

NEW ENGINEERING BUILDING SITE DEVELOPMENT GUIDELINES

DRAFT

Cornell University
Campus Planning Office

Draft for approval by
CF&PC, October 29th, 2007

B&P, December 6th, 2007

NEW ENGINEERING BUILDING

SECTION I - SUMMARY

*This section provides an overview of the project background and description.
It presents the site criteria and recommendations for the project design and site design.*

PURPOSE OF SITE CRITERIA

To gain approval from the University and Trustees, as well as to inform senior administration, consultants and the project team about significant contextual and campus-wide considerations that impact the building site and the project. Key issues with this site that are crucial to the success of the project are: (i) Ensuring that the placement, building and site design create an engaging presence for the College of Engineering; (ii) Creating a distinct and memorable campus gateway experience for a very busy part of the campus; and (iii) Relating spatially, stylistically and in massing to the surrounding buildings and landscape.

BACKGROUND AND CONTEXT

The College of Engineering (CoE) is a world-class institution of higher education and academic research. The Sibley School of Mechanical and Aerospace Engineering (MAE), and the School of Civil and Environmental Engineering (CEE) are two of the university's top ten ranked departments at the undergraduate and graduate levels. The College of Engineering's recently completed masterplan identifies the enhancements and new construction necessary to improve and expand the facilities required to enable engineering's research, educational, and community needs at present and into the future. The plan calls for a new engineering building on the existing site of Carpenter and Hollister Halls, replacing these 1950s era structures, which are no longer able to be re-purposed for advanced research.

PROJECT DESCRIPTION

The program calls for approximately 250,000 GSF of new space for research, instruction, community, and associated support. The CoE masterplan calls for the removal of Carpenter Hall and the north wing of Hollister Hall, and new construction to be integrated with the remaining south wing of Hollister Hall. MAE will move in its entirety to the new building and CEE's program will span interconnected space in the new building and remaining south wing of Hollister Hall, as well as the adjacent Kimball-Thurston-Bard complex. The building will support the collaborations, multidisciplinary research, and experiential team-based learning that are the hallmarks of Cornell Engineering's educational programs. It will also provide learning and community spaces to serve the entire Engineering College community. The new building will greatly enhance the college's identity and image, signifying the extraordinary achievements of its faculty, students, and staff, and serving as a prominent gateway to the campus.

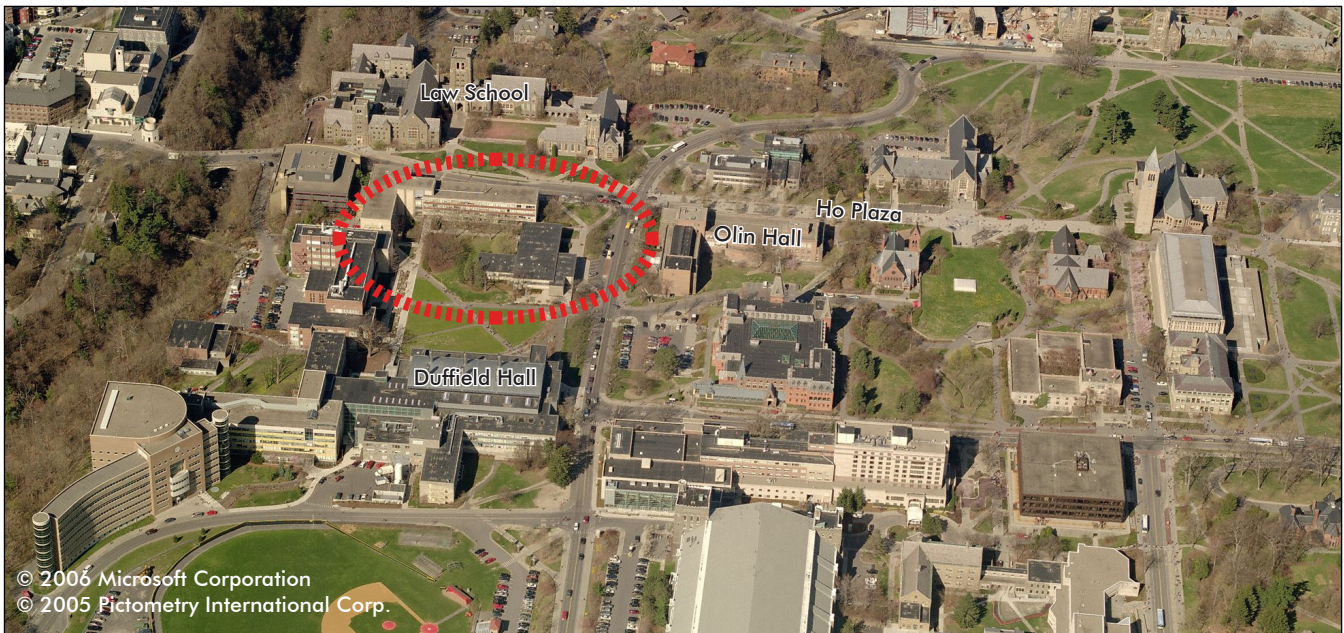


Figure 1. Aerial View of Site with Context Looking West

NEW ENGINEERING BUILDING

SITE DEVELOPMENT GUIDELINES

Important considerations that the University expects the project to meet.

