ADDENDUM NO. 1 - OUTLINE AND SUMMARY INFORMATION

<table>
<thead>
<tr>
<th>Project Name:</th>
<th>Plant Bio-Science Chiller Replacement</th>
<th>Location:</th>
<th>Montana State University - Bozeman</th>
</tr>
</thead>
<tbody>
<tr>
<td>Owner:</td>
<td>State of Montana, MSU - Bozeman</td>
<td>Date:</td>
<td>12-10-20</td>
</tr>
</tbody>
</table>

To: All Plan Holders of Record

The Plans and Specification prepared by MSU Engineering and Utilities dated November 16, 2020 shall be clarified and added as follow. The bidder proposes to perform all the following clarifications or changes. It is understood that the Base Bid shall include any modification of Work or Additional Work that may be required by reason of the following change or clarifications.

The Bidders are to acknowledge the receipt of this Addendum by inserting its number and date into their Bid Forms. Failure to acknowledge may subject the Bidder to disqualification and rejection of the bid. This Addendum forms part of the Contract Documents as if bound therein and modifies them as follows:

1. AMENDMENTS TO THE PROJECT MANUAL

   a. Mechanical Specifications:

      i. Section 1.a. Demolition and Installation Requirements: Add paragraph 1.a.vi. to read “Chiller pump serves both chiller and fluid cooler. Chiller pump replacement to be arranged and coordinated with all trades and Owner to minimize length of pump outage. Owner would like new pump to be installed as soon as possible in February, since there will be no cooling for processes in building while pump is being replaced. Coordinate timing and length of outage with Owner no less than one week before pump replacement.”

      ii. Section 1.c Replace Chiller Pump with New OFCI Pump:

         (1) Change paragraph 1.c.ii to read “Install new electrical service for pump per electrical drawings. Disconnect existing pump and remove wiring and conduit back to starter. Leave starter and upstream electrical service in place.”

         (2) Add paragraph 1.c.iv to read “Extend controls for new pump to new combination starter in new location shown on Sheet E1.0”.

      iii. Section 2.d. Utility Shutdowns: Change from 72-hour notice to minimum of 3 working days. 5 working days preferred.
iv. Section 3 Chilled Water Supply and Return Piping (CHS, CHR): Add paragraph 3.b: Provide weld-o-let or thread-o-let fittings for small pipe connections at gages, PT plugs, and similar. No “saddle tap” fittings.


vi. Section 8.d Chilled Water System Fill: Note that existing glycol is not “JeffCool” as indicated. It is “NorKool N507” propylene glycol.

vii. Section 11 Chiller Pump CCP-1 Controls:

(1) Change paragraph 11.a to read “Maintain current pump control based on signal from DDC system. Pump serves both chiller and fluid cooler”.

(2) Add paragraph 11.c to read “Extend controls for new pump to new combination starter in new location shown on Sheet E1.0”.

2. AMENDMENTS TO THE DRAWINGS

a. Electrical Sheet E1.0 - First Floor Power Plan:

i. Add attached Sheet E1.0 to construction documents.

ii. Add sentences to note 2 to read “Disconnect existing pump and remove wiring and conduit back to starter. Leave starter and upstream electrical service in place.”

iii. Modify second sentence of note 4 to read “Support conduit on Uni-Strut posts secured to slab. Coordinate location and height with Owner to ensure proper access to chiller equipment”.

b. Sheet 3, Chiller Area Demolition Plan:

i. Note that 6” valve in CHR piping is to be relocated, not removed.

ii. Change note at 6” CHS valve to read “This valve and others are required to isolate chiller and/or chiller pump from system. Coordinate valve closures with Owner for isolating chiller and/or chiller pump from remainder of system.”

iii. Disregard electrical notes. See Electrical Sheet E1.0 provided with this addendum.

c. Sheet 4, Chiller Area Plan:

i. Note that relocated 6” valve is to be reinstalled at outlet of elbow at bottom of CHR riser near bottom right side of drawing. Elbow at bottom of riser is to be rotated with outlet to east, then valve, and then 90-degree elbow to the north. Remainder of piping shown for CHR piping to be same.

