INDOOR ABOVEGROUND PIPE INSULATION MINIMUM THICKNESS SCHEDULE

PIPING SYSTEM	FLUID OPERATING TEMPERATURE RANGE (DEG F)	INSULATION CONDUCTIVITY RANGE (BTU-IN/HR-FT2 DEG F)	MEAN TEMPERATURE RATING (DEG F)	NOMINAL PIPE OR TUBE SIZE (INCHES)						INSULATION MATERIAL	VAPOR BARRIER REQUIRED
				PIPE BRANCH RUN OUTS (SEE NOTE 2 BELOW)	< 1	1 TO < 1-1/2	1-1/2 TO < 4	4 TO < 8	8 TO > 8		
				INSULATION THICKNESS (INCHES)							
DOMESTIC COLD WATER	40-60	0.21 - 0.27	75	N/A	0.5	0.5	0.5	N/A	N/A	MF	YES
DOMESTIC DHW & DHWR	105-140	0.22 - 0.28	100	N/A	1	1	1.5	N/A	N/A	MF	NO
REFRIGERANT SUCTION & LIQUID (SEE NOTE 3 BELOW)	10 & UP	0.21 - 0.27	75	0.5	0.75	0.75	N/A	N/A	N/A	FC	NO

NOTES:

1.THE TABLE ABOVE APPLIES TO METALLIC PIPES AND SCHEDULE 80 OR LESS NON-METALLIC PIPES. THE BASIS OF THE ABOVE SCHEDULE IS ECONOMIC THICKNESS, PREVENTION OF CONDENSATION, AND COMPLIANCE WITH ASHRAE 90.1-2013 MINIMUM INSULATION THICKNESSES. ASHRAE 90.1-2013 DOES NOT PROVIDE REDUCED INSULATION THICHNESS FOR BRANCH RUNOUTS.

2. PIPING INSULATION THICKNESSES MAY BE REDUCED AS INDICATED ABOVE FOR BRANCH RUNOUTS BETWEEN COIL CONTROL VALVE AND THE COIL WHEN THE CONTROL VALVE IS LOCATED WITHIN 4 FEET OF THE COIL AND THE PIPE SIZE IS 1 INCH OR LESS.

3. FOR OUTDOOR ABOVEGROUND REFRIGERANT PIPING, INSULATION REQUIREMENTS SHALL BE THE SAME AS FOR INDOOR ABOVEGROUND REFRIGERANT PIPING, WITH THE FOLLOWING EXCEPTION: INSULATION SHALL BE JACKED WITH FLEXCAD-250, OR APPROVED EQUAL, ALUMINUM JACKETING SYSTEM, INSTALLED PER THE MANUFACTUREER'S RECOMMENDATIONS.

PIPE INSULATION SPECIFICATIONS:

FLEXIBLE ELASTOMERIC INSLATION (FC): CLOSED-CELL, FIBER-FREE, ELASTOMERIC FOAM RUBBER TUBULAR INSULATION, ARMSTRONG AP ARMAFLEX, OR APPROVED EQUAL. COMPLY WITH ASTM C 534, TYPE 1 FOR TUBULAR MATERIALS WITH FLAME SPREAD INDEX LESS THAN 25 AND SMOKE DEVELOPED INDELX LESS THAN 50. INSTALL INSULATION PER THE MANUFACTURER'S RECOMMENDATIONS.

MINERAL-FIBER PREFORMED PIPE INSULATION (MF): TYPE 1, MINERAL OR GLASS FIBERS BONDED WITH A THERMOSETTING RESIN. COMPLY WITH ASTM C 547, TYPE 1, GRADE A. INSULATION SHALL HAVE A FACTORY-APPLIED ALL-SERVICE JACKET (ASJ). JACKET SHALL BE WHITE, KRAFT-PAPER, FIBERGLASS-REINFORCED SCRIM WITH ALUMINUM-FOIL BACKING; COMPLYING WITH ASTM C 1136, TYPE 1. FOR INDOOR EXPOSED PIPING REQUIRING FIBERGLASS INSULATION, PROVIDE A WHITE HIGH-IMPACT RESISTANT PVC JACKET COMPLYING WITH ASTM D 1784 CLASS 16354-C. INSTALL INSULATION PER THE MAUFACTURER'S RECOMMENDATIONS

ABBREVIATIONS: (APPLIES TO PIPE INSULATION THICKNESS SCHEDULES & PIPE INSULATION SPECIFICATIONS ON THIS DRAWING)
FC - FLEXIBLE CLOSED-CELL
MF - MINERAL FIBER
N/A - NOT APPLICABLE

DUCTWORK INSULATION SCHEDULE

DUCT SYSTEM	OPERATING TEMPERATURE RANGE (DEG F)	MEAN TEMPERATURE RATING (DEG F)	NOMINAL SIZES		INSULATION MATERIAL	VAPOR BARRIER REQUIRED	NOTES
			THICKNESS INCH	R VALUE			
INTERIOR DUCT LINER (ACOUSTICAL)(WHERE NOTED)	0-150	75	1/2"	NA	FC	YES	1
SUPPLY DUCT FROM FCU TO DIFFUSERS (CONDITIONED SPACE, EXPOSED)	0-150	75	0"	NONE			3
RETURN DUCT FROM RETURN BOOT TO FCU (CONDITIONED SPACE, EXPOSED)	0-150	75	0"	NONE			3
EXTERIOR OUTSIDE AIR DUCT FROM INTAKE TO ERV	0-150	75	2-1/2"	R-12	FC & RB	YES	1, 5
EXTERIOR VENTILATION AIR DUCT FROM ERV TO REHEAT COIL	0-150	75	2-1/2"	R-12	FC & RB	YES	1, 5
EXTERIOR EXHAUST DUCT FROM SPACE TO ERV	0-150	75	2-1/2"	R-12	FC & RB	YES	1, 5
EXTERIOR EXHAUST DUCT FROM ERV TO GARAGE	0-150	75	0"	NONE			
VENTILATION DUCTWORK FROM REHEAT COIL TO DIFFUSERS	0-150	75	0"	NONE			
EXHAUST DUCT IN SPACE TO EXTERIOR WALL	0-150	75	0"	NONE			

NOTES:

1.THE TABLE ABOVE APPLIES TO DUCTWORK. THE BASIS OF THE ABOVE SCHEDULE IS ECONOMIC THICKNESS, PREVENTION OF CONDENSATION, AND COMPLIANCE WITH ASHRAE 90.1-2013 MINIMUM INSULATION THICKNESSES. BRANCH RUNOUTS LESS THAN 10FT CAN BE R-3.5.

2. UNCONDITIONED SPACES INCLUDE LOADING DOCKS, WAREHOUSES, MECHANICAL ROOMS, NON-PLENUM CEILINGS, VESTIBULE CEILING AREA.

3. DUCTWORK IS EXPOSED IN SPACE. DUCTWORK MAY BE PAINTED BLACK.

4. PROVIDE PVC OR OTHER PROTECTIVE COVER WHERE DUCTWORK IS EXPOSED AND SUBJECT TO IMPACT

5. PROVIDE WITH PROTECTIVE/WEATHERPROOF EXTERIOR WRAP. WRAP SHALL BE MINIMUM OF 40 MIL, SELF-ADHERING,

6. PROVIDE UL LISTED GREASE DUCT ASSEMBLY TO MEET CLEARANCE TO COMBUSTABLES

DUCT INSULATION SPECIFICATIONS:

FLEXIBLE ELASTOMERIC INSLATION (FC): CLOSED-CELL, FIBER-FREE, ELASTOMERIC FOAM INSULATION, ARMSTRONG AP ARMAFLEX, OR APPROVED EQUAL. COMPLY WITH ASTM E 84 AT 25/50 FOR USE IN AIR PLENUMS. INSTALL INSULATION PER THE MANUFACTURER'S RECOMMENDATIONS.

RIGID BOARD (RB): RIGID POLYISOCYANURATE FOAM CORE DUCT BOARD WITH FACTORY APPLIED VAPOR RETARDER FACING BOTH SIDES. DUCT BOARD SHALL BE "ENERGY 3 FOIL FACE" BY JOHN MANSVILLE OR EQUIVALENT. R-6 PER INCH, k-VALUE = 0.16 AT 50 DEG F. ASTM C 1289, TYPE I, CLASS I.

MINERAL-FIBER DUCT-WRAP INSULATION (MF): FORMELDEHYDE-FREE, TYPE 1, MINERAL OR GLASS FIBERS BONDED WITH A THERMOSETTING RESIN. COMPLY WITH ASTM C 1290, TYPE 1, GRADE A. INSULATION SHALL HAVE A FACTORY-APPLIED FSK (FOIL-SCRIM-KRAFT). FOIL WILL BE 0.02 PERMS; COMPLY WITH ASTM E 84 AT 25/50 FOR USE IN AIR PLENUMS. INSTALL INSULATION PER THE MAUFACTURER'S RECOMMENDATIONS

DUCT COIL SCHEDULE

Tag	DESCRIPTION	HEATING	COIL SIZE			HEATING CAPACITY		AIRSIDE			ELECTRICAL			MANU. & MODEL	NOTES
		AIRFLOW	WIDTH	HEIGHT	AREA			EAT	LAT	VEL	V	PH	HZ		
		CFM	IN	IN	SF	KW	MBH	DEG F	DEG F	FPM					
DC 2-1	ELECTRIC DUCT COIL - VENTILATION RE-HEAT	350	12	12	1	4	13.6	45	81	350	208	1	60	RENEWAIRE EK SERIES	ALL
DC 2-2	ELECTRIC DUCT COIL - VENTILATION RE-HEAT	350	12	12	1	4	13.6	45	81	350	208	1	60	RENEWAIRE EK SERIES	ALL

NOTES:
1. PROVIDE DISCHARGE AIR TEMPERATURE CONTROL W/ OA RESET SCHEDULE
2. PROVIDE SCR STAGING OF COIL
3. PROVIDE AIR-FLOW PROVING WITH FAN RELAY
4. UNIT IS HORIZONTAL AIRFLOW

FAN COIL UNIT (FCU)