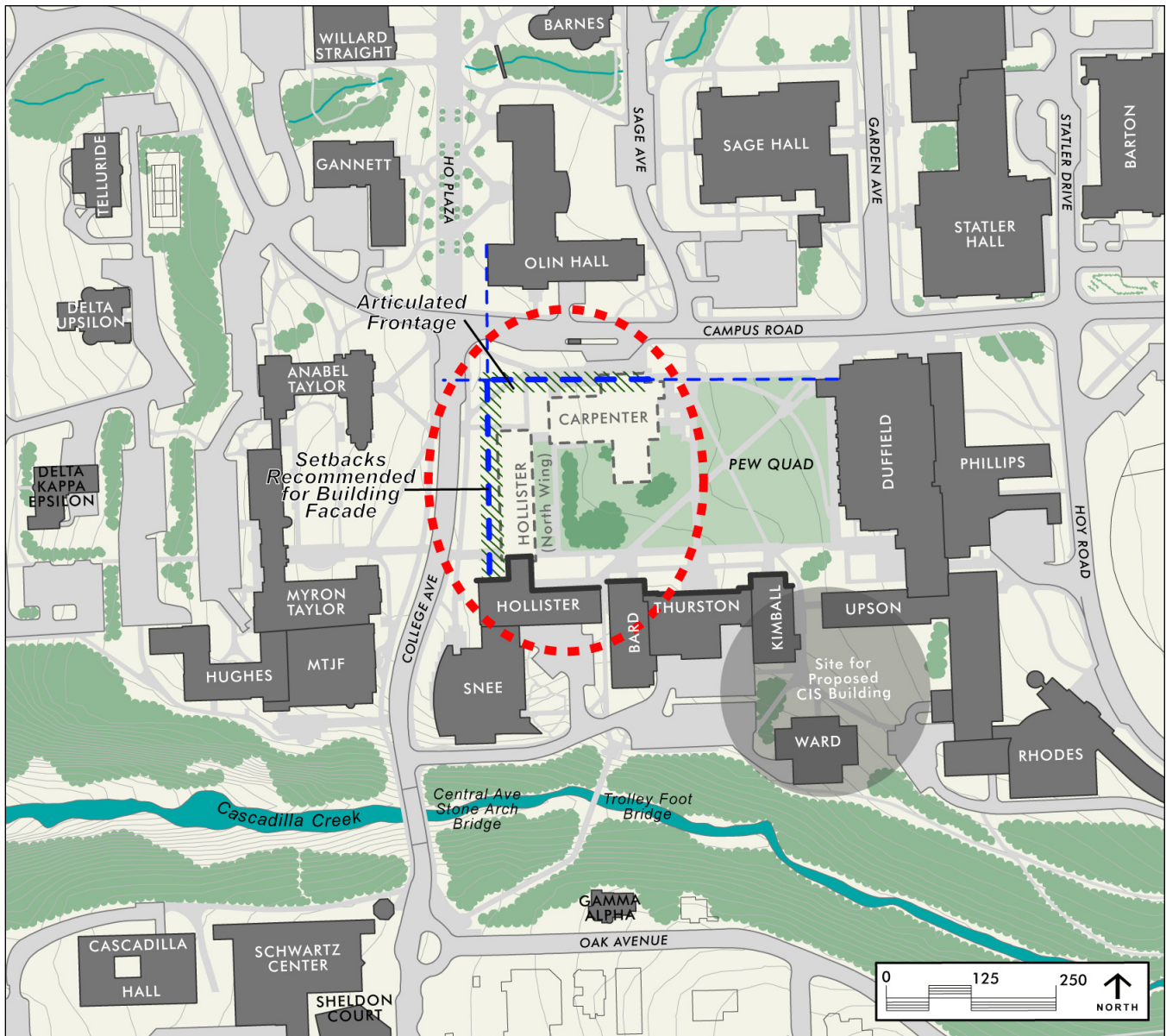


Figure 2. Site Location and Boundaries



Figure 3. Duffield Hall which anchors the Pew Quad on the east



Figure 4. View of the northwest corner of the site from the southern end of Ho Plaza



Figure 5. Pedestrian traffic through the Pew Quad, one of the heaviest traveled places on campus

NEW ENGINEERING BUILDING

SITE DEVELOPMENT GUIDELINES

Important considerations that the University expects the project to meet.

- The new building is at a gateway location on campus and its placement and design should be a coordinated part of an important arrival sequence to Ho Plaza, and the historic, iconic Arts Quad, along with the buildings and landscape across College Avenue, and the entry to Ho Plaza.
- The new building should anchor the Pew Quad to the west, along with Duffield Hall to the east, and create an engaging campus presence for the College of Engineering.
- The massing, volumes, and articulation of the edge of the new building need to connect spatially and stylistically with the south wing of Hollister and the surrounding Engineering buildings, and correspond to the height of Duffield Hall, while relating to Olin Hall and affording respect to Myron & Anabel Taylor Halls.
- The building façade & articulation should enhance the pedestrian experience of the Pew Quad and the north-south movement patterns on College Avenue, which with Ho Plaza forms a major student thoroughfare and links the Arts Quad to Collegetown.
- The landscape and surrounding space should further enhance the Pew Quad, its community use, and the identity and character of the College, while accommodating heavy pedestrian traffic between campus and Collegetown.
- The placement and design should take advantage of the views to the north from the site, allowing long views to the west from Myron Taylor Hall into Pew Quad through the new building, enhancing an east-west visual connection to Duffield Hall.
- The circulation pattern in the building needs to facilitate connections within the College of Engineering, as well as with the Law School to the west.
- Community spaces for the College within the new building, while meeting program requirements, should contribute to campus community spaces and the pedestrian experience of Pew Quad.
- The site design and service for the new Engineering Building needs to be coordinated with the site design for the proposed CIS building.
- The building and site need to be designed to allow ADA access and connections.
- Sustainable site and building design should be incorporated into the project from the outset.



Figure 6. Composite photo of the Pew Quad

NEW ENGINEERING BUILDING

SECTION II - RATIONALE

This section contains detailed analyses of the site and conditions that produce the site criteria presented in the first section. The analyses are broadly divided into the following categories: planning, landscape, transportation, and utilities.

