UWWC BOARD OF COMMISSIONERS

UWWC, Room 303 — October 29, 2009
West Bend, Wisconsin — 1:00 p.m.

Present**:** Richard Bertram, Ralph Hensel, Brenda Jaszewski, William Meyers (Alternate), Dean David Nixon, Amy Reuteman, Peter Sorce (arrived at 1:05 p.m.), and Tony Turner.

Also present: Administrative Coordinator Doug Johnson, Assistant Dean Cathi Dziedzic, Deputy County Attorney Chris Ohlis, Facilities Manager David Loomans, Buyer Roy Hartmann, UWWC Maintenance Supervisor Jon Etta, and County Clerk Administrative Assistant Linda Doro.

Chairperson Bertram called the meeting to order and read the Affidavit of Posting.

MINUTES

Moved by Mr. Hensel, seconded by Mr. Meyers to approve the minutes of October 15, 2009, as presented. Motion carried.

UPDATE ON ROOF TOP UNITS REPLACEMENT PROJECT

Appearance: Robert Lex, Harwood Engineering Consultants, LTD and Mike Reiels, Johnson Controls.
Mr. Lex presented the recently completed peer review of mechanical system replacement of rooftop units RTU-1, RTU-9, RTU-10. RTU-1 serves the Library Building C, RTU-9 and RTU-10 serves the Student Building B.

Mr. Sorce arrived at 1:05 p.m.

Mr. Lex reported the peer review performed on the project focused on these questions:

1. Does the completed project and equipment fulfill the RFP criteria of May 15, 2009 and Addendum No. 1 of May 28, 2009?
2. Do the equipment and systems meet code?
3. Is the roof structure and equipment curb support sufficient?
4. Are outside air intake modifications made to the kitchen makeup air unit close to RTU-10 proper?
5. Are the physical heights of the equipment above the roof a problem?
6. How did the equipment and installation affect efficiency?
7. Air flow and heating capacity

Conclusions:

Question No. 1 RFP Fullment:
Based on the preceding inventory of RFP criteria in need of verification, Harwood Engineering is not confident that the work required to fulfill the RFP is completed and in general, there are items open.

Question No. 2 Code Compliance:
The review identified three areas of concern that warrant further study and evaluation.
The furnace flue gas venting for RTU-1, RTU-9, and RTU-10 terminates below the outside air intake for the respective "piggy-back" rooftop unit on the curb adapter. The International Mechanical Code (IMC) and International Fuel Gas Code (IFGC) require flue venting to terminate a minimum of 24" above intakes.

The furnace flue gas vent termination for RTU-9 and RTU-10 is located within 72" from the outside air intake for the respective "piggy-back" rooftop unit on the curb adapter. The IMC requires a minimum 120" separation between the flue gas terminations and intakes.
It is imperative that there is no risk of ingesting flue gasses into the outside air intakes for the buildings. This information was sent to Wisconsin Department of Commerce (WI DOC) and they also have a concern. Harwood suggests that the Manufacturer review this matter and report on their findings and/or document compliance with IMC 401.41 or IMC/COMM 64.0401(4)(b)2. Harwood also recommends we situate CO monitors in the buildings to verify safe levels in the buildings.

Internally, the 2009 multi-zone custom curb adapters with a "piggy-backed" rooftop unit appear to lack conformance with 503.4.5 of the 2006 IECC. The WI DOC reviewed a diagram of the internal configuration of the unit and concurred that there is a potential code issue but wanted more information. Harwood recommends that the Manufacturer provide documentation and obtain approval from the State that the system satisfies this energy conservation code.

Ms. Reuteman questioned if the City Building Inspector has inspected the units to ensure they comply with City code and it was indicated the City Inspector has not been called for an inspection of the units.

Question No. 3 Structural Integrity
Based on Harwood's structural analysis, the existing roof structure is adequate to carry the additional loads from the new units; however, Mr. Lex stated the load capacity is now at the maximum.

One end of the RTU-1 is supported by two steel posts bearing on a wood 4 x 4 directly on the roof membrane. Harwood does not recommend bearing steel on wood and the wood should not be exposed to the environment whether exterior treated or not. Harwood recommends that the existing roof be removed at the steel post locations and the steel posts bear on the steel joists below using pitch pockets or other means to maintain a water tight condition. If a work surface platform is required to be added to service the "piggy-backed" upper portion of the roof tops units, the roof would need to be evaluated for these additional loads.

Question No. 4 Kitchen Makeup Air Unit Intake
The physical dimension of replacement rooftop unit RTU-10 forced a modification to the outside air intake weather hood for the existing kitchen makeup unit. It is Harwood's opinion that the direction a weather hood faces would not be a significant design consideration and the modification the Contractor installed that faced the weather hood west was reasonable. Harwood assumes there are turning vanes in the elbows so the velocity profile at the weather hood is uniform. If there are none, adding turning vanes is very important.

Question No. 5 Physical Height of Equipment
The equipment that replaced rooftop units RTU-1, RTU-9, and RTU-10 utilize a curb adapter "box" with a more conventional rooftop unit sitting "piggy-back" on top. This configuration resulted in an unusually high installation. Structural analysis indicates the building roof structure can support this equipment in the present configuration, including snow loads. One area of concern is the height above the roof of the "piggy-back" unit and our responsibility to provide safe conditions for routine service. The Board expressed concern that the roof load capacity is now at its maximum.

Question No. 6 Efficiency
It is Harwood's opinion, the older 1993 systems had internal air flow component arrangements configured more efficiently that the new "piggy-back" systems. The peer review analysis highlighted efficiency related data items that predict a potential for worse seasonal efficiency with the new equipment, which are:

1. The 2009 equipment requires summer operation of the gas fired furnace to regulate room temperature. If the gas furnace is not operated, the interior zones can over cool and loose the ability to regulate individually. The 1993 equipment had a different internal air flow configuration that did not require summer gas fired furnace operation.
2. The 2009 equipment for RTU-1 and RTU-10 required larger fan horsepower.
3. The Manufacturer's submittal information indicates that the full load electrical power amps are higher for the 2009 equipment.

Question No. 7 Reduced Air Supply and Heating Capacity
The review shows the 1993 equipment replaced the originally designed systems from 1967. There appears to be a situation where the cooling air flow was reduced significantly. Harwood is not sure why the air flow reduction was possible. The 2009 equipment size now replicated this situation. We think this should be studied to confirm how this reduced air supply rate impacts performance. Harwood also noted reduced heating capacity from the 1967 design. This requires more study to verify if the heating capacity of the 2009 equipment is adequate.

Mr. Lex stated the top areas of concern are: 1) verification that the arrangement of furnace flues to the intakes is safe, documented, and tested as an assembly; 2) concerned about the internal arrangement of the units and the need to run the gas furnace in summer to control air conditioning and; 3) confirmation that the heating capacity is adequate for the building.

Mr. Etta reported since Units 1, 9 and 10 have been installed, there have been ongoing operational problems. Presently, the dampers in these units are physically hitting the curb adapters and the zones cannot be controlled properly. Ms. Reuteman reported that currently, all proper permits have been issued by the City for this project.

FUTURE MEETING DATES

A UWWC Board of Commissioners meeting is tentatively scheduled for Thursday, November 11, 2009, at 1:30 p.m. in Room 303 of the Collins Science Hall.

ADJOURNMENT

Moved by Mr. Hensel, seconded by Ms. Jaszewski to adjourn the meeting at 2:27 p.m. Motion carried.

Brenda J. Jaszewski
Secretary, UWWC Board of Commissioners