIGHT. PROVIDE MULTI-POSITION CASED COOLING COIL WITH REFRIGERANT PIPING CONNECTIONS, FACTORY INSULATED INTERNAL HORIZONTAL DRAIN PAN, AND FACTORY INSTALLED THERMAL EXPANSION VALVE.
 - HEAT TRACE ALL FLUE CONDENSATE PIPING WHICH IS SUBJECT TO FREEZING.
 - PROVIDE FURNACE WITH FILTER RACKS AND FILTERS SUPPLIED BY THE MANUFACTURER.
 - INSTALL FURNACE WITH SPRING TYPE HANGING VIBRATION ISOLATORS.
 - PROVIDE CU WITH LOW AMBIENT OPERATION TO 30% CAPABILITY, ANTI-SHORT CYCLE TIMER, EVAPORATOR DEFROST CONTROL, AND HARD START KIT.
 - MANUFACTURER TO ENSURE THAT CASED COIL SELECTED IS CORRECTLY MATCHED TO FIT ON FURNACE IT IS BEING INSTALLED. CONTRACTOR SHALL PROVIDE ANY DUCT TRANSITIONS OR SHEETMETAL BLANK OFFS REQUIRED.
 - INTERLOCK FURNACE WITH ASSOCIATED ERV.
 - FURNACE SHALL BE PROVIDED WITH ECM TYPE MOTOR AND MODULATING HEATING OPERATION.
 - INSTALL DUCT SMOKE DETECTORS FURNISHED AND WIRED BY ELECTRICAL CONTRACTOR IN THE SUPPLY AIR AND RETURN AIR DUCT. DUCT SMOKE DETECTORS SHALL SHUT DOWN AC IMMEDIATELY UPON SENSING SMOKE.

DIVISION OF MECHANICAL/ ELECTRICAL WORK		
ITEM	MECH/ DIV 15	ELEC/ DIV 16
AUTOMATIC TEMPERATURE CONTROLS	FURNISH, INSTALL & WIRE	POWER WIRING
CONTROL PANELS FOR MECHANICAL EQUIPMENT	FURNISH & INSTALL	POWER WIRING
LOW & LINE VOLTAGE CONTROL WIRING FOR MECH. EQUIP.	FURNISH & INSTALL	
MECHANICAL FLOW SWITCHES	FURNISH, INSTALL & WIRE	
THERMOSTATS/ SENSORS	FURNISH, INSTALL & WIRE	
P/E & E/P SWITCHES	FURNISH, INSTALL & WIRE	
DISCONNECT SWITCHES FOR MECHANICAL EQUIPMENT		FURNISH, INSTALL & WIRE
MECHANICAL EQUIPMENT MOTORS	FURNISH & INSTALL	POWER WIRING
MANUAL STARTERS FOR MECHANICAL EQUIPMENT	FURNISH	INSTALL & POWER WIRE
MAGNETIC STARTERS FOR MECHANICAL EQUIPMENT	FURNISH	INSTALL & POWER WIRING
MOTOR CONTROL CENTERS	CONTROL WIRING	FURNISH, INSTALL & POWER WIRE
VARIABLE SPEED CONTROLLERS	FURNISH & INSTALL	POWER WIRING
MOTORIZED DAMPERS & VALVES	FURNISH, INSTALL & WIRE	
DUCT SMOKE DETECTORS	INSTALL	FURNISH & WIRE
HEAT TRACE CABLE FOR PIPING	FURNISH & INSTALL	POWER WIRING
OIL/ GAS EMERGENCY SHUT-OFF SWITCHES		FURNISH, INSTALL & WIRE
SPRINKLER FLOW & TAMPER SWITCHES	FURNISH & INSTALL	WIRE

GAS FIRED INFRARED HEATER SCHEDULE					
UNIT NO.	AREA SERVED	INPUT MBH (HIGH/LOW)	HEAT EXCHANGER LENGTH (FEET)	BASIS OF DESIGN SUPERIOR RADIANT PRODUCTS	REMARKS
IRH-1	BAYS 4-5	100 / 75	20	TX-100	1, 2, 3, 4
IRH-2	BAYS 1-2-3	100 / 75	20	TX-100	1, 2, 3, 4
IRH-3	BAY 2	100 / 75	20	TX-100	1, 2, 3, 4
IRH-4	BAY 1	100 / 75	20	TX-100	1, 2, 3, 4

- REMARKS:
- PROVIDE REMOTE TWO STAGE THERMOSTAT AND SIDE SHIELD EXTENSIONS AS PER FLOOR PLAN.
 - TWO STAGE HEATER.
 - INFRARED HEATERS SHALL BE PROVIDED UNDER BASE BID. PROVIDE DEDUCT PRICING AS PART OF DEDUCT ALTERNATE NO. 3.
 - SET THERMOSTAT ABOVE WASTE OIL HEATER THERMOSTAT TO ALLOW INFRARED HEATERS TO ACT AS THE SECOND STAGE OF HEAT.

