

SCOPE OF WORK: The contractor shall provide all material, labor, equipment, and supervision required to accomplish the following:

General description - The contractor shall replace the Carrier chiller #H 30GTR100-E-620HL, S# 3702F79297 located at building 1005.

Detailed requirements and specifications -

The contractor shall:
Remove and dispose of the existing 100 ton chiller and provide and install an 80 ton air cooled chiller with "N+1" redundancy (100 tons) to the following specifications and installation requirements:
* An example of achieving N+1 redundancy is to provide a modular chiller consisting of 5 each 20 ton modules such as an AirStack ASP 20A with a total 100 ton capacity.

Additional Chiller Specifications-

- 1) Liquid, suction and discharge service valves.
- 2) Replaceable core filter drier on each refrigeration circuit.
- 3) Each compressor shall have individual service valves for isolating compressor from the refrigerant circuit.
- 4) Integral GFCI convenience outlet.
- 5) Machine controller default language shall be English.
- 6) Phase monitor to include:
 - a) Phase imbalance
 - b) Over/under voltage
 - c) Phase loss
 - d) Delay on break timer to delay automatic restarts
 - e) Non-critical fault delay
 - f) Programmable auto-manual restart
 - g) Load and line side monitoring
- 7) Ambient controls for operation down to 40 F. Factory installed Louvered coil guards.
- 8) Chiller shall be equipped with BACNET/MSTP DDC card.
- 9) Compressor access guard(s).

- 10) Condenser coil shall be capable of meeting ASTM B-117 3000. (American Society for Testing and Materials (ASTM) B 117 (neutral salt fog) for 3000 hours) without appreciable material degradation.
- 11) Heat tracer protection for piping and evaporator/chiller barrel freeze protection.
- 12) Control panel shall have access to micro processor (controller) for viewing or setup, without interrupting machine operation. Hinged control panels are desired.
- 13) Control power transformer.
- 14) Single point power connection.
- 15) Factory start-up assistance w/report.
- 16) First year compressor labor warranty.
- 17) Five year compressor warranty (parts).

Construction Notes-

- 1) Demo and dispose of existing Carrier, S# 3702F79297. The chiller shall become the property of the contractor and disposed of at the contractor's discretion.
- 2) Provide and install new air cooled chiller to provided specifications.
- 3) Chiller shall be mounted on vibration isolators with level adjustment.
- 4) Welding is not permitted on chillers. Water connections shall be by grooved fitting or flange. Provide 16-20 mesh, "W" type strainer on chill water inlet.
- 5) 2" polyisocyanurate insulation w/metal jacket on all exposed piping.
- 6) Demo the existing and provide and install new evaporator flow switch in chilled water discharge (outlet) line. Flow switch shall be rain tight manufactured for outdoor use and shall be set for minimum chill water flow.
- 7) Provide and install new water balancing valve and balance to manufacturer's specifications
- 8) Demo existing chilled water isolation (stop) valves and provide and install new stop valves on supply and return water at chiller. (Locate stop

- valves to allow for strainer isolation if not already positioned so).
- 9) Strict adherence to manufacturer's installation instruction manual shall be followed with special attention to references to evaporator chilled water pump's necessity to be controlled by the chiller output (if required).
 - 10) Existing building automation control, Remote BAC start/stop shall be re-installed on the new chiller. The contractor shall integrate BACNET/MSTP chiller card (all wiring and programming) into building BAC (EMCS) system. Details and assistance can be obtained via Johnson Controls Inc. @ 910-794-4304.
 - 11) Provide all new piping necessary to accommodate new chiller and chilled water buffer tank layout.
 - 12) Insulate the circuit setter, strainer and both isolation valves, four places total, on the chilled water return and supply lines located in the mechanical room of the design wing (above chilled water pump). Use insulation specs similar to the existing insulation present on mech room piping.

Replace Chill Water Pump-

- 1) Demo the existing chilled water pump located in the mechanical room of the design wing of building 1005.
- 2) Furnish and install a base mounted centrifugal pump, aligned and grouted with the following specifications:
 - a) GPM=240
 - b) Head =116'
 - c) Voltage/phase =460/3
 - d) RPM=1800

Suggested pump-Armstrong Series 4030/4280, Size 4" X 3" X 1 1/2", and 15 HP. See electrical section for wiring electrical specifications.

Install Inertia Tank (Chill Water Buffer Tank (CWB)-

- 1) Furnish and install a 500 gallon chilled water buffer tank in the location indicated on drawing.
- 2) The tank shall incorporate a baffle to promote water temperature stratification.
- 3) The tank must be constructed in

accordance with the most recent addition of section VII of the ASME Boiler and Pressure Vessel code.

- 4) The CWB shall be insulated using 2" flexible cellular glass and a hard mesh covering/metal jacket.

