

# CERTIFIED COPY OF ORDER

STATE OF MISSOURI }  
County of Boone } ea.

March Session of the January Adjourned

Term. 2007

In the County Commission of said county, on the 29<sup>th</sup> day of March 20 07

the following, among other proceedings, were had, viz:

Now on this day the County Commission of the County of Boone does hereby award bid 22-27MAR07 Packaged Air-Cooled Chiller to McQuay International. It is further ordered the Presiding Commission be hereby authorized to sign said contract.

Done this 29<sup>th</sup> day of March, 2007.

ATTEST:

Wendy S. Noren  
Wendy S. Noren  
Clerk of the County Commission

Kenneth M. Pearson  
Kenneth M. Pearson  
Presiding Commissioner

Karen M. Miller  
Karen M. Miller  
District I Commissioner

Skip Elkin  
Skip Elkin  
District II Commissioner

## PURCHASE AGREEMENT FOR PACKAGED AIR-COOLED CHILLER

**THIS AGREEMENT** dated the 29<sup>th</sup> day of March 2007 is made between Boone County, Missouri, a political subdivision of the State of Missouri through the Boone County Commission, herein "County" and **McQuay International c/o Thermal Mechanics, Inc**, herein "Contractor."

**IN CONSIDERATION** of the parties performance of the respective obligations contained herein, the parties agree as follows:

- Contract Documents** - This agreement shall consist of this Purchase Agreement for a **Packaged Air-Cooled Chiller**, bid number **22-27MAR07** including Introduction and General Conditions of Bidding, Primary Specifications, Response Presentation and Review, the unexecuted Response Form, Standard Terms & Conditions, any applicable addenda, as well as the Contractor's bid response dated March 27, 2007 and executed by Kevin Krimmel, on behalf of the Contractor. All such documents shall constitute the contract documents which are attached hereto and incorporated herein by reference. Service or product data, specification and literature submitted with bid response may be permanently maintained in the County Purchasing Office bid file for this bid if not attached. In the event of conflict between any of the foregoing documents, the terms, conditions, provisions and requirements contained in the bid specifications including Introduction and General Conditions of Bidding, Primary Specifications, Response Presentation and Review, the unexecuted Response Form, Standard Terms & Conditions, and any applicable addenda shall prevail and control over the Contractor's bid response.
- Purchase** - The County agrees to purchase from the Contractor and the Contractor agrees to supply the County the items identified and responded to in Section 2 of bid including packaged air-cooled chiller (\$81,250.00), field quality control (1,400.00), and demonstration (\$700.00) for a total contract price of \$83,350.00. Items will be provided as required in the bid specifications and in conformity with the contract documents for the prices set forth in the Contractor's bid response, as needed and as ordered by County.
- Delivery** - Contractor agrees to deliver the equipment per the bid specifications and within 7 days after receipt of order.
- Billing and Payment** - All billing shall be invoiced to Boone County Public Work's Department and billings may only include the prices listed in the Contractor's bid response. No additional fees for delivery or extra services or taxes shall be included as additional charges in excess of the charges in the Contractor's bid response to the specifications. The County agrees to pay all invoices within thirty days of receipt; Contractor agrees to honor any cash or prompt payment discounts offered in its bid response if county makes payment as provided therein. In the event of a billing dispute, the County reserves the right to withhold payment on the disputed amount; in the event the billing dispute is resolved in favor of the Contractor, the County agrees to pay interest at a rate of 9% per annum on disputed amounts withheld commencing from the last date that payment was due.
- Binding Effect** - This agreement shall be binding upon the parties hereto and their successors and assigns for so long as this agreement remains in full force and effect.

6. **Entire Agreement** - This agreement constitutes the entire agreement between the parties and supersedes any prior negotiations, written or verbal, and any other bid or bid specification or contractual agreement. This agreement may only be amended by a signed writing executed with the same formality as this agreement.

7. **Termination** - This agreement may be terminated by the County upon thirty days advance written notice for any of the following reasons or under any of the following circumstances:

- a. County may terminate this agreement due to material breach of any term or condition of this agreement, or
- b. County may terminate this agreement if in the opinion of the Boone County Commission if delivery of products are delayed or products delivered are not in conformity with bidding specifications or variances authorized by County, or
- c. If appropriations are not made available and budgeted for any calendar year.

**IN WITNESS WHEREOF** the parties through their duly authorized representatives have executed this agreement on the day and year first above written.

**MCQUAY INTERNATIONAL  
C/O THERMAL MECHANICS, INC.**

**BOONE COUNTY, MISSOURI**

by Clarence Hornbacher

by: Boone County Commission

title Financial Services Representative  
Kenneth M. Pearson, Presiding Commissioner

APPROVED AS TO FORM:

ATTEST:

[Signature]  
County Counselor

Wendy S. Noren by Clerk  
Wendy S. Noren, County Clerk

**AUDITOR CERTIFICATION**

In accordance with RSMo 50.660, I hereby certify that a sufficient unencumbered appropriation balance exists and is available to satisfy the obligation(s) arising from this contract. (Note: Certification of this contract is not required if the terms of the contract do not create a measurable county obligation at this time.)

[Signature]  
Signature

3/28/07  
Date

6200 / 60110 - \$83,350.00

Appropriation Account

13 PAGES TOTAL

County of Boone

Purchasing Department

Since time is of the essence, faxed bids will be received. Fax to (573) 886-4390. Call (573) 886-4391 to confirm receipt of bid. Bid MUST be received by March 27, 2007, 10:30 a.m. CST.

4. Response Form - Submit three (3) complete copies of your Response in a single sealed envelope, clearly marked on the outside, left corner with your company name and return address, the bid number and the due date and time.

- 4.1 Company Name: McQuay International c/o Thermal Mechanics, Inc.
- 4.2 Address: 719 Goddard Ave.
- 4.3 City/Zip: Chesterfield, MO 63005
- 4.4 Phone Number: 636-532-1110
- 4.5 Fax Number: 636-532-7318
- 4.6 Federal Tax ID: 431316994

4.7. BID RESPONSE

4.7.1. Packaged Air-Cooled Chiller as detailed in Section 2 of Bid	\$ 81,250.00
4.7.2. Field Quality Control as detailed in Section 2.2.3.1.A. of Bid	\$ 1,400.00
4.7.3. Demonstration as detailed in Section 2.2.3.2. A of Bid	\$ 700.00
4.7.4. TOTAL	\$ 83,350.00

4.8. List any deviations from bid specifications:  
Sound enclosure is field installed. Note that this McQuay chiller has much lower sound levels than most other chiller manufacturers, even without sound enclosures.

4.9. Delivery will be made 7 days after receipt of Purchase Order

4.10. Attach warranty described in paragraph 2.2.1.4. A.

4.11. **The undersigned offers to furnish and deliver the articles or services as specified at the prices and terms stated and in strict accordance with all requirements contained in the Request for Bid which have been read and understood, and all of which are made part of this order.** By submission of this bid, the vendor certifies that they are in compliance with Section 34.353 and, if applicable, Section 34.359 ("Missouri Domestic Products Procurement Act") of the Revised Statutes of Missouri.

4.11.1. Authorized Representative (Sign By Hand):

[Signature]

4.11.2. Type or Print Signed Name:  
Kevin Krimmel

Date: 03/27/07

# THERMAL MECHANICS, INC.

# PROPOSAL

719 GODDARD AVENUE, CHESTERFIELD, MO 63005

VOICE (636) 532-1110

FAX (636) 532-7318

MAB

<b>To:</b> Melinda Bobbitt Boone County Purchasing	<b>Date:</b> March 27, 2007
<b>Project:</b> Air Cooled Chiller, Bid Number 22-27MAR07	<b>Terms:</b> Net 30 Days FOB Factory Freight Allowed

## Air Cooled Water Chiller

One McQuay AGS210C packaged air-cooled chiller with a capacity of 196 tons when cooling 424 GPM water to 44.5°F in an ambient air temperature of 105°F. Chiller includes the following features and options:

- Cabinet to be galvanized steel finished with a beige urethane finish suitable for outdoor use.
- McQuay single screw compressors on two independent refrigeration circuits. Chiller uses R-134a.
- Air-cooled condenser coils constructed of copper tubes expanded into aluminum fins
- Direct drive propeller type condenser fans with weather protected motors.
- Condenser fan speed control provides for low ambient operation to 0°F.
- The direct expansion cooler will be a single water pass with two refrigerant circuits. The cooler will have a carbon steel barrel with seamless internally finned copper through tubes expanded into carbon steel tube sheets. The refrigerant heads will be removable. The cooler will be constructed, tested and stamped in accordance with ASME Code requirements. The cooler shell and suction piping are covered with a closed cell foamed plastic insulation. Standard water piping connections will be grooved and are suitable for welding.
- Weatherproof control enclosure includes the McQuay MicroTech II DDC controller, high and low pressure cutouts, fan motor contractors, compressor circuit breakers, sub-circuit fusing, control power transformer and single point main power connection with disconnect switch.
- Each compressor shall have solid state motor starter to provide controlled motor acceleration and deceleration. Starter will provide protection for the following conditions: over/under voltage, electronic thermal overload, over/under current, stalled motor, single phase, high load current and current unbalance.
- Standard one-year parts and labor warranty for entire chiller and *optional* four years parts warranty extension (five years total) on the compressors.
- Chiller will be factory tested and will ship with an operating charge of refrigerant and oil. Shipping weight is 11,070 pounds.
- Sound enclosures kits are provided loose for *field installation by others*.
- Paddle type flow switch is provided loose for installation in chilled water piping.
- Two days of startup supervision by Thermal Mechanics, Inc
- Four hours of owner training by Thermal Mechanics, Inc.

