

# SCHEMATIC DESIGN NARRATIVE

For

HAUPPAUGE PUBLIC LIBRARY  
601 VETERANS HIGHWAY  
HAUPPAUGE, NY

*Prepared For*

HAUPPAUGE PUBLIC LIBRARY

*Prepared by:*



3555 VETERANS MEMORIAL HIGHWAY  
SUITE M

RONKONKOMA, NY 11779

Phone: 631-981-3990

Fax: 631-981-3971

EMTEC JOB NO.13-4833

December 12, 2013

## **FIRE ALARM SYSTEM**

1. This “A3” Library occupancy with an occupant load of less than 1000 people, will be provided with a manual and automatic fire alarm system as required per the NYS building Code, Section 907.2.1. In general, the fire alarm system shall include smoke and heat detectors, pull stations, duct detectors, manual pull stations, and audible/visual signaling devices (horn/strobes).

## **SPRINKLER**

1. The fire main service will be a 4-6 inch main tapped off the existing SCWA on-site water main that currently serves the existing Rinks building. Again, if the site main is protected with an approved SCWA backflow prevention device, the sprinkler main will only require a double check valve where it enters the building. A Siamese connection will be provided on the building exterior for fire department connection.
2. The sprinkler system will be a “wet” system. The entire building will be protected with this system throughout in accordance with the Building Code and NFPA 13 which is the governing Codes for the installation of this system in commercial buildings.
3. It is anticipated that a 4 inch main loop will be routed around the perimeter of the building and a combination of side wall sprinkler heads and concealed pendant heads will be utilized for proper coverage of the building interior while minimizing any exposed piping in the ceiling.
4. At the present time, it is assumed that the supply pressure and volume available from the on-site main is adequate and a fire pump will not be required.
5. Flow and Tamper switches will be provided and connected to the fire alarm panel in accordance with code requirements to report to an approved central station in the event of sprinkler system activation.

## **MECHANICAL**

### 1. Zone Conditioning:

- a. The mechanical HVAC system will consist of geothermal water source heat pump systems (WSHP) to do zone heating, ventilation, air conditioning and dehumidification. The WSHP's will be located in three mechanical rooms and above the ceiling of the Workspace zone and are planned to be horizontal ceiling hung systems with supply ductwork ducted down to a raised floor supply air plenum with air distributed to the zone through floor air outlets. One exception is for the Workspace zone which will be supplied with overhead ductwork and air outlets. Return air will be through high on the wall return grilles and for the large zones (adult, young adult, children) return will be provided on each side of the zone for good air distribution.
- b. The WSHP's will reject heat in the cooling season and extract heat in the heating season to/from condenser water through a condenser water supply/return pumped piping loop. The condenser water loop will be heated or cooled as needed to maintain the loop temperature within 60 - 75 degrees Fahrenheit for efficient operation of the WSHPs. The condenser water loop will be heated and cooled from well water through two plate and frame heat exchangers in the basement mechanical room. The well water will be pumped and piped from two supply wells and discharge to two return wells. When the well water cannot provide enough heat to maintain the condenser water loop temperature, a gas fired condensing boiler will be used to provide additional heat to the loop.
- c. An air cooled ductless split system will be provided to handle the server room load. This will consist of an outdoor condensing unit on the roof and an indoor air handler interconnected with refrigerant piping.

### 2. Outdoor Air Ventilation and Exhaust:

- a. The required outdoor air (OA) ventilation will be handled with two energy recovery ventilators (ERV) and two dedicated outdoor air systems (DOAS). Each ERV will have two fans (one for outdoor air in and one for exhaust) and an energy recovery wheel. The OA will come from outside, through the energy recovery wheel and out to the DOAS unit. The energy recovery wheel will reject or extract heat from the exhaust air stream to/from the OA stream. The DOAS will be similar to the WSHP's described above and will perform the final conditioning to provide a neutral air condition (approximately 72 degrees F and 50% RH) to all of the zone WSHP's so that each WSHP does not have to carry additional capacity to temper this air. Exhaust air for the ERV's will be pulled from WSHP return air duct.

- b. Demand controlled ventilation (DCV) will be provided with this system. This will consist of carbon dioxide (CO<sub>2</sub>) sensors in each of the zones. As the CO<sub>2</sub> varies with building occupancy, so will the OA intake and exhaust flow rates through variable frequency drives (VFD) on each of the ERV fans and the DOAS fans. The DCV has an upper and lower limit outdoor airflow quantity; the upper limit is the code required calculated design outdoor airflow based on the required airflow per area and per person and is the rating of the ERV and DOAS. The lower limit is the code required calculated design outdoor airflow based on the required airflow per area only. DCV would modulate between the min-max limits based on the CO<sub>2</sub> set-point.
  - c. Toilet exhaust will be provided through the ERV's so that separate toilet exhaust fans will not be required.
3. Snowmelt
- a. Hydronic snowmelt will be provided at the entrance walkway. The boiler will provide the heat required for this and the system will consist of a brazed plate heat exchanger to isolate the antifreeze water/glycol solution from the boiler water loop, a circulator pump, an expansion tank and a snowmelt manifold in the basement from which the plastic tubing will be run out to the entrance walkway.

