PART 1 - INTRODUCTION

1.1 PURPOSE

A. Yale University is committed to the incorporation of sustainable design practices in the design of construction of all size projects on campus. This section describes the goals, strategy and procedures for providing and meeting sustainable design requirements for projects designated by Yale Facilities as Comprehensive, Limited or Minimal Scope projects. Note: Each project regardless of scope classification shall follow the required reference documents, including "A Framework for Campus Planning", including the 2013 "Sustainability Supplement" to the Framework for Campus Planning; "Sustainable Stormwater Management Plan"; and "Water Management Plan" which can be found on the Yale Office of Facilities website. In addition, all projects shall use the Yale Basis of Design tool to document project parameters.

PART 2 - GENERAL DESIGN REQUIREMENTS

2.1 Comprehensive Scope Projects

A. System Design and Performance Requirements

1. Yale University has adopted the Leadership in Energy and Environmental Design (LEED BD+C or LEED ID+C) rating system, administered by the US Green Building Council (USGBC) as the method to help achieve a commitment to sustainable design.
2. Comprehensive new construction and renovation project designs must meet LEED "Gold" status or higher. Registration with USGBC may occur at any time in the design process, and should be coordinated with the Yale Office of Facilities.
3. Yale University has outlined several credits listed under Special Requirements below, as mandatory areas of compliance for all comprehensive new construction and renovation projects.
4. Yale University requires reporting on embodied carbon on all comprehensive scope projects. Provide an embodied carbon analysis as an attachment to the basis of design at the Final Submission. Modeling and analysis tools to be determined with the Yale Project Manager.
5. All sustainable design alternatives shall be presented to the University for their consideration with analyses as described herein. Designers are required to reduce the energy loads, apply the most efficient systems, and look for synergies wherein all systems, building construction, and components will work together to produce overall functionality and environmental performance and meet yale's zero carbon ready standard.

   In alignment with Yale University's Greenhouse Gas Emissions reduction commitment, all new projects will be required to achieve Zero Carbon Ready as defined below:

   Zero Carbon Ready is a highly energy efficient building that is ready to produce onsite or source carbon-free renewable energy from Yale infrastructure to meet all building operations energy consumption annually. 'Highly efficient' means meeting an aggressive energy demand intensity target (KBTU/GSF, which will be provided in the RFP and refined at the beginning of

the project's Schematic Design phase) , LEED Gold energy requirements, and IECC 2021 requirements. To take advantage of carbon-free renewable energy, buildings will be designed to meet all energy loads with electricity . Yale Utilities will install solar with a centrally administered PPA, procure renewable energy, or install geothermal systems.

The project's multiple goals (including electrification) require improved envelope performance, which is key to making the building energy efficient. Passive House and/or EnerPHit principles may be used to achieve our stated goals, but Passive House and/or EnerPHit certification will not be required.

B. Submittals

Submit the LEED checklist in the pre-design phase, DD phase and 50% CD phase with those points proposed for project inclusion. Score all designs at each design phase for Yale University's information.

C. Special Requirements

Required Credits (Note: This currently references credits in Version 4, LEED BD+C: New Construction and Major Renovation and LEED ID+C: Commercial Interiors. These references will be updated as new versions are published and adopted by Yale).

1. Sustainable Sites

LEED BD+C: Must incorporate Sustainable Sites Rainwater Management Credit. (LEED ID+C: Not Applicable) Note: This aligns with Yale's Sustainable Stormwater Management Plan that recommends innovative stormwater techniques including bioswales, downspout disconnections, rain gardens, and porous pavement.

2. Water Efficiency

LEED BD+C: Must incorporate Outdoor Water Use Reduction Credit. (LEED ID+C: Not Applicable)
LEED BD+C: Must incorporate Indoor Water Use Reduction Credit
Note: This aligns with Yale's Water Management Plan that recommends indoor and outdoor water conservation techniques.

3. Energy and Atmosphere

LEED BD+C and LEED ID+C: Must incorporate Enhanced Commissioning Credit
LEED BD+C and LEED ID+C: Must incorporate Optimize Energy Performance Credit.
Note: This is in addition to achievement of target EUI as defined for the project and documented in the Basis of Design.

