



The University of Vermont

DEPARTMENT *of* FACILITIES DESIGN
and CONSTRUCTION

October 31, 2017

REQUEST *for* PROPOSAL

New Research Laboratory & Given Building Renovation for the Larner College of Medicine and the Department of Psychology

ARCHITECTURAL AND ENGINEERING SERVICES

Facilities Design and Construction
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GENERAL

The University of Vermont and State Agricultural College (UVM) is soliciting proposals from qualified architectural firms and their consultant teams for professional services including design, document preparation, independent cost estimating services, and construction administration for a New Research Laboratory & Given Building Renovation for the Larner College of Medicine and Psychology Department project. Submitting firms are to include the necessary services and associated fees for all civil, landscape, structural, mechanical, electrical, fire protection, independent cost estimating and any other consultants as required for a complete design proposal. Fees shall also include development of a minimum of five colored renderings and computer generated models for the University's use in creating marketing and fundraising materials. All proposing firms shall have experience with the design of scientific research laboratories, particularly in a university setting. The firm(s) awarded the design contract will be required to affiliate with a Vermont architectural firm. The proposal for services must identify within the scope of services at a minimum, 20% of the design effort as being the work effort of the Vermont firm(s) making up your total design team. The 20% equivalent can also include the addition of other Vermont consultants as part of your design team. UVM reserves the right to approve and/or recommend the choice of all consultants proposed by the architectural firm.

It is the University's intent to contract for architectural/engineering design services and cost estimating for only the schematic design phase of the project at this time. Design development, construction documents, bidding and construction administration phase services need to be included in your proposal and will only proceed upon final approval by the University of Vermont's Board of Trustees. Board of Trustees consideration for work beyond the schematic design phase is anticipated for May 2018.

Important Note: The University may choose to award the design services contract to one or two design teams since this project involves two distinct design efforts. It will be important for all proposing firms to identify fee structures and past experience separately for the New Research Laboratory and the Given Building Renovation.

BACKGROUND AND PROJECT DESCRIPTION

The University of Vermont has identified the New Research Laboratory & Given Building Renovation for the Larner College of Medicine and Psychology Department project as one of its highest priority facilities needs in the Capital Plan for the institution.

The Larner College of Medicine (Larner College) and the Department of Psychological Science of the College of Arts and Sciences (Psychology Department) conduct renowned research that improves the health and healthcare of the citizens of Vermont, our nation and the world. UVM's research is an economic engine for the entire state. In the last year for which full data are available, the Larner College of Medicine generated \$90 million in research funding, approximately nine times the average return on State investment for public medical schools. This research is a foundation for M.D., Ph.D., undergraduate and honors college research experiences and for new clinical technology and treatment not otherwise available in the State.

Much of this research is housed in the Given Building (opened 1963; 245,987 GSF) and Dewey Hall (opened 1905; 45,287 GSF), buildings which are ancient by today's research standards. Given has the largest deferred maintenance cost at UVM and is the most energy inefficient building on campus. Additionally, the ability to convert Dewey Hall into modern research lab space is considered impossible. These factors impede our research and limit our ability to attract and retain the best scientists.

The plan is to eliminate the deferred maintenance on both buildings by constructing a new 60,000 gross square foot modern research facility adjacent to Given and rehabilitating Given to modern research and office space, to accommodate both the Larner College faculty and the Psychology Department faculty from Dewey. The project will result in no net square footage increase for the Larner College and the Psychology Department and will reduce heating and cooling costs in Given. The new and renovated buildings will be modern, flexible, collaborative research space allowing UVM to recruit and retain the best scientists and grow our world-class research.

The selected firm(s) will enter into a contract with the University of Vermont to provide program validation, site analysis, and the development of the schematic design phase with associated drawings and cost estimates. The schematic design and cost estimates will be presented to the Board of Trustees in May 2018. Upon the successful approval to continue the design process by the Board at the May meeting, it is the intention of the University to contract with the selected firm(s) to provide design development and construction documents. A final approval at the February 2019 Board meeting will extend the services to include construction administration services, project closeout and warranty as part of the basic services for this project.

PROJECT GOALS AND EXISTING BUILDING CHALLENGES

The Larner College of Medicine currently occupies the entire Given Building. The Department of Psychology currently occupies the entire Dewey Hall. The objective is to construct approximately 60,000 gross square feet (35,000 net assignable square feet) of new laboratory research space adjacent to the Health Science Research Facility (HSRF) and move an equivalent amount of space from the Given Building into the new structure. Following this relocation to the new facility, the renovation of the Given Building will include those functions remaining from the Larner College of Medicine and the relocation of the faculty and staff in the Department of Psychology. The project goals include:

- Construct a new building attached to the southeast side of Health Science Research Facility (HSRF); the goal is for the new construction to be 100% laboratory and associated office space.
- Rehab Given Building for a new 50 year life
- Given will be zoned into distinct laboratory and non-laboratory areas, to allow for efficient HVAC services
- Given Building Renovations include:
 - New core HVAC and electrical service for entire building
 - New distribution of HVAC and electrical to entire building
 - New exterior envelope
 - Architectural renovations of laboratory and office space, as needed

Phasing Challenge

Phasing of renovation work in the Given Building

The ability to renovate Given in the least number of phases will be the most efficient method for both time and cost. The University is interested in reviewing creative proposals and/or past history of firm's experience in temporary housing of functions (swing space) in order to accelerate renovation projects.

Probable uses of Given Building by floor

- Basement: predominantly for vivarium and some physical plant; no significant architectural renovation, but new mechanical distribution
- Level One: continue as administrative space, auditorium and cafeteria; minimal architectural renovation, but new mechanical distribution
- Level Two: maintain standardized patient area; renovate remainder into laboratory and/or office; new mechanical distribution for all space
- Level Three: renovate office and laboratory and new mechanical distribution
- Level Four: maintain anatomy laboratory area with minimal changes; remainder of floor renovated into laboratory and office with new mechanical distribution

ANTICIPATED SCOPE OF WORK AND SCHEDULE

The Architectural team will provide schematic design, design development, construction documents, construction administration services, project closeout and warranty as part of the basic services requested. Submitting firms will include the services of a professional cost estimator in their fee to prepare four (4) estimates as follows: one each at the completion of schematic design and design development and at 50% and 100% construction documents. The University expects to retain a preconstruction services firm to provide concurrent estimates to be reconciled with the architect's schematic, design development, and 50% and 100% construction documents estimates.

The anticipated design and construction schedule is as follows:

- | | |
|---|-------------------------|
| – <i>Complete schematic design and estimate reconciliation</i> | <i>May 1, 2018</i> |
| – <i>Present schematic design to Board of Trustees</i> | <i>May 18, 2018</i> |
| – <i>Complete design development, construction documents and estimate reconciliations</i> | <i>February 1, 2019</i> |
| – <i>Complete bid phase</i> | <i>April 1, 2019</i> |
| – <i>Begin construction on new Research Laboratory</i> | <i>June 1, 2019</i> |
| – <i>Complete construction of new Research Laboratory</i> | <i>December 1, 2020</i> |
| – <i>Begin renovation of Given Building</i> | <i>January 1, 2021</i> |
| – <i>Complete renovation of Given Building</i> | <i>December 1, 2023</i> |

The architect and the University's project manager shall coordinate with UVM's Campus Planning Services for permit submission and presentation. The project will go through the internal campus master planning review process, as well as local and state permitting. It may be necessary to provide presentation materials for public information meetings and Neighborhood Planning Assemblies.

This project may be considered by the City to be a “major impact” and as such will require a more extensive municipal zoning process, which may include multiple presentations to the Conservation Board, the Design Advisory Board and the Burlington Development Review Board.

The State of Vermont will also require state permits that include detailed storm water and environmental review, as well as a statewide land use permit. Permit requirements are quite detailed and include strict standards for building efficiency and construction waste recycling, among other items. Full permitting can take 6 - 7 months, on average.

Firms and individuals considering this RFP should not contact city or state offices to obtain additional information. All inquiries must be directed through the UVM project manager.

The selected firm shall complete *The University of Vermont’s Architect-Engineer (A/E) Checklist of Services* attached hereto. The Checklist identifies those services to be completed throughout the three phases of design of this project.

SUSTAINABLE DESIGN

Sustainable design practices must be followed for this project. In support of the University’s “Environmental Design in New and Renovated Buildings” policy, it is UVM's intent to register this project with the U.S. Green Building Council (USGBC), and to pursue, at a minimum, a LEED™ silver level certification. It is highly recommended that the project team design for a gold level certification. This requires the consideration and evaluation of all LEED credits for the project until it is determined it is not feasible to attain the credit. As many credits from the applicable LEED™ checklist as possible shall be achieved, from pre-construction through construction and owner occupancy.

The lead architect will identify a representative from their team to collect and submit the required LEED™ credit information to the USGBC.

The University may also retain a LEED™ accredited professional to audit the documentation. A third-party commissioning agent will be hired by UVM for the project. A third party building envelope commissioning agent may also be hired by UVM for the project.

PROJECT SCHEDULE

The proposed project schedule is as follows:

<i>Monday, October 30, 2017</i>		<i>Legal notice in the Burlington Free Press</i>
<i>Tuesday, October 31, 2017</i>		<i>Request for Proposal available</i>
<i>Wednesday, November 15, 2017</i>	<i>1:30 PM</i>	<i>Mandatory Campus Site Visit</i>
<i>Tuesday, November 28, 2017</i>	<i>2:00 PM</i>	<i>Deadline for Questions</i>
<i>Tuesday, December 5, 2017</i>		<i>Addendum to be Issued (if necessary)</i>
<i>Thursday, December 14, 2017</i>	<i>2:00 PM</i>	<i>Request for Proposals Due</i>
<i>Week of January 2-4, 2018</i>		<i>On-campus Interviews with Short Listed Firms</i>
<i>Monday, January 15, 2018</i>		<i>Schematic Design Start Date</i>

PROJECT BUDGET

The estimated target Construction Cost (Cost of Work) to be used to calculate fees is Sixty-Seven Million Dollars (\$67,000,000) for the entire project. The breakout cost for the New Research Laboratory is Thirty-Two Million Dollars (\$32,000,000) and the Given Building Renovation is Thirty-Five Million Dollars (\$35,000,000).