ELECTRIC HEATER SCHEDULE							
UNIT NO.	SERVES	KW	VOLT/PHASE	TYPE	MANUFACTURER	MODEL	REMARKS
EUH-1	TOOL ROOM	1.674	208 / 1	UNIT HEATER	Q-MARK	MWUH5004	1, 2
EUH-2	OIL/FLUID STORAGE	1.674	208 / 1	UNIT HEATER	Q-MARK	MWUH5004	1, 2
EUH-3	SPRINKLER CLOSET	1.674	208 / 1	UNIT HEATER	Q-MARK	MWUH5004	1, 2
BWH-1	BATTERY ROOM	1.8	208 / 1	CONVECTOR	Q-MARK	IC618081	1, 3

- REMARKS:
- PROVIDE DISCONNECT SWITCH AND UNIT MOUNTED THERMOSTAT.
 - PROVIDE MOUNTING BRACKET.
 - HEATER SHALL BE EXPLOSION PROOF TYPE CLASSIFIED FOR HAZARDOUS LOCATIONS.

SUPPLY REGISTER SCHEDULE	
CFM RANGE	DUCT/NECK SIZE
0-70	6 X 6
71-110	8 X 8
111-180	10 X 10
181-230	12 X 12
231-310	14 X 14
311-380	16 X 16

NOTE: ALL SUPPLY REGISTER SELECTIONS TO BE BASED ON: MAX. NC = 25, MAX. VELOCITY = 400 FPM.

EXHAUST & TRANSFER REGISTER SCHEDULE	
CFM RANGE	DUCT/NECK SIZE
0 - 75	6 X 6
76 - 150	8 X 8
151 - 225	10 X 10
226 - 350	12 X 12
351 - 450	14 X 14
451 - 650	16 X 20
651 - 850	16 X 28
851 - 1025	22 X 22
1026 - 1850	24 X 24

NOTE: ALL RETURN GRILLE SELECTIONS TO BE BASED ON: MAX. NC = 25 AND MAX. VELOCITY = 300 FPM

DIFFUSER & RUNOUT SCHEDULE		
CFM RANGE	NECK SIZE	MAX. LENGTH
0 - 100	6 Ø	8'-0"
101 - 250	8 Ø	8'-0"
251 - 420	10 Ø	8'-0"
421 - 500	12 Ø	8'-0"
501 - 575	14 Ø	8'-0"
576 - 750	16 Ø	8'-0"

NOTE: ALL FLEXIBLE DUCT DIAMETERS SHALL EQUAL DIFFUSER NECK SIZE. SEE PLANS AND SPECIFICATIONS FOR FACE TYPE AND MODEL NUMBERS

24/24 PERFORATED FACE RETURN AIR GRILLE SCHEDULE		
CFM RANGE	SQUARE NECK SIZE	ROUND NECK SIZE
0 - 125	6 X 6	8 Ø
126 - 240	8 X 8	8 Ø
241 - 375	10 X 10	10 Ø
376 - 550	12 X 12	12 Ø
551 - 725	14 X 14	14 Ø
726 - 850	15 X 15	15 Ø
851 - 1090	22 X 22	18 Ø

NOTE: NECK SIZES ABOVE ARE FOR DUCTED APPLICATIONS MODEL PAR. NON-DUCTED UNITS SHALL BE MODEL PKR. ALL RETURN GRILLE SELECTIONS TO BE BASED ON: MAX. NC = 25 AND MAX VELOCITY = 300 FPM.