4. Materials and Resources

LEED BD+C and LEED ID+C: Must incorporate Construction and Demolition Waste Management Credit Option 2, reduction of total waste material.
LEED BD+C and LEED ID+ C: Must incorporate Building Life Cycle Impact Reduction Credit.
Select Options 1-4 based on project specific scope in coordination with Yale Office of Facilities.

LEED BD+C and LEED ID+C: Must incorporate Building Product Disclosure and Optimization – Material Ingredients Credit, Option 1 Material Ingredient Reporting. Yale further requires that product disclosures meeting this credit shall be Declare Living Building Challenge (LBC) Red List Free.

D. Additional Pre-requisites and Credits

1. Water Efficiency
   LEED BD+C Building Level Water Metering Prerequisite. Designers shall consult with the Yale Office of Facilities during Schematic Design on meeting the metering and data sharing commitment of this prerequisite.

2. Energy and Atmosphere
   LEED BD+C and LEED ID+C Advanced Energy Metering Credit. This credit is not required; however, all projects shall incorporate metered building energy consumption and diagnostic tools to evaluate system operations. Yale Utilities & Engineering shall indicate criteria for metering for each project.

3. Indoor Environmental Quality
   LEED BD+C and LEED ID+ C: Environmental Tobacco Smoke Control Prerequisite. Yale is working towards becoming a tobacco free campus. Designers shall consult with the Yale Office of Facilities during Schematic Design on meeting this prerequisite.

4. Innovation
   LEED BD+C and LEED ID+ C: Innovation Credits: Yale University encourages the pursuit of Innovation Credits through strategies not addressed in the LEED rating system, achievement of a LEED Pilot Credit, or Exemplary Performance

E. Salvageable Building Components
   Design Consultant, with review by Facilities Project Manager and Planner to identify salvageable building components and determine their reuse by Yale or qualified salvage vendor.

F. Salvageable Furniture and Equipment
   Facilities Project Manager and Planner with TR&S to evaluate existing furniture and equipment for potential storage and re-use on other projects

G. Sustainability Workshops

1. Eco- Charrette occurs in the first weeks after a project's kick off meeting with update meetings every phase thereafter, incorporating full team participation including:
   a. Yale representatives from multiple groups including Planning and/or Project Management, Utilities & Engineering, Facilities Operations, Office of Sustainability.
   b. Consultants including the Architect, Sustainability Engineer, MEP Engineer, Civil Engineer, Geotechnical Engineer, Landscape Architect, Structural Engineer, Lighting

Consultants, Waste Management Consultant, Cost Estimator, Construction Manager.

2. Topics to include but not limited to:
   a. A Framework for Campus Planning, Sustainability Supplement: Project team shall review " A Framework for Campus Planning, Sustainability Supplement" and consider all applicable recommendations for integration into proposed project.
   b. Basis of Design: review criteria and approaches to systems design and basis of the project's energy usage goal.
   c. LEED Rating Systems Evaluation, including design strategies for meeting LEED Gold Certification
   d. Yale Special Requirements as outlined above.
   e. Salvageable Building Components
   f. Salvageable Furniture and Equipment

H. Archive Sustainability Documents
After LEED certification has been awarded, provide a compilation of all LEED documentation that was submitted to USGBC on-line plus all supporting analyses in the form of a bookmarked PDF file. Provide the following:

1. LEED Submittal File: The full LEED documentation that was submitted to the USGBC for the project.

2. LEED Final Report: The final report from USGBC that states each credit and describes what was earned and the final rating achieved with commentary from the USGBC reviewer regarding the design team responses.

3. Energy Modeling Reports: Energy Modeling Reports that were prepared to analyze energy strategies for the project.

4. Additional Supplements: Additional information, reports, studies etc. that provide insight into why decisions were made.

2.2 Limited Scope Projects

A. Systems Design and Performance Requirements
No LEED certification is required but sustainable goals will be considered throughout the design process and will be tracked on the Sustainable Design Matrix (a modified LEED scorecard) which can be found on the Yale Office of Facilities website. The matrix is the means to measure the level of compliance with the Limited Scope Project Standard. The Sustainable Design Matrix identifies sustainable attributes that are priorities for the University. It is expected that all applicable pre-requisites and/or credits are achieved or attempted in the design of the project. Note that Yale has identified credits in both BD+C and ID+C rating systems and limited scope projects may meet credits

from both rating systems. See C.4 for requirements related to construction methods. (Note: This currently references credits in Version 4, LEED BD+C: New Construction and Major Renovation and LEED ID+C: Commercial Interiors. These references will be updated as new versions are adopted by Yale.)