METHOD OF CONSTRUCTION

UVM expects to utilize pre construction services through the design phases and then to complete this project using a general construction delivery method. The form of contract is anticipated to be AIA A101 Standard form of Agreement Between Owner and Contractor where the basis of payment is a Stipulated Sum and AIA A201 General Conditions of the Contract for Construction, with language modified by the University.

PROPOSAL REQUIREMENTS

Please submit fifteen (15) hard copies and one (1) electronic copy **emailed to arch@uvm.edu** of your proposal **tabbed and labeled** per this list (by item number):

1. Provide a brief description of your firm, type of ownership, length of time the firm has been in existence, number of personnel, and business approach.
2. Introduce your proposed project team, including consultants. Provide the resumes of all personnel to be assigned to the project, including the relevant experience that each team member will bring to the project. Identify and define the individual roles. Describe how the team has worked together previously on completed projects of similar scope.
3. Provide a list of at least three (each of new construction and renovation) similar projects your firm/team has undertaken within the last five years including; description, size, original estimated cost as compared to original bid amount, final cost, date of completion, and owner. All of the projects must have a construction cost greater than Thirty Million Dollars (\$20,000,000) and include significant institutional research facilities, both new and renovated. Provide a current contact person, telephone number and email address for all references.
4. Provide at least one example of a medical/science research facility with sustainable design (can be one of the above projects). Indicate LEED™ certification status, describe in detail design solutions to achieve sustainable design; include the cost increases or savings, both capital and operating, that were associated with this design.
5. Comment on the design and construction time frame proposed by UVM for the project. Is this realistic and achievable from your firm's perspective? Include your anticipated schedule for completion of each design phase, allowing time for owner reviews, and estimate reconciliation in order to meet the construction start date for the project.
6. Provide a list of current and pending project commitments by your firm.

7. Provide a separate fee proposal for the New Research Laboratory and/or the Given Building Renovation project per the attached Fee Proposal Matrixes. Provide the methodology for charging for "additional services" including rate schedules. Provide an estimate of reimbursable expenses with a proposed lump sum not-to exceed amount. Include an hourly rate sheet for all firms carried in the proposal.
8. In the past ten years, has your firm (1) had claims made against it for claimed amounts in excess of \$25,000 per project **or** (2) had any arbitration actions or lawsuits initiated against it - for any claimed damages or losses arising out of services your firm has supplied to owners or clients who have hired your firm?

If so, please describe the date(s) and parties involved in such claims, and describe the nature of the dispute, and if a lawsuit was filed, please identify the court where such suit was filed.

9. Provide proof of ability to furnish liability insurance covering claims arising out of negligent acts, errors, and omissions in rendering or failing to render professional services as required per the contract (attached).

PROPOSAL SELECTION CRITERIA

The University will use the following criteria to evaluate the proposals:

- Firm's recent and demonstrated experience in designing new and renovated successful research facilities in a university setting, especially ones similar in size and nature to this project.
- Expertise, experience, and qualification of the design team proposed for the project.
- Expertise, experience, and qualifications of the consultants proposed for the project.
 - Favorable responses from references.
 - Fee proposal, estimated reimbursable expenses, and hourly rate schedules.

The University may elect to solicit additional information from certain firms and award a contract to the most responsible bidder providing the best value to UVM based on the selection criteria. The University reserves the right to reject any or all proposals.

BUILDING COMMITTEE

The selection committee will consist of the following University of Vermont personnel:

Senior Advisor to the President and Provost
Vice President, Division of University Relations and Administration
Senior Associate Dean of Research in Larner School of Medicine
Chair of Psychology
Asst. Dean for Facilities Administration in Larner School of Medicine
Director of Capital Planning and Management
Director of Campus Planning Services
Director of Facilities Design & Construction

Director of Physical Plant
University Architect, Facilities Design & Construction
Senior Construction Field Coordinator, Facilities Design & Construction

PROPOSAL TERMS

- Firms choosing to submit a proposal certify that they have reviewed the conditions of the **non-negotiable** AIA B102 Standard Form of Agreement Between Owner and Architect without a Predefined Scope of Architect's Services and B201 Standard Form of Architect's Services: Design and Construction Contract Administration, with language modified by the University, and that they will enter into this agreement with The University of Vermont if selected for this project. A copy of this agreement is attached.
- The University as an Instrumentality of the State of Vermont is governed by specific freedom of information laws. No aspect of the proposal(s) should be considered confidential. The University will not make the proposal(s) available for public review unless a request is presented in writing and the Office of the General Counsel determines the University is required to make the proposal(s) public under the freedom of information laws.

MANDATORY CAMPUS SITE VISIT AND INFORMATIONAL MEETING

The mandatory campus site visit and informational meeting will be held **Wednesday, November 15, 2017, at 1:30 PM**. At least one representative from the design team will be required to attend. The meeting will convene at the Larner Medical Education Center, Sullivan Auditorium (Room 200). Please view the following website for directions and parking information. <http://www.uvm.edu/~tspwww/>.

QUESTIONS

Verbal questions will be answered at the campus site visit and informational meeting. All other questions should be addressed in writing no later than 2:00 PM, **Tuesday, November 28, 2017**, to arch@uvm.edu.

PROPOSAL DEADLINE

Fifteen (15) hard copies and one (1) electronic copy **emailed to arch@uvm.edu** of your proposal are due by 2:00 PM, on **Thursday, December 14, 2017**, at the following address. Proposals received after that time will not be considered.

The University of Vermont
Department of Facilities Design and Construction
31 Spear Street, Marsh Hall, Suite 10
Burlington, VT 05405-0344
Attn: Paula Carlaccini, Director of Facilities Design & Construction

The University may elect to solicit additional information from certain firms. The University reserves the right to reject any and all proposals.

END OF REQUEST FOR PROPOSAL

Attachments:

- Research Building/Given Building Fee Proposal Matrix
- Architect-Engineer Checklist of Services
- Research Building Concept Site Plan Drawing
- Given Building Floor Plans
- AIA B102 Standard Form of Agreement Between Owner and Architect without a Predefined Scope of Architect's Services and Exhibits
- B201 Standard Form of Architect's Services: Design and Construction Contract Administration and Exhibits

Link to: Campus Master Plan & Design Guideline, May 2006:

<http://www.uvm.edu/~plan/?Page=campusmasterplan.html&SM=campusmasterplanmenu.html>

New Research Laboratory & Given Building Renovation for Larner School of Medicine and Dept. of Psychology Architect-Engineer (A-E) Checklist of Services

The following architectural and engineering checklist defines the requirements for University of Vermont construction project design submissions. It is meant as a guide for obtaining uniformity and coherence in the presentation of design documents.

It is imperative that the A/E and consultants recognize that the UVM reviews are general in nature; that the detailed checking for technical accuracy, sufficiency, and coordination is the sole responsibility of the A/E and its consultants. Notwithstanding UVM approval, the A/E shall remain liable for all damages resulting from design errors and negligent performance by the A/E or its consultants.

All review comments shall be incorporated into the design documents prior to subsequent design phase submissions, unless the reviewer directs the A/E to disregard the comment. In this event, the A/E shall record such a direction in the A/E response column.

The A/E shall provide a written reply to all comments prior to the next submission. If the A/E intends to disregard a comment, the A/E shall provide a written explanation of variance with the comment to UVM within seven (7) days after receipt of the UVM review comments.

Identify phase for each submission: Schematic Design, Design Development, 50% Construction Documents, and 100% Construction Documents.

Schematic Design (SD) Phase Submission

The SD documents must be submitted to UVM for design review and approval.

Detailed Information: Schematic design phase submissions at a minimum shall include the following requirements, as applicable to the project. All plan drawings shall indicate the north arrow, column lines and the scale of the drawing.

A. Site/Landscape

All site documentation shall:

- Be coordinated with similar activities in other disciplines

1) Drawings

- a) Existing site plan
 - (1) Vicinity Plan
 - (2) Location of benchmark that will control all project elevations
 - (3) Demolition Plan
 - (4) Facilities that may have interruption of any utility
 - (5) Orient north to be the top of the drawings in plan view
 - (6) Major landscaping
 - Major trees and memorial vegetation
 - Fences and barriers
 - (7) Site features and conditions
 - Existing contours, especially at major grade changes

- Building footprint
- Setbacks
- Preliminary geotech information
- Proposed soil boring locations
- Seismic conditions
- Identifiable site constraints
- Utility lines
- Manholes, drains, utility access
- Security features
- Known historic or archaeological impact items
- (8) Paved surfaces
 - Major streets
 - Vehicular routes
 - Curbs
 - Walks
 - Pedestrian access routes
 - Bicycle paths and parking
 - Parking with handicapped locations
 - Service areas
 - Other paved areas
- (9) Existing structures
- (10) Existing buildings
- (11) Buildings/Structures/other items to be demolished or removed
- (12) Other elements
 - Nuisance land uses
 - Convenience nodes (mass transit, drop off area)

2) Reports/Calculations

- a) Basis of Design report
 - (1) Analysis/description of conceptual design
 - Design objectives
 - Environmental determinants
 - Site utilities
 - Land forms
 - Site lighting
 - Pest management
 - Irrigation system
 - Lawns and plantings based on programming
 - Grading
 - Physical site characteristics
 - Impact of building on site
 - Impact of site on building
 - (2) Concept plan for drainage and grading
 - (3) Demolition requirements
 - (4) Alternative materials, systems, and equipment
 - Site utilities
 - Fire protection
 - Paving

B. Architectural

All architectural documentation shall:

- Be coordinated with similar activities in other disciplines
- Update LEED scorecard, provide submissions

1) Drawings

- a) Floor Plans
 - (1) Demolition plan of each level
 - Limit of demolition work
 - (2) Floor plan of each level – New work
 - Area names

