



Eastern Michigan University

Design and Construction Standards

**Prepared by:
EMU Physical Plant
Facilities Planning and Construction**

Design and Construction Standards

Introduction

Purpose of Design and Construction Standards

Eastern Michigan University Physical Plant; Facilities Planning and Construction department has prepared this manual to assist the Design Professionals, Contractors, and Construction Managers who provide professional services for all new construction, remodeling, rehabilitation and maintenance projects at Eastern Michigan University. This document is comprised of two parts: Design Standards and Construction Standards.

The Design Standards will address Planning and Design issues, including aesthetics, design attitudes and preferences, pattern language, and intended goals of design.

The Construction Standards, following the CSI 50 Section format (2004 version), includes the minimum building requirements which the University has recognized as necessary on all projects. These design guidelines assure uniformity, system or component quality, compatibility and functionality and ease of maintenance.

Throughout this manual wherever the term Professional is used, the term will be applicable to an architect, engineer or other specialized consultant similarly retained by the University to provide professional services.

Throughout this manual reference is made to the Professional's contact with the University as the Project Manager. This title is not meant to imply any one singular person, but rather any one of a number of people who may be assigned to the project.

This manual is not intended to be a "master specification" and therefore, in most cases, the language in this manual will need modification before it is included in the Project Specifications by the Professional. Properly written specifications will be much broader in scope and more detailed. The intent has been made to establish "performance" rather than "specification" standards wherever this has been practical. The use and inclusion of these standards in bid documents does not relieve the Professional of the responsibility and legal liability for any bid documents created from these standards.

Exceptions to any design or construction standard herein may be discussed and modified. These Standards are not meant to replace Professional judgment or practice. If deviations are necessary to satisfy the conditions of certain projects, the Professional must request and receive approval for such deviation in writing from the University Project Manager. The Professional shall specify the reasons for the deviation in detail – by providing drawings, sketches, technical information, mathematical calculations, etc. – as appropriate to allow a thorough and complete review by the University.

Administration of Construction Projects

The EMU Facilities Planning and Construction department is responsible to the University for managing the planning, design and construction activities for all capital projects, regardless of the source of funding. The primary responsibilities of the department are to select and procure qualified consultants and contractors, and to provide professional management and leadership throughout the entirety of the project, from concept through building commissioning. Additional responsibilities are to provide assistance with the development of internal programs, cost estimates, and planning for future capital projects.

A Project Manager will be designated by the EMU Facilities Planning and Construction department for each project. All communications from the Design Professional and/or Contractor to the University shall be directed to the Project Manager. The Project Manager will provide guidance to the Design Professional and/or Contractor and leadership to the project while providing the University a project that is within the established budget, schedule, and quality, and meets the end users' requirements.

The following organizational units will provide input in completing the requirements of the projects, and will be involved in the review of the schematic, design, and construction documents:

- Facilities Planning and Construction will be involved in decision making relative to construction practices, design, aesthetics, finishes, work scope, budget, schedule, and quality of work. They will have primary responsibility for the project.
- Facilities Maintenance and Operations will be involved in decision making relative to building operational systems quality, performance, and cost-effective maintenance issues.
- Buildings and Grounds Department is responsible for the care and coordination of all landscaping and site work, including utilities location, walkway locations, irrigation systems, and any other site work on the campus.
- Health and Safety Department provides advice and consultation in matters relating to the health and safety of faculty, staff, and students. These services include matters relating to asbestos control and other environmental hazards.
- Information and Communications Technology Division operates and maintains all telecommunication facilities on the campus and is responsible for the development and maintenance of standards for equipment and wiring, and the review of the proposed installation of the inter-building and intra-building telecommunications and data distribution facilities.
- The Office Access Services provides advice and consultation in matters relating to accessibility throughout the campus.

- End User Group, when necessitated by the project scope, will be involved in decision making relative to programmatic needs, prioritization of space use, functionality of design, and purpose and vision of the project.
- Others as needed for specialty purposes such as IT, Security, or specialized support.

Design Phase Deliverables

1. For all documents prepared / produced during the various design phases (Programming, Schematic Design, Design Development) the Professional Designer and/or Consultant shall follow the EMU Architectural / Engineering Standards for Design Phase Deliverables to define and detail the services required for all administered projects.

Contract Documents

1. Construction Drawings:
 - a. Shall follow industry best practices and contain all information necessary to provide for the bidding, construction, and safe occupancy. Documents shall be complete such that errors and discrepancies are properly resolved at no cost to the Owner.
2. Construction Specifications
 - a. Shall utilize standard CSI coding. The General Requirement Section shall not include items that are already covered in the General Conditions.
 - b. The Professional is cautioned to study the General Conditions before beginning the preparation of specifications, and to refer to them constantly through the writing of specifications. Particular attention should be paid to standardized or computerized specifications written by outside firms who are employed to write technical sections, to ascertain that nothing contained in those specifications disagrees with provisions in the General Conditions or these supplements. Complete coordination of all Bid Documents is the responsibility of the Professional.
 - c. Computerized or Standard Specifications: The Professional is cautioned that computerized or standard specifications must be edited to suit the requirements of the project being specified. The excuse that this mandatory editing of the Professional's standard specification will result in excessive costs or delays in producing the construction documents will not be accepted. Specifications must be tailored to the project.
 - d. Prohibited Language
 - i. The following words and phrases are expressly prohibited in the specifications or on the drawings:
 1. The note "by others." This phrase must not be used. Name the specific contractor or agent responsible.
 2. The phrase "This contractor shall..." to begin instructions to a contractor. These words are redundant, since