ii. 6” valve in CHR is to be relocated as quickly as possible. This valve and others are required to isolate chiller and/or chiller pump from system. Coordinate valve closures with Owner for isolating chiller and/or chiller pump from remainder of system.”
iii. Change note at 6” CHS valve to read “This valve and others are required to isolate chiller and/or chiller pump from system. Coordinate valve closures with Owner for isolating chiller and/or chiller pump from remainder of system.”

iv. Disregard electrical notes. See Electrical Sheet E1.0 provided with this addendum.

d. Sheet 5, Chiller Diagram:
i. Note relocated 6” valve in 6” CHR piping upstream of 6” to 4” reducer.

e. Sheet 6, Chiller Pump Diagram:
i. Disregard electrical notes. See Electrical Sheet E1.0 provided with this addendum.

ii. Add note “Salvage pump to Owner”.

iii. Change note at pump inlet valve to read “This valve and others are required to isolate chiller and/or chiller pump from system. Coordinate valve closures with Owner for isolating chiller and/or chiller pump from remainder of system.”

3. AMENDMENTS TO EQUIPMENT INFORMATION

a. New Chiller Pump Data Sheets: Replace data sheets for new chiller pump with attached. Pump is same model but new data sheets include motor, flow, and pressure information.

4. PRE-BID MEETING INFORMATION

a. Reviewed bidding requirements stated in project manual including permits, bid date, bid security, PLM bonds, state tax, prevailing wages, insurance, completion date, and liquidated damages.

b. Noted that schedule is important due to impact on research activities. Need to get chiller operational as indicated in documents so that chiller will be available before warmer weather returns.

c. Noted that chiller is currently scheduled to arrive first week of February.

d. Reviewed issues related to new electrical service for new chiller pump.

i. New service requirements will be issued in addendum.

ii. Walked path for new electrical service. All ceilings along route are exposed or T-bar, except at Men’s toilet room. Toilet room has ceiling access door and space above ceiling.

iii. New conduit in corridors does not need to be painted. Corridor walls are to be assumed to be fire-rated, so penetrations will need to be treated as such.

iv. Electrical service for new pump can be installed during normal working hours.

e. Deadline for substitutions and addenda items is Dec 9. Addendum will be issued on Dec 10.

5. PRIOR APPROVALS

a. None.
6. ATTACHMENTS
   
a. Electrical Sheet 1.0 – First Floor Power Plan
b. Revised Chiller Pump Data Sheets
c. Pre-bid meeting attendance list
SPECIFIC SHEET NOTES:

1. ADD NEW 40A-3P BREAKER TO PANEL 11A IN AVAILABLE SPACES. PANEL IS LOCATED IN SEPARATE MECHANICAL ROOM APPROXIMATELY 70' DOWN HALLWAY. RUN 3/4" CONDUIT WITH 3#6, 1#10 GROUND FROM PANEL TO NEW STARTER, COORDINATE ROUTE WITH OWNER. STARTER FURNISHED BY OWNER. CONTRACTOR SHALL PROVIDE OVERLOAD HEATERS SIZED TO FLA OF NEW PUMP MOTOR.

2. EXISTING 5 HP PUMP BEING REPLACED WITH NEW 15 HP PUMP. RUN 3/4" CONDUIT FROM PUMP TO STARTER WITH 3#10, 1#10 GROUND. FINAL CONNECTION TO PUMP WITH LFM C.

3. EXISTING CHILLER BEING REPLACED. EXISTING FEEDER IS (2) 3/250 KCM, 1#2 GROUND. NEW CHILLER REQUIRES 400A FEEDER. REMOVE EXISTING FEEDERS FROM EXISTING 600-3P FUSED SWITCH TO CHILLER AND PROVIDE SINGLE RUN OF 3/500 KCM, 1#3 GROUND FROM SWITCH TO CHILLER. REUSE EXISTING UNDERSLAB CONDUITS. PROVIDE NEW LFM C CONNECTION TO CHILLER CONTROL CABINET. INSTALL NEW FUSES IN FUSED SWITCH FURNISHED WITH CHILLER.

