Elmore Community Hospital

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STATE HEALTH PLANNING
AND DEVELOPMENT AGENCY

February 20, 2015

Albert Lambert
Alabama State Health Planning & Development Agency
P.O. Box 303025
Montgomery, AL 36130-3025

Dear Mr. Lambert:

Ivy Creek of Elmore d/b/a Elmore Community Hospital is requesting a letter of non-reviewability as it relates to the attached referenced project. We desire to update and replace the main cooling plant for the hospital which will consist of two chillers, two cooling towers and pumps. The pumps were installed in 1971 and the chiller upgrade in 1993 which have exceeded their service life span. It is imperative that we provide updated equipment for current and future utilization while maintaining high quality outcomes.

This proposal will not result in any capital expenditure in excess of the Certificate of Need capital expenditure thresholds, as they currently exist.

Thank you in advance for your cooperation and approval of this project and should you have any questions or concerns please contact me.

Sincerely,

Cindy A. Futral
Administrator

Attachment

HHB Engineers, P.C.
CONSULTING ENGINEERS

Review of Cooling Plant
Elmore Community Hospital
Wetumpka, AL

October 30, 2014
HHB Project No. 211043

Introduction

A review of the main cooling plant for the hospital was conducted. The main cooling plant consists of two chillers, two cooling towers, two chiller pumps, and three condenser water pumps. The purpose of the review is to give the owner a consolidated assessment as to the condition of their plant, and to provide budget cost estimates for recommended changes to the plant.

Existing Equipment

The main cooling plant consists of the following equipment, per nameplate data on the equipment:

Chiller (CH) #1: McQuay water cooled reciprocating chiller, R-22 refrigerant, nominal 75 tons, model number WHR080D-W, 208/3 phase power.

Chiller (CH) #2: McQuay water cooled reciprocating chiller, R-22 refrigerant, nominal 120 tons, model number WHR120D, 208/3 phase.

Pumps:
CWP #1: 10 HP, Aurora 4x4x9B, 600 GPM, 50 ft head
CWP #2: Same as #1
Condenser Pump #3: 5 HP, 225 GPM, 45 ft head
Condenser Pump #4, 7.5 HP, 360 GPM, 40 ft head
Condenser Pump #5, 7.5 HP, 560 GPM, 40 ft head

Cooling Towers: Both towers are blow through centrifugal type cooling towers.
CT #1: Baltimore Air Coil (BAC) tower, Model # VNT-75A, Serial # 72-2553.
CT #2: BAC Tower, nameplate could not be reached.

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Equipment Conditions

Chillers:

CH #1 was installed around 1993 as part of a chiller upgrade/energy package. It has been idle for approximately two to two and a half years per the maintenance staff. It is believed that the chiller has been idle due to an issue with the associated tower, CT #1. Engineered Cooling Services has been on site recently, and has determined CH #1 is functional. The expected service life of a reciprocating water cooled chiller is 20 years.

CH #2 was installed around 1993 as part of a chiller upgrade/energy package. It is functioning but recently has been experiencing issues, possibly with one of the compressors. Engineered Cooling indicated all the compressors were replaced approximately 2 years ago (there are 4 compressors). The oil pump has been replaced, and Engineered Cooling has determined that one of the compressors is malfunctioning and also needs to be replaced. The expected service life of a reciprocating water cooled chiller is 20 years.

Both chillers have exceeded the end of their expected service life.

Cooling Towers:

CT#1 appears to be circa early 1970s, although it is unclear. The 1971 renovation drawings indicate reusing an existing CT#1 and relocating it. The tower has been idle for approximately 2-2.5 years according to the maintenance staff. Engineered Cooling recently started up the tower, and confirmed the tower has major shaft issues with the fan. It was also determined upon starting up CH#1, that the tower piping has been cut, and therefore cannot function at this time. The expected service life of a cooling tower is 20 years.

CT#2 was installed around 2000-2001 per the maintenance staff. There are no known issues with the tower at this time as reported by the maintenance staff. The expected service life of a cooling tower is 20 years.

CT#1 has exceeded its useful service life, and due to lack of functionality and repairs required, this tower would need to be replaced. CT#2 is approximately 14 years old, with about 6 years of average service life remaining.

Pumps:

The pumps appear to have been installed as part of the 1971 renovation project. They all appear to be about the same age and are all Aurora pumps. During the site visit, only CWP #1 and Condenser pump #5 were running. Both pumps were significantly leaking water. It is unknown if the other pumps are functional. The expected service life of a base-mounted pump is 20 years.

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Recommendations

At a minimum it is recommended that the non-functioning cooling tower, CT#1, be replaced this winter so that both chillers can be online before the weather turns warm again, and so that there is redundancy in the chiller plant. While the existing 120-ton chiller carried the hospital this previous summer, it is not known if with the new OR addition online, if the single chiller will be able to carry the new load (even with the old OR space offline) next summer. Therefore installation of the new cooling tower is imperative.

CT#2 has service life remaining, however the style of the tower is outdated (blow through centrifugal type) and not energy efficient. A new energy efficient tower with axial fan, induced draft type, and VFD on the fan motor and will reduce operational costs.

