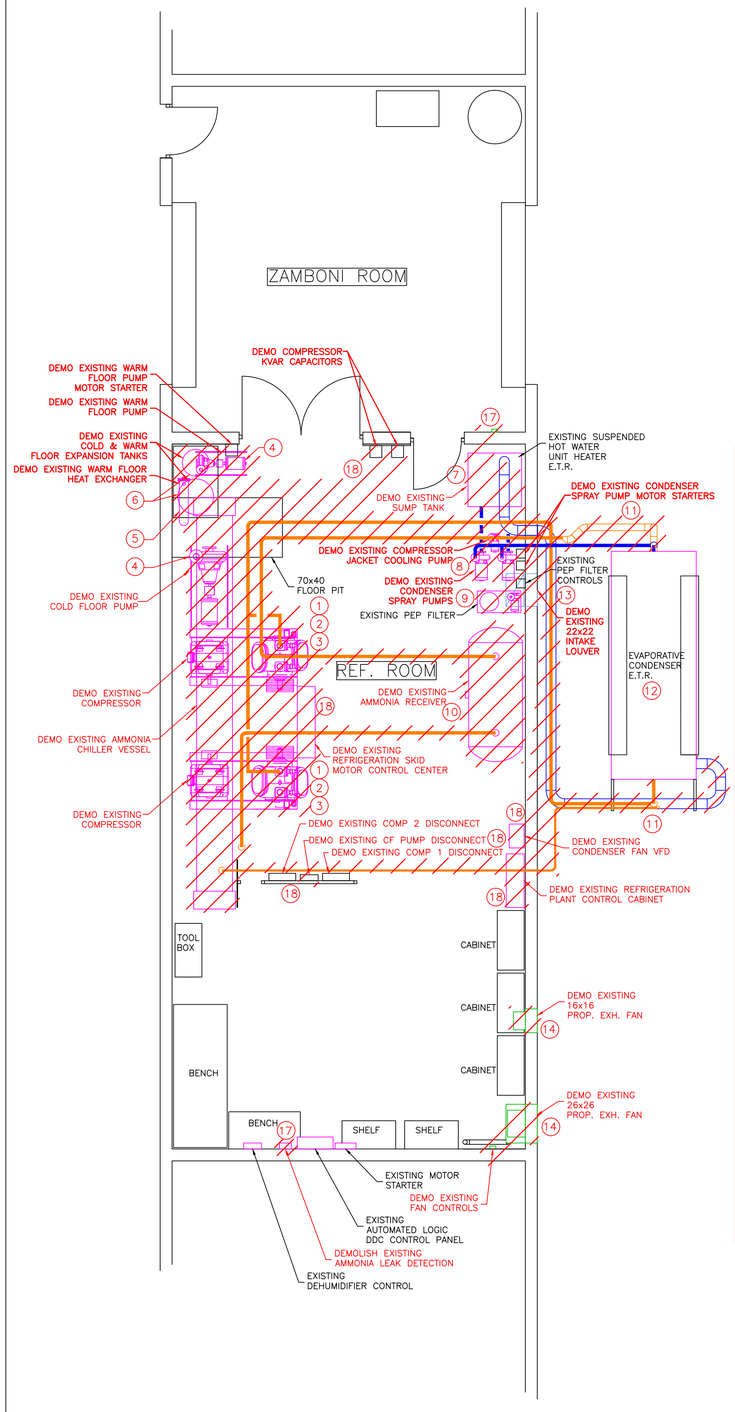


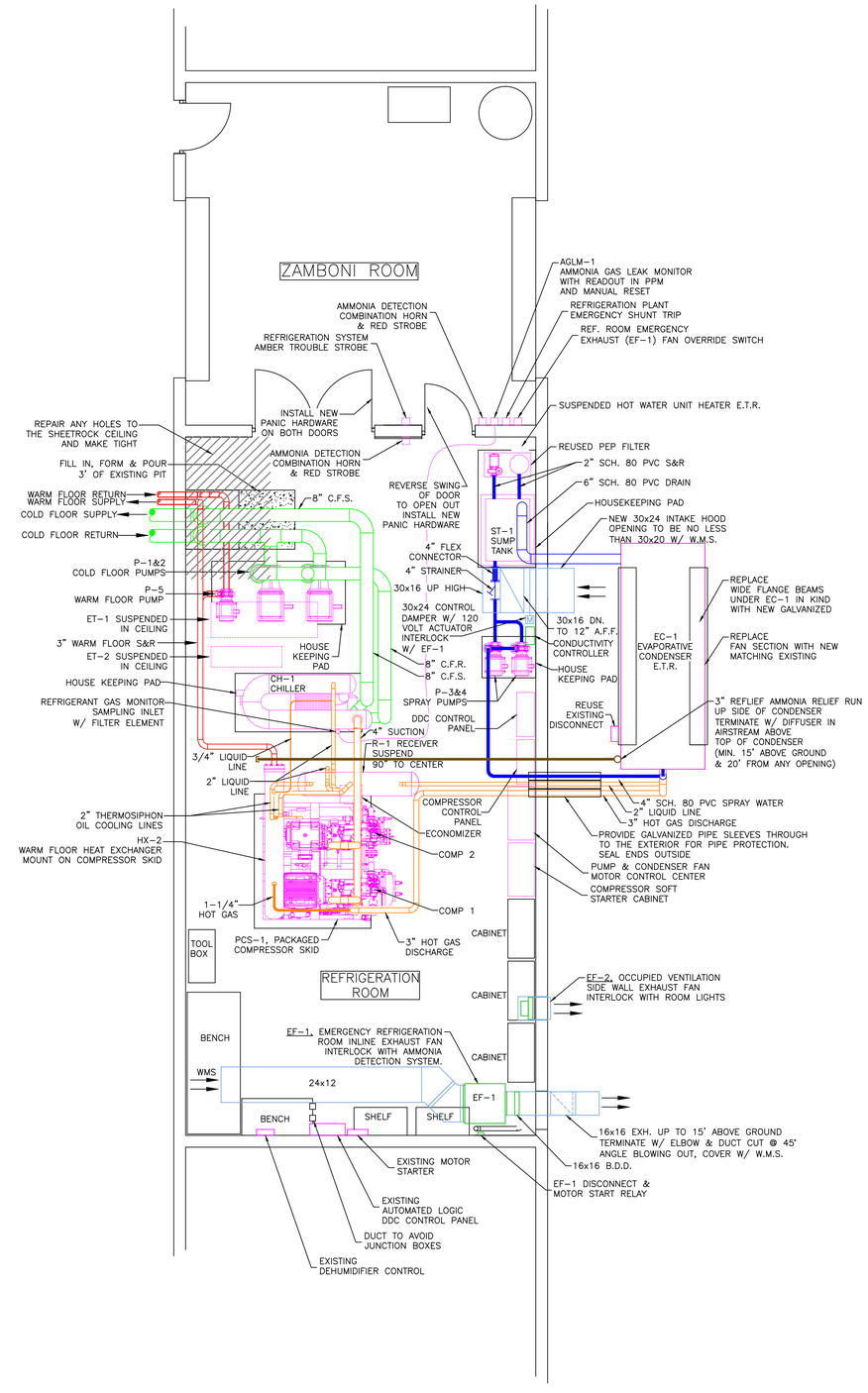
GENERAL NOTES:

1. E.T.R. = EXISTING TO REMAIN

DEMOLITION NOTES:

