

## project overview

Nobis Group was selected to provide civil and geotechnical engineering services for the design of a critically needed, \$70 million Ambulatory Health Care Building constructed on the Concord Hospital Campus in Concord, NH. Nobis was responsible for schematic and final design services as well as developing construction documents for the 5-story, 147,000-square-foot building. Design work included building layout, vehicle and pedestrian circulation, utility relocation, foundation underpinning, excavation support, and also providing construction observation expertise.

A key Nobis role included relocation prior to design of the actual building footprint. The building occupies a former tiered surface parking lot, which consisted of a maze of underground utilities servicing the hospital campus including municipal water and sewer, steam, storm drainage, natural gas, electric, and fiber optic lines. Nobis relocated all of these utility systems so they would not conflict with construction of the new building. Nobis was responsible for pursuing needed local, state, and federal permit approvals, performing a subsurface investigation, and providing geotechnical expertise related to the building and facility foundation systems, as well as protective systems for adjacent existing multi-story buildings.

# CONCORD HOSPITAL | Concord, NH New Ambulatory Health Care Building

Civil & Geotechnical Engineering services  
provided by Nobis Group®



## challenge

Designing a stormwater mitigation system replicating an existing underground storage tank that also provided 250,000 gallons of necessary post-development stormwater volume. This new underground stormwater management system had to also be carefully located to avoid interfering with the construction of the new building structure.

## solution

Nobis designed an innovative stormwater mitigation system that required complex hydrologic/hydraulic modeling for multiple rainfall event scenarios to ensure sufficient surface water quality and runoff requirements were achieved. The stormwater management system design incorporated several high strength plastic storage chambers, surrounded by stone, resulting in a significant cost reduction compared to rebuilding the existing concrete tank.



## challenge

The new building structure was situated adjacent to the existing 3-story Memorial Office Building. The site topography included a substantial drop in elevation of more than 30 feet from north to south, with groundwater present at approximately 5-10 feet below existing grades.

## solution

Nobis provided engineering guidance and construction oversight for underpinning and lateral support for the existing Memorial Office Building during the construction of the new Ambulatory Care Building foundation, which consisted of a 20-foot concrete retaining wall for which Nobis designed a waterproofing membrane and underdrain system to prevent groundwater intrusion into the new building.



## challenge

The overall design and construction phasing had to allow for 24-hour operation of the entire Concord Hospital campus to continue without impacts. This required strict design and construction controls related to keeping existing utilities active, maintaining safe vehicle and pedestrian circulation, mitigation of noise and air (dust and exhaust) pollution, and structural protection of existing active campus buildings.

## solution

Nobis engineers were actively involved during construction with the owner and contractor to develop creative solutions that successfully allowed critical campus and hospital operations to continue with minimal disturbance.

## services provided:

master planning | due diligence | site design | permitting  
& compliance | drainage studies | storm water design |  
parking design | pedestrian travel access | utilities design

