

HDC

ADMINISTRATIVE APPROVALS

June 10, 2020

- | | | |
|----|------------------------------|-----------------------|
| 1. | 678 Middle Street (LUHD-150) | -Recommended Approval |
| 2. | 105 Chapel Street (LUHD-144) | -Recommended Approval |

1. 678 Middle Street - Recommended Approval

Background: The applicant is seeking approval for the replacement of an existing 4' wooden picket fence with a 6' horizontal slat fence (to surround the sides and rear of the property).

Staff Comment: Recommended Approval

Stipulations:

1. _____
2. _____
3. _____

Historic District Commission Work Session or Administrative Approval Application

LUHD-150

Status: Active

Submitted: May 28, 2020

Applicant

 Emile Bussiere
 6036221002
 emilejr@bussierelaw.com

Location

678 MIDDLE ST
Portsmouth, NH 03801

Application Type

Please select application type from the drop down menu below

Administrative Approval

Project Information

Brief Description of Proposed Work

Replace 4' picket fence in disrepair with 6' horizontal slat fence. The fence to be replaced is entirely in the back yard. All of the fence will be outside the front yard set back where a 6' fence would not be permitted.

Description of Proposed Work (Planning Staff)

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Project Representatives

Acknowledgement

I certify that the information given is true and correct to the best of my knowledge.

true

I hereby certify that as the applicant for permit, I am

Owner of this property

By checking this box, I agree that this is equivalent to a handwritten signature and is binding for all purposes related to this transaction

true

If you selected "Other" above, please explain your relationship to this project. Owner authorization is required.

--

INTERNAL USE ONLY -- Historic District Commission Review and Approval

HDC Certificate of Approval Granted

--

HDC Approval Date

--

Planning Staff Comments

--

INTERNAL USE ONLY -- Letter of Decision Information

Owner Addressee Full Name and Title

--

Owner Addressee Prefix and Last Name

--

Existing Fence ↓



Proposed Fence Style ↓



Proposed Fence Style ↓



2. 105 Chapel Street

- Recommended Approval

Background: The applicant is seeking approval for the installation of mechanical equipment and guardrail to a portion of the existing roof. Equipment to include (new kitchen exhaust, fire suppression system, and A/C condenser).

Staff Comment: Recommended Approval

Stipulations:

1. _____
2. _____
3. _____

Historic District Commission Work Session or Administrative Approval Application

LUHD-144

Status: Active

Submitted: May 19, 2020

Applicant



W. MICHAEL CAMPBELL AIA

732-241-6516

wmcarch@optonline.net

Location

105 CHAPEL ST
Portsmouth, NH 03801

Application Type

Please select application type from the drop down menu below

Administrative Approval

Project Information

Brief Description of Proposed Work

To satisfy fire code violation we are required to add a new range hood for the kitchen with exhaust, make up air and fire suppression. Adding this equipment requires a guard rail 42" high at the perimeter of the roof. The guardrail would extend along about 1/2 of the roof edge. We are also adding a small condensing unit to the flat roof that will be further back and less in sight lines.

Description of Proposed Work (Planning Staff)

--

Project Representatives

Acknowledgement

I certify that the information given is true and correct to the best of my knowledge.

true

By checking this box, I agree that this is equivalent to a handwritten signature and is binding for all purposes related to this transaction

true

I hereby certify that as the applicant for permit, I am

Other

If you selected "Other" above, please explain your relationship to this project. Owner authorization is required.

Architect

INTERNAL USE ONLY -- Historic District Commission Review and Approval

HDC Certificate of Approval Granted

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HDC Approval Date

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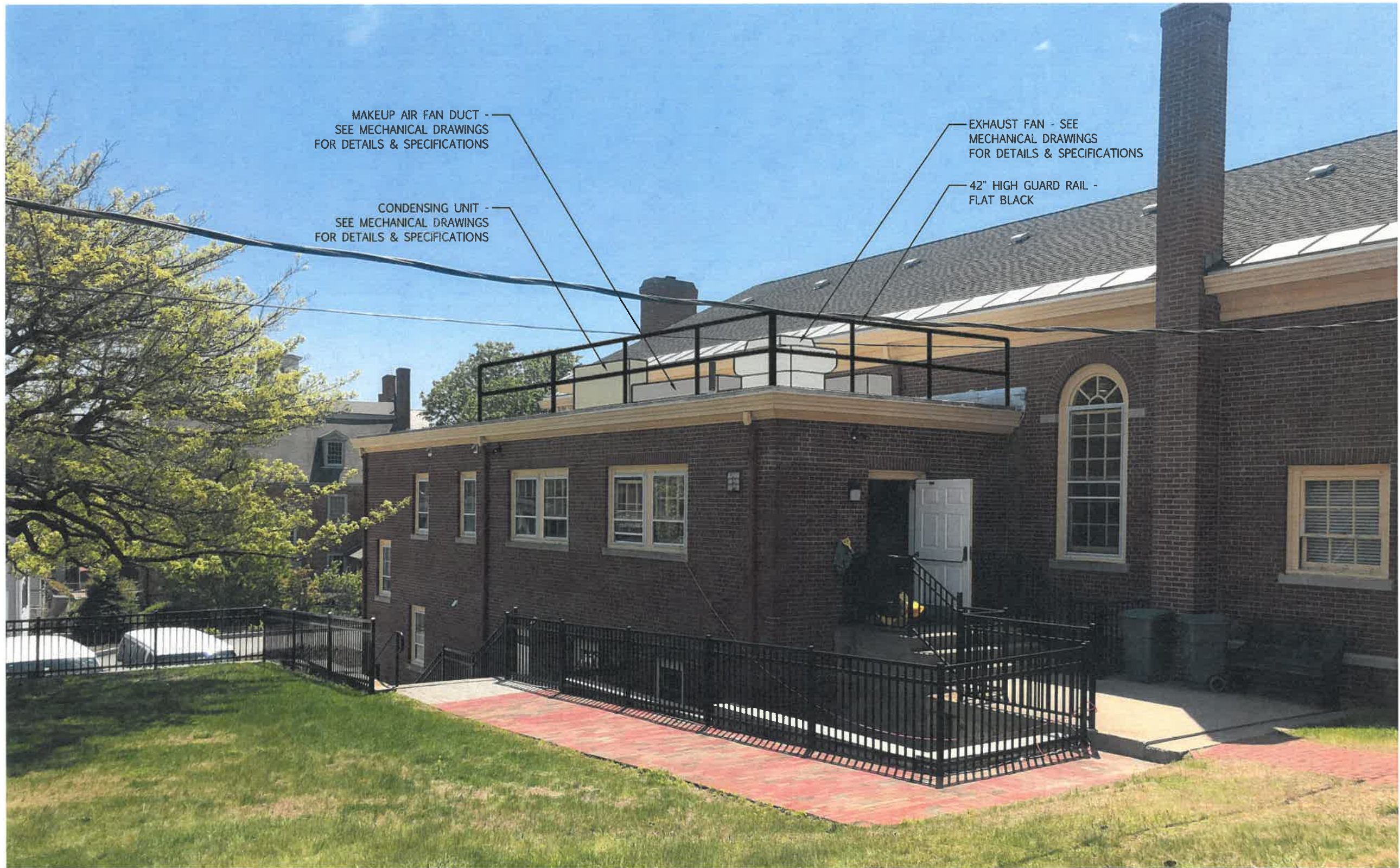
Planning Staff Comments

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INTERNAL USE ONLY -- Letter of Decision Information

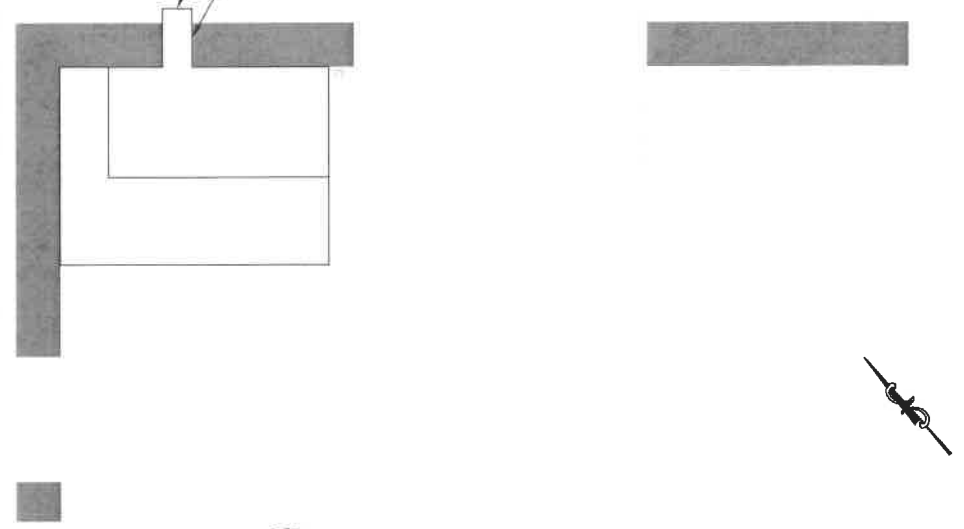
Existing ↓





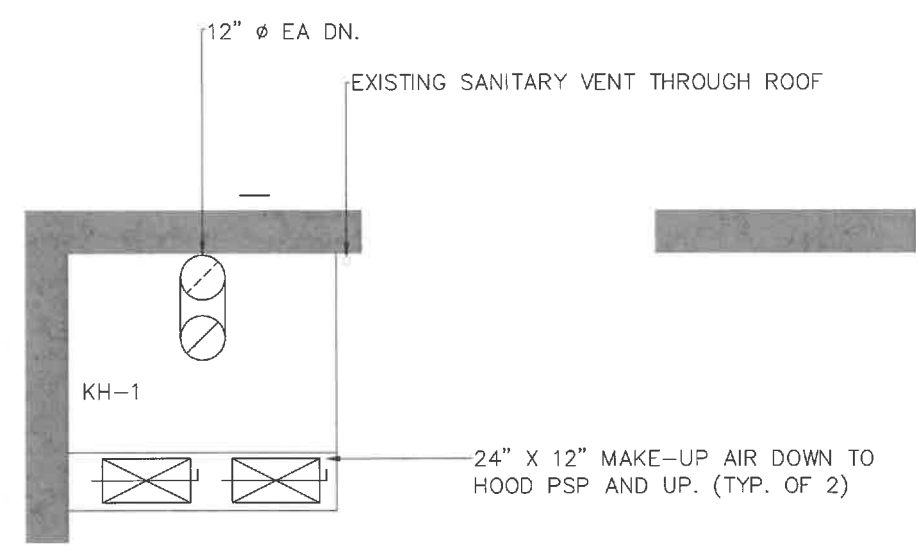
1 PROPOSED EXTERIOR
NTS.

REMOVE AND DEMOLISH EXISTING HOOD,
THROUGH-THE-WALL EXHAUST FAN,
BACKDRAFT DAMPER AND CONTROL SWITCH.
PATCH WALL. REFER TO ARCHITECTURAL DETAILS.



1 **KITCHEN DEMOLITION PART PLAN**
M.01 1/8" = 1'-0"

- NOTES:
1. LOCATE REMOTE MANUAL PULL STATION AT OR NEAR MEANS OF EGRESS FROM THE COOKING AREA NOT LESS THAN 10 FEET AND NOT MORE THAN 20 FEET FROM THE KITCHEN EXHAUST, 42 TO 48 INCHES A.F.F.
 2. PORTABLE FIRE EXTINGUISHER SHALL BE PROVIDED WITHIN A 30 FOOT DISTANCE OF TRAVEL FROM COOKING EQUIPMENT.



2 **KITCHEN NEW WORK PART PLAN**
M.01 1/8" = 1'-0"

CMU WALL. EXPOSED CONCRETE CEILING 10' A.F.F.



THE PROJECT MANAGER FOR THIS PROJECT IS NOTED BELOW. PLEASE REFER ALL RFIs, INQUIRIES, SUBMITTALS AND CORRESPONDENCE TO THE PROJECT MANAGER.
PROJECT MANAGER:
MATHIEZ KREBS
EMAIL: MATHIEZK@DESIGNDAYMECH.COM
PHONE: (603) 435-3458
ADDRESS: 78 WINE ST. SOUTH BERRICK, ME 03008

ST. JOHN'S CHURCH
101 CHAPEL ST.
PORTSMOUTH, NH

WM MICHAEL CAMPBELL AIA
ARCHITECT & PLANNER
CITY, STATE

KITCHEN PART PLANS

REVISIONS:

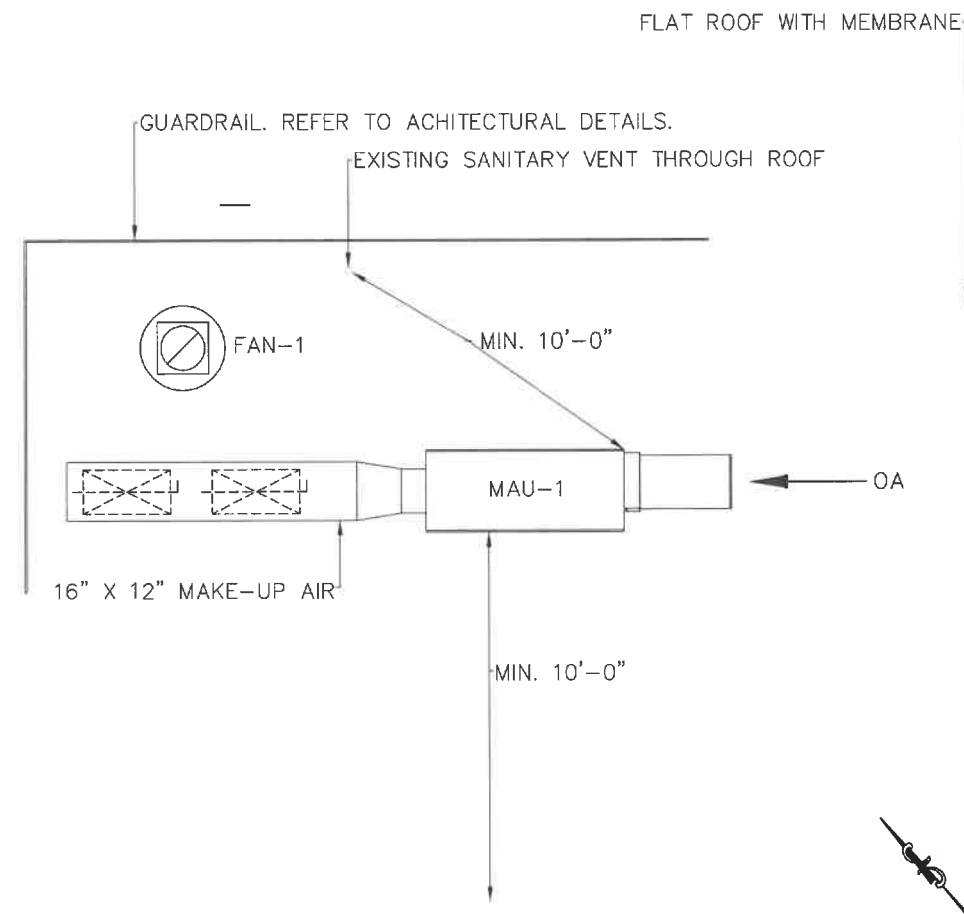
DESIGNED BY: MBK
DRAWN BY: ESH
CHECKED BY: AWA
DATE: 05/13/2020
SCALE: 20064
AS NOTED

DATE: 05/13/2020

PROGRESS DRAWING
NOT FOR CONSTRUCTION

M1.01

- NOTES:
1. INTAKE OPENING FOR MAU MUST BE AT LEAST 10 FEET FROM ADJACENT BUILDINGS, EXHAUST FAN DISCHARGE AND PLUMBING VENT.
 2. INSTALL ROOF WALKWAY PADS FROM ROOF'S POINT OF ENTRY TO EQUIPMENT.
 3. GUARDRAIL SHALL BE 42 INCHES HIGH AND EXTEND 30 INCHES PAST EQUIPMENT'S EDGE WITH ARCHITECTURAL FENCING AS NEEDED.



FELLOWSHIP HALL PITCHED ROOF

1 ROOF PART PLAN 1/8"=1'-0"



USE AND/OR MARKS FOR THIS PROJECT SUBJECT TO THE TERMS AND CONDITIONS OF THE PROJECT AGREEMENT.