1. –RECLAIM AMMONIA REFRIGERANT CHARGE FROM EXISTING REFRIGERATION SYSTEM. RECLAIMED REFRIGERANT SHALL BE DISPOSED OF IN ACCORDANCE WITH ALL LOCAL AND FEDERAL REGULATIONS.
   –REMOVE OIL CHARGE FROM EXISTING AMMONIA REFRIGERATION SYSTEM AND DISPOSE OF IN ACCORDANCE WITH ALL LOCAL AND FEDERAL REGULATIONS.
2. PRIOR TO ANY WORK COMMENCING THE CUSTOMER SHALL CONTRACT THE SERVICES OF TRADEBE NEWINGTON, NH (888-276-0887) LAB TEST THE BRINE FOR PH, CHROMATES & TRACES OF AMMONIA. THE PRIME CONTRACTOR SHALL DRAIN EXISTING ABOVE GROUND BRINE CHARGE FROM SYSTEM AND DISPOSE OF IN ACCORDANCE WITH ALL LOCAL AND FEDERAL REGULATIONS. BRINE WITHIN THE EXISTING COLD AND WARM FLOORS SHALL REMAIN.
3. DEMOLISH, REMOVE AND DISPOSE FROM SITE EXISTING AMMONIA REFRIGERATION SYSTEM & EXISTING REFRIGERATION PIPING.
4. DEMOLISH, REMOVE AND DISPOSE FROM SITE EXISTING COLD FLOOR PUMP & PIPING WITHIN THE REF. ROOM. THE PIPING SHALL HAVE FLANGES & VALVES INSTALLED WITHIN THE PIT BEFORE PIPING GOES TO RINK.
5. DEMOLISH, REMOVE AND DISPOSE FROM SITE EXISTING WARM FLOOR PUMP, HEAT EXCHANGER & PIPING WITHIN THE REF. ROOM. THE PIPING SHALL HAVE FLANGES & VALVES INSTALLED WITHIN THE PIT BEFORE PIPING GOES TO RINK.
6. DEMOLISH, REMOVE AND DISPOSE FROM SITE EXISTING WARM & COLD FLOOR EXPANSION TANKS AND SUPPORT STAND
7. DEMOLISH, REMOVE AND DISPOSE FROM SITE EXISTING CONDENSER SUMP TANK AND MAKE UP WATER PIPING.
8. DEMOLISH, REMOVE AND DISPOSE FROM SITE EXISTING CONDENSER SPRAY PUMPS, JACKET COOLING PUMP, SPRAY PIPING AND ANY WATER TREATMENT EQUIPMENT.
9. RETAIN EXISTING PEP FILTER FOR REUSE, IT IS THE RESPONSIBILITY OF THE PRIME CONTRACTOR TO REPAIR THE DISCHARGE PIPING, REPLACE THE FILTER CARTRIDGES & BRING THE PEP FILTER BACK TO OPERATIONAL USE. A SPARE SET OF CARTRIDGES SHALL BE HANDED TO THE OWNER AFTER PROJECT COMPLETION.
10. DEMOLISH, REMOVE AND DISPOSE FROM SITE EXISTING AMMONIA HIGH PRESSURE RECEIVER.
11. DEMOLISH, REMOVE AND DISPOSE FROM SITE EXISTING REFRIGERANT, WATER & RELIEF PIPING OUTDOORS.
12. EXISTING B.A.C. VC1-185 EVAPORATIVE CONDENSER COIL SECTION SHALL BE RETAINED FOR REUSE. IT WILL BE THE RESPONSIBILITY OF THE REFRIGERATION CONTRACTOR TO RIG THE CONDENSER FROM SUPPORT STAND. REMOVE AND DISPOSE OF FAN & DESUPERHEATER SECTIONS. THE FAN SECTION SHALL BE REPLACED WITH NEW INCLUDING REPLACMENT OF ALL SEALS AND HARDWARE AS REQUIRED. THE CONDENSER COIL SECTION SHALL BE CLEANED AND HAVE AN ANNUAL PREVENTIVE MAINTENANCE PERFORMED. WHILE THE CONDENSER IS REMOVED FROM STAND THE WIDE FLANGED BEAMS SHALL BE REPLACED IN KIND W/ NEW GALVANIZED. EXISTING ELECTRICAL DISCONNECT SHALL REMAIN FOR REUSE.
13. DEMOLISH, REMOVE AND DISPOSE FROM SITE EXISTING INTAKE LOUVER AND DUCT
14. DEMOLISH, REMOVE AND DISPOSE FROM SITE EXISTING EXHAUST FAN & LOUVER.
15. ALL PIPE INSULATION WITHIN REF. ROOM SHALL BE REMOVED AND DISPOSED OF.
16. ANY HOUSEKEEPING PADS SHALL BE DEMOLISHED OR MODIFIED TO FIT NEW SYSTEM.
17. DEMOLISH, MAKE SAFE, REMOVE AND DISPOSE FROM SITE EXISTING SHUNT TRIP, EMERGENCY EXHAUST FAN OVERRIDE CONTROL AND ALL AMMONIA DETECTION SYSTEM WIRING, STROBES AND HORNS.
18. DEMOLISH, MAKE SAFE, REMOVE AND DISPOSE OF THE FOLLOWING FROM SITE:
   - EXISTING KVAR CAPACITORS
   - EXISTING COMPRESSOR MOTOR CONTROL CENTER
   - EXISTING SAFTRONICS CONDENSER FAN VFD
   - EXISTING BASSAI REFRIGERATION SYSTEM CONTROLS
   - EXISTING COLD FLOOR PUMP STARTER AND DISCONNECT
   - EXISTING WARM FLOOR PUMP STARTER AND DISCONNECT
   - EXISTING CONDENSER SPRAY PUMPS STARTERS AND DISCONNECT
   - EXISTING COMP 1 DISCONNECT (FEED TO BE REUSED)
   - EXISTING COMP 1 DISCONNECT (FEED TO BE REUSED)

