

PART II – CSU FACILITIES PLANNING, DESIGN AND CONSTRUCTION STANDARDS

CHAPTER 04 – DRAWING AND DOCUMENT ADMINISTRATION

400 – GENERAL DRAWING REQUIREMENTS

400.1 – Project Drawings and Quality Control:

A. The following general requirements apply to all Drawing and Document types.

B. Quality Control:

1. The Design Project Team is solely responsible for the completeness and quality of the design product.
2. The licensed responsible Designer of Record shall check all Drawings and technical documents for complete coordination and compliance with applicable code requirements and the CSU Facilities Planning, Design and Construction Standards.
3. The following are minimal quality control measures:
 - a. Completing Design Work or Drawings
 - b. Checking the Drawing for conformance with design calculations
 - c. Conformance to CSU Facilities Planning, Design and Construction Standards and criteria
 - d. Coordination with and among other disciplines and departments
 - e. Obtaining acceptances and approval signatures when applicable
 - f. General quality of Drawings, including use and control of line weighted for graphic communication and legible contrast for grayline background plans and dimensions.
 - g. Elimination of all conflicts between Drawings and Specifications
 - h. Issuance and release of Drawings
 - i. Signing and stamping of Drawings

C. Legibility:

1. The drafter or Computer–Assisted Drawings (CAD) operator shall remember that the Drawing is a means of communication and that it must be clear, legible, accurate and clean.
2. The A/E shall assure its Work and that of Subconsultants are orderly and completely legible.
3. Drawings with faint, illegible or irreproducible lines shall not be accepted and shall be immediately revised at no cost to the Project.
4. Arrange Drawing sheets with adequate white space to avoid crowding.
5. Keep large scale Drawings clear of small-scale detail by using layer control, especially when details are CAD generated using automated building assembly routines.
6. Plan details, annotation and dimensions to avoid multiple crossing lines and overwriting.
7. Use keyed leaders and identifiers to reference full annotation in a legend or table.
8. Group and pattern placement of leader keys, symbols and indicators so they are easy to find.
9. Avoid using default CAD colors with low visual contrast to white paper.
 - a. Although standard yellow, green and cyan are bright in AutoCAD model space, they are difficult to see in paper space.
 - b. Substitute darker hues from the AutoCAD Color Index (ACI), such as 54 for yellow, 94 for green, 134 for cyan.

PART II – CSU FACILITIES PLANNING, DESIGN AND CONSTRUCTION STANDARDS

CHAPTER 04 – DRAWING AND DOCUMENT ADMINISTRATION

- c. Verify that screened, dithered and greyscale Drawing elements are not too faint to see and copy.

D. Issue of Drawings:

1. The issuance purpose shall be recorded on the Drawing as a revision note: e.g., "ISSUED FOR", and shall be identified by revision number as described in this Chapter.
2. Issue titles and dates shall align with Specifications footer, issue, titles and dates.
3. Where applicable, issued prints or Drawings shall be stamped to indicate any restrictions on the release of the Drawings.

E. Voided Drawings:

1. Voided or superseded Drawings shall be clearly and boldly marked on the face of the Drawing and recorded on the Drawing as a revision note: "VOID–SUPERSEDED BY DWG. NO."; and issued to the parties affected by this revision.
2. Drawing numbers of superseded and voided Drawings shall not be reused.

F. Supplemental Documents:

1. Issue of supplemental documents shall conform to Chapter 07 – Construction Evaluation and Administration.
2. The A/E shall provide the same number and quality of documents as required in the "Issue for Construction" submittal, including signed and stamped sets where required by the Project-specific Agreement.

G. Existing Conditions:

1. The Drawings shall utilize different line weights for depicting existing conditions versus new Work or Work to be demolished.
2. All line weights shall be legible and reproducible.

H. Demolition Work:

1. Drawings indicating Work to be removed or demolished shall carry line weights or types that differentiate demolition Work from new or existing Work.
2. All line weights shall be legible and reproducible.

I. New Work:

1. New Work shall be depicted in a heavier or bolder line than existing or demolished Work.
2. Drawings shall clearly depict routing of Systems.

J. Background Plans:

1. When the architectural floor plan or other Drawing of existing and/or new Work is used as a background for showing Work designed by a particular design discipline or intended for

PART II – CSU FACILITIES PLANNING, DESIGN AND CONSTRUCTION STANDARDS

CHAPTER 04 – DRAWING AND DOCUMENT ADMINISTRATION

construction by a particular trade, Subcontractor or group, the background plan shall be legible and reproducible.

K. Depicting Work in Operational Areas:

1. Where new Work must be installed adjacent to, above or below existing equipment, Systems or facilities that must remain in operation during construction, the A/E shall draw the entire affected facility/equipment including conduit runs, piping, duct work, etc. along with the new Work.
2. Indicate code required and practical operational clearances to existing equipment and facilities on the Drawings.
 - a. This Work shall not be Design/Build and shall not be left to the Contractor to decide how to stage, place or route the new Work.
3. The A/E shall coordinate staging and scheduling requirements into the Construction Documents to assure continuous and unobstructed operation of the existing Systems and facilities.
4. The A/E shall develop Division 01 Specifications to define all Work constraints, including limitations on means and methods available to the Project Team for execution of the Work in these circumstances.

400.2 – Sheet Size:

A. Standard Sheets:

1. Standard default Drawing sheet shall be 24" x 36" (Arch D) unless otherwise approved by the Project Representative.
2. Each set of Project Drawings shall be the same size.
3. All dimensions of sheet size are outside edge dimensions for finished print size and include all title blocks and border space.

