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1 May 2018

Mr. Steve Merkel
SEARHC Facilities Director
222 Tongass Drive
Sitka, Alaska 99835

Subject: Wrangell Medical Center Building Condition Survey (18315)

Dear Steve:

Wrangell Medical Center (WMC) building condition survey mechanical and electrical site visit was made 24 and 25 April 2018 per your request. This letter summarizes the mechanical and electrical survey. Attached with this letter are mechanical and electrical deficiency lists, structural report, and related estimate of probable construction costs.

Building condition survey site visit personnel consisted of Steve Merkel Facility Director, Victor Weaver Deputy Director of Facility Services, and Shannon Freitas Safety Management Program Manager with SEARHC, Ryan Wilson Structural Engineer with Design Southeast, and John Lackey Electrical Engineer and David Boggs Mechanical Engineer with AMC Engineers. Site assistance was provided by Jim Holder WMC Maintenance Director.

This narrative is based upon available owner furnished record drawings and limited field verification. The building condition survey was based upon the assumption to provide rehabilitation of existing spaces to meet current code and standards criteria for this critical access hospital. Facility rehabilitation would be done in multiple phases to allow the building to remain operational during the upgrades.

Many of the mechanical and electrical systems are in failing condition and/or do not meet current codes and standards. If the hospital continues to operate beyond the anticipated 3-5 years, we recommend replacing failing equipment and critical systems not meeting current criteria.

Codes and Standards

The building condition survey is based upon current codes adopted by the State of Alaska who is the Authority Having Jurisdiction (AHJ), the 2014 Federal Guidelines Institute (FGI) Guidelines for Design and Construction of Health Care Facilities (incorporates ASHRAE Standard 170 Ventilation of Health Care Facilities – which is under continuous maintenance), 2012 NFPA 99 Health Care Facilities Code, and 2012 NFPA 101 Life Safety Code. We recommend the facility complete a Safety Risk Assessment (SAR) in accordance with 2012 NFPA 99 Chapter 4 and 2014 FGI 1.2-3 to confirm codes and standards to be used.

A summary of current applicable codes and requirements follows:

- 2012 International Building Code (IBC).
- 2012 International Existing Building Code (IEBC).
- 2012 International Mechanical Code (IMC).
- 2012 Uniform Plumbing Code (UPC).
- 2012 International Fire Code (IFC).
- 2017 NFPA 70, National Electric Code, NEC.
- 2013 NFPA 72, National Fire Alarm and Signaling Code.
- 2012 NFPA 99, Health Care Facilities Code
- 2012 NFPA 101, Life Safety Code:
- 2017 NESC, National Electric Safety Code,
- 2010 ASCE 7, Minimum Design Loads for Buildings and Other Structures
- Standard for Accessible and Usable Buildings and Facilities (ANSI A117.1).

Mechanical Building Condition Survey

Fire Protection:

Existing sprinkler system consists of three dry pipe risers serving the building. The sprinkler distribution pipe has pin hole leaks due to corrosion. The piping consists of different wall thickness, including pipes with a corrosion resistance ratio less than 1.0. All sprinkler heads are dry type and require replacement or representative samples tested every 10 years.

Replacement of failing sprinkler piping and sprinkler heads is recommended. Existing sprinkler systems would be modified to relocate sprinkler heads and provide new sprinkler heads to accommodate floor plan revisions and current coverage requirements.

Automatic fire protection sprinklers are required during demolition and construction activities. The CT trailer has an independent clean agent fire protection system.

Domestic Plumbing:

The sprinkler system and domestic water line are not protected by backflow devices. Multiple service sinks and hose connections throughout building were observed without cross connection protection per UPC requirements.

A single aged oil fired water heater placed on CMUs provides hot water for the facility. Hot water plumbing system is not temperature regulated to meet UPC or FGI requirements, including hot water circulation criteria.

The building 6" wastewater service line has failed in areas, requires multiple cleaning each year due to root blockages, and interior 4" wastewater line has reversed slopes and corrosion.

Medical Gas:

Medical Vacuum and Oxygen source and distribution infrastructure is not adequate for providing medical gas requirements. These systems do not meet NFPA 99 source or distribution requirements, including isolation and alarm requirements. These systems are lacking medical gas verification records.