REFRIGERATION DEMOLITION PLAN



REFRIGERATION NEW WORK PLAN

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revisions:

project: RINK REFRIGERATION SYSTEM REPLACEMENT
GORDON H. PAQUETTE ICE ARENA
LEDDY PARK
BURLINGTON, VT

drawing title: RINK REFRIGERATION PLAN

scale: 1/4"=1'-0" date: JUNE 28, 2016

drawn:

dwg no: R-1

LINE LEGEND

REFRIGERANT	AMMONIA (NH3)
BRINE	
WATER	
RELIEF	
CONTROLS	

ABBREVIATIONS

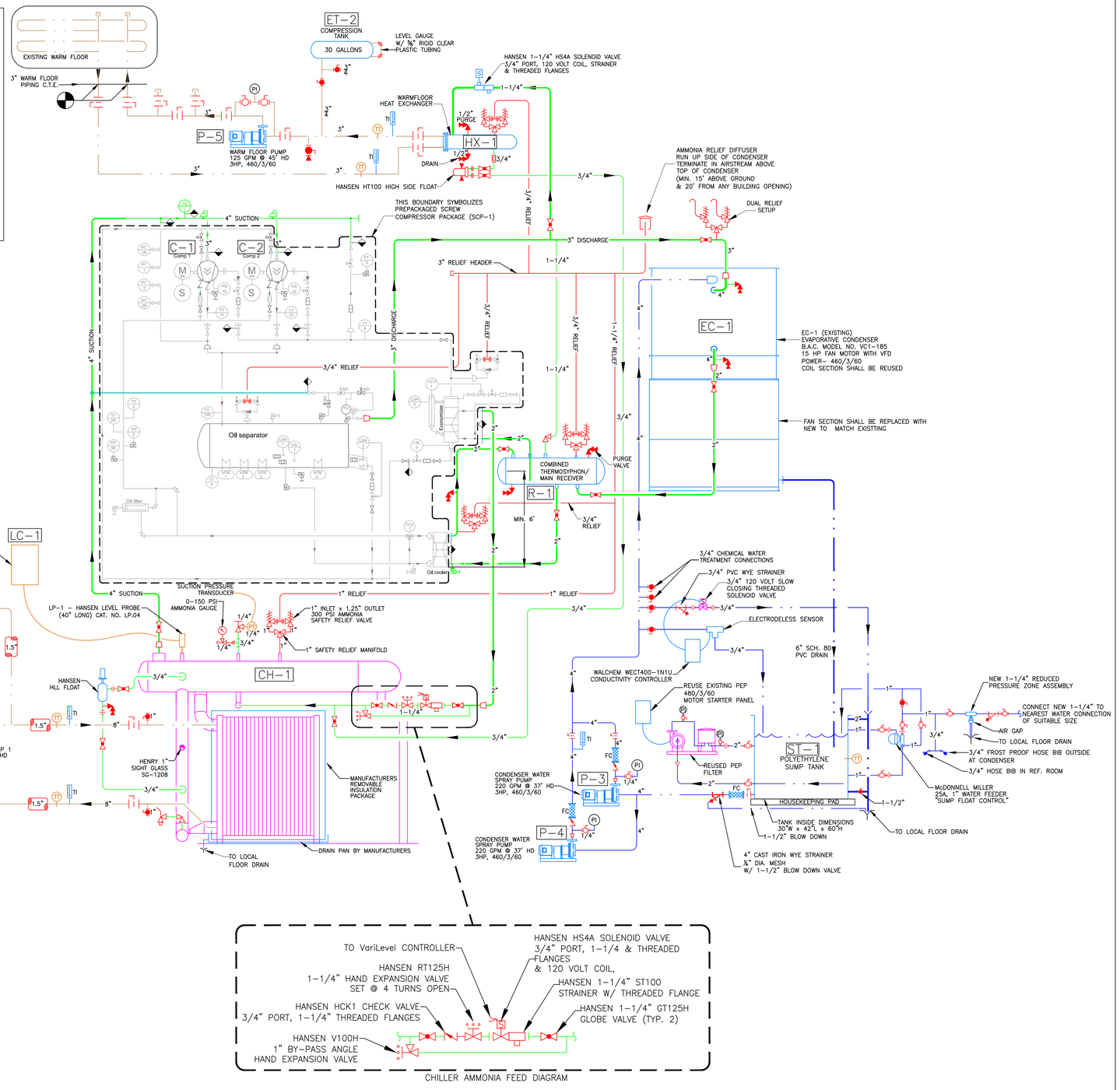
C.T.E.	CONNECT TO EXISTING
ET	EXPANSION TANK
HLL	HIGH LIQUID LEVEL
HTR	IMMERSION HEATER
LC	LEVEL CONTROLLER
LSH	LEVEL SWITCH HIGH
LSL	LEVEL SWITCH LOW
PC	PRESSURE CONTROLLER
PI	PRESSURE INDICATOR
PS	PRESSURE SWITCH
PT	PRESSURE TRANSMITTER
RPBFP	REDUCED PRESSURE BACK FLOW PREVENTER
SG	SIGHT GLASS
TCV	THERMOSTATICALLY CONTROLLED VALVE
TI	TEMPERATURE INDICATOR
TT	TEMPERATURE TRANSMITTER