MECHANICAL LEGEND		
SYMBOL	ABRV.	DESCRIPTION
		NEW EQUIPMENT OR DUCTWORK
		90° ELBOW WITH TURNING VANES
		DRAWING NOTE
	225	24/24 PERFORATED FACE DIFFUSER WITH ROUND NECK, CFM AS INDICATED. SEE SCHEDULE FOR NECK SIZE.
		24/24 PERFORATED FACE RETURN AIR GRILLE
		SPIN TAP WITH VOLUME CONTROL DAMPER
	V.C.D.	VOLUME CONTROL DAMPER
	B.D.	BACKDRAFT DAMPER
	M.D.	MOTORIZED DAMPER
	F.D.	FIRE DAMPER
	T-STAT	THERMOSTAT
	L/D	LOUVER DOOR, MIN. 1 SQ. FT. FREE AREA
	U/D	UNDER CUT DOOR 1'
	COND. DR.	CONDENSATE DRAIN SLOPE IN THE DIRECTION OF ARROW
	OA	OUTSIDE AIR
	SA	SUPPLY AIR
	RA	RETURN AIR
	DB/WB	DRY BULB / WET BULB
	E.A.T.	ENTERING AIR TEMPERATURE
	E.S.P.	EXTERNAL STATIC PRESSURE
	T.S.P.	TOTAL STATIC PRESSURE
	IN. W.G.	INCHES WATER GAUGE
	OED	OPEN ENDED DUCT WITH WIRE MESH SCREEN
	UNO	UNLESS NOTED OTHERWISE



ARCHITECTURE ENGINEERING

Dover, DE
 309 S. Governors Ave.
 Dover, DE 19904
 Ph: 302.734.7950
 Fax: 302.734.7965

Salisbury, MD
 312 West Main St. Suite 300
 Salisbury, MD 21801
 Ph: 410.341.7600
 Fax: 410.546.5824

Wilmington, NC
 3205 Randall Parkway, Suite 211
 Wilmington, North Carolina 28403
 Ph: 910.341.7600
 Fax: 910.341.7506

www.beckermorgan.com

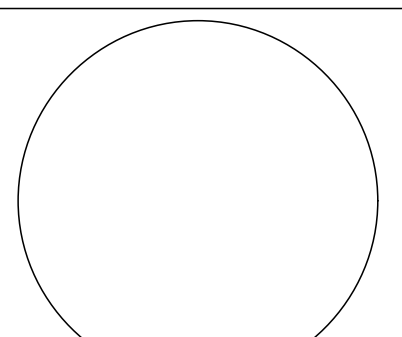
Allen & Shariff ENGINEERING

205 East Market Street
 Salisbury, Maryland 21801
 Tel: 410.341.0200
 Fax: 410.341.0400

MORABITO CONSULTANTS, INC.
 CONSULTING STRUCTURAL ENGINEERS
 952 RIDGEBROCK ROAD, SUITE 1700
 SPARKS, GLENCOE, MARYLAND 21152
 (410) 467-2377

MACHINTOSH ENGINEERING
 CONSULTING STRUCTURAL ENGINEERS
 2133 STERLINGS AVENUE, UNIT #11
 GEORGETOWN, DE 19947
 (302) 448-2000 FAX: (302) 448-2001

PROFESSIONAL CERTIFICATION: I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A FULLY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND.
 LICENSE NUMBER: 30756
 EXPIRATION DATE: 06/28/2012



