



Clarkson™

Construction Standards/Design Manual

Chapter 1

Introduction and First Principles

1.1 MISSION STATEMENT

MISSION:

Clarkson University is an independent, nationally recognized technological university whose faculty of teacher-scholars aspires to offer superior instruction and engage in high-quality research and scholarship in engineering, business, science, health, and liberal arts. Our primary mission is to educate talented and motivated men and women to become successful professionals through quality pre-collegiate, undergraduate, graduate, and professional continuing education programs, with particular emphasis on the undergraduate experience. Our community and campus settings enhance the quality of student life and afford students access to and interaction with their faculty. We value the diversity of our University community, and we strive to attune ourselves and our programs to our global, pluralistic society. We share the belief that humane and environmentally sound economic and social development derive from the expansion, diffusion, and application of knowledge.

OUR VALUES:**Teamwork**

Effective teamwork encourages creativity and self-initiative in our respective roles and partnerships. It is essential in getting the task done and in developing the skills needed to meet the challenges of ensuring sustainability of local and global economic, environmental and social systems.

Caring

A positive and friendly atmosphere is created when we care about each other, when we are open to constructive criticism and when we show appreciation for a job well done.

Integrity

Honesty and accountability in one's actions and words form the foundation of our relationships with others.

Vision

Having a vision of a sustainable future helps us prepare for it. Embracing the inevitable changes in our world as opportunities allows us to anticipate, promote and facilitate change.

Diversity

The mutual appreciation of differences and a plurality of opinions, beliefs and cultural traditions inform and enrich our lives.

Service

Offering our time and skills for the good of our fellow citizens leads to the prosperity and environmental health of the community and to the well-being and character development of the individual.

Growth

Educational experiences in and out of the classroom enliven our minds, broaden our horizons and facilitate dialogue and consensus. Learning is a lifelong activity.

Diligence

"A workman that needeth not to be ashamed." (The favorite Biblical phrase of University namesake Thomas S. Clarkson.) Initiative and hard work are key ingredients in getting the task done.

1.2 OVERVIEW OF THE DESIGN MANUAL

Each individual, each department, and each facility plays a part in accomplishing Clarkson's institutional mission. Clarkson's physical facilities provide a sense of "presence and welcome" and contribute to the overall learning environment of the university. The Design Manual serves as a framework to align Clarkson's physical facilities—including capital and non-capital projects on all Clarkson campuses—with the mission of the university. In addition, it is the intent of the Design Manual to introduce rigorous performance standards, delineate standards for sustainability and accessibility, support administrative procedures for the Facilities department, and provide a system to track the impact of individual projects on the campus as a whole. The Design Manual also incorporates "lessons learned" from previous projects in order to establish a higher standard for future university projects.

The Design Manual is intended to inform and direct the Project Team for any new construction, renovation or alteration of facilities or spaces on a Clarkson University Campus. The Design Manual clarifies and defines Clarkson's procedures and standards, indicates preferences on certain materials used in construction of its facilities, and answers common questions related to construction projects on any campus. The Design Manual supplements the requirements of contracts between the university and its consultants, as well as contractors (including but not limited to the Owner-Architect Agreement, Design-Build Contract, as well as the CM Contract). The Design Manual shall be considered a fundamental part of the Program provided for each project. Whenever the term "Design Team" is used, it shall apply to the architect and/or engineer. The term "Constructor" shall refer to the construction manager, design builder, and/or contractor. "Project Team" refers to the Design Team, Constructor, and Clarkson University.

It is the university's intent to maximize the design potential of each campus building, infrastructure element, or other facility project with the multiple goals of accommodating the programs to be served, fostering collegiality on the campus, and contributing to the positive public image of the university campus. Clarkson expects each project to achieve long-term endurance and sustainable operations. It is the responsibility of the Design Team and Constructor not only to employ the industry's best management practices, but also to recommend innovative technologies—balanced with those that are time honored and proven—subject to the university's review and approval. New designs must cost-effectively overlay the specific, user-generated objectives for the project with the broader and overarching University objectives of institutional identity, durability, longevity, flexibility, and adaptability.

The Design Team and Constructor are responsible for confirming use of the most current version of this manual. Pages have been dated for this purpose.