B. Addendum Sheets:

1. Addendum or change order sheets shall be the same size as the bid document sheet.
2. No partial sheets may be issued without written acceptance from the Project Representative.
3. If partial sheets are approved, partial sheets shall be 8 1/2" x 11" (Letter, ANSI A) unless otherwise directed by the Project Representative.

C. Special Sheets:

1. Special sizes for unique projects shall be used only with the written acceptance of the Project Representative.
2. Maximum sheet size for construction shall be 30" x 42" (Arch E1).

D. Reductions:

1. Reduced half-size prints (12" x 18" – Arch B) may be issued with the written acceptance of the Project Representative.

PART II – CSU FACILITIES PLANNING, DESIGN AND CONSTRUCTION STANDARDS

CHAPTER 04 – DRAWING AND DOCUMENT ADMINISTRATION

2. For convenience, ledger size (11" x 17" – ANSI B) reductions or copies of Drawings may be issued, but if printed at less than 50% reduction, they shall be marked "NOT HALF SIZE".

E. Borders:

1. Standard 24" x 36" sheet borders shall be 1" on top, bottom, and right side and 1–1/2" on left side for binding.

400.3 – Title Block Strip:

- A. The A/E shall submit a mockup of the Project title block to the Project Representative at the beginning of the Work for review and approval.

- B. The title block for all Drawings shall include:

1. Colorado State University
2. Colorado State University (CSU) Project Name
3. CSU Project Number
4. Building Name
5. Building Number
6. Designer of Record
7. Subconsultants responsible for the design shown in the Drawing

- C. Date:

1. The date shall be formatted *dd/mmm/yy*: "28JAN10"

- D. Signature Block:

1. The first and last initials of the designer, drafter and checker shall be shown.
2. Each Drawing shall be signed individually by the Licensed Design Supervisor and Project Engineer/Architect immediately prior to the publishing of final submittal of Construction Document Drawings.
3. Signatures of Design Project Team Drawings shall be signed by responsible Project Team personnel, i.e., Project Architect and Engineering Manager.
4. Enter date of submittal to CSU in *dd/mmm/yy* format.
5. Comply with Colorado State Licensing Board requirements.

- E. Drawing Title:

1. The Drawing title shall include no more than four lines; Title shall agree with the Drawing Control Log.

- F. Drawing Sequence:

PART II – CSU FACILITIES PLANNING, DESIGN AND CONSTRUCTION STANDARDS

CHAPTER 04 – DRAWING AND DOCUMENT ADMINISTRATION

1. Refer to Chapter 03 - Drawing and Design Requirements by Discipline for Drawing sequence details.

G. Sheet Number:

1. All Drawing sheets in a package shall be consecutively numbered and the total number of sheets indicated, "4 of 10".
2. The sheet number shall be located in the title block below the sequence number.

400.4 – Drawing Orientation:

A. General:

1. Drawings shall be oriented so that the stationing progresses from left (increase to the east) to print across the sheet.

B. Project Drawings:

1. Drawing content shall be carefully organized so that the designer's intent can be easily understood.
2. Related information shall be grouped together in an orderly arrangement.

C. Drawing Notes:

1. Notes, key plan and other references shall be shown on the right-hand side of the sheet in a 6" wide column.

D. North Arrow:

1. The north arrow shall be displayed in the upper right-hand corner of plan sheets, directed to the TOP of the Drawing where feasible or otherwise directed to the right.
2. Where there is a difference between Project North and true north, site Drawings shall show a combined Project North and Universal Transverse Mercator (UTM) grid North Arrow.
3. Building plans shall show Project North only.
4. Drawing sets shall use the same orientation for all Drawings.

400.5 – Scale:

A. Minimum Standard:

1. Generally, drawing scales shall be appropriate to the material and detail represented and clearly indicated on the Drawing.

B. Scales shall not be less than the following minimum standards, unless otherwise accepted by the Project Representative:

1. Site Plans:
 - a. 1" = 30'-0" (preferred whenever practical)

PART II – CSU FACILITIES PLANNING, DESIGN AND CONSTRUCTION STANDARDS

CHAPTER 04 – DRAWING AND DOCUMENT ADMINISTRATION

2. Floor Plans:
 - a. 1/8" = 1'-0"
3. Detail Plans:
 - a. 1/4" = 1'-0"
4. Elevations:
 - a. 1/8" = 1'-0"
5. Building Sections:
 - a. 1/8" = 1'-0"
6. Detail Sections:
 - a. 1/4" = 1'-0"
7. Details:
 - a. 1/2" = 1'-0" (many details require larger scales)
8. Refer to the requirements for each discipline for specific scales.

C. Indications of Scale:

1. Scale indications of each Drawing or element shall be printed following or below the title of the Drawing or element.
2. Graphic scales shall be shown on all Drawings. Refer to CAD requirements for standard graphic scale.

D. Composite Drawings (2D):

1. For projects not being designed with three-dimensional Building Information Modeling (BIM), the A/E shall prepare Composite Drawings.
2. Composite 1/8" scale Drawings shall be used to cross-check plan Drawings from various disciplines for interferences.
3. Section Drawings used to cross check for interferences shall be 1/2" scale.
4. Composite Drawings shall indicate all elements and disciplines on a single Drawing to show areas of possible interference.
5. Composite Drawings shall be submitted with the 60% CD and final CD Drawing submittals.

400.6 – Symbols:

A. Symbols:

1. Use symbols considered standard for the industry and discipline involved.
2. Avoid proprietary, trademark or custom symbols.
3. Modify prime A/E and Subconsultant standard details as needed to coordinate them with the rest of the Project.

PART II – CSU FACILITIES PLANNING, DESIGN AND CONSTRUCTION STANDARDS

CHAPTER 04 – DRAWING AND DOCUMENT ADMINISTRATION

B. Symbol Key:

1. Explain all symbols used in a symbol key for each set of Drawings.
2. Do not use a boilerplate symbol key; remove unused symbols from the key.

