

Fifteen Wilson

(aka 40 Smith Place / 45 & 55 Wilson Road)

Cambridge, MA

Volume 03: Special Permit Application

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I. INFRASTRUCTURE

The following narrative describes the existing and proposed infrastructure systems within and surrounding the Project Site and discusses utility requirements for the Project and potential impacts to this infrastructure.

The Project will connect to existing City of Cambridge and private utility company systems in the adjacent public streets. As design progresses, all required engineering analyses will be conducted, and the final design will adhere to all applicable protocols and design standards ensuring that the proposed building is properly supported by this infrastructure. Detailed design of the Project's utility systems will proceed in conjunction with the design of the building and interior mechanical and plumbing systems.

The systems described herein include those owned or managed by the City of Cambridge Department of Public Works (DPW), Cambridge Water Department (CWD), Eversource Electric, Eversource Gas, private telecommunication systems, and on-site infrastructure. Existing infrastructure systems will be reviewed with the appropriate agencies to ensure that they are adequately sized to accept any increase in demand associated with the Project.

II. SANITARY SEWER INFRASTRUCTURE

The Project Site currently hosts existing lab/office commercial, and warehouse buildings. The Project design anticipates these existing building structures will be demolished for the construction of the new four-story commercial office and laboratory building that will include a limited amount of ground floor retail and a two-level subsurface parking structure.

In the final condition, the sanitary sewage from the new building structure will be collected within the subsurface garage and ultimately discharged to the existing 15-inch diameter municipal sewer main within Wilson Road, abutting the Project Site. The proposed building anticipates the installation of a new lab waste line serving the lab use due to the presence of a pH neutralization system within the garage. The new waste line will connect to the on-site 8-inch sanitary sewer service at a proposed sewer manhole structure for access purposes.

The Project's sanitary sewer generation has been estimated using design sewage flow rates obtained from 310 CMR 15.000: Septic Systems ("Title 5"). The following flow criteria has been evaluated for existing and proposed anticipated gallons per day (GPD) of sanitary sewer usage:

- › 75 GPD per 1,000 SF for Office
- › 200 GPD per 2,000 SF of Lab
 - This is an assumed rate based on similar Cambridge area projects
- › 75 GPD per 1,000 SF for Back-of-House
- › 50 GPD per 1,000 SF for Retail
- › 35 GPD per One (1) Seat of Restaurant

The Project proposes to generate approximately 45,676 GPD of sanitary sewer compared to 14,556 GPD within the existing condition, totaling a net increase of approximately 31,120 GPD of sanitary sewer generation for the proposed development. The estimated sanitary sewer generation is summarized in Table 1 below.

Table 1 Preliminary Sanitary Sewer Generation

Proposed Program	Unit/Area	DEP Category	Generation Rate*	Total Generation (GPD)
1 Wilson Road				
Lab	128,197 SF	Lab**	200 GPD / KSF	25,639
Office	85,465 SF	Office Building	75 GPD / KSF	6,410
Lobby/BOH	37,310 SF	Office Building	75 GPD / KSF	2,798
Retail	12,175 SF	Retail Store	50 GPD / KSF	609
Restaurant	292 Seats	Restaurant***	35 GPD / Seat	<u>10,220</u>
1 Wilson Road Total				45,676
Existing Buildings to be Demolished				
Office	38,417 SF	Office Building	75 GPD / KSF	2,881
Lab	57,626 SF	Lab**	200 GPD / KSF	11,525
Warehouse	10 Persons	Warehouse****	15 GPD / Person	<u>150</u>
Existing Buildings Total				14,556
Net New Sewer Flow				31,120
Proposed Water Demand*****				34,232

* 314 CMR7.00 Sewer System Extension and Connection Permit Program.
** Assumed lab use rate.
*** Restaurant seating capacity assumes 15 SF per 1 occupant per IBC 2015 Chapter 10.
**** Warehouse occupancy assumes 500 SF per person.
***** Proposed water demand based on estimated sewage generation with an added factor of 10 percent for consumption.

The sanitary sewer generation threshold for local Cambridge DPW Inflow/Infiltration (I/I) mitigation is 15,000 GPD. The Project anticipates continued discussions with Cambridge DPW regarding the applicable I/I mitigation project for the development. The Project anticipates utilizing the excess surplus of available gallonage from the ‘Sherman St I/I Mitigation Project’ to fully satisfy the 1 Wilson Road I/I mitigation needs. This is anticipated to be confirmed during the Stormwater Control Permit (SWCP) process, with the construction of the Sherman St mitigation project anticipated to be completed by the end of 2022.

III. WATER SERVICE INFRASTRUCTURE

The domestic water estimate for the Project is based on the projected approximate daily wastewater flow for the project. As shown in Table 1 above, the approximate net new demand for water is 34,232 gallons per day (GPD).