## **ELECTRICAL**

1. Electrical Utility Service
- a. Based upon the preliminary load calculations a 800A, 208Y/120V-3phase,4wire. The service capacity will be designed to serve the calculated connected load of the facility.
  - b. It is anticipated primary electric service at 13.8 KV will be derived from the local electric utility company's distribution system, fed a pole on the east side of the park's access road (just south of the baseball fields parking lot). An underground primary will be run to a pad mounted transformer located at the northeast corner of the Library's property, which in turn will feed into the new building's main electrical room in the basement. All primary and secondary distribution feeders will be installed below grade and in PVC conduit.
  - c. Separate panelboards for HVAC, Lighting and Receptacles loads will be provided.

## 2. Standby Generator

- a. It is anticipated a 200kw, 208Y/120, 3 phase, 4 wire, Natural Gas Generator will be provided to supply standby (backup) generator power.
- b. Two locations for the generator have been considered. The first is to be outside at grade at the northeast corner of the property. The second alternative location is to have the generator located in the basement at the northeast corner of the building, which specialty building construction is required to be located inside.
- c. Consideration to meeting the Town of Islip noise level sound criteria for adjoining property owners will be addressed.

## 3. Transient Voltage Surge Suppressors (TVSS)

- a. TVSS's will be furnished on the main switchgears to provide a level of protection against the transients created by the incoming utility power or large motor loads for the facility.

## 4. Photovoltaic System

- a. It is anticipated that provisions will be made for a possible installation in the future of up to a 30kW Photovoltaic System. The provisions shall include indication on the plans for designated areas for future inverter equipment in the building and future photovoltaic modules on the roof.

## 5. Lighting and Lighting Control

- a. Egress emergency and exit lighting, will be provided with integral battery packs. Consideration will be given to providing emergency power for lighting from Generator. The initial cost differential could be offset by the reduced maintenance costs over time.
- b. The indoor lighting system will consist primarily of energy-efficient LED lighting fixtures. Lighting controls will consist of local switches, room occupancy sensors and Lighting Control Panels
- c. The outdoor parking lot lighting system will consist of high intensity discharge lighting fixtures (to match lamp type of existing Rinx's) and will be full cut-off type lighting. The exterior grounds lighting will be a combination of bollard and building mounted fixtures to provide adequate safety and security lighting around the buildings and the walking path areas. Lighting controls will consist of combination photocell and time clock systems.

## 6. Low Voltage Systems

- a. It is anticipated that three (3) 4" underground conduits for Phone, Fiber and Cable TV will be installed from Terry Road down the Park's access road to a Point of Entry at the northeast corner of the building's basement.
  1. Conduits under the raised floor will be provided for connections from the Point of Entry to the Server Room on the west side of the building.
  2. This Server Room will be main distribution point for data/phone Cat 6 wiring throughout the building.
  3. Cable TV cabling will distributed from the Point of Entry in the basement.
- b. Security System is anticipated to include exterior door access control and exterior/interior security cameras.

## **PLUMBING**

1. Domestic Water- A new 1 ½ inch water service will be supplied to the building from the existing on-site Suffolk County water main. If the site water main is currently protected with an approved backflow prevention device (RPZ), which we believe to be the case, a local RPZ within the building will not be required.
2. An indirect domestic hot water heater, approximately 30-40 gallons will supply hot water to the lavatories, kitchen sink and janitor closet. A hot water recirculation line will be provided per Code to maintain hot water at the further point without delay. At the current time, it is anticipated that the water main pressure will be sufficient and a domestic water booster pump will not be required.
3. Fixtures-The plumbing fixtures will be ADA compatible in accordance with Code. All faucets will be electronic for automatic on-off operation and the urinals will be the waterless type for the purpose of water conservation.
4. Sanitary -The sanitary system will be a conventional gravity system which will exit the building on the south side of the building and discharge into an approved on-site Suffolk County Health Department approved sanitary septic and leaching system.
5. Roof Drains- There will be no interior roof drainage system. The roof drains will be exterior and the water runoff will be captured and used for various irrigation uses as part of a water conservation design plan

6. Gas Service- Will be supplied from National Grid via an onsite gas main that presently serves the existing Rinks building. The gas meter will be located on the north side of the site and a low pressure gas main will supply the boiler and gas fired standby generator