**TOTAL NET PRICE ..... \$83,350.00**

McQuay has one of these chillers available for immediate shipment at this time. An order must be placed by March 30, 2007 in order to guarantee shipment in seven days. An order placed after March 30 may require a chiller be built to order with an estimated 11 to 12 week shipment.

Very truly yours,  
Thermal Mechanics, Inc.

Kevin Krimmel/mab

TAXES AND/OR PERMITS ARE NOT INCLUDED UNLESS NOTED OTHERWISE  
ALL PROPOSALS ARE SUBJECT TO THE ACCEPTANCE, TERMS AND CONDITIONS IMPOSED BY THE INDIVIDUAL SELLER COMPANIES AS OFFERED HEREIN ABOVE  
ENUMERATED. SUCH TERMS AND CONDITIONS ARE ON FILE AT THERMAL MECHANICS, INC. AND ARE AVAILABLE AT REQUEST  
THE PURCHASER AND THERMAL MECHANICS, INC. MUTUALLY AGREE THAT THERMAL MECHANICS, INC. SHALL NOT BE LIABLE FOR NEGLIGENCE, MISCONDUCT, WARRANTIES  
EXPRESSED OR IMPLIED, EXCEPT BY WRITTEN CONSENT OF ALL PARTNERS OF SAID THERMAL MECHANICS, INC.

## McQUAY PDC - TECHNICAL BREAKDOWN

Date saved: March 27, 2007

<b>JOB NUMBER</b>	QRZ343	<b>REP. OFFICE</b>	Thermal Mechanics, Inc.
<b>JOB DESCRIPTION</b>	Boone County chiller	<b>SALESMAN</b>	Thermal Mechanics, Inc.
		<b>CUSTOMER</b>	
<b>MODEL NUMBER</b>	AGS210C		
<b>UNIT TAGGING</b>	CH-1	<b>VERSION</b>	7.52

**GENERAL DATA**

Approval listing	ETL / Canadian ETL Listed and Labeled
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**PHYSICAL DATA**

Length (ins)	263.0	Shipping weight (lb)	11011.0
Width (ins)	89.0	Operating weight (lb)	11928.0
Height (ins)	101.0	Refrigerant	R134a
		Refrigerant charge (lb)	402.0

**EVAPORATOR DATA****CONDENSER DATA**

LWT (°F)	44.5	Design ambient (°F)	105.0
EWT (°F)	55.6	Altitude (ft)	0
Flow (gpm)	424.5	Fan diameter (ins)	30
Delta T (°F)	11.1	Fan motor HP	2.5
Fluid type	Water	Fan RPM	1140
Percentage of fluid	100	Low ambient control to (°F)	30.0
Number of passes	2	Unit airflow (cfm)	130360
Fouling Factor (F.ft <sup>2</sup> .h/Btu)	0.00010		
Tube material	Cu		
Tube wall thickness (ins)	0.025		
Water volume (gal)	106.0		

**UNIT ELECTRICAL DATA**

Volts	208	LRA Fan Motors (each)	46.0
Num Fan Motors	12	RLA Fan Motors (each)	11.0
	Single Point	Multi Point	
		Ckt 1	Ckt 2
			Ckt 3
MCA	897		
Field Wire Gauge	300		
Field Wire Qty	12		
Conduit Qty			
Conduit Nom Size			
Recommend Fuse Size	1000		
Maximum Fuse Size	1200		
Terminal Amps**			
Connector Wire Range**	1/0 - 750 (4/C)		

\*\* Amp and Wire Range values shown are for Standard Power Block. Consult catalog for values when selecting Disconnect Switch option.

## McQUAY PDC – TECHNICAL BREAKDOWN

Date saved: March 27, 2007

COMPRESSOR ELECTRICAL DATA						
Type / Quantity	Screw/2					
	Comp 1	Comp 2	Comp 3	Comp 4	Comp 5	Comp 6
RLA	340.0	340.0	-	-	-	-
LRA						
Across the Line	-	-	-	-	-	-
Reduced Inrush / Part Winding	-	-	-	-	-	-
Solid State	-	-	-	-	-	-

DESIGN PERFORMANCE										
Capacity (tons)	Input power (kW)	Performance (EER)	Flow (gpm)	IPLV	Evaporator			Condensar		
					P.D. (ftHd)	T in (°F)	T out (°F)	Ambien t (°F)	Altitude (ft)	n/a
196.3	266.7	8.8	424.5	12.39	11.4	55.6	44.5	105.0	0	n/a

PART LOAD PERFORMANCE AT ARI STANDARD CONDITIONS				
P#	%load request	Capacity (tons)	Total unit input power (kW)	Performance (EER)
1	100	201.2	241.5	10.0
2	75	151.0	159.5	11.4
3	50	100.6	89.8	13.4
4	25	50.3	49.1	12.3

SOUND DATA								
Sound pressure (at 30 feet) – octave band at center frequency (dBA)								
63Hz	125Hz	250Hz	500Hz	1000Hz	2000Hz	4000Hz	8000Hz	Overall
41	46	54	59	65	66	62	56	70
Sound power – octave band at center frequency (dBA)								
63Hz	125Hz	250Hz	500Hz	1000Hz	2000Hz	4000Hz	8000Hz	Overall
68	72	80	85	91	93	89	82	97

Sound data rated in accordance with ARI Standard-370. Sound data may not be available for all models.

**NOTES:**

The ARI 60 hertz Certification Program covers models that are:

- rated up to 200 tons at ARI Standard Rating Conditions
- voltages less than or equal to 600 volts
- leaving chilled water temperature 40 to 48 °F
- ambient temperature 55 to 125 °F
- hermetic or open type electric motor driven
- chiller selections that are within the scope of the Application Rating Conditions of ARI Standard 550/590-1998 have chiller performance this is "Certified in accordance with the ARI Water-Chilling Packages Using the Vapor Compression Cycle Certification Program, which is based on ARI Standard 550/590."

The ARI Certification Program specifically excludes:

- chillers above 200 tons
- chillers with voltages above 600 volts
- secondary coolant ratings other than water (e.g. glycol ratings)
- chiller selections that are not within the scope of the Application Rating Conditions of ARI Standard 550/590-1998 have chiller performance this is "Rated in accordance with ARI Standard 550/590-Outside the scope of Certification Program."
- Above RLA values are per compressor. kW values are total unit kW.

Certified Drawing	CD: AGS C PKG COVR
McQuay International certifies that it will furnish equipment in accordance with this drawing and specifications, and subject to its published warranty. Purchaser's approval to this drawing signifies that the equipment is acceptable under the provisions of the job specifications. Any change made hereon by any person whomsoever is subject to acceptance by McQuay International, P.O. Box 2510, Staunton, VA 24402 USA; (540) 248-0711.	Group: Chiller
	Type: AGS-C
	Effective: February 2004

## Model AGS-C Packaged Air-Cooled Screw Compressor Water Chiller

<b>Sold To:</b> Boone County	McQuay G.O. No.	Date: 3/26/07
	<b>Customer P.O.:</b>	
<b>Job:</b> Air Cooled Chiller, Boone County Jail	<b>Rep. Name:</b> Thermal Mechanics, inc.	
	<b>Rep. P.O.:</b>	
	<input type="checkbox"/> Copies	<input checked="" type="checkbox"/> For Approval
	<input type="checkbox"/> For Record	
<b>Consulting Engineer:</b>	<b>Rev. No.</b> 1	<b>By</b> MAB
	<b>Date</b> 3/27/07	<b>Was</b>

### Certified Performance Data

Tag	Model Number	Qty.	Electrical Charac. V/Hz/Ph	Capacity Tons	Compressor Power kW	Unit Efficiency EER	Evaporator				Ambient Air Temp.
							Flow GPM	EWT °F	LWT °F	PD Ft	
	AGS210C	1	208/60/3	196.3	266.7	8.8	424	55.6	44.5	11.4	105

### Standard Features

- Cabinet:** Unit casing and all structural members and rails are fabricated of steel and painted to meet ASTM B117, 500 hour salt spray.
- Compressors:** Two, independent, direct drive 3600 rpm, single screw type, with one main rotor meshing with two diametrically opposed gaterotors
- Condenser Coil:** Copper tube and aluminum fin with integral subcooler section. Wire mesh coil guards are standard.
- Condenser Fans:** Direct drive propeller type with heavy gauge mesh fan guard.
- Condenser Fan Motors:** Three phase, 1140 rpm, TEAO type.
- Evaporator:** Two circuit, direct expansion, shell-and-tube type, with water in the shell and refrigerant in the tubes. Removable heads and internally finned tubes mechanically bonded to the steel tube sheets. Drain and vent fittings. ASME designed, constructed, inspected, and stamped. Insulated with 3/4 in. (19mm) thick closed shell insulation. Resistance type heating cable and thermostat for freeze protection to -20°F (-29°C).
- Piping and Accessories:** Manual liquid line shutoff valve, filter-drier, liquid line solenoid valve, sight glass/moisture indicator, electronic expansion valve and suction insulation.
- Control Center:** A microprocessor based control system. The controller features easy to use 12-key keypad and 32 character digital display that provides access to temperatures, pressures, setpoints, operating states and alarm messages. The control transformer is included. Solid State Starters are standard and include ground fault and phase voltage protection. Standard power connection is multi-point to power blocks.
- Assembly and Test:** Assembly includes complete factory fabrication and assembly of parts, insulation, wiring between control components and all controls listed, factory supplied oil and refrigerant charge. Testing includes full operational and safety testing.