NOTES:

1. REFRIGERANT PIPING, VALVES & CONTROLS AS PER ASME B31.5–2010
2. REFRIGERANT DESIGN PRESSURE/TEMPERATURE:
   LOW SIDE: 250 PSIG/200°F
   HIGH SIDE: 300 PSIG
3. REFRIGERANT CHARGE: APPROX. 450 LBS
4. ELECTRICAL CLASSIFICATION: NON HAZARDOUS, NEMA 1
5. ELECTRICAL CHARACTERISTICS:
   POWER: 460/3/60
   CONTROL: 120/1/60
6. PIPING SPECIFICATIONS:
   REFRIGERANT
   –1 1/2" AND SMALLER – SCH.80 ASTM A106B OR A53E/B
   –2" AND LARGER – SCH.40 ASTM A53E/B
   BRINE, GLYCOL & WATER
   –2" & SMALLER SCH 40 A53E/B
   –2 1/2" & LARGER SCH 40 A53E/B
7. FITTING SPECIFICATION:
   REFRIGERANT PIPING (–40°F TO 302°F)
   1 1/2" AND SMALLER
   – 3000 # FS, SW OR SCREWED, ASME B16.11, ASTM A105
   – 300 # MI SCREWED, ASME B16.3
   2" AND LARGER (–40°F TO 302°F)
   – STD WEIGHT BW, ASTM 234 WPB
   NON–PRESSURE RELIEF PIPING & BRINE PIPING
   1 1/2" AND SMALLER
   – 150 GALV MI SCREWED, ASME B16.3
   2" AND LARGER
   – STD WEIGHT BW, ASTM 234 WPB
   GLYCOL & WATER PIPING
   2" AND SMALLER
   – 150 GALV MI SCREWED, ASME B16.3
   2 1/2" AND LARGER
   – STD WEIGHT BW, ASME B16.9
   CONDENSER WATER PIPING
   SCHEDULE 80 PVC FLANGED OR SOCKET GLUED
8. VALVE SPECIFICATION:
   REFRIGERANT PIPING (–60°F TO 240°F)
   1 1/4" AND SMALLER, GLOBE OR ANGLE TYPE
   – 400 PSI, SW OR SCREWED, ASTM A105
   1–1/2" AND LARGER, GLOBE OR ANGLE TYPE
   – 400 PSI, SW, ASTM A–352, GRADE LCB
   WATER PIPING (0°F TO 400°F)
   2" AND SMALLER, 2 PIECE, BRASS BALL VALVE
   – 600 PSI WOG, THREADED OR SWEAT, ASME B16.3
   2–1/2" AND LARGER, IRON BUTTERFLY VALVE
   – 200 PSI, NON SHOCK, WOG, ALUM. BRONZE DISC
   BRINE PIPING (0°F TO 400°F)
   2" AND SMALLER, 2 PIECE, FORGED CARBON STEEL VALVE
   – 600 PSI WOG, THREADED, ASME B16.3
   2–1/2" AND LARGER, IRON BUTTERFLY VALVE
   – 200 PSI, NON SHOCK, WOG, IRON DISC
9. INSTRUMENT TUBING SPECIFICATION:
   SAE 1018 1.24 (0.049") WALL THICKNESS
   FITTINGS: STEEL, COMPRESSION TYPE
10. REFRIGERANT:
    PRIMARY – AMMONIA (NH3)
    SECONDARY – 22% CALCIUM CHLORIDE (BRINE)
11. REF. ROOM VENTILATION
    TO CONFORM WITH REGULATIONS.