TAG	DESCRIPTION	NOM. TONS	INDOOR UNIT							ELECTRICAL DATA				MANUFACTURER & MODEL	NOTES
			TYPE	AIRFLOW (CFM)	ESP (IN)	SENSIBLE COOLING	HEATING (MBH)	REFRIG.	SOUND (dBA)	WEIGHT (LBS)	VOLTS	PH	MCA	MOP		
SCU-2-1	PERIMETER	2.5	CEILING CASSETTE	600/690/775	-	30	34	R-410A	30/34/39	42	208	3			TRANE 4TVC0030B100N	ALL
SCU-2-2	PERIMETER	2.5	CEILING CASSETTE	600/690/775	-	30	34	R-410A	30/34/39	42	208	3			TRANE 4TVC0030B100N	ALL
SCU-2-3	PERIMETER	2.5	CEILING CASSETTE	600/690/775	-	30	34	R-410A	30/34/39	42	208	3			TRANE 4TVC0030B100N	ALL
FCU-2-4	OFFICE	1	WALL CASSETTE	255/295/325	-	12	13.5	R-410A	29/33/37	20	208	1			TRANE 4TVW0012B100N	ALL
FCU-2-5	OFFICE	1	WALL CASSETTE	255/295/325	-	12	13.5	R-410A	29/33/37	20	208	1			TRANE 4TVW0012B100N	ALL
FCU-2-6	OFFICE	1	WALL CASSETTE	255/295/325	-	12	13.5	R-410A	29/33/37	20	208	1			TRANE 4TVW0012B100N	ALL
FCU-2-7	CONFERENCE	1	WALL CASSETTE	255/295/325	-	12	13.5	R-410A	29/33/37	20	208	1			TRANE 4TVW0012B100N	ALL
FCU-2-8	OFFICE	1	WALL CASSETTE	255/295/325	-	12	13.5	R-410A	29/33/37	20	208	1			TRANE 4TVW0012B100N	ALL
FCU-2-9	OFFICE	1	WALL CASSETTE	255/295/325	-	12	13.5	R-410A	29/33/37	20	208	1			TRANE 4TVW0012B100N	ALL

NOTES:
1. PROVIDE GRAVITY CONDENSATE DRAIN TO APPROVED LOCATION.
2. PROVIDE UNIT WITH WIRED REMOTE THERMOSTAT MOUNTED ON WALL AS SHOWN (WIRED BY MC).
3. POWER WIRING & DISCONNECT PROVIDED TO OUTDOOR UNIT BY EC.
*VENTILATION AIR IS PROVIDED THRU ERV 2-1 & ERV 2-2 AND DUCTED DIRECTLY INTO THE SPACE.

GRILLE, REGISTER AND DIFFUSER SCHEDULE

TAG	DESCRIPTION	AIRFLOW	NECK	FACE SIZE	NC	SP	THROW (FT)	MATRL	VOL DAMP	MOUNTING	AIR PATTERN	MODEL	NOTES
		CFM	INCHES	INCHES		W.G.	@ 22-1/2						
SR-1	SUPPLY - SIDEWALL	100	6"	8"X8"	<20	0.01	6-9-19	ALUM	YES	SURFACE	ADJ	PRICE 22DAL	1
EG-6	EXHAUST - CEILING	125	6"	12"X12"	<20	0.011	NA	ALUM	YES	SURFACE	45 DEG	PRICE 630	1
EG-8	EXHAUST - CEILING	250	8"	12"X12"	<20	0.025	NA	ALUM	YES	SURFACE	45 DEG	PRICE 630	1

NOTES:
1. CORRDINATE FINISH WITH ARCHITECTURAL

CONDENSER SCHEDULE (CN)

TAG	DESCRIPTION	NOM. TONS	TYPE	REFRIG.	EER	SOUND (dBA)	WEIGHT (LBS)	ELECTRICAL DATA				MANUFACTURER & MODEL	NOTES
								VOLTS	PH	MCA	MOP		
CN 2-1	SERVES FCU 2-1 THRU 2-5	14	INVERTER COMPRESSOR	R-410A	20.8	63	740	460	3	31.3	40	TRANE 4TVR0169C400N	ALL

NOTES:
1. OUTDOOR HEATPUMP UNIT MOUNTED ON 12" STAND.
2. POWER WIRING & DISCONNECT PROVIDED TO OUTDOOR UNIT BY EC.

ENERGY RECOVERY VENTILATOR SCHEDULE (ERV)

TAG	DESCRIPTION	SUPPLY/VENTILATION AIR			EXHAUST/RETURN AIR			SUMMER					WINTER					EFFECTIVENESS				ELECTRICAL DATA					INSTALLED WEIGHT (LBS)	MANUFACTURER & MODEL	NOTES
		AIRFLOW (CFM)	ESP (IN WC)	MOTOR HP	AIRFLOW (CFM)	ESP (IN WC)	MOTOR HP	TOTAL CAPACITY	LATENT CAPACITY	OA AT	EXH. AT	ERV LAT	TOTAL CAPACITY	LATENT CAPACITY	EAT	EXH. AT	ERV LAT	SUMMER CONDITIONS		WINTER CONDITIONS		VOLTS	PH	HZ	MCA	MOP			
								MBH	MBH	DB/WB	DB/WB	DB/WB	MBH	MBH	DB/WB	DB/WB	DB/WB	SENSIBLE	TOTAL	SENSIBLE	TOTAL								
ERV 2-1	STATIC PLATE HX	350	0.5	0.75	250	0.5	0.75	5.9	2.8	88/71	75/62.6	79.6/66.4	24.6	5.1	-10/-11	70/54.4	41.6/36.1	90%	80%	90%	88%	208	1	60	10.1	15	275	RENEWAIRE HE1XINV	ALL
ERV 2-2	STATIC PLATE HX	350	0.5	0.75	250	0.5	0.75	5.9	2.8	88/71	75/62.6	79.6/66.4	24.6	5.1	-10/-11	70/54.4	41.6/36.1	90%	80%	90%	88%	208	1	60	10.1	15	275	RENEWAIRE HE1XINV	ALL

NOTES:
1. UNIT HAS DUAL MOTORS, DUAL ECM FANS.
2. PROVIDE STANDARD 2" MERV 8 FILTERS WITH UNIT.

JOHNSON & JORDAN
MECHANICAL CONTRACTORS
18 MUSSEY ROAD
SCARBOROUGH, ME 04074
TEL. (207) 883-8345

STATE OF MAINE — JACOB R. MARTIN — No. 12013 — LICENSED PROFESSIONAL ENGINEER

REV.	DESCRIPTION	DATE

ISSUE STATUS:
ISSUED FOR CONSTRUCTION 3-28-19

PROJECT:
OCEAN GATEWAY ADDITION
PORTLAND, ME

SHEET TITLE:
2ND FLOOR MECHANICAL SCHEDULES

DATE: 3-28-19
PROJECT# 17150
DRAWN: MAC
CHECKED: JRM
SCALE: NOT TO SCALE

SHEET #
M-602

INDOOR ABOVEGROUND PIPE INSULATION MINIMUM THICKNESS SCHEDULE

PIPING SYSTEM	FLUID OPERATING TEMPERATURE RANGE (DEG F)	INSULATION CONDUCTIVITY RANGE (BTU-IN/HR-FT2 DEG F)	MEAN TEMPERATURE RATING (DEG F)	NOMINAL PIPE OR TUBE SIZE (INCHES)						INSULATION MATERIAL	VAPOR BARRIER REQUIRED
				PIPE BRANCH RUN OUTS (SEE NOTE 2 BELOW)	< 1	1 TO < 1-1/2	1-1/2 TO < 4	4 TO < 8	8 TO > 8		
				INSULATION THICKNESS (INCHES)							
DOMESTIC COLD WATER	40-60	0.21 - 0.27	75	N/A	0.5	0.5	0.5	N/A	N/A	MF	YES
DOMESTIC DHW & DHWR	105-140	0.22 - 0.28	100	N/A	1	1	1.5	N/A	N/A	MF	NO
REFRIGERANT SUCTION & LIQUID (SEE NOTE 3 BELOW)	10 & UP	0.21 - 0.27	75	0.5	0.75	0.75	N/A	N/A	N/A	FC	NO

NOTES:

1.THE TABLE ABOVE APPLIES TO METALLIC PIPES AND SCHEDULE 80 OR LESS NON-METALLIC PIPES. THE BASIS OF THE ABOVE SCHEDULE IS ECONOMIC THICKNESS, PREVENTION OF CONDENSATION, AND COMPLIANCE WITH ASHRAE 90.1-2013 MINIMUM INSULATION THICKNESSES. ASHRAE 90.1-2013 DOES NOT PROVIDE REDUCED INSULATION THICHNESS FOR BRANCH RUNOUTS.

2. PIPING INSULATION THICKNESSES MAY BE REDUCED AS INDICATED ABOVE FOR BRANCH RUNOUTS BETWEEN COIL CONTROL VALVE AND THE COIL WHEN THE CONTROL VALVE IS LOCATED WITHIN 4 FEET OF THE COIL AND THE PIPE SIZE IS 1 INCH OR LESS.

3. FOR OUTDOOR ABOVEGROUND REFRIGERANT PIPING, INSULATION REQUIREMENTS SHALL BE THE SAME AS FOR INDOOR ABOVEGROUND REFRIGERANT PIPING, WITH THE FOLLOWING EXCEPTION: INSULATION SHALL BE JACKED WITH FLEXCAD-250, OR APPROVED EQUAL, ALUMINUM JACKETING SYSTEM, INSTALLED PER THE MANUFACTUREER'S RECOMMENDATIONS.

PIPE INSULATION SPECIFICATIONS:

FLEXIBLE ELASTOMERIC INSLATION (FC): CLOSED-CELL, FIBER-FREE, ELASTOMERIC FOAM RUBBER TUBULAR INSULATION, ARMSTRONG AP ARMAFLEX, OR APPROVED EQUAL. COMPLY WITH ASTM C 534, TYPE 1 FOR TUBULAR MATERIALS WITH FLAME SPREAD INDEX LESS THAN 25 AND SMOKE DEVELOPED INDELX LESS THAN 50. INSTALL INSULATION PER THE MANUFACTURER'S RECOMMENDATIONS.