- ◆ Room names
- ◆ Public areas
- ◆ Service areas
- Column lines
- North Arrow
- Capacity information (Number of people, seating, etc.)
- Departmental assignments, if known
- Floor elevations in coordination with civil
- Light wells
- Mechanical areas
- Multilevel spaces
- Partition locations
- Planning grid or module
- Preliminary equipment and description
- Relative wall thickness
- Security features
- Skylights
- Vertical transportation
- (3) Fire protection and means of egress plan
 - List features required by code
 - List features required by NFPA Standard 101 and FM Global
 - Fire protection analysis
 - Fire areas
 - Fire walls
 - Smoke zones
 - Travel distances
 - Areas of refuge
- b) Interiors
 - (1) Interior space allocation and utilization plan
 - Indicate major materials and systems
- c) Exterior
 - (1) Building exterior elevations
 - Finish grades
 - Major floor elevations above and below grade
 - Exposed mechanical and electrical equipment
 - Description of various design features
- d) Sections
 - (1) Building section (cross and longitudinal)
 - Relative thickness of floors
 - Relative thickness of walls
 - Major floor elevations
 - Finish grades
 - Major room names
 - Important site easements
 - Significant mechanical and electrical equipment
 - Relationship to site contours
 - Above-ceiling zoning analysis
 - Typical wall sections
 - Set interstitial space dimensions
 - Set floor-to-floor dimensions

2) Reports/Calculations

- a) Basis of Design report
- b) Architectural program
- c) Code analysis
 - (1) Define building type
 - (2) Define use category
- d) Area analysis
 - (1) Gross area tabulations
 - (2) Area tabulations for net and gross design areas by floor

- (3) Space tabulation of net by room
- e) Alternative materials, systems, and equipment
- f) Description of Green/Sustainable Design elements included (LEED scorecard)

C. Structural

All structural documentation shall:

- o Be coordinated with similar activities in other disciplines

1) Drawings

- a) Floor Plans
 - (1) Demolition plan of each level
 - (2) Building outline – plan view with column lines related to architectural plan
 - (3) Indicate contemplated column footprint size
 - (4) Column lines
 - (5) North Arrow
- b) Sections
 - (1) Indicate contemplated beam configuration and depth
 - (2) Indicate interstitial levels

2) Reports/Calculations

- a) Basis of Design Report
 - (1) Systems outlines
 - (2) Development of conceptual design solutions in coordination with other disciplines
 - (3) Design live loads and design wind loads stated
 - (4) Two possible structural systems
- b) Indicate status of obtaining geotechnical data for structural design
- c) Code analysis

D. Mechanical

All mechanical documentation shall:

- o Be coordinated with similar activities in other disciplines

1) Drawings

- a) Floor Plans
 - (1) Demolition plan of each level
 - o Limit of demolition work
 - (2) New work plan of each level
 - (3) Locate new and existing mechanical HVAC equipment
 - (4) Layout out major components
 - (5) Coordinate locations and size of mechanical rooms with architectural plans
 - (6) Coordinate locations and size of vertical shafts with architectural plans
 - (7) System flow diagrams indicating the basic arrangement, general distribution concept, and key features of each mechanical system
 - (8) Identify connections to major utilities
 - o Steam
 - o Chilled water
 - o Natural gas
 - (9) Indicate intakes and exhausts relationships to:
 - o Loading docks
 - o Emergency generator
 - o Adjacent buildings
 - o Wind direction

2) Reports/Calculations

- a) Basis of Design report
- b) Code analysis
- c) Design conditions
 - (1) Outside air temperature
 - (2) Inside air temperature

- (3) Air changes
- (4) Relative humidity
- (5) Utility pressure
- (6) Methodology for utility demands
- d) Requirements for HVAC services
- e) Special requirements
 - (1) Fume hood
 - (2) Biosafety cabinet
 - (3) Other local exhaust requirements
 - (4) Constant-temperature rooms
 - (5) Clean rooms
 - (6) Chemical storage
- f) Overall HVAC system concepts
- g) Equipment type and redundancies
- h) Energy recovery systems
- i) Preliminary equipment sizes based on building gross square feet area
- j) Preliminary energy budget
- k) Life-cycle cost analysis
- l) Analysis of conceptual design solutions
 - (1) Energy source
 - (2) Energy conservation
 - (3) Heating and ventilating
 - (4) Air conditioning
- m) Alternative materials, systems, and equipment
- n) Design intent and scope of systems
- o) Systems outline for proposed projects
- p) Systems redundancies

E. Plumbing

All plumbing documentation shall:

- o Be coordinated with similar activities in other disciplines

1) Drawings

- a) Floor Plans
 - (1) Demolition plan of each level
 - o Limit of demolition work
 - (2) New work plan of each level
 - (3) Locate new and existing plumbing equipment
 - (4) Layout out major components
 - (5) System flow diagrams indicating the basic arrangement, general distribution concept, and key features of each plumbing/piping system
 - (6) Coordinate locations and size of vertical shafts with architectural plans
 - (7) Identify connections to major utilities
 - o Steam
 - o Chilled water
 - o Natural gas
 - o Water
 - o Special water (deionized, R.O.)
 - o Sewer
 - o Specialty gases (systems or tanks)
 - o Vacuum
 - o Compressed air

2) Reports/Calculations

- a) Basis of Design report
- b) Code analysis
- c) Basic system arrangement and zoning
- d) Primary features
- e) General sizing criteria (Flow and Pressure)
- f) Equipment type and redundancies

- g) Provisions to be included for future loading and flexibility
- h) Outline of proposed system materials
- i) Present conditions
- j) Requirements for plumbing services
- k) Special requirements, i.e. booster systems
- l) Water supply analysis/test results specific to building site
 - (1) Hazardous waste
 - (2) Waste recovery
- m) Overall plumbing system concepts
- n) Analysis of conceptual design solutions
- o) Alternative materials, systems, and equipment
- p) Plumbing calculations

F. Fire Protection

All fire protection documentation shall:

- o Be coordinated with other disciplines

1) Drawings

- a) Floor Plans
 - (1) Demolition plan of each level
 - o Limit of demolition work
 - (2) New work plan of each level
 - (3) Locate new and existing fire protection equipment or systems
 - (4) Layout out major components

2) Reports/Calculations

- a) Basis of Design report
- b) Code analysis
- c) Present conditions
- d) Requirements for fire protection
- e) Requirement for a fire pump and preliminary size
- f) Overall system concepts
- g) Analysis of conceptual design solutions
- h) Alternative materials, systems, and equipment
- i) Calculation of the required water supply
- j) Hydrostatic flow test
- k) Preliminary sprinkler water supply calculations
- l) Schematic plans with overall fire protection concepts
- m) Special fire suppression systems
 - (1) Descriptions
 - (2) Locations
 - (3) Justification for use
- n) Integrated fire alarm
- o) Protection analysis report for each alternative

G. Electrical

All electrical documentation shall:

- o Be coordinated with other disciplines

1) Drawings

- a) Site Plans
 - (1) Locate connection to medium voltage distribution
 - (2) Locate emergency generators
 - (3) Indicate demolition work
- b) Floor Plans
 - (1) Demolition plan of each level
 - o Limit of demolition work
 - (2) New work plan of each level
 - (3) Locate electrical distribution equipment
 - (4) Coordinate locations and size of electrical rooms/closets with architectural plans

- (5) Single line indication of major feeder routes
 - (6) Tentative layouts of components
 - (7) Lighting plans
 - o Location of lighting fixtures
 - o Type of lighting fixtures
 - (8) Coordinate locations of vertical shafts with architectural plans
- c) Riser Diagram for normal and emergency power distribution

2) Reports/Calculations

- a) Basis of Design report
 - (1) Code analysis
 - (2) Description of primary service available
 - (3) Overall electrical system concept
 - (4) Analysis of conceptual design solutions
 - (5) Description of all proposed systems
 - (6) Description of emergency power system
- b) Electrical load calculations

H. Telecommunications

All telecommunication documentation shall:

- o Be coordinated with other disciplines

1) Drawings

- a) Site Plans
 - (1) Locate connection to telecommunication distribution
 - (2) Indicate demolition work
- b) Floor Plans
 - (1) Demolition plan of each level
 - o Limit of demolition work
 - (2) New work plan of each level
 - (3) Locate new and existing telecommunication equipment
 - (4) Coordinate locations and size of telecommunication rooms/closets with architectural plans
 - (5) Single line indication of major pathway routes
 - (6) Coordinate locations of vertical shafts with architectural plans
- c) Riser Diagram for telecommunication distribution

2) Reports/Calculations

- a) Basis of Design report
 - (1) Description of telecommunication service available
 - (2) Overall telecommunication system concept
 - (3) Analysis of conceptual design solutions
 - (4) Description of all proposed systems (Public address, audio/visual system, distributed antenna system, etc.)

I. Specifications

- 1) General conditions of contract coordinated with the University of Vermont's 'General Requirements for Working at the University of Vermont'
- 2) Outline of specifications or itemized list with criteria and quality standards

J. Costs

Cost analysis

- o Prepared by independent professional estimating firm
- o Cost estimates reconciled with Owner's independent cost estimator

Design Development Phase Submission

The DD documents must be submitted to UVM for design review and approval.

Design development phase submission, at a minimum, shall include following requirements as applicable to the project in addition to the requirements from the schematic design phase. All plan drawings shall indicate the

north arrow, column lines, and the scale of the drawing.

The Architect shall coordinate with the University of Vermont's Campus Planning Services Department for permit submission and presentation.

