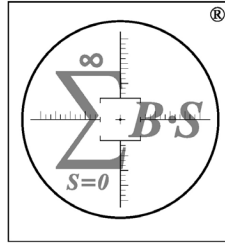


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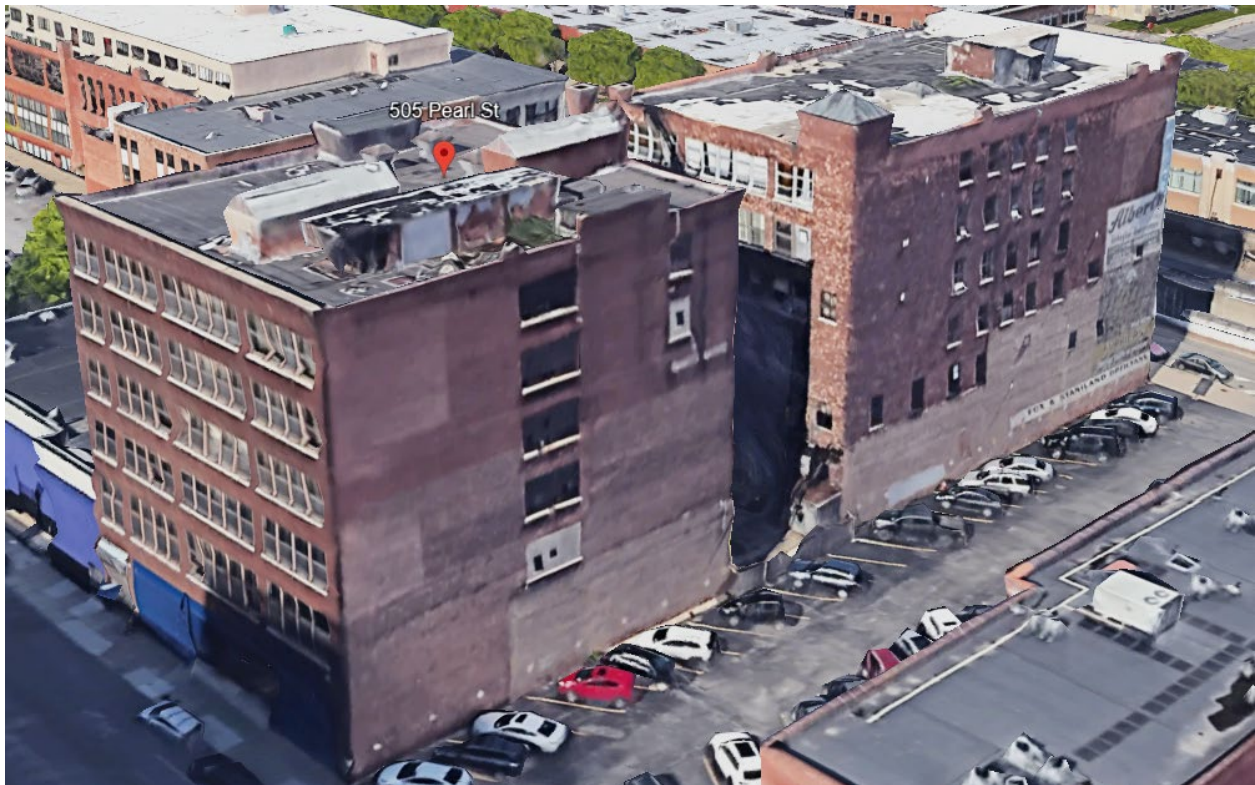


# 505 Pearl Street

## M/E/P/FP BASIS OF DESIGN

James Bowman, PE, LEED AP BD+C

12-05-23



Basis of Design (BOD)

### Objective:

The objective of this document is to provide a dynamic process of review between the owner and design team of the systems to be incorporated as part of the building construction by identifying and attaining the owner's project expectations.

### Process:

The Owners Project Requirements (OPR) shall be the basis to identify the functional requirements of the project and the expectations of the building use and operation as it relates to the systems to be commissioned. Achieving this path requires an ongoing dynamic process between the design team and project owner in collaboration to achieve a coordinated result, meeting expectations and performance goals within project constraints. This process includes several interactions between Architect, Site Engineer, MEP Engineers and the Owner from the onset of design through system performance verification.