MINERAL-FIBER PREFORMED PIPE INSULATION (MF): TYPE 1, MINERAL OR GLASS FIBERS BONDED WITH A THERMOSETTING RESIN. COMPLY WITH ASTM C 547, TYPE 1, GRADE A. INSULATION SHALL HAVE A FACTORY-APPLIED ALL-SERVICE JACKET (ASJ). JACKET SHALL BE WHITE, KRAFT-PAPER, FIBERGLASS-REINFORCED SCRIM WITH ALUMINUM-FOIL BACKING; COMPLYING WITH ASTM C 1136, TYPE 1. FOR INDOOR EXPOSED PIPING REQUIRING FIBERGLASS INSULATION, PROVIDE A WHITE HIGH-IMPACT RESISTANT PVC JACKET COMPLYING WITH ASTM D 1784 CLASS 16354-C. INSTALL INSULATION PER THE MAUFACTURER'S RECOMMENDATIONS

ABBREVIATIONS: (APPLIES TO PIPE INSULATION THICKNESS SCHEDULES & PIPE INSULATION SPECIFICATIONS ON THIS DRAWING)
FC - FLEXIBLE CLOSED-CELL
MF - MINERAL FIBER
N/A - NOT APPLICABLE

DUCTWORK INSULATION SCHEDULE

DUCT SYSTEM	OPERATING TEMPERATURE RANGE (DEG F)	MEAN TEMPERATURE RATING (DEG F)	NOMINAL SIZES		INSULATION MATERIAL	VAPOR BARRIER REQUIRED	NOTES
			THICKNESS INCH	R VALUE			
INTERIOR DUCT LINER (ACOUSTICAL)(WHERE NOTED)	0-150	75	1/2"	NA	FC	YES	1
SUPPLY DUCT FROM FCU TO DIFFUSERS (CONDITIONED SPACE, EXPOSED)	0-150	75	0"	NONE			3
RETURN DUCT FROM RETURN BOOT TO FCU (CONDITIONED SPACE, EXPOSED)	0-150	75	0"	NONE			3
EXTERIOR OUTSIDE AIR DUCT FROM INTAKE TO ERV	0-150	75	2-1/2"	R-12	FC & RB	YES	1, 5
EXTERIOR VENTILATION AIR DUCT FROM ERV TO REHEAT COIL	0-150	75	2-1/2"	R-12	FC & RB	YES	1, 5
EXTERIOR EXHAUST DUCT FROM SPACE TO ERV	0-150	75	2-1/2"	R-12	FC & RB	YES	1, 5
EXTERIOR EXHAUST DUCT FROM ERV TO GARAGE	0-150	75	0"	NONE			
VENTILATION DUCTWORK FROM REHEAT COIL TO DIFFUSERS	0-150	75	0"	NONE			
EXHAUST DUCT IN SPACE TO EXTERIOR WALL	0-150	75	0"	NONE			

NOTES:

1.THE TABLE ABOVE APPLIES TO DUCTWORK. THE BASIS OF THE ABOVE SCHEDULE IS ECONOMIC THICKNESS, PREVENTION OF CONDENSATION, AND COMPLIANCE WITH ASHRAE 90.1-2013 MINIMUM INSULATION THICKNESSES. BRANCH RUNOUTS LESS THAN 10FT CAN BE R-3.5.

2. UNCONDITIONED SPACES INCLUDE LOADING DOCKS, WAREHOUSES, MECHANICAL ROOMS, NON-PLENUM CEILINGS, VESTIBULE CEILING AREA.

3. DUCTWORK IS EXPOSED IN SPACE. DUCTWORK MAY BE PAINTED BLACK.

4. PROVIDE PVC OR OTHER PROTECTIVE COVER WHERE DUCTWORK IS EXPOSED AND SUBJECT TO IMPACT

5. PROVIDE WITH PROTECTIVE/WEATHERPROOF EXTERIOR WRAP. WRAP SHALL BE MINIMUM OF 40 MIL, SELF-ADHERING,

6. PROVIDE UL LISTED GREASE DUCT ASSEMBLY TO MEET CLEARANCE TO COMBUSTABLES

DUCT INSULATION SPECIFICATIONS:

FLEXIBLE ELASTOMERIC INSLATION (FC): CLOSED-CELL, FIBER-FREE, ELASTOMERIC FOAM INSULATION, ARMSTRONG AP ARMAFLEX, OR APPROVED EQUAL. COMPLY WITH ASTM E 84 AT 25/50 FOR USE IN AIR PLENUMS. INSTALL INSULATION PER THE MANUFACTURER'S RECOMMENDATIONS.

RIGID BOARD (RB): RIGID POLYISOCYANURATE FOAM CORE DUCT BOARD WITH FACTORY APPLIED VAPOR RETARDER FACING BOTH SIDES. DUCT BOARD SHALL BE "ENERGY 3 FOIL FACE" BY JOHN MANSVILLE OR EQUIVALENT. R-6 PER INCH, k-VALUE = 0.16 AT 50 DEG F. ASTM C 1289, TYPE I, CLASS I.

MINERAL-FIBER DUCT-WRAP INSULATION (MF): FORMELDEHYDE-FREE, TYPE 1, MINERAL OR GLASS FIBERS BONDED WITH A THERMOSETTING RESIN. COMPLY WITH ASTM C 1290, TYPE 1, GRADE A. INSULATION SHALL HAVE A FACTORY-APPLIED FSK (FOIL-SCRIM-KRAFT). FOIL WILL BE 0.02 PERMS; COMPLY WITH ASTM E 84 AT 25/50 FOR USE IN AIR PLENUMS. INSTALL INSULATION PER THE MAUFACTURER'S RECOMMENDATIONS

DUCT COIL SCHEDULE

Tag	DESCRIPTION	HEATING	COIL SIZE			HEATING	AIRSIDE			ELECTRICAL			MANU. & MODEL	NOTES
		AIRFLOW	WIDTH	HEIGHT	AREA	CAPACITY	EAT	LAT	VEL	V	PH	HZ		
		CFM	IN	IN	SF	KW / MBH	DEG F	DEG F	FPM					
DC 3-1	ELECTRIC DUCT COIL - VENTILATION RE-HEAT	350	12	12	1	4 / 13.6	45	81	350	208	1	60	RENEWAIRE EK SERIES	ALL
DC 3-2	ELECTRIC DUCT COIL - VENTILATION RE-HEAT	350	12	12	1	4 / 13.6	45	81	350	208	1	60	RENEWAIRE EK SERIES	ALL

NOTES:
1. PROVIDE DISCHARGE AIR TEMPERATURE CONTROL W/ OA RESET SCHEDULE
2. PROVIDE SCR STAGING OF COIL
3. PROVIDE AIR-FLOW PROVING WITH FAN RELAY
4. UNIT IS HORIZONTAL AIRFLOW

FAN COIL UNIT (FCU)

TAG	DESCRIPTION	NOM. TONS	INDOOR UNIT							ELECTRICAL DATA				MANUFACTURER & MODEL	NOTES
			TYPE	AIRFLOW (CFM)	ESP (IN)	SENSIBLE COOLING	HEATING (MBH)	REFRIG.	SOUND (dBA)	WEIGHT (LBS)	VOLTS	PH	MCA	MOP		
SCU-3-1	PERIMETER	2.5	CEILING CASSETTE	600/690/775	-	30	34	R-410A	30/34/39	42	208	3			TRANE 4TVC0030B100N	ALL
SCU-3-2	PERIMETER	2.5	CEILING CASSETTE	600/690/775	-	30	34	R-410A	30/34/39	42	208	3			TRANE 4TVC0030B100N	ALL
SCU-3-3	PERIMETER	2.5	CEILING CASSETTE	600/690/775	-	30	34	R-410A	30/34/39	42	208	3			TRANE 4TVC0030B100N	ALL
FCU-3-4	OFFICE	1	WALL CASSETTE	255/295/325	-	12	13.5	R-410A	29/33/37	20	208	1			TRANE 4TVW0012B100N	ALL
FCU-3-5	OFFICE	1	WALL CASSETTE	255/295/325	-	12	13.5	R-410A	29/33/37	20	208	1			TRANE 4TVW0012B100N	ALL
FCU-3-6	OFFICE	1	WALL CASSETTE	255/295/325	-	12	13.5	R-410A	29/33/37	20	208	1			TRANE 4TVW0012B100N	ALL
FCU-3-7	CONFERENCE	1	WALL CASSETTE	255/295/325	-	12	13.5	R-410A	29/33/37	20	208	1			TRANE 4TVW0012B100N	ALL
FCU-3-8	OFFICE	1	WALL CASSETTE	255/295/325	-	12	13.5	R-410A	29/33/37	20	208	1			TRANE 4TVW0012B100N	ALL
FCU-3-9	OFFICE	1	WALL CASSETTE	255/295/325	-	12	13.5	R-410A	29/33/37	20	208	1			TRANE 4TVW0012B100N	ALL

NOTES:
1. PROVIDE GRAVITY CONDENSATE DRAIN TO APPROVED LOCATION.
2. PROVIDE UNIT WITH WIRED REMOTE THERMOSTAT MOUNTED ON WALL AS SHOWN (WIRED BY MC).
3. POWER WIRING & DISCONNECT PROVIDED TO OUTDOOR UNIT BY EC.
*VENTILATION AIR IS PROVIDED THRU ERV 3-1 & ERV 3-2 AND DUCTED DIRECTLY INTO THE SPACE.

GRILLE, REGISTER AND DIFFUSER SCHEDULE

TAG	DESCRIPTION	AIRFLOW	NECK	FACE SIZE	NC	SP	THROW (FT)	MATRL	VOL DAMP	MOUNTING	AIR PATTERN	MODEL	NOTES
		CFM	INCHES	INCHES		W.G.	@ 22-1/2						
SR-1	SUPPLY - SIDEWALL	100	6"	8"X8"	<20	0.01	6-9-19	ALUM	YES	SURFACE	ADJ	PRICE 22DAL	1
EG-6	EXHAUST - CEILING	125	6"	12"X12"	<20	0.011	NA	ALUM	YES	SURFACE	45 DEG	PRICE 630	1
EG-8	EXHAUST - CEILING	250	8"	12"X12"	<20	0.025	NA	ALUM	YES	SURFACE	45 DEG	PRICE 630	1

NOTES:
1. CORRDINATE FINISH WITH ARCHITECTURAL

CONDENSER SCHEDULE (CN)

TAG	DESCRIPTION	NOM. TONS	TYPE	REFRIG.	EER	SOUND (dBA)	WEIGHT (LBS)	ELECTRICAL DATA				MANUFACTURER & MODEL	NOTES
								VOLTS	PH	MCA	MOP		
CN 3-1	SERVES FCU 3-1 THRU 3-5	14	INVERTER COMPRESSOR	R-410A	20.8	63	740	460	3	31.3	40	TRANE 4TVR0169C400N	ALL

NOTES:
1. OUTDOOR HEATPUMP UNIT MOUNTED ON 12" STAND.
2. POWER WIRING & DISCONNECT PROVIDED TO OUTDOOR UNIT BY EC.