The operating room medical gas system consist of one cylinder each of oxygen, medical air, and nitrous oxide connected to hoses, and medical vacuum wall inlets.

Oxygen concentrator and connected 80 psig low flow tank are not located in accordance with IFC, NFPA 55, and NFPA 99 requirements. Oxygen cylinder fill operations includes 2,000 psig and 55 psig flexible lines (exposed and concealed) routed through building storage and occupied areas. Medical vacuum pumps are located in sprinkler riser room and do not meet current NFPA 99 requirements.

Recommend revisions to source equipment and distributions systems are made. Medical gas outlets should be modified to improve user access and functionality, as well as meet current UPC and FGI requirements. Modifications to medical gas lines will require independent verification per 2012 NFPA-99 requirements.

Fuel Oil:

A single wall underground 3,000 gallon fuel oil (FO) tank installed in 1988 with separate FOS/FOR lines (6 total) to both boilers and one water heater in mechanical room are routed through crawl space and underground to the tank. A separate fuel oil tank is provided for the generator.

Chilled Water:

The ventilation system does not provide mechanically cooled air. There is not a chilled water system for the facility. Direct expansion air condition equipment is provided at some IT and critical equipment locations.

Heating System:

The heating plant consist of two Burnham V-909 1,054 MBH oil fired boilers and circulation pumps to provide the hydronic, hot water, heat for the building. Boiler controls are local without outdoor temperature reset. Each boiler has a ceiling mounted captive air expansion tank. Facility maintenance personnel state the building temperature can be maintain in the winter with one boiler operating. No records of boiler burner combustion efficiency or flue gases were available.

Additional boiler and hydronic circulation capacity will be required to temper the additional air required to meet ventilation requirements. Heating terminal units and related controls are also required to meet program area temperature criteria.

Steam and Condensate:

The hospital's original 15 Hp steam boiler, feedwater, and condensate return system that served laundry, humidifiers, sterilizers, and water heater has been removed. There is not a central steam system serving the hospital.

Humidification Control:

The hospital's ability to increase relative humidity has been disabled and mostly removed. Dehumidification was not incorporated for the AHUs. There is not a humidity level monitoring system for the facility. The facility cannot maintain FGI criteria humidity levels.

Ventilation:

The existing AHUs, fans, and ductwork systems are not able to support the ventilation demands to meet current code and criteria requirements. Many areas are currently not provided with ventilation and do not meet indoor air quality or exhaust air requirements. The existing two AHUs are in failing condition and are beyond their anticipated service life. We recommend replacing the system if the facility will continue to operate beyond the anticipated 3-5 years.

Fire dampers, smoke dampers, or fire/smoke dampers were not observed in the ductwork systems. Locations for these dampers are to be coordinated with life safety plans and required for defend-in-place locations.

The facility doesn't have a permanent room for examination or treatment of a patient with a suspected airborne infection. Airborne infection isolation (AII) is provided by temporary installation of exterior wall window mounted exhaust air fan.

Testing, Adjusting and Balancing (TAB):

It is unknown when the last testing, adjusting and balancing report was provided. No records of HVAC operating conditions were found. Areas requiring differential air pressure relationships may not be maintained. TAB reports are recommended for existing conditions and future HVAC work.

HVAC Controls:

Existing building HVAC system uses pneumatic controls with many components from original construction. The control system air compressor and dryer are located in the same room with the water service, three dry pipe sprinkler risers, and medical vacuum compressors with inadequate maintenance space. The air compressor also serves the dry pipe sprinkler systems.

It is unknown when the last calibration and overall haul of pneumatic controls was provided. There is no master control or alarm panels for the HVAC equipment. The facility cannot maintain FGI criteria temperature or humidity levels.

Recommend a Direct Digital Control (DDC) building automation system (BAS) with local and internet graphical interface for monitoring, controlling, and troubleshooting. The BAS will improve energy efficiency, preventative and predictive maintenance, efficient response to alarms and user requirements.

Electrical Building Condition Survey

Power Distribution:

The power distribution system has been expanded from the original 1968 construction to include an emergency generator and Essential Electrical System. The building electrical distribution system does not meet current NEC article 517 requirements.

