



Lumpkin County, Georgia

Finance Department

Date: September 21, 2016

Agenda Item: Justice Center HVAC

Item Description: Recommendation on next mitigation steps for the Justice Center HVAC system performance improvement.

Facts & Historical Information:

After several years of issues with the HVAC system at the Justice Center, the Board of Commissioner engaged the services of Moreland Altobelli Associates (M&A) to help determine remaining issues with the system and to provide guidance on resolving the remaining issues. Staff has had numerous phone conferences and meetings with M&A. At each step of the process M&A have provided County staff with tasks and staff has completed those tasks. These tasks include: fixing holes in the chimney, replacing diffusers, switching returns and supply lines in rooms, fix air flow problems between rooms, and repair leaking duct work on roof. At the recommendation of M&A, staff has contacted insulation specialists and HVAC contractors to visit our facility and provide their thoughts and recommendations on how to get better performance from our existing system. From these meetings, two more options have been proposed; insulating the beams and commissioning the facility. Our facility's beams were not insulated at the time of construction and these beams become very cold in the winter months and contribute to cold air in the plenum. The last HVAC contractor that visited the facility reviewed everything we had completed to date and asked us numerous questions about the history of the facility. This contractor feels that our facility was never commissioned and that our system wasn't properly balanced. This could be contributing to some of the issues we have in the facility. Staff has discussed with M&A the need to insulate



Lumpkin County, Georgia

Finance Department

the exposed beams in the plenum. A budget price for this is \$22,000. We have also discussed commissioning the facility. A budget price for this is \$11,000.

Potential Courses Of Action:

- 1) The Board can choose to do nothing and allow the facility to remain as is. This means we will continue to have cold spots in the facility and receive complaints from the occupants. This is the least favorable of the options since we have worked on system performance and have made some progress.
- 2) The Board can choose to insulate and commission the facility to see if this helps system performance and mitigates some of the occupant complaints. This option is the best because it addresses two concerns and both can be accomplished with minimal disruption to the operation of the facility.
- 3) The Board can choose to do the commissioning and not the insulation and see if this helps performance. This is not as favorable as option 2 because it still leaves the exposed beams which will be the same as the outside temperature which will continue to impact the temperature of the air that flows in the plenum but this option should help system performance.

Budget Impact:

While not included in the operating budget, the step(s) approved by the Board could be paid from contingency funds.

Technical Memorandum

Date: September 29, 2016
To: Allison Martin, Finance Director, Lumpkin County
Stan Kelley, County Manager, Lumpkin County
From: Stan Steingold, P.E., Moreland Altobelli Associates, Inc.
Re: Field Report Summary
CC: Bob Lane, P.E., Moreland Altobelli Associates, Inc.

On June 10, 2015, Moreland Altobelli Associates, Inc. (MAAI) visited the New Lumpkin County Courthouse located at 325 Riley Road, Dahlonega, GA 30533-0820. The purpose of the visit was to review the existing condition of mechanical systems in the building. Because the facility had been in operation for several years and was relatively new, MAAI suggested an incremental “find and fix” remedy to get the maximum benefit from smaller changes, with the intent of avoiding large capital costs. A summary of this incremental strategy is as follows, in chronological order:

Initial Meeting (Background):

The initial observations from the first site visit are as follows:

1. The New Courthouse is approximately 7 years old and the client has indicated that it had not been generating adequate heating and cooling over the years.
2. The original HVAC system was designed for a chiller with a fully ducted supply and return. During construction, as a cost savings measure, the design was changed to a series of RTUs (Roof Top Units) with a fully ducted supply and a plenum returns.
3. The client indicated that heating bills were in the neighborhood of \$10K- \$12K.

Field Inspection No. 1:

Observations from the initial Site Visit are as follows:

1. Offices located along the building exterior walls, especially on second floor, are supplied air along the interior corner, and have the return air along the window side of the office.
2. Exterior I-Beams (building structural steel) are not insulated, and may act as heat sinks.
3. No insulation above the ceiling tiles is noted.

-
4. The airflow from several branch terminations appears to be significantly higher than the downstream diffusers.
 5. A noticeable pressure differential exists between Front Atrium and Rear Atrium.
 6. Several of the diffusers and returns , primarily in interior Courtroom, are nearly adjacent to each other – which can create air flow short circuiting.
 7. The Chimney leading from the 1st Floor RTU has holes in the drywall which may be a source for air flow leaks.

General recommendations from the first field inspection were as follows:

1. Balance output diffusers, especially where significant air flow differential exists along a branch duct.
2. Reverse some of the diffuser and return positions in corner offices (ask about occupant comfort after a time with new positions).
3. Allow better communication of air flow in plenum area, especially around the Jury Assembly Room.

Results:

The above improvements were made by the County forces with some incremental benefits observed by staff in the corner offices. Also, noise at the court reporter's station in the Magistrate Court was reduced. However, the air differential between Atrium and Courtrooms appears to have been unaffected.

Field Inspection No. 2:

Observations from the second Site Visit are as follows:

1. Investigate costs for steel column insulation.
2. Review cost for adding insulation to exterior walls.
3. Consider partial ducting of return air.

Results:

The steel column wrapping appears to be too expensive and contains a high level of difficulty to install. Foam insulation was considered too invasive. The exterior walls are inaccessible.

At this time, we recommend the following items for consideration:

1. Run new Test & Balance to create a new baseline for further analysis.

Future options for consideration are as follows:

1. Possible partial ducting of return air with new batt insulation on top of the drop-ceiling.
2. Formal HVAC study.

End of Report