



ADHOC ENERGY MEETING NOTES

HOLDEN PUBLIC SAFETY FACILITY

Main Street, Holden, MA

KBA # 02045.05

Prepared by: Paul McAndrew (KBA) &
Wayne Whippie (WV Engineering)

Date: June 30, 2008

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SUMMARY

A meeting was held on June 23, 2008 at Holden Light & Power to discuss energy efficient options for the new Holden Public Safety Facility.

PRESENT

Chief George Sherrill	Police Chief, Town of Holden Police Department
Chief Jack Chandler	Fire Chief, Town of Holden Fire Department
Karl Makela	Holden Public Safety Facility Building Committee
Wayne Whippie	Principal, WV Engineering (WV)
Paul McAndrew	Project Architect, Kaestle Boos Associates, Inc. (KBA)

UNABLE TO ATTEND

Dave White	Holden Public Safety Facility Building Committee
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COPIES

Attendees	
Chris Lucchesi	Chairman,
Brian Bullock	Town Manager, Town of Holden
Michael McKeon	Principal, Kaestle Boos Associates, Inc. (KBA)
Dan Tavares	Principal, Kaestle Boos Associates, Inc. (KBA)
Todd Costa	Job Captain, Kaestle Boos Associates, Inc. (KBA)

ATTACHMENT: Sustainable Design Strategies

DISCUSSION

The purpose of this meeting was to discuss energy efficient options that are available following items were discussed regarding required security equipment and services for the new public safety facility. Items discussed are not necessarily in the order presented:

GEOHERMAL OPTION

- Wayne Whippie gave a brief overview/presentation of basic function/operation of a geothermal system.
- Additional site testing/borings must occur to determine if geothermal is a viable option. The Town of Holden has a contact that can explore if groundwater is available on site.
- If viable, the Committee is interested in having a heat source at the following locations:
 - Slabs in Apparatus Bay and Sallyport (approx. 55 degrees)
 - Concrete Aprons, Public and Rear Entry walkways, Stair between the buildings.



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SUSTAINABLE DESIGN STRATEGIES

- Paul McAndrew and Wayne Whippie discussed items on the attached Sustainable Design Strategies document.

PHOTOVOLTAICS

- Dave White (absent from the meeting) noted in an email "*Holden is part a municipal utility buying group. They have an agreement with the company out at Devens that make photovoltaic and we do get a very healthy discount from them.*" Further investigation is required.
- Exterior Appearance is a consideration.
- Micheal McKeon (not present at the meeting) stated in an email that: a 5kW array that the Town was proposing would be of little benefit for the HoPS facility but would better serve the HS across the street as a "learning " tool.
- Wayne Whippie stated that a 5kW array is more beneficial to a facility that is remotely located, not for a facility in a developed area.
- Choices related to this type of system must be researched for quantity of PVs needed and cost.

AIR HANDLERS with ECONOMIZER

- Wayne Whippie discussed the proposed location and function of air handlers and how A/C controls can operator within interior spaces.
- The following will be on generator: E911/Dispatch, A/C, Elevator.

ARTIFICIAL/NATURAL LIGHTING

- Wayne Whippie discussed MA lighting requirements and light sensor options (wall and ceiling mounted) and energy efficient light fixtures.
- Borrowed lights (sidelights and transoms) shall be utilized wherever possible to let natural light further into building.

OTHER ITEMS

- Ventilation and circulation of air within the Apparatus Bay and Sallyport was discussed.
- Consideration of a suspended ceiling in the Apparatus Bay.

The Notes below were prepared by Wayne Whippie (WV Engineering)

1. Basic discussion of Energy issues – lighting, heating, lighting controls, geothermal heat pump systems
2. Geothermal – Wayne provided summary discussion
 - a. Of interest to the committee as an energy cost saver
 - b. Involves a Closed loop system for the extraction of heat from the ground
 - c. Does not involve removal of water from the ground / aquifers
 - d. Pattern of wells recommended, appx 15 ft spacing, 20 wells, 300 ft deep, in lower parking lot area

