SMMA

Phase 1 Utility Assessment

Water and Sewer

Estimated water demand and sanitary discharge for Phase 1 and the anticipated master plan expansion have been prepared by Genesis AEC. The Applicant has presented the projections to Andover Public Works including representatives of the Water, Sewer and Engineering Divisions. For purposes of this utility analysis Phase 1 includes Building 1 and the proposed Addition, Building 3, Building 2 with partial occupancy and the Link/Amenity Building. The Phase 1 data presented below includes chilled water demand. For this analysis the chilled water source for Buildings 2 and 3 is assumed to be from a central utility plant (CUP).

ARE is committed to sustainable technologies to minimize water demand and will work with the town to assess water supply during peak demand conditions. ARE is also committed to conducting a study of a section of the sanitary sewer as discussed with the town.

The peak and average water demands and average sewer discharge profiles for Phase 1 are as follows:

PLUMBING ENGINEERING CALCULATIC

Domestic Water & Drainage Usage - Phase 1

GENESIS
Architects | Engineers | Constructors

Project Name:	*ARE*	Calculated By	*J Rowe*
Project Number:	*21326*	Date	*23-Jan-22*
Location:	*Andover PA*	Revision	*2*
Plumbing Code	*Mass Plumbing Code*		

BUILDING	Peak Flow (GPM)	Domestic Water GPD	Sanitary GPD	Comments
Building 1	50	6840	3623	
Building 1 Addition	58.5	8310	4386	
Building 2 - 50%	50	6840	3623	
Building 3	95	14085	7438	
Link	100	4940	4940	
Partial CUP	222.5	77100	30200	
TOTAL FLOW	576	118115	54210	

PARAMETERS
1. Personnel based upon 7.5 GPD per person (8 GPD for Cafeteria)
2. Assume (1) lab sink per 1,000 SF
3. Assume (1) glass washer and (1) autoclave per 25,000 SF of lab space
4. Lab RODI based upon 0.1 gpd/SF & 0.0003 gpm/SF
5. Clean room purified water based upon 0.2 gpd/SF & 0.0006 gpm/SF
6. Lab RODI backwash is based upon 30% of the water make-up on a SF basis
7. Clean room purified water backwash is based upon a 40% of the water make-up on a SF basis

The design team is currently coordinating a series of hydrant flow tests to be conducted in January or early February 2022. The testing will provide input to the water network model and confirm water pressures and flowrates under existing conditions and enable modeling of proposed demand scenarios.

SMMA has prepared analyses of the existing sewer capacity and is designing the new sewer connections to meet peak flow.

The plumbing design for each building is being developed with Genesis AEC. In general, a new lab/process service will be provided for each building complete with an interior neutralization system. After being neutralized, the lab/process waste main will be routed to the main with an exterior test/sampling port installed as required.

Electrical Distribution

The existing site distribution capacity is rated to support approximately 11MVA. However, the site is limited by the utility owned 5000kVA transformers.

The calculated total demand load for the site is approximately 27,735kVA (or 464A at 34.5kV). Based on the electrical load calculation, the existing electrical service to the site is adequate to provide power for Phase 1 of the campus fit-out.