ENERGY RECOVERY VENTILATOR SCHEDULE (ERV)

TAG	DESCRIPTION	SUPPLY/VENTILATION AIR			EXHAUST/RETURN AIR			SUMMER					WINTER					EFFECTIVENESS				ELECTRICAL DATA					INSTALLED WEIGHT (LBS)	MANUFACTURER & MODEL	NOTES
		AIRFLOW (CFM)	ESP (IN WC)	MOTOR HP	AIRFLOW (CFM)	ESP (IN WC)	MOTOR HP	TOTAL CAPACITY MBH	LATENT CAPACITY MBH	OA AT DB/WB	EXH. AT DB/WB	ERV LAT DB/WB	TOTAL CAPACITY MBH	LATENT CAPACITY MBH	EAT DB/WB	EXH. AT DB/WB	ERV LAT DB/WB	SUMMER CONDITIONS SENSIBLE	SUMMER CONDITIONS TOTAL	WINTER CONDITIONS SENSIBLE	WINTER CONDITIONS TOTAL	VOLTS	PH	HZ	MCA	MOP			
ERV 3-1	STATIC PLATE HX	350	0.5	0.75	250	0.5	0.75	5.9	2.8	88/71	75/62.6	79.6/66.4	24.6	5.1	-10/-11	70/54.4	41.6/36.1	90%	80%	90%	88%	208	1	60	10.1	15	275	RENEWAIRE HE1XINV	ALL
ERV 3-2	STATIC PLATE HX	350	0.5	0.75	250	0.5	0.75	5.9	2.8	88/71	75/62.6	79.6/66.4	24.6	5.1	-10/-11	70/54.4	41.6/36.1	90%	80%	90%	88%	208	1	60	10.1	15	275	RENEWAIRE HE1XINV	ALL

NOTES:
1. UNIT HAS DUAL MOTORS, DUAL ECM FANS.
2. PROVIDE STANDARD 2" MERV 8 FILTERS WITH UNIT.

JOHNSON & JORDAN
MECHANICAL CONTRACTORS
18 MUSSEY ROAD
SCARBOROUGH, ME 04074
TEL. (207) 883-8345

STATE OF MAINE
JACOB R. MARTIN
No. 12013
LICENSED
PROFESSIONAL ENGINEER

REV.	DESCRIPTION	DATE

ISSUE STATUS:
ISSUED FOR CONSTRUCTION 3-28-19

PROJECT:
OCEAN GATEWAY ADDITION
PORTLAND, ME

SHEET TITLE:
3RD FLOOR MECHANICAL SCHEDULES

DATE: 3-28-19
PROJECT# 17150
DRAWN: MAC
CHECKED: JRM
SCALE: NOT TO SCALE

SHEET #
M-603

INDOOR ABOVEGROUND PIPE INSULATION MINIMUM THICKNESS SCHEDULE

PIPING SYSTEM	FLUID OPERATING TEMPERATURE RANGE (DEG F)	INSULATION CONDUCTIVITY RANGE (BTU-IN/HR-FT2 DEG F)	MEAN TEMPERATURE RATING (DEG F)	NOMINAL PIPE OR TUBE SIZE (INCHES)						INSULATION MATERIAL	VAPOR BARRIER REQUIRED
				PIPE BRANCH RUN OUTS (SEE NOTE 2 BELOW)	< 1	1 TO < 1-1/2	1-1/2 TO < 4	4 TO < 8	8 TO > 8		
				INSULATION THICKNESS (INCHES)							
DOMESTIC COLD WATER	40-60	0.21 - 0.27	75	N/A	0.5	0.5	0.5	N/A	N/A	MF	YES
DOMESTIC DHW & DHWR	105-140	0.22 - 0.28	100	N/A	1	1	1.5	N/A	N/A	MF	NO
REFRIGERANT SUCTION & LIQUID (SEE NOTE 3 BELOW)	10 & UP	0.21 - 0.27	75	0.5	0.75	0.75	N/A	N/A	N/A	FC	NO

NOTES:

1.THE TABLE ABOVE APPLIES TO METALLIC PIPES AND SCHEDULE 80 OR LESS NON-METALLIC PIPES. THE BASIS OF THE ABOVE SCHEDULE IS ECONOMIC THICKNESS, PREVENTION OF CONDENSATION, AND COMPLIANCE WITH ASHRAE 90.1-2013 MINIMUM INSULATION THICKNESSES. ASHRAE 90.1-2013 DOES NOT PROVIDE REDUCED INSULATION THICHNESS FOR BRANCH RUNOUTS.

2. PIPING INSULATION THICKNESSES MAY BE REDUCED AS INDICATED ABOVE FOR BRANCH RUNOUTS BETWEEN COIL CONTROL VALVE AND THE COIL WHEN THE CONTROL VALVE IS LOCATED WITHIN 4 FEET OF THE COIL AND THE PIPE SIZE IS 1 INCH OR LESS.

3. FOR OUTDOOR ABOVEGROUND REFRIGERANT PIPING, INSULATION REQUIREMENTS SHALL BE THE SAME AS FOR INDOOR ABOVEGROUND REFRIGERANT PIPING, WITH THE FOLLOWING EXCEPTION: INSULATION SHALL BE JACKED WITH FLEXCAD-250, OR APPROVED EQUAL, ALUMINUM JACKETING SYSTEM, INSTALLED PER THE MANUFACTUREER'S RECOMMENDATIONS.

PIPE INSULATION SPECIFICATIONS:

FLEXIBLE ELASTOMERIC INSLATION (FC): CLOSED-CELL, FIBER-FREE, ELASTOMERIC FOAM RUBBER TUBULAR INSULATION, ARMSTRONG AP ARMAFLEX, OR APPROVED EQUAL. COMPLY WITH ASTM C 534, TYPE 1 FOR TUBULAR MATERIALS WITH FLAME SPREAD INDEX LESS THAN 25 AND SMOKE DEVELOPED INDELX LESS THAN 50. INSTALL INSULATION PER THE MANUFACTURER'S RECOMMENDATIONS.

MINERAL-FIBER PREFORMED PIPE INSULATION (MF): TYPE 1, MINERAL OR GLASS FIBERS BONDED WITH A THERMOSETTING RESIN. COMPLY WITH ASTM C 547, TYPE 1, GRADE A. INSULATION SHALL HAVE A FACTORY-APPLIED ALL-SERVICE JACKET (ASJ). JACKET SHALL BE WHITE, KRAFT-PAPER, FIBERGLASS-REINFORCED SCRIM WITH ALUMINUM-FOIL BACKING; COMPLYING WITH ASTM C 1136, TYPE 1. FOR INDOOR EXPOSED PIPING REQUIRING FIBERGLASS INSULATION, PROVIDE A WHITE HIGH-IMPACT RESISTANT PVC JACKET COMPLYING WITH ASTM D 1784 CLASS 16354-C. INSTALL INSULATION PER THE MAUFACTURER'S RECOMMENDATIONS

ABBREVIATIONS: (APPLIES TO PIPE INSULATION THICKNESS SCHEDULES & PIPE INSULATION SPECIFICATIONS ON THIS DRAWING)
FC - FLEXIBLE CLOSED-CELL
MF - MINERAL FIBER
N/A - NOT APPLICABLE

DUCTWORK INSULATION SCHEDULE

DUCT SYSTEM	OPERATING TEMPERATURE RANGE (DEG F)	MEAN TEMPERATURE RATING (DEG F)	NOMINAL SIZES		INSULATION MATERIAL	VAPOR BARRIER REQUIRED	NOTES
			THICKNESS INCH	R VALUE			
INTERIOR DUCT LINER (ACOUSTICAL)(WHERE NOTED)	0-150	75	1/2"	NA	FC	YES	1
SUPPLY DUCT FROM FCU TO DIFFUSERS (CONDITIONED SPACE, EXPOSED)	0-150	75	0"	NONE			3
RETURN DUCT FROM RETURN BOOT TO FCU (CONDITIONED SPACE, EXPOSED)	0-150	75	0"	NONE			3
EXTERIOR OUTSIDE AIR DUCT FROM INTAKE TO ERV	0-150	75	2-1/2"	R-12	FC & RB	YES	1, 5
EXTERIOR VENTILATION AIR DUCT FROM ERV TO REHEAT COIL	0-150	75	2-1/2"	R-12	FC & RB	YES	1, 5
EXTERIOR EXHAUST DUCT FROM SPACE TO ERV	0-150	75	2-1/2"	R-12	FC & RB	YES	1, 5
EXTERIOR EXHAUST DUCT FROM ERV TO GARAGE	0-150	75	0"	NONE			
VENTILATION DUCTWORK FROM REHEAT COIL TO DIFFUSERS	0-150	75	0"	NONE			
EXHAUST DUCT IN SPACE TO EXTERIOR WALL	0-150	75	0"	NONE			

NOTES:

1.THE TABLE ABOVE APPLIES TO DUCTWORK. THE BASIS OF THE ABOVE SCHEDULE IS ECONOMIC THICKNESS, PREVENTION OF CONDENSATION, AND COMPLIANCE WITH ASHRAE 90.1-2013 MINIMUM INSULATION THICKNESSES. BRANCH RUNOUTS LESS THAN 10FT CAN BE R-3.5.

2. UNCONDITIONED SPACES INCLUDE LOADING DOCKS, WAREHOUSES, MECHANICAL ROOMS, NON-PLENUM CEILINGS, VESTIBULE CEILING AREA.

3. DUCTWORK IS EXPOSED IN SPACE. DUCTWORK MAY BE PAINTED BLACK.

4. PROVIDE PVC OR OTHER PROTECTIVE COVER WHERE DUCTWORK IS EXPOSED AND SUBJECT TO IMPACT

5. PROVIDE WITH PROTECTIVE/WEATHERPROOF EXTERIOR WRAP. WRAP SHALL BE MINIMUM OF 40 MIL, SELF-ADHERING,

6. PROVIDE UL LISTED GREASE DUCT ASSEMBLY TO MEET CLEARANCE TO COMBUSTABLES

DUCT INSULATION SPECIFICATIONS:

FLEXIBLE ELASTOMERIC INSLATION (FC): CLOSED-CELL, FIBER-FREE, ELASTOMERIC FOAM INSULATION, ARMSTRONG AP ARMAFLEX, OR APPROVED EQUAL. COMPLY WITH ASTM E 84 AT 25/50 FOR USE IN AIR PLENUMS. INSTALL INSULATION PER THE MANUFACTURER'S RECOMMENDATIONS.

RIGID BOARD (RB): RIGID POLYISOCYANURATE FOAM CORE DUCT BOARD WITH FACTORY APPLIED VAPOR RETARDER FACING BOTH SIDES. DUCT BOARD SHALL BE "ENERGY 3 FOIL FACE" BY JOHN MANSVILLE OR EQUIVALENT. R-6 PER INCH, k-VALUE = 0.16 AT 50 DEG F. ASTM C 1289, TYPE I, CLASS I.