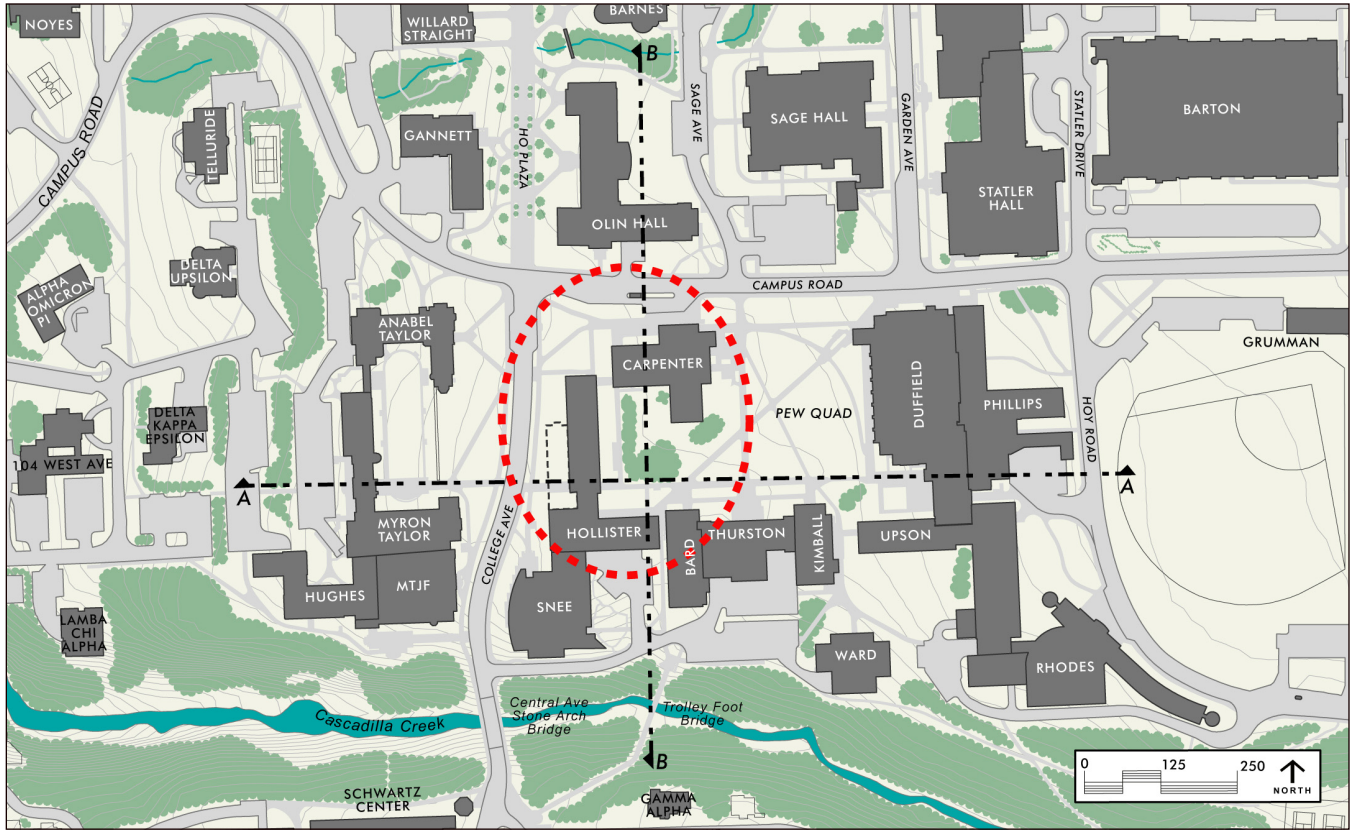


Figure 7. Site location

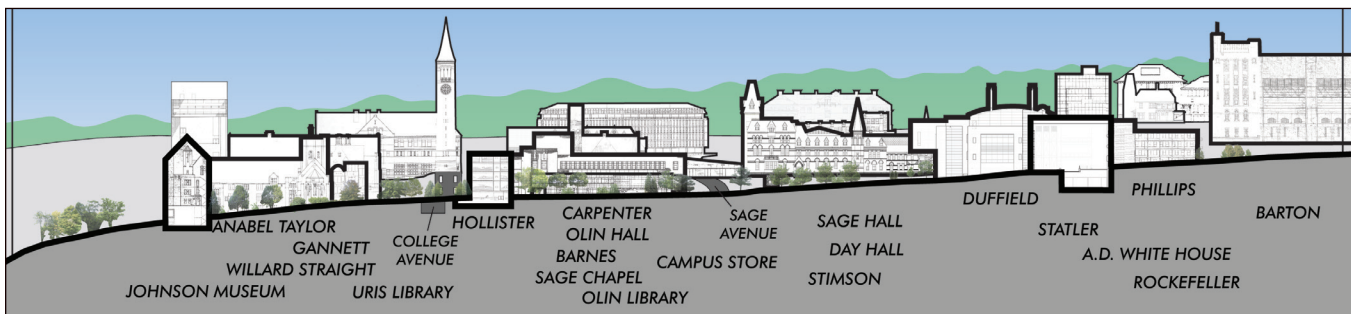


Figure 8. Section A-A, East-West section through site looking north

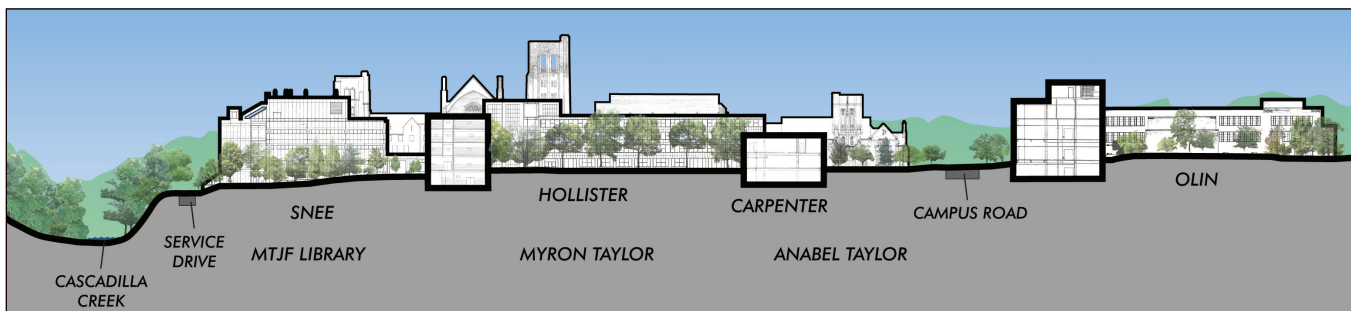


Figure 9. Section B-B, North-South section through site looking west

NEW ENGINEERING BUILDING

LONG-TERM PLANNING AND CAMPUS CONTEXT

A consideration of the site and its relationship with the surrounding buildings, open space, users and the campus.