A. Site/Landscape

All site documentation shall:

- Be coordinated with similar activities in other disciplines

1) Drawings

a) Plans

- (1) Vicinity Plan updated as required
- (2) Location of signage
- (3) Details
- (4) Existing Site Plan updated as required
 - Facilities that may have interruption of any utility
- (5) Proposed site plan
 - Existing site information
 - Building footprint
 - ◆ Spot elevations at building
 - Proposed contours
 - Key design elements
 - Major landscaping
 - Utility lines
 - Concept plan for drainage and grading
 - Vehicular access routes
 - Parking area
 - Loading dock location and proposed access route
 - ◆ Coordinate location of loading docks such that they are not near air intakes
 - Proposed pedestrian access routes
 - Proposed service areas
 - Construction access/lay down information
 - ◆ Location for excavated material
 - ◆ Site access routes for transporting/delivering project supplies
 - ◆ Staging areas
 - ◆ Construction office trailer locations
 - ◆ Utility hookups, construction trailer
 - Limits of work showing location of site fence
 - Indication of future surrounding improvements

2) Reports/Calculations

a) Basis of Design report

- (1) Establish final scope
 - Relationships
 - Form
 - Size
 - Appearance
- (2) Utilities statement: Companies, agencies, individual contact
- (3) Analysis/description of conceptual design solutions
- (4) Site safety plan
 - Fire protection
 - Hazardous material handling
- (5) Storm water management report
- (6) Erosion/sediment control report
- (7) Concept plan for drainage and grading
- (8) Demolition requirements
- (9) Alternative materials, systems, and equipment

B. Architectural

All architectural documentation will:

- Be coordinated with similar activities in other disciplines

1) Drawings

a) Plans

- (1) Demolition plan of each level
- (2) Floor plans of each level
 - Identification of existing and new construction
 - General notes
 - Enlarged plan bubbles
 - Shelving and special features
 - Fixed equipment
 - Portable equipment
 - Other penetrations
 - Access areas/area ways
 - Door schedules
 - Finish schedules
 - Double line plans with precise wall thickness
 - All programmed rooms
 - Equipment rooms
 - Electrical rooms
 - Telephone closets
 - Mechanical rooms
 - Shafts
 - Circulation corridors
 - Stairs
 - Ladders
 - Elevators
 - ◆ Number
 - ◆ Type
 - ◆ Size
 - Automatic conveyances
 - Room names
 - Department or area names
 - Planning grid
 - Structural grid
 - Floor elevations
 - Equipment
 - Furnishings and other space-defining elements
 - Multilevel spaces
 - light wells
 - Significant mechanical equipment
 - Significant electrical equipment
 - Capacity information (Number of people, seating, etc.)
 - Overall dimensions
 - Plan and layout of typical or repetitive spaces
 - Fire protection
 - ◆ Fire walls
 - ◆ Smoke walls
 - ◆ Smoke zones
- (3) Roof plan
 - Major roof elements
 - ◆ Skylights
 - ◆ Hatches
 - ◆ Major mechanical equipment
 - ◆ Major electrical equipment
 - ◆ Elevator machine rooms
- (4) Reflected ceiling plan
 - Suspended ceiling grids
 - Lighting fixtures
 - Diffusers

- Registers
- Sprinkler heads
- Areas of special interest
- Major components
- (5) Fire protection egress plan
- b) Interiors
 - (1) Interior space allocation and utilization plan
 - Establish the final scope relative to interior construction
 - Finish Schedule
 - ◆ Finishes
 - ◆ Colors
 - ◆ Special interior design features
 - Furniture and equipment
 - ◆ Furnishings
 - ◆ Equipment selections
 - ◆ Materials
- c) Interior Elevations
 - (1) Building interior elevations
 - Typical spaces
 - Major spaces
 - Areas of special interest
 - Areas of special complexity
- d) Exterior Elevations
 - (1) Building exterior elevations
 - Indicate all surface materials for all areas
- e) Sections and Details
 - (1) Building Sections
 - Set floor-to-floor dimensions
 - Establish floor elevations
 - Set interstitial space dimensions
 - (2) Wall sections
 - Typical wall sections
 - ◆ At window
 - ◆ At solid wall
 - ◆ At parapets and roofs
 - ◆ At finished grades and footings
 - (3) Construction sections
 - Typical stairways
 - Typical elevator shaft and machine room
 - Utility coordination cross-sections

2) Reports/Calculations

- a) Basis of Design Report
- b) Area analysis
- c) Alternative materials, systems, and equipment
- d) Outline of program
- e) Design description narrative
- f) Design concepts and objectives
- g) Tabulation of net and gross areas
- h) Growth potential
- i) Description of Green/Sustainable Design elements included
(LEED scorecard can be used to communicate intent even if certification is not intended)
- j) Alternate schemes
- k) Building envelope analysis
 - (1) Recommendations for overall building envelope
 - (2) Review of thermal vapor flow and moisture
 - (3) Recommendation for vapor barriers
 - (4) Recommendation for vapor isolation
 - (5) Coordinate with Owner's Building Envelope Consultant
- l) Asbestos report – Provided by the University

- m) Vertical transportation recommendations
 - (1) Elevators
 - Number
 - Type
 - Size
 - Weight capacity
 - Speed
 - Arrangement
 - (2) Other requirements

C. Structural

All reports and documentation will:

- Be coordinated with similar activities in each discipline

1) Drawings

- a) Floor plans
 - (1) Demolition Plan
 - (2) Structural floor plans, each level coordinated with architectural development
 - Indicate soil bearing capacities
 - Indicate potential structural framing system that coordinates with architectural and suitable for vibration transmission limitation required by scientific program
 - Fixed column reference lines
 - Basic structural system and dimensions
 - Bearing walls
 - Major bracing locations
 - Locate typical bay – relate to architectural
 - Preliminary sizing of major components
 - Columns
 - All framing members identified
 - ◆ Girders
 - ◆ Beams
 - ◆ Joists
 - Indicate structural framing systems
 - (3) Structural foundation plans
 - Footings
 - Foundation walls
 - Retaining walls
 - Grade beams
 - (4) Details
 - Foundation details
 - Typical framing details
 - Sub drainage
 - Waterproofing
 - Damp proofing

2) Reports/Calculations

- a) Basis of Design report
 - (1) Existing conditions
 - Underlying soil-bearing capacities
- b) Calculations for support of Hydronic and hydraulic piping
- c) Vibration requirements and analysis
- d) Summary of structural systems requirements
- e) Fire-resistive construction requirements
- f) Development of alternatives
 - (1) Foundation design criteria
 - (2) Coordination with piping systems that require support
 - (3) Laboratory vibration analysis
 - (4) Final structural design criteria
 - (5) Comparative cost analysis of at least two structural systems
- g) Critical coordination clearances

- h) Column schedules

D. Mechanical

All mechanical documentation will:

- o Be coordinated with similar activities in other disciplines

1) Drawings

- a) Floor Plans
 - (1) Demolition plan
 - (2) Locate associated existing mechanical equipment
 - (3) Indicate connection to major utilities
 - (4) Block layouts of mechanical spaces
 - o Layout of major components in equipment rooms
 - o Approximate equipment sizes and capacities
 - o Required space for equipment
 - o Required chases and clearances
 - o Acoustical and vibration control
 - (5) Energy conservation measures
 - (6) Shafts
 - (7) Mechanical Plan showing ducts
 - (8) Double line drawing of ducts >150 mm (6 in.)
 - (9) Single line drawing of ducts ≤150 mm (6 in.)
 - (10) Indicate size of ducts
 - (11) Indicate insulation/moisture prevention
 - (12) Location of supply diffusers, return and exhaust grilles, coordinated
 - (13) Reflected ceiling plan
 - (14) Location of all equipment
- b) Legend
- c) Special or complex ductwork
- d) Drawing sections through equipment rooms
- e) Typical ductwork details
- f) Details of unique conditions
- g) Air conditioning systems
- h) Exhaust systems
- i) Refrigeration systems
- j) Process systems
- k) Equipment schedules
- l) Air conditioning schedules
- m) Ventilation units schedules
- n) Refrigeration elements schedules
- o) Fans schedules
- p) Pumps schedules
- q) Specialty system
- r) System diagrams (one line flow and control diagrams)

2) Reports/Calculations

- a) Basis of Design report
 - (1) Plant analysis
 - (2) Design intent and scope of systems
 - (3) Systems outline for proposed project
 - o Heating source
 - o Refrigeration source
 - o HVAC systems
 - o Energy conservation
 - o Redundancies
 - o Building & energy management systems
 - (4) Indoor design conditions U-value calculations
 - (5) Outdoor design conditions U-value calculations
 - (6) Theoretical water vapor migration
 - (7) Dew point and condensation potential

- b) Room by room load calculations for space cooling and heating
- c) Ductwork sizing in plenums and shafts
- d) Energy analysis for at least three HVAC systems
- e) Building energy model
- f) Life cycle cost analysis
- g) Energy recovery analysis
 - (1) Energy conservation analysis
- h) Connected load requirements
- i) Wind analysis and laboratory exhaust plume study
- j) Pressurization analysis
- k) Energy study
- l) Sizing calculations for ducts
- m) Combustion air supply calculations
- n) Boiler plants
- o) Ventilation systems
- p) Heating system
- q) Calculations for fan pressures and pump heads
- r) Calculations for required sound attenuation of major fans
- s) Calculations for process systems

E. Plumbing

All plumbing documentation will:

- o Be coordinated with similar activities in other disciplines

1) Drawings

- a) Demolition Plans
- b) Locate associated existing mechanical equipment
- c) Indicate connection to major utilities
- d) Floor Plans showing location and size of equipment
- e) Locate piping
- f) Double line drawing and piping >150 mm
- g) Single line drawing and piping ≤150 mm
- h) Indicate size of pipes
- i) Indicate insulation/moisture prevention
- j) Indicate piping system
- k) Walk-in coolers, freezers, cold rooms
- l) Refrigeration systems
 - (1) Schematic piping
 - (2) Wiring diagrams
 - (3) Automatic controls
- m) Plot plan for outside of building underground distribution
- n) Riser diagrams
- o) Details
- p) Detailing of unique conditions and vibration isolation engineering
- q) One line flow and control diagrams
- r) Chilled water
- s) Condenser water
- t) Hot water
- u) Steam piping (including low quantities)
- v) Air conditioning steam
- w) Plumbing piping mains
- x) Pipes materials
- y) Drainage piping mains (waste and storm)
- z) Utilities
 - aa) Distribution layouts
 - bb) Plumbing fixtures
 - cc) Plumbing riser diagrams
 - dd) Schedules

2) Reports/Calculations

- a) Basis of Design report
- b) Coordination with structural for support of piping
- c) Provide cut-sheets for plumbing fixtures and equipment, with primary features/anticipated design options identified
- d) Plumbing calculations
 - (1) Pump sizing
 - (2) Tank sizing

