

Environmental Analysis

Domestic Water Demand

The proposed Project will construct approximately 24,126 square feet of new gross floor area. A 3-inch domestic water service will be extended from the water main at 21st 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. Design flow demand for the building is 90 gpm. A water pressure booster pump system will not be provided as a part of this design, as the recent hydrant flow tests have indicated adequate pressures in the 70-80 psig range.

Fire Service Demand

A 6-inch fire service entrance pipe will be extended from the main at 21st Street, NW based on the sizing requirements of NFPA-13 and NFPA-14 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 21st 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

Potential stormwater managements are currently being explored, and technologies under investigation include a cistern to store and permit reuse of captured water for a combination of purposes such as irrigation, flushing of toilets, and make-up water for mechanical systems, absorption systems (e.g. green roofs), and dissipation systems (e.g. drain fields).

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 208Y/120V secondary building utilization voltage. The primary system service capacity will be designed to serve the calculated connected load of the facility plus an additional 20 % 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 208Y/120V, 3Ø, 4W, 2000A service entrance rated switchboard.

All electrical systems will be designed to comply with the D.C. Energy Code. The transformer vault and underground ductbank 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. 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.