MINERAL-FIBER DUCT-WRAP INSULATION (MF): FORMELDEHYDE-FREE, TYPE 1, MINERAL OR GLASS FIBERS BONDED WITH A THERMOSETTING RESIN. COMPLY WITH ASTM C 1290, TYPE 1, GRADE A. INSULATION SHALL HAVE A FACTORY-APPLIED FSK (FOIL-SCRIM-KRAFT). FOIL WILL BE 0.02 PERMS; COMPLY WITH ASTM E 84 AT 25/50 FOR USE IN AIR PLENUMS. INSTALL INSULATION PER THE MAUFACTURER'S RECOMMENDATIONS

DUCT COIL SCHEDULE

Tag	DESCRIPTION	HEATING	COIL SIZE			HEATING	AIRSIDE			ELECTRICAL			MANU. & MODEL	NOTES
		AIRFLOW	WIDTH	HEIGHT	AREA	CAPACITY	EAT	LAT	VEL	V	PH	HZ		
		CFM	IN	IN	SF	KW	MBH	DEG F	DEG F	FPM					
DC 4-1	ELECTRIC DUCT COIL - VENTILATION RE-HEAT	350	12	12	1	4	13.6	45	81	350	208	1	60	RENEWAIRE EK SERIES	ALL
DC 4-2	ELECTRIC DUCT COIL - VENTILATION RE-HEAT	350	12	12	1	4	13.6	45	81	350	208	1	60	RENEWAIRE EK SERIES	ALL

NOTES:
1. PROVIDE DISCHARGE AIR TEMPERATURE CONTROL W/ OA RESET SCHEDULE
2. PROVIDE SCR STAGING OF COIL
3. PROVIDE AIR-FLOW PROVING WITH FAN RELAY
4. UNIT IS HORIZONTAL AIRFLOW

FAN COIL UNIT (FCU)

TAG	DESCRIPTION	NOM. TONS	INDOOR UNIT								ELECTRICAL DATA				MANUFACTURER & MODEL	NOTES
			TYPE	AIRFLOW (CFM)	ESP (IN)	SENSIBLE COOLING	HEATING (MBH)	REFRIG.	SOUND (dBA)	WEIGHT (LBS)	VOLTS	PH	MCA	MOP		
SCU-4-1	PERIMETER	2.5	CEILING CASSETTE	600/690/775	-	30	34	R-410A	30/34/39	42	208	3			TRANE 4TVC0030B100N	ALL
SCU-4-2	PERIMETER	2.5	CEILING CASSETTE	600/690/775	-	30	34	R-410A	30/34/39	42	208	3			TRANE 4TVC0030B100N	ALL
SCU-4-3	PERIMETER	2.5	CEILING CASSETTE	600/690/775	-	30	34	R-410A	30/34/39	42	208	3			TRANE 4TVC0030B100N	ALL
FCU-4-4	OFFICE	1	WALL CASSETTE	255/295/325	-	12	13.5	R-410A	29/33/37	20	208	1			TRANE 4TVW0012B100N	ALL
FCU-4-5	OFFICE	1	WALL CASSETTE	255/295/325	-	12	13.5	R-410A	29/33/37	20	208	1			TRANE 4TVW0012B100N	ALL
FCU-4-6	OFFICE	1	WALL CASSETTE	255/295/325	-	12	13.5	R-410A	29/33/37	20	208	1			TRANE 4TVW0012B100N	ALL
FCU-4-7	CONFERENCE	1	WALL CASSETTE	255/295/325	-	12	13.5	R-410A	29/33/37	20	208	1			TRANE 4TVW0012B100N	ALL
FCU-4-8	OFFICE	1	WALL CASSETTE	255/295/325	-	12	13.5	R-410A	29/33/37	20	208	1			TRANE 4TVW0012B100N	ALL
FCU-4-9	OFFICE	1	WALL CASSETTE	255/295/325	-	12	13.5	R-410A	29/33/37	20	208	1			TRANE 4TVW0012B100N	ALL

NOTES:
1. PROVIDE GRAVITY CONDENSATE DRAIN TO APPROVED LOCATION.
2. PROVIDE UNIT WITH WIRED REMOTE THERMOSTAT MOUNTED ON WALL AS SHOWN (WIRED BY MC).
3. POWER WIRING & DISCONNECT PROVIDED TO OUTDOOR UNIT BY EC.
*VENTILATION AIR IS PROVIDED THRU ERV 4-1 & ERV 4-2 AND DUCTED DIRECTLY INTO THE SPACE.

GRILLE, REGISTER AND DIFFUSER SCHEDULE

TAG	DESCRIPTION	AIRFLOW	NECK	FACE SIZE	NC	SP	THROW (FT)	MATRL	VOL DAMP	MOUNTING	AIR PATTERN	MODEL	NOTES
		CFM	INCHES	INCHES		W.G.	@ 22-1/2						
SR-1	SUPPLY - SIDEWALL	100	6"	8"X8"	<20	0.01	6-9-19	ALUM	YES	SURFACE	ADJ	PRICE 22DAL	1
EG-6	EXHAUST - CEILING	125	6"	12"X12"	<20	0.011	NA	ALUM	YES	SURFACE	45 DEG	PRICE 630	1
EG-8	EXHAUST - CEILING	250	8"	12"X12"	<20	0.025	NA	ALUM	YES	SURFACE	45 DEG	PRICE 630	1

NOTES:
1. CORRDINATE FINISH WITH ARCHITECTURAL

CONDENSER SCHEDULE (CN)

TAG	DESCRIPTION	NOM. TONS	TYPE	REFRIG.	EER	SOUND (dBA)	WEIGHT (LBS)	ELECTRICAL DATA				MANUFACTURER & MODEL	NOTES
								VOLTS	PH	MCA	MOP		
CN 4-1	SERVES FCU 4-1 THRU 4-5	14	INVERTER COMPRESSOR	R-410A	20.8	63	740	460	3	31.3	40	TRANE 4TVR0169C400N	ALL

NOTES:
1. OUTDOOR HEATPUMP UNIT MOUNTED ON 12" STAND.
2. POWER WIRING & DISCONNECT PROVIDED TO OUTDOOR UNIT BY EC.

ENERGY RECOVERY VENTILATOR SCHEDULE (ERV)

TAG	DESCRIPTION	SUPPLY/VENTILATION AIR			EXHAUST/RETURN AIR			SUMMER					WINTER					EFFECTIVENESS				ELECTRICAL DATA					INSTALLED WEIGHT (LBS)	MANUFACTURER & MODEL	NOTES
		AIRFLOW (CFM)	ESP (IN WC)	MOTOR HP	AIRFLOW (CFM)	ESP (IN WC)	MOTOR HP	TOTAL CAPACITY	LATENT CAPACITY	OA AT	EXH. AT	ERV LAT	TOTAL CAPACITY	LATENT CAPACITY	EAT	EXH. AT	ERV LAT	SUMMER CONDITIONS		WINTER CONDITIONS		VOLTS	PH	HZ	MCA	MOP			
								MBH	MBH	DB/WB	DB/WB	DB/WB	MBH	MBH	DB/WB	DB/WB	DB/WB	SENSIBLE	TOTAL	SENSIBLE	TOTAL								
ERV 4-1	STATIC PLATE HX	350	0.5	0.75	250	0.5	0.75	5.9	2.8	88/71	75/62.6	79.6/66.4	24.6	5.1	-10/-11	70/54.4	41.6/36.1	90%	80%	90%	88%	208	1	60	10.1	15	275	RENEWAIRE HE1XINV	ALL
ERV 4-2	STATIC PLATE HX	350	0.5	0.75	250	0.5	0.75	5.9	2.8	88/71	75/62.6	79.6/66.4	24.6	5.1	-10/-11	70/54.4	41.6/36.1	90%	80%	90%	88%	208	1	60	10.1	15	275	RENEWAIRE HE1XINV	ALL

NOTES:
1. UNIT HAS DUAL MOTORS, DUAL ECM FANS.
2. PROVIDE STANDARD 2" MERV 8 FILTERS WITH UNIT.

JOHNSON & JORDAN
MECHANICAL CONTRACTORS
18 MUSSEY ROAD
SCARBOROUGH, ME 04074
TEL. (207) 883-8345

STATE OF MAINE — JACOB R. MARTIN — No. 12013 — LICENSED PROFESSIONAL ENGINEER

REV.	DESCRIPTION	DATE

ISSUE STATUS:
ISSUED FOR CONSTRUCTION 3-28-19

PROJECT:
OCEAN GATEWAY ADDITION
PORTLAND, ME

SHEET TITLE:
4TH FLOOR MECHANICAL SCHEDULES

DATE:	PROJECT#
3-28-19	17150

DRAWN:	CHECKED:	SCALE:
MAC	JRM	NOT TO SCALE

SHEET #
M-604

INDOOR ABOVEGROUND PIPE INSULATION MINIMUM THICKNESS SCHEDULE

PIPING SYSTEM	FLUID OPERATING TEMPERATURE RANGE (DEG F)	INSULATION CONDUCTIVITY RANGE (BTU-IN/HR-FT2 DEG F)	MEAN TEMPERATURE RATING (DEG F)	NOMINAL PIPE OR TUBE SIZE (INCHES)						INSULATION MATERIAL	VAPOR BARRIER REQUIRED
				PIPE BRANCH RUN OUTS (SEE NOTE 2 BELOW)	< 1	1 TO < 1-1/2	1-1/2 TO < 4	4 TO < 8	8 TO > 8		
				INSULATION THICKNESS (INCHES)							
DOMESTIC COLD WATER	40-60	0.21 - 0.27	75	N/A	0.5	0.5	0.5	N/A	N/A	MF	YES
DOMESTIC DHW & DHWR	105-140	0.22 - 0.28	100	N/A	1	1	1.5	N/A	N/A	MF	NO
REFRIGERANT SUCTION & LIQUID (SEE NOTE 3 BELOW)	10 & UP	0.21 - 0.27	75	0.5	0.75	0.75	N/A	N/A	N/A	FC	NO

NOTES:

1.THE TABLE ABOVE APPLIES TO METALLIC PIPES AND SCHEDULE 80 OR LESS NON-METALLIC PIPES. THE BASIS OF THE ABOVE SCHEDULE IS ECONOMIC THICKNESS, PREVENTION OF CONDENSATION, AND COMPLIANCE WITH ASHRAE 90.1-2013 MINIMUM INSULATION THICKNESSES. ASHRAE 90.1-2013 DOES NOT PROVIDE REDUCED INSULATION THICHNESS FOR BRANCH RUNOUTS.

2. PIPING INSULATION THICKNESSES MAY BE REDUCED AS INDICATED ABOVE FOR BRANCH RUNOUTS BETWEEN COIL CONTROL VALVE AND THE COIL WHEN THE CONTROL VALVE IS LOCATED WITHIN 4 FEET OF THE COIL AND THE PIPE SIZE IS 1 INCH OR LESS.