PIPING LEGEND

- ANGLE VALVE (N.O.)
- ANGLE VALVE (N.C.)
- BALL VALVE (N.O.)
- BALL VALVE (N.C.)
- GLOBE VALVE (N.O.)
- GLOBE VALVE (N.C.)
- GATE VALVE (N.O.)
- GATE VALVE (N.C.)
- BUTTERFLY VALVE
- CHECK VALVE
- PLUG
- REDUCER
- STRAINER
- QUICK CLOSING OIL DRAIN VALVE
- SOLENOID VALVE
- SINGLE RELIEF VALVE
- DUAL RELIEF VALVE ASSEMBLY
- HAND EXPANSION VALVE
- SIGHT GLASS



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revisions:

project: RINK REFRIGERATION SYSTEM REPLACEMENT GORDON H. PAQUETTE ICE ARENA LEDDY PARK BURLINGTON, VT

drawing title: RINK REFRIGERATION PIPING & INSTRUMENTATION DIAGRAM

drawn:

scale: NONE

date: JUNE 28, 2016

dwg no: R–2

PACKAGED AMMONIA SCREW COMPRESSOR SKID

TAG NO.	REFRIGERATION PERFORMANCE TONS	SST	SDT	REFRIGERANT TYPE	NO. OF COMPRESSORS	BHP EACH COMPRESSOR	DRIVE MOTOR EACH COMPRESSOR	DRIVE MOTOR EFFICIENCY	FULL LOAD AMPS EACH	DRIVE MOTOR RPM	COMPRESSOR TYPE	BASIS OF SELECTION	COMPRESSOR DRIVE TYPE	REMARKS
PCS-1	135.4	8°F	90°F	AMMONIA	2	94.9	100HP	94.5%	111.0	1550	OPEN DRIVE SCREW	BITZER AMMONIA SCREW COMPRESSOR PACK W/ OPEN DRIVE 06KA COMPRESSORS	DIRECT COUPLED	PROVIDE W/ (1) REFRIGERANT ECONOMIZER, (1) THERMOSIPHON OIL COOLER, (2) SOFT STARTERS, (1) OIL SEPARATOR, OIL MANAGEMENT SYSTEM, BITZER ACP CONTROLER, NEMA 3R STARTER PANEL PROVIDE AN ADD ALTERNATE #1 FOR VFDs IN LIEU OF SOFT STARTERS

SHELL & TUBE AMMONIA HEAT RECOVERY HEAT EXCHANGER SCHEDULE

TAG NO.	BASIS OF SELECTION	REFRIGERANT SIDE DGT	SCT	REFRIGERANT TYPE	WATER SIDE DGT	LBT	GPM	MBH	HEATING FLUID TYPE	REMARKS
HX-1	ALFA LAVAL MAC SERIES	175°F	90°F	AMMONIA	70°F	73°F	125	200	22% CFC BRINE	PROVIDE W/ (1) DUAL RELIEF MANIFOLD (2) 300 PSIG RELIEF VALVES (1) HANSEN HT-100 FLOAT DRAINER VESSEL MUST BE ASME RATED