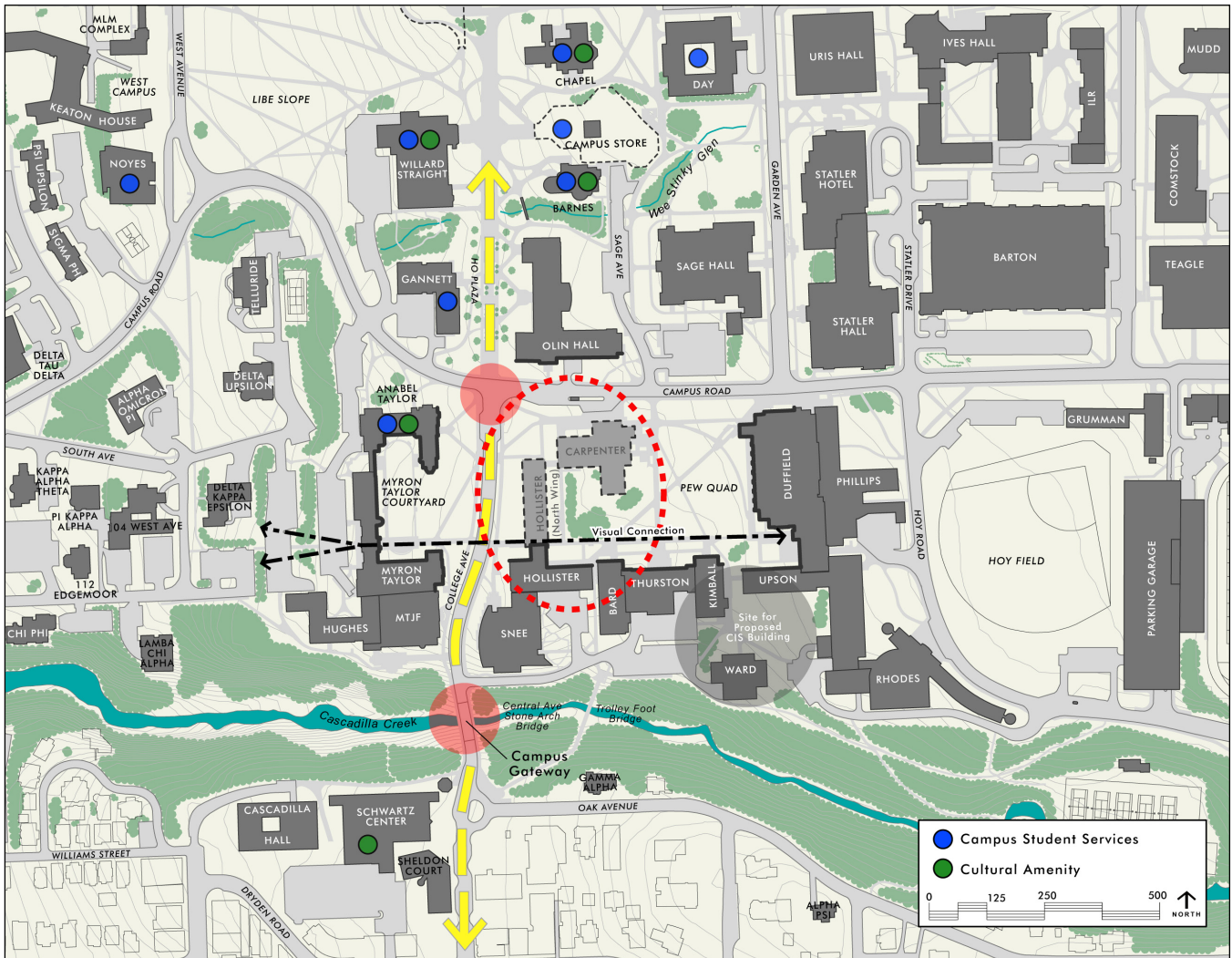


Figure 10. Campus Context

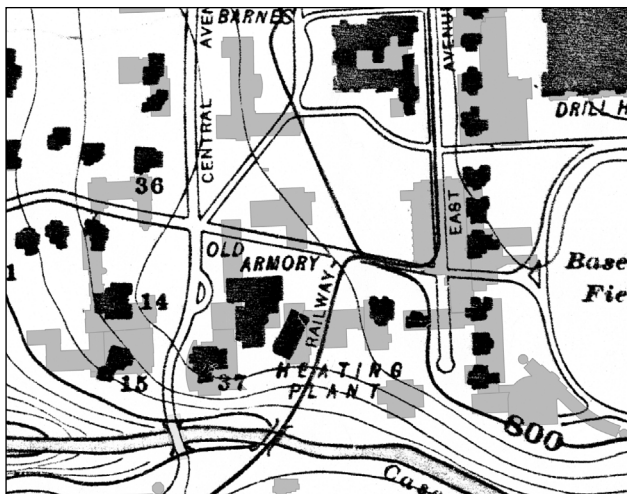


Figure 11. Historic 1920 campus map near the College of Engineering with current buildings in background

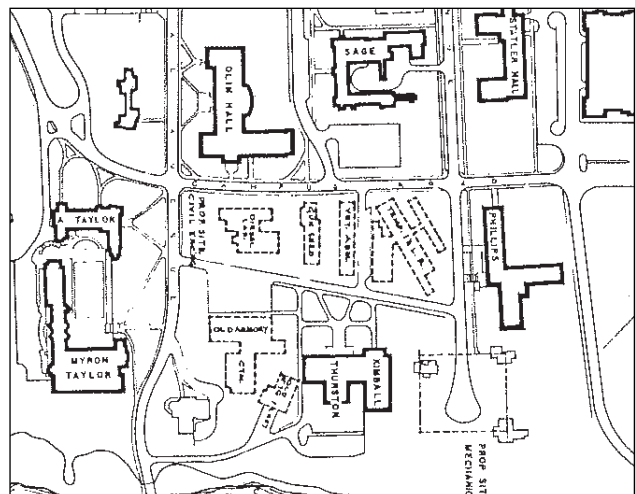


Figure 12. Historic 1954 plan of the College of Engineering showing future buildings and demolition of old structures

NEW ENGINEERING BUILDING

LONG-TERM PLANNING AND CAMPUS CONTEXT

A consideration of the site and its relationship with the surrounding buildings, open space, users and the campus.