C. Special Symbols:

1. If standard symbols do not exist for certain conditions, special symbols may be used with approval of the Project Representative.

D. Identifiers:

1. In CAD, names and attributes of symbols and other identifiers shall be descriptive, not alphanumeric codes.
2. In projects dealing with remodels or additions to existing facilities, wall types and other identifiers of the existing facility shall be indicated with the same identifiers and legends as the original As-Built Drawings where appropriate.

E. Match Line:

1. Match lines shall be utilized where a portion of a Drawing is continued on another sheet.
2. The wording "Match Line – FOR CONTINUATION SEE SHEET NO." shall appear centered on the length of the Match Line.

F. Grid/Column References:

1. Structural grid and building grid and column reference graphics for a limited number of existing CSU buildings are available upon request.
2. Review and coordinate with the Project Representative to assign nomenclature to the grid for each building or facility.

400.7 – Lettering:

A. Consistency:

1. Lettering shall be consistent in style throughout the Drawing set.

B. Height:

1. Lettering height shall be appropriate for the type of information to be presented and adequate to make multiple copies legible after reproduction.
2. All lettering shall be upper case and must be easily readable on half-size prints.
3. Default lettering height shall be 3/32".
4. The following lettering classes should be mapped to the corresponding standard height:

PART II – CSU FACILITIES PLANNING, DESIGN AND CONSTRUCTION STANDARDS

CHAPTER 04 – DRAWING AND DOCUMENT ADMINISTRATION

Height	Class
3/32"	Normal Lettering, Notes, Dimensions
1/8"	Sub-headings (notes)
5/32"	Headings (notes)

C. Style:

1. Standard font is proportional.
2. Use ARIAL and AutoCAD style ROMANS.
3. Use of non-proportional lettering is discouraged; if necessary use Monospac821 BT and AutoCAD MONOTXT.

D. Drawing/Detail Titles:

1. Uniform 3/16" height upper case shall be used for Drawing and detail titles in the body of the sheet (other than title block).
2. All titles shall be underlined with a single line having the same weight as the lettering used.
3. Subtitle lettering height shall be 3/32".

E. Annotation and Dimensions:

1. Use 3/32" height upper case lettering. Stacked fractions shall not use reduced letter height.

F. Orientation:

1. All lettering shall be oriented to facilitate reading from the bottom or right-hand edge of the sheet.

400.8 – Lines:

A. Consistency:

1. Line weight and style usage shall be consistent throughout.

B. Line Weight:

1. Line weight shall be appropriate for the type of information to be presented, with adequate thickness, screen percentage and color shade to make multiple legible copies.
2. Thin 0.18 mm/.007 in.
 - a. Dimension lines and leaders, object lines seen in the distance, and most patterns
3. Medium 0.25 mm/0.010 in.
 - a. Minor object lines, line terminators (arrowheads and ticks), hidden lines, note leader lines
4. Medium thick 0.35 mm/0.014 in.
 - a. Most object lines, lettering, schedule boxes, and charts
5. Thick 0.50 mm/0.020 in.
 - a. Minor title underlining, title text, object lines requiring special emphasis

PART II – CSU FACILITIES PLANNING, DESIGN AND CONSTRUCTION STANDARDS

CHAPTER 04 – DRAWING AND DOCUMENT ADMINISTRATION

6. Extra thick 0.70 mm/0.028 in.
 - a. Use sparingly for underlining titles, separating portions of Drawings, elevation grade lines, building footprints, top of grade markings

400.9 – Nomenclature:

A. Terminology:

1. Standard terminology used in all documents shall be in accordance with the terms established in the CSU Facilities Planning, Design and Construction Standards and in general use throughout the industry.

B. Abbreviations:

1. Abbreviations shall conform to the standard Abbreviations listed in the CSU Facilities Planning, Design and Construction Standards – Additional Documents.
2. Abbreviations shall be used only as necessary and shall be explained in an abbreviation table contained on a Drawing in the document set.

C. Consistency:

1. Nomenclature shall be consistent throughout the document set, and coordinated with the Project Manual Specifications.

D. Generic Terms:

1. Generic terms shall be used on the Drawings.
2. Names of Manufacturers, trade names, and model numbers shall be listed and explained in the Project Manual Specification only.

400.10 – Annotation:

A. General:

1. Annotation shall be appropriate to the scale of the Drawing. Materials that cannot be distinguished at the Drawing scale shown should not be annotated.
 - a. Avoid excessive description on the Drawings.
2. Detailed material description shall be written in the appropriate Specification section.

B. Specificity:

1. Annotations, legends and general notes that do not apply to any Drawing on a sheet shall be removed from that sheet.
2. Design submittals containing Drawing sheets with irrelevant “rubber stamp” annotation, legends and notes are not acceptable.

C. Arrangement:

1. To the extent possible, leader notes shall be arranged neatly in stacked groups alongside the Drawing in an order that does not require leader lines to cross.

PART II – CSU FACILITIES PLANNING, DESIGN AND CONSTRUCTION STANDARDS

CHAPTER 04 – DRAWING AND DOCUMENT ADMINISTRATION

- a. Do not place leader notes randomly in and around the Drawings.

D. Complete Identification:

1. All materials shown in a detail shall be identified, preferably with Specification–linked keyed annotation.
2. Details must be drawn at a scale sufficient to distinguish the materials annotated.
3. If the Drawing scale is not fine enough to distinguish individual components, identify Building Systems using a Specification–linked keyed note or specific assemblies using an assembly indicator.