PROJECT TITLE

TCC/SHORE TRANSIT BUS MAINTENANCE FACILITY - PHASE II

31955 TRI-COUNTY WAY
 SALISBURY, MD. 21804

ISSUED FOR BIDDING

DATE: 01/05/12

SHEET TITLE

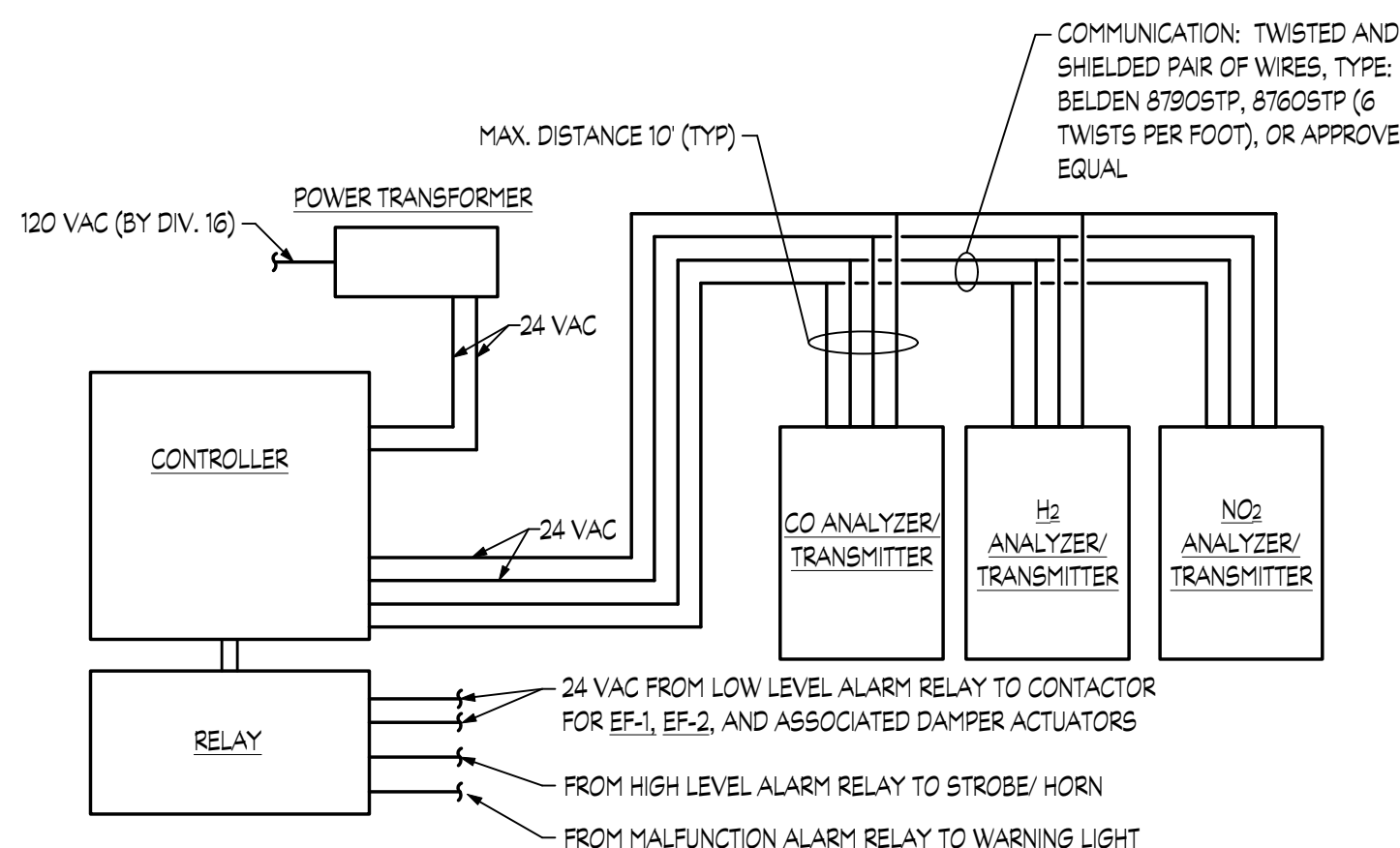
MECHANICAL SCHEDULES, DETAILS, AND LEGEND

ISSUE BLOCK

Mark	Date	Description
△	12.21.2011	FIRE SPRINKLER ADDITION
△	11.4.2011	CODE REVIEW COMMENTS

Project Number: 2009145.00
 Date: 01/05/12
 Scale: NONE
 Drawn By: AM | Checked By: DC