LOCATION, SITE BOUNDARIES AND CAMPUS CONTEXT

The site is located at the edges of the Engineering Quad along College Avenue and Campus Road with the Pew Quad to the east and is bounded by the south wing of Hollister Hall; and Kimball, Thurston and Bard Halls to the south. There is also a small green courtyard between Carpenter and Hollister Halls. Currently the site is occupied by Carpenter Hall and the north wing of Hollister Hall, which are proposed to be demolished to make way for the new building. Across Campus Road to the north is Olin Hall, housing chemical engineering, Ho Plaza and to the west of Ho Plaza, the Gannett Health Center. To the west across College Avenue are Anabel Taylor Hall, which houses CURW, and the Law School in Myron Taylor Hall. The site is at the intersection of teaching, research, student services, and social and cultural functions on the campus (see Figure 10) and a very active hub throughout the day and into the evenings. It is also an iconic gateway to the campus and at a crossroads.

Historic campus maps record the evolution of the site, from a relatively open and bucolic landscape to a denser and urbanized part of the campus (Figures 11, 12). In 1890 the site was crossed by Sage Avenue with the armory and gymnasium building to the south. Campus Road as we know it did not exist. A photograph from the early 50s shows a low building on a wooded site facing Myron Taylor Hall with the current alignment of Campus Road. The 1954 campus development plan shows the first buildings of the engineering college - Olin Hall, Phillips Hall, and Kimball-Thurston Halls framing what eventually became the Engineering Quad. The site has a notation - "Prop(osed) Site - Civil Engineering". The existing buildings in the area were demolished for the eventual full development of the Quad. Current and future planning for this area acknowledges its urban nature and higher density.

The development of the site as envisioned in the recent facilities master plan for the College considers its full capacity, including one or more levels below grade as feasible. The campus master plan includes the overall recommendations for the College's plan, with a new precinct that includes the College of Engineering and the Law School. The precinct is distinguished by its edge with the gorge and a natural area, a major campus entry, and the formal geometric organization of buildings.

The site forms a major part of the western edge of the Engineering Quad, highly visible and along a very well-traversed route. The northwestern corner of the site (along with the corresponding sites across College Avenue and Campus Road) is part of an iconic arrival sequence to campus and needs to be part of a future urban plaza and mall, strengthening the visual, pedestrian and functional link of the campus to Collegetown (see Figure 10).

The length of the building along its west façade should be articulated to seem less massive, and also respond to the façades of Myron and Anabel Taylor Halls across College Avenue. There is an opportunity to continue the long views west through the portal of Myron Taylor Hall eastward to allow a continuous visual connection through the Pew Quad to Duffield Hall. Centralized loading recommended by the campus master plan will be necessary to the successful service function for this building and overall as the campus gets denser. The campus master plan also recommends that service access be maintained from the south along the gorge, to avoid disrupting pedestrian movement along College Avenue and Campus Road or through movement from the Pew Quad to Collegetown.

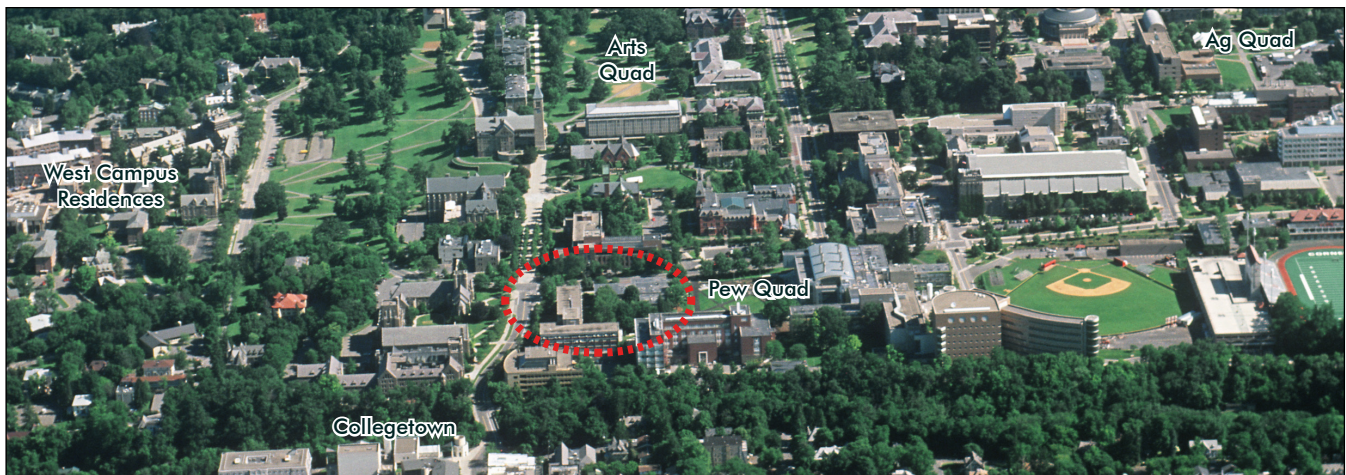


Figure 13. Aerial View of Site with Campus Context

NEW ENGINEERING BUILDING

SITE AND LANDSCAPE

Consideration of the role of the site in the campus landscape structure.