### Primary Design Assumptions:

- Space Use: The building shall be utilized for Residential Apartments, small commercial and House services. The building shall also have common areas to be served on separate house utilities, natural gas, domestic water and electric.
- Climatic Design Conditions: The climatic design conditions used for the project are based from Weather Data tables as published by the ASHRAE Fundamentals Handbook. This project is based on Buffalo, New York data:
  - Cooling Design Dry-Bulb and Mean Coincident Wet Bulb used are based on 1% of the total hours that have been equaled or exceeded during the months of June through September. These values for Buffalo, NY are 92° F db / 73° F wb.
  - Heating Design Temperatures are selected based on 99.6% of the total hours that have been equaled or exceeded during the months of December through February. This value for Buffalo, NY is 0.0° F.
  - Indoor Conditions used are per the International Energy Conservation Code (as adopted by New York State). The interior design temperatures used shall be 72° F (adjustable) for heating and 75° F (adjustable) for cooling.
- Space Zoning: Space zoning is derived based upon several factors such as; exterior orientations, space population, internal heat sources, space utilization, and economics.
- Operations and space environmental requirements: Space environmental conditions shall be maintained based upon anticipated occupancy schedules in Common Areas and Tenant demands within Apartment units. Zone temperature set point during occupied times shall be set by the area occupant using programmable control panels and thermostats to adjust settings in Common Areas and 24/7 programmable thermostatic controls within Apartments. Air quality shall be achieved using outside air ventilation



and air handling filtration using an ASHRAE defined MERV 13 efficiency rating. Humidity control shall be maintained during summer operation only.

#### MECHANICAL HVAC:

- Applicable Codes:
  - ✓ 2020 Residential Code of NYS.
  - ✓ 2020 Building Codes of NYS.
  - ✓ 2020 Plumbing Code of NYS.
  - ✓ 2020 Fuel Gas Code of NYS.
  - ✓ 2020 Fire Code of NYS.
  - ✓ 2020 Energy Conservation Code of NYS.
  - ✓ 2020 Mechanical Code of NYS.
  - ✓ Current National Electrical Code.
  - ✓ New York State Department of Labor Rules and Regulations.
  - ✓ New York State Department of Health.
  - ✓ Federal Occupational Safety and Health Act – OSHA.
  - ✓ Life Safety Codes, NFPA 101.
  - ✓ Local Codes and Ordinances.
  - ✓ NEMA Standards.
  - ✓ Underwriters Laboratory (UL).
  
- Applicable Guideline Standards:
  - ✓ ASHRAE 90.1
  - ✓ ASHRAE 55
  - ✓ ASHRAE 62.1

#### Narrative Systems Descriptions:

- HVAC&R:
  - Design Parameters:
    - Building Apartment Load calculations will be developed using Carrier HAP load calculation software.
    - Ventilation Air rates are to be designed based on ASHRAE 62.1.
    - HVAC – We propose heat pump high wall and cassette split systems with to serve a majority of the building. Each indoor unit will be located either suspended from ceilings or wall mounted and will serve a dedicated zone, defined by space occupancy, orientation and load.
      - i. Individual spaces (apartments) shall be heated and cooled by split electric heat pump systems with a condensing unit located at the roof to serve heating/cooling within each apartment. Apartments shall be provided with programmable thermostats for occupant control and



with each apartment metered for energy usage responsible by the tenant(s). Carrier equipment is suggested as a basis of design for apartment units. We anticipate an average of one 1.5-2 Ton condensing unit and two high wall units per apartment. One located in the living/kitchen area and the second to be located within the unit bedroom.

