

## DESIGN DOCUMENT REQUIREMENTS

### 1. CONTRACT DOCUMENT FORMAT:

- 1.1 The Electronic Word Programs used for the Project Manual shall be Microsoft Word.
- 1.2 The Electronic Drafting Program used for the Contract Drawings shall be AutoCAD 2010/Revit.
- 1.3 The format for Record Documents shall be AutoCAD 2010/Revit for Drawing Files and Microsoft Word for the Project Manual.

### 2. INTERNET BASED PROJECT COMMUNICATION AND MANAGEMENT SYSTEM:

- 2.1 An internet based project management system (Submittal Exchange) will be utilized on all University Of Northern Iowa projects to share information among team members and conduct and track project communications. The Design Professional is required to participate with the project team and use the system for viewing correspondence and information posted by other project team members, publishing correspondence and information for viewing by other project team members, logging and/or responding to items such as RFI's and Submittals. There are no fees required for access to the system. University of Northern Iowa will provide project team members with password protected access privileges to the project web site.
- 2.2 All project paperwork and documentation shall be on this system.

#### Minimum System and Software Requirements:

- Operating Systems: Microsoft Windows, Internet Explorer
- Minimum 32MB RAM

3. The project manual and drawings shall be prepared in compliance with good practice, state and federal law, and Board of Regents, State of Iowa policy. Statutory requirements relating to preparation include, but are not limited to, the State Building Code (Iowa Code Chapter 103A), Fire Safety (Iowa Code Chapter 100), Occupational Safety and Health (Iowa Code Chapter 88), Life Cycle Cost Analysis and Energy Efficiency (Iowa Code Chapter 470) and the Americans with Disabilities Act.
  - 3.1 The Design Professional shall not assign design or drafting responsibilities for custom-designed elements of the project to the Constructor, subcontractors, or suppliers through the Construction Documents or any other means, except for those items listed below. However, the Project Manual and Drawings shall be inclusive of the custom-designed elements for the Project in that the Design Professional shall design, coordinate, and document the preliminary sizes and layout of the items listed below. It shall then be the responsibility of each successful Constructor to prepare a final design, certify their design and furnish a product which meets the stated design intent and performance requirements. Bid documents shall require the Constructor to submit calculations and shop drawings to be prepared and sealed by an engineer licensed in the state of Iowa.
    - .1 Steel stair systems. Design Professional to provide loadings, sections and miscellaneous details as required.
    - .2 Pre-cast concrete member design and connection details for precast concrete beams,

columns and walls.

- .3 Pre-engineered, metal plate connected wood trusses.
- .4 Curtain wall glass and aluminum glazing systems.
- .5 Cold-formed, light gage metal wall systems.
- .6 Open web steel bar joist for non-uniform loading. The Design Professional shall include load diagrams in the drawings for all non-uniform joists.
- .7 Steel connections shall be designed by the Design Professional in accordance with the AISC Code of Standard Practice.
- .8 Fire sprinkler design. Location of mains to be shown on the drawings.
- .9 Fire alarm system. Design Professional to provide layout of all fire alarm devices, including alarms, strobes, pull stations, and heat and smoke detectors.
- .10 Building System Controls. Operational design shall be completed by the Design Professional.

3.2 Processing materials and timing:

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|-------------------|---|
| RFI -             | Answer within 5 business days.  |
| ASI -             | Issue within 5 business days.   |
| PR/IDC -          | Issue within 5 business days.   |
| Submittals -      | Issue within 14 calendar days or in accordance with submittal schedule. |
| Pay Application - | Review within 5 business days.  |

3.3 The Design Professional shall abide by the Owner's Confined Space Program or the Design Professional's Confined Space Program, whichever is more stringent. The Owner's program is available to the Design Professional at the Owner's Safety Department.

4. The project manual consists of the Owner's Uniform Documents for Construction Contracts, the Owner's Division I, and the Design Professional's technical specifications, appendices and 8-1/2" x 11" drawings, when applicable.