MATTHEW KROGER
 EMAIL: MATTHEW@DESIGNDAYMECH.COM
 PHONE: (207) 478-5481
 ADDRESS: 75 WINE ST. SOUTH BERRICK, ME 03908

PROJECT
 ST. JOHN'S CHURCH

101 CHAPEL ST.
 PORTSMOUTH, NH

WM MICHAEL CAMPBELL AIA
 ARCHITECT & PLANNER
 CITY, STATE

ROOF PART
 PLAN

DESIGNED BY: MBK
 DRAWN BY: RH
 CHECKED BY: AWA
 DDM JOB #: 20064
 SCALE: AS NOTED

DATE: 05/13/2020

PROGRESS DRAWING
 NOT FOR CONSTRUCTION

M1.02

FAN SCHEDULE (FAN)												
MARK	SERVES	MAKE	MODEL	CFM	ESP (IN. WC)	RPM	BHP	MHP	WATTS	VOLT/PH	SONES	NOTES
FAN-1	KH-1	CAPTIVEAIRE	DU85HFA	1350	1.25	1337	0.432	3/4		115/1	15.2	1,2,3
NOTES:												
1. SEE CAPTIVEAIRE DRAWINGS FOR ADDITIONAL INFORMATION												
2. PROVIDE DISCONNECT												
3. PROVIDE 24" CURB												

KITCHEN HOOD SCHEDULE (KH)								
MARK	MAKE	MODEL	LENGTH	EXHAUST		SUPPLY		NOTES
				CFM	SP (IN W.C.)	CFM	SP (IN W.C.)	
KH-1	CAPTIVEAIRE	5424 ND-2-PSP-F	6'	1350	0.85	1215	0.33	1,2
NOTES:								
1. SEE CAPTIVEAIRE DRAWINGS FOR ADDITIONAL INFORMATION								
2. EQUIPMENT UNDER HOOD ASSUMED TO BE GARLAND GS60-6G24CC1 (60" GAS RANGE WITH 6 BURNERS, 24" GRIDDLE AND 2 CONVECTION OVENS)								

MAKEUP AIR UNIT SCHEDULE (MAU)																		
MARK	SERVES	MAKE	MODEL	SUPPLY (CFM)	ESP (IN. WC)	HEATING						BHP	MHP	VOLT/PH	RPM	SONES	FILTER	NOTES
						INPUT (MBH)	OUTPUT (MBH)	EFFICIENCY	FUEL	EAT	LAT							
MAU-1	KH-1	CAPTIVEAIRE	D76	1,215	0.50	104.1	95.8	92%	NG	-16.3	55.4	0.93	1-1/2	115/1	1895	25.0	EZ	1
NOTES:																		
1. SEE CAPTIVEAIRE DRAWINGS FOR ADDITIONAL INFORMATION																		

LEGEND OF PIPING SYMBOLS

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	PIPE ELBOW UP		BALL VALVE
	PIPE ELBOW DOWN		BUTTERFLY VALVE
	PIPE TEE UP		GATE VALVE
	PIPE TEE DOWN		OS&Y GATE VALVE
	PIPE CROSS OVER		CHECK VALVE
	UNION		BACK FLOW PREVENTER
	FLEXIBLE PIPE CONNECTOR		TRIPLE-DUTY VALVE
	END CAP		TRIPLE-DUTY VALVE WITH MEASUREMENT PORTS
	PET'S PLUG		2-WAY MOTORIZED VALVE
	HOSE THREAD DRAIN VALVE WITH CAP AND DRAIN		3-WAY MOTORIZED VALVE
	CIRCUIT SETTER		TEMPERING VALVE
	STRAINER		PRESSURE REDUCING VALVE
	STRAINER WITH BLOWDOWN		TEMPERATURE & PRESSURE RELIEF VALVE
	CIRCULATOR PUMP		DIFFERENTIAL PRESSURE BYPASS VALVE
	MANUAL AIR VENT		SOLENOID VALVE
	AUTOMATIC AIR VENT		GAS COCK
	AIR SCOOP		DIRECTION OF FLOW
	AIR SCOOP WITH VENT		DIRECTION OF PITCH
	AIR SEPARATOR WITH VENT		CONNECT TO EXISTING
	FM TUBE IDENTIFICATION TAG		PIPE CONTINUES
	FM TUBE RADIATION WITH COVER		THERMOMETER
			PRESSURE GAUGE WITH SHUT-OFF & PROBE
			VACUUM BREAKER
			ELECTRIC HEAT TRACING

LEGEND OF DUCT SYMBOLS

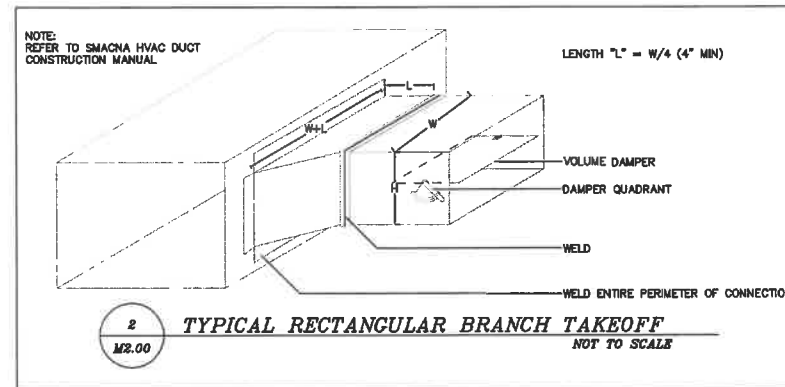
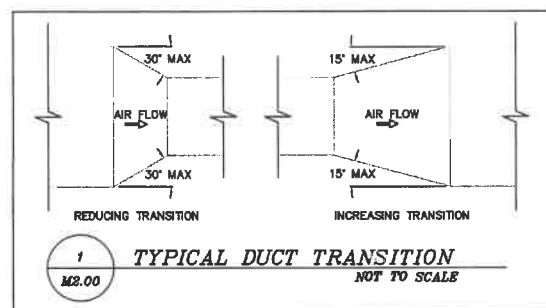
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	MANUAL BALANCING DAMPER		RECTANGULAR RETURN OR EXHAUST DUCT UP
	FIRE DAMPER		ROUND RETURN OR EXHAUST DUCT UP
	SMOKE DAMPER		RECTANGULAR RETURN OR EXHAUST DUCT DOWN
	SMOKE & FIRE DAMPER		ROUND RETURN OR EXHAUST DUCT DOWN
	CABLE OPERATED DAMPER		RECTANGULAR SUPPLY DUCT UP
	BACK DRAFT DAMPER		ROUND SUPPLY DUCT UP
	MOTORIZED DAMPER		RECTANGULAR SUPPLY DUCT DOWN
	SUPPLY AIRFLOW		ROUND SUPPLY DUCT DOWN
	RETURN / EXHAUST AIRFLOW		REGISTER, GRILLE AND DIFFUSER IDENTIFICATION TAG
	CONNECT TO EXISTING		

LEGEND OF CONTROL SYMBOLS

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	THERMOSTAT		HUMIDISTAT
	TEMPERATURE SENSOR		PRESSURE SENSOR
	CARBON MONOXIDE SENSOR		SMOKE DETECTOR
	CARBON DIOXIDE SENSOR		INDICATOR LAMP

MECHANICAL ABBREVIATIONS

AFP ABOVE FINISHED FLOOR	EAT ENTERING AIR TEMPERATURE	HRV HEAT RECOVERY VENTILATOR	MPT MALE PIPE THREAD
AMP AMPACITY	EC ELECTRICAL CONTRACTOR	HW HOT WATER	NA NOT APPLICABLE
APD AIR PRESSURE DROP	EER ENERGY EFFICIENCY RATIO	HWUH HOT WATER UNIT HEATER	NC NORMALLY CLOSED
ATC AUTOMATIC TEMP. CONTROL	EFT ENTERING FLUID TEMPERATURE	HWCUH HOT WATER CABINET HEATER	NO NORMALLY OPEN
BTU/H BRITISH THERMAL UNITS/HOUR	ERV ENERGY RECOVERY VENTILATOR	HWR HOT WATER RETURN	OA OUTSIDE AIR
CAP CAPACITY	ESP EXTERNAL STATIC PRESSURE	HWS HOT WATER SUPPLY	OD OUTSIDE DIAMETER
CH CHILLED	ET EXPANSION TANK	HX HEAT EXCHANGER	PD PRESSURE DROP
CHW CHILLED WATER	EWT ENTERING WATER TEMPERATURE	ID INSIDE DIAMETER	PG PROPYLENE GLYCOL
C/HWR CHILLED & HOT WATER RETURN	F FAHRENHEIT	IN INCHES	PSI POUNDS PER SQUARE INCH
C/HWS CHILLED & HOT WATER SUPPLY	FA FRESH AIR	KW KILOWATTS	PH/6 PHASE
CHWR CHILLED WATER RETURN	FPD FLUID PRESSURE DROP	LAT LEAVING AIR TEMPERATURE	R RETURN
CHWS CHILLED WATER SUPPLY	FPM FEET PER MINUTE	LB/6 POUNDS	RA RETURN AIR
COND CONDENSATE	FPT FEMALE PIPE THREAD	LFT LEAVING FLUID TEMPERATURE	RTU ROOFTOP UNIT
CONN CONNECT OR CONNECTION	FT HD FEET HEAD	LPS LOW PRESSURE STEAM	SF SQUARE FEET
CONV CONNECTOR	FTR FIN TUBE RADIATION	LWT LEAVING WATER TEMPERATURE	SQ IN SQUARE INCHES
CP CIRCULATOR PUMP	FW FRESH WATER	M MINUTES	S SUPPLY
CW COLD WATER	GC GENERAL CONTRACTOR	MAX MAXIMUM	SA SUPPLY AIR
CWR CONDENSER WATER RETURN	GWWS GLYCOL & WATER SUPPLY	MBH THOUSANDS OF BTU/H	TEMP TEMPERATURE
CWS CONDENSER WATER SUPPLY	GWNR GLYCOL & WATER RETURN	MC MECHANICAL CONTRACTOR	V VOLTS
DB DRY BULB	GPM GALLONS PER MINUTE	MCA MINIMUM CIRCUIT AMPACITY	W WATTS
DN DOWN	HP HORSEPOWER	MIN MINUTE OR MINIMUM	WPD WATER PRESSURE DROP
DX DIRECT EXPANSION	HPS HIGH PRESSURE STEAM	MOOP MAX OVERCURRENT PROTECTION	WB WET BULB
EA EXHAUST AIR	HRS HOUR	MPS MEDIUM PRESSURE STEAM	WC WATER COLUMN



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PROJECT:
ST. JOHN'S CHURCH

101 CHAPEL ST.
 PORTSMOUTH, NH

WM MICHAEL CAMPBELL AIA
 ARCHITECT & PLANNER
 CITY, STATE

HVAC SCHEDULES,
 LEGEND,
 ABBREVIATIONS
 & DETAILS

DESIGNED BY: MBK
 DRAWN BY: RH
 CHECKED BY: AWA
 20064
 AS NOTED

05/13/2020

M2.00

DIVISION 23 - HVAC SPECIFICATIONS

I) GENERAL

A) WORK INCLUDED:

- 1) THESE SPECIFICATIONS INCLUDE GENERAL REQUIREMENTS FOR ALL WORK REPRESENTED ON THESE DRAWINGS. NOT ALL SYSTEMS OR SYSTEM COMPONENTS DESCRIBED IN THESE SPECIFICATIONS ARE NECESSARILY INCLUDED AS A PART OF THIS PROJECT.
- 2) THE HEATING, VENTILATING, AND AIR CONDITIONING (HVAC) CONTRACTOR SHALL HEREAFTER BE DESCRIBED AS "THE CONTRACTOR" IN THIS HVAC SPECIFICATION. THE CONTRACTOR SHALL PROVIDE, INSTALL, PIPE, DUCT, AND WIRE, AS REQUIRED, HVAC SYSTEMS AS DESCRIBED BELOW, AND SHOWN OR DESCRIBED ON THESE PLANS AND SPECIFICATIONS.

B) QUALITY ASSURANCE:

- 1) THE INTERNATIONAL MECHANICAL CODE (IMC) 2015, AND THE INTERNATIONAL ENERGY CONSERVATION CODE (IECC) 2015 ARE THE GOVERNING CODES FOR ALL HVAC WORK. THE CODES AND STANDARDS REFERENCED IN THE MECHANICAL CODE SHALL BE CONSIDERED A PART OF THE REQUIREMENTS OF CODE TO THE PRESCRIBED EXTENT OF EACH SUCH REFERENCE. WHERE DIFFERENCES OCCUR BETWEEN PROVISIONS OF THE CODE AND THE REFERENCED STANDARDS, THE PROVISIONS OF THE CODE SHALL APPLY. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO BE FAMILIAR WITH THE REQUIREMENTS OF ALL CODES AS THEY HAVE BEEN ADOPTED BY THE STATE AND LOCAL JURISDICTIONS.
- 2) EXCEPT AS SPECIFICALLY DESCRIBED OTHERWISE IN THESE SPECIFICATIONS, ALL COMPONENTS ALLOWED WITHIN THE ABOVE REFERENCED CODES SHALL BE ALLOWED AS A PART OF THE WORK.
- 3) THE WORKMANSHIP AND MATERIALS COVERED BY THESE SPECIFICATIONS SHALL CONFORM TO ALL ORDINANCES AND REGULATIONS OF ALL AUTHORITIES HAVING JURISDICTION, INCLUDING BUT NOT LIMITED TO, ALL APPLICABLE REGULATIONS OF THE CITY, COUNTY, AND STATE.
- 4) THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING AND PAYING FOR HVAC PERMITS, TAXES, CONNECTION AND INSPECTION FEES AS REQUIRED FOR THE COMPLETE INSTALLATION OF THE HVAC SYSTEM. THE CONTRACTOR SHALL PROVIDE TO THE OWNER ALL CERTIFICATES OF INSPECTION ISSUED BY THE JURISDICTION.
- 5) THE CONTRACTOR SHALL VISIT THE SITE AND EXAMINE ALL CONDITIONS AFFECTING THE PROPER EXECUTION OF THE CONTRACT, VERIFY ALL EXISTING CONDITIONS IN THE FIELD AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES BEFORE PROCEEDING WITH WORK.
- 6) DURING THE PROGRESS OF THE WORK, THE CONTRACTOR SHALL MAINTAIN AN ACCURATE RECORD OF ALL CHANGES MADE IN THE HVAC INSTALLATION FROM THE LAYOUT AND MATERIALS CONTAINED IN THE APPROVED DRAWINGS AND SPECIFICATIONS.
- 7) DRAWINGS AND CATALOG CUTS, SHOWING ALL HVAC EQUIPMENT AND SYSTEM COMPONENTS, SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL. FIELD MEASURE AND COORDINATE WITH ARCHITECTURAL AND STRUCTURAL DRAWINGS AND ALL OTHER TRADES THE PROPOSED LOCATIONS FOR NEW EQUIPMENT AND COMPONENTS BEFORE PRODUCING SUBMITTALS. NO ITEMS SHALL BE PURCHASED OR ORDERED BEFORE APPROVAL IS GIVEN BY THE ENGINEER IN WRITING.
- 8) THE CONTRACTOR SHALL COORDINATE HIS WORK WITH ALL OTHER TRADES.