The Design Team is responsible for producing the best possible life cycle cost building within the constraints of the first cost building budget. Clarkson does not wish to handicap creative efforts by insistence on blind adherence to requirements; team members are encouraged to think creatively about solving problems throughout the process. Variations will be considered and approved if there is an advantage in terms of risk, time, and cost to Clarkson to do so. However, intended variations must be brought to Clarkson's attention for written approval. Otherwise, the Design Team will be held responsible as indicated in section 1.8 of this manual.

An attempt has been made to establish performance rather than specification standards. The Design Manual is not intended to be a "master specification"; therefore, much of the language in the Design Manual will require modification before being included in the Project Specifications.

To achieve the university's goals, it is incumbent upon the project design team to invest in an understanding not only of immediate program objectives, but also of the history of planning and architecture on the campus, the intent of the current campus master plan, and particularly the immediate context (precinct and site) of the project.

1.3 ORGANIZATION OF THE DESIGN MANUAL

The text of The Design Manual is arranged in five Parts:

Chapter 1 - Introduction and First Principles

This chapter defines the intent of the Design Manual and the general organization of the document, as well as how the Design Manual is to be used. The first principles of Clarkson University, including its approach to accessibility, sustainability and energy management, and maintenance and operations, are also defined in this chapter.

Chapter 2 - Design Process and Procedures

This chapter includes information about administrative procedures that the Design Team must follow in working with the university during the design process. This statement of procedures is intended to establish a smooth operating relationship throughout the design process, from pre-design through construction documentation. Information regarding administrative procedures for the construction process, including bidding, can be found in Divisions 00 and 01 of Chapter 4.

Chapter 3 - Design Standards

This chapter defines exterior and interior planning and design, as well as environmental, security and life safety, and accessibility standards.

Chapter 4 - Construction Products and Activities

This chapter discusses technical requirements of materials, systems and methods of construction. It is arranged on the basis of the Construction Specifications Institute (CSI) 48-Division Specification Format to include all areas in which the university requires certain minimal standards in the selection of materials and quality of workmanship. When this manual is silent on a particular material, no standards have been developed by Clarkson University. In all cases, the Design Team and Constructor are to use professional judgment and, where such judgment indicates material or methods contrary to information found in this manual, must discuss these areas with Clarkson's Project Manager.

Chapter 5 – Clarkson Standard Details

This chapter contains standard details. These details represent typical standards established by the university and are included to assist the Design Team and Constructor in preparing drawings that are acceptable and uniform for all projects.

1.4 PRINCIPLES OF ACCESSIBILITY

It is a key objective of Clarkson University to maintain an accessible environment for all people. To achieve this goal, the university is committed to the following principles:

- Clarkson supports universal design and strives to make all public spaces and facilities on its campuses physically accessible to people of all abilities, including physical, mental, learning or other.

- Creating an accessible campus is inclusive of interior and exterior spaces, both new and renovated. At a minimum, all designs for new construction and renovations shall be in compliance with applicable state and federal mandates. In instances where Clarkson's standards exceed state and federal regulations, the most stringent requirement (i.e., most beneficial to persons with disabilities) must be followed.
- Accessibility must be considered in the initial phases of design and throughout the entire process. All members of the design, construction and maintenance teams must maintain a seamless integration of design for people of all abilities.

1.5 PRINCIPLES OF SUSTAINABILITY

Clarkson is committed to providing its students with a transformational learning experience while being a careful steward of its economic and natural resources. In this vein, Clarkson has two main strategic goals related to sustainability:

- Incorporate sustainability concepts into all learning experiences for students, faculty, and staff to foster a more sustainable culture.
- Aspire to eventual climate neutrality.

These goals are referenced in more detail in its [2014 Strategic Plan](http://www.clarkson.edu/clarkson125/) (<http://www.clarkson.edu/clarkson125/>).

The majority of Clarkson's greenhouse gas emissions are produced from the operations of its buildings. As such, it is essential to improve the design, construction and maintenance of campus facilities, and to create opportunities for awareness-building, education, and research.

