Solar Garage

When Regional Memorial Hospital was built in 1960, there wasn't enough money in the budget to build a garage maintenance building. For 20 years, the Maintenance Department kept the trucks out-of-doors year round. We serviced our plows and trucks in winter time out-of-doors. This made for great discomfort to the person or persons doing the service.

In 1980, we were asked what size building was needed. After much conversations and meetings, it was decided that a building of approximately 1,600 square feet would be adequate. A location was picked, so as not to jeopardize future expansion. Energy saving was the critical factor in design of this building. Also, over-all cost of the building was kept in mind.

The design of this building comes from the architects, contractor and the Maintenance Department.

The construction of this building consists of wood framing 6" walls and 12" roof insulation with exterior of brick veneer. This multi-purpose structure has (3) three 10'x10' overhead doors. On the west side is a 30'x6'8" service door.

The passive solar has a total collection of 455 sq. ft. filament glass set at a 65° angle to the sun. It was interesting to find that in the winter months, the peak of the garage will reach a maximum temperature of 100°F and in summer it gets to 95°F.

We installed a Horizontal Hot Air furnace in the peak of the garage. When the peak of the garage reaches 72°, the furnace blower unit is activated by a reverse acting actuator and pulls the hot, heated air from its peak and distributes it throughout the garage. The cold air is drawn up through the passive cantilever wall through adjustable damper near the floor. The garage can be maintained at a 70° to 75° temperature by the sun's rays only on a very cold day.

I really can't say what saving in energy we have realized, but we have been able to heat this garage on an average of 720 gallons of very winter since we built it in 1981.

This 40x40 garage was built for $39,000.00, including electrical and hot air heating system.

- Percy Hanscom
Regional Memorial Hospital
Brunswick, Maine

NEHES Speaks to Architects

On May 16, Kip McClendon, Karl Haugen and David Hathaway represented your society in a meeting with the Boston Society of Architects, Health Care Facilities Committee. The discussion was held during regular meeting of the committee at 320 Newbury St. in Boston. A summary of the points made follows:

The value of a long-standing relationship between one architectural firm and the Hospital cannot be underestimated.

Hospital Engineers (HE) and Architects (A) need to be involved early in any planning of building changes.

Color photographs of existing conditions are advisable for accurate and thorough documentation.

Feedback: Involvement of HE should be solicited by A/E's to obtain as much information as possible about operational aspects of building (relative success of building finishes, systems, etc.). This should be done both during and after any project.

Clearances: All mechanical and electrical equipment rooms should be sized large enough to allow for ease of access for both periodic maintenance and minor repairs as well as future replacement of primary equipment. Provide for adequate ventilation also.

Standardization: If hospital has standardized its building equipment, such as temperature controls, this should be followed by A/E specs. for renovated/new areas.

Equipment Selection: Consider long-term availability of parts and primary equipment.

Room Numbering: Obtain Hospital's input for drawing coordination.

Reduced Floor Plans: Provide 8½" x 11" presentation plans (no utilities) to Hospital for their use in planning.

Key Control: Centralize access to all keys for rooms, cabinets and panelboards via one (1) person.

Record Documents:

a) Min. three (3) sets of sepias of as-built drawings should be transmitted to Owner.

b) Complete list of all contractors and suppliers include telephone numbers and contact person.

c) Complete manual of warranties, recommended preventive maintenance schedules, parts and operating procedures.

d) Proper labelling of all piping, access panels.

e) Thorough testing of all alarm systems (fire, temperature controls, etc.).

Substitutions: Determine protocol for decisions regarding "or equal" submittals by contractors.

Language: Obtain agreement on significant terms, jargon, nomenclature early in project: "construction manager", "general contractor", "scope of work", "allowance", "change order", etc. Members of a hospital board do not necessarily appreciate either the nuance or basic construction knowledge.

Communication: Alert Owner to the need for and timing of major decisions e.g., system selection, materials selection, etc.

Design Changes: No change of concepts should be allowed after Owner's acceptance of Schematic Design documents.

Renovations: Explore many design alternatives with doctors and staff so as to allow for continuity of operations.

Design Review: Brevity of available time HE should be relieved temporarily of many normal duties to allow for proper involvement in design project.

Complete Construction Documents: Important for close bidding, field coordination, etc., no substitute for completeness. Cost of incomplete documents never avoided becomes profit for G.C. in later change orders.

CON Application: Reserve funds for hospital staff to be involved in this stage of project.

Construction Management: A volatile and highly debatable issue. Recognize many pluses as well as minuses. Owner should prepare list of parameters for selection of all consultants.

D. Hathaway
Vice President

Is NEHES "Member Friendly?"

Engineers are busy people, therefore it's an engineering organizations job to communicate with them as effectively as possible. By so doing, an organization builds a loyal following.

The New England Hospital Engineers' Society communicates with its members in several ways. The two that stand out most are through our technical seminars and our quarterly Newsletter. Our prime goal in these efforts is to make NEHES "member friendly". We openly and actively solicit direct involvement and other forms of help from our members so we can continue to maintain a high level of communications effectiveness. We are here for you. Without you, we wouldn't exist as an organization.