PUMP SCHEDULE

TAG NO.	SERVICE	BASIS OF SELECTION	TYPE	PERFORMANCE DATA GPM	HEAD FT.	RPM	HP	FLUID	V/PH/HZ	REMARKS
P-1	COLD FLOOR PUMP	BELL & GOSSETT – E-1532 5EB	CLOSE COUPLED – END SUCTION	1125	90	1800	40	22% CALCIUM CHLORIDE BRINE	460/3/60	MOTOR SHALL BE PREMIUM EFFICIENCY VFD COMPATIBLE PROVIDE W/ SHAFT GROUNDING RING & FLEXIBLE PIPING CONNECTORS
P-2	COLD FLOOR BACKUP PUMP	BELL & GOSSETT – E-1532 5EB	CLOSE COUPLED – END SUCTION	1125	90	1800	40	22% CALCIUM CHLORIDE BRINE	460/3/60	MOTOR SHALL BE PREMIUM EFFICIENCY VFD COMPATIBLE PROVIDE W/ SHAFT GROUNDING RING & FLEXIBLE PIPING CONNECTORS
P-3	CONDENSER SPRAY PUMP	BELL & GOSSETT – E-1532 2.5AC	CLOSE COUPLED – END SUCTION	225	37	1800	3	WATER	460/3/60	MOTOR SHALL BE PREMIUM EFFICIENCY VFD COMPATIBLE PROVIDE W/ FLEXIBLE PIPING CONNECTORS
P-4	CONDENSER BACKUP SPRAY PUMP	BELL & GOSSETT – E-1532 2.5AC	CLOSE COUPLED – END SUCTION	225	37	1800	3	WATER	460/3/60	MOTOR SHALL BE PREMIUM EFFICIENCY VFD COMPATIBLE PROVIDE W/ FLEXIBLE PIPING CONNECTORS
P-5	WARM FLOOR PUMP	BELL & GOSSETT – E-1532 2AD	CLOSE COUPLED – END SUCTION	125	45	1800	3	22% CALCIUM CHLORIDE BRINE	460/3/60	MOTOR SHALL BE PREMIUM EFFICIENCY VFD COMPATIBLE PROVIDE W/ FLEXIBLE PIPING CONNECTORS

EXHAUST FAN SCHEDULE

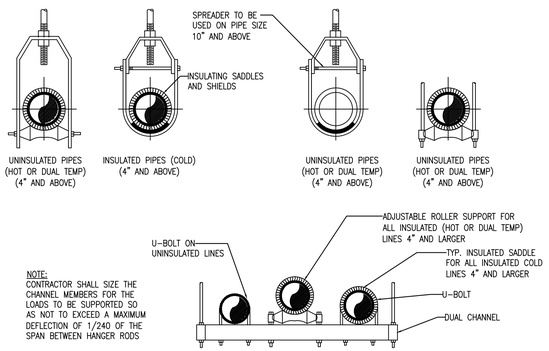
TAG NO.	BASIS OF SELECTION	SERVICE	TYPE	FAN DATA CFM	SP (in wg)	RPM	HP	DRIVE	MOTOR DATA VOLTS	PHASE	HZ	AMPS	REMARKS
EF-1	DELHI – MODEL 212E	COLD FLOOR EMERGENCY VENTILATION	DUCT BLOWER	2800	4.5"	1184	5/4	BELT	120	1	60	16.4	PROVIDE W/ 16x16 B.A.D. INTERLOCK W/ AMMONIA DETECTION SYSTEM
EF-2	CENTRAL-AIRE – MODEL K12	SIDEWALL	SIDEWALL	450	0.375"	1550	1/29	DIRECT	120	1	60	1.4	PROVIDE W/ GRAVITY WALL SHUTTER INTERLOCK W/ ROOM LIGHTS

GALVANIZED STEEL EXPANSION TANK SCHEDULE

TAG NO.	LOCATION	SERVICE	SYS. TEMP. (°F) MIN.	MAX.	SYS. PRESS. (PSI) MIN.	MAX.	TANK PRESSURE RATING (PSI)	TANK ACCEPTANCE VOLUME (GAL.)	BASIS OF SELECTION	REMARKS
ET-1	REFRIGERATION RM.	COLD FLOOR LOOP	10	70	20	50	125	120	B&G – 116036	PROVIDE W/ TANK DRAINER FITTING, LEVEL GAUGE VALVES & 5/8" CLEAR RIGID PLASTIC LEVEL GAUGE TUBING – ASME RATED
ET-2	REFRIGERATION RM.	WARM FLOOR LOOP	65	100	20	50	125	30	B&G – 116031	PROVIDE W/ TANK DRAINER FITTING, LEVEL GAUGE VALVES & 5/8" CLEAR RIGID PLASTIC LEVEL GAUGE TUBING – ASME RATED