- ii. Fully concealed ductwork shall be provided in areas scheduled for drop ceilings or lowered GYP ceiling areas. Apartment unit ventilation and exhaust ductwork shall be installed and routed through the building structural members and be exposed spiral style.
  - iii. Natural gas supply/services and venting to apartments will not be required as electric will be the energy source for heating, cooling, cooking, cloths drying and hot water generation.
  - iv. Common areas served via house services shall be served from split systems and electric heat pumps in areas requiring individual controls such as offices, fitness and other common areas to the tenants. We recommend Carrier as the basis of design (LG as an alternate manufacturer) for split systems and Heat Pumps. Suspended cassette style units such as Carrier 40VMF024A--3 shall be utilized in common areas and other public gathering spaces such as fitness rooms etc.
  - v. Outside air to Commercial Tenants, Public and Common spaces will be provided by dedicated direct expansion electric cooling / heating roof-based makeup air units with energy recovery. Apartment ventilation and exhaust shall be served by these units and fully ducted with 100CFM ventilation air provided and 50 CFM each removed from the unit toilet room and kitchen area. Common area exhaust air shall be captured from toilet rooms and corridors to provide a net neutral fresh air / exhaust air balance. Common corridors shall have set points of 70-75°F and be net neutral air pressurization. We anticipate two 10-ton Carrier 90kW electric Energy Recovery Units required for proper heating/cooling and ventilation of all tenants and common area spaces. Ventilation air will be ducted to the rear of each terminal unit (or directly to a wall/ceiling Diffuser) for distribution into the occupied spaces within all separate spaces such as apartments, commercial tenants, fitness, gathering and office spaces.
- HVAC – Misc Areas – Various common areas such as fitness and gathering areas shall be served from a common 15 Ton (Estimated size) VRF system to maintain baseline environment. Ventilation rates shall be maintained via the central ventilation system to maintain compliance with ASHRAE 62.1 standards. Basis of design is Carrier, with LG and Samsung as alternate, acceptable manufacturers. Elevator shafts shall be conditioned with high-wall heat pumps to temper the shafts to a minimum temperature as required by the selected manufacturer. Corridors, electrical and mechanical areas are anticipated to be served from the energy recovery system. Anticipate four ceiling cassettes suspended in the fitness/amenity room. Include all refrigerant piping and sizing from the manufacturer. Common areas such as



Stairs and Vestibules will be provided with unitary equipment (Electric Wall Heaters or Electric Ceiling Heaters) with an integral, tamperproof thermostat. Basis of design is Markel, with Q'Mark and Indeco as alternate, acceptable manufacturers.

- HVAC – Commercial Tenants shall be served from separate Heat pump split systems at 1 ton per 300 sq.ft. (Estimated size) to maintain baseline environment. Ventilation rates shall be maintained via the central ventilation system to maintain compliance with ASHRAE 62.1 standards. Basis of design is Carrier, with LG and Daikin as alternate, acceptable manufacturers. Commercial tenants are proposed to utilize cassette style terminal units suspended from the ceiling structure.
- Temperature Control: Space temperature control shall be achieved via separate control panels and thermostatic controls for all rooftop equipment and terminal units in common/commercial areas. Apartment units are proposed to be controlled by individual 24/7 programmable thermostatic controls. Minor unitary equipment, such as unit heaters and split systems, may be controlled via local electro-mechanical control components.
- Ductwork. All ductwork shall be constructed in compliance with SMACNA standards, and insulated to meet or exceed Energy Code requirements. All galvanized steel ductwork shall be minimum 26-gauge and all aluminum ductwork shall be minimum 24-gauge. All supply ductwork shall be sized per the equal friction method and at a minimum of 0.08” drop per 100 feet. All return ductwork shall also be sized per the manual equal friction method at a minimum of 0.08” drop per 100 feet.
- Snow melt: anticipate providing electric snow melt systems to cover the building entrances. Other areas of snow melting to be provided as directed by the stakeholders. Snowmelt zones shall utilize in-slab snow sensors in combination with exterior temperature sensors to activate separate zones around the building perimeter.



- ELECTRICAL:
  - Design Parameters:
    - ✓ National Electrical Code (2017 NEC)
    - ✓ State of New York Energy Code
    - ✓ Fire Code of New York State
    - ✓ Energy conservation Construction Code of New York State
    - ✓ Building code of New York State
  
    - ✓ Life Safety Codes, NFPA 101
    - ✓ Local Codes and Ordinances
    - ✓ NEMA Standards
    - ✓ Underwriters Laboratory
    - ✓ Electrical systems including power distribution, grounding, fire alarm and emergency lighting shall be installed to meet requirements of local codes and regulations as well as National code guidelines.
  