- 4.1 The outline specifications, which accompany the design development submittals, shall be typewritten and presented on 8-1/2" x 11" paper. Top and side margins shall be 1-inch minimum to permit side binding and head-to-head printing. Bottom margins shall be 1-1/4-inches, with page number centered 1-inch above the bottom.
- 4.2 The technical specifications shall follow the Construction Specification Institute (CSI) format.
- 4.3 The Design Professional shall provide an electronic record document project manual on Submittal Exchange micro-software Microsoft Word, along with one hard copy. The Design Professional, and appropriate professional consultants, shall place their information block with certifications, seals and dates on the original title page of the manual. The information block shall include the numbers of the pages which are covered by the seals. The electronic manual, including the Owner's Uniform Documents for Construction Contracts and the Design Professional's technical specifications, shall be submitted on Submittal Exchange in one electronic file so it can be viewed, read, archived, and retrieved in its entirety with ease.
- 4.4 Revisions in the Project Manual shall be inserted into the text with "italic" type style for ease of recognition. Footnotes for the italic type shall denote addendum number corresponding to such revision. Revisions in the drawings shall be in "clouds" and labeled with the addendum and item numbers. Five (5) copies and Ten (10) copies shall be provided to the Owner and

Constructor respectively. Of the Owner's copies two sets of drawings shall be half size (11"x17"). The Constructor shall be supplied with 20 copies on projects greater than \$1 million. A complete electronic copy of all drawings shall be provided to the Owner.

5. The Design Professional shall respond in writing to all formal design review comments with regard to the disposition of; or actions taken on such comments.
6. The Design Professional shall include a revision history on the drawings, including the issue dates and descriptions of the revisions.
7. A complete design analysis shall be submitted along with the final documents. The design analysis shall include all calculations, design criteria, applicable standards, etc. needed for equipment and material selection, sizing, detailing, etc. Provide one (1) hard copy and one (1) electronic copy.
  - 7.1 The design analysis shall be presented on 8-1/2" x 11" paper except that larger sheets may be used when required for graphs or other special calculation forms. All sheets shall be in reproducible form. The material may be typewritten, hand lettered, handwritten or a combination thereof, provided it is legible. Side margins shall be 1-inch minimum to permit side binding and head-to-head printing. Bottom margins shall be 1-1/4" with page numbers centered 1-inch from the bottom.
  - 7.2 The Design Professional shall provide record document design analysis in reproducible form designated as "FINAL DESIGN ANALYSIS." If a project is abandoned before completion the Design Analysis should be submitted at that point.
8. The Design Professional shall provide record document specifications of furnishings and interior finishes, when applicable. The specifications shall include materials, colors and location. Provide one hard copy and one electronic copy.
9. The Design Professional shall review Operation and Maintenance Manuals and the Constructor's marked-up construction documents reflecting all as-built changes.
10. Bid documents shall be updated and revised to reflect all addenda, accepted alternates and negotiated scope changes and reissued as "Construction Set Documents" within ten (10) days after receiving a copy of the Constructor's Notice of Award. Revisions in the Project Manual shall be inserted into the text with "italic" type style for ease of recognition. Footnotes for the italic type shall denote addendum number corresponding to such revision. Revisions in the drawings shall be in "clouds" and labeled with the addendum and item numbers. Five (5) copies and ten (10) copies shall be provided to the Owner and Constructor respectively. Of the Owner's copies two sets of drawings shall be half size (11"x17"). The Constructor shall be supplied with 20 copies on projects greater than \$1 million. A complete electronic copy of all drawings shall be provided to the Owner and published on the Project Management System (Submittal Exchange) both PDF and DWG format.
11. The Design Professional shall include in Division I of the construction documents, a list of required shop drawings and other submittals including controls software and training programs, which the Constructor must submit and shall stipulate that the Constructor shall be required to submit a schedule of the submittals within 30 days after receipt of the Constructor's Notice of Award. The Design Professional shall review and return shop drawings and submittals to the Constructor within 14 days of receipt or as noted in the approved submittal schedule.
12. The Design Professional shall specify in the construction documents warranties and guarantees for various building elements (i.e., roof, windows, door hardware, plumbing fixtures, cabinetry, carpet, etc.) and provide to the Owner and Constructor a list of required warranties and guarantees at the preconstruction meeting.