E. Specification–Linked Keyed Notes:

1. A Specification–linked System is preferred for the annotation of materials.
2. Text for leaders that identify materials on the Drawings should be limited to the relevant Section number from the Specifications, followed by an alphabetic suffix, such as “09 29 00.E”.
3. Each Drawing sheet should include a legend on the right side of the sheet, listing the material leader notes that appear on that sheet in order, accompanied by a brief generic description, such as “09 29 00.E – 5/8” Type X Gypsum Board”, in upper/lower case.
4. The same leader text and legend description shall be used consistently throughout the Drawing set for each specific material.
5. Do not list materials in the legend if they do not appear on that Drawing sheet.
6. It is not required to coordinate leader alphabetic suffixes with the outline letters in the Specification section.
7. For general scale Drawings such as building elevations and sections where individual components cannot be distinguished, descriptions may be limited to Building Systems, such as “Single Membrane Roof System.”
8. Leader notes for material used in different sizes may be supplemented with dimensions, such as “05 50 00.G – 2”x1”x1/8”, which directs to the legend text “05 50 00.G – Hot dip galvanized steel angle”.

F. Consecutive–Alphanumeric Keyed Notes:

1. The Project Team shall use a Consecutive–Alphanumeric Keyed Note System for repetitive directive annotation.
2. Leader notes that direct specific Work or action to be performed shall use consecutive numbers or letters inside a specific regular shape (circle, square, diamond).
3. Use the same regular shape for directions of a similar nature.
4. Each Drawing sheet shall include a legend on the right side of the sheet, listing consecutively all the alphanumerical leader symbols that appear on that sheet, grouped by the regular shape used for a class of Work or action, followed by brief text explaining the action or Work required.

PART II – CSU FACILITIES PLANNING, DESIGN AND CONSTRUCTION STANDARDS

CHAPTER 04 – DRAWING AND DOCUMENT ADMINISTRATION

5. The same number/letter and shape shall be used for the same direction on all sheets within a discipline.
6. Symbols and descriptions in the legend shall be deleted or changed to “not used” if the annotation does not appear on the Drawing sheet.

G. Verbose Notes:

1. The Project Team shall use verbose leader notes sparingly, concisely and with careful attention to arrangement.
2. When lengthy description is needed, annotation shall be referenced to the legend using an alphanumeric keyed note.
 - a. Do not use verbose notes to list components of a Building System, such as “EPDM on coverboard on tapered insulation on steel decking.”

H. Assembly Indicators:

1. The Project Team shall use standardized indicators for assemblies such as partitions, doors, windows, etc. shown in floor plans and building elevations.
 - a. Such indicators shall be described briefly in the legend similar to keyed notes, with reference to the relevant detailed assembly Drawings (partition types, door and window types, etc.)

400.11 – Dimensions:

A. General:

1. Dimensions shall be in United States Customary Units. The Project Coordinate Control System, contour designations and elevations shall contain whole number and decimal fractions of feet.
2. Layout work may use whole numbers and decimal fractions of feet to conform to the Coordinate Control System and to employ a large unit (feet) to measure a large dimension, e.g., earthworks, overall building dimension, etc.
3. In Detail Design Work, use feet and inches to conform to the most commonly accepted practice, to keep within the tolerance necessary for the Work, and to employ a small unit to measure relatively small dimensions, e.g., structural joints, mechanical fittings, etc.

B. Unit of Measure:

1. The appropriate unit of measure shall be defined by a note on the Drawing for principal dimensions: "Measurements are based on the United States Customary System".
2. Half size sets and other reduced size Drawings shall be marked: "Reduced Drawings Do Not Scale for Dimensions"

C. Location of Dimensions:

1. To reduce the possibility of error due to changes or revisions, dimensions shall be shown in one location only on the Drawing and referenced on other Drawings or details as necessary for clarity.
2. Draw dimensions from base structural grid or site grid for overall dimension control.

PART II – CSU FACILITIES PLANNING, DESIGN AND CONSTRUCTION STANDARDS

CHAPTER 04 – DRAWING AND DOCUMENT ADMINISTRATION

3. Larger scale Drawings have precedence for dimension control and shall be developed accordingly.

D. Dimensions on Layout Drawings:

1. Symbols for floor elevations and horizontal dimensions shall be shown on plan view only, unless the dimensioning cannot be made clear by this method.
2. Vertical dimensions and elevations shall be shown on sections and elevations.
3. Basic vertical elevations of piping and equipment shall be designated by means of vertical dimensions above floor level or a given reference point instead of dimensions from other piping and structures.
4. Repetition of dimensions within a single sheet shall be avoided. Dimensions of lines crossing matchlines shall be repeated on the matching sheet so each shall be complete.
5. Dimensions that are out of scale shall be undermarked "NTS". However, every effort shall be made to keep Drawings to accurate scale.
6. Dimensions, etc., undefined or for temporary information during the design phase shall be encircled and marked "CHECK".

400.12 – Details, Schedules and Product Data Sheets:

A. Detail Limits:

1. Details shall be identified by encircling the area to be clarified and connecting this circle with the detail symbol.
2. The larger scale detail as developed shall include the entire area encircled on the smaller scale Drawing.
3. Details as drawn shall not be encircled.

B. Orientation and Arrangement:

1. The orientation of the detail Drawing shall be identical to that of the plan, elevation, etc., where it is identified.
2. Arrange collected detail sheets using a modular grid layout of sufficient size to prevent crowding.
3. Combine modules as needed for details of differing size.

C. Identifying Symbols and Titles:

1. All details shall be designated by numbers.
2. Wherever practical, details shall be listed consecutively, 1, 2, 3, etc., from left to right and from top to bottom on the sheet on which they are drawn.
3. Whenever possible refer to typical details where the details are identical.
4. Never annotate a detail as "similar" – provide complete detailing.