### Additional Features As Checked Below:

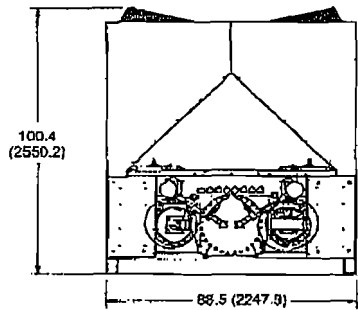
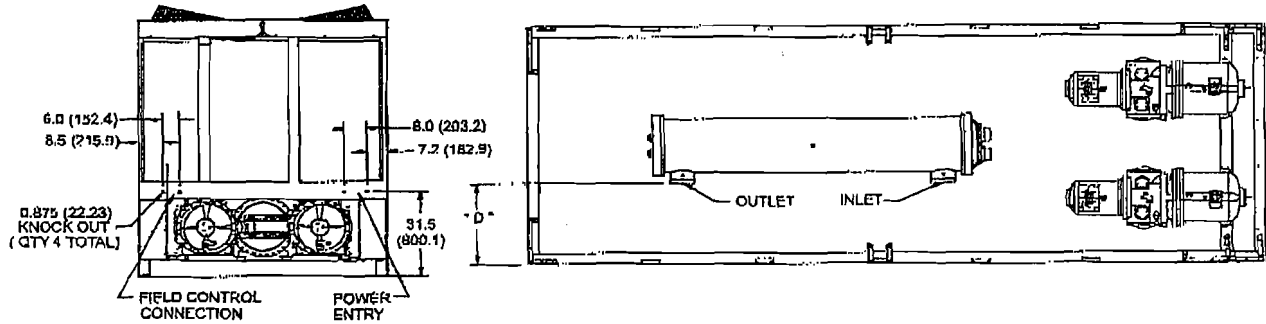
<b>Field Installed</b>	
<input checked="" type="checkbox"/> Chilled Water Flow Switch. Field Installed	<input type="checkbox"/> Spring Isolators
<input type="checkbox"/> Chilled Water Flow Switch. Factory Installed	<input type="checkbox"/> Wind Baffles/Hail Guards
<b>Factory Installed</b>	
<input type="checkbox"/> Copper Condenser Fins	<input type="checkbox"/> Single-point Connection to Power Block w/ Compressor Circuit Breakers
<input type="checkbox"/> Baked Epoxy Coil Coating	<input checked="" type="checkbox"/> Single-point Connection to Disc. Switch w/ Compressor Circuit Breakers
<input type="checkbox"/> Black Fin Coil	<input type="checkbox"/> Single-point Connection to High Interrupt DS w/ Compressor Circuit Breakers
<input checked="" type="checkbox"/> 115v Convenience Outlet	<input type="checkbox"/> Single-point Connection to High Interrupt DS w/ Compressor Circuit Breakers in a High Short Circuit Rated Panel
<input checked="" type="checkbox"/> VFD Low Ambient Control	<input type="checkbox"/> Multi-point Connection to Disconnect Switches
<input checked="" type="checkbox"/> High Ambient Temperature Operation	<input type="checkbox"/> Multi-point Connection to High Interrupt Disconnect Switches
<input type="checkbox"/> BAS Interface Module <input type="checkbox"/> Modbus <input type="checkbox"/> BACnet <input type="checkbox"/> LONTALK	<input type="checkbox"/> Multi-point Connection to High Interrupt DS in a High Short Circuit Rated Panel
<input type="checkbox"/> Right-hand Evaporator Connections	<input checked="" type="checkbox"/> Sound Enclosure (Field installed kit)
<input type="checkbox"/> 115 Volt Convenience Outlet	<input checked="" type="checkbox"/> Suction Shutoff valve
<input type="checkbox"/> Protective Base Guards	<input type="checkbox"/> Other
<input type="checkbox"/> Louvers <input type="checkbox"/> Coil Only <input type="checkbox"/> Coil and Base	



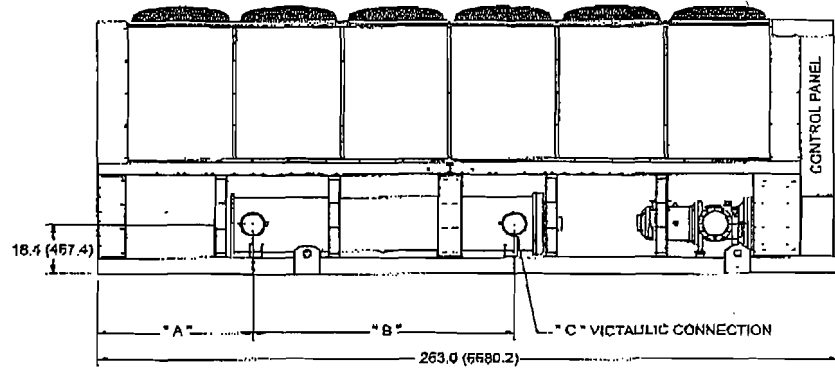


<b>Certified Drawing</b>		<b>CD: AGS120-210CS-CH</b>
Job Name:		Group: Chiller
		Type: AGS 120-210CS/CH
		Date: June 2005
Tag / Item No.:		Supersedes: April 2005

## Dimensions: AGS 165C -210C Packaged Chiller



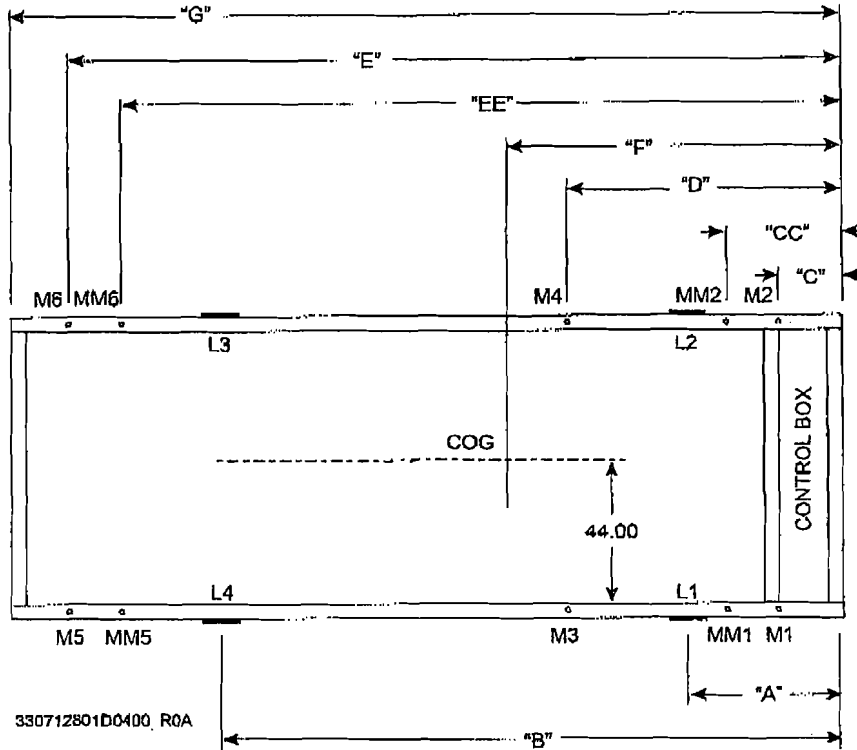
330712701-03



UNIT SIZE	Dimensions in (mm)			
	" A "	" B "	" C "	" D "
AGS165C	54.9 (1394.5)	92.9 (2359.7)	8 (203.2)	30.1 (764.5)
AGS175C	54.9 (1394.5)	92.9 (2359.7)	8 (203.2)	30.1 (764.5)
AGS195C	54.9 (1394.5)	92.9 (2359.7)	8 (203.2)	30.1 (764.5)
AGS210C	54.9 (1394.5)	92.9 (2359.7)	8 (203.2)	30.1 (764.5)

<b>Certified Drawing</b>		<b>CD: AGS120-210CS-CH</b>
Job Name:		Group: Chiller
		Type: AGS 120-210CS/CH
		Date: June 2005
Tag / Item No.:		Supersedes: April 2005

## Mounting and Lifting Dimensions



NOTE: "L" are lifting tab locations, "M" are standard isolator locations, MM and M3 and M4 are for seismic mounts.