13. The Design Professional shall include in the construction documents when applicable:
  - 13.1 Building signage and directories.
  - 13.2 Fire alarm and other life safety systems and lighting and security systems which are compatible and functional with the building automation.
    - .1 The fire alarm controls takeover function shall reset/restore controls and clear all the alarmed failures which occurred during the fire takeover.
  - 13.3 Access provisions for all equipment (i.e. fire dampers) for maintenance.
  - 13.4 Submittal of software flow charts, diagrams, language, etc. for Owner's use.
  - 13.5 Training of Owner's operation and maintenance personnel.
  - 13.6 Submittal of building automation and other control systems technical information by the Constructor when the building is 50% complete.
  - 13.7 Constructor-furnished materials/equipment for the Owner's post-construction inventory.
    - .1 The Design Professional shall provide an all-inclusive list of the materials/equipment to the Owner and Constructor three months prior to substantial completion.
14. The Design Professional shall provide the probable construction costs in the uniform format for construction work recommended by the Construction Specifications Institute (CSI).
  - 14.1 Probable costs of items in the Form of Bid (i.e., base proposal, alternates, unit prices) shall be provided prior to receipt of bids.
  - 14.2 The Design Professional shall provide, during the Construction Documents Phase a probable project cost, which includes, but is not limited to, construction, testing, contingencies, design and construction services and other project related costs.
15. The Design Professional shall utilize the Owner's Division I document located at [www.vpaf.uni.edu/fp](http://www.vpaf.uni.edu/fp). The Design Professional shall meet and review this document with the Owner prior to issuing.
16. The Design Professional shall notify the Owner fourteen (14) calendar days in advance of when the Owner's Uniform Documents for the Construction Contracts are needed for printing. The Owner will forward an electronic copy of the documents to the Design Professional within seven calendar days of such notice.
17. The Design Professional shall encourage bidding of prospective Constructors during the bidding phase. Copies of the project advertisement and/or a letter describing the Project shall be sent to Constructors and phone calls (if necessary) shall be made to Constructors to encourage the competitive bidding process and improve the probability of receiving a minimum of three bids. If bids are not received and a good faith effort to obtain bids is not shown, the Design Professional, without additional charge, shall revise and issue the Bid Documents as necessary to obtain bids if deemed appropriate by the Owner.
18. The Design Professional shall attend a preconstruction meeting to exchange project information with the Owner, Constructor and subcontractors. An agenda shall be prepared and meeting minutes shall be taken and posted to Submittal Exchange by the Design Professional. The Design Professional shall attend subsequent construction meetings every two weeks, or when otherwise

required to stay current with the Project. Construction meetings (every two weeks) shall be conducted by the Constructor with the Design Professional preparing and posting minutes within 48 hours of the meeting to Submittal Exchange.