DATE: 01/05/12

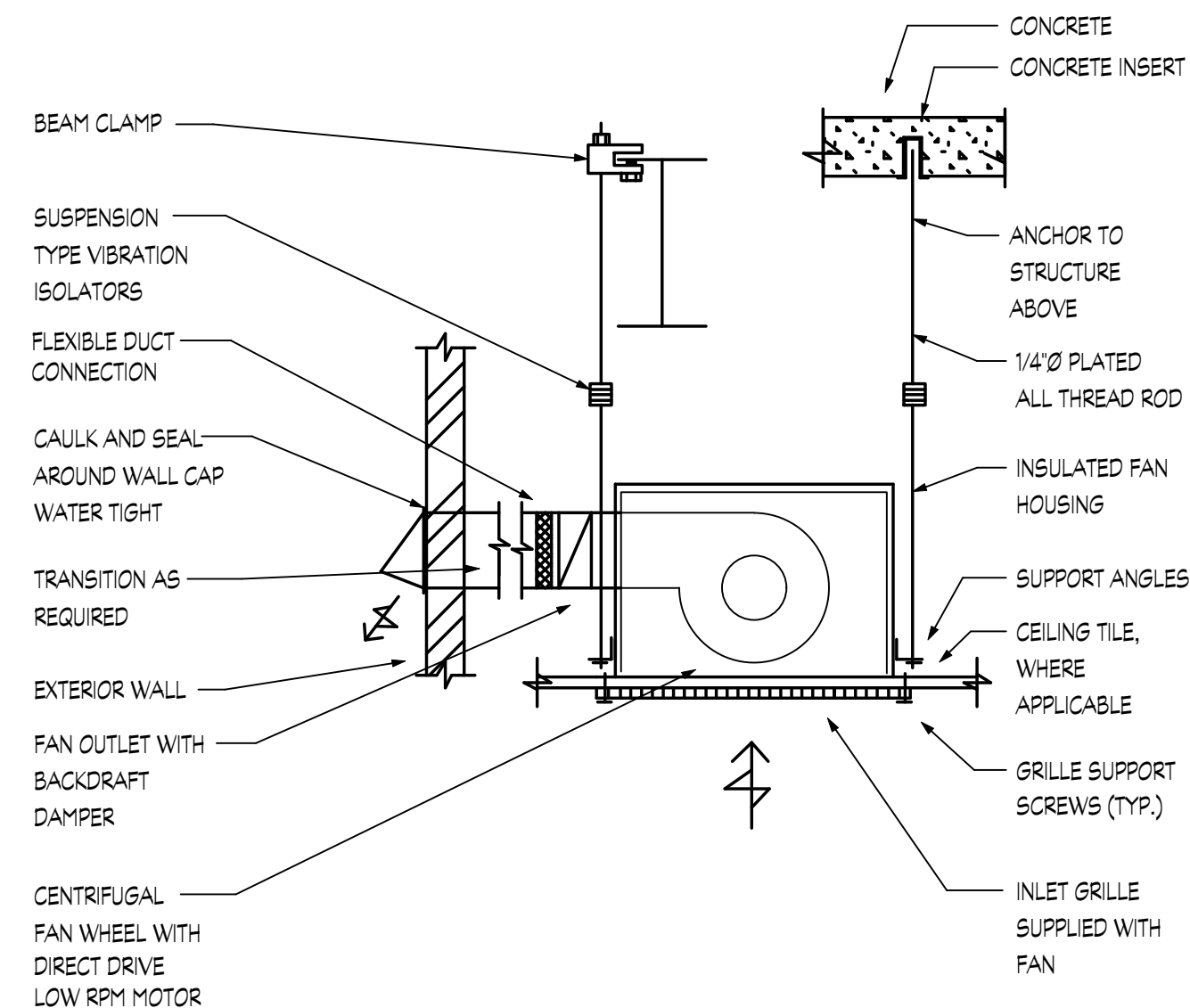


GAS DETECTION SYSTEM WIRING DIAGRAM

SCALE: NONE
 NOTE: ALL EXPOSED CONTROL WIRING SHALL BE IN CONDUIT

GAS DETECTION SYSTEM SEQUENCE OF OPERATION:

WHEN CO AND NO2 GAS CONCENTRATIONS EXCEED LOW LEVEL ALARM SET POINTS, A 24V SIGNAL FROM RELAY IN CONTROLLER SHALL START EF-1 AND/OR EF-2 AND OPEN ASSOCIATED MOTORIZED DAMPERS VIA A FOUR POLE CONTACTOR. WHEN CO, NO2, AND H2 GAS CONCENTRATIONS EXCEED HIGH LEVEL ALARM SET POINTS, CONTROLLER SHALL INITIATE VISUAL AND AUDIBLE ALARMS. A LOW VOLTAGE THERMOSTAT SHALL BE WIRED IN PARALLEL WITH RELAY TO START EF-1 AND EF-2 AND OPEN ASSOCIATED MOTORIZED DAMPERS WHEN TEMPERATURE EXCEEDS 80° F (ADJUSTABLE).



CEILING MOUNTED EXHAUST FAN WITH WALL CAP DETAIL

NO SCALE
 NOTE:
 1. PROVIDE VARIABLE SPEED SWITCH ON THE SIDE OF THE CASING FOR FINAL AIR BALANCE.