AGS MODEL	A	B	C	CC	D	E	EE	F	G
120	36.00	136.60	12.00	21.00	57.30	174.60	165.60	71.49	186.60
125	36.00	168.85	12.00	21.00	69.25	212.80	203.80	86.54	224.80
130	36.00	136.60	12.00	21.00	57.30	174.60	165.60	71.49	186.60
135	36.00	168.85	12.00	21.00	69.25	212.80	203.80	86.54	224.80
140	36.00	136.60	12.00	21.00	57.30	174.60	165.80	71.49	186.60
145	36.00	168.85	12.00	21.00	69.25	212.80	203.80	86.66	224.80
160	36.00	136.60	12.00	21.00	57.30	174.60	165.60	74.37	186.60
165	36.00	189.00	12.00	21.00	84.00	251.00	242.00	105.17	263.00
170	36.00	168.85	12.00	21.00	69.25	212.80	203.80	89.65	224.80
175	36.00	189.00	12.00	21.00	84.00	251.00	242.00	105.17	263.00
180	36.00	168.85	12.00	21.00	69.25	212.80	203.80	89.65	224.80
190	36.00	168.85	12.00	21.00	69.25	212.80	203.80	89.65	224.80
195	36.00	189.00	12.00	21.00	84.00	251.00	242.00	105.17	263.00
210	36.00	189.00	12.00	21.00	84.00	251.00	242.00	105.17	263.00

**NOTES:**

- Center of gravity (F) is calculated from shipping weight.
- Dimensions are in inches.
- Mounting holes are 0.75 inch diameter and have center located 2.0 inches from the outside edge.



<b>Certified Drawing</b>											<b>CD: AGS120-210CS-CH</b>			
Job Name:											Group: Chiller			
											Type: AGS 120-210CS/CH			
											Date: June 2005			
Tag / Item No.:											Supersedes: April 2005			

*Lifting and Mounting Weights, Aluminum Fins*

AGS	Lifting Weights				Mounting Weights						Operating Weight		Shipping Weight	
	L1, L2		L3, L4		M1, M2		M3, M4		M5, M6		lbs	kg	lbs	kg
	lbs	kg	lbs	kg	lbs	kg	lbs	kg	lbs	kg				
120	2919	1325	1591	722	1735	788	1631	740	1359	617	9452	4291	9020	4095
125	3161	1435	1941	881	1980	899	1875	851	1610	731	10930	4962	10205	4633
130	2919	1325	1591	722	1735	788	1631	740	1359	617	9452	4291	9020	4095
135	3161	1435	1941	881	1980	899	1875	851	1610	731	10930	4962	10205	4633
140	2919	1325	1591	722	1735	788	1631	740	1359	617	9452	4291	9020	4095
145	3075	1396	1896	861	1905	865	1800	817	1538	698	10485	4760	9942	4514
150	2933	1332	1809	821	1766	802	1724	783	1614	733	10209	4635	9484	4306
165	3017	1370	2489	1130	2129	967	2031	922	1804	819	11928	5415	11011	4999
170	3269	1484	2007	911	1940	881	1900	863	1798	816	11277	5120	10552	4791
175	3017	1370	2489	1130	2129	967	2031	922	1804	819	11928	5415	11011	4999
180	3269	1484	2007	911	1940	881	1900	863	1798	816	11277	5120	10552	4791
190	3269	1484	2007	911	1940	881	1900	863	1798	816	11277	5120	10552	4791
195	3017	1370	2489	1130	2129	967	2031	922	1804	819	11928	5415	11011	4999
210	3017	1370	2489	1130	2129	967	2031	922	1804	819	11928	5415	11011	4999

*Lifting and Mounting Weights, Copper Fins*

AGS	Lifting Weights				Mounting Weights						Operating Weight		Shipping Weight	
	L1, L2		L3, L4		M1, M2		M3, M4		M5, M6		lbs	kg	lbs	kg
	lbs	kg	lbs	kg	lbs	kg	lbs	kg	lbs	kg				
120	3238	1470	1910	867	1948	884	1844	837	1572	714	10728	4871	10296	4674
125	3560	1616	2340	1062	2246	1020	2141	972	1876	852	12526	5687	11801	5358
130	3238	1470	1910	867	1948	884	1844	837	1572	714	10728	4871	10296	4674
135	3560	1616	2340	1062	2246	1020	2141	972	1876	852	12526	5687	11801	5358
140	3238	1470	1910	867	1948	884	1844	837	1572	714	10728	4871	10296	4674
145	3474	1577	2295	1042	2171	986	2066	938	1804	819	12081	5485	11538	5238
160	3252	1476	2128	966	1979	898	1937	879	1827	829	11485	5214	10760	4885
165	3496	1587	2968	1347	2448	1112	2350	1067	2123	964	13844	6285	12927	5869
170	3668	1665	2406	1092	2206	1002	2166	983	2064	937	12873	5844	12148	5515
175	3496	1587	2968	1347	2448	1112	2350	1067	2123	964	13844	6285	12927	5869
180	3668	1665	2406	1092	2206	1002	2166	983	2064	937	12873	5844	12148	5515
190	3668	1665	2406	1092	2206	1002	2166	983	2064	937	12873	5844	12148	5515
195	3496	1587	2968	1347	2448	1112	2350	1067	2123	964	13844	6285	12927	5869
210	3496	1587	2968	1347	2448	1112	2350	1067	2123	964	13844	6285	12927	5869



<b>Certified Drawing</b>		<b>CD: AGS120-210CS-CH</b>
Job Name:		Group: Chiller
		Type: AGS 120-210CS/CH
		Date: June 2005
Tag / Item No.:		Supersedes: April 2005

Table Continued from Previous Page

AGS UNIT SIZE	VOLTS	HZ	MINIMUM CIRCUIT AMPACITY (MCA)	POWER SUPPLY (NOTE 1) FIELD WIRE	FIELD FUSE SIZE or HACR BREAKER SIZE	
					RECOM- MENDED	MAXIMUM
180C	208	60	853	(2) 2-300 MCM	1000	1000
	230		772	(2) 2-250 MCM	1000	1000
	380		469	(2)-250 MCM	600	600
	460		380	2-250 MCM	450	500
	575		301	350 MCM	350	400
190C	208	60	853	(2) 2-300 MCM	1000	1000
	230		772	(2) 2-250 MCM	1000	1000
	380		469	(2)-250 MCM	600	600
	460		380	2-250 MCM	450	500
	575		301	350 MCM	350	400
195C	208	60	874	(2) 2-300 MCM	1000	1000
	230		788	(2) 2-250 MCM	1000	1000
	380		479	(2)-250 MCM	800	600
	460		387	2-250 MCM	450	500
	575		306	250 MCM	350	400
210C	208	60	897	(2) 2-300 MCM	1000	1200
	230		812	(2) 2-250 MCM	1000	1000
	380		493	(2)-250 MCM	600	600
	460		396	2-250 MCM	450	500
	575		313	400 MCM	350	400

## Notes

1. Table based on 75°C field wire.
2. A "HACR" breaker is a circuit breaker designed for use on equipment with multiple motors. It stands for Heating, Air Conditioning, Refrigeration.

<b>Certified Drawing</b>		<b>CD: AGS120-210CS-CH</b>
Job Name:		Group: Chiller
		Type: AGS 120-210CS/CH
		Date: June 2005
Tag / Item No.:		Supersedes: April 2005

Table Continued from Previous Page

AGS UNIT SIZE	VOLTS	HZ	RATED LOAD AMPS		FAN MOTORS FLA (EACH)	NO OF FAN MOTORS	L R A FAN MOTORS (EACH)
			COMP. #1	COMP. #2			
180	208	60	340	340	7.3	10	40.0
	230		308	308	6.6	10	40.0
	380		187	187	4.0	10	20.0
	460		154	154	3.3	10	20.0
	575		123	123	2.4	10	12.8
190	208	60	340	340	7.3	10	40.0
	230		308	308	6.6	10	40.0
	380		187	187	4.0	10	20.0
	460		154	154	3.3	10	20.0
	575		123	123	2.4	10	12.8
195	208	60	340	340	7.3	12	40.0
	230		308	308	6.6	12	40.0
	380		187	187	4.0	12	20.0
	460		154	154	3.3	12	20.0
	575		123	123	2.4	12	12.8
210	208	60	340	340	11.0	12	46.0
	230		308	308	9.9	12	46.0
	380		187	187	6.0	12	25.0
	460		154	154	4.1	12	23.0
	575		123	123	3.0	12	20.0

NOTES:

1. Table based on 75°C field wire.



<b>Certified Drawing</b>		<b>CD: AGS120-210CS-CH</b>
Job Name:		Group: Chiller
		Type: AGS 120-210CS/CH
		Date: June 2005
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AGS UNIT SIZE	VOLTS	HZ	WIRING TO STANDARD UNIT POWER BLOCK		WIRING TO OPTIONAL NONFUSED MOLDED CASE SWITCH IN UNIT	
			TERMINAL SIZE AMPS	CONNECTOR WIRE RANGE PER PHASE (COPPER WIRE ONLY)	SIZE AMPS	CONNECTOR WIRE RANGE PER PHASE (COPPER WIRE ONLY)
160	208	60	800	1/0 - 750 MCM (4/C)	800	1/0 - 500 MCM (3/C)
	230		800	1/0 - 750 MCM (4/C)	800	1/0 - 500 MCM (3/C)
	380		800	1/0 - 750 MCM (4/C)	600	3/0 - 500 MCM (2/C)
	460		400	#6 - 350 MCM (2/C)	600	3/0 - 500 MCM (2/C)
	575		400	#6 - 350 MCM (2/C)	600	3/0 - 500 MCM (2/C)
165	208	60	800	1/0 - 750 MCM (4/C)	800	1/0 - 500 MCM (3/C)
	230		800	1/0 - 750 MCM (4/C)	800	1/0 - 500 MCM (3/C)
	380		800	1/0 - 750 MCM (4/C)	600	3/0 - 500 MCM (2/C)
	460		400	#6 - 350 MCM (2/C)	600	3/0 - 500 MCM (2/C)
	575		400	#6 - 350 MCM (2/C)	600	3/0 - 500 MCM (2/C)
170	208	60	1000	1/0 - 750 MCM (4/C)	1200	250 - 500 MCM (4/C)
	230		800	1/0 - 750 MCM (4/C)	800	1/0 - 800 MCM (2/C)
	380		800	1/0 - 750 MCM (4/C)	600	3/0 - 500 MCM (2/C)
	460		400	#6 - 350 MCM (2/C)	600	3/0 - 500 MCM (2/C)
	575		400	#6 - 350 MCM (2/C)	400	3/0 - 500 MCM (2/C)
175	208	60	1000	1/0 - 750 MCM (4/C)	1200	250 - 500 MCM (4/C)
	230		800	1/0 - 750 MCM (4/C)	800	1/0 - 800 MCM (2/C)
	380		800	1/0 - 750 MCM (4/C)	600	3/0 - 500 MCM (2/C)
	460		400	#6 - 350 MCM (2/C)	600	3/0 - 500 MCM (2/C)
	575		400	#6 - 350 MCM (2/C)	400	3/0 - 500 MCM (2/C)
180	208	60	1000	1/0 - 750 MCM (4/C)	1200	250 - 500 MCM (4/C)
	230		1000	1/0 - 750 MCM (4/C)	1200	250 - 500 MCM (4/C)
	380		800	1/0 - 750 MCM (4/C)	600	3/0 - 500 MCM (2/C)
	460		400	#6 - 350 MCM (2/C)	600	3/0 - 500 MCM (2/C)
	575		400	#6 - 350 MCM (2/C)	400	3/0 - 500 MCM (2/C)
190	208	60	1000	1/0 - 750 MCM (4/C)	1200	250 - 500 MCM (4/C)
	230		1000	1/0 - 750 MCM (4/C)	1200	250 - 500 MCM (4/C)
	380		800	1/0 - 750 MCM (4/C)	600	3/0 - 500 MCM (2/C)
	460		400	#6 - 350 MCM (2/C)	600	3/0 - 500 MCM (2/C)
	575		400	#6 - 350 MCM (2/C)	400	3/0 - 500 MCM (2/C)
195	208	60	1000	1/0 - 750 MCM (4/C)	1200	250 - 500 MCM (4/C)
	230		1000	1/0 - 750 MCM (4/C)	1200	250 - 500 MCM (4/C)
	380		800	1/0 - 750 MCM (4/C)	600	3/0 - 500 MCM (2/C)
	460		400	#6 - 350 MCM (2/C)	600	3/0 - 500 MCM (2/C)
	575		400	#6 - 350 MCM (2/C)	400	3/0 - 500 MCM (2/C)
210	208	60	1000	1/0 - 750 MCM (4/C)	1200	250 - 500 MCM (4/C)
	230		1000	1/0 - 750 MCM (4/C)	1200	250 - 500 MCM (4/C)
	380		800	1/0 - 750 MCM (4/C)	600	3/0 - 500 MCM (2/C)
	460		400	#6 - 350 MCM (2/C)	600	3/0 - 500 MCM (2/C)
	575		400	#6 - 350 MCM (2/C)	400	3/0 - 500 MCM (2/C)

NOTES:

1. Terminal size amps are the maximum amps that the power block is rated for.
2. Data based on 75°C wire.
3. (2/C) notation means two cables per conduit.



<b>Certified Drawing</b>		<b>CD: AGS120-210CS-CH</b>
Job Name:	Group: Chiller	
	Type: AGS 120-210CS/CH	
	Date: June 2005	
Tag / Item No.:	Supersedes: April 2005	

### Electrical Data Notes

- Explanation of field wiring designation:

Designation	Total Wires	Total Conduits
350 MCM	3	1
2-250 MCM	6	1
(2) 250 MCM	6	2
(2) 2-300 MCM	12	2

NOTE: Wire size shown is for illustrative purposes only.

- Allowable voltage limits:  
 Unit nameplate 208V/60Hz/3Ph: 187V to 229V  
 Unit nameplate 230V/60Hz/3Ph: 207V to 253V  
 Unit nameplate 380V/60Hz/3Ph: 342V to 418V  
 Unit nameplate 460V/60Hz/3Ph: 414V to 506V  
 Unit nameplate 575V/60Hz/3Ph: 517V to 633V  
 NOTE: Voltage unbalance not to exceed 2% with a resultant current unbalance of 6 to 10 times the voltage unbalance per NEMA MG-1, 1998 Standard.
- Unit wire size ampacity (MCA) is equal to 125% of the largest compressor-motor RLA plus 100% of RLA of all other loads in the circuit including control transformer. Wire size ampacity for separate 115V control circuit power is 15 amps.
- Compressor RLA values are for wire sizing purposes only, but do reflect normal operating current draw at unit rated capacity.
- Single point power supply requires a single disconnect to supply electrical power to the unit. This power must be fused.
- Multiple point power supply requires two independent power circuits.
- All field wiring to unit power block or optional nonfused disconnect switch must be copper.
- Field wire size values given in tables apply to 75°C rated wire per NEC.
- External disconnect switch(s) or HACR breakers must be field supplied.
- All wiring must be done in accordance with applicable local and national codes.
- Recommended time delay fuse size or HACR breakers is equal to 150% of the largest compressor motor RLA plus 100% of remaining compressor RLAs and the sum of condenser fan FLAs.
- Maximum time delay fuse size or HACR breakers is equal to 225% of the largest compressor-motor RLA plus 100% of remaining compressor RLAs and the sum of condenser fan FLAs.

### Power Limitations:

- Voltage within  $\pm 10$  percent of nameplate rating.
- Voltage unbalance not to exceed 2% with a resultant current unbalance of 6 to 10 times the voltage unbalance per NEMA MG-1, 1998 Standard.

### Optional Protocol Selectability Connection for BAS

The locations and interconnection requirements for the various standard protocols are found in their respective installation manuals, obtainable from the local McQuay sales office and also shipped with each unit.