19. The Design Professional shall follow design guidelines and procedures established for the construction phase of projects and outlined on Facilities Planning's website.
20. The Design Professional shall submit the following documents to the Owner within 30 days after construction completion in well-organized, bound forms. The documents shall be provided in the number of copies and on media as required herein before.
  - 20.1 Approvals of authorities having jurisdiction over the Project.
  - 20.2 Design analysis (i.e., electrical, mechanical, structural, life-cycle cost analysis, etc.).
  - 20.3 Record project manual.
  - 20.4 Specifications of furnishing and interior finishes when applicable.
  - 20.5 Constructor's marked-up Construction Documents.
  - 20.6 Record Drawings, including changes reflected on Constructor's marked-up set of construction documents and all information in ASI's, RFIs, PRs, IDCs and other changes.
  - 20.7 Status Report of allowance items.
  - 20.8 Substantial Completion Certificate with punch list for construction contract.
  - 20.9 Letter of recommendation for construction contract acceptance.
21. The room numbers shown in the Project Program shall be used, together with room names, on the schematic and design development drawings. **At the time construction documents are started, a final numbering system for rooms and all other spaces shall be prepared jointly by the Design Professional and Owner.** These numbers and the room or space names shall be incorporated on the final floor plans. The finish schedule shall include one column showing the original Project Program room numbers for coordination with the final numbers in preparing the numbering system the following procedures shall be observed:
  - 21.1 Below grade level (basement) will be numbered 001-099, Ground floor (grade level) will have number 100-199, First floor, 200-299, Second floor, 300-399, etc. If a building has more than 99 numbered spaces per floor, use four digit numbers with the first digit representing the floor designation.
  - 21.2 Lay out the systems so that numbers approximately correspond in location on each floor. For example Room 200 should be found approximately over Room 100.
  - 21.3 Sequence of numbers should start at principal entrance, running clockwise from the left as one enters the building. Generally, maintain even numbers on one side of corridor with odd numbers on the opposite side.
  - 21.4 Number all spaces including corridors, vestibules, stairwells, elevator shafts and restrooms even if they do not normally appear on finish schedules.
  - 21.5 When rooms in a suite open from a reception area and not from a corridor, they will carry the number of the reception room with a letter suffix, starting from the left (as approached from corridor) and working clockwise. Similarly, closets or storage spaces opening from another room shall be designated with a suffix letter following the main room number.
  - 21.6 Where large rooms occur, assume possible subdivision in the future and allow for new number assignments in the normal sequence.
  - 21.7 Consider effect of possible future addition on the system.
  - 21.8 Any changes to the building floor plan as it relates to room numbering as a result of a change order during construction must be assigned/correct/edited by the Owner at the time of the change.

22. The Design Professional's drawings shall detail the Project and be prepared by or under the supervision of a design professional. In order to maintain consistency in drawings, the Owner has established standards for drawings.
- 22.1 All drawings shall be 36" x 24" unless otherwise indicated. The maximum allowable size is 42" x 30" with the Owner's written approval.
- 22.2 The drawing sheets shall include project title, sheet title, sheet number, drawing scale and plotting information to include either the .ctb file used (see 27) or plotting scale and perimeters, pens and shade width/size and color assignment needed to recreate the plotted drawing in the right-hand corner of each drawing. Only plotting information for each file shall be supplied, i.e., if a line color, line width or layer is not used in the file, no information should be provided.
- 22.3 Sheets shall be numbered in accordance with AIA Standards.
- 22.4 Space for the Owner's drawing number shall be provided in the lower right-hand corner ~~between~~ within the border and edge of the paper approximately 2" wide.
- 22.5 A graphic scale for each of the different scales used on a drawing shall be placed on the drawing.
23. Record "as-built" documents are required to be submitted to the Owner 30 days after the completion of the project. Two sets of drawings (white bond), two specification booklets and the AutoCad/Revit electronic drawings will be submitted to the Owner. PDF's, DWGs, & Word Documents of the record drawings and the specification booklets will be posted on Submittal Exchange.
24. Line density shall be equivalent to that produced by black India ink; half-tones and gray scale plots are not acceptable unless otherwise approved. Manual changes to plotted originals are not acceptable.
25. Record drawings shall include, but not be limited to the following:
- 25.1 Title/Index Sheet with Owner's Project Name, number and site location.
- 25.2 Design Professional and appropriate professional consultant's individual information blocks with certification, seals and date.
- 25.3 Project Directory
- Owner and representatives.
  - Constructor and subcontractors.
  - Design Professional and subconsultants.
  - Survey, geotechnical, mechanical testing, adjusting and balancing, and quality control firms.
- 25.4 Complete drawings and details of the Project including plan and profile drawings of utilities and street, parking lot and walk pavements.
- 25.5 Floor plans with room names, numbers, and area.
- 25.6 Tabulation of floor areas by room, corridor, etc.
- 25.7 Gross square feet of floor areas.
- 25.8 Net assignable square feet of floor areas.
- 25.9 Volumes (building height).
- 25.10 Floor loadings.
- 25.11 Vertical loadings.

