

Environmental Analysis

Domestic Water Demand

The proposed Project will contain approximately 115,542 square feet of gross floor area. A 3-inch domestic water service will be extended from the water main at 24th Street, NW. The water service will be designed to provide water to the building's fixtures and equipment at a minimum pressure of 25 psig. Maximum pressure will not exceed 80 psig and flow velocity will not exceed 8 fps. The building's service main size is anticipated to be 3-inches in diameter, to serve domestic demands and 6-inches for fire protection requirements. Estimated design flow demand for the building is 140 gpm. A water pressure booster pump system will be provided in mechanical room at the B2 level. The booster pump system will be configured so that the system is capable of 100% of the total design flow with the loss of the largest pump.

Fire Service Demand

A 6-inch fire service entrance pipe will be extended from the main at 24th Street, NW based on the sizing requirements of NFPA-13, NFPA-14, NFPA-24, with a velocity of not more than 15 fps. The flow capacity will be based on the supply demand of the most hydraulically remote sprinkler zone plus inside/outside hose stream demands. For standpipe systems, fire service sizing criteria shall be based on the flow demand of the fire pump capacity at 150% rating, for testing in compliance with NFPA-25. Piping shall be sized to provide at least 10-psig net positive suction head pressure at the full demand.

Sanitary Sewer Demand

A sanitary waste and vent system will be provided for all domestic fixtures in the building. Plumbing fixtures will be drained by gravity through conventional soil, waste and vent stacks, building drains and building sewers to the street sewer. A sump pump located in mechanical room at the B2 level, will lift up the waste from the B1 and B2 levels and drain it to the main sanitary pipe that is routed under the slab at the first level. All fixtures will be trapped and vented to atmosphere. Vents will be extended through the roof.

The sanitary waste system will be designed to maintain a minimum velocity of 2 fps. The sanitary vent system will be designed so that the differential pressure at any point in the building does not exceed the 1-inch water column. The main sanitary pipe discharged from the building will be 6-inches in diameter and will extend to the sanitary main located below grade at 24th Street, NW. All design and installation will be in accordance with the International Plumbing Code and will be coordinated with the D.C. Water.

Stormwater Management

The site is located at 2300 K Street, NW, Washington DC (building address to change upon completion of the Project). The sewer in this area is a combined sewer area. Per the District Department of Environment regulations, quantity and quality is the required stormwater management system. A DC Sandfilter, with 8,300 square feet of greenroof at the building, will handle the quantity and quality of the site runoffs and will discharge to the existing 15-inch combined sewer at 24th Street, NW. The Project meets/exceeds the District Department of Environment water quantity and quality requirements.

Solid Waste Services

Solid waste and recycling materials generated by the Project will be collected by a private trash collection contractor.

Electrical Services

Primary electric service at 13.8KV voltage will be derived from PEPCO grid located at the northwest corner of site and PEPCO will provide a transformer vault and distribution transformer to have 480Y/277V secondary building utilization voltage. The primary system service capacity will be designed to serve the calculated connected load of the facility plus an additional 25 % for anticipated future loads. PEPCO will provide primary distribution transformer and make terminal at primary side of transformer at a charge to the Owner. Feeders from secondary of PEPCO transformer will be installed through underground ductbank from PEPCO transformer vault into the B2 level mechanical space. The feeders will be terminated on a 480Y/277V, 3Ø, 4W, 3000A service entrance rated switchboard.

All electrical systems will be designed to comply with the D.C. Energy Code. The transformer and bus underground vault will be installed in accordance with PEPCO's design guidelines.

Energy Conservation

The Project will be constructed in full compliance with Article 24 (Energy Conservation) of the D.C. Building Code. Conformance to code standards will minimize the amounts of energy needed for the heat, ventilation, hot water, electrical distribution, and lighting systems contained in the structure. The building will have high efficiency chillers, energy recovering air-handling units and 4-pipe chilled beams for heating and cooling. The HVAC system strategy is to reduce the overall airflow required and thereby the total energy consumed by the building. The ventilation system will employ CO₂ sensors to

regulate the outside air brought into the building. Similarly, high efficiency electrical system components will be provided. A daylight control system will be provided to minimize the use of electrical lighting when ambient light is available for illumination. A monitoring system will be provided for utilities for the building.

Erosion Control

Sediment and erosion control will be implemented during excavation and during construction per the District Department of Environment standards and specifications. Tree protection, inlet protection, construction entrance and sediment trap are the methods being use for this Project.