Water will be supplied to the proposed building via two (2) new 8-inch redundant water services. The project proposes to connect to the existing 12-inch water main within Smith Place with a 12-inch by 12-inch by 8-inch anchor tee and 8-inch gate valve, for each new domestic water service. Additionally, the project proposes one (1) new 8-inch fire protection service to the building connecting to the 12-inch water main within Smith Place with a 12-inch by 12-inch by 8-inch anchor tee and 8-inch gate valve. This new 12-inch water main manifold configuration will be furnished with three (3) 12-inch mainline isolation

gate valves to provide the necessary redundancy required by the Cambridge Water Department (CWD). Prior to construction hydrant flow tests will be completed to verify adequate flow and pressure for the building's sprinkler system.

The proposed water meter room location will be closely coordinated with CWD during final design. The water meter room location is intended to be located adjacent to the building façade within the first level of the subsurface parking garage. The new water meter configuration will be abutting the building wall, as required by CWD.

All existing domestic water and fire protection services will be discontinued prior to building demolition, meeting CWD standards. All existing service connections 4-inches or larger, will cut out the existing anchor tee at the water main and replace with new water pipe, following CWD standards.

The Applicant will work with CWD on the development of the Project design and submit plot plans for formal approval prior to the issuance of the Building Permit for the Project.

IV. STORMWATER MANAGEMENT

Under existing conditions, the Project Site is previously developed and predominantly covered by impervious surfaces comprised of building roof areas and surface parking lots. The existing buildings on the Project Site do not contain any form of known stormwater management in the existing condition. Stormwater is conveyed via enclosed pipe roof conduit and surface sheet flow to local catch basin structures on site. Stormwater discharges into the DPW-owned 30-inch storm drain within Wilson Road, without any known form of stormwater quality or quantity management.

The proposed stormwater management system will be designed to comply with the City of Cambridge standards and the MA DEP Stormwater Management Policy for new construction projects. This includes the management of stormwater for the difference between the 2-year 24-hour pre-construction runoff hydrograph and the post-construction 25-year 24-hour runoff hydrograph.

The Project anticipates evaluating storm events using rainfall volumes based on the National Oceanic and Atmospheric Administration (NOAA) Atlas Type III, 24-hour storm event for Boston (Station – Boston Logan International Airport). Local Cambridge rainfall depths may be evaluated for the year 2070 storm events, as requested by Cambridge DPW.

Under proposed conditions, the Project Site will not produce changes in either the pattern of or rate of stormwater runoff. Stormwater management controls will be established in compliance with DPW standards. The Project is not designed to result in the introduction of any peak flows, pollutants, or sediments that would potentially impact the receiving waters of the local municipal stormwater drainage system.

For the current design, the proposed building roof areas will discharge through an approximate 40,000-50,000 gallon rainwater harvesting tank, designed to reduce peak stormwater rates and volumes in addition to reducing the total phosphorus load from the project site. Natural stormwater infiltration systems will be located on the Project Site where existing conditions allow for groundwater recharge, such as the existing floodplain area. Stormwater infiltration will promote groundwater recharge and reduce stormwater peak rates and volumes, in addition to reducing total phosphorus load from the Project Site. In locations on the Project Site where stormwater infiltration is not feasible, stormwater detention will be utilized to mitigate stormwater rates discharging from the Project Site.

The final design will incorporate facilities to reduce phosphorus on-site by 65 percent compared to the existing conditions, in compliance with DPW standards. These facilities may include added pervious area such as green roofs, stormwater infiltration systems, stormwater bio-retention areas, and/or stormwater harvesting tanks. The Project will implement stormwater Best Management Practices (BMPs) in conformance with DEP's Stormwater Management Standards.

The Project's construction documents will include measures and specifications regarding erosion and sediment controls and barriers (e.g. silt fence, silt sacks). Construction dewatering discharges will be appropriately controlled and discharged in accordance with National Pollutant Discharge Elimination System (NPDES) and state and local dewatering standards.

The Project anticipates detailed design review with DPW throughout the design process. The detailed stormwater management report is anticipated to be coordinated with DPW throughout final design and submitted in part to the SWCP process, prior to Building Permit submission.

V. CAMBRIDGE 2070 RESILIENCY

The City of Cambridge has developed the Climate Change Preparedness & Resilience Plan (CCPR), which is intended to commit to prepare the community for impacts to anticipated climate change. In part to the CCPR, the City has developed an online FloodViewer (v2.1), which provides anticipated flood event elevations for the year 2070.

The Project team has reviewed the 2070 resiliency elevations within the current Cambridge FloodViewer for both Precipitation and Sea Level Rise / Storm Surge (SLR/SS). In review of the existing Project Site, the current 2070 10-year storm event is equal to elevation 22.0 CCB, and the 2070 100-year storm event is equal to elevation 22.5 CCB. However, the Project understands the City of Cambridge will be revising these projected elevations for the year 2070. Based on preliminary information provided by Cambridge DPW on November 22, 2021; the new projected storm elevations are equal to 22.05 CCB for the 2070 10-year storm event, and 23.35 CCB for the 2070 100-year storm event.

