



## Existing Building Systems

### Mechanical

The existing (designed) mechanical system for the Community Hospital of Lancaster consists of a centralized cooling and heating system. During the cooling season, heat is rejected from the



hospital campus via secondary chilled water loop which is pumped from the central energy plant (CEP) building. Two (2) 450 nominal ton centrifugal chillers extract the heat from the chilled water loop and reject it through two (2) 450 ton open cell cooling

towers via the condenser loop. The system is also set up to take advantage of low temperatures by use of a 300 ton (3600 MBH) plate frame heat exchanger. The heat exchanger is designed to bypass the chillers when outdoor air temperatures fall below 55°F, thereby saving energy. Heating is provided by the CEP as well, which utilizes two (2) 300 HP gas / oil fired boilers. A separate hot water loop on which the boilers are set in parallel to provides the necessary heating, reheat and terminal heating.



Six (6) chilled water air handling units (AHUs) and twelve (12) chilled water rooftop units (RTUs) supply a total of 175,000 CFM re-circulated and conditioned fresh air to all the spaces of Community Hospital of Lancaster. All of the AHUs and RTUs (with the exception of AHU 5) precondition ventilation air with return air before entering the cooling and heating coils. A "Mee Fog" system is incorporated into some of the air systems to increase the humidity of the conditioned supply air in dry winter months. AHU 1 serves a VAV system which supplies air to the Administration, business and educational areas of the hospital. AHU 2

serves the Pharmacy and nearby open areas. AHU 3 serves the 2<sup>nd</sup> floor nurse station as well as open areas including second floor hallways. AHU 4 provides air for the Intensive Care unit on the 2<sup>nd</sup> floor. AHU 6 supplies the 3<sup>rd</sup> floor nurse station and open areas including hallways. AHU 5 is a 100% O.A. unit that serves Patient and Isolation rooms on the 2<sup>nd</sup> and 3<sup>rd</sup> floors of the south west





# COMMUNITY HOSPITAL OF LANCASTER

WARWICK TOWNSHIP, PA



wing. Each room served by AHU 5 has a 4-pipe fan coil unit (FCU) which mixes the supply air with room air and is controlled by an individual thermostat in each room.



The RTUs serve the rest of the hospital spaces. RTU 1 serves Outpatient Holding while nearby RTU 2 supplies air to the Emergency Room. RTUs 3 and 4 are paired together to serve the Radiology Department. RTUs 5 and 6 are similarly paired together to serve the Operating Room. The Clinical Labs & Offices, General Storage, Kitchen and Restaurant are individually served by RTUs 7 thru 10 respectively. RTUs 11 and 12 are paired and serve the Women's Centre.





## Electrical



Two main panels draw from the local utility, one at 4000A 480Y/277V 3 $\phi$  the other at 3000A 480Y/277 3 $\phi$ . The first panel is dedicated to the main hospital building, which includes the Woman's Pavilion. The second serves the central energy plant building and off its equipment including the cooling towers. The main hospital panel serves 10 separate panels without stepping down in voltage. From those 10 distribution

panels, the power is then distributed and stepped down as needed via dry type transformers. The central energy plant panel serves a multitude of mechanical and life safety systems. The plants main panel serves a multitude of secondary panels and is stepped down as needed for specific apparatus. Both the hospital panel and the energy plant panels are tied together and are set to receive emergency power from a 1250kW/1562kVA Diesel Generator to keep life support systems functioning at all times. Multiple surge suppression devices are located on each major panel to ensure safety of the system from overload.



## Lighting

Lighting mainly consists of 2x4 ceiling inlay fluorescent light fixtures with 32W lamps. This lighting is present in virtually all spaces of the hospital however wall sconces and directional ceiling canister lighting is used to highlight certain wall areas or desk areas. The lighting becomes very specialized in the surgery, intensive care and neonatal care zones of the hospital. This type of lighting was not within the specs of the MEPFP engineer and is under the design of a healthcare facility specialist.

## Structural

Main hospital building has rigid frame construction with 8 inch slab on grade concrete. Steel structural columns are supported by rectangular concrete footings. Wide flange structural steel, beams, girders and columns with some load bearing concrete and masonry walls. Floor framing consists of 5 ¼ inch lightweight concrete slab resting on composite metal deck supported by wide flange steel beams. Fenestration is curtain wall construction tied into steel framing.



## Project Delivery Method

The Community Hospital of Lancaster used the traditional Design - Bid - Build method.

## Fire Protection

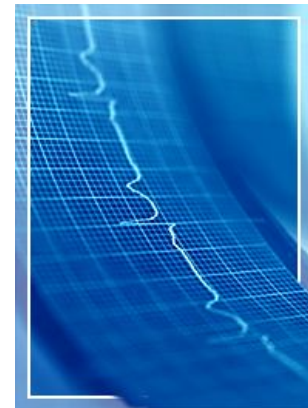
Passive fire protection systems include spray on fire proofing of all steel structure, fire retardant paint and fire rated doors and finishes. Active fire protection consists of a wet and dry pipe sprinkler system. Water is supplied from local utility and is boosted by a 1000 GPM electric fire pump. Fire pull alarms are located throughout facility and smoke and heat sensors monitor conditions as part of a pre-action suppression system.

## Transportation

The building is multi-tiered, with the largest tier standing at 3 stories. 4 independent piston driven elevators allow ADA passage between all floors. Stair wells provide access and egress from each floor.

## Telecommunications

Community Hospital of Lancaster utilizes intercom and P.A. systems as well as inside/outside line phone systems. Data, T.V. and voice ports are present in every patient room and at all nurse and office stations. Monitoring systems for patient rooms as well as security are present throughout the facility. Medical gas pressure monitors, water pressure monitors and I.A.Q. (CO<sub>2</sub>, CO etc...) monitors are located in all zones where applicable. Fire safety monitors and alarms (including pull stations and strobes for the visually impaired) are installed to work with the pre-action fire suppression system and alert local fire departments.



## Special Systems

Specialized patient monitoring systems including biological (heart, kidney ...etc) as well as security monitoring systems (electronic and magnetic door locking, key card readers, etc...) are installed in CHOL. Medical Gas and air flow sensors and monitors are also included. There are also specialized monitors for Radiology, neonatal care, Magnetic Resonance Imaging and similar equipment.