PART II – CSU FACILITIES PLANNING, DESIGN AND CONSTRUCTION STANDARDS

CHAPTER 04 – DRAWING AND DOCUMENT ADMINISTRATION

D. Schedules:

1. Standardize schedule formats across A/E disciplines.
2. Identifiers and marks in schedules shall be consistent throughout the Project.

E. Product Data Sheets:

1. Product Data Sheets are required with the final Construction Documents submittal.
2. These sheets shall include all components specified in the Construction Documents.
3. Updated Product Data Sheets are also required as part of the Record Documents submittal by the Design Project Team and shall include updated As-Built information regarding the installed components.

400.13 – Drawing Revisions:

A. Revisions to Preliminary Design Drawings:

1. For ease of identification revised areas on Preliminary Design Drawings shall be circled with a revision cloud and marked with a lettered symbol.
2. "Description of Revisions" shall be designated by letter on each sheet title block.

B. Revision of Final Design Drawings:

1. Whenever Drawings are revised after Final Submittal for Bid Documents and prior to issuance for bid, the following procedures shall apply:
2. All revised Drawings, as well as Drawing Sheets on the Drawing Index, shall be marked Rev. 1, 2, etc. as appropriate. Newly added sheets shall be added to the revised Index to Drawings Sheet.
3. Enter a brief description of the technical change. The "Rev" column entry shall be the figure revision number.
4. To avoid confusion between changes made before issuance for bid and those made during or after bid, changes made before the bid shall not be identified on the Drawing.
 - a. For changes during and after bid, revised areas of the Drawing shall be circled and the changes described in the revision block, i.e., ADD01, COB01, etc.
5. Coordinate with the Project Representative when subsequent revisions require modification of revision circle or addition of circles conflicting with existing circles.

C. Voided Drawings:

1. Where portions of a Drawing are voided, outline and place an "X" across each area voided and print the word "Void" across the center of the "X".
2. If an entire sheet is voided, place an "X" from corner to corner of the sheet with the word "Void" at the center.

PART II – CSU FACILITIES PLANNING, DESIGN AND CONSTRUCTION STANDARDS

CHAPTER 04 – DRAWING AND DOCUMENT ADMINISTRATION

- a. Place the word "Void" across the title block sheet number and on the appropriate sheet title on the index of Drawings.
- b. Do not delete the underlying Drawing.

D. Description of Changes to Drawings:

1. The Design Project Team shall prepare a written summary of the revision changes to the Drawings.

E. Transmittal:

1. After revisions are completed, the following items shall be delivered to the Project Representative: Summary of Changes to Drawings, Originals of Revised Drawings, Revised List of Drawings.

400.14 – Revision Blocks:

A. Preliminary Drawing Revisions:

1. For Preliminary Design Drawings, the following might describe the purpose of issue such as: "Scope Statement", "In-House Review", "30%".

B. Indications:

1. On Preliminary Design Drawings of Sketches, each revision shall be indicated alphabetically: A, B, C, etc. in a triangle.
2. On Final Design and Construction Drawings of Sketches, each revision shall be indicated numerically, in triangle.
3. Each revision shall be dated with day, month and year.
4. Initials of Drafter or Lead Designer/Engineer shall be entered.
5. Group Project Architect/Engineer shall enter his initials as the other revision checker.
6. When applicable, signature shall be hand-initialed at time of issue, and a facsimile of the initials shall be entered in the appropriate area on the CAD file.

C. Number of Revisions:

1. When the number of revisions exceeds the number of revision spaces allowed on the standard title block, modify the title block to accommodate additional revisions.

400.15 – Project Presentation:

A. General:

1. The Design Drawings shall be organized into a Construction Drawing Package as determined by the Project Representative.

B. The Construction Drawing Package shall include:

1. Organization:

PART II – CSU FACILITIES PLANNING, DESIGN AND CONSTRUCTION STANDARDS

CHAPTER 04 – DRAWING AND DOCUMENT ADMINISTRATION

- a. Title Sheet
- b. Index of Drawings, General Notes, Symbols, Abbreviations
- c. Access and Traffic Control Plans
- d. Staging Plans
- e. Site Plan
- f. Master Column Grid
- g. Key Plan
- h. Quantity Schedules
- i. Phasing Drawings
- j. Design Drawings

2. Title Sheet:

- a. The Project Representative shall provide the title sheet format to the Design Project Team in CAD format.
- b. The title sheet shall include:
 - i. Colorado State University
 - ii. CSU Project Name and Project Number
 - iii. CSU Building Name, Number and Street Address
 - iv. Code Analysis Summary and Code Editions Used
 - v. List of Project Teams, Addresses, Voice/FAX/Mobile phones, Email addresses
 - vi. Project Location Map
 - vii. Project Vicinity Site Plan

C. Index of Drawings:

1. All Drawings shall be listed by Page/Drawing number and title.
 - a. This sheet must be updated any time that additions or deletions of Drawings occur.

D. General Notes and Symbols:

1. The general notes Drawing shall include all notes, symbols, abbreviations, etc. that are of general information to the Project.
2. Do not duplicate Specification language on the Drawings.
3. Do not place information on the Drawings that belongs in the Specifications.

E. Site Plan:

1. Site Drawings shall be provided by the Project Representative when available and adapted for Final Design Drawings by the Design Project Team.

F. Base Map:

1. Overall plan oriented in same direction as large Drawings, indicating how project is organized and how Drawings are organized.
2. Use the building/facility location and grid indicators and coordinate nomenclature on Base Map with the Project Representative.