- instructions are directed to a single prime contractor and it should be obvious to which contractor the instructions are directed.
3. The words “alternate” or “substitute” to indicate an “option.” The words alternate and substitute have specific definitions in the front-end contract documents. The word “option” should be used to indicate items for which the contractor may make a choice without affecting the contract.
 4. The word “mechanical” when referring to the Plumbing Contract, Fire Protection Contract, or the HVAC Contract, or when referring to any of the contractors for these divisions of work. The applicable trade must be used when making these references.
3. All Documents:
- a. All documents prepared for Construction shall be properly formatted and contain the required information as indicated in:
 - i. EMU Architectural / Engineering Standards for Design Phase Deliverables
 - ii. EMU Architectural / Engineering Standards for Design and Construction Documents

Construction Deliverables

In addition to the “product” of constructed entities, property, or equipment, the Contractor shall provide the appropriate documentation, communications, cost tracking, invoices, payments, as-built documents, addenda, bulletins, warranties, guarantees, and all other necessary information to properly document the history of the project. The Design Professional shall ensure that these requirements are properly included in the Closeout Documents section of the Specifications. Where Specifications do not exist, or a Design Professional was not part of the project, it is the responsibility of the primary Contractor to maintain these records.

Construction Standards Overview

Buildings shall be designed as quality institutional buildings or renovations, and heavy-duty components shall be selected and specified to provide maximum life-cycle usefulness. The requirement that the project be designed within available funds is not a license to design short life cycle, speculative-type construction or to specify inferior or inappropriate material. **The Professional is responsible for providing and recommending cost-effective designs that achieve the quality institutional building requirement. In addition, the Professional shall provide all necessary value engineering to ensure funds allocated are utilized in the requirements established herein.**

The Professional shall perform professional services, including services customarily furnished in accordance with generally accepted architectural or engineering services to provide the Owner a

Project within the Construction Budget. The Professional shall provide such services and comply with any applicable federal, state, and local rules and regulations and the State of Michigan Department of Management and Budget Major Project Design Manual for Professional Services Contractors, State Universities, Community Colleges, and State Agencies, any applicable federal and local statutes, ordinances, rules, regulations, and building codes.

The University is dedicated to the principle of sustainability and energy conservation. University personnel will scrutinize proposed design for means of reducing not only initial cost of energy consuming equipment, but also long-range operational costs. Furthermore, efforts shall be made to exercise prudent judgment on the use of sustainable practices, design methods, materials, and life-cycle costs for facilities relative to the program needs and available project budget. Use of LEED standards or other formalized standards are not required on all projects, but their use will be defined in the program by the University. However, each project shall take appropriate considerations to utilize best practices to consider and implement sustainability and energy conservation where feasible. The Professional must work in harmony with its consultants to design new buildings and to remodel existing buildings to make the most efficient use of building materials and energy sources available.

Certain design standards will be guidelines for the Professional to develop specifications. Other standards are specifications that shall be incorporated by the Design Professional and/or Contractor. In all cases, the Design Professional and/or Contractor is responsible for ensuring these standards are met, not only during the design process, but also during construction. The Design Professional and/or Contractor is also responsible for verifying that the Standards being used are current.

Construction Standards

The Design Standards are organized in Construction Specifications Institute (CSI) format, as follows:

<u>Division #</u>	<u>Description of Work</u>
00	Procurement and Contracting Requirements
01	General Requirements
02	Existing Conditions
03	Concrete
04	Masonry
05	Metals
06	Woods, Plastics, and Composites
07	Thermal and Moisture Protection
08	Openings
09	Finishes
10	Specialties
11	Equipment
12	Furnishings
13	Special Construction
14	Conveying Equipment

15	Reserved for Future Use*
16	Reserved for Future Use*
17	Reserved for Future Use*
18	Reserved for Future Use*
19	Reserved for Future Use*
20	Reserved for Future Use*
21	Fire Suppression
22	Plumbing
23	Heating, Ventilating, and Air Conditioning
24	Reserved for Future Use
25	Integrated Automation
26	Electrical
27	Communications
28	Electronic Safety and Security
29	Reserved for Future Use*
30	Reserved for Future Use*
31	Earthwork
32	Exterior Improvements
33	Utilities
34	Transportation*
35	Waterway and Marine Construction*
36	Reserved for Future Use*
37	Reserved for Future Use*
38	Reserved for Future Use*
39	Reserved for Future Use*
40	Process Integration*
41	Material Processing and Handling Equipment*
42	Process Heating, Cooling, and Drying Equipment*
43	Process Gas and Liquid Handling, Purification, and Storage Equipment*
44	Pollution Control Equipment*
45	Industry-Specific Manufacturing Equipment*
46	Reserved for Future Use*
47	Reserved for Future Use*
48	Electrical Power Generation*
49	Reserved for Future Use*

* *Items identified with an asterisk (*) are not currently utilized by Eastern Michigan University*

End of Introduction