Modbus IM 743

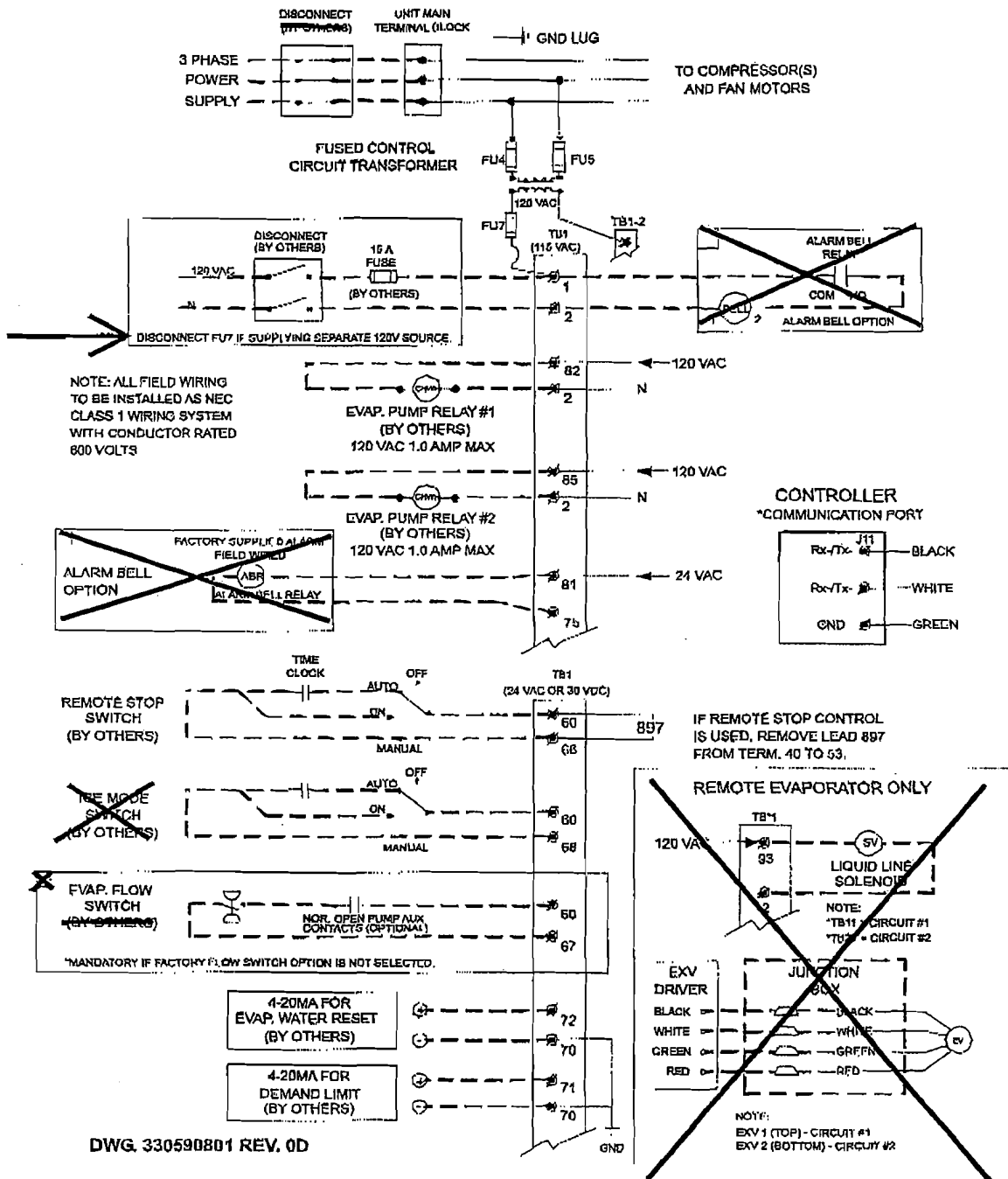
LONWORKS IM 735

BACnet IM 736

**McQuay**  
International

<b>Certified Drawing</b>		<b>CD: AGS120-210CS-CH</b>
<b>Job Name:</b>	<b>Group: Chiller</b>	
	<b>Type: AGS 120-210CS/CH</b>	
	<b>Date: June 2005</b>	
<b>Tag / Item No.:</b>	<b>Supersedes: April 2005</b>	

### Typical Field Wiring Diagram



DWG. 330590801 REV. 0D







**BOONE COUNTY, MISSOURI**  
**Request for Bid #: 22-27MAR07 – Packaged Air-Cooled Chiller**

**ADDENDUM #1 - Issued March 26, 2007**

This addendum is issued in accordance with the Introduction and General Conditions of the Request for Bid and is hereby incorporated into and made a part of the Request for Bid Documents. Offerors are reminded that receipt of this addendum should be acknowledged and submitted with Offeror's *Response Form*.

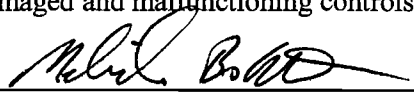
Specifications for the above noted Request for Bid and the work covered thereby are herein modified as follows, and except as set forth herein, otherwise remain unchanged and in full force and effect:

**I. Changes to RFB Specifications:**

**REPLACE Paragraph 2.2.3.1.A with the following:**

The successful vendor's bid response shall include the services of a factory-authorized service representative to provide start-up services and **review the** installation of chiller, including piping and electrical connections, and to report results in writing.

1. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

By:   
**Melinda Bobbitt, CPPB**  
**Director of Purchasing**

OFFEROR has examined copy of Addendum #1 to Request for Bid # 22-27MAR07 – *Packaged Air-Cooled Chiller*, receipt of which is hereby acknowledged:

Company Name: \_\_\_\_\_

Address: \_\_\_\_\_  
\_\_\_\_\_

Phone Number: \_\_\_\_\_

Fax Number: \_\_\_\_\_

Authorized Representative Signature: \_\_\_\_\_

Date: \_\_\_\_\_

Authorized Representative Printed Name: \_\_\_\_\_



**Request for Bid (RFB)**

**Boone County Purchasing**  
601 E. Walnut Street, Room 208  
Columbia, MO 65201

**Melinda Bobbitt, CPPB, Director**  
Phone: (573) 886-4391 – Fax: (573) 886-4390  
Email: mbobbitt@boonecountymo.org

**Bid Number: 22-27MAR07**  
**Commodity Title: Packaged Air-Cooled Chiller**

**DIRECT BID FORMAT OR SUBMISSION QUESTIONS TO THE PURCHASING DEPARTMENT**

***Bid Submission Address and Deadline – Bid Closing & Opening***

**Day / Date: TUESDAY – March 27, 2007**  
**Time: 10:30 A.M. (Bids received after this time will be returned unopened)**

**Location / Mail Address: Boone County Purchasing Department**  
**Boone County Johnson Building**  
**601 E. Walnut, Room 208**  
**Columbia, MO 65201**

**Directions: The Johnson Building is located on the Northeast corner at 6<sup>th</sup> Street and Walnut Street. Enter the building from the East Side. Wheel chair accessible entrance is available on the West side of the building.**

***Bid Contents***

- 1.0: Introduction & General Conditions of Bidding**
- 2.0: Primary Specifications**
- 3.0: Response Presentation and Review**
- 4.0: Response Form**  
**Standard Terms and Conditions**  
**Statement of Bidder's Qualifications**

## 1. Introduction and General Conditions of Bidding

- 1.1. **INVITATION** - The County of Boone Purchasing Department invites responses, which offer to provide the goods and/or services identified on the title page, and described in greater detail in Section 2.
- 1.2. **DEFINITIONS**
- 1.2.1. **County** - This term refers to the County of Boone, a duly organized public entity. It may also be used as a pronoun for various subsets of the County organization, including, as the context will indicate:  
*Purchasing* - The Purchasing Department, including its Purchasing Director and staff.  
*Department(s) or Office(s)* - The County Department(s) or Office(s) for which this Bid is prepared, and which will be the end user(s) of the goods and/or services sought.  
*Designee* - The County employee(s) assigned as your primary contact(s) for interaction regarding Contract performance.
- 1.2.2. **Bidder / Contractor / Supplier** - These terms refer generally to businesses having some sort of relationship to or with us. The term may apply differently to different classes of entities, as the context will indicate.  
*Bidder* - Any business entity submitting a response to this Bid. Suppliers, which may be invited to respond, or which express interest in this bid, but which do not submit a response, have no obligations with respect to the bid requirements.  
*Contractor* - The Bidder whose response to this bid is found by Purchasing to meet the best interests of the County. The Contractor will be selected for award, and will enter into a Contract for provision of the goods and/or services described in the Bid.  
*Supplier* - All business(s) entities which may provide the subject goods and/or services.
- 1.2.3. **Bid** - This entire document, including attachments. A Bid may be used to solicit various kinds of information. The kind of information this Bid seeks is indicated by the title appearing at the top of the first page. An "Invitation For Bid" is used when the need is well defined. An "Invitation For Proposal" is used when the County will consider solutions, which may vary significantly from each other or from the County's initial expectations.
- 1.2.4. **Response** - The written, sealed document submitted according to the Bid instructions.
- 1.3. **BID CLARIFICATION** - Questions regarding this Bid should be directed in writing, preferably by fax or e-mail, to the Purchasing Department. Answers, citing the question asked but not identifying the questioner, will be distributed simultaneously to all known prospective Bidders. Note: written requirements in the Bid or its Amendments are binding, but any oral communications between County and Bidder are not.
- 1.3.1. **Bidder Responsibility** - The Bidder is expected to be thoroughly familiar with all specifications and requirements of this Bid. Bidder's failure or omission to examine any relevant form, article, site or document will not relieve them from any obligation regarding this Bid. By submitting a Response, Bidder is presumed to concur with all terms, conditions and specifications of this Bid.
- 1.3.2. **Bid Amendment** - If it becomes evident that this Bid must be amended, the Purchasing Department will issue a formal written Amendment to all known prospective Bidders. If necessary, a new due date will be established.
- 1.4. **AWARD** - Award will be made to the Bidder(s) whose offer(s) provide the greatest value to the County from the standpoint of suitability to purpose, quality, service, previous experience, price, lifecycle cost, ability to deliver, or for any other reason deemed by Purchasing to be in the best interest of the County. Thus, the result will not be determined by price alone. The County will be seeking the least costly outcome that meets the County needs as interpreted by the County.
- 1.5. **CONTRACT EXECUTION** - This Bid and the Contractor's Response will be made part of any resultant Contract and will be incorporated in the Contract as set forth, verbatim.
- 1.5.1. **Precedence** - In the event of contradictions or conflicts between the provisions of the documents comprising this Contract, they will be resolved by giving precedence in the following order:  
 1) the provisions of the Contract (as it may be amended);  
 2) the provisions of the Bid;  
 3) the provisions of the Bidder's Response.
- 1.6. **COMPLIANCE WITH STANDARD TERMS AND CONDITIONS** - Bidder agrees to be bound by the attached County's standard "boilerplate" Terms and Conditions for Contracts.