CWB Equipment Pad Specifications- Detailed requirements and specifications -

- 1) The contractor shall form and pour a 5'-0" x 5'-0" x 0'-6" concrete slab.
- 2) Remove the first 4-inches of ground.
- 3) Remove all organic material and concrete slab shall be poured on undisturbed ground or clean fill that has been mechanically compacted.
- 4) Form concrete slab and pour with fibrillated fiber reinforced 3,500 -psi concrete.
 - a) Concrete slab shall be formed and poured to prevent standing water.
 - b) Fibrillated fiber reinforced concrete shall be a minimum of 3500 -psi with a maximum 4-inch slump.
- 1) The water -cement ratio shall not exceed the manufacturer's recommendations. The contractor shall provide a batch ticket to the contracting officer, stating the cement water ratio needed for a 4-inch slump and the amount of water added by the receiver.
 - 1) Fibrillated fiber reinforcement shall have a minimum ratio of 1-1/2 lbs per yard.
- 5) Surfaces shall have a broom finish. The only means a contractor shall add water to the surface of the concrete for finishing is with fog spray or wet burlap.
- 6) Forms shall be removed and the ground backfilled, with top soil. .

General requirements for CWB Pad -

- 1) Replacement areas shall be barricaded off until concrete has been poured and forms removed and ground has been backfilled.
- 2) The measurements and quantities furnished here are for reference only. The contractor is responsible for actual field verification prior to bidding, ordering materials and during every step of construction for

- existing surfaces, dimensions and conditions.
- 3) Repair, refinish areas damaged or disturbed by new work to be provided under this contract.
 - 4) Properly remove, haul, and dispose of all debris. The base landfill may be utilized.

Electrical -

Chiller-

- 1) Procure and install chiller service breaker sized to accommodate the maximum over current protection electrical specifications of new chiller (if existing is inappropriate).

Chilled Water Pump-

- 1) Demo the existing 15 amp three pole breaker for the CW pump and furnish and install new 15 amp, 3 pole breaker.
- 2) Demo the existing starter and furnish and install new NEMA size #2 with heater size to 24,150 amps.
- 3) Conduit shall be 3/4" and wire size #10.

GENERAL REQUIREMENTS -

SUBMITTALS -

- 1) Provide installation, start up and maintenance manuals for new equipment.
- 2) Complete and submit a MAXIMO Equipment up-date form for each piece of newly installed equipment.
- 3) Provide manufacturer specifications for proposed chiller with quote.
- 4) Provide material lead time with bid proposal.
- 5) Provide Factory start-up report.
- 6) The contractor shall provide a written report detailing the composition of the concrete mixture before the commencement of the work. (CWB equipment pad)
- 7) The contractor shall provide a copy of the batch ticket to the contracting office's rep. upon completion of the pour for verification of the composition of the delivered mix. (CWB equipment pad)

SPECIAL SCHEDULING AND ACCESS: Existing chiller shall not be taken off line prior to January 1, 2010 and all work shall be completed before March 26, 2010.

SPECIAL CONDITIONS: None Identified

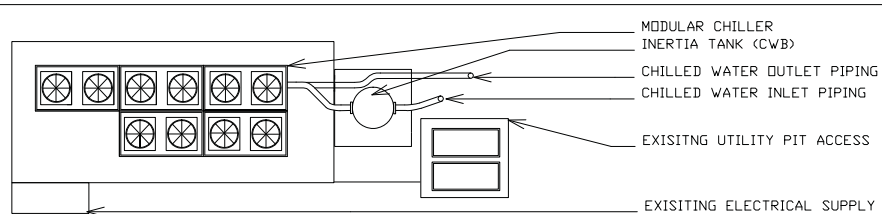
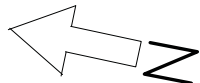
HAZARDOUS MATERIALS: None Identified

ENVIRONMENTAL:

1) All EPA regulations concerning ozone depleting refrigerants shall be followed in the performance of this contract.

NEW CHILLER SCHEDULE

UNIT MARK	CAPACITY @ 95 F -2%,+10%	MIN. EFF. IPLV	P.D. FT. HD.	E.W.T.	L.W.T.	COMP. TYPE	REFRIGERANT CIRCUITS	CAPACITY MODULATION	ELEC.
CH-1	100 TON@ 240 GPM	18.5	6.5	54 F	44 F	SCROLL OR SCREW	DUAL/MULTIPLE	VARIABLE CAPACITY MODULATION OVER ENTIRE OPERATING RANGE	460 v3 ph



1005 NEW CHILLER LAYOUT

PLAN VIEW

BLDG# 1005 SHEET 2 OF 2
CONTRACT# N40083-09B-0512
DUG SCOTT WILLIAMS MECH MACC # 09-0512

TITLE: REPLACE CHILLER
USMC CAMP LEIBURNIE

M-1