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- e. Deeper well drilling sample should be taken in that lower level for understanding of existing soils conditions
 - f. Discussion of “ dual use of Wells” for vehicle washing - WW noted drill an adjacent, dedicated well if desired
 - g. Any opportunity to consider wells under separate contract ?
3. Discussion of Solar
- a. Thermal vs Photo Electric
 - b. Thermal tough sell - heating loads greatest in winter when solar is at lowest
 - c. Photo Electric – costs are coming down, will check out systems with Vendors
 - d. Aesthetics – panels on roofs an issue
 - e. Cost benefit – tough to justify for either approach
 - f. WW will check new installation up in VT – Photovoltaic on Power co Building
4. Building Envelope Discussion
- a. Envelope and glass will exceed Energy Code
 - b. Modeling will check and confirm
5. Radiant Floor Discussions
- a. Desired for Apparatus Bays and Sally Port
 - b. Recommended by WV as great way to heat those spaces
 - c. Warm, constant heat at slab, -- when warmed air leaves spaces while doors are open, once closed, temps come back up
 - d. Slab where people feet are remain warm – equipment warm, snow melt off vehicles, keeps floors clear
 - e. Steady Heat – constant temp,
 - f. Warm for any vehicle maintenance work
 - g. 100 – 130 deg water temp, 90 deg slab temp - typical levels
 - h. Chief noted fire station at other town had metal piping that failed – Wayne noted that current practice is PEX piping that lasts decades
6. Radiant in Slab Snow Melting discussed
- a. Wayne noted costly, and not energy efficient
 - b. Wayne noted systems use PEX tubing for long life
 - c. Systems include out door Temp and Moisture Detection
 - d. Systems do not run if both cold and moisture are not present
 - e. Systems need to be sized to “ catch up “ a bit during quick snow falls
 - f. WV can model and comment / recommend for selected areas
 - g. Issues at Aprons includes re-freezing issues at edge of Radiant system
 - h. Chiefs commented perhaps only use at:
 - i. Aprons at Apparatus bays



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- ii. Main Public Entry – as it is 24 / 7
 - iii. Stairs between levels, between the buildings – so off hours first responders have clear stairs
7. Apparatus Bay Paddle Fans discussed (De stratification Fans)
- a. Intent is to mix warmer rising air and “ drive down” that warm air in winter
 - b. Also serves to move air in summer, air motion assists in perception of comfort in summer
 - c. Not as necessary in winter with the radiant slab delivering heat from the floor
 - d. Perhaps not as necessary in summer if high windows are motorized – natural chimney effect
 - e. Tight and well insulated envelope for entire building also reduces need for fans
 - f. Can easily be added into the design, manual controls
8. Ventilation at Turnout Gear room Discussed
- a. Chief concern about drying - should paddle fans be provided in turn out gear / locker room
 - b. Wayne noted that design will include excess air volumes delivered to and returned from this area
 - c. Paddle fans not recommended, not necessary, too low ceiling area
9. Mention of a Peterson Boiler – WV to follow up
10. plumbing Fixtures discussed
- a. fixtures will be specified with low flow faucets and aerators
 - b. metered faucets (push and the stay on – then go off automatically) were discussed, not sure if these are best
 - c. electric eye auto faucets discussed - more durable than years ago, recommended by WV
 - d. need to confirm if desired on locker room sinks, other non-public sinks
11. Paper Towels vs Electric Dryers
- a. Electric dryer products are improving
 - b. Paul mentioned product where hands are “ inserted “
 - c. Towel sales folks have strong argument for use of towels
 - d. Dryer sales folks have strong argument for use of hand dryers
 - e. Chiefs / owners to confirm final decisions
12. Co and Co2 detection
- a. Co – Carbon Monoxide - fumes from vehicles – detection, alarm and fan control will be part of vehicle area design
 - b. Co2 – Carbon Dioxide – from breathing – may be used as out door air control strategy in larger gathering rooms in other occupancies such as gyms, not really useful in relatively small spaces in this facility
13. Chief reports that VESDA system was used at another Holding cell police project – mandated by local Authority



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- a. Systems are alternate method of detecting smoke in selected areas
 - b. Uses tubes to gather and sample air remotely
 - c. Keeps electronics (which needs protection and servicing) out of cell areas
 - d. Quite costly method of smoke detection
 - e. Not recommended by WV unless mandated
14. Point of use water heaters were discussed
- a. Increased advertising for instant – point of use water heaters
 - b. Two types, electric and gas fired
 - c. Electric costs more than gas (today !!)
 - d. Results in several (many ?) separate units to maintain, service, and replace
 - e. Use of boiler to heat water during heating season makes most sense
 - f. Shower volume use – need to confirm – if large, supports central boiler recommendation
15. Lighting and lighting controls
- a. Energy code in mass mandates energy efficient lighting be installed – total building wattage limits
 - b. Energy code also mandates automatic off controls for all areas (certain exceptions – need to justify)
 - c. Also mandates occupant control and after hours override
 - d. Occupancy sensors are great choice for small , private offices and conf rooms
 - e. Timer switches great choice for storage and file rooms - locate where light switches would have been
 - f. Central controllers for large space controls (ie apparatus bay)
 - g. Will consider Day light sensing – some integrated into the occupancy sensors
 - h. Exterior lighting on Photo cell for dusk to dawn operation
 - i. Need to discuss, confirm if any exterior lighting should go “ off” at any period of darkness (this is a 24 / 7 security facility)
16. Next Steps
- a. Follow up on Solar systems - WV
 - b. Follow up on Exterior slab snow melting – WV
 - c. Paper vs Electric dryers – Chiefs
 - d. Vesda – need to confirm NOT required
 - e. Point of use water heaters - to continue discussion - WV