C) RELATED DOCUMENTS:

- 1) THE GENERAL PROVISIONS OF THE CONTRACT, INCLUDING GENERAL AND SUPPLEMENTAL GENERAL CONDITIONS OF THE CONTRACT AND DIVISION 1 SPECIFICATION SECTIONS PROVIDED BY THE ARCHITECT, AND ALL OTHER DRAWINGS AND SPECIFICATIONS PROVIDED AS A PART OF THIS PROJECT, APPLY TO THIS DIVISION 23 AND TO ALL CONTRACTORS, SUBCONTRACTORS, OR OTHER PERSONS SUPPLYING MATERIALS AND/OR LABOR, ENTERING INTO THE PROJECT SITE AND/OR PREMISES, DIRECTLY OR INDIRECTLY.
- 2) THE SPECIFICATIONS AND DRAWINGS ARE INTENDED TO BE COMPLEMENTARY. A PARTICULAR SECTION, PARAGRAPH OR HEADING IN A DIVISION MAY NOT DESCRIBE EACH AND EVERY DETAIL CONCERNING WORK TO BE DONE AND MATERIALS TO BE FURNISHED. THE DRAWINGS ARE DIAGRAMMATIC AND MAY NOT SHOW ALL OF THE WORK REQUIRED OR ALL CONSTRUCTION DETAILS. DIMENSIONS ARE SHOWN FOR CRITICAL AREAS ONLY AS AN AID TO THE CONTRACTOR; ALL DIMENSIONS AND ACTUAL PLACEMENTS ARE TO BE VERIFIED IN THE FIELD. IT IS TO BE UNDERSTOOD THAT THE BEST TRADE PRACTICES OF THE DIVISION WILL PREVAIL.
- 3) ALL TRADE SUBCONTRACTORS ARE TO NOTE THAT THE ORGANIZATION OF SPECIFICATIONS INTO DIVISIONS, AND LIKEWISE THE ARRANGEMENT OF THE DRAWINGS, IS SET UP FOR THE CONVENIENCE OF UNDERSTANDING THE SCOPE OF THE WORK ONLY. THIS STRUCTURING SHALL NOT CONTROL THE GENERAL CONTRACTOR IN DIVIDING THE WORK AMONG TRADE SUBCONTRACTORS OR IN ESTABLISHING THE EXTENT OF THE WORK TO BE PERFORMED BY ANY TRADE. REFER TO GENERAL CONDITIONS.

II) PRODUCTS

A) GENERAL MECHANICAL MATERIALS:

- 1) ESCUTCHEONS: AT ALL FINISHED WALL PENETRATIONS, PROVIDE CHROME-PLATED SPLIT-RING ESCUTCHEON. INSIDE DIAMETER SHALL CLOSELY FIT PIPE OUTSIDE DIAMETER OR OUTSIDE OF PIPE INSULATION WHERE PIPE IS INSULATED. OUTSIDE DIAMETER SHALL COMPLETELY COVER THE OPENING IN FLOORS, WALLS, OR CEILINGS.
- 2) UNIONS: MALLEABLE-IRON, CLASS 150 FOR LOW PRESSURE SERVICE AND CLASS 250 FOR HIGH PRESSURE SERVICE; HEXAGONAL STOCK, WITH BALL-AND-SOCKET JOINTS, METAL-TO-METAL BRONZE SEATING SURFACES; FEMALE THREADED ENDS.
- 3) SLEEVES: GALVANIZED STEEL/METAL OR SCHEDULE 40 STEEL PIPE AS APPROPRIATE FOR THE WALL CONSTRUCTION.
- 4) SLEEVE SEALS: MODULAR TYPE, CONSISTING OF INTERLOCKING SYNTHETIC RUBBER LINKS SHAPED TO CONTINUOUSLY FILL ANNULAR SPACE BETWEEN PIPE AND SLEEVE. CONNECTED WITH BOLTS AND PRESSURE PLATES WHICH CAUSE RUBBER SEALING ELEMENTS TO EXPAND WHEN TIGHTENED, PROVIDING WATERTIGHT SEAL AND ELECTRICAL INSULATION.
- 5) DRIP PANS: WHERE REQUIRED, PROVIDE DRIP PANS FABRICATED FROM CORROSION-RESISTANT SHEET METAL WITH WATERTIGHT JOINTS, AND WITH EDGES TURNED UP A MINIMUM OF 2-1/2". REINFORCE TOP, EITHER BY STRUCTURAL ANGLES OR BY ROLLING TOP OVER 1/4" STEEL ROD. PROVIDE HOLE, GASKET, AND FLANGE AT LOW POINT FOR WATERTIGHT JOINT AND 1" DRAIN LINE CONNECTION.
- 6) FIRESTOPPING/FIRE-RESISTANT SEALANT: WHERE REQUIRED, PROVIDE A FIRESTOP SYSTEM APPROPRIATE FOR THE ASSEMBLY PENETRATED AND THE PENETRATING ELEMENT. USE ONLY FIRESTOP PRODUCTS THAT HAVE BEEN UL 1479 OR ASTM E 814 TESTED FOR SPECIFIC FIRE-RATED CONDITIONS CONFORMING TO CONSTRUCTION ASSEMBLY TYPE, PENETRATING ITEM TYPE, ANNULAR

SPACE REQUIREMENT AND FIRE-RATING INVOLVED FOR EACH SEPARATE INSTANCE. SUBMIT MANUFACTURER'S SPECIFIC DETAIL FOR EACH TYPE OF PENETRATION.

- 7) SUPPORTS AND ANCHORS: HANGERS FOR PIPE UP TO AND INCLUDING 4" SHALL BE SWIVEL RING, SPLIT RING, WROUGHT PIPE CLAMP, BAND, ADJUSTABLE WROUGHT CLEVIS TYPE OR TRAPEZE. HANGERS FOR PIPES ABOVE 4" SHALL BE STANDARD CLEVIS, ROLLER OR TRAPEZE.

B) ELECTRICAL REQUIREMENTS OF MECHANICAL WORK:

- 1) BASIC ELECTRICAL COMPONENTS INCLUDE, BUT ARE NOT LIMITED TO ALL REQUIRED STARTERS, DISCONNECT SWITCHES, CONTROL DEVICES, AND MOTORS. IT INCLUDES MOTORS THAT ARE FACTORY-INSTALLED AS PART OF EQUIPMENT AND APPLIANCES AS WELL AS FIELD-INSTALLED MOTORS.
- 2) STARTERS AND DISCONNECTS: WHERE AVAILABLE, PROVIDE FACTORY MOUNTED DISCONNECTS AND STARTERS. OR, WHEN FACTORY MOUNTED STARTERS AND DISCONNECTS ARE NOT AVAILABLE PROVIDE COMBINATION STARTERS AND DISCONNECT SWITCHES, OR, WHERE COMBINATION STARTERS AND DISCONNECT SWITCHES ARE NOT SUITABLE OR AVAILABLE, PROVIDE SEPARATE STARTERS AND DISCONNECTS FOR ALL HVAC EQUIPMENT, AS REQUIRED FOR PROPER INSTALLATION AND OPERATION OF EQUIPMENT.

C) MECHANICAL IDENTIFICATION:

- 1) PROVIDE PIPE MARKERS AND EQUIPMENT MARKERS COMPLYING WITH ANSI A13.1 FOR LETTERING SIZE, LENGTH OF COLOR FIELD, COLORS, AND INSTALLED VIEWING ANGLES OF IDENTIFICATION DEVICES.
- 2) PIPE MARKERS
 - (a) SNAP-ON TYPE: PROVIDE MANUFACTURER'S STANDARD PRE-PRINTED, SEMI-RIGID, SNAP-ON, COLOR-CODED, PIPE MARKERS.
 - (b) PRESSURE-SENSITIVE TYPE: PROVIDE MANUFACTURER'S STANDARD PRE-PRINTED, PERMANENT ADHESIVE, COLOR-CODED, PRESSURE-SENSITIVE VINYL PIPE MARKERS.
 - (c) INSTALL EVERY 40 FEET AND AT EACH CHANGE IN DIRECTION.
- 3) PLASTIC EQUIPMENT MARKERS: PROVIDE MANUFACTURER'S STANDARD LAMINATED PLASTIC, COLOR CODED EQUIPMENT MARKERS.
- 4) LETTERING AND GRAPHICS: COORDINATE NAMES, ABBREVIATIONS AND OTHER DESIGNATIONS USED IN MECHANICAL IDENTIFICATION WORK, WITH CORRESPONDING DESIGNATIONS SHOWN, SPECIFIED OR SCHEDULED. PROVIDE NUMBERS, LETTERING AND WORDING AS INDICATED OR, IF NOT OTHERWISE INDICATED, AS RECOMMENDED BY MANUFACTURERS OR AS REQUIRED FOR PROPER IDENTIFICATION AND OPERATION/MAINTENANCE OF MECHANICAL SYSTEMS AND EQUIPMENT.

D) DUCTWORK:

- 1) UNLESS OTHERWISE SPECIFIED, ALL RIGID DUCTWORK SHALL BE SHEET METAL MATERIALS AS SPECIFIED IN ASTM A700, WITH GALVANIZED SHEET STEEL LOCK-FORMING QUALITY, ASTM A527, COATING DESIGNATION G60; MILL PHOSPHATIZED FINISH.
 - (a) ALL DUCTWORK WHICH WILL BE PAINTED SHALL BE GALVANEALD.
- 2) PRESSURE CLASS AND SEAL CLASS (PER SMACNA):
 - (a) 2" PRESSURE CLASS, SEAL CLASS A (ALL TRANSVERSE JOINTS, LONGITUDINAL SEAMS AND DUCT WALL PENETRATIONS).
- 3) RECTANGULAR DUCT FABRICATION: FABRICATE RECTANGULAR DUCTS WITH GALVANIZED SHEET STEEL, IN ACCORDANCE WITH SMACNA "HVAC DUCT CONSTRUCTION STANDARDS", TABLES 1-3 THROUGH 1-19, INCLUDING THEIR ASSOCIATED DETAILS. CONFORM TO THE REQUIREMENTS IN THE REFERENCED STANDARD FOR METAL THICKNESS, REINFORCING TYPES AND INTERVALS, TIE ROD APPLICATIONS, AND JOINT TYPES AND INTERVALS.
- 4) WATER BASED LIQUID RUBBER DUCT SEALANT OR FLANGED JOINT MASTICS SHALL BE ONE-PART, ACID-CURING, SILICONE ELASTOMERIC JOINT SEALANTS, COMPLYING WITH ASTM C920, TYPE S, GRADE NS, CLASS 25, USE 0.
- 5) FLEXIBLE DUCT CONNECTORS SHALL BE INSTALLED AT POINTS AS CLOSE AS POSSIBLE TO AIR HANDLERS AND FANS. THE CONNECTOR SHALL BE AT LEAST FOUR (4") INCHES WIDE AND FABRICATED SPECIFICALLY FOR USE AS A FLEXIBLE CONNECTOR. ALL CONNECTIONS SHALL BE AIR TIGHT AND MADE SO THE CONNECTOR IS UNDAMAGED WHEN THE JOINT IS REMOVED.
- 6) BELLMOUTH OR 45 DEGREE TAKEOFFS SHALL BE USED FOR DUCT TAKEOFFS TO MINIMIZE PRESSURE DROP.
- 7) MANUAL VOLUME DAMPERS SHALL BE INSTALLED AT ALL DUCT TAKEOFFS AND AS NEEDED ELSEWHERE TO PROPERLY BALANCE THE SYSTEMS.
- 8) FIRE, SMOKE, COMBINATION FIRE/SMOKE DAMPERS AND CEILING RADIATION DAMPERS
 - (a) FIRE DAMPERS: UL 555 LISTED TYPE "B" (OUT OF AIRSTREAM) 1-1/2 HOUR RATED FOR LESS THAN 3-HOUR FIRE-RESISTANCE RATED ASSEMBLIES AND 3 HOUR RATED FOR 3-HOUR OR GREATER FIRE-RESISTANCE RATED ASSEMBLIES
 - (1) DYNAMIC FIRE DAMPERS SHALL BE USED IN SYSTEMS DESIGNED TO OPERATE WITH FANS ON DURING A FIRE.
 - (2) STATIC FIRE DAMPERS MAY BE USED IN SYSTEMS NOT OPERATIONAL DURING A FIRE.
 - (b) SMOKE DAMPERS: UL 555S LISTED.
 - (c) COMBINATION FIRE/SMOKE DAMPERS: UL 555 AND UL 555S LISTED
 - (d) CEILING RADIATION DAMPERS: UL 555C LISTED.
 - (e) REFER TO BOTH MECHANICAL AND ARCHITECTURAL DRAWINGS FOR THE LOCATION OF RATED ASSEMBLIES.
- 9) COMMERCIAL KITCHEN GREASE DUCTS
 - (a) GREASE DUCTS SERVING TYPE I HOODS SHALL BE CONSTRUCTED OF CARBON STEEL SHEETS: ASTM A366, COLD ROLLED, NOT LESS THAN 0.055 INCH (1.4 MM) (NO. 16 GAUGE) IN THICKNESS OR STAINLESS STEEL NOT LESS THAN 0.044 INCH (1.1 MM) (NO. 18 GAUGE) IN THICKNESS.
 - (b) JOINTS, SEAMS AND PENETRATIONS OF GREASE DUCTS SHALL BE MADE WITH A CONTINUOUS LIQUID-TIGHT WELD OR BRAZE MADE ON THE EXTERNAL SURFACE OF THE DUCT SYSTEM.
 - (c) DUCT-TO-HOOD JOINTS SHALL BE MADE WITH CONTINUOUS INTERNAL OR EXTERNAL LIQUID-TIGHT WELDED OR BRAZED JOINTS. SUCH JOINTS SHALL BE SMOOTH, ACCESSIBLE FOR INSPECTION, AND WITHOUT GREASE TRAPS.
 - (d) DUCT-TO-EXHAUST FAN CONNECTIONS SHALL BE FLANGED AND GASKETED AT THE BASE OF THE

FAN FOR LISTED AND LABELED VERTICAL DISCHARGE FANS; SHALL BE FLANGED, GASKETED, AND BOLTED TO THE INLET OF THE FAN FOR SIDE-INLET UTILITY FANS; AND SHALL BE FLANGED, GASKETED, AND BOLTED TO THE INLET AND OUTLET OF THE FAN FOR IN-LINE FANS.

- (e) GREASE DUCT BRACING AND SUPPORTS SHALL BE OF NONCOMBUSTIBLE MATERIAL SECURELY ATTACHED TO THE STRUCTURE AND DESIGNED TO CARRY GRAVITY AND SEISMIC LOADS WITHIN THE STRESS LIMITATIONS OF THE INTERNATIONAL BUILDING CODE.

- (f) BOLTS, SCREWS, RIVETS AND OTHER MECHANICAL FASTENERS SHALL NOT PENETRATE DUCT WALLS.

- (g) GREASE DUCT SYSTEMS SERVING A TYPE I HOOD SHALL HAVE A CLEARANCE TO COMBUSTIBLE CONSTRUCTION OF NOT LESS THAN 18 INCHES (457 MM).

- (h) PREVENTION OF GREASE ACCUMULATION: DUCT SYSTEMS SERVING A TYPE I HOOD SHALL BE CONSTRUCTED AND INSTALLED SO THAT GREASE CANNOT COLLECT IN ANY PORTION THEREOF, AND THE SYSTEM SHALL SLOPE NOT LESS THAN ONE-FOURTH UNIT VERTICAL IN 12 UNITS HORIZONTAL (2-PERCENT SLOPE) TOWARD THE HOOD OR TOWARD AN APPROVED GREASE RESERVOIR. WHERE HORIZONTAL DUCTS EXCEED 75 FEET (22 860 MM) IN LENGTH, THE SLOPE SHALL BE NOT LESS THAN ONE UNIT VERTICAL IN 12 UNITS HORIZONTAL (8.3-PERCENT SLOPE). EXHAUST FANS SHALL BE POSITIONED SO THAT THE DISCHARGE WILL NOT IMPINGE ON THE ROOF. OTHER EQUIPMENT OR APPLIANCES OR PARTS OF THE STRUCTURE. A VERTICAL DISCHARGE FAN SHALL BE MANUFACTURED WITH AN APPROVED DRAIN OUTLET AT THE BOTTOM OF THE HOUSING TO PERMIT DRAINAGE OF GREASE TO AN APPROVED GREASE RESERVOIR.