- ELECTRICAL DISTRIBUTION SYSTEM
  - The main electrical gear shall be installed in one dedicated electrical room within the sub grade basement level. We are currently waiting for service confirmation from NGRID and have two service scenarios awaiting confirmation:
    - ✓ Scenario 1: Two new 208Y/120V three phase 1,600A electrical services. One shall serve a 2000A service entrance rated piece of distribution gear to serve house, fire pump and commercial tenants. The other service shall terminate a 1600A main breaker section feeding ten 5 socket, 225A ez-meter packs each serving apartment units for a total of fifty (50) apartments. The general network routed beneath Pearl Street is anticipated to support the project at this time. The house electrical service is estimated to be 1200A at this time and shall employ CTs at the distribution section for metering. The fire pump service is estimated to be 150A, 208V three phase and also is required to use CTs for metering per NGRID Standards. Commercial tenants shall utilize a separate metering section with 208V three phase 200A CBs being the maximum size service anticipated per tenant. Apartment electrical services shall be metered from separate electrical meters within the electrical room via Square-D e-z meter packs or similar metering. Each apartment shall receive a 150A single phase, 30 circuit load center fed from a 150A main breaker emanating from the metering stacks. All interior apartment wiring is to comply with the current NEC requirements for non-combustible construction and be armored type MC cable including feeders from the main electrical room. Provide GFCI and AFCI protection as required.





- Enclosed offices, storage rooms, mechanical rooms, public toilet rooms shall be provided with wall mounted occupancy sensors with integral switching. Rooms with exterior windows shall have daylight harvesting controls.
  - Lounges, offices and similar areas shall be provided with ceiling mounted occupancy sensors with toggle switch manual controls. Rooms with exterior windows shall have daylight harvesting controls.
  - Corridors shall be provided with ceiling mounted occupancy sensor for light reduction when unoccupied.
  - Light fixtures serving as emergency lighting, will be wired from a UL924 emergency bypass / shut-trip shunt trip relay to support both “normal” and emergency circuit power feeds.
  - Open areas not controlled with local occupancy sensors will be controlled via a lighting control timer (Intermatic next generation timer) for occupied / unoccupied operation with night lighting circuits wired around the timer. Remote override switches shall be provided and wired to the timer override input.
- Site Lighting (supplied by house power panels):
  - General - Lighting control will comply with the latest requirements of the 2020 NYS International Energy Conservation Code and Buffalo, NY requirements.
  - Light fixtures shall be LED style, dark sky compliant, control by photocell with motion sensor activation to allow 50% dimming capability.
- Fire Alarm and Detection Systems
  - Fire alarm systems will be provided as required per the 2020 Fire Code of NYS. Communication with a supervising station is required (off-site). Fire alarm system equipment will be specified to be addressable intelligent / analog to minimize nuisance alarm and simplify testing, inspection and maintenance. Additional NAC extender panels shall be located throughout the building as needed for notification appliances within all common areas and apartments.
  - Electrical power supply for fire alarm control equipment shall emanate from main lugs of house service main distribution panels wired per the AHJ requirements. Include a single phase, 15A fused disconnect switch accessible only to authorized personnel, and shall be identified as "FIRE ALARM CIRCUIT." Standby power batteries will be sized to provide 24 hours of standby power in addition to 5 minutes in full load alarm in accordance with NFPA 72 requirements.





- Fire alarm device and appliance mounting heights will comply with NFPA 72 and 2020 NYS Building Code requirements. The following devices shall be incorporated in building system:
  - i. Pull stations.
  - ii. Smoke detectors.
  - iii. Duct smoke detectors (for commercial HVAC units +2,000 cfm).
  - iv. Combination smoke / CO detectors.
  - v. Heat detectors.
  - vi. Strobes.
  - vii. Horn / Strobes.
  - viii. Flow and Tamper Switches.
  - ix. Low Air Pressure alarms for dry sprinkler systems.
  - x. Elevator Recall
  
- Addressable input control modules shall be included for elevators and HVAC energy recovery systems to shut down equipment upon fire alarm system activation.
  
