Sustainable
Structural
Mechanical
Fire Protection
Electrical
Civil
Controls
Architecture

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March 4, 2019

Mr. David Benner
Boothbay Region High & Elementary Schools, AOS 98
dbenner@aos98schools.org

Subject: Independent Technical Review of Investment Grade Energy Audit
Review of Proposed Upgrade of Controls and HVAC for Boothbay Elementary School

Dear Mr. Benner:

We have completed our Independent Technical Review (ITR) of the Investment Grade Energy Audit performed by Honeywell for the Boothbay Region High & Elementary Schools. Our scope was limited to the Controls and HVAC System Upgrade at the Boothbay Region Elementary School, which we understand is the portion of the work outlined in the Audit which you are seeking to have performed by Honeywell.

Investigation/Study Services
Colby Co. performed the following services in order to prepare the ITR:

1. David Brown of Colby Co. visited the site on 22Feb19 to look at the identified problem areas, and was escorted by David Benner. Except for a visit to the High School's boiler room, the visit was confined to the Elementary School. The visit was visual in nature, and did not include testing of equipment.
2. Colby Co. reviewed the proposed upgrades from a technical standpoint utilizing the reports created by Honeywell.
3. Colby Co. reviewed the estimated costs for the proposed work in the Elementary School. We obtained additional information from Honeywell to aid in our review.

Review
1. Site Conditions: We observed that the condition of existing HVAC systems and controls appear to be as reported in the Audit.
   a. The major equipment which is proposed to be replaced does appear to be of advanced age and at the end of its service life.
   b. Some specific items were observed as clearly needing repair or replacement as noted in the Audit.
   c. Air quality was observed to be poor in some locations, based on perceived odor and stuffiness. These locations included one of the typical classrooms with unit ventilator at exterior wall, a special education classroom which is completely interior with no outside walls and limited ventilation, and the band room on the former gymnasium stage which has no ventilation.
   d. The safety conditions for service people at the elevated HVAC platforms are as described in the Audit and in need of remediation.
   e. Controls were observed to include a Honeywell direct digital control (DDC) system installed in about 2006, which is capable of being expanded to serve new equipment and updated control sequences.
2. Technical Review:
   a. The recommended HVAC and Controls repairs and replacements are reasonable and to be expected in a building of this age.
   b. The proposed Buderus boilers are high quality and simple to maintain.
   c. Replacing unit ventilators with the same type of equipment, including weatherizing the wall penetrations and upgrading their controls for energy efficiency, is a cost-effective solution.

d. The safety upgrades to the mechanical mezzanines are very necessary.
e. The air barrier and insulation improvements are expected to make spaces more comfortable, as well as saving energy. Honeywell proposes to install and protect the foam air barriers above ceilings in a manner approved by the State Fire Marshall, including protecting existing foam.
f. The proposed controls work, as described in the Audit and detailed further in a discussion with Honeywell, includes necessary upgrades to be compatible with current technology. This primarily involves replacing the existing Jace (Java Application Control Engine) network adapter which uses older software that is being phased out, with a Jace with the latest software and features.
g. The proposed transfer system for the server room seems complicated, possibly insufficient in warm weather because the corridor air would be warm, and potentially problematic in terms of Code requirements for air supply to egress corridors. Although this system would provide some free heat to the building entrance, it is our opinion that a ductless split air conditioning system rejecting heat to outdoors would be a simpler solution at a similar installed cost.

3. Costs:
   a. We reviewed the costs listed in the Project Scope Summary of 9/14/2018. To aid in our review, we obtained additional information from Honeywell about the proposed equipment and services.
   b. The proposed costs are reasonable for the proposed scope of work.

Thank you for contacting Colby Company for your engineering needs. Please do not hesitate to call with any questions.

Sincerely,

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Cc Rae Pinyard, PE – Colby Co.