G. Quantity Schedules:

1. On Construction Agreements incorporating unit pricing, quantity schedules shall be included on the Drawings indicating quantities for all bid items/pay items.

PART II – CSU FACILITIES PLANNING, DESIGN AND CONSTRUCTION STANDARDS

CHAPTER 04 – DRAWING AND DOCUMENT ADMINISTRATION

2. The schedule shall itemize all units included in the Design Project Team's final Cost Estimate and shall also correlate with unit pricing on the Bid Form.
3. The schedule shall itemize pay item by Specification section number, unit of measure and estimate of quantity.
4. On other construction agreements, where per unit costs are desired, simply itemize anticipated per unit items on the Bid Form for Project Team unit pricing.

H. Drawings:

1. A "Layout Index" or "Area Base Map" is a scaled plan(s) of the University space covered by the Construction Document Package.
2. Graphically indicate the outline locations of all area plans or plan/profile Drawings involved.
3. Each Drawing location indicated on the index shall be given a number (placed near the upper right-hand corner) as well as the Drawing number.
4. Major structures and stations and their Plan Drawing numbers shall also be indexed on this plan.

400.16 – Layout Control:

A. Horizontal Control:

1. The alignment control of all roadway, utility and facility Drawings shall be based on and referenced to HORIZONTAL DATUM: NAD83 COLORADO STATE PLANES – NORTH ZONE – US FOOT.

B. Vertical Control:

1. Elevations for profile, contour, bench mark and other vertical control points shall be based on and referenced to VERTICAL DATUM: NGVD 29.

C. The elevation of finished floor, top of steel, bottom of foundation, depressions, etc., of major structures may be reference datum plane.

1. On these Drawings, the reference datum plane shall be equated to the CSU survey datum by a note on the Drawing.
 - a. For example: "Reference Datum Plane EL = 100'-0" (for building projects) or EL = 100.0' (for civil projects) = 5382.67' NGVD 29".

400.17 – Sequence:

A. Refer to Chapter 03 - Drawing and Design Requirements by Discipline for specific Drawing organization within each design discipline.

B. When appropriate, the Project Team shall obtain written permission from the Project Representative to vary the sequence.

C. Drawings shall be bound in a single set whenever feasible and arranged in the following sequence:

1. Title and General Information Drawings

PART II – CSU FACILITIES PLANNING, DESIGN AND CONSTRUCTION STANDARDS

CHAPTER 04 – DRAWING AND DOCUMENT ADMINISTRATION

2. Phasing/Staging Drawings/Overall Site Base Map
 3. Civil Drawings
 4. Utility Drawings
 5. Landscape Drawings
 6. Structural Drawings
 7. Architectural Drawings
 - a. Equipment
 - b. 3D Views and Photographs
 - c. Wayfinding, Signage and Graphics
 - d. Interiors and Furniture
 8. Mechanical Drawings
 9. Plumbing Drawings
 10. Electrical Drawings
 11. Technology/Telecommunication Drawings
 12. Fire Alarm Drawings
 13. Fire Protection Drawings
 14. Foodservice Drawings
- D. For larger projects which require the Construction Document Drawing sets to be organized in several sets, do not break apart any of the Drawing groups unless approved by the Project Representative.
- E. Alternates:
1. Alternates shall be clearly delineated to assign the extent of work to be bid as an alternate or separate price basis.
- F. Revisions:
1. Revisions shall be clearly indicated on the Drawings and cross referenced to the revision listing on the title block of each Drawing sheet as a COB number.
- G. Standards:
1. The Drawings shall not refer to compliance with the CSU Facilities Planning, Design and Construction Standards by name or incorporate by reference any of its Standard details.
 2. These Standards shall be used as a guide to the design of a Project and not as documents for construction.

400.18 – Construction Document Numbering System – Tracking Number:

- A. General:

PART II – CSU FACILITIES PLANNING, DESIGN AND CONSTRUCTION STANDARDS

CHAPTER 04 – DRAWING AND DOCUMENT ADMINISTRATION

1. All Construction Documents shall be numbered according to the criteria outlined in this section.
 - a. The purpose of this numbering scheme is to electronically track both hard copy and electronic copies of all Construction Documents used on the Project.

B. Definition of Documents:

1. Construction Documents shall be broken down into two broad categories, hardcopy documents and softcopy or electronic documents.
2. The Project Representative defines "Documents" as the following:
 - a. Hardcopy:
 - i. Drawings
 - ii. Design Analysis
 - iii. Specifications
 - iv. Engineering Reports
 - v. Project Schedules
 - vi. Estimates
 - vii. Agreement Documents
 - viii. Vendor and O&M Manuals
 - b. Softcopy:
 - i. These are Electronic Files of Drawings
 - ii. Specifications
 - iii. Estimates
 - iv. Project Schedules
 - v. Change Documents and
 - vi. Other Project records such as logs, minutes, correspondence, photographs and email generated or residing in electronic form.

C. Document Numbering:

1. Project Teams must number Drawings, sketches, and certain non-Drawing documents.

D. Submittal Level:

1. Note in the Issue block of each Drawing the date of the submittal. The numbering shall be sequential and shall include a brief description of the reason of the submittal up until the issuance of the Advertisement for Bids. At Advertisement for Bids, the entry shall be "00 Issue for Bid ____/____/____".
Revision Numbers – Two digits
#A First issue of Document, prior to bid
#B–Z Revisions to Documents issued prior to Construction Documents shall use letters.
00 Issue for Bid
01 Subsequent Documents Issued for Construction with revisions (COB numbers).

