

September 16, 2013
Lyme Energy Committee minutes

Meeting called to order at 7:30 by Mark Bolinger
At the Highway Dept Garage

Present: Mark Bolinger, Sue Mackenzie, Gary Phetteplace, Johanna Laro, Scott Nichols, Robin Taylor, Matt Brown, Dan O'Hara
Also guests Fred King (Highway Department) Richard Vidal (Selectman, Building Committee), and Henri Fennell (consultant)

1. Minutes of the August 19, 2013 meeting were approved as circulated.

The remainder of the meeting was spent touring the building with Henri Fennel (HF) who was hired as a consultant to help us better understand the problems with the building and how they might be addressed. His main area of expertise is sprayed on insulation systems; he also has experience with other aspects of large building operation. He reviewed the Peregrine report and a quote on foaming submitted by Trumbull Nelson.

HF inspected the roof and wall insulation in the mezzanine area by cutting a slit in the outer covering. He felt that it is unlikely that the insulation levels of R19 and R30 (which Scott felt were in the original specification for the building) were met by the existing insulation. HF felt the side insulation might be R11 – it is 1 1/2 to 3 inches thick. It appeared that there are lots of places where humid air from the building could contact the cold exterior metal outside of the building. Moisture was found in the side wall insulation on the mezzanine level south wall during the meeting. Roof insulation appears to be both between purlins and to some degree over the purlins for a thermal break. HF thought the roof was probably R19. HF did not know whether steel buildings have a special code for insulation, but thought the building would not have met regular insulation code in 2005. A strong air current was found exiting a hole in the side wall insulation on the west wall. It seems that air freely travels up and down the ribbing or the steel panels, which could easily transport moisture from the side walls into the roof system. In effect there could be a chimney effect in the ribbing.

HF said the Richmond School (foam insulated) heats for \$.13 per square foot per year. The Lyme Highway Garage apparently costs \$.85 per square foot per year.

The ventilation system was identified as a problem – HF felt the exhaust fan was not effective because it is small and very high on the south side of the building; also the louvers for the replacement air were often frozen up. He felt that it would be difficult to keep an opening discharging humid air in the winter from freezing up. He noted that the Peregrine report said the overhead doors were insulated and well gasketed. The existing overhead fans are inadequate to prevent a smoke layer from forming, and there is not enough vertical air movement to get this out of the building. There was discussion of an air exchange system that could exhaust dirty air (with welding fumes and engine exhaust) after extracting the heat from it, and a cost of \$30K was mentioned for such a system. In

addition he suggested that perhaps one bay could be designated as a welding bay and equipped with a localized ventilation system (e.g. fume hood of something like that) in order to handle these isolated events (rather than upgrading the entire ventilation system to address a problem that only occurs once in a while).

HF suggested that the slab should be sealed to prevent water entering the slab from the top side. He suggested that water could drip from wet and snowy trucks onto the slab which would act like a sponge and release the water vapor later. A plastic bag was laid on the slab during the meeting to see if there would be dampness there in the morning. Fred thought the slab was sealed, and would like to paint it.

HF Suggested we contact the building manufacturer to find out what the roof warranty is and ask how we can foam the roof without affecting the roof warranty. He described using flexible foam at the joints to allow for expansion and contraction.

HF suggested painting the rear plywood covered wall with vapor barrier paint. He said vapor barrier paint could be used instead of intumescent paint if the foam has a 15 minute fire rating – for example , if “one step” foam is used only vapor barrier paint is required to protect the foam from vapor intrusion over time.

HF described the three types of foam that might be used in a job of this type: “Normal” foam consisting of two separately applied coatings, one serving as a vapor barrier and the other as the thermal barrier.

Foam with StaFlex coating. This is a rugged coating that is applied over the foam which is a good vapor barrier and meets fire code requirements. This is probably the most expensive option and is designed mainly as a corrosion control system.

One Step. A grey fire retardant coating that does require a vapor-barrier paint. This is probably the least expensive option in total, given that the thermal/fire barrier is already built in. Adding a separate vapor barrier is apparently much cheaper than adding a thermal/fire barrier, so having the latter built in is an advantage.

Both Stayflex and OneStep products are manufactured by a company in Ohio, but can be installed by any local foam installer.

To address concerns about thermal expansion potentially impacting foam applied directly to the roof, he would recommend putting a strip of soft foam where the roof panels meet to allow for expansion and contraction, and then spray hard foam over that.

HF noted that the River Valley Club swimming pool is a local example of a building with a severe moisture problem where an insulation system like the one that we have was replaced by foam that we might want to look at.

HF noted dark stains on the roof vapor barrier and said those were colder areas. Stains that look like water flow paths were noted running from top to bottom on the west slope of the roof. These stains terminate at the west eave where dripping is obvious on the purlins.

There is a salt like substance on the horizontal purlins on both eve walls. We wondered if salt was being transported by air and vapor, then condensing and pooling. It could be that if the substance is salt we are facing a more corrosive condensate than just water there.

HF suggested improving the ceiling insulation as a first step, perhaps combined with an air exchange system, before working on the sidewall insulation. From the perspective of the town budget this approach might be more affordable, especially if the wall insulation is deemed adequate after the other improvements are made.

Henri mentioned that developing good bid specifications would improve the bidding process. He felt that with properly written specifications all bids should be within 5% of each other. He was not definitive as to whether he thought the Town should work with a general contractor or whether job could be completed by foam installer. He mentioned having a third party involved monitoring installation might be valuable. He agreed he could work as a consultant developing bid specs, a task which would involve developing best solution for whatever we can afford.

HF discussed the possibility of removing the existing insulation from a small area where it looks like there are moisture and mold problems could tell us if there is structural damage occurring or likely to be occurring as a result of the present situation. The area in the center of the west wall of the building was suggested as an appropriate place to do that (this is where the crud on the steel is accumulating, near the grader.) Another option would be to do it in the SW corner of the building behind the Modine heater.

HF mentioned that there was some concern expressed in the Peregrine report that moisture could be entering the building through the south facing concrete retaining wall and might be welling up through the concrete slab. To address these possibilities we could simply paint the plywood covering the retaining wall with a vapor barrier paint and make sure the floor is adequately sealed (so that it will not act like a sponge when snow melts on it.)

We discussed the TN proposal. HF would suggest two changes. First he would rather see the existing wall insulation removed prior to foaming (rather than foaming right over the top of it). Second, he thinks that a vapor barrier should be added, in addition to the intumescent paint thermal/fire barrier. Both of these changes would presumably increase the proposed cost.

The meeting was adjourned at 8:50

Respectfully submitted

Dan O'Hara