3. FOR OUTDOOR ABOVEGROUND REFRIGERANT PIPING, INSULATION REQUIREMENTS SHALL BE THE SAME AS FOR INDOOR ABOVEGROUND REFRIGERANT PIPING, WITH THE FOLLOWING EXCEPTION: INSULATION SHALL BE JACKED WITH FLEXCAD-250, OR APPROVED EQUAL, ALUMINUM JACKETING SYSTEM, INSTALLED PER THE MANUFACTUREER'S RECOMMENDATIONS.

PIPE INSULATION SPECIFICATIONS:

FLEXIBLE ELASTOMERIC INSLATION (FC): CLOSED-CELL, FIBER-FREE, ELASTOMERIC FOAM RUBBER TUBULAR INSULATION, ARMSTRONG AP ARMAFLEX, OR APPROVED EQUAL. COMPLY WITH ASTM C 534, TYPE 1 FOR TUBULAR MATERIALS WITH FLAME SPREAD INDEX LESS THAN 25 AND SMOKE DEVELOPED INDELX LESS THAN 50. INSTALL INSULATION PER THE MANUFACTURER'S RECOMMENDATIONS.

MINERAL-FIBER PREFORMED PIPE INSULATION (MF): TYPE 1, MINERAL OR GLASS FIBERS BONDED WITH A THERMOSETTING RESIN. COMPLY WITH ASTM C 547, TYPE 1, GRADE A. INSULATION SHALL HAVE A FACTORY-APPLIED ALL-SERVICE JACKET (ASJ). JACKET SHALL BE WHITE, KRAFT-PAPER, FIBERGLASS-REINFORCED SCRIM WITH ALUMINUM-FOIL BACKING; COMPLYING WITH ASTM C 1136, TYPE 1. FOR INDOOR EXPOSED PIPING REQUIRING FIBERGLASS INSULATION, PROVIDE A WHITE HIGH-IMPACT RESISTANT PVC JACKET COMPLYING WITH ASTM D 1784 CLASS 16354-C. INSTALL INSULATION PER THE MAUFACTURER'S RECOMMENDATIONS

ABBREVIATIONS: (APPLIES TO PIPE INSULATION THICKNESS SCHEDULES & PIPE INSULATION SPECIFICATIONS ON THIS DRAWING)
FC - FLEXIBLE CLOSED-CELL
MF - MINERAL FIBER
N/A - NOT APPLICABLE

DUCTWORK INSULATION SCHEDULE

DUCT SYSTEM	OPERATING TEMPERATURE RANGE (DEG F)	MEAN TEMPERATURE RATING (DEG F)	NOMINAL SIZES		INSULATION MATERIAL	VAPOR BARRIER REQUIRED	NOTES
			THICKNESS	R VALUE			
			INCH				
INTERIOR DUCT LINER (ACOUSTICAL)(WHERE NOTED)	0-150	75	1/2"	NA	FC	YES	1
SUPPLY DUCT FROM FCU TO DIFFUSERS (CONDITIONED SPACE, EXPOSED)	0-150	75	0"	NONE			3
RETURN DUCT FROM RETURN BOOT TO FCU (CONDITIONED SPACE, EXPOSED)	0-150	75	0"	NONE			3
EXTERIOR OUTSIDE AIR DUCT FROM INTAKE TO ERV	0-150	75	2-1/2"	R-12	FC & RB	YES	1, 5
EXTERIOR VENTILATION AIR DUCT FROM ERV TO REHEAT COIL	0-150	75	2-1/2"	R-12	FC & RB	YES	1, 5
EXTERIOR EXHAUST DUCT FROM SPACE TO ERV	0-150	75	2-1/2"	R-12	FC & RB	YES	1, 5
EXTERIOR EXHAUST DUCT FROM ERV TO GARAGE	0-150	75	0"	NONE			
VENTILATION DUCTWORK FROM REHEAT COIL TO DIFFUSERS	0-150	75	0"	NONE			
EXHAUST DUCT IN SPACE TO EXTERIOR WALL	0-150	75	0"	NONE			

NOTES:

1.THE TABLE ABOVE APPLIES TO DUCTWORK. THE BASIS OF THE ABOVE SCHEDULE IS ECONOMIC THICKNESS, PREVENTION OF CONDENSATION, AND COMPLIANCE WITH ASHRAE 90.1-2013 MINIMUM INSULATION THICKNESSES. BRANCH RUNOUTS LESS THAN 10FT CAN BE R-3.5.

2. UNCONDITIONED SPACES INCLUDE LOADING DOCKS, WAREHOUSES, MECHANICAL ROOMS, NON-PLENUM CEILINGS, VESTIBULE CEILING AREA.

3. DUCTWORK IS EXPOSED IN SPACE. DUCTWORK MAY BE PAINTED BLACK.

4. PROVIDE PVC OR OTHER PROTECTIVE COVER WHERE DUCTWORK IS EXPOSED AND SUBJECT TO IMPACT

5. PROVIDE WITH PROTECTIVE/WEATHERPROOF EXTERIOR WRAP. WRAP SHALL BE MINIMUM OF 40 MIL, SELF-ADHERING,

6. PROVIDE UL LISTED GREASE DUCT ASSEMBLY TO MEET CLEARANCE TO COMBUSTABLES

DUCT INSULATION SPECIFICATIONS:

FLEXIBLE ELASTOMERIC INSLATION (FC): CLOSED-CELL, FIBER-FREE, ELASTOMERIC FOAM INSULATION, ARMSTRONG AP ARMAFLEX, OR APPROVED EQUAL. COMPLY WITH ASTM E 84 AT 25/50 FOR USE IN AIR PLENUMS. INSTALL INSULATION PER THE MANUFACTURER'S RECOMMENDATIONS.

RIGID BOARD (RB): RIGID POLYISOCYANURATE FOAM CORE DUCT BOARD WITH FACTORY APPLIED VAPOR RETARDER FACING BOTH SIDES. DUCT BOARD SHALL BE "ENERGY 3 FOIL FACE" BY JOHN MANSVILLE OR EQUIVALENT. R-6 PER INCH, k-VALUE = 0.16 AT 50 DEG F. ASTM C 1289, TYPE I, CLASS I.

MINERAL-FIBER DUCT-WRAP INSULATION (MF): FORMELDEHYDE-FREE, TYPE 1, MINERAL OR GLASS FIBERS BONDED WITH A THERMOSETTING RESIN. COMPLY WITH ASTM C 1290, TYPE 1, GRADE A. INSULATION SHALL HAVE A FACTORY-APPLIED FSK (FOIL-SCRIM-KRAFT). FOIL WILL BE 0.02 PERMS; COMPLY WITH ASTM E 84 AT 25/50 FOR USE IN AIR PLENUMS. INSTALL INSULATION PER THE MAUFACTURER'S RECOMMENDATIONS

DUCT COIL SCHEDULE

Tag	DESCRIPTION	HEATING	COIL SIZE			HEATING	AIRSIDE			ELECTRICAL			MANU. & MODEL	NOTES
		AIRFLOW	WIDTH	HEIGHT	AREA	CAPACITY	EAT	LAT	VEL	V	PH	HZ		
		CFM	*IN*	*IN*	*SF*	*KW*	*MBH*	*DEG F*	*DEG F*	*FPM*					
DC 5-1	ELECTRIC DUCT COIL - VENTILATION RE-HEAT	350	12	12	1	4	13.6	45	81	350	208	1	60	RENEWAIRE EK SERIES	ALL
DC 5-2	ELECTRIC DUCT COIL - VENTILATION RE-HEAT	350	12	12	1	4	13.6	45	81	350	208	1	60	RENEWAIRE EK SERIES	ALL

NOTES:
1. PROVIDE DISCHARGE AIR TEMPERATURE CONTROL W/ OA RESET SCHEDULE
2. PROVIDE SCR STAGING OF COIL
3. PROVIDE AIR-FLOW PROVING WITH FAN RELAY
4. UNIT IS HORIZONTAL AIRFLOW

FAN COIL UNIT (FCU)

TAG	DESCRIPTION	NOM. TONS	INDOOR UNIT								ELECTRICAL DATA				MANUFACTURER & MODEL	NOTES
			TYPE	AIRFLOW (CFM)	ESP (IN)	SENSIBLE COOLING (MBH)	HEATING (MBH)	REFRIG.	SOUND (dBA)	WEIGHT (LBS)	VOLTS	PH	MCA	MOP		
SCU-5-1	PERIMETER	2.5	CEILING CASSETTE	600/690/775	-	30	34	R-410A	30/34/39	42	208	3			TRANE 4TVC0030B100N	ALL
SCU-5-2	PERIMETER	2.5	CEILING CASSETTE	600/690/775	-	30	34	R-410A	30/34/39	42	208	3			TRANE 4TVC0030B100N	ALL
SCU-5-3	PERIMETER	2.5	CEILING CASSETTE	600/690/775	-	30	34	R-410A	30/34/39	42	208	3			TRANE 4TVC0030B100N	ALL
FCU-5-4	OFFICE	1	WALL CASSETTE	255/295/325	-	12	13.5	R-410A	29/33/37	20	208	1			TRANE 4TVW0012B100N	ALL
FCU-5-5	OFFICE	1	WALL CASSETTE	255/295/325	-	12	13.5	R-410A	29/33/37	20	208	1			TRANE 4TVW0012B100N	ALL
FCU5-6	OFFICE	1	WALL CASSETTE	255/295/325	-	12	13.5	R-410A	29/33/37	20	208	1			TRANE 4TVW0012B100N	ALL
FCU-5-7	CONFERENCE	1	WALL CASSETTE	255/295/325	-	12	13.5	R-410A	29/33/37	20	208	1			TRANE 4TVW0012B100N	ALL
FCU-5-8	OFFICE	1	WALL CASSETTE	255/295/325	-	12	13.5	R-410A	29/33/37	20	208	1			TRANE 4TVW0012B100N	ALL
FCU 5-9	OFFICE	1	WALL CASSETTE	255/295/325	-	12	13.5	R-410A	29/33/37	20	208	1			TRANE 4TVW0012B100N	ALL

NOTES:

1. PROVIDE GRAVITY CONDENSATE DRAIN TO APPROVED LOCATION.
2. PROVIDE UNIT WITH WIRED REMOTE THERMOSTAT MOUNTED ON WALL AS SHOWN (WIRED BY MC).
3. POWER WIRING & DISCONNECT PROVIDED TO OUTDOOR UNIT BY EC.

*VENTILATION AIR IS PROVIDED THRU ERV 5-1 & ERV 5-2 AND DUCTED DIRECTLY INTO THE SPACE.