F. Fire Protection

All fire protection documentation shall:

- o Be coordinated with similar activities in other disciplines

1) Drawings

- a) Floor Plans
 - (1) Demolition plans
 - (2) Locate new and existing equipment
 - (3) New fire protection mains
 - (4) Booster system requirements
 - (5) Fire pump requirements
 - (6) Preliminary equipment layouts
 - (7) Required space for equipment
 - (8) Block layouts for the fire protection system
 - (9) Plan drawings
 - (10) Create legends
 - (11) Locate piping
 - (12) Indicate size of pipes
 - (13) Equipment layouts
 - (14) Ceiling plan drawings
 - (15) Sprinkler locations

2) Reports/Calculations

- a) Basis of Design report
 - (1) Strategy for meeting life safety codes
 - (2) List any upgrade requirements to achieve fire protection policy
 - (3) Sprinkler calculations
 - (4) Fire pump calculations
 - (5) Fire alarm requirements
- b) Approximate sizes and capacities of major components

G. Electrical

All electrical documentation will:

- o Be coordinated with similar activities in other disciplines

1) Drawings

- a) Site Plan
 - (1) Service transformer location
 - (2) Location of emergency generators and feeder/conduit routing
 - (3) Preliminary details for site electrical work
 - (4) Indication of demolition work
- b) Floor Plans
 - (1) Demolition plans
 - (2) Layout of major components in all electrical equipment rooms
 - o Preliminary sizes of major components
 - o UPS
 - o High-voltage systems
 - o Service transformer
 - o Emergency generator
 - (3) Identify special features
 - o Under floor raceways
 - o Floor outlets

- Occupancy sensors
- c) Tentative layouts of components where space is critical
- d) Lighting plans
 - (1) Location of lighting fixtures
 - (2) Type of lighting fixtures
- e) Updated riser diagram for normal and emergency power distribution with feeder, conduit, and transformer sizes
- f) Updated site plan indicating location of:
 - (1) Feeder/conduit routing for medium voltage distribution
 - (2) Location of emergency generators and feeder/conduit routing
 - (3) Transformer vaults
 - (4) Other major equipment
- g) Lighting fixtures indicated with type, switching and circuiting information
- h) Outlets for power with circuiting information
- i) Connections for mechanical and plumbing equipment with disconnect and circuiting information
- j) One line riser diagram of electrical distribution
- k) One line riser diagram of auxiliary power distribution
- l) Panel schedules
- m) Grounding
- n) Fire alarm
- o) Telephone
- p) All low-voltage systems

2) Reports/Calculations

- a) Basis of Design report
 - (1) Criteria for lighting
 - (2) Criteria for electrical system
 - (3) Lighting control concept
 - (4) Systems outline and types of systems
- b) Overall building connected load requirements
 - (1) Normal power
 - (2) Emergency power
- c) Electrical service sizing calculations
- d) Preliminary sizing for transformers, generator, UPS, etc.
- e) Lighting calculations
- f) Load calculations
- g) Short circuit calculations
- h) Voltage drop calculations

H. Telecommunication

All telecommunication documentation will:

- Be coordinated with similar activities in other disciplines

1) Drawings

- a) Site Plan
 - (1) Conduit routing for telecommunication distribution
 - (2) Preliminary details for site electrical work
 - (3) Indication of demolition work
- b) Floor plans
 - (1) Demolition plans
 - (2) Layout of major components in all telecommunication equipment rooms
 - Preliminary sizes of major components
 - (3) Telephone connections
 - (4) Data connections
- c) Tentative layouts of components where space is critical
- d) Updated riser diagram for telecommunication distribution conduit sizes
- e) Layout of major components in all telecommunication equipment rooms
- f) Layouts of components where space is critical

- 2) **Reports/Calculations**
 - a) Updated basis of design report

I. Specifications

- 1) General and supplemental conditions of contract
- 2) Outline of specifications or itemize list with criteria and quality standards
 - a) Significant architectural materials
 - b) Engineering systems
 - c) Equipment
- 3) Outline of project specifications

J. Costs

- 1) Cost Analysis
 - a) Systems Cost estimate
 - (1) Approximate quantities
 - (2) Identification of potential items for value engineering
 - b) Budget outline
 - (1) Construction costs by an independent professional estimating firm, to be reconciled with the Owner's independent cost estimator
 - (2) Equipment included in budget
 - (3) Equipment by owner

K. Specifications

- 1) General and supplemental conditions of contract
- 2) Edited project specifications

L. Schedules

- 1) Construction schedule and phasing in bar chart form
- 2) Project schedule diagram with phases of development

Construction Document Phase Submission

The CD documents must be submitted to UVM for design review and approval.

Detailed Information: The construction documents, at a minimum, shall include the following requirements as applicable to the project.

A. Site/Landscape

All Site documentation will:

- Be completed
- Be coordinated with similar activities in other disciplines
- Address all comments from Design Development phase

1) Drawings

- a) Floor Plans
 - (1) Updated Vicinity Plan
 - (2) Updated Existing Site Plan
 - (3) Proposed Site Plan
 - Erosion control measures
 - Existing site information
 - Dimension major site features
 - Building footprint
 - Key design elements
 - Major landscaping
 - Utility lines
 - Vehicular access routes
 - Pedestrian access routes
 - Parking
 - Walks
 - Curbs

- Service areas
- Staking plan
- Proposed contours
- Construction access/lay down information
- Indications of phasing
- Limits of work/construction fencing
- Indication of future surrounding improvements
- Locate signage
- Security measures
- (4) Planting plan
 - Location of all trees, shrubs, and lawns
 - Complete planting list
 - Planting details
- (5) Landscape details
- (6) Demolition plans
- (7) Utility plot plan
 - Existing utilities and their connections
 - Proposed trunk sewers
 - Water distribution loop
 - Fire water distribution loop
 - Gas distribution mains
 - Location arrangement of water treatment equipment
- (8) Alternate schemes

2) Reports/Calculations

- a) Site Construction Document Design Report
 - Updated Basis of Design

B. Architectural

All Architectural documentation will:

- Be coordinated with similar activities in other disciplines
- Address and provide responses to all comments from Design Development phase

1) Drawings

- a) Entire project site on one sheet for references
- b) Demolition plan of each level
- c) Floor plans of each level
 - (1) Signage location
- d) Roof plan
- e) Reflected ceiling plans
- f) Floor covering plan
 - (1) Material type
 - (2) Graphics
 - (3) Patterns
- g) Enlarged plans
- h) Fire protection egress plan
- i) Equipment plan
- j) Interior space allocation and utilization plan
- k) Interior elevations
 - (1) Signage location
- l) Exterior elevations
 - (1) Signage location
- m) Building sections
- n) Construction details
 - (1) Any unique condition not previously covered
- o) Installation plans
 - (1) Furniture
 - (2) Equipment
- p) Updated schedules
 - (1) Door schedules

- (2) Finish schedules
- (3) Equipment schedules

2) Reports/Calculations

- a) Architectural Design report
 - o Updated Basis of Design
 - o Updated Green/Sustainable Design

C. Structural

All Structural documentation will:

- o Be coordinated with similar activities in other disciplines
- o Address all comments from Design Development phase

1) Drawings

- a) Demolition plan of each level
- b) Structural floor plans for each level and roof
 - (1) Column reference lines
 - (2) Final dimensions
 - (3) All bracing
 - (4) Sizing of all components
 - (5) Special provisions for installation or removal of equipment
- c) Structural foundation plans
 - (1) Locate grades
 - (2) Indicate site information, i.e., manholes and important features
 - (3) State concrete mix properties, steel reinforcement properties
 - (4) Locate terrain features
 - (5) State elevation of bottom of footings
 - (6) Indicate concrete member
 - o Dimensions of footings, foundation walls, grade beams
 - o Spacing
 - o Reinforcing
 - (7) Locate finished and unfinished spaces
 - (8) Pipe sleeves through footings
 - (9) Pipe sleeves through below grade walls
 - (10) Elevations
 - (11) Top of slab elevations
 - (12) Top of steel elevations
- d) Details
 - (1) Sections, elevations, and details
 - (2) Critical coordination clearances
 - (3) Concrete reinforcement splicing details, where critical
 - (4) Clarification of lengths or arrangement of reinforcement
 - o Any condition not previously addressed
- e) Schedules
 - (1) Schedules for slabs, beams and girders
 - (2) Column schedule
- f) Structural notes
- g) Structural drawings and information is coordinated with architectural, HVAC, and electrical design

2) Structural Load Information

- a) Horizontal (wind and seismic)
- b) Live loads
- c) Dead loads

3) All Structural Members Sized

- a) Girders, beams, joists, slabs, columns, walls, shear walls, pads, and their reinforcing
- b) Beams – steel and concrete
- c) Joists
- d) Open web joists

- e) Concrete joists
- f) Waffle slab
- g) Space frames
- h) Lintels
- i) Type, extent, and direction of framing
- j) Reference structural items to schedule

4) Dimensioned Details

- a) Large openings
- b) Nonstandard beam to column framing
- c) Concrete stairs
- d) Exterior wall construction
- e) Window wash supports
- f) Anchors and ties
- g) Elevator shaft details
- h) Vibration isolation details
- i) Large mechanical equipment and anchorage
- j) Typical framing details
- k) Standard structural steel connections
- l) Sump pump systems
- m) Reference to appropriate schedules
- n) Shear walls

5) Reports/Calculations

- a) Structural report
 - (1) Completed computations
 - (2) Special condition
 - (3) General note
 - (4) Boring logs
 - (5) Girder diagrams
 - o Live loads
 - o Uniform loads
 - o Concentrated loads
 - o Reactions
 - o Girder material
 - o Stresses

D. Mechanical

All mechanical documentation will:

- o Be a minimum of 100% complete
- o Be coordinated with similar activities in other disciplines
- o Address all remarks from Design Development phase
- o

