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Municipal Systems Impact Analysis
49 Walnut Street Residential Project
Wellesley, Massachusetts

PROJECT DESCRIPTION

It is a new 4-story residential construction, market-rate condominium project. The building will house 28 units. Indoor garage space will be located on the first floor.

Gross Building Areas

The project is in Wellesley, a Stretch Code community. On July 1, 2024, Wellesley adopted the Specialized Code.

The building systems will be designed in accordance with the Massachusetts State Building Code, 10th Edition and 225 CMR 23, Stretch Code for buildings 4 stories and over.

ELECTRICAL LOADS

Site and Utility Work

The building will be served by one pad mounted transformer. The location of the transformer will be coordinated with the power company during the design phase.

Based on the calculations the project demand load will be 721kVA and will require approximately 2,500amps at 120/208V, 3phase, 4 wire service.

All apartments will be separately metered. There will be a separate house meter to feed the common area loads.

Loads are calculated as follows:

49 Walnut Street House Loads:

Lighting……. 10 kVA
Air Conditioning……..……. 40 kVA
Misc. Load……..…. 30 kVA
Site Lighting…… 5 kVA
Elevators:……..... 80 kVA
Car Charging: 12@10 kw ea 120 kVA

Sub Total…… 280 kVA

28 Apartments…… 421 kVA

Total Connected…… 701 kVA

The diversified/demand load is anticipated to be 701kVA. There will be one 2,500amps switchboard rated at 120/208volt, 3phase, 4 wire to feed the building.

Electrical Distribution

Building electric service will consist of one switchboard located in the main electrical room. The switchboard shall serve all residential apartment units, house loads and all common areas. There will be one remote electric room on each floor. This is required to minimize the feeder runs to the apartment units and branch wiring to common areas to compensate for voltage drop. The rooms will be in a centralized location.

New house distribution and branch circuit panels will be provided in each new electric room. Panelboards rated 120/208V will service the house lighting, HVAC, and receptacle loads and miscellaneous equipment.

New meter centers will be located at each electric room and will distribute power via SER cables to each unit load center. Each unit will have a separate meter and 200amp load center and there will be one meter for the house loads.

A load center will be in each apartment to power the electrical loads. The apartment load will consist of the lighting, general power, electric stove, electric water heater, electric dryer, and all other appliances.

Each floor will include a central Tel/Data closet in the core area off the egress corridors.

Electric vehicle charging stations and vehicle lifts will be powered from the House switchboard. Electric vehicle charging stations shall be fed from a dedicated panelboard.

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NATURAL GAS

The natural gas will no natural gas utilized for this project

WATER & SEWER

Domestic water

Based on Zade preliminary calculations the maximum domestic water demand will be approximately 90 gpm (gallons per minute).

Sanitary Waste

In accordance with Title V, sewage flow is calculated as 110 gpd (gallons per day) per bedroom. The total sewer flow for the building will be 6,160 gpd (gallons per day).

Storm Drainage

Based on maximum rain flow of 4" / hr and the floor area of 33,085 sq. ft. the roof drains will collect approximately 81,500 gph (gallons per hour).

Maximum Water Demand for Fire Protection System

The parking garage with car stacker will require the maximum water demand.

1. Parking garage will contain 2-level of car stackers. The design criteria are based on NFPA 13-2019 edition including increase in sprinkler activation area by 30% and reduction by 25% for using high temperature rated sprinklers and another 25% for using k-11.2 sprinklers. Ceiling level sprinklers will only be provided.

Density:	0.4 gpm / sq. ft.
Sprinkler spacing:	100 sq. ft.
Combined Inside / Outside hose allowance:	500 gpm
The most hydraulically remote area at ceiling	2,000 sq. ft.
Sprinklers K-factor	11.2
Sprinklers temperature characteristic:	High

The estimated maximum water flow will be approximately 2,000 gpm.

Fire Alarm

The fire alarm service will consist of an underground municipal loop or radio master box that will communicate to the fire department and/or a listed central station.

The fire alarm system will consist of an addressable system. FACP will be in the main Electric room and Annunciator panel will be in the lobby. Detectors will be installed in all electric, telephone, storage, elevator pit and base building support areas. Smoke detectors will be installed at top of each Stairwell. The system will include manual pull stations along with horn/strobe devices along corridors and at egress exits.

The residential units will be provided with low frequency 520Hz horn devices in the sleeping areas and in the living areas of the units. A combination of local carbon monoxide and smoke detectors will be provided in the units per current codes.

Dual frequency Bi-Directional Antennae system will be provided for the building for fire department and other first responders' communication.

Two-way communication at area of rescue for the building will be provided in the elevator lobbies 2nd floor and up.

If the architect chooses to provide the smoke guard system, the system will be designed and shown on the architectural drawings. As part of the coordination process, Zade will provide a junction box with a 120V circuit to power the smoke curtain, a smoke detector to activate the smoke curtain, and show the test deploy switch to allow the fire department to test the curtain.