Our seminar chairmen and our Newsletter editors place great emphasis on member
Over 613 fluorescent lamps at 40 watts each were removed from service and at a conservative rate of four cents ($0.04) per kilowatt per hour (kwh) Putnam could account for a savings of four thousand eight hundred and ninety dollars ($4,890.00) per year. This does not include the one thousand and thirty-six dollars ($1,036.00) saved per year just by utilizing watt miser lamps. (Based on 1000 lamps at 6 watts each with a $0.04 kwh rate).

In an existing building, because lighting is a significant consumer of energy, conservation efforts to reduce lighting energy were focused on reducing lighting levels. This was done through derating existing light fixtures by relamping and through use of more efficient lamps.

In the new and remodeled parts of the hospital, efforts to reduce lighting energy were focused largely on increased lamp efficiency and reducing lighting levels. This was done mainly in the coffee shops, halls, corridors, machine equipment rooms and support type departments such as laboratory, pharmacy, radiology, and maintenance. All of which were grossly over-luminated and in need of some conservation lighting engineering.

It is a known fact that lighting designers, up until the most recent years, have had a tendency to over-luminate most hospitals or buildings.

It has not been until the last five to six (5-6) years when conservation was a major concern did designers start to think conservatively about lighting and other using equipment.

Having been conscious for years of high energy consumption, Putnam implemented many ideas for better control of its energy, such as: night set-back thermostats, time clock control of Air Handling Units, watt miser lamps and ballasts, both in the hospital and outside in its parking lots, replacement of incandescent lamps with fluorescent lamps and other energy saving fixtures. This hospital has also played a leading role in purchasing and installing energy efficient equipment. With the help of the Department of Energy, Putnam with its most recent construction put into use a Laundry Waste Water Heat Recovery System, a Laundry Air to Air Heat Recovery System, a Boiler Stack Heat Recovery System and a Roof Replacement System with heat saving properties, all of which were based on a four year average pay back period.

Savings was also experienced by adding 350 K V A R of Powerfactor correction capacitors to the Electrical distribution system and large motors throughout. This raised the powerfactor for the total hospital from 77% to 92% giving us less than a year and half pay back.

In conclusion better conservation of our energy needs, both now and in the future, is something that every hospital should take a long hard look at, there is much to lose and even more to gain.

- Donald E. Harvey
Assistant Engineer at P.M.H.
Treasurer of Vt. H.E.S.
UPDATE ON CYTOTOXIC EXPOSURE

In August of 1983, the National Study Commission on Cytotoxic Exposure under the direction of Chairman Louis P. Jeffrey, Sc.D. of the Rhode Island Hospital, Department of Pharmacy, in Providence, Rhode Island published a pamphlet entitled “Recommendations for Handling Cytotoxic Agents”. Of particular interest to Hospital Engineers was the section entitled “Disposal Procedures” in which the Commission suggested various methods to dispose of the cytotoxic waste which would be considered hazardous. In particular, they recommend that:

“...There is insufficient information to recommend any single preferred method for disposal of antineoplastic drug waste...”

One method for disposal of hazardous waste is by incineration at a temperature considered sufficient to destroy organic compounds (greater than 1000°C). Compounds containing inorganic moieties should not be incinerated.

Another method of disposal is by burial at a site approved for hazardous chemical wastes.

A licensed hazardous waste disposal company may be consulted for information concerning available disposal methods in the local area”.

One obvious question raised by this recommendation is the rational and source of the 1000°C temperature. This is of particular interest to Hospital Engineers since it may become common practice that cytotoxic wastes are being disposed of routinely by incineration under the assumption that the hospital’s incinerator, being licensed for hazardous infectious waste, is suitable for cytotoxic waste. This may or may not be the case.

In fact, in March of 1984 the National Study Commission on Cytotoxic Exposure issued a report entitled “Consensus Responses to ‘Unresolved Questions Concerning Cytotoxic Agents’”. In this report the question is asked:

“Can some cytotoxic agents be incinerated at less than 1000°C? Which ones?”

In response, the Commission notes:

“This is another area where specific experimental data is not available. The concern that incineration temperatures must be high enough to cleave carbon-to-carbon bonds (organic compounds).

The Commission feels that all organic agents should be incinerated at temperatures approved by the Environmental Protection Agency (EPA) for the incineration of organic chemicals. Incineration must be done in EPA permitted hazardous waste incinerators for any cytotoxic agent classified as “hazardous waste; therefore, only properly permitted incinerators should be used. If incineration at these temperatures is not feasible, disposal by some other acceptable means is indicated. For example, disposal via a licensed hazardous waste disposal contractor”.

There are any number of issues relative to the safe handling, administration, and disposal of these agents. The Hospital Engineer should be aware that any hospital which currently has an on-going Cancer Treatment Program may be generating this type of waste. There does not appear to be any inexpensive or easy answers to the method of disposal. The first step is to identify the hazard and then to look for appropriate answers.