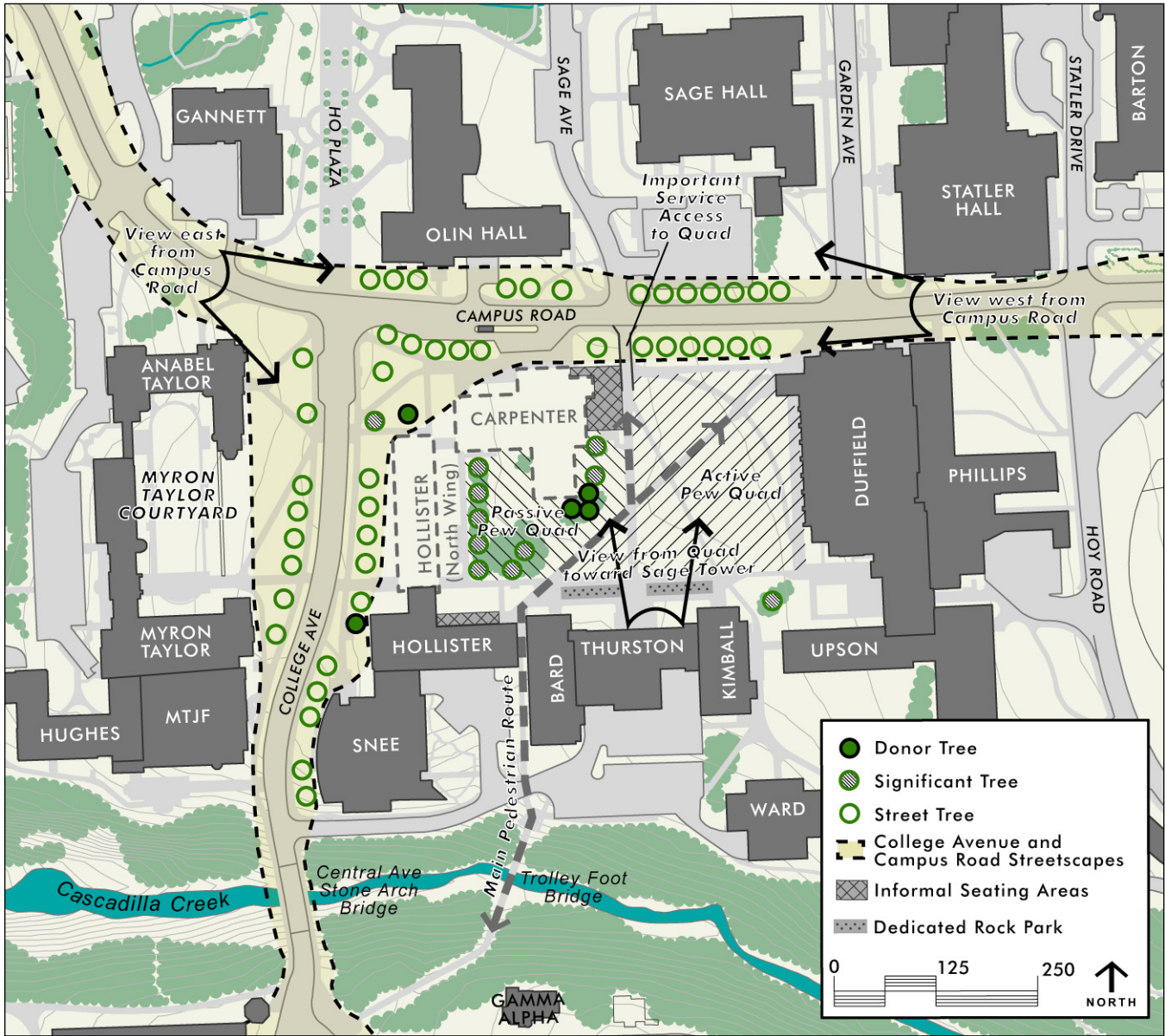


Figure 14. Landscape and Environment



Figure 15. Sycamores in the passive area of the Pew Quad behind Carpenter Hall



Figure 16. Significant Beech tree framing courtyard to the south of Carpenter Hall



Figure 17. Grove of donor trees on the southeast corner of Carpenter Hall

NEW ENGINEERING BUILDING

SITE AND LANDSCAPE

Consideration of the role of the site in the campus landscape structure.

LANDSCAPE AND ENVIRONMENTAL ISSUES

The new Engineering building relates to a number of different components of the University's open space system that are critical in shaping the daily experience of a large proportion of campus users as well as in distinguishing the built environment on the campus. The building and surrounding landscape have the potential to create a memorable campus gateway from the south and west, and enhance the presence of the College of Engineering in a highly visible and heavily traversed section of campus that has experienced significant densification over recent decades.

The north, west and east facades of the new building can be thought of as the public faces onto the streetscapes of College Avenue and Campus Road and the Pew Quad. These street corridors are critical circulation and open space connectors that function primarily to facilitate safe and comfortable movement and wayfinding, while providing an identity for the building and college. Generous sidewalks and high-branched street trees define the pedestrian environment and provide a transition between the mixed-use circulation space of the streets, and the place-based spaces of the Pew Quadrangle. The landscape elements along the street corridors should be thought about as part of the larger streetscapes. Care should be taken to ensure that street trees have adequate soil volume, drainage and protection from vehicular impacts (including compaction and salt) to provide for optimal growing conditions. Additional plantings in this area serve to emphasize building and quadrangle entries, provide scale to the building and create / enhance views.

The College Avenue corridor sets up an arrival sequence of spaces from Collegetown, across the Cascadilla Gorge through Ho Plaza to the Arts Quad that articulate related, but different experiences and uses. The new Engineering Building and Myron Taylor – Anabel Taylor complex define one such space whose landscape should be complementary on both sides of the street. The intersection of College Avenue and Campus Road mark a gateway space where the circulation changes from mixed, multi-modal to pedestrian. The landscape of this area must announce this entryway and transition in scale from vehicular to pedestrian.

The south and east façades of the new building are the spatial delineators of the west side of Pew Quad – the defining open space element for the School of Engineering. The essence of Pew Quad is a lawn panel surrounded by compatibly-designed architectural walls on three sides, softened with more intensely planted perimeter areas that accommodate informal seating, dining, studying and social uses. This quad provides a needed refuge from the dense surrounding development, and the sense of spaciousness and open character should be maximized. Consideration should also be given to the use of green roof technology both as additional open space and a means of minimizing stormwater runoff. Although the quad is a pedestrian environment, the broad walk to the east of existing Carpenter Hall provides an important vehicular service and maintenance access point to the quad that must be maintained.

The arrangement of plantings, pavement and site furnishings in Pew Quadrangle needs to facilitate the heavy pedestrian flow of traffic across the quad while creating both intimate and community gathering places that contribute to campus public spaces. A dedicated Rock Park in front of Thurston Hall contains both a learning landscape for geology and informal seating areas. The more formal seating areas on the east side of Carpenter Hall and the north side of the south wing of Hollister hall are popular studying and eating locations in good weather. These spaces are a good example of the level of design and detail that the College has invested in making Pew Quadrangle the public face and outdoor living room for the College of Engineering.

The two mature red oaks on the west of Carpenter and the two beech trees south of Carpenter are significant specimens that define the informal separation between the open, active portion of Pew Quad from the more enclosed, passive-use western portion. In addition, there is a mature allee of sycamore trees in this western portion of the quad that would contribute to the landscape legacy of the quad if they could be accommodated by the new building design. Most of the now maturing trees around the existing buildings date from the 1970's, with some of them planted in recognition of donors. These include an oak on College Avenue, the area planting north of Hollister, and the firs and area planting south and west of Carpenter Hall. These trees should be integrated into the new landscape plan to the extent possible or replacement trees of adequate size and species planted in consultation with the Office of Alumni Affairs and Development.