Power:

Power systems throughout the building do not meet NEC article 517 requirements and FGI guidelines. Numerous branch circuits are not connected to the appropriate branch of the electrical system and there are multiple instances where there are not adequate receptacles in patient care areas.

Lighting:

Existing lighting throughout the clinic is outdated but functional. We recommend replacing lighting throughout the hospital with high efficiency LED fixtures if the facility will continue to operate as a hospital beyond the anticipated 3-5 years.

Telecom:

Existing telecom cabling does not meet NEC article 800 requirements and the BICSI Telecommunication Distribution Methods Manual standards. The main telecom room is adequately sized for the facility.

Fire Alarm:

The fire alarm system dates back to the 1988 remodel and is outdated but functional. Based on annual fire alarm testing reports many of the detectors need to be replaced. In addition, a comprehensive survey of detection and audio/visual notification should be completed to verify that the facility is adequately protected. Fire alarm service contractor is currently able to provide replacement devices; however, the system is beyond its anticipated service life, therefore we recommend replacing the system if the facility will continue to operate as a hospital beyond the anticipated 3-5 years.

Nurse Call:

The nurse call system dates back to the 1988 remodel and is outdated, but functional. Maintenance personnel report that spare parts are becoming difficult to obtain, therefore we recommend replacing the system if the facility will continue to operate as a hospital beyond the anticipated 3-5 years.

Public Address:

The public address system was not surveyed. The system was not mentioned in our meetings with staff as deficient or having problems. Unknown when the system was installed.

CCTV/Security/Access Control:

The CCTV, Security, or Access Control systems were not surveyed. It is unknown when these systems were installed. These systems are recommended to support program requirements in order to meet current FGI criteria and policy procedures.

Seismic Restraint

The mechanical and electrical systems will require seismic restraint in accordance with the IBC and ASCE standard 7. This critical care access hospital is considered an essential facility and all mechanical and electrical components require a seismic component importance factor (Ip) of 1.5 in accordance with the IBC and ASCE 7.

Construction Phasing Considerations

Coordination of project construction phasing with the life safety plans and infrastructure systems will be required to maintain occupied adjacent spaces throughout the project. The facility will need to review the phasing plan to identify operational risks and provide direction for the design team and contractor. Some disruptions to services are expected; though the goal would be to minimize disruptions through planning and coordination.

Means of providing ventilation and differential air pressure relationships during construction should be reviewed with the phasing plans. Coordination with other projects in the area and/or connecting to the area of work or systems is recommended to minimize future disruptions.

Commissioning of systems per the 2014 FGI Guidelines 1.2-7 would be completed before the project is accepted and area is occupied.

Facility Recommendations

Recommended items for completion before determination of phasing plans and specific project scopes include:

- Life safety plans.
- Building floor plan and mechanical and electrical system as-builts.
- Functional program requirements, (2014 FGI 1.2-2).
- Hazardous, lead paint, and asbestos containing materials survey.
- Safety Risk Assessment (SRA) for each project phase, (2014 FGI 1.2-3).

The Functional Program describes the planned operational function of space(s) as it relates to providing direct and indirect patient care. Once a project scope is determined, the Owner Performance Requirements (OPR) (2014 FGI 1.2-7.2.1) and Infection Control Risk Assessment (ICRA) (2014 FGI 1.2-3.2) drafts would be undertaken. These documents and their elements will be iteratively used to complete the OPR and Basis of Design (BOD) (2014 FGI 1.2-3.2.2) for the project's construction documents by the facility and the design team. The project Pre-Construction Risk Assessment (PCRA) and Interim Life Safety Measures (ISLM) would be developed along with Infection Control Risk Mitigation Recommendations (ICRMR) (2014 FGI 1.2-3.2.3) before demolition or construction starts.

Please contact me if there are any questions or additional services we may provide.

Sincerely,

David L. Boggs

David L. Boggs, PE
Principal Mechanical Engineer

Attachments:

1. Wrangell Medical Center Survey Construction Cost Estimate, 1 May 2018; 20 pages
2. Wrangell Medical Center Survey Mechanical Deficiency List, 1 May 2018, 4 pages
3. Wrangell Medical Center Survey Electrical Deficiency List, 1 May 2018, 3 pages
4. Wrangell Medical Center Survey Structural Report, 1 May 2018, 15 pages

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