B. Submittals

The Design Team will submit the Sustainable Design Matrix at the mid-point of Schematic Design and at the end of all design phases as an attachment to the Basis of Design. The Yale Project Manager to review and signoff. If a project is out of compliance, an explanation is required in the Remarks column of the Matrix with attachments submitted as backup as needed.

C. Materials and Products Standards

Designers shall provide product and materials specifications that preferentially select resource, energy saving and healthy building materials and design features.

D. Construction Methods

The following construction methods must be followed where applicable:

1. Construction and Demolition Debris
   LEED BD+C and ID+C MR Credit Construction and Demolition Waste Management, Option 1, Path 2: Divert 75% and four material streams.
2. Air Quality
   LEED BD+C and ID+C EQ Credit: Construction Indoor Air Quality Management Plan
   LEED BD+C and ID+Q EQ Credit: Indoor Air Quality Assessment
3. Construction Activity Pollution Prevention
   LEED BD+C SS Prerequisite 1: Construction Activity Pollution Prevention

E. Salvageable Building Components

Design Consultant, with review by Facilities Project Manager and Planner to identify salvageable building components and determine their reuse by Yale or qualified salvage vendor.

F. Salvageable Furniture and Equipment

Facilities Project Manager, Planner, and TR&S to evaluate existing Furniture and Equipment for potential storage and reuse on other projects.

G. Verification

Constructor is required to sign project Sustainability Matrix attesting that the provisions in the matrix have been provided as per the Contract Documents.

H. Archive Sustainability Documents

After project is complete, submit a copy of the updated and final Sustainable Design Matrix, as an attachment to the Basis of Design. This Matrix will document achieved sustainable design attributes of the project.

2.3 Minimal Scope Projects

A. No LEED certification is required. Sustainable attributes will be documented through the Sustainable Design Matrix as described in below.

B. Yale Sustainable Products List
The Yale Sustainable Products List provides information on approved products typically used on Minimal scope projects. The Sustainable Products List can be found on the Yale Office of Facilities website. Substitutions may be made if approved by Yale Project Manager with products or methods that achieve the same or greater sustainable attributes.

C. Construction Methods
The following construction methods must be followed where applicable:
1. Construction and Demolition Debris:
   LEED BD+C and ID+C MR Credit Construction and Demolition Waste Management, Option 2: Reduction of Total Waste Materials
2. Salvageable Building Components, Furniture and Equipment:
   Per project requirements if needed, similar to requirements for Limited Scope Projects
3. Air Quality
   LEED BD+C and ID+C EQ Credit: Construction Indoor Air Quality Management Plan
   LEED BD+C and ID+Q EQ Credit: Indoor Air Quality Assessment
4. Construction Activity Pollution Prevention:
5. LEED BD+C SS Prerequisite 1: Construction Activity Pollution Prevention

D. Salvageable Building Components
Design Consultant, with review by Facilities Project Manager and Planning Office to identify salvageable building components and determine their reuse by Yale or qualified salvage vendor.

E. Salvageable Furniture and Equipment
Facilities Project Manager and TR&S to evaluate existing furniture and equipment for potential storage and re-use on other projects

F. Sustainable Design Matrix
Sustainable design and construction attributes will be considered throughout the design process and be tracked on the Sustainable Design Matrix which can be found on the Yale Office of Facilities website. Design Team shall submit the Matrix to the Yale Project Manager at the end of the CD Phase indicating the products, systems, and materials specified that contribute to a sustainable project outcome. The Construction Manger shall submit the Matrix at construction completion with close out documents verifying the installation of specified products, systems, and materials and use of required construction methods. The Sustainable Design Matrix shall reflect the applicable recommendations considered by the Design Team from “A Framework for Campus Planning, Sustainability Supplement” .

G. Archive Sustainability Documents
After project is complete, submit a copy of the updated and final Sustainable Design Matrix which was used throughout the design and construction process to track sustainable attributes of the project, (see

A. above).

Date	Description of Change	Pages / Sections Modified	ID
March 2022	Zero Carbon Ready & Embodied Carbon Reporting Requirement	-	VC,CJ