It is Clarkson's expectation that its Design Teams will propose practices, technologies, and designs that are based on life cycle analysis and support efforts to mitigate Clarkson's current and future impact on the natural environment, with the following goals in mind:

- Create efficient and long-lasting buildings from the design and construction phase through the operations and maintenance phase. This applies especially to energy consumption as the energy consumed in buildings produces the majority of Clarkson's emissions and is its largest operational expense.
- Support environmentally sustainable site development, especially with regard to storm water management and features that strengthen existing transportation support systems.
- Promote both the understanding and involvement of building occupants of the efforts being pursued within the building, along with their comfort and well-being.
- Apply appropriate design, processes, and tools to minimize waste and increase recycling.

1.6 PRINCIPLES OF MAINTENANCE AND OPERATIONS

It is well established that over 80% of the cost of any facility is attributed to the ongoing cost of maintenance and operations, which is why the ability to easily, efficiently, and effectively maintain and operate a facility is critical to the success of any Clarkson University project.

Because the implications of a design on the subsequent operations and maintenance are often overlooked, it is important to be aware of how design decisions will impact maintenance and operations. The following standards apply to all new projects at Clarkson University:

- Projects at Clarkson must be cost effective, not only in terms of their first cost, but also the ongoing energy, maintenance, operations, and staffing costs (to name a few). Therefore, the university views full life cycle cost analysis as the best way to ensure the value and longevity of its investments.
- Design, construction and maintenance personnel must be judicious in their selection of materials, equipment, and products to ensure proven performance, longevity, and durability.
- In the design of any project, it is critical that all systems and devices are made accessible for the full life cycle of that piece of equipment, inclusive of major overhauls, replacement of major components, and segmented full equipment recap.
- All design and construction decisions should consider the ease and practicality of future maintenance and modifications. A greater first cost may be required to achieve the best long-term gain. New systems shall be compatible with existing systems as they are emplaced.
- Finally, Clarkson supports and encourages sustainable maintenance practices that mitigate or arrest harm to the people and the natural environment.

1.7 PRINCIPLES OF DESIGN FOR OUR CAMPUSES AND BUILDINGS

As a destination and center for educational, business, social and cultural events for divergent interests and populations, each campus of Clarkson University has unique and distinctive characteristics. With an assembly of specialized facilities, natural landscapes, public art and other attractive features, Clarkson University's campuses comprise significant settings for educational, research and service activities.

Clarkson's campus settings must be attractive, progressive, and welcoming. The campus environment must also communicate the importance of the university in our society through its unique sense of place and evolving academic traditions. Each design opportunity, be it campus or building, offers a unique opportunity to create an environmentally and socially responsible physical environment which can create an atmosphere conducive to intellectual discovery and interaction as well as relaxation and contemplation.

Used in conjunction with the Clarkson University Master Plan, the following design principals and guidelines are intended to convey an understanding of the specific objectives and design intentions that contribute to: the qualities of the physical environment; a unity of visual character; a unique sense of place; and activities that are encompassed at various Clarkson campuses and locations.

Clarkson University's campus and building design should strive to achieve the following goals which generally align with Smart Growth development principals:

- Preserve natural beauty, open space (lawns, fields, plazas, quads etc), and critical environmental areas
- Foster a distinctive, attractive campus with a strong sense of place

- Create a walkable campus
- Mix land uses
- Take advantage of compact building design
- Create a range of housing opportunities and choices
- Strengthen and direct development towards existing academic core and residential neighborhoods
- Provide a variety of transportation choices (emphasizing the reduction of single occupancy vehicle trips)
- Make development decisions predictable, fair, and cost effective
- Encourage university community and stakeholder collaboration in development decisions

1.8 ENFORCEMENT OF THE DESIGN MANUAL

As stated previously, the Design Manual is intended to provide guidance to all parties involved in the design and construction process at Clarkson. It is critical that efforts be made to ensure the provisions are followed, and that any exceptions are executed in a transparent, open, and explicit manner.

To facilitate this process, during each design submittal and/or modification to the design of a project (new construction, renovation, rehabilitation, maintenance effort, and so forth), the designer of record will provide a listing of any exceptions taken to this manual or certify that there are no such exceptions taken. Any exceptions will be reviewed through an internal Clarkson procedure that will result in a written approval of exception by the Director of Facilities. Once approved, the modification can be used without further recourse. In the event that an exception is not noted by the designer of record, and it is subsequently found that an exception was made, the university will consider cost sharing with the designer for the required change in order to align the project with the Design Manual. It is incumbent upon designers to review and aide in the enforcement of these procedures throughout the process.