NEW ENGINEERING BUILDING

TRANSPORTATION

Issues of access to, through and around the site.

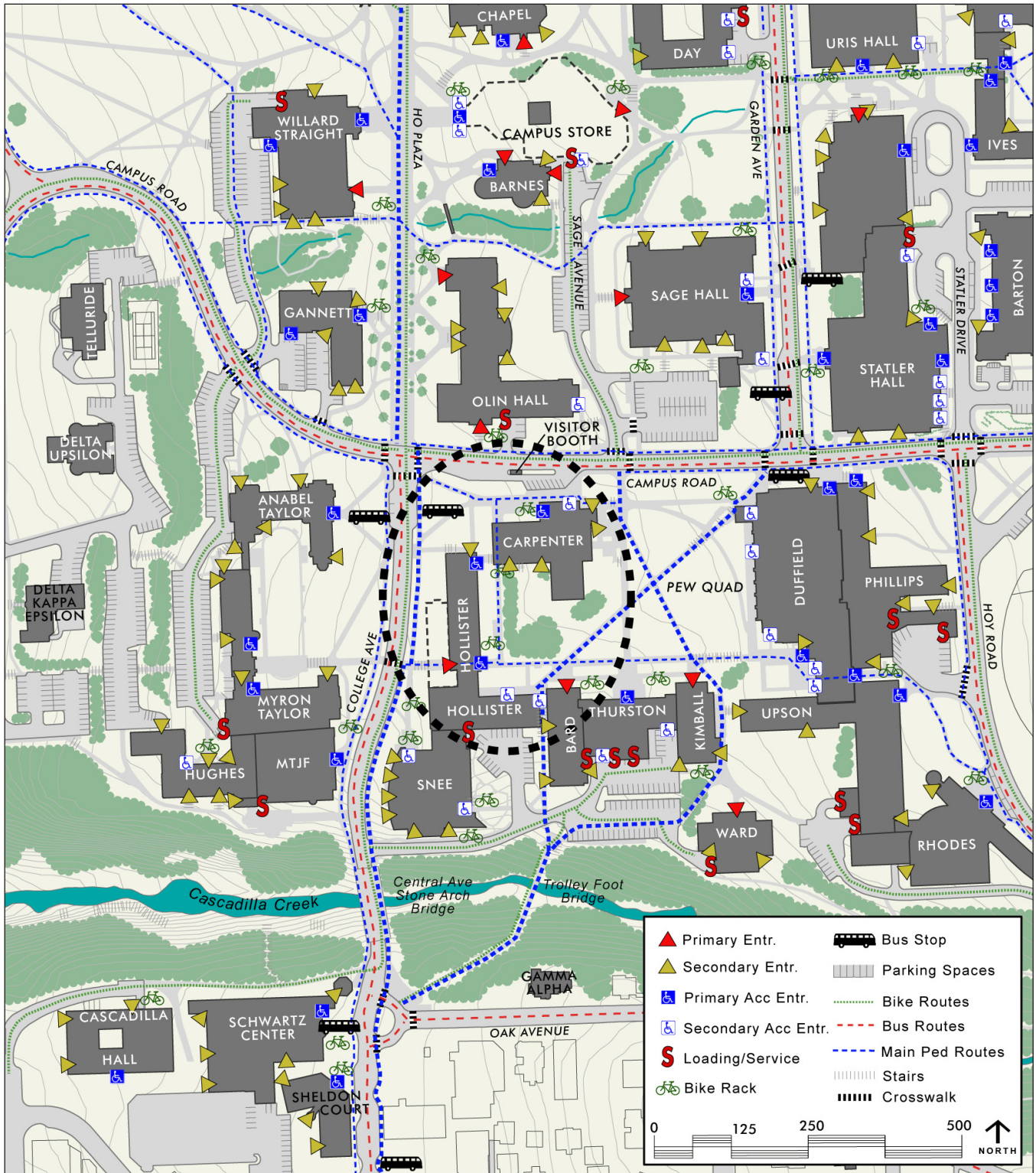


Figure 18. Site Transportation and Circulation around Site

NEW ENGINEERING BUILDING

TRANSPORTATION

Issues of access to, through and around the site.

TRANSPORTATION AND CIRCULATION

The site is at the convergence of two primary transportation corridors to campus - Campus Road and College Avenue and one of the busiest and most frequented areas of the campus over a 24 hour period. Campus Road, a major vehicular route, connects the eastern and western ends of the core campus with gateways at either end. College Avenue is the historic approach to campus from the city and Collegetown, and continues beyond Campus Road as Ho Plaza, a landscaped north-south pedestrian corridor to the Arts Quad. The site is also at the crossroads of student pedestrian movement and major campus-wide pedestrian networks from residential areas to the west and south to campus, along a hub of student services on the core campus and greatly used by visitors for campus events.

To enhance the pedestrian experience and avoid vehicular conflicts, access to the new building should be located close to major pedestrian routes around the site. Since this area is a major campus gateway, the visitor booth will need to remain in the vicinity of the new building, and its location can be modified to fit the overall site plan. Similarly there is an opportunity to move the bus stop on College Avenue further south to alleviate the congestion at the intersection with Campus Road and create safer conditions for vehicles and pedestrians. Bus stops located along College Avenue near the Campus Road intersection provide excellent alternatives to driving and parking on campus. This is an advantage that can be leveraged with staff and visitors as part of a future campus-wide transportation strategy.

Of the 139 faculty and staff in the current buildings, approximately 65% commute and park on campus, approximately 70% of whom have parking spaces within a five minute walk to the site. Based on this ratio, and a future total of approximately 180 employees on the future site, there will be a net increase of 30 spaces in the demand for on-campus parking. Any parking spaces displaced by the project will need to be replaced in a proximate or remote location. Also, bike racks displaced by the project must be replaced and an adequate amount of bike parking must be added proportionate to the increase in population at the new facility, as many of them sheltered as possible.

Service access to the new Engineering building should be maintained as it currently is to the majority of the College of Engineering, which is from behind the Kimball-Thurston-Bard Complex. Short-term parking and loading could still be facilitated by the parking spaces north of the site by the visitor booth, but all large deliveries should be kept off Campus Road and the majority of College Avenue.