While both chillers have exceeded their anticipated service life span of 20 years, with CT#2 requiring a full compressor replacement several years ago, with one of the four compressors already requiring replacement again. In addition, both chillers use R-22 refrigerant, which is currently being phase out of production, which will cause prices to continue to increase affecting maintenance costs of the existing chillers. New chillers will have either R-410a or R-123 depending on the manufacturer. It is recommended that if these cannot be replaced soon, that planning take place to anticipate the need to replace the chillers in the near future.

While there appears to be some redundancy with the pumps, due to not all the pumps operational status known, it is also recommended that all the pumps be replaced with new. All pumps have exceeded their anticipated service life, and those observed running, are leaking significant amount of water. This wastes water and energy due to the cooling of the water only to have it leak out of the system.

An option for the plant upgrades is to increase the capacity of chiller and cooling tower 1 (the smaller chiller and non-functioning tower) when they are replaced, adding more redundancy to the system. Since the new chillers can provide additional capacity for the same power requirements as older chillers (since they are more efficient), the existing power may be sufficient while still increasing plant capacity.

The controls for the chiller plant are also outdated. It is recommended that as equipment is replaced, controls should also be upgraded for the equipment.

All piping in the plant is also recommended to be replaced.

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Budget Cost for Upgrades

Budget costs for plant upgrades range from $100,000 to $450,000, as described in the options in the table below. If not all equipment can be replaced at once due to budget constraints, the work can be performed in various bid packages and phases. As with any cooling plant equipment replacement, it is recommended to replace cooling plant equipment in the cooler months from November to April. The work can be phased such that downtime of the plant is still limited if cooling is required in some areas during the winter.

Possible phasing/packaging of work and associated budget prices for each:

Smaller Upgrade Options	
Option	**Budget Price**
1) Tower CT-1, associated pumps (#3 and possibly #4), condenser water piping associated with CT-1 and pump	$100,000
2) Replace chiller CH-1, include pumps for CH-1 and associated piping	$100,000
3) Increase capacity of CH-1 and CT-1, pipe and pumps from 75 tons to possibly 100-120 tons	For tower only, add $10,000 to Option 1 For chiller, add $20,000 to Option 2
4) Package to replace Larger chiller CH-2 and CT-2 and associated pumps and piping	$220,000
Entire Plant Upgrade Options	
5) Replace entire plant, one to one in capacity for chiller and towers	$420,000
6) Increase CH-1 and CT-1 capacity when replacing entire plant	$450,000

Option 1 is the critical item in that the cooling plant is likely to not be able to meet the load of the hospital with only one chiller and tower next summer.

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The budget costs above do not include any electrical upgrades that may be required, particularly for Option 3, depending on how much larger the plant is increased in capacity. The budget prices above include all stainless steel cooling towers, which will provide the longest life and higher quality than a budget tower. Removing the all stainless steel requirement and only including a stainless steel drain pan will reduce Option 1 and 4 by $10,000 each, and reduce the overall plant upgrade costs of Options 5 and 6 by $20,000 each. The budget prices above include controls upgrades for each option.

Other Factors

These recommendations only include the main chiller plant. It is known that piping problems (corrosion and scaling) is present in the secondary distribution system, particularly in the piping from the 1st floor mechanical room (with new replacement secondary pumps) to the existing OR location. When the Existing OR is renovated it is recommended to replace the distribution piping at that time, likely routed along the roof. Likewise with any additional renovation; replace secondary distribution piping as the spaces are renovated.

Time Constraints

The standard lead time for cooling towers is 6-8 weeks. Due to time constraints, with the desire to have the cooling tower online by the end of spring, the tower will need to be ordered by early-February at the latest. It is too late in the year to design, bid, and order a chiller for a spring replacement. Therefore, Option 1 is the only available option to be implemented prior to next summer's peak cooling season. It is recommended if the chillers are desired to be replaced, to schedule this for next November at the earliest.

Schedule

The following schedule is offered a guide in planning the tower replacement project. This is an aggressive schedule. HHB would like provide design and construction administration services for the tower replacement project, including bidding services. Bidding the project will allow for competitive pricing and ideally overall savings for the hospital.

HHB Construction Document Phase Notice to proceed (NTP): December 3, 2014
Issue drawings to bidders: January 12, 2014
Bid opening: January 19, 2015
Construction NTP: January 26, 2015
Cooling tower ordered: February 16, 2015
Cooling tower/pump/piping replacement: April 2015

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Additional information

The chiller upgrade of 1993 was funded through "energy" money made available since the project was considered an energy upgrade (HHB Engineers, then Hattemer, Hornsby, and Bailey was involved in the chiller replacement project in 1993). Similar financing sources are available today. Through ADECA, a program called AlabamaSAVES is available to the hospital, providing 1% financing for equipment upgrades that provide certain payback requirements over existing equipment, or exceed minimum energy efficiency code requirements. More information can be found at the ADECA website www.adeca.alabama.gov or by calling (334) 242-5292.

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