GRILLE, REGISTER AND DIFFUSER SCHEDULE

TAG	DESCRIPTION	AIRFLOW	NECK	FACE SIZE	NC	SP	THROW (FT)	MATRL	VOL DAMP	MOUNTING	AIR PATTERN	MODEL	NOTES
		CFM	*INCHES*	*INCHES*		*W.G.*	*@ 22-1/2*						
SR-1	SUPPLY - SIDEWALL	100	6"	8"X8"	<20	0.01	6-9-19	ALUM	YES	SURFACE	ADJ	PRICE 22DAL	1
EG-6	EXHAUST - CEILING	125	6"	12"X12"	<20	0.011	NA	ALUM	YES	SURFACE	45 DEG	PRICE 630	1
EG-8	EXHAUST - CEILING	250	8"	12"X12"	<20	0.025	NA	ALUM	YES	SURFACE	45 DEG	PRICE 630	1

NOTES:

1. CORRDINATE FINISH WITH ARCHITECTURAL

CONDENSER SCHEDULE (CN)

TAG	DESCRIPTION	NOM. TONS	TYPE	REFRIG.	EER	SOUND (dBA)	WEIGHT (LBS)	ELECTRICAL DATA				MANUFACTURER & MODEL	NOTES
								VOLTS	PH	MCA	MOP		
CN 5-1	SERVES FCU 5-1 THRU 5-5	14	INVERTER COMPRESSOR	R-410A	20.8	63	740	460	3	31.3	40	TRANE 4TVR0169C400N	ALL

NOTES:

1. OUTDOOR HEATPUMP UNIT MOUNTED ON 12" STAND.
2. POWER WIRING & DISCONNECT PROVIDED TO OUTDOOR UNIT BY EC.

ENERGY RECOVERY VENTILATOR SCHEDULE (ERV)

TAG	DESCRIPTION	SUPPLY/VENTILATION AIR			EXHAUST/RETURN AIR			SUMMER					WINTER					EFFECTIVENESS				ELECTRICAL DATA					INSTALLED WEIGHT (LBS)	MANUFACTURER & MODEL	NOTES
		AIRFLOW (CFM)	ESP (IN WC)	MOTOR HP	AIRFLOW (CFM)	ESP (IN WC)	MOTOR HP	TOTAL CAPACITY	LATENT CAPACITY	OA AT	EXH. AT	ERV LAT	TOTAL CAPACITY	LATENT CAPACITY	EAT	EXH. AT	ERV LAT	SUMMER CONDITIONS		WINTER CONDITIONS		VOLTS	PH	HZ	MCA	MOP			
								MBH	MBH	DB/WB	DB/WB	DB/WB	MBH	MBH	DB/WB	DB/WB	DB/WB	SENSIBLE	TOTAL	SENSIBLE	TOTAL								
ERV 5-1	STATIC PLATE HX	350	0.5	0.75	250	0.5	0.75	5.9	2.8	88/71	75/62.6	79.6/66.4	24.6	5.1	-10/-11	70/54.4	41.6/36.1	90%	80%	90%	88%	208	1	60	10.1	15	275	RENEWAIRE HE1XINV	ALL
ERV 5-2	STATIC PLATE HX	350	0.5	0.75	250	0.5	0.75	5.9	2.8	88/71	75/62.6	79.6/66.4	24.6	5.1	-10/-11	70/54.4	41.6/36.1	90%	80%	90%	88%	208	1	60	10.1	15	275	RENEWAIRE HE1XINV	ALL

NOTES:
1. UNIT HAS DUAL MOTORS, DUAL ECM FANS.
2. PROVIDE STANDARD 2" MERV 8 FILTERS WITH UNIT.

JOHNSON & JORDAN
MECHANICAL CONTRACTORS
18 MUSSEY ROAD
SCARBOROUGH, ME 04074
TEL. (207) 883-8345

STATE OF MAINE
JACOB R. MARTIN
No. 12013
LICENSED
PROFESSIONAL ENGINEER

REV.	DESCRIPTION	DATE

ISSUE STATUS:
ISSUED FOR CONSTRUCTION 3-28-19

PROJECT:
OCEAN GATEWAY ADDITION
PORTLAND, ME

SHEET TITLE:
5TH FLOOR MECHANICAL SCHEDULES

DATE: 3-28-19
PROJECT# 17150
DRAWN: MAC
CHECKED: JRM
SCALE: NOT TO SCALE

SHEET #
M-605

INDOOR ABOVEGROUND PIPE INSULATION MINIMUM THICKNESS SCHEDULE

PIPING SYSTEM	FLUID OPERATING TEMPERATURE RANGE (DEG F)	INSULATION CONDUCTIVITY RANGE (BTU-IN/HR-FT2 DEG F)	MEAN TEMPERATURE RATING (DEG F)	NOMINAL PIPE OR TUBE SIZE (INCHES)						INSULATION MATERIAL	VAPOR BARRIER REQUIRED
				PIPE BRANCH RUN OUTS (SEE NOTE 2 BELOW)	< 1	1 TO < 1-1/2	1-1/2 TO < 4	4 TO < 8	8 TO > 8		
				INSULATION THICKNESS (INCHES)							
DOMESTIC COLD WATER	40-60	0.21 - 0.27	75	N/A	0.5	0.5	0.5	N/A	N/A	MF	YES
DOMESTIC DHW & DHWR	105-140	0.22 - 0.28	100	N/A	1	1	1.5	N/A	N/A	MF	NO
REFRIGERANT SUCTION & LIQUID (SEE NOTE 3 BELOW)	10 & UP	0.21 - 0.27	75	0.5	0.75	0.75	N/A	N/A	N/A	FC	NO

NOTES:

1.THE TABLE ABOVE APPLIES TO METALLIC PIPES AND SCHEDULE 80 OR LESS NON-METALLIC PIPES. THE BASIS OF THE ABOVE SCHEDULE IS ECONOMIC THICKNESS, PREVENTION OF CONDENSATION, AND COMPLIANCE WITH ASHRAE 90.1-2013 MINIMUM INSULATION THICKNESSES. ASHRAE 90.1-2013 DOES NOT PROVIDE REDUCED INSULATION THICHNESS FOR BRANCH RUNOUTS.

2. PIPING INSULATION THICKNESSES MAY BE REDUCED AS INDICATED ABOVE FOR BRANCH RUNOUTS BETWEEN COIL CONTROL VALVE AND THE COIL WHEN THE CONTROL VALVE IS LOCATED WITHIN 4 FEET OF THE COIL AND THE PIPE SIZE IS 1 INCH OR LESS.

3. FOR OUTDOOR ABOVEGROUND REFRIGERANT PIPING, INSULATION REQUIREMENTS SHALL BE THE SAME AS FOR INDOOR ABOVEGROUND REFRIGERANT PIPING, WITH THE FOLLOWING EXCEPTION: INSULATION SHALL BE JACKED WITH FLEXCAD-250, OR APPROVED EQUAL, ALUMINUM JACKETING SYSTEM, INSTALLED PER THE MANUFACTUREER'S RECOMMENDATIONS.

PIPE INSULATION SPECIFICATIONS:

FLEXIBLE ELASTOMERIC INSLATION (FC): CLOSED-CELL, FIBER-FREE, ELASTOMERIC FOAM RUBBER TUBULAR INSULATION, ARMSTRONG AP ARMAFLEX, OR APPROVED EQUAL. COMPLY WITH ASTM C 534, TYPE 1 FOR TUBULAR MATERIALS WITH FLAME SPREAD INDEX LESS THAN 25 AND SMOKE DEVELOPED INDELX LESS THAN 50. INSTALL INSULATION PER THE MANUFACTURER'S RECOMMENDATIONS.

MINERAL-FIBER PREFORMED PIPE INSULATION (MF): TYPE 1, MINERAL OR GLASS FIBERS BONDED WITH A THERMOSETTING RESIN. COMPLY WITH ASTM C 547, TYPE 1, GRADE A. INSULATION SHALL HAVE A FACTORY-APPLIED ALL-SERVICE JACKET (ASJ). JACKET SHALL BE WHITE, KRAFT-PAPER, FIBERGLASS-REINFORCED SCRIM WITH ALUMINUM-FOIL BACKING; COMPLYING WITH ASTM C 1136, TYPE 1. FOR INDOOR EXPOSED PIPING REQUIRING FIBERGLASS INSULATION, PROVIDE A WHITE HIGH-IMPACT RESISTANT PVC JACKET COMPLYING WITH ASTM D 1784 CLASS 16354-C. INSTALL INSULATION PER THE MAUFACTURER'S RECOMMENDATIONS

ABBREVIATIONS: (APPLIES TO PIPE INSULATION THICKNESS SCHEDULES & PIPE INSULATION SPECIFICATIONS ON THIS DRAWING)
FC - FLEXIBLE CLOSED-CELL
MF - MINERAL FIBER
N/A - NOT APPLICABLE

DUCTWORK INSULATION SCHEDULE

DUCT SYSTEM	OPERATING TEMPERATURE RANGE (DEG F)	MEAN TEMPERATURE RATING (DEG F)	NOMINAL SIZES		INSULATION MATERIAL	VAPOR BARRIER REQUIRED	NOTES
			THICKNESS INCH	R VALUE			
INTERIOR DUCT LINER (ACOUSTICAL)(WHERE NOTED)	0-150	75	1/2"	NA	FC	YES	1
SUPPLY DUCT FROM FCU TO DIFFUSERS (CONDITIONED SPACE, EXPOSED)	0-150	75	0"	NONE			3
RETURN DUCT FROM RETURN BOOT TO FCU (CONDITIONED SPACE, EXPOSED)	0-150	75	0"	NONE			3
EXTERIOR OUTSIDE AIR DUCT FROM INTAKE TO ERV	0-150	75	2-1/2"	R-12	FC & RB	YES	1, 5
EXTERIOR VENTILATION AIR DUCT FROM ERV TO REHEAT COIL	0-150	75	2-1/2"	R-12	FC & RB	YES	1, 5
EXTERIOR EXHAUST DUCT FROM SPACE TO ERV	0-150	75	2-1/2"	R-12	FC & RB	YES	1, 5
EXTERIOR EXHAUST DUCT FROM ERV TO GARAGE	0-150	75	0"	NONE			
VENTILATION DUCTWORK FROM REHEAT COIL TO DIFFUSERS	0-150	75	0"	NONE			
EXHAUST DUCT IN SPACE TO EXTERIOR WALL	0-150	75	0"	NONE			

NOTES:

1.THE TABLE ABOVE APPLIES TO DUCTWORK. THE BASIS OF THE ABOVE SCHEDULE IS ECONOMIC THICKNESS, PREVENTION OF CONDENSATION, AND COMPLIANCE WITH ASHRAE 90.1-2013 MINIMUM INSULATION THICKNESSES. BRANCH RUNOUTS LESS THAN 10FT CAN BE R-3.5.