Both the site and building need to be designed to facilitate universal (including ADA) access, as well as enhance the current pedestrian network in the area. The safety and efficiency of the intersection of Campus Road, College Avenue and Ho Plaza that pertains to this site needs to be considered. During the construction phase of the project, pedestrian movement should be impacted as little as possible with safe and clearly marked re-routing. All effort should be made to maintain pedestrian access between Hollister and Bard Halls through the Pew Quad during construction, as this is a major pedestrian artery. Any planning that relates to transportation needs to consult with the Department of Transportation and Mail Services and the Campus Planning Office.



Figure 19. Heavily utilized bicycling park below the overhang of Carpetner Hall and in the Pew Quad



Figure 20. Frequently used bus stop on the west of College Avenue



Figure 21. Intersection of Campus Road and College Avenue with visitor booth in background

NEW ENGINEERING BUILDING

UTILITIES

Consideration of campus utility infrastructure in the vicinity of the site.

UTILITIES ISSUES

The site in general is well served by utilities. Both the future capacity of the site and future development in adjacent areas of campus are factored into the assessment of utility networks. Depending on the size of the facilities in the area, the parts of the steam line from Carpenter Hall to Uris Library should be considered for upsizing if major new loads are developed. The Utilities Department is currently considering a project to replace the line on the east edge of Ho Plaza from the Campus Store to Uris Library.

This area is on the hydraulic fringes of the endowed chilled water system. A major increase in load might require either a new line from the Lake Source Cooling transmission lines across Libe Slope, the extension of new lines down Campus Road, or both. Both these extensions have been anticipated for some time and will be required for the initial Hollister/Carpenter Phase of the College of Engineering (CoE) Master Plan. The CoE master plan, if fully executed, will require the completion of a new loop from the Johnson Art Museum to Duffield Hall. Construction of a new Engineering Building should be coordinated with other projects in the area for chilled water.

Although there is ample storm sewer capacity, the topography of the site needs to be carefully considered to allow cost effective compliance with the "no increase in runoff rate" regulations. The site is well served by electricity supply, sanitary sewer, and natural gas provided by NYSEG.

The Cornell Utilities Department should be consulted for detailed information and projections regarding loads and capacity of the respective systems. The drawing below illustrates the location of major existing utilities on and around the site, which need to be considered in designing the new building. Also, any planning by the Cornell University Utilities Department needs to be included in building and site design. For more information and details, please contact Cornell University Utilities Department.

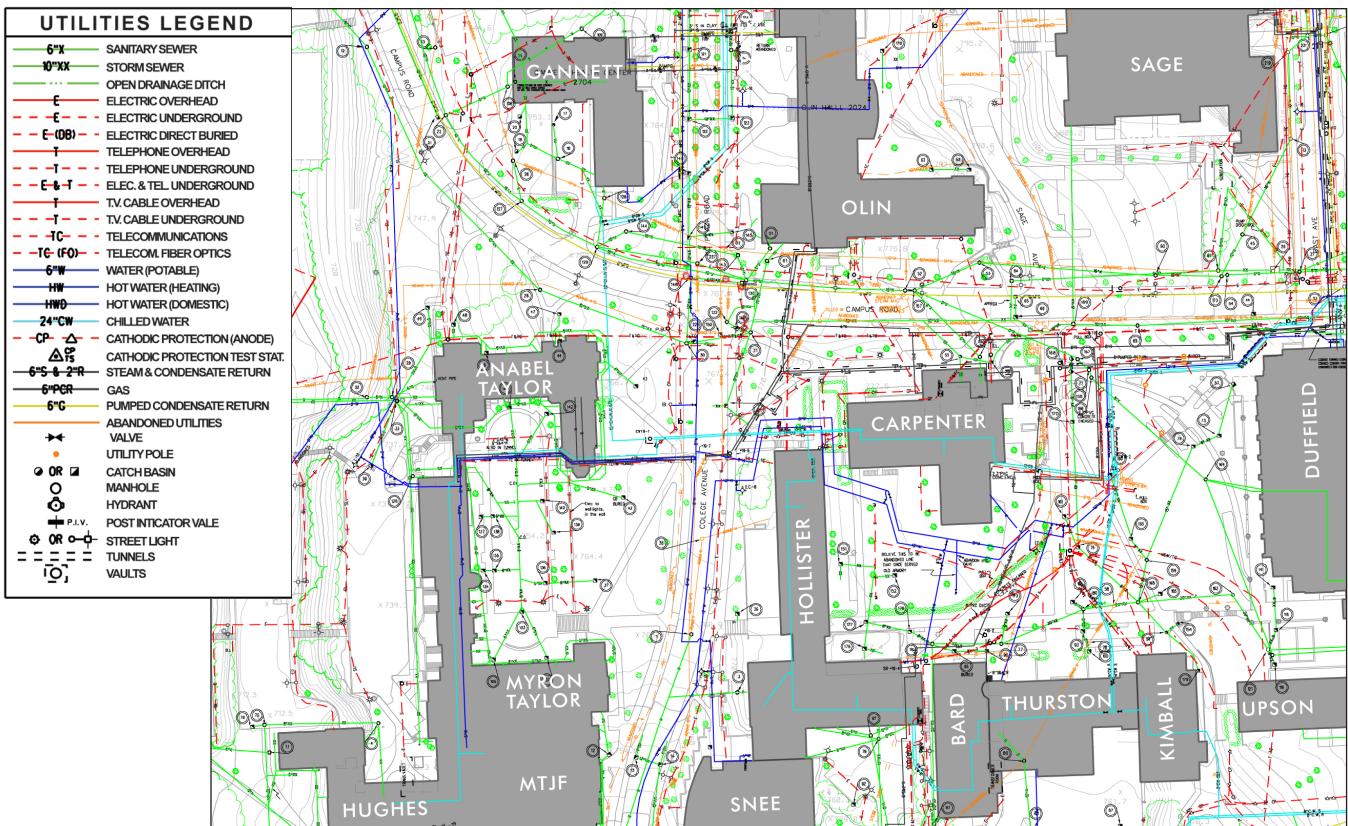


Figure 22. Utilities Diagram