E. Drawing Numbering System:

1. The Project Team shall use this sheet numbering System unless alternate numbering Systems have been approved by the Project Representative.
 - a. Refer to Chapter 03 – Drawing and Design Requirements by Discipline for more details.
2. Use four digits to identify all sheets using XX.XX format (G0.00, E1.01).
 - a. Exceptions using 5 digits are noted in the relevant sections.
3. Sheet Alpha Prefixes:

PART II – CSU FACILITIES PLANNING, DESIGN AND CONSTRUCTION STANDARDS

CHAPTER 04 – DRAWING AND DOCUMENT ADMINISTRATION

- a. **G** General
- b. **C** Civil
- c. **U** Utility
- d. **L** Landscape
- e. **S** Structural
- f. **A** Architectural
 - i. Shall also include the following:
 - a) Equipment
 - b) 3D Views and Photographs
 - c) **W** Wayfinding, Signage and Graphics
 - d) Interiors and Furniture
- g. **M** Mechanical
- h. **P** Plumbing
- i. **E** Electrical
- j. **T** Technology/Telecommunications and Data Systems
- k. **FA** Fire Alarm
- l. **FP** Fire Protection
- m. **FS** Foodservice

4. Sheets indicating the identical area but issued for different disciplines shall contain the same three digit series for ease of coordination.
 - a. For example, when A101 is the first-floor plan of a building, S101 shall be the structural plan for the first floor.

F. Non-Drawings:

1. Documents that are to be officially submitted to the Project Representative must follow the identical numbering sequence as Drawings except that sheet number is replaced with a document designation code.

G. Electronic Drawing File Name Requirement:

1. Drawing file names shall include the sheet number and descriptive sheet title.
 - a. For example, M202 Mechanical Plan Level 2.dwg

401 – CAD REQUIREMENTS

401.1 – Scope and Purpose:

A. Scope:

1. This section identifies the Project CAD requirements for design and construction Projects at CSU.
2. It shall outline the submittal requirements, layering structure, symbols, identifiers and abbreviations.
 - a. Building Information Modeling (BIM) requirements shall be addressed below.

B. Purpose:

1. Many of these Standards represent basic CAD literacy.
2. Files with systematic naming conventions, uniform legibility and capable of being opened independent of the Project Team's directory tree and external reference library are essential to the integrity and utility of the Facilities Management (FM) Project Archive.

PART II – CSU FACILITIES PLANNING, DESIGN AND CONSTRUCTION STANDARDS

CHAPTER 04 – DRAWING AND DOCUMENT ADMINISTRATION

C. Project Team Requirements:

1. Adherence to the basic standards and requirements in this section is mandatory.
2. Any and all exceptions to these standards must be approved by the Project Representative prior to incorporation into any Drawings.
3. The CAD Drawings shall match the hardcopy Drawings for each submittal.

D. National CAD Standard:

1. The Project Team shall use the National CAD Standard (NCS), current version for guidelines to layering, symbols and plotting.

E. CAD Requirements:

1. The Project Team shall use computerized Design Systems unless otherwise directed in writing by the Project Representative.
2. All Drawings requiring a CAD submittal must be delivered according to the CSU CAD Requirements.
3. Each Project Team shall use internal corporate quality control procedures to ensure accurate, adequate, and safe Work.
4. The CSU Facilities Planning, Design and Construction Standards set forth preferred formats for size, media, title block, line weights, symbols, etc.
5. The Standards serve as a supplement to Project Team's existing procedures.

F. Drawings shall be submitted as reproducible electronic media.

1. Generally, the electronic media submittals shall be required three times during the design phase and then with the Record Drawings as specified in the Project-specific Agreement.

G. No Specifications on Drawings:

1. Specifications and schedules shall be placed in the Project Manual and not on the Drawings unless approved by Project Representative.

H. Restriction on Access:

1. The Project Team may not provide Drawings or data for uses not directly related to the Project.
2. The Project Team shall secure approval from the Project Representative prior to release of any information.
 - a. This includes reviewing of documents or Project requirements with Project Teams or Vendors prior to issuance of Advertisement for Bids.

I. Designer Supervision:

1. Drawings and documents shall be prepared under the supervision of design professionals licensed in the State of Colorado as required by Colorado State Boards of Licensing.

PART II – CSU FACILITIES PLANNING, DESIGN AND CONSTRUCTION STANDARDS

CHAPTER 04 – DRAWING AND DOCUMENT ADMINISTRATION

401.2 – Submittal Requirements:

- A. Electronic files of all Drawings are required for each design phase submittal.
- B. Submittals shall be delivered electronically via file share.
- C. Files shall be submitted in PDF format.
 - 1. Refer to Chapter 02 – Design Administration for submittal process details.

401.3 – Drawing Format:

A. Layering:

- 1. The Project Team shall use a Layer Name System based on design discipline and Building System, similar to the AIA CAD Layer Guidelines.
- 2. At minimum, layer names shall be descriptive, systematic and unambiguous. Colors, numbers or line weights are not acceptable as layer names (i.e. Red, 743, Thin).
- 3. With each Drawing submittal, the Project Team shall provide a list of all layer names used for the Project Drawings, identifying the type of elements placed on each layer (bearing walls, plumbing fixtures, room numbers, dimensions, etc.).

B. Color Contrast:

- 1. Use colors with strong contrast to a WHITE background. Avoid yellow, cyan or light grayscale. These colors are difficult to read in paperspace and in plots.
- 2. AutoCAD allows explicit definition of line weight. Assignment of plot color to line weight is obsolete.

C. Color Assignment:

- 1. All entities in the Drawing shall have color by layer.

D. Line Weights:

- 1. The Project Team shall control line weight to enhance legibility.
- 2. Line weights shall be defined in the layer table.
- 3. These line weights are plotted line weights, not display line weights.
- 4. Use of defined width polylines (display line weight) should be restricted to graphic and diagrammatic uses calling for conceptual emphasis, such as delineation of fire rated separations and egress pathways in code analysis plans, conceptual Drawings and illustrations.