- (i) CLEANOUTS AND OTHER OPENINGS. GREASE DUCT SYSTEMS SHALL NOT HAVE OPENINGS THEREIN OTHER THAN THOSE REQUIRED FOR PROPER OPERATION AND MAINTENANCE OF THE SYSTEM. ANY PORTION OF SUCH SYSTEM HAVING SECTIONS NOT PROVIDED WITH ACCESS FROM THE DUCT ENTRY OR DISCHARGE SHALL BE PROVIDED WITH CLEANOUT OPENINGS. CLEANOUT OPENINGS SHALL BE EQUIPPED WITH TIGHT-FITTING DOORS CONSTRUCTED OF STEEL HAVING A THICKNESS NOT LESS THAN THAT REQUIRED FOR THE DUCT. DOORS SHALL BE EQUIPPED WITH A SUBSTANTIAL METHOD OF LATCHING, SUFFICIENT TO HOLD THE DOOR TIGHTLY CLOSED. DOORS SHALL BE DESIGNED SO THAT THEY ARE OPERABLE WITHOUT THE USE OF A TOOL. DOOR ASSEMBLIES, INCLUDING ANY FRAMES AND GASKETING, SHALL BE APPROVED FOR THE PURPOSE, AND SHALL NOT HAVE FASTENERS THAT PENETRATE THE DUCT. LISTED AND LABELED ACCESS DOOR ASSEMBLIES SHALL BE INSTALLED IN ACCORDANCE WITH THE TERMS OF THE LISTING.

- (j) HORIZONTAL CLEANOUTS. CLEANOUTS LOCATED ON HORIZONTAL SECTIONS OF DUCTS SHALL BE SPACED NOT MORE THAN 20 FEET (6096 MM) APART. THE CLEANOUTS SHALL BE LOCATED ON THE SIDE OF THE DUCT WITH THE OPENING NOT LESS THAN 1.5 INCHES (38 MM) ABOVE THE BOTTOM OF THE DUCT, AND NOT LESS THAN 1 INCH (25 MM) BELOW THE TOP OF THE DUCT. THE OPENING MINIMUM DIMENSIONS SHALL BE 12 INCHES (305 MM) ON EACH SIDE. WHERE THE DIMENSIONS OF THE SIDE OF THE DUCT PROHIBIT THE CLEANOUT INSTALLATION PRESCRIBED HEREIN, THE OPENINGS SHALL BE ON THE TOP OF THE DUCT OR THE BOTTOM OF THE DUCT. WHERE LOCATED ON THE TOP OF THE DUCT, THE OPENING EDGES SHALL BE A MINIMUM OF 1 INCH (25 MM) FROM THE EDGES OF THE DUCT. WHERE LOCATED IN THE BOTTOM OF THE DUCT, CLEANOUT OPENINGS SHALL BE DESIGNED TO PROVIDE INTERNAL DAMMING AROUND THE OPENING. SHALL BE PROVIDED WITH GASKETING TO PRECLUDE GREASE LEAKAGE, SHALL PROVIDE FOR DRAINAGE OF GREASE DOWN THE DUCT AROUND THE DAM, AND SHALL BE APPROVED FOR THE APPLICATION. WHERE THE DIMENSIONS OF THE SIDES, TOP OR BOTTOM OF THE DUCT PRECLUDE THE INSTALLATION OF THE PRESCRIBED MINIMUM-SIZE CLEANOUT OPENING, THE CLEANOUT SHALL BE LOCATED ON THE DUCT FACE THAT AFFORDS THE LARGEST OPENING DIMENSION AND SHALL BE INSTALLED WITH THE OPENING EDGES AT THE PRESCRIBED DISTANCES FROM THE DUCT EDGES AS PREVIOUSLY SET FORTH IN THIS SECTION.

- (k) IF REDUCED CLEARANCE TO COMBUSTIBLES IS NEEDED, WRAP GREASE DUCT WITH A FIELD APPLIED GREASE DUCT ENCLOSURE SYSTEM SIMILAR TO FIREMASTER FASTWRAP XL.

E) INSULATION:

- 1) ALL INSULATION SHALL BE UL APPROVED FOR A FLAME SPREAD RATING OF NOT OVER 25 AND A SMOKE DEVELOPED RATING OF NOT OVER 50.
- 2) ALL INSULATION SHALL CONFORM TO THE REQUIREMENTS OF THE ENERGY CODE.

3) DUCTWORK:

- (a) ROOF MOUNTED SUPPLY, RETURN AND EXHAUST AIR DUCTS SHALL BE INSULATED WITH AN **INSTALLED** MINIMUM R-12 INSULATION, SIMILAR TO 2.5" THICK HUNTER H-SHIELD POLYISO OR JOHNS MANVILLE 814, 3" THICK, 3.0 PCF FIBERGLASS INSULATION BOARD WITH FSK JACKET.

- (1) SLOPE TOP TO SHED WATER.
- (2) COVER WITH VENTURECLAD 1577CW-E EMBOSSED ALUMINUM INSULATION JACKETING TAPE OR SIMILAR.

D) EXECUTION

- A) THE CONTRACTOR SHALL PROVIDE ALL SUPERVISION, LABOR, EQUIPMENT, MATERIAL, MACHINERY, PLANS, RIGGING, AND ANY AND ALL OTHER ITEMS NECESSARY TO COMPLETE THE MECHANICAL SYSTEM. SMALL DETAILS NOT USUALLY INDICATED ON THE DRAWINGS OR SPECIFIED, BUT WHICH ARE NECESSARY FOR THE PROPER INSTALLATION AND OPERATION OF THE MECHANICAL SYSTEM SHALL BE INCLUDED IN THE WORK AND IN THE CONTRACTOR'S ESTIMATE THE SAME AS IF HEREIN SPECIFIED OR SHOWN ON THE DRAWINGS.

- B) THE CONTRACTOR SHALL INSTALL EQUIPMENT IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. THIS INCLUDES CHECKING THE MANUFACTURER'S INSTRUCTIONS TO DETERMINE WHAT TYPE OF GLYCOL SYSTEM MAY BE USED WITH EQUIPMENT SO AS NOT TO VOID THE WARRANTY OR IMPAIR THE OPERATION OF THE EQUIPMENT. WHERE THE DRAWINGS AND SPECIFICATIONS CONFLICT WITH THE MANUFACTURER'S RECOMMENDATIONS, IT WILL BE THE CONTRACTOR'S RESPONSIBILITY TO BRING THIS TO THE ATTENTION OF THE ENGINEER.

- C) THE HVAC EQUIPMENT MAY NOT BE USED FOR TEMPORARY HEAT DURING CONSTRUCTION. THE HVAC EQUIPMENT SHALL NOT BE STARTED AND TESTED UNTIL ALL CONSTRUCTION ACTIVITY THAT HAS THE POTENTIAL OF CREATING AIR BORNE PARTICULATES THAT COULD BE DRAWN INTO THE HVAC EQUIPMENT AND DUCTWORK SYSTEMS HAS BEEN COMPLETED. IN ADDITION, ALL DUCTWORK OPENINGS SHALL BE SEALED UNTIL THE TIME WHEN THE HVAC EQUIPMENT IS TO BE STARTED AND TESTED.
- D) DUCTWORK AND FITTINGS SHALL HAVE ENDS COVERED WITH PLASTIC AT ALL TIMES.

- E) UPON COMPLETION OF WORK, THE CONTRACTOR SHALL CLEAN, OIL AND GREASE (UNLESS FACTORY LUBRICATED) ALL FANS, PUMPS, MOTORS, ALL OTHER RUNNING EQUIPMENT AND APPARATUS AND MAKE CERTAIN THAT ALL SUCH APPARATUS AND MECHANISMS ARE IN PROPER WORKING ORDER AND MADE READY FOR TESTING.

- F) REPLACE ALL FILTERS USED DURING CONSTRUCTION.

- G) EQUIPMENT SHALL BE STARTED, TESTED, ADJUSTED AND PLACED IN SATISFACTORY OPERATING CONDITION

BY THE CONTRACTOR.

- H) THE CONTRACTOR SHALL INSTRUCT OWNER IN THE PROPER OPERATION OF EQUIPMENT, EXPLAIN THE PROPER OPERATING AND MAINTENANCE PROCEDURES AND SHALL FURNISH THE OWNER WITH ALL INSTRUCTION PAMPHLETS, BOOKS AND OTHER MATERIAL FURNISHED BY THE VARIOUS MANUFACTURERS

- I) ALL VIBRATING EQUIPMENT NOT MOUNTED ON THE GROUND FLOOR SHALL BE MOUNTED ON OR SUSPENDED FROM VIBRATION ISOLATORS.

- J) EQUIPMENT SHALL BE INSTALLED WITH CLEARANCE FOR PROPER MAINTENANCE. FILTERS, COILS, DRIVES, VALVES, AND CONTROLS SHALL BE ACCESSIBLE FOR SERVICING AND/OR REPLACEMENT.

- K) EQUIPMENT SHALL BE COVERED FOR ONE YEAR FROM THE REVIEWING ENGINEER'S DATE OF ACCEPTANCE AND/OR THE DURATION OF THE MANUFACTURER'S GUARANTEE OR WARRANTY, WHICH EVER IS LONGER. THE CONTRACTOR SHALL FURNISH THE OWNER WITH ALL MANUFACTURER'S GUARANTEES OR WARRANTIES.

- L) THE WATER AND AIR SYSTEMS SHALL BE BALANCED FROM -10% TO + 10% OF THE GPM AND CFM VALUES SHOWN ON THE APPROVED HVAC PLANS. BALANCING SHALL BE DONE IN ACCORDANCE WITH STANDARDS ESTABLISHED BY THE AABC OR NEBB USING REPORT SHEETS DEVELOPED BY THE AABC OR NEBB. SUBMIT REPORTS TO THE ENGINEER.

END OF DIVISION 23

DIVISION 25 - HVAC CONTROLS AND SEQUENCES OF OPERATION

I) GENERAL

- A) REFER TO SPECIFICATION DIVISION 23 - HVAC SPECIFICATIONS, ESPECIALLY GENERAL FOR WORK INCLUDED, QUALITY ASSURANCE AND RELATED DOCUMENTS.

- B) PROVIDE A COMPLETE ELECTRIC/ELECTRONIC CONTROL SYSTEM TO ACCOMPLISH ALL CONTROL SEQUENCES AS DESCRIBED BELOW.

- C) ALL LINE AND LOW VOLTAGE CONTROL WIRING, TRANSFORMERS, DISCONNECTS, ETC REQUIRED FOR THE CONTROL SYSTEMS THAT IS NOT SHOWN ON THE ELECTRICAL DRAWINGS SHALL BE PROVIDED BY THE CONTROLS CONTRACTOR (HENCEFORTH CALLED "THE CONTRACTOR").

- 1) LINE VOLTAGE POWER FROM CIRCUIT BREAKERS IN ELECTRICAL PANELS TO CONTROL TRANSFORMERS OR CONTROL DEVICES SHALL BE INSTALLED BY THE CONTRACTOR.
- 2) COMPLY WITH DIVISION 26 REQUIREMENTS.
- 3) CONNECT VARIABLE FREQUENCY DRIVES (VFD) AND DUCT & AREA SMOKE DETECTORS (FURNISHED BY OTHERS) INTO CONTROL CIRCUITS TO ACCOMPLISH THE SEQUENCES OF OPERATION.

II) PRODUCTS

- A) PROVIDE CONTROL PRODUCTS (IF NOT FACTORY PROVIDED BY HVAC EQUIPMENT MANUFACTURER) INCLUDING, BUT NOT LIMITED TO, CONTROL DAMPERS, THERMOSTATS, TIMECLOCKS, SENSORS, RELAYS, CONTROLLERS, AND OTHER COMPONENTS AS REQUIRED FOR A COMPLETE INSTALLATION.

- B) CONTROL DAMPERS SHALL BE LOW LEAKAGE DAMPERS WITH BLADE AND EDGE SEALS. CLASS 1 WITH LEAKAGE OF LESS THAN 4 CFM/SQFT AT 1.0" W.G. AND 8 CFM/SQFT AT 4.0" W.G.

- C) DAMPER AND VALVE ACTUATORS SHALL BE ELECTRIC, SIZED TO SMOOTHLY OPERATE DAMPER OR VALVE WITH ADEQUATE TORQUE FOR TIGHT SHUTOFF AGAINST MAXIMUM SYSTEM PRESSURE.

- 1) ACTUATION REQUIREMENTS SHALL BE PER THE SEQUENCES OF OPERATION.

III) EXECUTION

- A) INSTALL SYSTEMS AND MATERIALS IN ACCORDANCE WITH MANUFACTURER INSTRUCTIONS AND ROUGH-IN DRAWINGS AND DETAILS ON THE DRAWINGS. INSTALL ELECTRICAL COMPONENTS AND USE ELECTRICAL PRODUCTS COMPLYING WITH REQUIREMENTS OF APPLICABLE DIVISION 26 SECTIONS. COORDINATE THE INSTALLATION IN ACCORDANCE WITH FINAL SHOP DRAWINGS, FIELD MEASUREMENTS, MANUFACTURER'S DATA AND AS SPECIFIED HEREIN.

- B) MOUNT CONTROLLERS AT CONVENIENT LOCATIONS AND HEIGHTS, COORDINATE WITH ARCHITECT AND OTHER TRADES.

- C) PROVIDE REMOTE CONTROL OF MANUAL RESET CONTROLLERS AS REQUIRED FOR USER ACCESSIBILITY. COORDINATE WITH OWNER.

- D) THE TERM "CONTROL WIRING" IS DEFINED TO INCLUDE PROVIDING OF WIRE, CONDUIT AND MISCELLANEOUS MATERIALS AS REQUIRED FOR MOUNTING AND CONNECTING ELECTRIC CONTROL DEVICES.

- E) INSTALL COMPLETE CONTROL WIRING SYSTEM FOR CONTROL SYSTEMS. CONCEAL WIRING, EXCEPT IN MECHANICAL ROOMS AND AREAS WHERE OTHER CONDUIT AND PIPING ARE EXPOSED, PROVIDE MULTI-CONDUCTOR INSTRUMENT HARNESS (BUNDLE) IN PLACE OF SINGLE CONDUCTORS WHERE A NUMBER OF CONDUCTORS CAN BE RUN ALONG A COMMON PATH. FASTEN FLEXIBLE CONDUCTORS BRIDGING CABINETS AND DOORS NEATLY ALONG HINGE SIDE AND PROTECT AGAINST ABRASION. TIE AND SUPPORT CONDUCTORS NEATLY.

- F) INSTALL CIRCUITS OVER 25-VOLT WITH COLOR-CODED THWN/THHN WIRE IN EMT OR MC CABLE AS WHIPS TO EQUIPMENT CONNECTIONS. USE LIQUID-TITE CONDUIT IN EXTERIOR OR HAZARDOUS LOCATIONS.

- G) INSTALL CIRCUITS UNDER 25-VOLT WITH COLOR-CODED NO. 18 WIRE WITH INSULATION ON EACH CONDUCTOR AND PLASTIC SHEATH OVER ALL. PROVIDE PLENUM RATED CABLE IN PLENUM CEILINGS.

- H) INSTALL LOW VOLTAGE CIRCUITS WHICH ARE LOCATED IN CONCRETE SLABS OR IN MASONRY WALLS IN CONDUIT.

- I) WHERE CONTROL WIRING MUST BE SURFACE MOUNTED IN OCCUPIED ROOMS AND IT IS NOT POSSIBLE TO CONCEAL WIRING, RUN WIRING IN WIREMOLD RACEWAY (COLOR BY ARCHITECT).

- J) NUMBER-CODE OR COLOR-CODE CONDUCTORS APPROPRIATELY FOR IDENTIFICATION AND SERVICING OF THE CONTROL SYSTEM.

- K) DEMONSTRATE CONTROL SYSTEM TO AND TRAIN OWNER'S PERSONNEL IN OPERATION AND MAINTENANCE OF CONTROL SYSTEM.

IV) SEQUENCES OF OPERATION

- A) REFER TO CAPTIVE/ARE DRAWINGS FOR CONTROL, WIRING DIAGRAMS AND SEQUENCES.