1) Drawings

- a) Demolition plans
- b) Completed floor plans
 - (1) Legend
 - (2) Mechanical Plan showing ducts and piping
 - o Double line drawing of ducts and piping >150 mm (6 in.)
 - o Single line drawing of ducts and piping ≤150 mm (6 in.)
 - (3) Indicate size of ducts and pipes
 - (4) Indicate insulation/moisture prevention
 - (5) Fire dampers
 - (6) Smoke dampers
 - (7) Balancing dampers
 - (8) Location of all equipment
 - (9) Indicate smoke detectors
 - o Within ducts
 - o In air handling units

- (10) Special or complex ductwork
- (11) Location of supply diffusers, return and exhaust grilles coordinated with reflected ceiling plan
- c) Completed Sections
 - (1) Drawing sections
 - Through equipment rooms
 - Typical ductwork
 - Through tight and congested ceiling spaces
- d) Completed Details
 - (1) Details of unique conditions
 - (2) Details of component/equipment piping and duct connections
 - (3) Control diagrams with points list, legend, and operating description
 - Air conditioning systems
 - Exhaust systems
 - Refrigeration systems
 - Heating systems
- e) Completed Schedules
 - (1) Equipment schedules with facility numbers and labeling requirements
 - Air conditioning
 - Ventilation units
 - Refrigeration elements
 - Fans
 - Pumps
 - Boilers/Heat exchangers

2) Reports/Calculations

- a) Completed Basis of Design report
- b) Completed Design reports
 - (1) Sizing calculation for ducts, piping, and equipment
 - (2) Calculations for fan pressures and pump heads
 - (3) Calculations for required sound attenuation of major fans

E. Plumbing

All plumbing documentation will:

- Be coordinated with similar activities in other disciplines
- Address and provide responses to all comments from Design Development phase

1) Drawings

- a) Demolition plans
- b) Completed plumbing system plan drawings
 - (1) Legends
 - (2) Show location and size of equipment, fixtures, valves, and accessories
 - Pumps
 - Tanks
 - Heat Exchangers
 - Heaters
 - Compressors
 - Sinks, emergency showers, and eye wash
 - Backflow preventers, pressure reducing valves
 - Lab air outlets and floor drains
 - Isolation valves and access panels
 - (3) Locate piping
 - Double line drawing and piping >150 mm
 - Single line drawing and piping ≤150 mm
 - (4) Indicate size of pipes
 - (5) Indicate insulation/moisture prevention
 - (6) Indicate piping system
 - Storm water
 - Cold water
 - Condenser water

- Hot water/recirculation
 - Steam piping (including low quantities)
 - Waste
 - Sanitary
 - Vent
 - Oxygen
 - Compressed air
 - Fuel gas
 - Vacuum air
 - DI/RO water
 - Condensate drain
 - Laboratory water and waste systems
 - Chilled water
 - Additional piping used for the project
 - c) Plot plan for outside of building underground distribution
 - d) Riser diagrams
 - e) Details
 - (1) Detailing
 - Unique conditions
 - Vibration isolation
 - Fixture connection
 - Equipment connection
 - Bench top/utility ledge piping
 - f) One line flow and control diagrams
 - (1) Lab waste and vent
 - (2) Sanitary waste and vent
 - (3) Hot and cold water/recirculation
 - (4) Steam piping (including low quantities)
 - (5) DI/RO water
 - (6) Natural gas
 - (7) Compressed gas
 - (8) Chilled water
 - g) Completed schedules
 - (1) Equipment schedules with facility numbers and labeling requirements
 - Water heaters
 - Pumps
 - Compressors
 - Tanks
- 2) Reports/Calculations**
- a) Design report
 - (1) Equipment selections based on manufacturer's catalog data
 - (2) Sizing calculations
 - Piping mains and principal branches
 - All equipment

F. Fire Protection

All fire protection documentation will:

- Be coordinated with similar activities in other disciplines
- Address and provide responses to all comments from Design Development phase

1) Drawings

- a) Demolition plans
- b) Plan drawings
 - (1) Create legends
 - (2) Indicate existing systems
 - (3) Show location and size of equipment
 - (4) Locate piping
 - (5) Indicate size of pipes
 - (6) Equipment layouts

- c) Ceiling plan drawings
 - (1) Sprinkler locations

2) Reports/Calculations

- a) Fire Protection Design Report
 - o Update Basis of Design

G. Electrical and Communication

All Electrical documentation shall:

- o Be coordinated with similar activities in other disciplines
- o Address and provide responses to all comments from Design Development phase

1) Drawings

- a) Completed site plan with demolition work and indicating location of:
 - (1) Location of emergency generators and feeder/conduit routing
 - (2) Transformer vaults
 - (3) Pad mount transformer location
 - (4) Auxiliary power system connection
 - (5) Engine generator sets
 - (6) Unit substations
 - (7) Other major equipment
- b) Demolition plans
- c) Completed floor plans with
 - (1) Room numbers
 - (2) Room titles
 - (3) Area functions
 - (4) Lighting, fixtures indicated with type, switching, and circuiting information
 - (5) Outlets for power with circuiting information
 - (6) Connections for mechanical and plumbing equipment with disconnect and circuiting information
 - (7) Layout of major components in all electrical equipment rooms
 - (8) Layouts for special systems
- d) One line riser diagram of electrical distribution
- e) One line riser diagram of auxiliary power distribution
- f) Completed panel schedules
- g) Light fixture schedules
- h) Riser diagrams for:
 - (1) Grounding
 - (2) Fire alarm
 - (3) Telephone
 - (4) Paging
 - (5) Television
 - (6) All low-voltage systems

2) Reports/Calculations

- a) Updated basis of design report
- b) Lighting calculations
- c) Load calculations
- d) Short circuit calculations
- e) Voltage drop calculations
- f) Arc flash analysis

H. Telecommunication

All telecommunication documentation will:

- o Be coordinated with similar activities in other disciplines
- o Address and provide responses to all comments from Design Development phase

1) Drawings

- a) Update site plan
 - (1) Conduit routing for telecommunication distribution

- (2) Details for site electrical work
- 3) Demolition work
- b) Demolition plans
- c) Floor Plans
 - (1) Layout of major components in all telecommunication equipment rooms
 - o Sizes of major components
 - (2) Telephone connections
 - (3) Data connections
- d) Layouts of components where space is critical
- e) Laboratory planning module
- f) Updated riser diagram for telecommunication distribution conduit sizes

2) Reports/Calculations

- a) Updated Basis of Design report

I. Specifications

- 1) General and supplemental conditions of contract
- 2) Completed project specifications

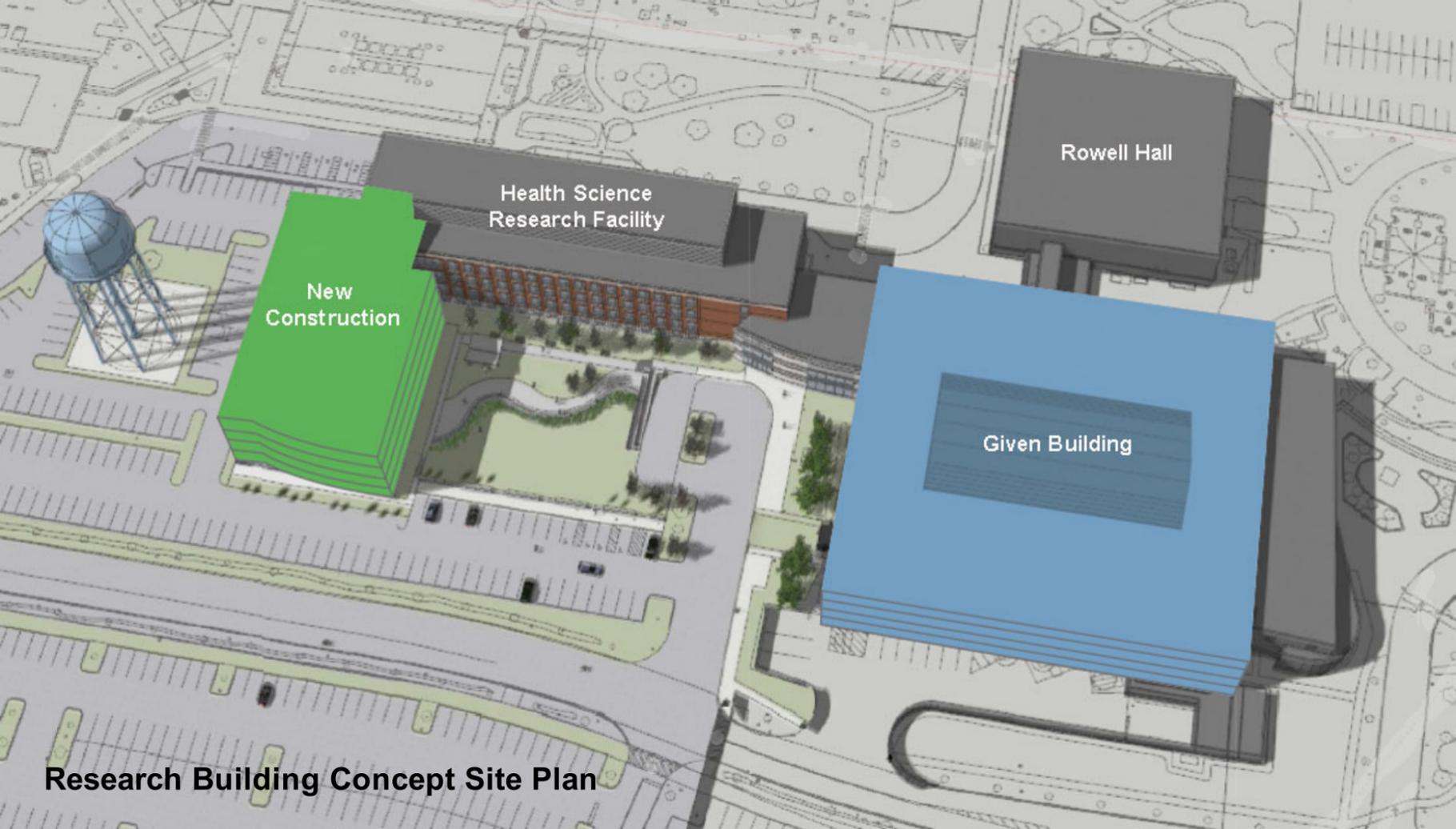
J. Summary

All reports and other documentation will:

- o Be coordinated with similar activities in each discipline
 - o Address all comments from the Design Development phase
- 1) Basis of Design report
 - 2) Updated Green/Sustainable Design report
 - 3) Cost estimates
 - o 50% construction documents cost by an independent professional estimating firm to be reconciled with the Owner's independent cost estimator.
 - 4) Specifications
 - 5) Schedules
 - 6) All design calculations
 - 7) Reviews
 - o Respond in writing to all Design Development phase review comments
 - o Submit all documents for review
 - o Attend review meetings as necessary to answer questions

Final Construction Documents Record Submission for UVM Approval

- 1) All drawings, reports, and other documentation will:
 - o Be completed
 - o Be coordinated with similar activities in each discipline
- 2) Final Basis of Design report for all disciplines
- 3) Final Green/Sustainable Design report for all disciplines
- 4) Final cost estimates
 - o 100% construction documents cost by an independent professional estimating firm to be reconciled with the Owner's independent cost estimator.
- 5) Final specifications (including certification page sealed by registered architect, landscape architect, and professional engineers responsible for the design)
- 6) Drawings (sealed by registered architect, landscape architect, and professional engineers responsible for the design)
- 7) Final schedules
- 8) Final design calculations (sealed by registered architect, landscape architect, and professional engineers responsible for the design)
- 9) Reviews
 - o Written responses to all 100% of Construction Document Phase comments
 - o Submit all documents for review
 - o Attend review conference calls as necessary to answer questions
- 10) Final deliverable
 - o Electronic copy of CADD of PDF drawings
 - o Electronic copy of specifications



New
Construction

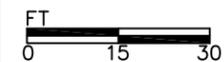
Health Science
Research Facility

Rowell Hall

Given Building

Research Building Concept Site Plan

BUILDING NUMBER
0068



NOTES:

0070 GIVEN B LEVEL 01
GROSS: 6528
ASSIGNABLE: 0
NON-ASSIGNABLE: 5590

0071 GIVEN C LEVEL 01
GROSS: 17148
ASSIGNABLE: 8326
NON-ASSIGNABLE: 7144

0072 GIVEN D LEVEL 01
GROSS: 4693
ASSIGNABLE: 3092
NON-ASSIGNABLE: 1128

0073 GIVEN E LEVEL 01
GROSS: 12644
ASSIGNABLE: 3439
NON-ASSIGNABLE: 6038

0068 GIVEN LEVEL 01 TOTALS
GROSS: 41,013
ASSIGNABLE: 14,857
NON-ASSIGNABLE: 19,900



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CAMPUS PLANNING
SERVICES

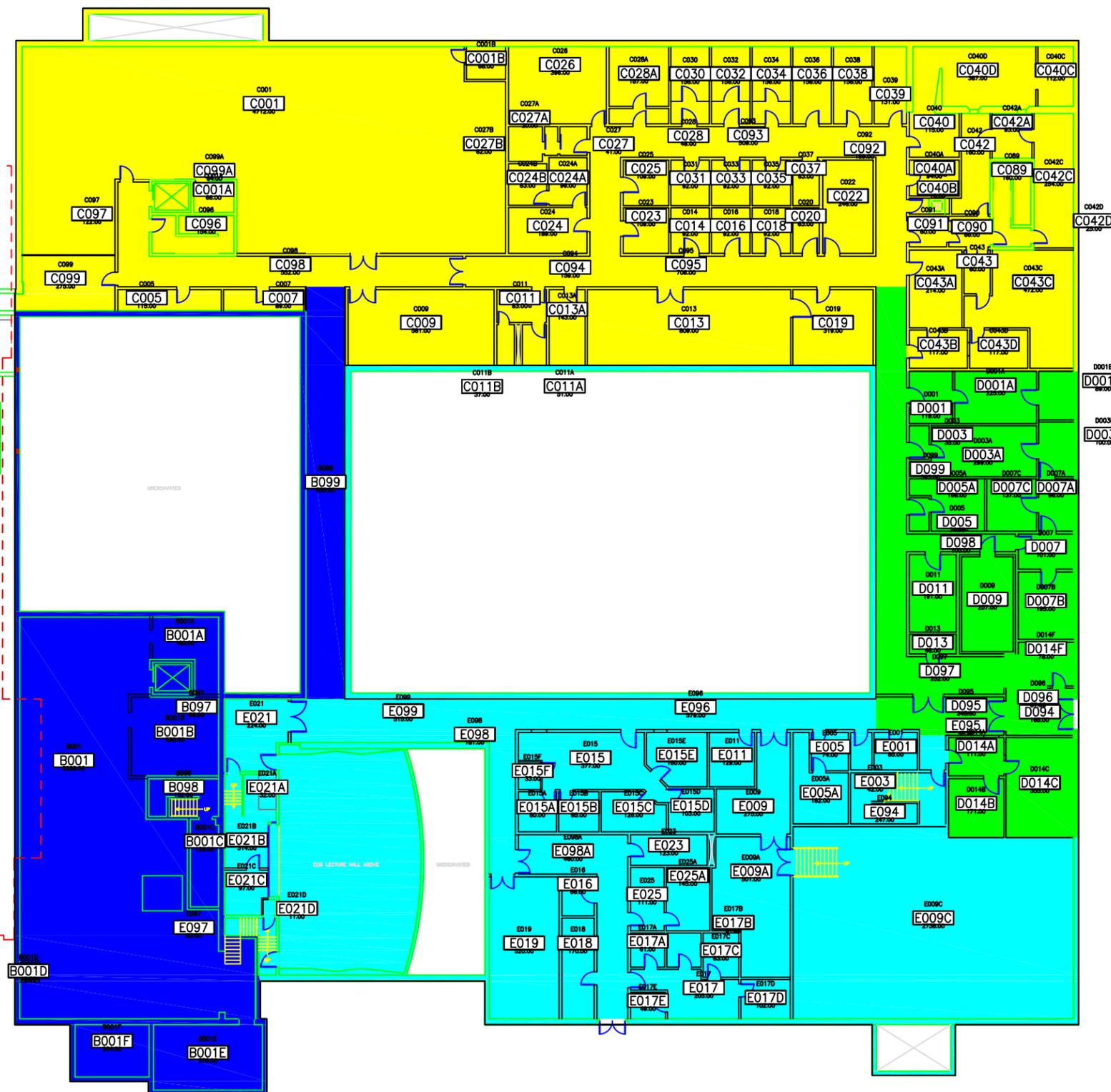
Project
MAIN
GIVEN COMPLEX
89 BEAUMONT AVE
BURLINGTON, VT 05405

Scale AS NOTED
Date 10/19/2017

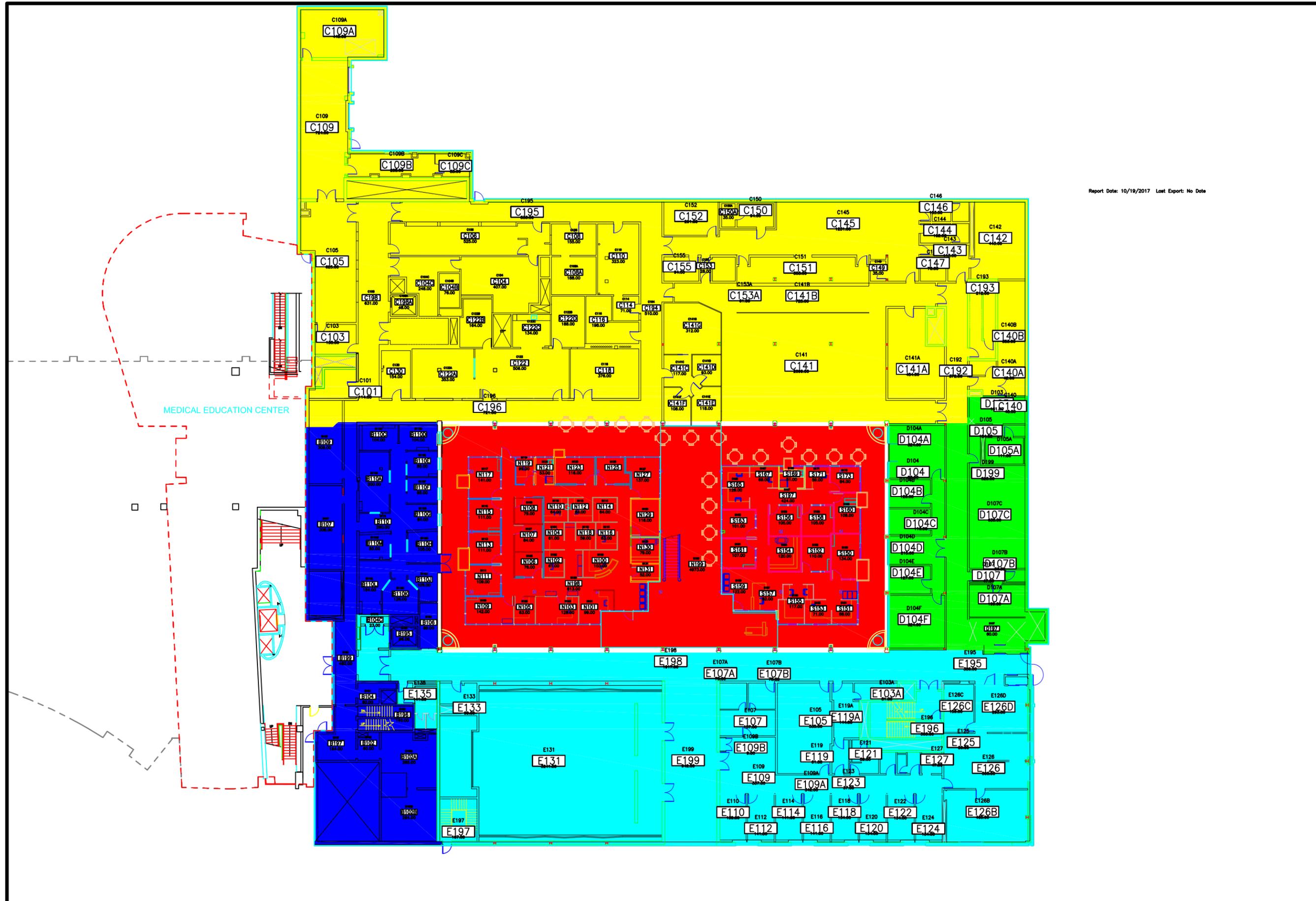
Level
LEVEL 01
(000'S)

Famis Floor
01

File Name
0068_01



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**All data should be verified prior to any design, excavation, or construction.