4. EXTEND ONE 3" CONDUIT TO ELECTRICAL COMPARTMENT OF CHILLER. SUPPORT CONDUIT ON 18" UNISTRUT POSTS SECURED TO SLAB.

FIRST FLOOR POWER PLAN
SCALE: NOT TO SCALE
**KV Series Pump | Submittal Data**

Vertical Close Coupled Pumps  

**JOB:** Plant Bio Chiller  

**ENGINEER:**

**PRODUCT DATA**

<table>
<thead>
<tr>
<th>ITEM NO.</th>
<th>MODEL NO.</th>
<th>IMPELLER DIAMETER</th>
<th>HORSEPOWER</th>
<th>GPM</th>
<th>VOLTAGE</th>
<th>RPM</th>
<th>HEAD/FT</th>
<th>WEIGHT</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>4009D</td>
<td>9.4</td>
<td>15</td>
<td>410</td>
<td>208-230/460/60/3</td>
<td>1760</td>
<td>83</td>
<td>525.6</td>
</tr>
</tbody>
</table>

**CONTRACTOR:**

**OPERATING SPECIFICATIONS**

<table>
<thead>
<tr>
<th>Configuration</th>
<th>DOE Basic Model Number</th>
<th>PEI Value</th>
<th>Energy Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bare Pump</td>
<td>KV4009D-4P-BP</td>
<td>PEI_{BP}</td>
<td>0.9</td>
</tr>
<tr>
<td>Pump + Motor</td>
<td>KV4009D-4P-PM</td>
<td>PEI_{PM}</td>
<td>0.9</td>
</tr>
</tbody>
</table>

**DIMENSIONS**

<table>
<thead>
<tr>
<th>HORSEPOWER</th>
<th>5</th>
<th>7.5</th>
<th>10</th>
<th>15</th>
</tr>
</thead>
<tbody>
<tr>
<td>MOTOR FRAME TEFC</td>
<td>184JM</td>
<td>213JM</td>
<td>215JM</td>
<td>254JM</td>
</tr>
<tr>
<td>MOTOR FRAME ODP</td>
<td>184JM</td>
<td>213JM</td>
<td>215JM</td>
<td>254JM</td>
</tr>
<tr>
<td>WEIGHT WITHOUT OPTIONAL STAND LBS (KG)</td>
<td>322.9 (146)</td>
<td>383.4 (174)</td>
<td>398.8 (181)</td>
<td>525.6 (238)</td>
</tr>
<tr>
<td>WEIGHT WITH OPTIONAL STAND LBS (KG)</td>
<td>374.8 (170)</td>
<td>435.3 (197)</td>
<td>450.7 (204)</td>
<td>577.6 (262)</td>
</tr>
<tr>
<td>FLANGE SIZE ASA</td>
<td>4 (102)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

A*  
ANSI CLASS 125: 12.5 (318)  
ANSI CLASS 250: 12.82 (326)

B*  
ANSI CLASS 125: 12.5 (318)  
ANSI CLASS 250: 12.82 (326)

C  
6.77 (172)

D  
12.59 (320)

E MAX  
15.26 (388)  
16.64 (423)  
18.11 (460)  
20.05 (509)

F  
7.29 (185)

G  
8.44 (214)

J DIA  
7.88 (200)  
9.56 (243)  
9.56 (243)  
12.94 (329)

K  
4

L  
3/8-16 UNC-2B

M  
4.87 (124)

N  
6.5 (165)

P  
12.63 (321)

Q  
0.75 (19)

R  
10.63 (270)

**SUPPORT STAND OPTION**

[ ] YES  [ ] NO

(Ductile Iron ASTM A536-84 Grade 65-45-12)