- Elevator landing two-way communication system. Include call station in main lobby with emergency call boxes located at each floor's elevator lobby as required by code.
  
- Monitoring modules shall be included for elevators, apartment 120V smoke, CO detectors, sprinkler system tamper and flow devices and dry sprinkler system compressor.

#### SECURITY AND ACCESS SYSTEMS

- Video Management System
  - IP network-based cameras will be specified for indoor and outdoor applications. Megapixel resolutions with both day and night modes.
  - Cameras will be networked back to the closest data closet to connect to the network video recorder which will have video retention of up to 30 days.
  - An intuitive 'drag & drop' tool makes it extremely easy for operators to set up a display of live and recorded images on a single screen or video wall, with customizable layouts and sizes.
  - Zoom windows which, with just simple clicks of a mouse, enables operators to zoom in to see close up detail of any suspicious activity.
  - Motion detection and video analytics support generate alerts when user defined incidents occur.
  
- Access Control (Main Exterior Doors Only) All apartments – Keyed Style
  - IP Based cloud access control system. All controlled doors will homerun to the closest data closet.
  - Event tracking for door activity and event classification to organize that activity by critical action needed, warning alert, or information for reporting.
  - Device status showing a focused display of all devices in the building platform.



- Site and door management to set up access perimeter and interior doors.
  - Schedule creation to automate dates and times that occupants can gain access.
  - Admin management to support customized role-based permissions User management, credential management and group access permissions.
  - Lockdown to secure the facility in an emergency.
  - Control access to the building from any device, anywhere.
  - Global access for facilities management.
  - Mobile capability.
- Video Intercom
    - Entry control panel can simultaneously call multiple residents, or a single resident by a variety of methods. These methods include direct telephone dialing, mobile app calling and calling to one or more resident monitors.
    - Visitors can choose to contact all residents of an apartment or select an individual resident to contact to allow access.
    - Residents using the mobile app, can share their own live video stream when answering, providing real-time face-to-face audio/video communications.
  - Site work:
    - Electrical contractor will be responsible for the following underground installations:
      - i. Network electric service.
      - ii. Power circuiting for site lighting.
      - iii. Incoming telephone and cable television service conduits.
    - Electrical Contractor is responsible for powering all site lighting. A majority of exterior lighting is expected to be building mounted due to tight site constraints.



## PLUMBING SYSTEMS:

- Design Parameters:
  - ✓ 2020 Residential Code of NYS.
  - ✓ 2020 NYS Building Codes.
  - ✓ 2020 Plumbing Code of NYS.
  - ✓ 2020 Fuel Gas Code of NYS.
  - ✓ 2020 Fire Code of NYS.
  - ✓ 2020 International Energy Conservation Code of NYS.
  - ✓ New York State Department of Health.
  - ✓ Local Codes and Ordinances.
  - ✓ NEMA Standards.
  - ✓ Underwriters Laboratory (UL).
  
- Applicable Guideline Standards:
  - ✓ ASPE/ANSI 45
  
- Domestic Water Supply:
  - Domestic Water Service (Cold Water) shall be designed as new. A new 4" water service with RPZ is anticipated for the building. Domestic Cold Water piping shall be insulated copper with pro-press fittings, CPVC, or PEX. A duplex domestic booster system is anticipated to support the building due to building size, elevation and available pressures available at the site.
  
  - Domestic hot water piping systems are proposed to be served from separate electric water heaters, final sizing and recovery rates TBD, based on fixture count per apartment. Domestic Hot Water piping shall be insulated copper with pro-press fittings, CPVC, or PEX. Tenants will be responsible for their own utility expenses in generating hot water. Anticipate AO Smith 40 gallon low-boy style 6kW electric hot water heaters for apartments. Commercial tenants shall also utilize similar style water heaters with sizing TBD. Common area toilet rooms, stand alone sinks and laundry areas shall be served from point of use tankless electric water heaters or tank type electric water heaters with final sizing and recovery rates TBD. All water heaters to be equipped with expansion tanks, mixing valves, drain pans and drain connections to sanitary system.
  