END OF DIVISION 25



THE PROJECT MANAGER FOR THIS PROJECT IS NOTED BELOW. PLEASE REFER ALL QUESTIONS, SUBMITTALS AND CORRESPONDENCE TO THE PROJECT MANAGER.
PROJECT MANAGER
MATHIAS KRESS
EMAIL: MATHIAS.KRESS@DESIGNDAYMECH.COM
PHONE: (603) 475-3428
ADDRESS: 75 WINE ST. SOUTH BERRICK, ME 03908

PROJECT:
ST. JOHN'S CHURCH

101 CHAPEL ST.
PORTSMOUTH, NH

WM MICHAEL CAMPBELL AIA
ARCHITECT & PLANNER
CITY, STATE

**HVAC SPECIFICATIONS
&
CONTROL SEQUENCES**

DESIGNED BY: M3.00
CHECKED BY: M3.00
DATE: 2008-04-15
SCALE: AS NOTED

05/13/2020

M3.00

PROGRESS DRAWING
NOT FOR CONSTRUCTION

HOOD INFORMATION - Job#4344290

HOOD NO.	TAG	MODEL	LENGTH	MAX. COOKING TEMP.	TYPE	APPLIANCE DUTY	DESIGN CFM/R	TOTAL EXH. CFM	EXHAUST PLENUM RISER(S)					TOTAL SUPPLY CFM	HOOD CONSTRUCTION	HOOD CONFIG.			
									WIDTH	LENG.	HEIGHT	DIA.	CFM			VEL.	S.P.	END TO END	ROW
1		5424 ND-2-PSP-F	6' 0"	600 Deg.	I	Heavy	225	1350			4"	12"	1350	1719	-0.850"	1215	430 SS Where Exposed	ALONE	ALONE

PATENT NUMBERS

AC-PSP (United States) - US Patent 7963830 B2
 AC-PSP Wall (Canada) - CA Patent 2820509
 AC-PSP Island (Canada) - CA Patent 2520330

HOOD INFORMATION

HOOD NO.	TAG	FILTER(S)				LIGHT(S)				UTILITY CABINET(S)				FIRE SYSTEM PIPING	HOOD HANGING WGT	
		TYPE	QTY.	HEIGHT	LENGTH	EFFICIENCY @ 7 MICRONS	QTY.	TYPE	WIRE GUARD	LOCATION	SIZE	TYPE	SIZE			ELECTRICAL MODEL #
1		Captrate Solo Filter	4	16"	16"	85% See Filter Spec.	2	Screw In Compact	NO						NO	393 LBS

HOOD OPTIONS

HOOD NO.	TAG	OPTION
1		FIELD WRAPPER 18.00" High Front, Right RIGHT QUARTER END PANEL 23" Top Width, 0" Bottom Width, 23" High 430 SS RISER SENSOR INSTALL 3IN DBL

PERFORATED SUPPLY PLENUM(S)

HOOD NO.	TAG	POS.	LENGTH	WIDTH	HEIGHT	MUA	RISER(S)				
							WIDTH	LENG.	DIA.	CFM	S.P.
1		Front	72"	20"	6"	MUA	12"	24"		607	0.165"
						MUA	12"	24"		607	0.165"

SPECIFICATION: CAPTRATE GREASE-STOP SOLO FILTER

THE CAPTRATE GREASE-STOP SOLO FILTER IS A SINGLE-STAGE FILTER FEATURING A UNIQUE S-BAFFLE DESIGN IN CONJUNCTION WITH A SLOTTED REAR BAFFLE DESIGN, TO DELIVER EXCEPTIONAL FILTRATION EFFICIENCY.

FILTER IS STAINLESS STEEL CONSTRUCTION, AND SIZED TO FIT INTO STANDARD 2-INCH DEEP HOOD CHANNEL(S).

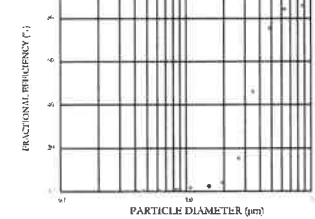
UNITS SHALL INCLUDE STAINLESS STEEL HANDLES AND A FASTENING DEVICE TO SECURE THE TWO COMPONENTS WHEN ASSEMBLED.

GREASE EXTRACTION EFFICIENCY PERFORMANCE SHALL REMOVE AT LEAST 75% OF GREASE PARTICLES FIVE MICRONS IN SIZE, AND 85% GREASE PARTICLES SEVEN MICRONS IN SIZE AND LARGER, WITH A CORRESPONDING PRESSURE DROP NOT TO EXCEED 1.0 INCHES OF WATER GAUGE.

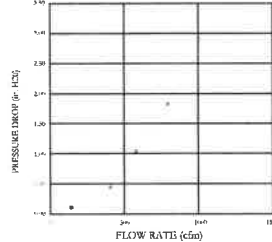
THE CAPTRATE GREASE-STOP SOLO WAS TESTED TO ASTM STANDARD ASTM F2519-05.

MANUFACTURER APPROVED FOR USE IN SOLID FUEL APPLICATIONS AS A SPARK ARRESTER.

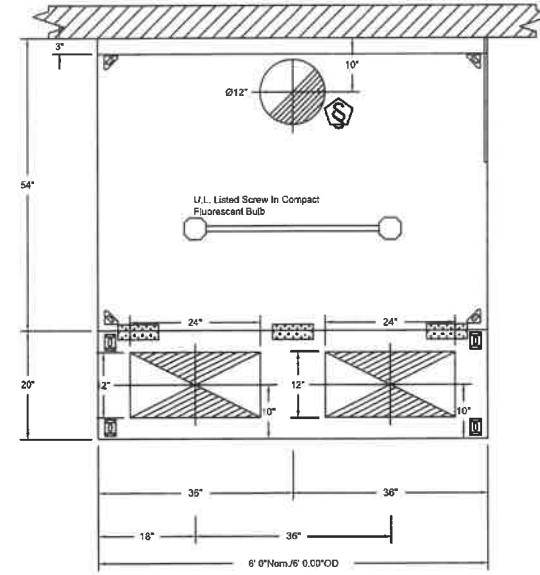
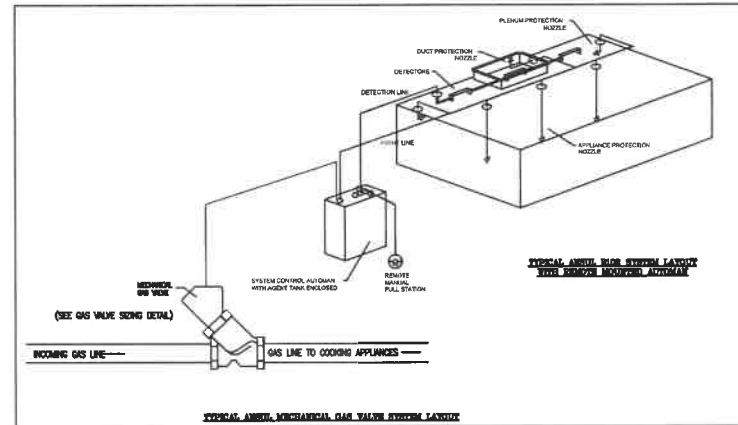
EFFICIENCY VS. PARTICLE DIAMETER



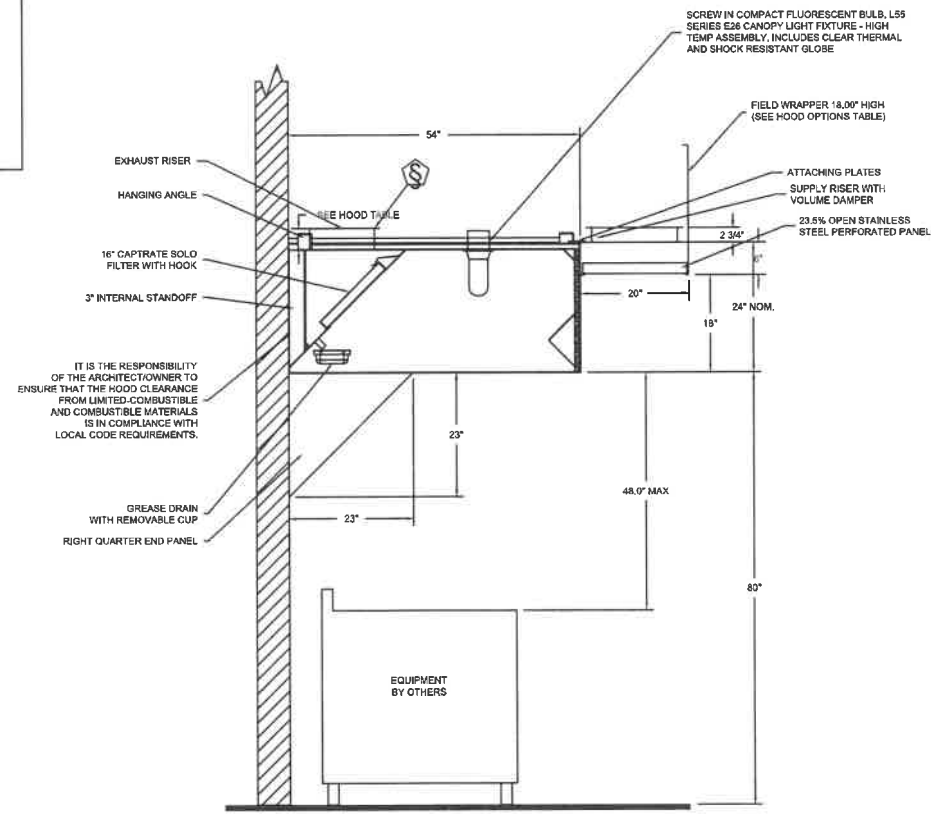
PRESSURE DROP VS. FLOW RATE



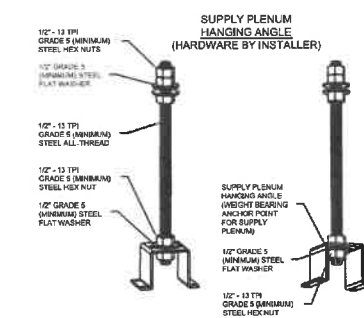
CAPTRATE FILTERS ARE BUILT IN COMPLIANCE WITH:
 NFPA 99B
 NSF STANDARD #2
 UL STANDARD #1046
 INT. MECH. CODE (IMC)
 ULC-S649



PLAN VIEW - Hood #1
 6' 0.00" LONG 5424ND-2-PSP-F

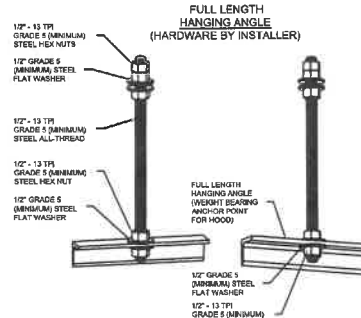


SECTION VIEW - MODEL 5424ND-2-PSP-F
 HOOD - #1



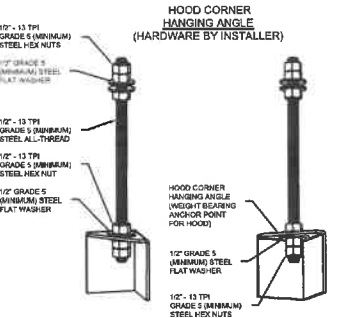
ASSEMBLY INSTRUCTIONS

HANGING ANGLE MUST BE SUPPORTED WITH 1/2" - 13 TPI GRADE 5 (MINIMUM) ALL-THREAD, SANDWICH HANGING ANGLES AND CEILING ANCHOR POINTS WITH 1/2" GRADE 5 (MINIMUM) STEEL FLAT WASHERS AND 1/2" - 13 TPI GRADE 5 (MINIMUM) HEX NUTS AS SHOWN. MUST USE DOUBLED HEX NUT CONFIGURATION ABOVE CEILING ANCHORS. SINGLE HEX NUT BENEATH HANGING ANGLE IS ACCEPTABLE FOR PSP HANGING ANGLES. MAINTAIN 1/4" OF EXPOSED THREADS BENEATH BOTTOM HEX NUT. TORQUE ALL HEX NUTS TO 57 FT-LBS.



ASSEMBLY INSTRUCTIONS

HANGING ANGLE MUST BE SUPPORTED WITH 1/2" - 13 TPI GRADE 5 (MINIMUM) ALL-THREAD, SANDWICH HANGING ANGLES AND CEILING ANCHOR POINTS WITH 1/2" GRADE 5 (MINIMUM) STEEL FLAT WASHERS AND 1/2" - 13 TPI GRADE 5 (MINIMUM) HEX NUTS AS SHOWN. MUST USE DOUBLED HEX NUT CONFIGURATION ABOVE CEILING ANCHORS. SINGLE HEX NUT BENEATH HANGING ANGLE IS ACCEPTABLE FOR FULL LENGTH HANGING ANGLES. MAINTAIN 1/4" OF EXPOSED THREADS BENEATH BOTTOM HEX NUT. TORQUE ALL HEX NUTS TO 57 FT-LBS.



ASSEMBLY INSTRUCTIONS

HANGING ANGLE MUST BE SUPPORTED WITH 1/2" - 13 TPI GRADE 5 (MINIMUM) ALL-THREAD, SANDWICH HANGING ANGLES AND CEILING ANCHOR POINTS WITH 1/2" GRADE 5 (MINIMUM) STEEL FLAT WASHERS AND 1/2" - 13 TPI GRADE 5 (MINIMUM) HEX NUTS AS SHOWN. MUST USE DOUBLED HEX NUT CONFIGURATION BENEATH HOOD HANGING ANGLES AND ABOVE CEILING ANCHORS. MAINTAIN 1/4" OF EXPOSED THREADS BENEATH BOTTOM HEX NUT. TORQUE ALL HEX NUTS TO 57 FT-LBS.

REVISIONS

NO.	DESCRIPTION	DATE

CAPTIVEAIRE
 NH / VT Mechanical
 9A Lafayette Road, Suite 6, North Hampton, NH, 03862
 PHONE: (603) 505-4847 FAX: (603) 516-8711 EMAIL: mg111@captivaire.com

DESIGN DAY
 Mechanical Inc.

PROJECT: ST. JOHN'S CHURCH
 101 CHAPEL ST. PORTSMOUTH, NH
 WM MICHAEL CAMPBELL AIA ARCHITECT & PLANNER CITY, STATE

Thaxter Hall - Portsmouth, NH (St John) r.1
 PORTSMOUTH, NH, 03803

DATE: 5/4/2020
 DWG.#: 4344290
 DRAWN BY: KCD-111
 SCALE: 3/4" = 1'-0"
 MASTER DRAWING

SHEET NO. 1

PROGRESS DRAWING
 NOT FOR CONSTRUCTION

M4.01

EXHAUST FAN INFORMATION - Job#4344290

FAN UNIT NO.	TAG	FAN UNIT MODEL #	CFM	ESP.	RPM	MOTOR ENCL.	H.P.	B.H.P.	Ø	VOLT	FLA	DISCHARGE VELOCITY	WEIGHT (LBS.)	SONES
1		DUBSHFA	1350	1.250	1337	TEAO-ECM	0.750	0.4320	1	115	8.9	427 FPM	123	15.2

MUA FAN INFORMATION - Job#4344290

FAN UNIT NO.	TAG	FAN UNIT MODEL #	BLOWER	HOUSING	MIN CFM	DESIGN CFM	ESP.	RPM	MOTOR ENCL.	H.P.	B.H.P.	Ø	VOLT	FLA	MCA	MOCP	WEIGHT (LBS.)	SONES
2		D76	G7	D.6	600	1215	0.500	1895	ODP	1.500	0.9260	1	115	12.2	17.4A	25A	464	25

GAS FIRED MAKE-UP AIR UNIT(S)

FAN UNIT NO.	TAG	INPUT BTUs	OUTPUT BTUs	TEMP. RISE	REQUIRED INPUT GAS PRESSURE	GAS TYPE
2		104115	95786	75 deg F	7 in. w.c. - 14 in. w.c.	Natural

FAN OPTIONS

FAN UNIT NO.	TAG	OPTION (Qty. - Descr.)
1		1 - Grease Box 1 - Full Crating For Exhaust Fans 1 - 3 Year Extended Motor Warranty 1 - ECM Wiring Package - Manual or 0-10VDC Reference Speed Control (TELCO Motor), CCW Rotation
2		1 - High Profile Lid 1 - AC Interlock Relay - 24VAC Coil 1 - Full Crating For Commercial Heater 1 - Inlet Pressure Gauge, 0-35" 1 - Manifold Pressure Gauge, -5 to 15" wc 1 - 3 Year Extended Motor Warranty 1 - Extra Set of Belts 1 - Motorized Intake Damper (D76)

FAN ACCESSORIES

FAN UNIT NO.	TAG	EXHAUST				SUPPLY			
		GREASE CUP	GRAVITY DAMPER	WALL MOUNT	SIDE DISCHARGE	GRAVITY DAMPER	MOTORIZED DAMPER	WALL MOUNT	
1		YES							
2					YES		YES		