Those individuals who would like to receive some additional information on the problems associated with this subject should write to Louis P. Jeffrey, Sc.D., Chairman, National Study Commission on Cytotoxic Exposure, Rhode Island Hospital, Department of Pharmacy, Providence, Rhode Island, 02902, and request copies of the “Recommendations for Handling Cytotoxic Agents” (August 1983) and “Consensus Responses to Unresolved Questions Concerning Cytotoxic Agents” (March 1984).

John J. Crowley
St. John’s Hospital

1985 NEHES FALL SEMINAR

The 1985 Fall Seminar Program will be coordinated by The Hospital Association of Rhode Island Engineers’ Section.

Contact has been made with the Sheraton Islander Inn and Conference Center and the facilities are in order for September 16, 17 and 18, 1985.

We have confirmed the availability of eighty (80) rooms at the rate of $80.00 a single and $90.00 a double per day. These rooms will be available on a first come first served basis until thirty (30) days prior to the above mentioned dates.

Some of the tentative topics will be:

Water Treatment as pertaining to Cooling Towers and Medical Air, Guest Speaker from CDC, Engineering Disasters, Guest Speaker Dr. C.A. Pretzer, P.E. Dialysis Water Treatment, Applications of Computer Systems, etc., are some additional topics.

The Seminar will be a three track system featuring Engineering, Administration and Guest Activities and for the first time, have an exhibition booth section.

- Ken Jankovich
Fall Seminar Coordinator

STOP/LOOK/ and FEEL/

When we got the report that a small electric fire had taken place at our hospital we were really surprised to find out how it happened. It seemed that one of the small plug-in transformers used with our infusion pumps came apart and shorted out as it was being unplugged from a wall outlet. This in turn caused sparks, smoke and several scared people. The transformer was ruined and the charted outlet was replaced and things soon returned to normal.

In spite of the fact that we perform operational and safety checks on this equipment we were obviously overlooking a FEEL test of the mechanical integrity of the transformer plug. When we started to feel the condition of the three blades, we learned the “shocking” truth. Of the hundred units we have utilizing plug-in transformers, clearly one third we found to have loose pins.

We checked with the manufacturer and also
with other users of this equipment and learned that there were two solutions. First, and easiest, we could buy new cord-transformer assemblies. This would cost us one thousand dollars. The second technique, which we used, was to rewire the unit to enable the transformer to be relocated inside the equipment case. We added a conventional ten foot power cord and plugged the transformer into the female end inside the case. A strain relief held the cord securely in the hole we drilled in the case rear. In that the case was plastic, we cemented thin pieces of aluminum to the inside near the transformer to prevent hot spots, which might otherwise occur. We think we have the problem solved.

- Jack Berger
University Hospital

REPORT OF THE PRESIDENT ELECT

Another summer has gone and it seems like only yesterday that we were at Sebasco Lodge for our 25th Anniversary and Convention. They say ‘time flies when you’re having fun’ but I believe it has more to do with you’re getting older.

If the professionalism of the Brochure is any indication of the Mystic Connecticut Convention, this should be a great one. Thomas “Splash” Shubuck and his Committee have been doing a fine job organizing this one. I hope that this one will have the biggest turnout of any.

As all of you know, I will be taking over John Crowley’s position next year as President. I have a very big pair of shoes to fill, as John has done an excellent job. But I’m sure, with your support, I’ll be able to do half as well.

I’ve been able to fill two (2) positions so far. Paul Taylor will stay on as Constitution and By-Laws Chairman. Jack Gosselin from North County Hospital in Newport, Vermont will be our new Newsletter editor. I’m glad I got to him before anyone told him what a big job he is undertaking—I’m sure Dave Elliott can attest to that. But from what I’ve heard about Jack, he can handle it.

I’ve contacted Ralph Henry and asked him to take a chairmanship and he has agreed for me to put him where his expertise can be realized. I’m sure it will be good for all of us to have Ralph around to voice his opinion.

The only goals that I have in mind for next year is to try and increase our membership and get four (4) informative Newsletters out. As all of you know, the letter can not be accomplished without articles from all of us.

- Percy Hanscom
President Elect

NEWS FROM THE STATES

Connecticut:

On August 17, 1984 the annual meeting of C.H.E.S. was held at the home of Richard Popham, followed by a picnic.

At the meeting we enjoyed the company of President, John Crowley and President-Elect, Percy Hanscom from N.H.E.S.

A new slate of officers was appointed for the coming year. The new president is Roy LeClaire of Mount Sinai Hospital, Hartford, Connecticut.

A good time was had by all at the pig roast.

- Alan Seagrave
Connecticut Representative

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Mayo Regional Hospital, ME

MASSACHUSETTS

THOMAS J. GALLIGAN
New England Sinai Hospital, MA

NEW HAMPSHIRE

THOMAS ROZWADOWSKI
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