2. UNCONDITIONED SPACES INCLUDE LOADING DOCKS, WAREHOUSES, MECHANICAL ROOMS, NON-PLENUM CEILINGS, VESTIBULE CEILING AREA.

3. DUCTWORK IS EXPOSED IN SPACE. DUCTWORK MAY BE PAINTED BLACK.

4. PROVIDE PVC OR OTHER PROTECTIVE COVER WHERE DUCTWORK IS EXPOSED AND SUBJECT TO IMPACT

5. PROVIDE WITH PROTECTIVE/WEATHERPROOF EXTERIOR WRAP. WRAP SHALL BE MINIMUM OF 40 MIL, SELF-ADHERING,

6. PROVIDE UL LISTED GREASE DUCT ASSEMBLY TO MEET CLEARANCE TO COMBUSTABLES

DUCT INSULATION SPECIFICATIONS:

FLEXIBLE ELASTOMERIC INSLATION (FC): CLOSED-CELL, FIBER-FREE, ELASTOMERIC FOAM INSULATION, ARMSTRONG AP ARMAFLEX, OR APPROVED EQUAL. COMPLY WITH ASTM E 84 AT 25/50 FOR USE IN AIR PLENUMS. INSTALL INSULATION PER THE MANUFACTURER'S RECOMMENDATIONS.

RIGID BOARD (RB): RIGID POLYISOCYANURATE FOAM CORE DUCT BOARD WITH FACTORY APPLIED VAPOR RETARDER FACING BOTH SIDES. DUCT BOARD SHALL BE "ENERGY 3 FOIL FACE" BY JOHN MANSVILLE OR EQUIVALENT. R-6 PER INCH, k-VALUE = 0.16 AT 50 DEG F. ASTM C 1289, TYPE I, CLASS I.

MINERAL-FIBER DUCT-WRAP INSULATION (MF): FORMELDEHYDE-FREE, TYPE 1, MINERAL OR GLASS FIBERS BONDED WITH A THERMOSETTING RESIN. COMPLY WITH ASTM C 1290, TYPE 1, GRADE A. INSULATION SHALL HAVE A FACTORY-APPLIED FSK (FOIL-SCRIM-KRAFT). FOIL WILL BE 0.02 PERMS; COMPLY WITH ASTM E 84 AT 25/50 FOR USE IN AIR PLENUMS. INSTALL INSULATION PER THE MAUFACTURER'S RECOMMENDATIONS

DUCT COIL SCHEDULE

Tag	DESCRIPTION	HEATING	COIL SIZE			HEATING	AIRSIDE			ELECTRICAL			MANU. & MODEL	NOTES
		AIRFLOW	WIDTH	HEIGHT	AREA	CAPACITY	EAT	LAT	VEL	V	PH	HZ		
		CFM	IN	IN	SF	KW / MBH	DEG F	DEG F	FPM					
DC 6-1	ELECTRIC DUCT COIL - VENTILATION RE-HEAT	350	12	12	1	4 / 13.6	45	81	350	208	1	60	RENEWAIRE EK SERIES	ALL
DC 6-2	ELECTRIC DUCT COIL - VENTILATION RE-HEAT	350	12	12	1	4 / 13.6	45	81	350	208	1	60	RENEWAIRE EK SERIES	ALL

NOTES:
1. PROVIDE DISCHARGE AIR TEMPERATURE CONTROL W/ OA RESET SCHEDULE
2. PROVIDE SCR STAGING OF COIL
3. PROVIDE AIR-FLOW PROVING WITH FAN RELAY
4. UNIT IS HORIZONTAL AIRFLOW

FAN COIL UNIT (FCU)

TAG	DESCRIPTION	NOM. TONS	INDOOR UNIT							ELECTRICAL DATA				MANUFACTURER & MODEL	NOTES
			TYPE	AIRFLOW (CFM)	ESP (IN)	SENSIBLE COOLING	HEATING (MBH)	REFRIG.	SOUND (dBA)	WEIGHT (LBS)	VOLTS	PH	MCA	MOP		
SCU-6-1	PERIMETER	2.5	CEILING CASSETTE	600/690/775	-	30	34	R-410A	30/34/39	42	208	3			TRANE 4TVC0030B100N	ALL
SCU-4-2	PERIMETER	2.5	CEILING CASSETTE	600/690/775	-	30	34	R-410A	30/34/39	42	208	3			TRANE 4TVC0030B100N	ALL
SCU-6-3	PERIMETER	2.5	CEILING CASSETTE	600/690/775	-	30	34	R-410A	30/34/39	42	208	3			TRANE 4TVC0030B100N	ALL
FCU-4-4	OFFICE	1	WALL CASSETTE	255/295/325	-	12	13.5	R-410A	29/33/37	20	208	1			TRANE 4TVW0012B100N	ALL
FCU-6-4	OFFICE	1	WALL CASSETTE	255/295/325	-	12	13.5	R-410A	29/33/37	20	208	1			TRANE 4TVW0012B100N	ALL
FCU-6-5	OFFICE	1	WALL CASSETTE	255/295/325	-	12	13.5	R-410A	29/33/37	20	208	1			TRANE 4TVW0012B100N	ALL
FCU-6-6	OFFICE	1	WALL CASSETTE	255/295/325	-	12	13.5	R-410A	29/33/37	20	208	1			TRANE 4TVW0012B100N	ALL
FCU-6-7	CONFERENCE	1	WALL CASSETTE	255/295/325	-	12	13.5	R-410A	29/33/37	20	208	1			TRANE 4TVW0012B100N	ALL
FCU-6-8	OFFICE	1	WALL CASSETTE	255/295/325	-	12	13.5	R-410A	29/33/37	20	208	1			TRANE 4TVW0012B100N	ALL
FCU-6-9	OFFICE	1	WALL CASSETTE	255/295/325	-	12	13.5	R-410A	29/33/37	20	208	1			TRANE 4TVW0012B100N	ALL

NOTES:
1. PROVIDE GRAVITY CONDENSATE DRAIN TO APPROVED LOCATION.
2. PROVIDE UNIT WITH WIRED REMOTE THERMOSTAT MOUNTED ON WALL AS SHOWN (WIRED BY MC).
3. POWER WIRING & DISCONNECT PROVIDED TO OUTDOOR UNIT BY EC.
*VENTILATION AIR IS PROVIDED THRU ERV 6-1 & ERV 6-2 AND DUCTED DIRECTLY INTO THE SPACE.

GRILLE, REGISTER AND DIFFUSER SCHEDULE

TAG	DESCRIPTION	AIRFLOW	NECK	FACE SIZE	NC	SP	THROW (FT)	MATRL	VOL DAMP	MOUNTING	AIR PATTERN	MODEL	NOTES
		CFM	INCHES	INCHES		W.G.	@ 22-1/2						
SR-1	SUPPLY - SIDEWALL	100	6"	8"X8"	<20	0.01	6-9-19	ALUM	YES	SURFACE	ADJ	PRICE 22DAL	1
EG-6	EXHAUST - CEILING	125	6"	12"X12"	<20	0.011	NA	ALUM	YES	SURFACE	45 DEG	PRICE 630	1
EG-8	EXHAUST - CEILING	250	8"	12"X12"	<20	0.025	NA	ALUM	YES	SURFACE	45 DEG	PRICE 630	1

NOTES:
1. CORRDINATE FINISH WITH ARCHITECTURAL

CONDENSER SCHEDULE (CN)

TAG	DESCRIPTION	NOM. TONS	TYPE	REFRIG.	EER	SOUND (dBA)	WEIGHT (LBS)	ELECTRICAL DATA				MANUFACTURER & MODEL	NOTES
								VOLTS	PH	MCA	MOP		
CN 6-1	SERVES FCU 6-1 THRU 6-5	14	INVERTER COMPRESSOR	R-410A	20.8	63	740	460	3	31.3	40	TRANE 4TVR0169C400N	ALL

NOTES:
1. OUTDOOR HEATPUMP UNIT MOUNTED ON 12" STAND.
2. POWER WIRING & DISCONNECT PROVIDED TO OUTDOOR UNIT BY EC.

ENERGY RECOVERY VENTILATOR SCHEDULE (ERV)

TAG	DESCRIPTION	SUPPLY/VENTILATION AIR			EXHAUST/RETURN AIR			SUMMER					WINTER					EFFECTIVENESS				ELECTRICAL DATA					INSTALLED WEIGHT (LBS)	MANUFACTURER & MODEL	NOTES
		AIRFLOW (CFM)	ESP (IN WC)	MOTOR HP	AIRFLOW (CFM)	ESP (IN WC)	MOTOR HP	TOTAL CAPACITY	LATENT CAPACITY	OA AT	EXH. AT	ERV LAT	TOTAL CAPACITY	LATENT CAPACITY	EAT	EXH. AT	ERV LAT	SUMMER CONDITIONS		WINTER CONDITIONS		VOLTS	PH	HZ	MCA	MOP			
								MBH	MBH	DB/WB	DB/WB	DB/WB	MBH	MBH	DB/WB	DB/WB	DB/WB	SENSIBLE	TOTAL	SENSIBLE	TOTAL								
ERV 6-1	STATIC PLATE HX	350	0.5	0.75	250	0.5	0.75	5.9	2.8	88/71	75/62.6	79.6/66.4	24.6	5.1	-10/-11	70/54.4	41.6/36.1	90%	80%	90%	88%	208	1	60	10.1	15	275	RENEWAIRE HE1XINV	ALL
ERV 6-2	STATIC PLATE HX	350	0.5	0.75	250	0.5	0.75	5.9	2.8	88/71	75/62.6	79.6/66.4	24.6	5.1	-10/-11	70/54.4	41.6/36.1	90%	80%	90%	88%	208	1	60	10.1	15	275	RENEWAIRE HE1XINV	ALL

NOTES:
1. UNIT HAS DUAL MOTORS, DUAL ECM FANS.
2. PROVIDE STANDARD 2" MERV 8 FILTERS WITH UNIT.

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MECHANICAL CONTRACTORS
18 MUSSEY ROAD
SCARBOROUGH, ME 04074
TEL. (207) 883-8345

STATE OF MAINE — JACOB R. MARTIN — No. 12013 — LICENSED PROFESSIONAL ENGINEER

REV.	DESCRIPTION	DATE

ISSUE STATUS:
ISSUED FOR CONSTRUCTION 3-28-19

PROJECT:
OCEAN GATEWAY ADDITION
PORTLAND, ME

SHEET TITLE:
6TH FLOOR MECHANICAL SCHEDULES

DATE: 3-28-19 | PROJECT#: 17150
DRAWN: MAC | CHECKED: JRM | SCALE: NOT TO SCALE

SHEET #
M-606