CURB ASSEMBLIES

NO.	ON FAN	WEIGHT	ITEM	SIZE
1	# 1	41 LBS	Curb	23.000"W x 23.000"L x 24.000"H Vented Hinged
2	# 2	50 LBS	Curb	19.500"W x 52.000"L x 20.000"H Insulated

FAN SOUND DATA

FAN UNIT NO.	TAG	MOTOR	RPM	SOUND DATA			OCTAVE BAND SOUND DATA								
				LWA	SONES @ 5 ft	DBA @ 5 ft	DISTANCE (ft)	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz
1		Exhaust	1337	78	15.2	65.5	5	77.4	79.8	80.9	73.9	69.9	69.2	67.4	60.4
2		Supply	1895	86	25	74.5	5	83.9	92.3	88.2	83.5	78.8	74	70.6	66.6

REVISIONS

NO.	DESCRIPTION	DATE

CAPTIVE
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THE PROJECT MANAGER FOR THIS PROJECT IS GUY W. LUK. PLEASE REFER ALL QUESTIONS, COMMENTS AND CORRECTIONS TO THE PROJECT MANAGER.
PROJECT MANAGER:
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PROJECT
ST. JOHN'S CHURCH

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PORTSMOUTH, NH

ARCHITECT
WM MICHAEL CAMPBELL AIA
ARCHITECT & PLANNER
CITY, STATE

CAPTIVEAIRE

Thaxter Hall - Portsmouth, NH (St John) r.1
PORTSMOUTH, NH, 03803

DATE: 5/4/2020

DWG.#:
4344290

DRAWN BY: KCD-111

SCALE:
3/4" = 1'-0"

MASTER DRAWING

SHEET NO.
2

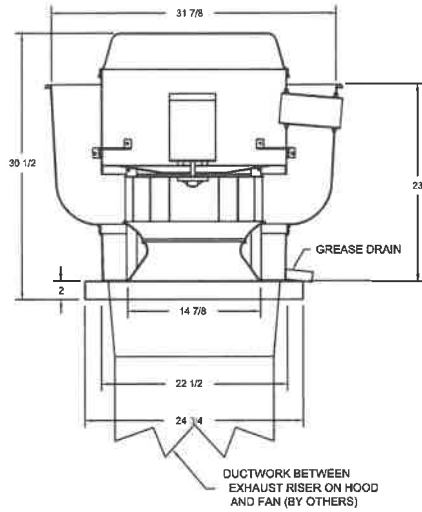
DESIGNED BY: MBK
DRAWN BY: RH
CHECKED BY: AWA
DATE: 05/13/2020

DATE: 05/13/2020

PROGRESS DRAWING
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M4.02

FAN #1 DUSH-FA - EXHAUST FAN



FEATURES:

- DIRECT DRIVE CONSTRUCTION (NO BELTS/PULLEYS)
- ROOF MOUNTED FANS
- RESTAURANT MODEL
- UL705 AND UL792 AND ULC-8645
- VARIABLE SPEED CONTROL
- INTERNAL WIRING
- WEATHERPROOF DISCONNECT
- THERMAL OVERLOAD PROTECTION (SINGLE PHASE)
- HIGH HEAT OPERATION 300°F (149°C)
- GREASE CLASSIFICATION TESTING

NORMAL TEMPERATURE TEST

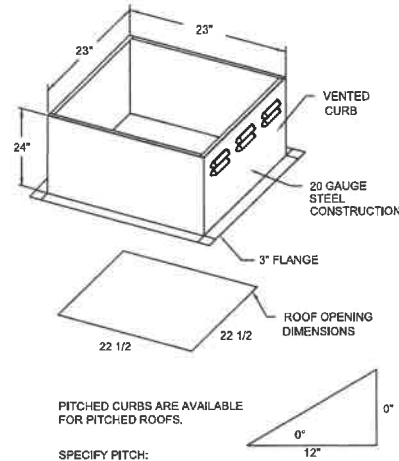
EXHAUST FAN MUST OPERATE CONTINUOUSLY WHILE EXHAUSTING AIR AT 300°F (149°C) UNTIL ALL FAN PARTS HAVE REACHED THERMAL EQUILIBRIUM, AND WITHOUT ANY DETRIMENTAL EFFECTS TO THE FAN WHICH WOULD CAUSE UNSAFE OPERATION.

ABNORMAL FLARE-UP TEST

EXHAUST FAN MUST OPERATE CONTINUOUSLY WHILE EXHAUSTING BURNING GREASE VAPORS AT 600°F (318°C) FOR A PERIOD OF 15 MINUTES WITHOUT THE FAN BECOMING DAMAGED TO ANY EXTENT THAT COULD CAUSE AN UNSAFE CONDITION.

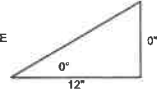
OPTIONS

- GREASE BOX
- FULL CRATING FOR EXHAUST FANS
- 3 YEAR EXTENDED MOTOR WARRANTY
- ECM WIRING PACKAGE - MANUAL OR 0-10VDC REFERENCE SPEED CONTROL (TECO MOTOR), COW ROTATION



PITCHED CURBS ARE AVAILABLE FOR PITCHED ROOFS.

SPECIFY PITCH:
EXAMPLE: 7/12 PITCH = 30° SLOPE

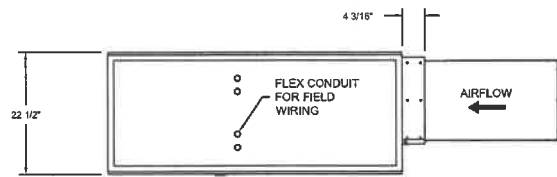


FAN #2 D76 - HEATER

1. LOW CFM DIRECT FIRED HEATER BELT DRIVE.
2. INTAKE HOOD WITH EZ FILTERS
3. SIDE DISCHARGE - AIR FLOW RIGHT - LEFT
4. HIGH PROFILE LID OPTION FOR D76, REQUIRED WITH BELT DRIVE, SINGLE PHASE MOTORS
5. COOLING INTERLOCK RELAY, 24VAC COIL, 120V CONTACTS, LOCKS OUT BURNER CIRCUIT WHEN AC IS ENERGIZED.
6. FULL CRATING FOR COMMERCIAL HEATERS FOR SHIPPING
7. GAS PRESSURE GAUGE, 0-35", 2.5" DIAMETER, 1/4" THREAD SIZE
8. GAS PRESSURE GAUGE, 5 TO +15 INCHES WC, 2.5" DIAMETER, 1/4" THREAD SIZE
9. 3 YEAR EXTENDED WARRANTY FOR FAN MOTOR. PARTS ONLY; DOES NOT INCLUDE LABOR.
10. EXTRA SET OF V-BELTS. ONLY TO BE ORDERED AS FAN OPTION AT TIME FAN IS ORDERED.
11. MOTORIZED BACK DRAFT DAMPER 13" X 17" FOR D76 COMPACT DIRECT FIRED HEATERS W/EXTENDED SHAFT, STANDARD GALVANIZED CONSTRUCTION.
12. 34" REAR FLANGE, FT125S ACTUATOR INCLUDED

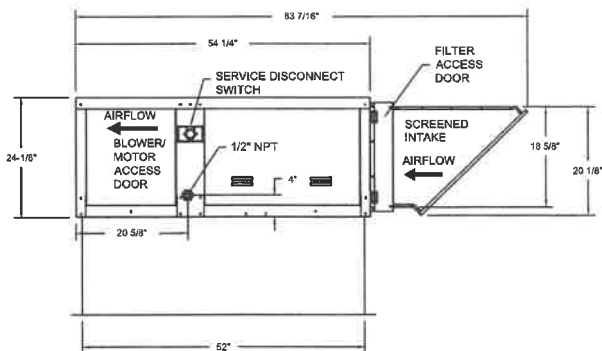
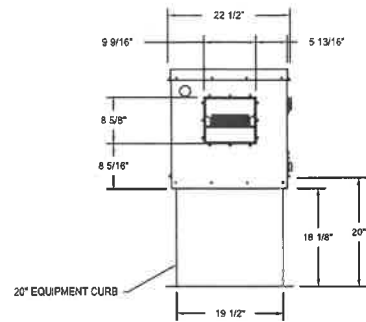
SUPPLY SIDE HEATER INFORMATION:

WINTER TEMPERATURE = 8°F. TEMP. RISE = 75°F.
BTUs CALCULATED OFF ACTUAL AIR DENSITY
OUTPUT BTUs AT ALTITUDE OF 0.0 ft. = 95917
INPUT BTUs AT ALTITUDE OF 0.0 ft. = 104258
OUTPUT BTUs AT ALTITUDE OF 38 ft. = 95766
INPUT BTUs AT ALTITUDE OF 38 ft. = 104115



Direct Fired (DF) Profile Plate Assembly

Direct Fired Profile Plate Specifications:
Description:
Direct Fired burners shall have patented (US Patent No. 1,556,992/2002), self-adjusting profile plates designed to ensure proper air velocity and pressure drop across the burner. Profile plates shall allow burners to achieve their combustion by heating hydrocarbon gases to a maximum of 800° of carbon monoxide (CO) and 5.0% of nitrogen dioxide (NO2), and shall be configured with the burner mounted downstream of the burner. This arrangement will ensure a consistent airflow, regardless of inlet air temperature.
Application:
Spring loaded burner profile plates are engineered to automatically react to the movement of a fresh air stream, without the need for any motors or actuators to mechanically adjust them, with this feature, all DF units are designed for demand control ventilation (DCV) requirements.
Configuration:
All profile plate assemblies shall be included in the DF units ETE listing and comply with combined safety standards ANSI Z93.4 and CSA 3.2 (non-recirculating DF heating and ANSI Z93.18 (recirculating DF heaters).
General Construction:
-Profile plates shall be formed from DRP galvanized sheet.
-Profile plates shall vary in size per unit.
-Profile plates shall be mounted along the same plane as the discharge of the burner.
-Design shall incorporate properly torqued, permanently mounted spring hinges.
-Spring hinges shall be made from plated steel.



REVISIONS	
DESCRIPTION	DATE

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CAPTIVE



THE PROJECT MANAGER FOR THIS PROJECT IS NOTED BELOW. PLEASE REFER ALL QUESTIONS, SUBMITTALS AND CORRESPONDENCE TO THE PROJECT MANAGER.

MATTHEW KROBES
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PROJECT
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Thaxter Hall - Portsmouth, NH (St John) r.1
PORTSMOUTH, NH, 03803

DATE: 5/4/2020

DWG.#:
4344290

DRAWN BY: KCD-111

SCALE:
3/4" = 1'-0"

MASTER DRAWING

SHEET NO.
3

DESIGNED BY: MBK
DRAWN BY: RH
CHECKED BY: AWA

DATE: 05/13/2020

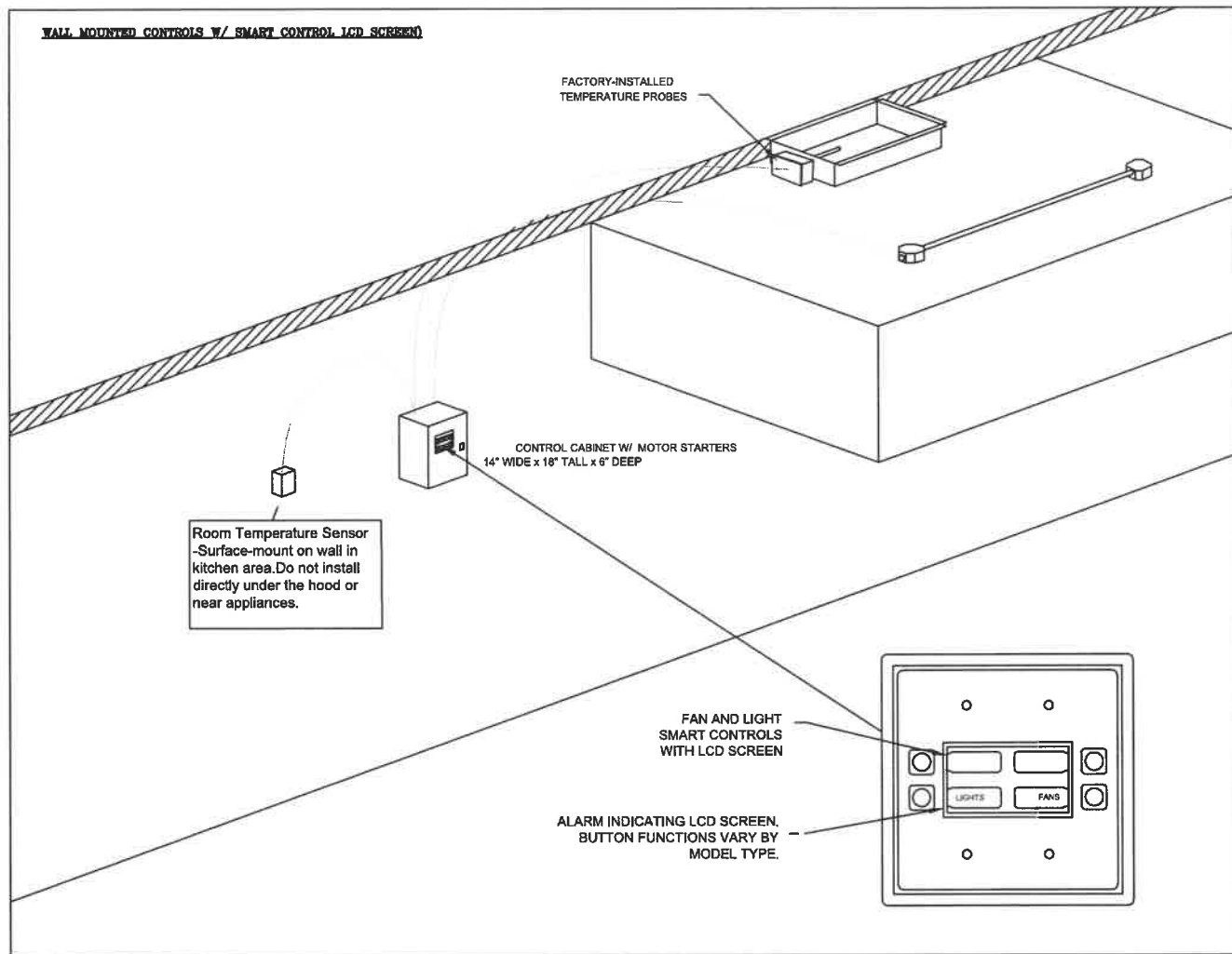
DATE: 05/13/2020

PROGRESS DRAWING
NOT FOR CONSTRUCTION

M4.03

ELECTRICAL PACKAGE -- Job#4344290

NO.	TAG	PACKAGE #	LOCATION	SWITCHES		OPTION	FANS CONTROLLED				
				LOCATION	QUANTITY		TYPE	#	H.P.	VOLT	FLA
1		SC-111010FP	Wall Mount in SS Box	05-SS Wall Mount Box	1 Fan	Smart Controls Thermostatic Control	Exhaust	1	0.750	115	8.9
							Supply	1	1.500	115	12.2



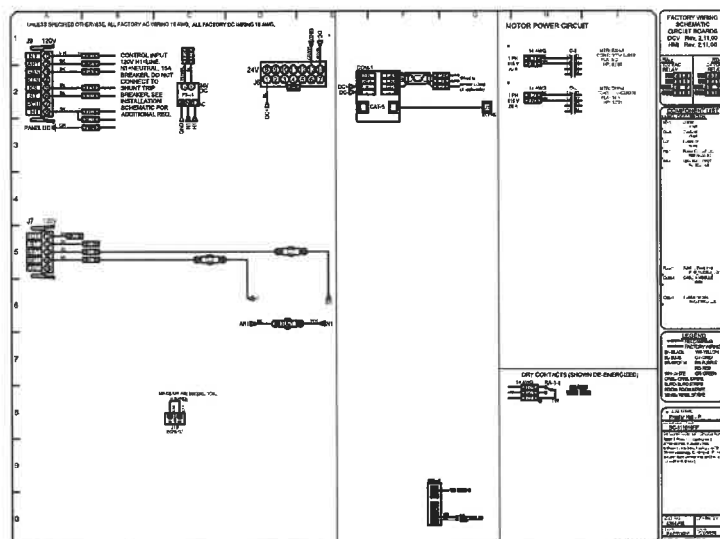
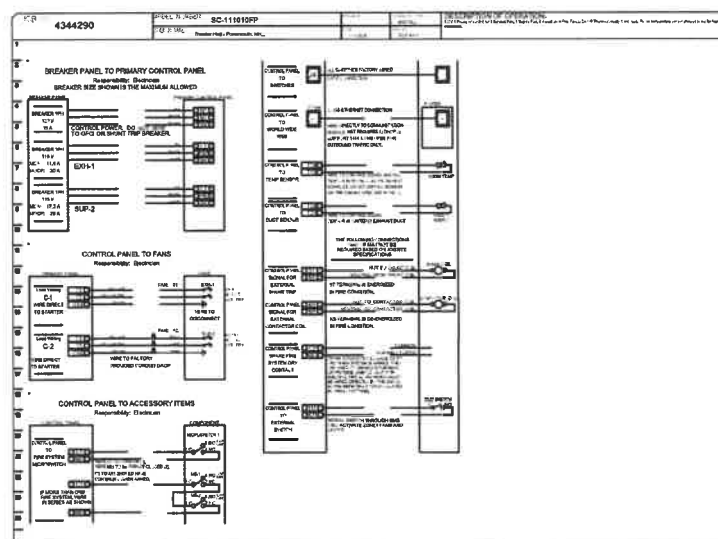
The Electrical Package, typically FP, is designed to thermostatically activate the exhaust fans for an exhaust hood whenever elevated temperatures are sensed in the exhaust system. This option will meet the requirements of IMC 607.2.1.1 by providing a thermostat(s) mounted in the duct or hood riser to sense increased exhaust temperatures.