Given the forthcoming revisions to the projected 2070 flood elevations by DPW, the Project anticipates designing the new building towards and being resilient to the 2070 100-year storm event elevation of 23.35 CCB, which is greater than the current DPW design requirements.

The Project is designed to set the proposed building Finished Floor Elevation (FFE) to a minimum elevation of 23.35 CCB. This elevation will allow for the proposed building to be resilient towards the 2070 100-year storm elevation. Additionally, critical infrastructure such as electric switchgear and transformers will be raised to a minimum of elevation 23.35 CCB on the Project Site or within the proposed building.

At locations where it will not be feasible for the Project to meet the 2070 100-year flood elevation, such as the proposed garage entrance and proposed loading docks, temporary deployable flood measures will be installed to provide additional resiliency at these critical locations.

VI. OTHER UTILITIES

In addition to sanitary sewer, water service and stormwater management infrastructure, each proposed building within the Project Site will also require natural gas, electrical, and telecommunication services, which are available adjacent to the Project Site.

The design team will work with the respective private utility providers on sizing and configuration of services. The design of these utilities will be included on the DPW and CWD permit drawings to ensure that the work is coordinated as part of the public review process.

VII. NOISE MITIGATION NARATIVE

Fifteen Wilson Road will be designed to meet two separate sets of noise mitigation criteria: the Cambridge Noise Control Ordinance, and the separate (and generally more stringent) requirement applicable in the Alewife Overlay district as set forth in Section 20.94.2 of the Zoning Ordinance, which requires that *“Any noise, vibration or flashing shall not be normally perceptible without instruments at a distance of one hundred (100) feet from the premises”*. To address these standards, sound emanating from the Project’s mechanical equipment will be managed and minimized by adopting the best available and feasible practices regarding the location and sizing of equipment, selecting appropriate equipment, and implementing sound attenuation measures as needed to meet the requirements identified above.

Most of the building mechanical equipment, including air handling units, chillers, boilers, and emergency or stand by generators, will be located inside an enclosed mechanical penthouse. The cooling towers, which must be outdoors and do require access to air flow, have been intentionally located on the northwest side of the building, in a location with the furthest distance to an adjacent property of separate ownership. Exhaust fans, which also require access to free air flow to ensure proper disbursement, will be in similar fashion to the chillers and will be fitted with appropriate noise attenuators. Other sorts of mitigation strategies, such as baffles and non-line-of-site air flow design, will be employed as necessary to ensure compliance.

VIII. TREE STUDY

The Tree Mitigation Plan Summary quantifies the proposed tree additions to the site and includes the following breakdown. All the trees, including the existing significant trees, will be removed from the site during construction. The total existing significant trees to be removed is 135.25” DBH (diameter at breast height). The proposed new tree DBH is quantified as 4” DBH trees is 307”. This represents the addition of (seventy-seven) 77 new trees with a surplus of 171.75” DBH from the existing condition. Our Intent is to tag trees in the 4”-4.5” range but for the purposes of the tree study we’ll be conservative with 4” DBH in our estimate.

The Tree Mitigation Plan and Tree Planting Plan identify the location of the 77 proposed Eastern Massachusetts natives or adapted trees. While there will be no caliper size reductions, the proposed tree species may be substituted based on availability and condition. An extensive street tree planting is proposed along both Smith Place and along Wilson Road. The multiuse path will be flanked by plantings of deciduous trees. Native deciduous and ornamental trees will be featured along the building’s southern façade and public terrace areas. The floodplain compensatory flood storage area to the east of the site will incorporate native and ornamental trees well adapted to those site conditions.

IX. TRANSPORTATION IMPACT STUDY

On behalf of the applicant, VHB prepared a Transportation Impact Study (“TIS”) for the Project, which was submitted to the Cambridge Department of Traffic, Parking & Transportation (TP&T) on December 17, 2021. VHB developed the TIS in accordance with the City of Cambridge’s Guidelines for Traffic Impact Study for land development projects, the TIS scoping letter from TP&T dated January 21, 2020, and responds to TP&T’s requests for clarification, corrections, and information detailed in its January 14, 2022 letter. The TIS was Certified by TP&T on January 28, 2022.

As described in the TIS, the Project is expected to have minimal impacts on traffic and will not cause congestion, hazard or substantial change to the established neighborhood character. The TIS indicated that the Project is expected to have 24 exceedances of Planning Board criteria out of 91 data entries. The majority of the exceedances pertain to existing pedestrian delay and presence (absence) of pedestrian and bicycle infrastructure, with one relating to Vehicular LOS and two relating to Lane Queues. The Project’s impacts do not exceed any of the criteria under Project Vehicle Trip Generation nor Traffic on Residential Streets.