  - All commercial tenants and apartments shall be separately metered. Water consumption metering shall be provided by Energy Management Systems (<https://ems3.com>). The plumbing contractor is responsible for installation of a 3/4" poly spacer tube per tenant to allow for meter and wiring installation. Tubing will be supplied by EMS and installed by the plumbing contractor.



- Sanitary and Vent System:
  - Sanitary and vent piping shall be connected to all plumbing fixtures, floor drains, etc. Fixtures shall flow by gravity and connect to new sanitary and vent outlets located below the respective floor and above to vent piping. Sanitary and vent piping may be PVC in all concealed areas – all other areas are to be Cast Iron. We anticipate utilizing the two existing 6” sanitary laterals to Pearl Street at this time.
    - i. Drains required for 4” RPZ on the Domestic Water Service shall be routed to a floor drain and pumped from the building.
    - ii. Condensate for all HVAC equipment is to be indirectly connected to the sanitary laterals throughout the building.
  
- Storm System:
  - Storm piping system shall be gravity utilizing MyFab or JRSmith roof drains – for standard roof drains. Storm piping shall be insulated Cast Iron. Overflow drains are to be overflow roof drains or scuppers and have Downspout nozzles at building exit 12” above grade. Nozzles to have insect screens serving overflow roof drains.
  
- Natural Gas System:
  - Low pressure gas (7-14" w.c.) will be supplied to the building from a new natural gas service. One house meter is anticipated for necessary loads. Piping is to be black steel pipe sized as calculated to support loads and indicated on plumbing plans.
  - One meter shall be installed to serve house requirements as necessary such as the generator. Gas piping will be connected to all mechanical, public kitchen, and plumbing equipment utilizing natural gas as a fuel source. 3” natural gas piping to be installed to the roof to support the new generator with estimated demand of 1,500,000 BTU/hr at this time.
  
- Plumbing Fixtures:
  - All plumbing fixtures (lavatory, water closets, faucets, tubs, etc.) are compliant with the accessibility requirements of the Building Code of the State of New York, as well as other pertinent ADA requirements.
  - Plumbing fixtures shall be water conserving and enhance water use reduction criteria and rated as follows:
    - i. Water Closet (Toilet) - Maximum 1.28 GPM (Public Areas) – Maximum 1.28 GPM (Apartments).
    - ii. Urinal – Maximum 0.5 GPM.
    - iii. Lavatory with Electronic Sensor Faucet – Maximum 0.5 GPM
    - iv. Lavatory with Manual Faucet - Maximum 0.5 GPM.



- v. Tub Hand Shower – Maximum 2.0 GPM.
- vi. Kitchen Sink Faucet - Maximum 1.5 GPM.
- vii. Mop Sink Faucet - Maximum 2.5 GPM.

## FIRE PROTECTION SYSTEMS:

- Design Parameters:
  - ✓ 2020 NYS Building Codes.
  - ✓ 2020 Fire Code of NYS.
  - ✓ NFPA 13: *Installation of Sprinkler Systems.*
  - ✓ NFPA 14: *Standard for the Installation of Standpipe and Hose Systems*
  - ✓ NFPA 20: *Standard for the Installation of Stationary Pumps for Fire Protection*
  - ✓ NFPA 24: *Standard for the Installation of Private Fire Service Mains and Their Appurtenances.*
  - ✓ NFPA 25: *Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems*
  - ✓ NFPA 70: *National Electrical Code.*
  - ✓ NFPA 72: *National Fire Alarm and Signaling Code.*
  - ✓ Life Safety Codes, NFPA 101.
  - ✓ NFPA 291: *Recommended Practice for Fire Flow Testing and Marking of Hydrants.*
  - ✓ New York State Department of Health.
  - ✓ Underwriters Laboratories Fire Protection Equipment Directory.
  - ✓ Equipment manufacturers' installation directions and recommendations.
  
