



University of Colorado at Boulder

**Department of Facilities Management  
Office of Planning, Design & Construction - Engineering**

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March 24, 2020

Fred Hebert, Project Manager  
University of Colorado  
453 UCB  
Boulder, CO 80309

RE: CP297633-MCKY-GH-Heat Exchanger replacement-INSULATION VARIANCE REQUEST

Dear Mr. Hebert,

The University has reviewed your variance request for the above mentioned project and provides the determination listed below. Please be aware that these determinations are only applicable to this specific variance request and this project. No precedent is being set for future determinations.

Please be aware that these issues should have been addressed during the design phase with consultation with Facilities Engineering. The variance process is not intended to resolve code or standard non-compliance after construction has been completed and inspection failed. Future variance determinations will consider the design team's compliance history which may affect future work.

**Variance Request** – The greenhouse relies on steam radiation heat. Jeremy explained that for low pressure steam code calls for 4" of insulation on 1"-1.5" pipe. The client is satisfied with leaving the unit uninsulated except for the vertical pipe sticking out over the electric HW heater. This is for safety purposes. The piping is configured so closely that 4" insulation is not feasible to install over all the piping.

Due to the specific condition that the greenhouse utilizes the exposed steam pipes for providing space heating, the University is willing to reduce the piping insulation requirements. The variance request is approved provided the following conditions are met.

- The design team acknowledges that the design documentation should have addressed that steam piping and heat exchanger's insulation requirements. Site conditions would have limited the amount of insulation that could be installed, however, alternative pipe alignments could have been directed. Consultation with Facilities Engineering should have occurred during design development.

- All steam piping for the heat exchanger is insulated with a minimum of ½" thickness. This thickness is for safety purposes to minimize the severity of potential injury.
- The steam heat exchanger is acceptable without having any insulation due to the fact that it is not readily accessible and therefore less likely to cause injury.

This determination does not preclude you from resubmitting a variance request if alternatives are investigated and determined to be technically infeasible.

Thank you,

A stylized, handwritten-style signature in black ink, appearing to read "Jonathan Akina".

Jonathan Akina, P.E.  
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