Controls shall be listed by ETL (UL 508A). The control enclosure shall be NEMA 1 rated and listed for installation inside of the exhaust hood utility cabinet. The control enclosure may be constructed of stainless steel or painted steel.

Temperature probes(s) located in the duct riser shall be constructed of Stainless Steel. A room temperature sensor is also provided for field installation in the kitchen space in order to start the fan(s) based on the temperature differential between the room and the exhaust air in the duct, rather than fixed set-points. The system is factory pre-set to activate the fans at 10 deg F° above the room temperature.

Once the duct temperature reaches the activation point, the exhaust fans will be activated. The controls also provide hysteresis to prevent cycling of the fans after the cooking appliances have been turned off and the heat in the exhaust system is reduced. The hysteresis is factory set 2 degrees and will keep the exhaust running until the temperature falls 2 degrees below the activation set point. A hysteresis timer also exists to keep the fans running for at least 30 min after being activated by the temperature rise.

The activation and hysteresis settings may be field adjusted on the board LCD interface located inside the control enclosure to meet application needs. The panel is factory configured to shut down supply fans, turn on the exhaust fans and turn off the hood lights in a fire condition.



REVISIONS

NO.	DESCRIPTION	DATE

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www.captivaire.com

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Thaxter Hall - Portsmouth, NH (St John) r.1
PORTSMOUTH, NH, 03803

DATE: 5/4/2020

DWG.#:
4344290

DRAWN BY: KCD-111

SCALE:
3/4" = 1'-0"

MASTER DRAWING

MBK
RM
AWA

DDM JOB #
SCALE

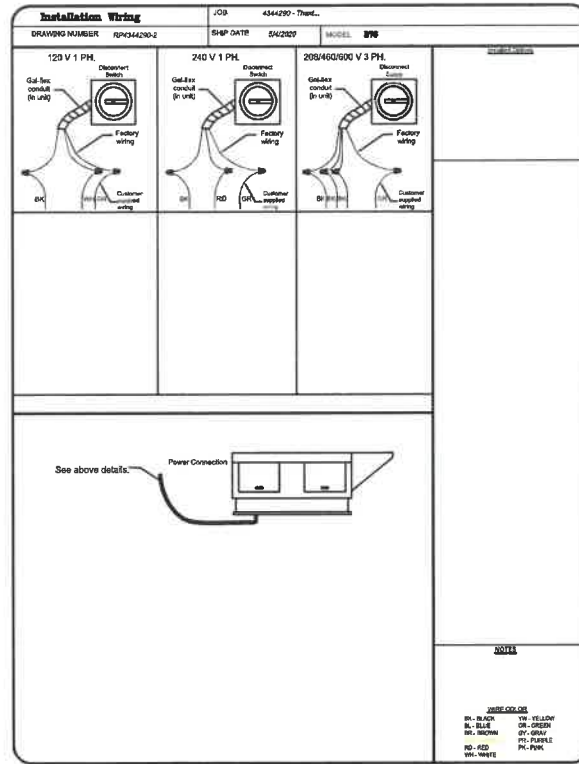
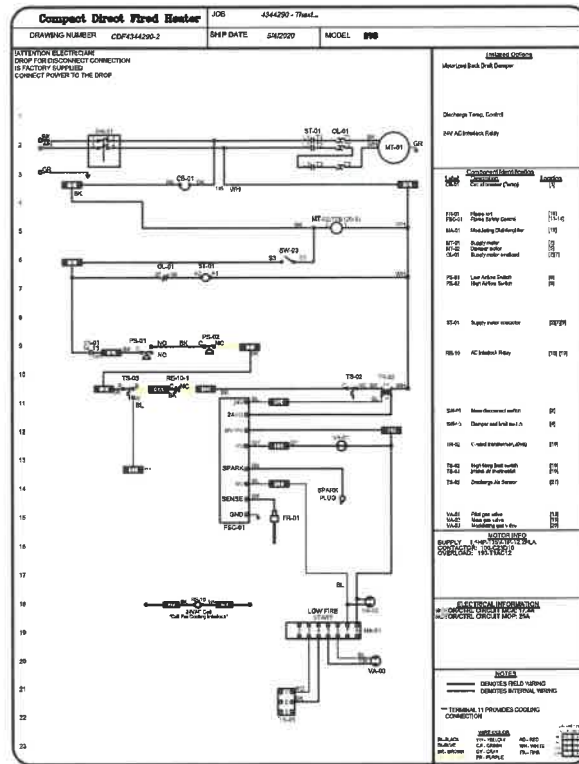
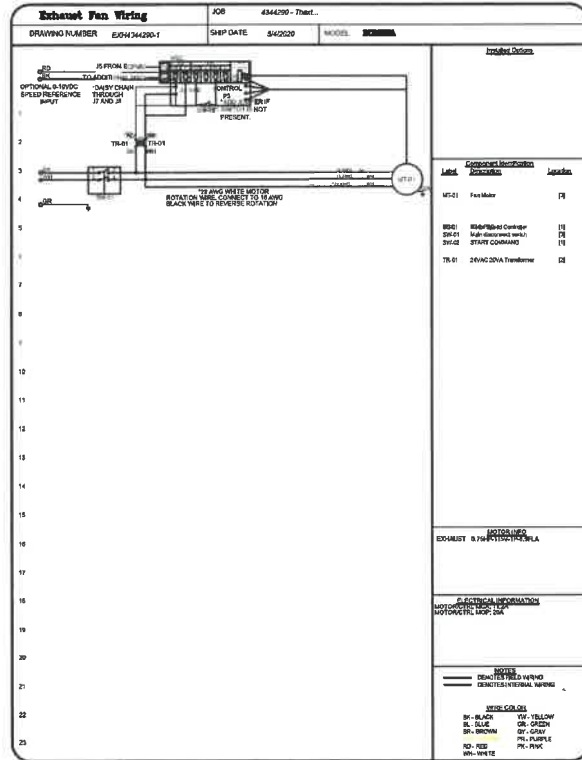
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AS NOTED

SHEET NO.
4

DATE: 05/13/2020

PROGRESS DRAWING
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M4.04



GREASE DUCT & CHIMNEY SPECIFICATIONS:
 PROVIDE GREASE DUCT EQUAL TO CAPTIVEAIRE SYSTEMS MODEL "DW" ROUND 20 GAUGE 430 STAINLESS STEEL DUCTWORK. MODEL "DW" IS LISTED TO UL-1978 AND IS INSTALLED USING "V" CLAMP LOCKING CONNECTIONS SEALED WITH 3M FIRE BARRIER 2000 PLUS. MODEL "DW" DOES NOT REQUIRE WELDING PROVIDING IT HAS BEEN INSTALLED PER THE MANUFACTURES INSTALLATION GUIDE.
 PROVIDE RATED ACCESS DOORS AT EVERY CHANGE IN DIRECTION AND EVERY 12' ON CENTER. PER MANUFACTURES LISTING MODEL "DW" HORIZONTAL RUNS LESS THAN 75 FT. CAN BE SLOPED 1/16" PER 12", HORIZONTAL RUNS MORE THAN 75 FT. CAN BE SLOPED 3/16" PER 12".
 DUCT SHOULD BE SLOPED AS MUCH AS POSSIBLE TO REDUCE THE CHANCE OF GREASE ACCUMULATION IN HORIZONTAL RUNS.
 IF THE DUCT OR CHIMNEY IS WITHIN 18 INCHES OF COMBUSTIBLE MATERIAL, PROVIDE UL-2221 OR UL-103 HT LISTED DOUBLE WALL GREASE DUCT OR DOUBLE WALL CHIMNEY EQUAL TO CAPTIVEAIRE SYSTEMS MODEL "DW- 2R, 2R TYPE HT, 3R, OR 3Z" ROUND 20 GAUGE 430 STAINLESS INNER DUCT INSULATED WITH A 24 GAUGE 430 STAINLESS OUTER SHELL.

CUSTOMER APPROVAL TO MANUFACTURE:

Approved as Noted

Approved with NO Exception Taken

Revise and Resubmit

SIGNATURE _____

Your Title _____ Date _____

System Design Verification (SDV)

If ordered, CAS Service will perform a System Design Verification (SDV) once all equipment has had a complete start up per the Operation and Installation Manual. Typically, the SDV will be performed after all inspections are complete.

Any field related discrepancies that are discovered during the SDV will be brought to the attention of the general contractor and corresponding trades on site. These issues will be documented and forwarded to the appropriate sales office. If CAS Service has to resolve a discrepancy that is a field issue, the general contractor will be notified and billed for the work. Should a return trip be required due to any field related discrepancy that cannot be resolved during the SDV, there will be additional trip charges.

During the SDV, CAS Service will address any discrepancy that is the fault of the manufacturer. Should a return trip be required, the general contractor and appropriate sales office will be notified. There will be no additional charges for manufacturer discrepancies.

REVISIONS

NO.	DESCRIPTION	DATE

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 PORTSMOUTH, NH, 03803

DATE: 5/4/2020
 DWG.#: 4344290
 DRAWN BY: KCD-111
 SCALE: 3/4" = 1'-0"
 MASTER DRAWING
 SHEET NO. 5



DESIGN DAY Mechanicals Inc
 101 CHAPEL ST. PORTSMOUTH, NH
 PHONE: (207) 478-2491
 ADDRESS: 75 WINE ST. SOUTH BETHLEHEM, PA 18018

ST. JOHN'S CHURCH
 101 CHAPEL ST. PORTSMOUTH, NH
 FOR: WM MICHAEL CAMPBELL AIA ARCHITECT & PLANNER CITY, STATE

CAPTIVEAIRE

REVISIONS

MBK
 RH
 AWA
 20064
 AS NOTED

05/13/2020

PROGRESS DRAWING
 NOT FOR CONSTRUCTION

M4.05

Job Name:	
System Reference:	Date:

Indoor Unit: MSZ-GL24NA	Outdoor Unit: MUZ-GL24NA-U1 MUZ-GL24NA-U2	Wireless Remote Controller
		

GENERAL FEATURES

- Slim wall-mounted indoor units provide zone comfort control
- The outdoor unit powers the indoor unit, and should a power outage occur, the system is automatically restarted when power returns
- INVERTER-driven compressor and LEV provide high efficiency and comfort while using only the energy needed to maintain maximum performance
- Multiple fan speed options: Quiet, Low, Medium, High, Super-high, Auto
- Multiple control options available:
 - Hand-held Remote Controller (provided with unit)
 - kumo cloud® smart device app for remote access
 - Third-party interface options
 - Wired or wireless controllers
- Quiet operation
- Smart Set: recalls a preferred preset temperature setting at the touch of a button
- Blue Fin anti-corrosion treatment applied to the outdoor unit heat exchanger for increased coil protection and longer life

SPECIFICATIONS: MSZ-GL24NA & MUZ-GL24NA

Cooling ¹	Maximum Capacity	Btu/h	31,400
	Rated Capacity	Btu/h	22,500
	Minimum Capacity	Btu/h	8,200
	Maximum Power Input	W	3,522
	Rated Power Input	W	1,800
	Moisture Removal	Pints/h	5.1
	Sensible Heat Factor		0.75
	Power Factor	%	99 / 99
Heating at 47°F ²	Maximum Capacity	Btu/h	36,900
	Rated Capacity	Btu/h	27,600
	Minimum Capacity	Btu/h	7,500
	Maximum Power Input	W	3,592
	Rated Power Input	W	2,340
	Power Factor	%	99 / 99
Heating at 17°F ³	Maximum Capacity	Btu/h	24,600
	Rated Capacity	Btu/h	16,000
	Maximum Power Input	W	3,232
	Rated Power Input	W	1,712
Heating at 5°F ⁴	Maximum Capacity	Btu/h	19,320
	Maximum Power Input	W	2,990
Heating at -4°F ⁵	Maximum Capacity	Btu/h	15,450
Efficiency	SEER		20.5
	EER ¹		12.5
	HSPF (IV)		10.0
	COP at 47°F ²		3.46
	COP at 17°F in Maximum Capacity ³		2.23
	COP at 5°F in Maximum Capacity ⁴		1.89
	ENERGY STAR® Certified (ENERGY STAR products are third-party certified by an EPA-recognized Certification Body.)		YES
Electrical	Voltage, Phase, Frequency		208/230V, 1 phase, 60Hz
	Guaranteed Voltage Range	V AC	187 - 253
	Voltage: Indoor - Outdoor, S1-S2	V AC	208 / 230
	Voltage: Indoor - Outdoor, S2-S3	V DC	24
	Voltage: Indoor - Remote Controller		Wireless Type
	Recommended Fuse/Breaker Size	A	20
	Recommended Wire Size (Indoor - Outdoor)	AWG	14
Indoor Unit	MCA	A	1
	MOCP	A	20
	Blower Motor Full Load Amperage	A	0.76
	Blower Motor Output	W	56
	Airflow Rate at Cooling, Dry	CFM	738-628-544-469-388

SPECIFICATIONS: MSZ-GL24NA & MUZ-GL24NA

	Airflow Rate at Cooling, Wet	CFM	661-562-487-420-347	
	Airflow Rate at Heating, Dry	CFM	738-628-544-469-388	
	Sound Pressure Level (Cooling)	dB(A)	53-49-45-41-34	
	Sound Pressure Level (Heating)	dB(A)	52-49-45-41-32	
	Drain Pipe Size	In. (mm)	5/8 (15.88)	
	Heat Exchanger Type		Plate fin coil	
	External Finish Color		Munsell 1.0Y 9.2/0.2	
	Unit Dimensions	W: In. (mm)		43-5/16 [1,100]
		D: In. (mm)		9-3/8 [238]
		H: In. (mm)		12-13/16[325]
	Package Dimensions	W: In. (mm)		45-1/2 (1,160)
		D: In. (mm)		12-3/4 (320)
		H: In. (mm)		15-1/2 (390)
	Unit Weight	Lbs. (kg)		37 (17)
Package Weight	Lbs. (kg)		37 (17)	
Indoor Unit Operating Temperature Range	Cooling Intake Air Temp (Maximum / Minimum)*	°F	90 DB, 73 WB / 67 DB, 57 WB	
	Heating Intake Air Temp (Maximum / Minimum)	°F	80 DB / 70 DB	
Outdoor Unit	MCA	A	17.1	
	MOCP	A	20	
	Fan Motor Full Load Amperage	A	0.93	
	Fan Motor Output	W	77	
	Airflow Rate	CFM	1,769 / 1,701	
	Refrigerant Control		LEV	
	Defrost Method		Reverse cycle	
	Heat Exchanger Type		Plate fin coil	
	Sound Pressure Level, Cooling ¹	dB(A)	55	
	Sound Pressure Level, Heating ²	dB(A)	55	
	Compressor Type		DC INVERTER-driven	
	Compressor Model		SNB172FQKMT	
	Compressor Rated Load Amps	A	12.9	
	Compressor Locked Rotor Amps	A	16.1	
	Compressor Oil Type // Charge	oz.	FV50S // 13.5	
	External Finish Color		Munsell 3Y 7.8/1/1	
	Base Pan Heater		Optional	
	Unit Dimensions	W: In. (mm)		33-1/16 (840)
		D: In. (mm)		13 (330)
		H: In. (mm)		34-5/8 [880]
Package Dimensions	W: In. (mm)		38-9/16 (980)	
	D: In. (mm)		16-9/16 (420)	
	H: In. (mm)		39 (990)	
Unit Weight	Lbs. (kg)		119 [54]	