- Fire Protection Water Supply:
  - Hydrant flow testing in accordance with NFPA 291 must be conducted to measure the water supply available for fire protection. Given the NFPA 13 'light hazard' fire hazard classification of the facility and building height combined with known available pressures in the area, the need for a fire pump is anticipated. The indoor parking area is classified ordinary hazard, group II and will be served from a dry sprinkler system. The preliminary placeholder is a 25HP electric fire pump with final sizing TBD during designs.
  
  - A fire service is existing at the building and shall be repurposed for the renovation. We anticipate the 6" fire protection service currently serving the building will be adequate for the renovations.



- Backflow Prevention:
  - A double check backflow preventer is minimally required by the building code. It is assumed that a double check valve appliance will be acceptable on the new fire protection service. A test header will be provided to permit full flow testing of backflow preventers. Double check backflow preventors shall be arranged in a vertical position and manufacturer by Watts or Wilkins with valves included.
  
- Fire Sprinkler Systems:
  - The building will be protected by wet pipe sprinkler system. NFPA 13 design parameters for light hazard will be used. Sprinkler systems will be designed to provide 0.15 GPM / sf over 1,500 s.f. in Common Areas and Residential sprinklers in Apartments. Remote area reduction may be taken as permitted by NFPA 13-11.2.3.2.3.1. Any covered loading docks or apartment balconies will be protected with dry sidewall or dry pendent sprinklers.
  - Fire protection piping will be black steel; schedule 40 for pipe diameters 2" and smaller; schedule 10 for pipe diameters 2-1/2": and larger. All sprinkler piping must be installed in heated spaces not subject to freezing temperatures. CPVC may be utilized only if requested and approved by the owner.
  - One fire department connection (FDC) will be provided on the exterior of the building. The size and type of FDC will be coordinated with the local, first responding fire department.
  
- Fire Standpipe System:
  - A manual wet, class 1 standpipe system is required in each stairwell with standpipe hose connections located at intermediate floors as directed by the Fire Marshal. Design and installation shall comply with NYS & NFPA14 requirements.
  
- Portable Fire Extinguishers:
  - By others.



## HIGH RISE CONSTRUCTION REQUIREMENTS:

The addition of a rooftop fitness and amenity area will most likely trigger high rise construction requirements of NYS to be complied with. The addition of the following equipment should be priced as an alternate to the project.

- Design Parameters:
  - ✓ 2020 NYS Building Codes.
  - ✓ 2020 Fire Code of NYS.
  - ✓ NFPA 13: *Installation of Sprinkler Systems.*
  - ✓ NFPA 14: *Standard for the Installation of Standpipe and Hose Systems*
  - ✓ NFPA 20: *Standard for the Installation of Stationary Pumps for Fire Protection*
  - ✓ NFPA 24: *Standard for the Installation of Private Fire Service Mains and Their Appurtenances.*
  - ✓ NFPA 25: *Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems*
  - ✓ NFPA 70: *National Electrical Code.*
  - ✓ NFPA 72: *National Fire Alarm and Signaling Code.*
  - ✓ NFPA 92: *Standard for Smoke Control Systems.*
  - ✓ NFPA 101: *Life Safety Code.*
  - ✓ Underwriters Laboratories Fire Protection Equipment Directory.
  - ✓ Equipment manufacturers' installation directions and recommendations.
  
- HVAC:
  - Stairwell pressurization systems shall be required for each stair tower. A VFD supply fan at the top of each stair shall be provided with pressure sensors within the stairs controlling the speed of the fan to maintain positive pressure of 0.10 to 0.45 in water column. Fans shall be activated by the fire alarm system and shall be wired from the emergency power source (Generator life safety panel).
  
  - Elevator shaft pressurization systems shall be required for each shaft. A VFD supply fan at the top of each shaft shall be provided with pressure sensors within the stairs controlling the speed of the fan to maintain positive pressure of 0.10 to 0.25 in water column. Fans shall be activated by the fire alarm system and shall be wired from the emergency power source (Generator life safety panel).
  
- ELECTRICAL AND FIRE ALARM:
  - Fire alarm system shall be voice evacuation system with firefighter phones. Provide annunciators and peripherals required in the fire command center.
  
  - Provide two-way communication system as required by the City of Buffalo, NY Fire Marshall.