**REPRESENTATIVE:** Vemco
MATERIALS OF CONSTRUCTION

<table>
<thead>
<tr>
<th>STANDARD CONSTRUCTION</th>
<th>CASING</th>
<th>COVER</th>
<th>IMPELLER</th>
<th>WEAR RING</th>
<th>SHAFT</th>
<th>SHAFT SLEEVE</th>
<th>MECHANICAL SEAL</th>
<th>SEAL</th>
<th>FLUSH LINE ASSEMBLY</th>
<th>SUPPORT STAND</th>
</tr>
</thead>
<tbody>
<tr>
<td>125# FLANGE</td>
<td>Cast Iron ASTM A48/A48M-03 Class 30A</td>
<td>Cast Iron ASTM A48/A48M-03 Class 30A</td>
<td>Bronze ASTM B584 ALLOY C83600 or C84400</td>
<td>N/A</td>
<td>Carbon Steel</td>
<td>Bronze ASTM B584-98A C92200</td>
<td>Ceramic/EPT</td>
<td>Copper &amp; Brass</td>
<td>C3600</td>
<td>N/A</td>
</tr>
<tr>
<td>250# FLANGE</td>
<td>Ductile Iron ASTM A536-84 Grade: 65-45-12</td>
<td>Cast Iron ASTM A48/A48M-03 Class 30A</td>
<td>Bronze ASTM B584 ALLOY C83600 or C84400</td>
<td>N/A</td>
<td>Carbon Steel</td>
<td>Bronze ASTM B584-98A C92200</td>
<td>Ceramic/EPT</td>
<td>Copper &amp; Brass</td>
<td>C3600</td>
<td>N/A</td>
</tr>
<tr>
<td>OPTIONAL</td>
<td>125# OR 250#</td>
<td>N/A</td>
<td>Stainless Steel ASTM A351/A 351M-08</td>
<td>Bronze ASTM B584-98A C92200</td>
<td>N/A</td>
<td>Stainless Steel TYPE 303 ASTM A276</td>
<td>Tungsten Carbide/EPT or Silicon-Carbide/EPT</td>
<td>N/A</td>
<td>Ductile Iron ASTM A536-84 Grade 65-45-12</td>
<td></td>
</tr>
</tbody>
</table>

N/A - Not Available

KV Series | Model: 4009D | 1760 RPM
Curve No. 4354 | Min. Imp. Dia. 6.75" | Size 4x4x9.5 | December 18, 2019
Energy Efficiency Rating: DOE Basic Model Number: KV4009D-4P-PM Pump & Motor: \( P_{ECL} = 0.9 \) | \( E_{RCL} = 10 \)

COMMENTS
Tag:

Flow Rate (GPM): 410
Head (FT): 83
Working Fluid: Propylene Glycol 50% @ 50 F
Efficiency (%): 83%
Construction: Iron
Design Hp: 10.87
Nol Hp: 13.74
Motor Hp: 15
Npsh (Ft): 7
RPM: 1760
### Pre-Bid Mtg Attendance

<table>
<thead>
<tr>
<th>Name</th>
<th>Company</th>
<th>Email</th>
<th>Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brit Revord</td>
<td>Johnson Controls</td>
<td><a href="mailto:Brit.Revord@jci.com">Brit.Revord@jci.com</a></td>
<td>406-572-1672</td>
</tr>
<tr>
<td>Brandon Karroll</td>
<td>Johnson Controls</td>
<td><a href="mailto:Brandon.Ellen.Karroll@jci.com">Brandon.Ellen.Karroll@jci.com</a></td>
<td>706-5969</td>
</tr>
<tr>
<td>Dan Bohma</td>
<td>Williams Plumbing</td>
<td><a href="mailto:dbohma@willplumbing.com">dbohma@willplumbing.com</a></td>
<td></td>
</tr>
<tr>
<td>Sean Fanning</td>
<td>Williams</td>
<td><a href="mailto:Shannon@willplumbing.com">Shannon@willplumbing.com</a></td>
<td>922-3124</td>
</tr>
<tr>
<td>Niko Little</td>
<td>ATLAS</td>
<td><a href="mailto:nikol@atlarllc.com">nikol@atlarllc.com</a></td>
<td>781-926</td>
</tr>
<tr>
<td>Joe Miller</td>
<td>Apollo</td>
<td><a href="mailto:Joe.Miller@apollomech.com">Joe.Miller@apollomech.com</a></td>
<td>479-2246</td>
</tr>
<tr>
<td>Drew Loftus</td>
<td>Apollo Mech</td>
<td><a href="mailto:DREW.Loftus@apollomech.com">DREW.Loftus@apollomech.com</a></td>
<td>406-210-6537</td>
</tr>
<tr>
<td>Loras O'Toole</td>
<td>MSU</td>
<td><a href="mailto:loras@montana.edu">loras@montana.edu</a></td>
<td>406-994-7092</td>
</tr>
<tr>
<td>Neil Jorgensen</td>
<td>MSU</td>
<td><a href="mailto:neil.jorgensen@montana.edu">neil.jorgensen@montana.edu</a></td>
<td>994-2107</td>
</tr>
</tbody>
</table>