SPECIFICATIONS: MSZ-GL24NA & MUZ-GL24NA

	Package Weight	Lbs. (kg)	138 (63)
Outdoor Unit Operating Temperature Range	Cooling Air Temp (Maximum / Minimum)*	°F	115 / 14
	Cooling Thermal Lock-out / Re-start Temperatures**	°F	-4 / 0
	Heating Air Temp (Maximum / Minimum)	°F	75 / -4
	Heating Thermal Lock-out / Re-start Temperatures**	°F	-9 / -4
Refrigerant	Type		R410A
	Charge	Lbs, oz	4, 3
Piping	Gas Pipe Size O.D. (Flared)	In. (mm)	5/8 (15.88)
	Liquid Pipe Size O.D. (Flared)	In. (mm)	3/8 (9.52)
	Maximum Piping Length	Ft. (m)	100 (30)
	Maximum Height Difference	Ft. (m)	50 (15)
	Maximum Number of Bends		10

Notes

AHRI Rated Conditions (Rated data is determined at a fixed compressor speed)	¹ Cooling (Indoor // Outdoor)	°F	80 DB, 67 WB // 95 DB, 75 WB
	² Heating at 47°F (Indoor // Outdoor)	°F	70 DB, 60 WB // 47 DB, 43 WB
	³ Heating at 17°F (Indoor // Outdoor)	°F	70 DB, 60 WB // 17 DB, 15 WB
Conditions	⁴ Heating at 5°F (Indoor // Outdoor)	°F	70 DB, 60 WB // 5 DB, 4 WB
	⁵ Heating at -4°F (Indoor // Outdoor)	°F	70 DB, 60 WB // -4 DB, -5 WB

*Applications should be restricted to comfort cooling only; equipment cooling applications are not recommended for low ambient temperature conditions.

**System cuts out in heating mode to avoid thermistor error and automatically restarts at these temperatures.

ACCESSORIES: MSZ-GL24NA

Anti-allergy Enzyme Filter	<input type="checkbox"/> MAC-2310FT-E
Backlit, Wall-mounted, Wireless Controller	<input type="checkbox"/> MHK1
Portable Central Controller	<input type="checkbox"/> MCCH1
Wired MA Controller ¹	<input type="checkbox"/> PAR-33MAA
Simple MA Controller ¹	<input type="checkbox"/> PAC-YT53CRAU
Touch MA Controller ¹	<input type="checkbox"/> PAR-CT01MAU-SB
Wireless Temperature and Humidity Sensor	<input type="checkbox"/> PAC-USWHS003-TH-1
Outside Air Sensor for MHK1	<input type="checkbox"/> MOS1
System Control Interface ²	<input type="checkbox"/> MAC-333IF-E
Wireless Interface	<input type="checkbox"/> PAC-USWHS002-WF-1
Thermostat Interface	<input type="checkbox"/> PAC-US444CN-1
kumo station [®]	<input type="checkbox"/> PAC-WHS01HC-E
USNAP Interface	<input type="checkbox"/> PAC-WHS01UP-E
IT Extender	<input type="checkbox"/> PAC-WHS01IE-E
BACnet [®] and MODBUS [®] Interface	<input type="checkbox"/> PAC-UKPRC001-CN-1
Lockdown Bracket for Hand-held Remote Controllers	<input type="checkbox"/> RCMKP1CB
Blue Diamond Sensor Extension Cable — 15 Ft.	<input type="checkbox"/> C13-103
Blue Diamond Alarm Extension Cable — 6.5 Ft.	<input type="checkbox"/> C13-192
Blue Diamond MultiTank — collection tank for use with multiple pumps	<input type="checkbox"/> C21-014
Blue Diamond Rubber Foot Pads	<input type="checkbox"/> F10-010
Mini Condensate Pump — 230 volt application	<input type="checkbox"/> SI30-230
MegaBlue Advanced Blue Diamond Condensate Pump w/ Reservoir & Sensor	<input type="checkbox"/> X87-835 - 110 to 250V
MaxiBlue Advanced Blue Diamond Mini Condensate Pump w/ Reservoir & Sensor (110V) up to 48,000 Btu/h [recommended]	<input type="checkbox"/> X87-711 - 110V
Advanced Blue Diamond Mini Condensate Pump w/ Reservoir & Sensor (208/230V) [recommended]	<input type="checkbox"/> X87-721 - 208/230V
MicroBlue Blue Diamond Mini Condensate Pump (110/208/230V) up to 18,000 Btu/h	<input type="checkbox"/> X85-003
Fascia Kit for MicroBlue Pump – mounts the MicroBlue and sensor directly beneath the indoor unit	<input type="checkbox"/> T18-016
Drain Pan Level Sensor	<input type="checkbox"/> DPLS2
(30A/600V/UL) [fits 2" X 4" utility box] - Black	<input type="checkbox"/> TAZ-MS303
(30A/600V/UL) [fits 2" X 4" utility box] - White	<input type="checkbox"/> TAZ-MS303W

¹ Requires MAC-333IF-E

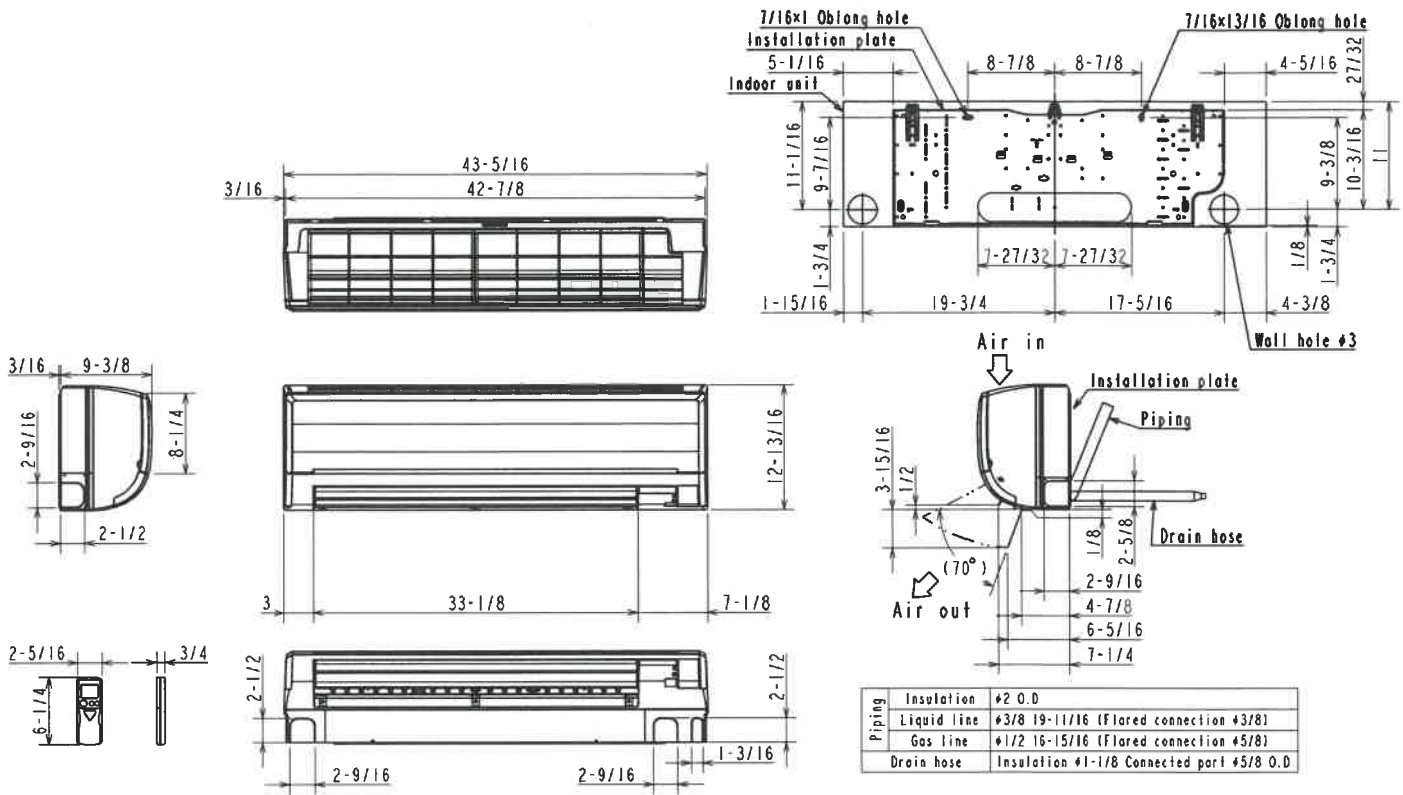
² Allows indoor units to connect to an MA Controller

ACCESSORIES: MUZ-GL24NA

Air Outlet Guide	<input type="checkbox"/> MAC-886SG-E
Drain Socket	<input type="checkbox"/> MAC-860DS
Optional Defrost Heater	<input type="checkbox"/> MAC-642BH-U1
Hail Guard	<input type="checkbox"/> HG-A7
Outdoor Unit 3-1/4 inch Mounting Base (Pair) - Plastic	<input type="checkbox"/> DSD-400P
Condensing Unit Mounting Pad 16" x 36" x 3"	<input type="checkbox"/> ULTRILITE1
Outdoor Unit Stand — 12" High	<input type="checkbox"/> QSMS1201M
Outdoor Unit Stand — 18" High	<input type="checkbox"/> QSMS1801M
Outdoor Unit Stand — 24" High	<input type="checkbox"/> QSMS2401M
Heavy Duty Wall Mounting Bracket— Coated Steel	<input type="checkbox"/> QSWB2000M-1
Heavy Duty Wall Mounting Bracket— 316 Series Stainless Steel	<input type="checkbox"/> QSWBSS
10' x 3/8" x 10' x 5/8" Lineset (Twin-Tube Insulation)	<input type="checkbox"/> MPLS385812T-10
15' x 3/8" x 15' x 5/8" Lineset (Twin-Tube Insulation)	<input type="checkbox"/> MPLS385812T-15
30' x 3/8" x 30' x 5/8" Lineset (Twin-Tube Insulation)	<input type="checkbox"/> MPLS385812T-30
50' x 3/8" x 50' x 5/8" Lineset (Twin-Tube Insulation)	<input type="checkbox"/> MPLS385812T-50
65' x 3/8" x 65' x 5/8" Lineset (Twin-Tube Insulation)	<input type="checkbox"/> MPLS385812T-65
100' x 3/8" x 100' x 5/8" Lineset (Twin-Tube Insulation)	<input type="checkbox"/> MPLS385812T-100

DIMENSIONS: MSZ-GL24NA

Unit: inch

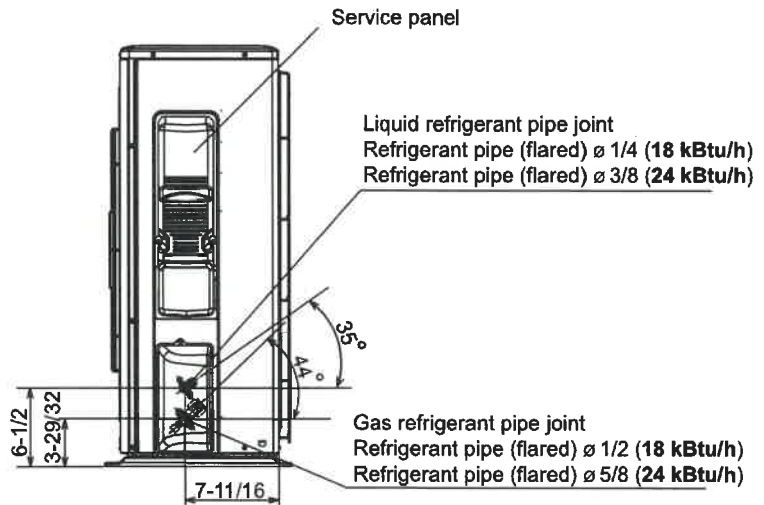
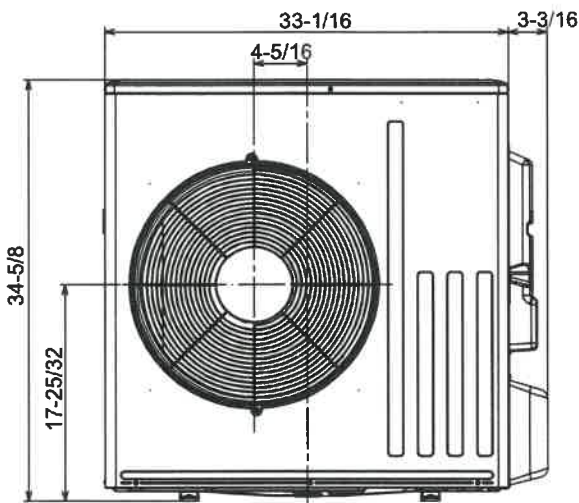
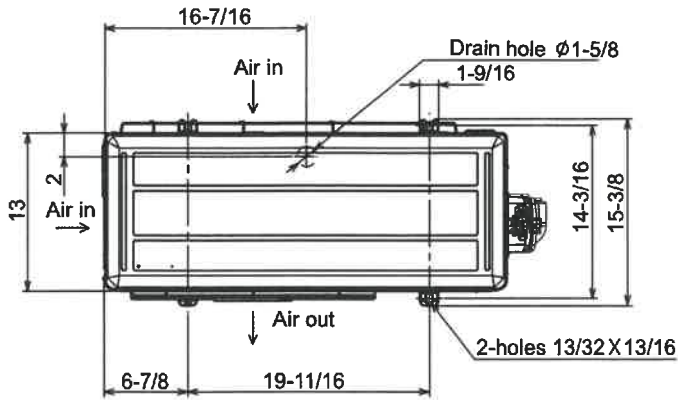
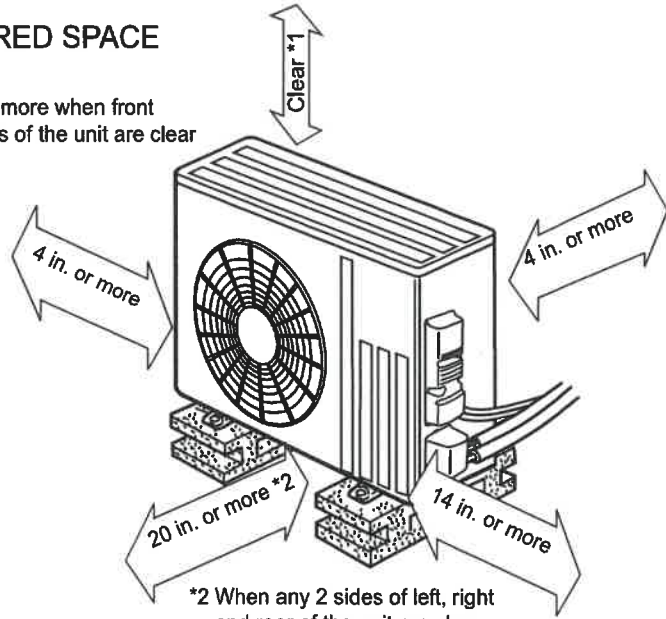


DIMENSIONS: MUZ-GL24NA

Unit: inch

REQUIRED SPACE

*1 20 in. or more when front and sides of the unit are clear



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FORM# MSZ-GL24NA / MUZ-GL24NA - 201903



Specifications are subject to change without notice.

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