- Standby generator size increase to 175kW natural gas. Provide annunciators and peripherals as required in the fire command center. Second breaker within generator changed to 200A from 150A to serve fire pump.
- Increase fire pump electrical service size and feeder sizing from the standby generator. Fire Pump increased from 25HP to 40HP.
- Wiring of Stair and Elevator pressurization systems, annunciators and controls.
- FIRE SPRINKLER SYSTEM:
  - Assumed 25HP fire pump increased to a 40HP electric fire pump to serve Standpipe requirements.
- Fire Standpipe System:
  - Manual wet, class 1 standpipe system changed to a semi-automatic wet standpipe system is required in each stairwell with standpipe hose connections located at each floor or as directed by the Fire Marshal. Design and installation shall comply with NYS & NFPA14 requirements. Standpipes shall be sized for 250GPM flow at 100psi pressure at the top of the standpipe per code.
- FIRE COMMAND CENTER & COMPONENTS:
  - Fire command center shall be provided with the following components, annunciators etc. as required in the NYS building code by the respective installing contractors:

#### **508.1.6 Required Features**

The *fire command center* shall comply with NFPA 72 and shall contain the following features:

1. The emergency voice/alarm communication system control unit.
2. The fire department communications system.
3. Fire detection and alarm system annunciator.
4. Annunciator unit visually indicating the location of the elevators and whether they are operational.
5. Status indicators and controls for air distribution systems.
6. The fire fighter's control panel required by Section 909.16 for smoke control systems installed in the building.
7. Controls for unlocking *interior exit stairway* doors simultaneously.
8. Sprinkler valve and water-flow detector display panels.
9. Emergency and standby power status indicators.
10. A telephone for fire department use with controlled access to the public telephone system.
11. Fire pump status indicators.





12. Schematic building plans indicating the typical floor plan and detailing the building core, means of egress, fire protection systems, fire-fighter air-replenishment systems, fire-fighting equipment and fire department access, and the location of fire walls, fire barriers, fire partitions, smoke barriers and smoke partitions.
13. An approved Building Information Card that includes, but is not limited to, all of the following information:
  1. 13.1. General building information that includes: property name, address, the number of floors in the building above and below grade, use and occupancy classification (for mixed uses, identify the different types of occupancies on each floor) and the estimated building population during the day, night and weekend;
  2. 13.2. Building emergency contact information that includes: a list of the building's emergency contacts including but not limited to building manager, building engineer and their respective work phone number, cell phone number and e-mail address;
  3. 13.3. Building construction information that includes: the type of building construction including but not limited to floors, walls, columns and roof assembly;
  4. 13.4. Exit access stairway and exit stairway information that includes: number of exit access stairways and exit stairways in building; each exit access stairway and exit stairway designation and floors served; location where each exit access stairway and exit stairway discharges, interior exit stairways that are pressurized; exit stairways provided with emergency lighting; each exit stairway that allows reentry; exit stairways providing roof access; elevator information that includes: number of elevator banks, elevator bank designation, elevator car numbers and respective floors that they serve; location of elevator machine rooms, control rooms and control spaces; location of sky lobby; and location of freight elevator banks;
  5. 13.5. Building services and system information that includes: location of mechanical rooms, location of building management system, location and capacity of all fuel oil tanks, location of emergency generator and location of natural gas service;
  6. 13.6. Fire protection system information that includes: location of standpipes, location of fire pump room, location of fire department connections, floors protected by automatic sprinklers and location of different types of automatic sprinkler systems installed including but not limited to dry, wet and pre-action;
  7. 13.7. Hazardous material information that includes: location and quantity of hazardous material.
14. Work table.
15. Generator supervision devices, manual start and transfer features.
16. Public address system, where specifically required by other sections of this code.
17. Elevator fire recall switch in accordance with ASME A17.1/CSA B44.
18. Elevator emergency or standby power selector switch(es), where emergency or standby power is provided.



This concludes our narrative of proposed systems to serve the 505 Pearl Street project. Please contact our firm with any questions or concerns.

Respectfully Submitted,



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James D. Bowman, PE, LEED AP  
*President*  
EBS Engineering, PC  
Engineered Building Systems