- 25.12 Roof loadings.
  - 25.13 Occupant Load and types by room/area.
  - 25.14 Construction classification(s) with walls fire rated 2 hours or more when applicable.
  - 25.15 Geotechnical information/soil boring logs and locations.
  - 25.16 Certified Land Survey Drawings.
  - 25.17 Effective Code Directory.
  - 25.18 Door, window and finish schedules.
  - 25.19 Furnishings and equipment schedules.
  - 25.20 Shop drawing and sample.
  - 25.21 Substantial completion and acceptance dates.
  - 25.22 Legends for all symbols.
26. Electronic drawing files shall be provided in AutoCAD 10/Revit. Drawings shall be drawn at one-unit equals one unit or full scale. The plot style table (pen assignments) used by the Design Professional shall be supplied. The name of this file will be the UNI drawing number including the discipline with an extension of .ctb. Example: 401-55 arch.ctb, 401 55 mech.ctb, 401-55 elec.ctb. This requirement is in addition to the inclusion of the plotting information in 15.48.2. Layers shall be named in accordance with the American Institute of Architects Cad Layer Guidelines, current edition.
- 26.1 At completion of the construction all record drawing shall represent the buildings final construction and be labeled with the Owner's drawing number. The Owner will assign numbers and the Design Professional shall enter the numbers accordingly. These numbers shall be placed in the lower, right-hand corner of each drawing. Upon completion of construction the numbers will be placed on the record drawings and represent the total number of drawings. The electronic file shall be renamed to match the UNI drawing number.
  - 26.2 Each electronic drawing scheme is to be zoomed to the extents of the drawing. Each electronic file is to be purged of empty blocks, layers, linetypes, text styles, and dimension styles. X-referenced drawings shall be bound to the electronic drawing file. All frozen and/or turned off layers are to be deleted from the electronic file. Nested blocks will not be accepted. Standard RomanD font shall be used on the drawings (other fonts may be used as approved by the Owner). The electronic drawings shall not contain any custom objects or proxies.
  - 26.3 Each plotted drawing is to have a separate like electronic drawing file. Only as-built drawings are to be furnished to the Owner at the end of the project.
  - 26.4 Raster images are allowed for photographs only. Non-photographic raster images will not be accepted. When raster photographs are used, insertion point and scale needs to be indicated on the as-built drawing.
  - 26.5 Paper space format may be used as long as no other layers, lines, text, etc. in the paper space view exists in model space. Four (4) layout views per electronic file will be allowed.
27. A separate site plan shall be prepared for above-ground features, subsurface utility lines, and topographical features using the drawing scheme furnished by the Owner at a scale of one unit equals one foot using the Iowa State Plane Coordinate System, plotted out at a scale of 1-inch equals 50-feet.
- 27.1 The Owner shall provide the site plan drawing scheme on electronic media. The layering system to be used for utility drawings will be furnished by the Owner. These layer names shall be used when translating the compiled digital information to AutoCAD drawing files. If a layer does not exist, the Owner shall be contacted so one can be assigned. If an error is found in the drawing scheme, the Owner shall be informed immediately.
  - 27.2 All properties are to be drawn "by layer" and not associated with entities. No information shall be placed on Layer 0.

27.3 All new or abandoned/removed work shall be on a layer with an N (new) or D (deleted) in front of its suffix.