BUILDING NUMBER
0000



Report Date: 10/19/2017 Last Export: No Date

- NOTES:
- 0070 GIVEN B █
LEVEL 2
GROSS: 5174
ASSIGNABLE: 1616
NON-ASSIGNABLE: 2208
YEAR BUILT: 1960
 - 0071 GIVEN C █
LEVEL 2
GROSS: 19669
ASSIGNABLE: 12850
NON-ASSIGNABLE: 4048
YEAR BUILT: 1963
 - 0072 GIVEN D █
LEVEL 2
GROSS: 3580
ASSIGNABLE: 2111
NON-ASSIGNABLE: 1075
YEAR BUILT: 1963
 - 0073 GIVEN E █
LEVEL 2
GROSS: 13353
ASSIGNABLE: 7905
NON-ASSIGNABLE: 3856
YEAR BUILT: 1963
 - 0067 COURTYARD █
LEVEL 2
GROSS: 10893
ASSIGNABLE: 5403
NON-ASSIGNABLE: 4973
YEAR BUILT: 2009
 - 0068 LEVEL 02 TOTAL
GROSS: 52,669
ASSIGNABLE: 29,887
NON-ASSIGNABLE: 16,160



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Project
MAIN
GIVEN CMLX LEVEL 02
89 BEAUMONT AVE
BURLINGTON, VT 05405

Scale AS NOTED
Date 10/19/2017

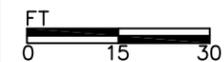
Level
LEVEL 02
(100'S)

Famis Floor
02

File Name
0068_02

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BUILDING NUMBER
0068



NOTES:

- 0070 GIVEN B █
LEVEL 3
GROSS: 6578
ASSIGNABLE: 3768
NON-ASSIGNABLE: 2160
YEAR BUILT: 1960
- 0071 GIVEN C █
LEVEL 3
GROSS: 16512
ASSIGNABLE: 9957
NON-ASSIGNABLE: 4466
YEAR BUILT: 1963
- 0072 GIVEN D █
LEVEL 3
GROSS: 5887
ASSIGNABLE: 3402
NON-ASSIGNABLE: 1674
YEAR BUILT: 1963
- 0073 GIVEN E █
LEVEL 3
GROSS: 15358
ASSIGNABLE: 11453
NON-ASSIGNABLE: 2171
YEAR BUILT: 1963
- 0067 COURTYARD █
LEVEL 3
GROSS: 6485
ASSIGNABLE: 5109
NON-ASSIGNABLE: 789
YEAR BUILT: 2009
- 0068 LEVEL 03 TOTAL
GROSS: 50,820
ASSIGNABLE: 33,689
NON-ASSIGNABLE: 11,260

Report Date: 10/19/2017 Last Export: No Date



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Project
MAIN
GIVEN
89 BEAUMONT AVE
BURLINGTON, VT 05405

Scale AS NOTED
Date 10/19/2017

Level
LEVEL 03
(200s)

Famis Floor
03

File Name
0068_03

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Report Date: 10/19/2017 Last Export: No Date



NOTES:

- 0070 GIVEN B █
LEVEL 4
GROSS: 9496
ASSIGNABLE: 5901
NON-ASSIGNABLE: 2264
YEAR BUILT: 1960
- 0071 GIVEN C █
LEVEL 4
GROSS: 14945
ASSIGNABLE: 9217
NON-ASSIGNABLE: 4022
YEAR BUILT: 1963
- 0072 GIVEN D █
LEVEL 4
GROSS: 7188
ASSIGNABLE: 4805
NON-ASSIGNABLE: 1457
YEAR BUILT: 1963
- 0073 GIVEN E █
LEVEL 4
GROSS: 12316
ASSIGNABLE: 9107
NON-ASSIGNABLE: 2124
YEAR BUILT: 1963
- 0067 COURTYARD █
LEVEL 4
GROSS: 6868
ASSIGNABLE: 5339
NON-ASSIGNABLE: 914
YEAR BUILT: 2009
- 0068 LEVEL 04 TOTAL
GROSS: 50,813
ASSIGNABLE: 34,369
NON-ASSIGNABLE: 10,781



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Project
MAIN
GIVEN COMPLEX
89 BEAUMONT AVE
BURLINGTON, VT 05405

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Date 10/19/2017

Level
LEVEL 04
(300 LEVEL)

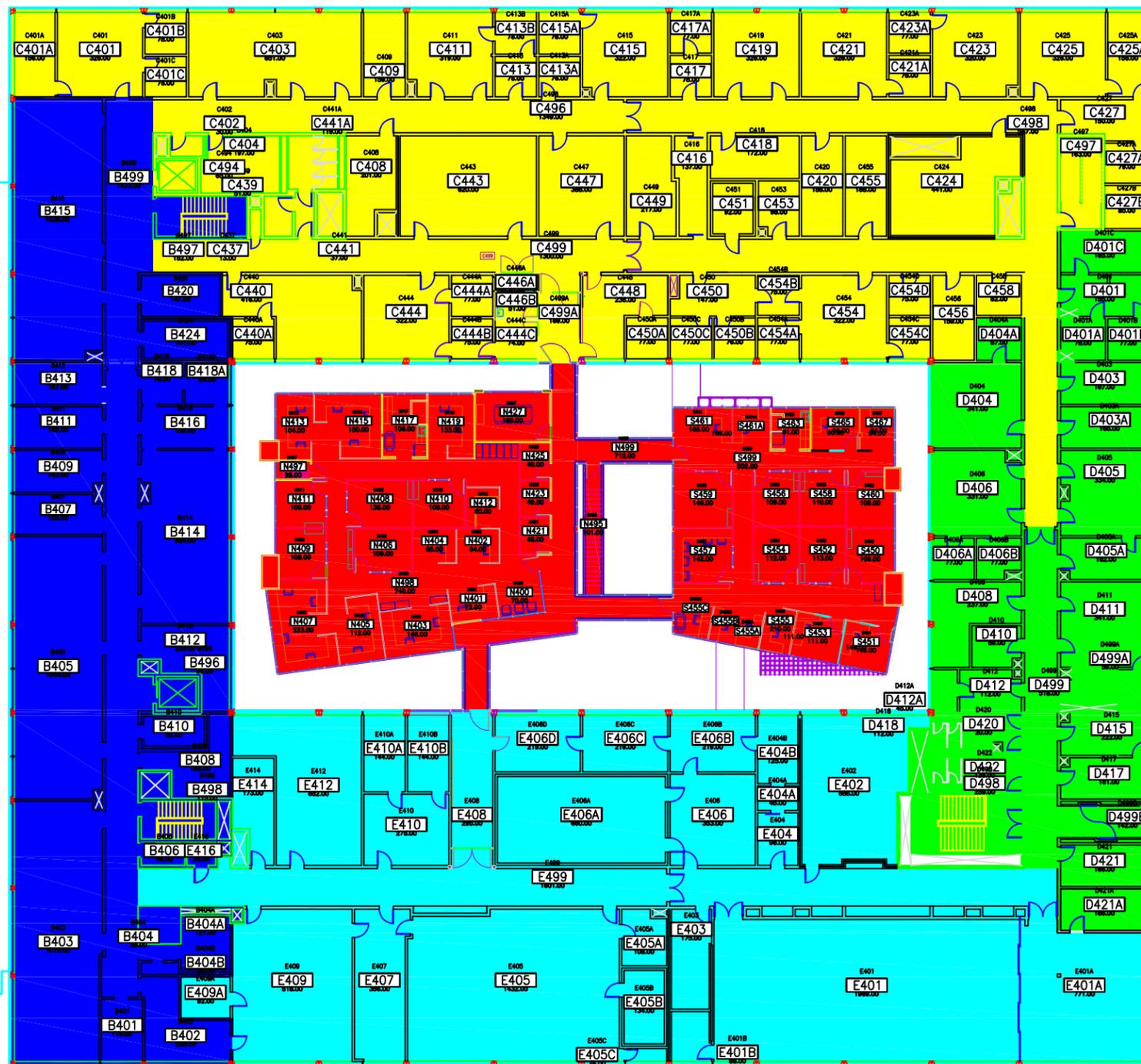
Famis Floor
04

File Name
0068_04

BUILDING NUMBER
0068



Report Date: 10/19/2017 Last Export: No Date



ROOF
MEDICAL EDUCATION CENTER

NOTES:

0070 GIVEN B
LEVEL 05
GROSS: 9131
ASSIGNABLE: 5886
NON-ASSIGNABLE: 2021

0071 GIVEN C
LEVEL 05
GROSS: 15851
ASSIGNABLE: 9353
NON-ASSIGNABLE: 4542

0072 GIVEN D
LEVEL 05
GROSS: 5945
ASSIGNABLE: 3775
NON-ASSIGNABLE: 1226

0073 GIVEN E
LEVEL 05
GROSS: 13094
ASSIGNABLE: 9332
NON-ASSIGNABLE: 2584

0067 COURTYARD
LEVEL 05
GROSS: 6651
ASSIGNABLE: 5245
NON-ASSIGNABLE: 841

0068 LEVEL 05 TOTAL
GROSS: 50,672
ASSIGNABLE: 33,591
NON-ASSIGNABLE: 11,214



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CAMPUS PLANNING
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Project
MAIN
GIVEN COMPLEX
89 BEAUMONT AVE
BURLINGTON, VT 05405

Scale AS NOTED

Date 10/19/2017

Level
LEVEL 05
(400-LEVEL)

Famis Floor
05

File Name
0068_05