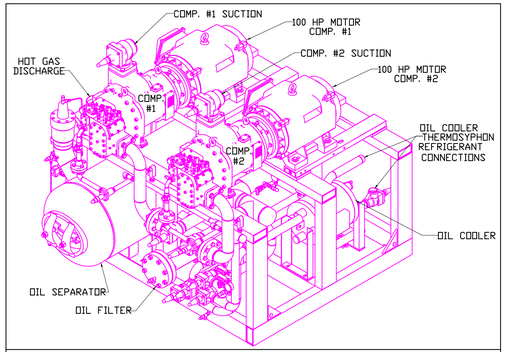
PLATE & FRAME AMMONIA CHILLER

TAG NO.	BASIS OF SELECTION	REFRIGERANT SIDE INLET TEMP	INLET TEMP	SAT. TEMP	MASS FLOW RATE	PSI DROP	REFRIGERANT TYPE	WATER SIDE EBT	LBT	GPM	MBH	COOLING FLUID TYPE	REMARKS
CHR-1	ALFA LAVAL MX15-BWD	8.0°F	6.0°F	8.0°F	3724 LB/H	0.405	AMMONIA (R-717)	17.2°F	14°F	1,125	1,564	22% CFC BRINE	PROVIDE WITH THE FOLLOWING: – "hi-lund" LIQUID SEPARATOR – REMOVABLE INSULATION PACKAGE FOR PLATE AND FRAME CHILLER – INTEGRATED OIL ASSEMBLY



NOTE:
CONTRACTOR SHALL SIZE THE CHANNEL MEMBERS FOR THE LOADS TO BE SUPPORTED SO AS NOT TO EXCEED A MAXIMUM DEFLECTION OF 1/240 OF THE SPAN BETWEEN HANGER RODS

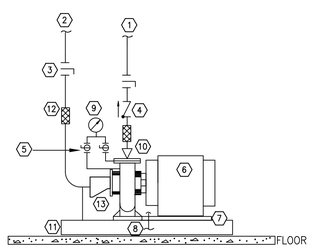
1 PIPE SUPPORT AND HANGER DETAIL



COMPRESSOR SKID ISOMETRIC VIEW
NOT TO SCALE

AMMONIA SINGLE ZONE GAS LEAK MONITOR SCHEDULE

TAG NO.	BASIS OF SELECTION	SERVICE	TYPE	SENSITIVITY	ELECTRICAL DATA VOLTS	PHASE	HZ	REMARKS
AGM-1	BACHARACH – ADM-82	MECHANICAL ROOM AMMONIA LEAK DETECTION SYSTEM	INFRARED SENSING	25 PPM	120	1	60	PROVIDE W/ INLET TERMINATION FILTER, 100' OF SAMPLING TUBE INTERLOCK ALARM RELAY W/ EF-1 EMERGENCY EXHAUST FAN



1. PUMP DISCHARGE PIPING
2. PUMP SUCTION PIPING
3. SHUT-OFF VALVE (TYPICAL)
4. SILENT WAFER CHECK VALVE
5. 1/4" BALL VALVE (TYPICAL)
6. END SUCTION CLOSE COUPLED PUMP
7. PUMP BASE
8. 3/4" DRAIN, RUN TO FLOOR DRAIN
9. PRESSURE GAUGE
10. CONCENTRIC INCREASER (TYPICAL)
11. HOUSEKEEPING PAD
12. FLEX CONNECTOR (TYPICAL-SEE NOTE 1)
13. ECCENTRIC REDUCER (FLAT ON TOP)

NOTES:
1. FLANGED FLEXIBLE METAL HOSE CONNECTOR SHALL BE LOCATED IN CLOSE PROXIMITY TO VIBRATING SOURCE.

CLOSE COUPLED BASE MOUNT PUMP DETAIL

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revisions:

project: RINK REFRIGERATION SYSTEM REPLACEMENT GORDON H. PAQUETTE ICE ARENA LEDDY PARK BURLINGTON, VT

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