2. Primary Specifications

2.1. SCOPE OF WORK – The County of Boone is seeking bids for the furnishing and delivery of a packaged air-cooled chiller located at the Boone County Sheriff Department

2.1.1. Contract Documents - The successful bidder(s) shall be obligated to enter into a written contract with the County within thirty (30) days of award on contract forms provided by the County. If bidders desire to contract under their own written agreement, any such proposed agreement shall be submitted in blank with their bid. County reserves the right to modify any proposed form agreement or withdraw its award to a successful bidder if any proposed agreement contains terms and conditions inconsistent with its bid or are unacceptable to County legal counsel.

2.2. Packaged Air-Cooled Chiller: Division 15000, Section 15400

2.2.1. PART I - GENERAL

2.2.1.1. SUMMARY

- A. Boone County Facilities Maintenance, hereinafter referred to as the County, is requesting bids from qualified vendors for a packaged air-cooled chiller as specified in this section. This chiller shall replace an existing chiller at the Boone County Jail Facility located at 2121 County Drive, Columbia, MO 65202. The vendor’s bid response shall include all shipping costs to the site. All installation shall be by others. The successful contractor from this bid shall coordinate the chiller delivery with the installing contractor.
- B. For reference, the existing chiller is a McQuay Model ALR-195C. Existing performance is as follows:

Total Capacity	185.8 Tons
Voltage	208V-60-3 Ph.
Flow	424 GPM
Water Temperatures	55.0 deg.F EWT; 44.5 deg.F LWT
Ambient Cond.	105 deg.F
Steps of Cooling	8 Steps
Low Ambient Operation	30 deg.F

2.2.1.2. PRODUCT SUBMITTAL

- A. A full chiller submittal shall accompany each vendor’s cost proposal. This submittal shall also include an estimated delivery time for consideration by the County.
- B. Product Data for each chiller, including chiller refrigerant, chiller capacity, condenser pressure drop, cooler pressure drop, weights (shipping, installed, and operating), furnished accessories, and electrical characteristics.
- C. Shop Drawings showing fabrication and installation of chiller, including plans, elevations, sections, details of components, attachments, and other construction elements. Include the following:
  - 1. Dimensions.
  - 2. Weight loadings and distribution.
  - 3. Clearances for maintenance and operation.
  - 4. Size and location of field connections.
- D. Wiring diagrams detailing wiring for power and control systems and differentiating between manufacturer-installed and field-installed wiring.
- E. Coordination Drawings showing the following:
  - 1. Structural supports.
  - 2. Piping roughing-in requirements.
  - 3. Wiring roughing-in requirements. Determine spaces reserved for electrical equipment.
  - 4. Access requirements around other work, including working clearances to mechanical controls and electrical equipment.
- F. Maintenance data for each chiller to include in the Operation and Maintenance Manual. Provide (3) bound copies to County.
- G. Certification of performance and factory test results specified in "Source Quality Control" Article.

2.2.1.3. QUALITY ASSURANCE

- A. ARI Compliance: Rate chiller according to ARI 550.
- B. ASHRAE Compliance: Conform to ASHRAE 90.1 for chiller efficiencies.
- C. ASME Compliance: Comply with ASME Boiler and Pressure Vessel Code, Section VIII, Division 1, for construction and testing of evaporator and condenser pressure vessels. Label evaporator and condenser with ASME mark.
- D. NEC Compliance: Comply with applicable NEC requirements for electrical power and control wiring.

2.2.1.4. WARRANTY

- A. Proposed chiller cost shall include a written warranty signed by chiller manufacturer with a standard one year warranty covering parts and labor for all chiller components, and an extended warranty agreeing to furnish parts for compressor and motor failures within a 5 year period from start-up.

2.2.2. PART II – PRODUCTS

2.2.2.1. CHILLER PERFORMANCE

- A. Chiller performance shall be selected based upon the following conditions:
 

Cooling Capacity	200 Tons (plus/minus 5%)
Voltage	208V-60-3 Ph.
Flow	424 GPM
Water Temperatures	55.0 deg.F EWT; 44.5 deg.F LWT
Evaporator Pressure Drop	11.6 Ft. of head maximum
Ambient Cond.	105 deg.F

2.2.2.2. MANUFACTURERS

- A. Subject to compliance with requirements, provide chiller by one of the following:
  1. Carrier
  2. McQuay.
  3. Trane Company (The).
  4. York International Corporation.

2.2.2.3. MANUFACTURED UNIT

- A. Description: Factory-assembled and -wired rotary-screw or scroll water chiller. Packaged chiller consists of multiple compressors, an evaporator or cooler, an air cooled condenser, safety controls, and operational controls.

2.2.2.4. REFRIGERANT

- A. Material: R-134a (HFC-134a); provide full operating charge of refrigerant and oil.
  1. Refrigerant Circuit: Provide refrigerant charging ports and service valves for each circuit.

2.2.2.5. COMPRESSOR

- A. Description: Hermetic or semihermetic, rebuildable, screw or scroll compressor.
- B. Unit shall have minimum of (2) compressors and refrigerant circuits.

2.2.2.6. MOTOR

- A. Refrigerant-cooled, hermetic or semihermetic motor; or open, dripproof induction motor; with the following features:
  1. Overvoltage protection
  2. Undervoltage protection
  3. Single-phasing protection
  4. Current-overload protection

2.2.2.7. EVAPORATOR

- A. Description: Shell and tube cooler with refrigerant totally enclosed by shell; water in tubes.
- B. Shell Material: Carbon-steel plate.
- C. Cooler Tubes: Seamless copper; expanded into tube sheets; individually replaceable; externally finned; with standard, removable, carbon-steel water boxes.
  1. Internal Finish: Internally ribbed or smooth tubes.
- D. Refrigerant Working Pressure: 300 psig (2070 kPa).
- E. Water Side Working Pressure: 150 psig (1035 kPa).
- F. Insulation: Factory-applied, 3/4-inch- (19-mm-) thick, flexible elastomeric insulation. Insulate

evaporator, suction lines, and other surfaces where condensation might occur.

2.2.2.8. AIR-COOLED CONDENSER

- A. Description: Factory assembled, wired, and tested; and consisting of casing, air-cooled condenser coils, fans, and controls integrated with compressor operation.
- B. Casing: Weatherproof, constructed of hot-dip galvanized steel with factory-painted finish.
- C. Fans: Propeller type, statically and dynamically balanced.
- D. Fan Discharge Arrangement: Vertical.
- E. Fan Motor: Direct drive, weatherproof, with bearings permanently lubricated, and having built-in current- and thermal-overload protection.
- F. Condenser Coil: Copper tubes with mechanically bonded aluminum fins.
- G. Safety and Operating Options: Low-ambient operational controls.

2.2.2.9. CHILLER OPTIONS

- A. Furnish chiller with the following features:
  - 1. Control transformer.
  - 2. Indicating lights for chiller status.
  - 3. Pressure gages.
  - 4. Audible alarm.
  - 5. Sound blanketing.
  - 6. Refrigerant service valves.

2.2.2.10. CONTROLS, GENERAL

- A. Manufacturer's standard, microprocessor-based chiller controls.

2.2.2.11. TEMPERATURE CONTROLS

- A. Compressor Capacity Control: Modulating slide valve to maintain chilled water temperature set point without hunting within throttling range. Include the following features:
  - 1. Throttling Range: Full load to 10 percent of full load.
- B. HVAC Controls: Furnish appurtenances to monitor and control chilled water set point, to monitor condenser water set point, and to monitor chiller alarms from building's HVAC controls.

2.2.2.12. SAFETY CONTROLS

- A. Manually reset controls to perform the following functions:
  - 1. Low evaporator pressure cutout.
  - 2. Low evaporator temperature cutout.
  - 3. Low chilled water temperature cutout.
  - 4. Low oil sump temperature cutout.
  - 5. Low oil pressure cutout.
  - 6. High oil temperature cutout.
  - 7. High condenser pressure cutout.
  - 8. Water-Flow Interlock: Vapor proof water-flow switch to prevent starting of compressor without chilled and condenser water flow.

2.2.2.13. POWER CONTROLS

- A. Control Panel: Manufacturer's standard, unit mounted, factory wired with a **single-point connection**, with the following power-control options:
  - 1. External-overload protection.
  - 2. Control circuit fuse.
  - 3. Power terminal block.
  - 4. Lockout restart timer.
- B. Combination controller and disconnect with solid-state start.
  - 1. Controller listed by Underwriters Laboratories (UL), classified as suitable for installed use and environmental conditions.

2.2.2.14. VIBRATION CONTROL

- A. Direct isolation (no base) and vibration isolators recommended by manufacturer.

2.2.2.15. SOURCE QUALITY CONTROL

- A. Verification of Performance: Test each chiller before shipment. Rate each chiller according to ARI 550, "Standard for Centrifugal or Rotary Water-Chilling Packages." Provide a written report

indicating Integrated Part-Load Value (IPLV) at ARI standard conditions or Application Part-Load Value (APLV) and test conditions.

2.2.3. **PART III – EXECUTION**

2.2.3.1. **FIELD QUALITY CONTROL**

A. The successful vendor's bid response shall include the services of a factory-authorized service representative to provide start-up services and installation of chiller, including piping and electrical connections, and to report results in writing.

1. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

2.2.3.2. **DEMONSTRATION**

A. The successful vendor's bid response shall include the cost for a factory-authorized service representative to demonstrate and train County's maintenance personnel as specified below.

1. Train County's maintenance personnel on procedures and schedules related to startup, shutdown, troubleshooting, servicing, and preventive maintenance.

2. Review data in the operation and maintenance manuals.

3. Schedule training with County, through Engineer, with at least 7 days' advance notice.

2.3. **INVOICES:** Contractor must submit an invoice and charges must only include prices listed in the contractor's bid response. No additional fees or taxes shall be included as additional charges. The County's purchase order must appear on the invoice. The County agrees to pay the monthly statement within thirty (30) days from receipt of a correct statement and all other required documents. The billing address is Boone County Facilities Maintenance, 601 East Walnut, Room 205, Columbia, MO 65201.

2.4. **DESIGNEE:** Boone County Facility Maintenance, Bob Davidson, Manager, 601 E. Walnut Street, Room 206, Columbia, MO 65201. (573) 886-4400.

2.5. **Bid Clarification:** Any questions or clarifications concerning bid documents should be addressed in writing, PRIOR TO BID OPENING, to Melinda Bobbitt, CPPB, Director of Purchasing, 601 E. Walnut, Room 208, Columbia, Missouri 65201. Phone: (573) 886-4391 Fax: (573) 886-4390 or Email: [mbobbitt@boonecountymmo.org](mailto:mbobbitt@boonecountymmo.org)

2.6. *Since time is of the essence, faxed bids will be received by County. Fax to (573) 886-4390. Call (573) 886-4391 to confirm receipt of bid. Bid MUST be received by March 27, 2007, 10:30 a.m. CST.*

**3. Response Presentation and Review**

- 3.1 **RESPONSE CONTENT** - In order to enable direct comparison of competing Responses, you must submit your Response in strict conformity to the requirements stated herein. Failure to adhere to all requirements may result in Bidder's Response being disqualified as non-responsive. All Responses must be submitted using the provided Response Sheet. Every question must be answered and if not applicable, the section must contain "N/A."
- 3.1.2 **Submittal Of Responses** – Responses MUST be received by the date and time noted on the title page under "Bid Submission Information and Deadline". NO EXCEPTIONS. The County is not responsible for late or incorrect deliveries from the United States Postal Service or any other mail carrier.
- 3.1.3 **Submittal Package** - Submit, to the location specified on the title page, **three (3) complete copies** of your Response in a single sealed envelope, clearly marked on the outside with your company name and return address, **the bid number and the due date and time.**
- 3.1.4 **Web Page:** Vendors may view Bids, Bid Tabulations, and Bid Awards on the Boone County Web Page at <http://www.showmeboone.com>.
- 3.1.5. **Bid Opening** - On the date and time and at the location specified on the title page under "Bid Opening", all Responses will be opened in public. Brief summary information from each will be read aloud.
- 3.2 **REMOVAL FROM VENDOR DATABASE** - If any prospective Bidder currently in our Vendor Database to whom the Bid was sent elects not to submit a Response and fails to reply in writing stating reasons for not bidding, that Bidder's name may be removed from our database. Other reasons for removal include unwillingness or inability to show financial responsibility, reported poor performance, unsatisfactory service, or repeated inability to meet delivery requirements.
- 3.2.1 **Response Clarification** - We reserve the right to request additional written or oral information from Bidders in order to obtain clarification of their Responses.
- 3.3 **REJECTION OR CORRECTION OF RESPONSES** – The County reserves the right to reject any or all Responses. Minor irregularities or informalities in any Response which are immaterial or inconsequential in nature, and are neither affected by law nor at substantial variance with Bid conditions, may be waived at our discretion whenever it is determined to be in the County's best interest.
- 3.3.1. **Evaluation Process** - The County's sole purpose in the evaluation process is to determine from among the Responses received which one is best suited to meet the County's needs at the lowest possible cost. Any final analysis or weighted point score does not imply that one Bidder is superior to another, but simply that in our judgment the Contractor selected appears to offer the best overall solution for our current and anticipated needs at the lowest possible cost.
- 3.3.2 **Method of Evaluation** – The County will evaluate submitted Responses in relation to all aspects of this Bid.
- 3.3.3 **Acceptability** – The County reserves the sole right to determine whether goods and/or services offered are acceptable for our use.
- 3.4 **ENDURANCE OF PRICING** – Bidder's pricing must be held until award or 60 days, whichever comes first.



Since time is of the essence, faxed bids will be received. Fax to (573) 886-4390. Call (573) 886-4391 to confirm receipt of bid. Bid MUST be received by March 27, 2007, 10:30 a.m. CST.

4. Response Form - Submit three (3) complete copies of your Response in a single sealed envelope, clearly marked on the outside, left corner with your company name and return address, the bid number and the due date and time.

- 4.1 Company Name: \_\_\_\_\_
- 4.2 Address: \_\_\_\_\_
- 4.3 City/Zip: \_\_\_\_\_
- 4.4 Phone Number: \_\_\_\_\_
- 4.5 Fax Number: \_\_\_\_\_
- 4.6 Federal Tax ID: \_\_\_\_\_

4.7. BID RESPONSE

4.7.1. Packaged Air-Cooled Chiller as detailed in Section 2 of Bid	\$	
4.7.2. Field Quality Control as detailed in Section 2.2.3.1.A. of Bid	\$	
4.7.3. Demonstration as detailed in Section 2.2.3.2. A of Bid	\$	
4.7.4. TOTAL	\$	

4.8. List any deviations from bid specifications:  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

4.9. Delivery will be made \_\_\_\_\_ days after receipt of Purchase Order

4.10. Attach warranty described in paragraph 2.2.1.4. A.

4.11. **The undersigned offers to furnish and deliver the articles or services as specified at the prices and terms stated and in strict accordance with all requirements contained in the Request for Bid which have been read and understood, and all of which are made part of this order.** By submission of this bid, the vendor certifies that they are in compliance with Section 34.353 and, if applicable, Section 34.359 ("Missouri Domestic Products Procurement Act") of the Revised Statutes of Missouri.

4.11.1. Authorized Representative (Sign By Hand):  
\_\_\_\_\_

4.11.2. Type or Print Signed Name: \_\_\_\_\_ Date: \_\_\_\_\_



**Boone County Purchasing**  
601 E. Walnut, Room 208  
Columbia, MO 65201  
**Melinda Bobbitt, Director**

***Standard Terms and Conditions***

Phone: (573) 886-4391 – Fax: (573) 886-4390

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1. Responses shall include all charges for packing, delivery, installation, etc., (unless otherwise specified) to the Boone County Department identified in the Request for Bid.
2. The Boone County Commission has the right to accept or reject any part or parts of all bids, to waive technicalities, and to accept the offer the County Commission considers the most advantageous to the County. Boone County reserves the right to award this bid on an item by item basis, or an "all or none" basis, whichever is in the best interest of the County.
3. Bidders must use the bid forms provided for the purpose of submitting bids, must return the bid and bid sheets comprised in this bid, give the unit price, extended totals, and sign the bid.
4. When products or materials of any particular producer or manufacturer are mentioned in our specifications, such products or materials are intended to be descriptive of type or quality and not restricted to those mentioned.
5. Do not include Federal Excise Tax or Sales and Use Taxes in bid process, as law exempts the County from them.
6. The delivery date shall be stated in definite terms, as it will be taken into consideration in awarding the bid.
7. The County Commission reserves the right to cancel all or any part of orders if delivery is not made or work is not started as guaranteed. In case of delay, the Contractor must notify the Purchasing Department.
8. In case of default by the Contractor, the County of Boone will procure the articles or services from other sources and hold the Bidder responsible for any excess cost occasioned thereby.
9. Failure to deliver as guaranteed shall disqualify Bidder from future bidding.
10. Prices must be as stated in units of quantity specified, and must be firm. Bids qualified by escalator clauses may not be considered unless specified in the bid specifications.
11. The County of Boone, Missouri expressly denies responsibility for, or ownership of any item purchased until same is delivered to the County and is accepted by the County.



***"No Bid" Response Form***

**Boone County Purchasing**  
601 E. Walnut, Room 208  
Columbia, MO 65201

Melinda Bobbitt, CPPB, Director  
(573) 886-4391 – Fax: (573) 886-4390

**"NO BID RESPONSE FORM"**

**NOTE: COMPLETE AND RETURN THIS FORM ONLY IF YOU DO NOT WANT TO  
SUBMIT A BID**

If you do not wish to respond to this bid request, but would like to remain on the Boone County vendor list for this service/commodity, please remove form and return to the Purchasing Department by mail or fax.

If you would like to FAX this "No Bid" Response Form to our office, the FAX number is (573) 886-4390.

**Bid: 22-27MAR07 – Packaged Air-Cooled Chiller**

Business Name: \_\_\_\_\_

Address: \_\_\_\_\_

\_\_\_\_\_

Telephone: \_\_\_\_\_

Contact: \_\_\_\_\_

Date: \_\_\_\_\_

Reason(s) for Not Bidding:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_