E. Standard Symbols:

- 1. All Drawing symbols must conform to the symbol conventions for each discipline.
- 2. Symbols should carry a descriptive symbol name. Ambiguous codes are not acceptable.
- 3. Symbols shall have an origin point at a center, vertex or projection and use a 3/32" text height.

PART II – CSU FACILITIES PLANNING, DESIGN AND CONSTRUCTION STANDARDS

CHAPTER 04 – DRAWING AND DOCUMENT ADMINISTRATION

F. Blocks:

1. All blocks shall be created on Layer 0 so that, when inserted, they are assigned to the name, color and line weight of the insertion layer.

G. Line Types:

1. Project Teams must use defined linetypes.
2. Broken lines must be actual patterned lines, and not multiple line segments.
3. Dashed lines with two end points for each dash are not acceptable.

H. Text Style:

1. Use upper case proportional text – AutoCAD style ROMANS and True Type font Arial.
2. Non-proportional font and AutoCAD default TXT are discouraged; if necessary use AutoCAD MONOTXT and Monospac821 BT.

I. Title Sheet:

1. The Project Team shall submit a mockup of the Project title sheet for review and approval by the CSU Project Representative at the commencement of CAD Work.
2. The standard title sheet shown in the CSU Facilities Planning, Design and Construction Standards - Additional Documents is preferred, but expressive variation is permitted.

J. Title Block:

1. Project Teams shall submit a mockup of the Project title block for review and approval by the CSU Project Representative at the commencement of CAD Work.
2. CSU title blocks shown in the CSU Facilities Planning, Design and Construction Standards - Additional Documents are preferred, but appropriate variation is permitted.
3. The approved title block and border must appear in each CAD file.

K. Coordinate Basis:

1. All Drawings must be produced using units in feet and inches.
2. The Survey Coordinate System should be used for Site Drawings.
3. The use of real-world coordinates is necessary for the University GIS System.

L. Double Precision:

1. All Drawings should be submitted in double precision (carried to sixteen decimal places).
2. Integer based Systems should convert to double precision during the translation.

M. Drawing Accuracy:

PART II – CSU FACILITIES PLANNING, DESIGN AND CONSTRUCTION STANDARDS

CHAPTER 04 – DRAWING AND DOCUMENT ADMINISTRATION

1. All Drawings shall be precision input.
2. CAD Drawings must reflect true design dimensioning and must not be graphic representations of the design.

401.4 – CAD Filenames:

- A. The Project Team shall use the following filename conventions for all CAD Work.

xxxxx-AA-Ax.xx Title-vx

1 2 3 4 5

1. CSU Project Number – Five digits (assigned by Project Representative)
2. Submittal Level – Two digits (some levels may not be applicable to individual Projects)
 - a. **SD** Schematic Design
 - b. **DD** Design Development
 - c. **CD** Construction Documents – 100% (Final)
 - i. C3 – 30% CD (when required by Agreement)
 - ii. C6 – 60% CD (when required by Agreement)
 - d. **BD** Bid Documents
 - e. **CCD** Conformed Contract Documents (when extent of Addenda require conformation)
 - f. **CB** Change Bulletin Sketches and Drawings (do not use X)
 - g. **SH** Shop Drawings (Project Team submittal Drawings)
 - h. **RL** As-Built Redline Submittal (Project Team scan of Drawing redlines)
 - i. **RD** Record Drawings – Final Issue
 - i. PR – Preliminary (when required by Agreement)
 - j. **MP** Mapping/Topos/Surveys
 - k. **PL** Planning Documents
3. Sheet Numbers – Four digits* (one letter and three numbers)
(*some Drawings requiring two letters in the prefix have a five digit sheet number)
 - a. **G** General
 - b. **C** Civil
 - c. **U** Utility
 - d. **L** Landscape
 - e. **S** Structural
 - f. **A** Architectural
 - i. Shall also include the following:
 - a) Equipment
 - b) 3D Views and Photographs
 - c) **W** Wayfinding, Signage and Graphics
 - d) Interiors and Furniture
 - g. **M** Mechanical
 - h. **P** Plumbing
 - i. **E** Electrical
 - j. **T** Technology/Telecommunications and Data Systems
 - k. **FA** Fire Alarm
 - l. **FP** Fire Protection
 - m. **FS** Foodservice
4. Short descriptive title
 - a. For example, Floor Plan 1, Bldg Section, Index, One Line
5. Revision Numbers – only if Drawings must be revised and resubmitted. Start with v2.

PART II – CSU FACILITIES PLANNING, DESIGN AND CONSTRUCTION STANDARDS

CHAPTER 04 – DRAWING AND DOCUMENT ADMINISTRATION

B. The Drawing filename shall appear in the title block under CAD FILE NO.

401.5 – Electronic Schedules:

A. All Project schedules including but not limited to room schedules, door schedules, hardware schedules, mechanical, electrical, and plumbing schedules, equipment schedules, etc. in MS–Excel spreadsheet format (.XLS).

B. Schedules shall be submitted following the submittal process as described above, labeled clearly with:

1. Project Team Name and Agreement Number
2. CSU Project Number
3. Submittal Date
4. Submittal Level
5. Schedule Names/Numbers

401.6 – Attributes, Identifiers, and Product Data:

A. This section shall describe how various components, products, Systems, utilities and buildings are identified. CSU utilizes AiM as an asset management database.

1. For more information, contact Project Representative.

B. Building Number:

1. All buildings at CSU have a unique building number.
 - a. Contact Project Representative for building numbers.

C. Room Number:

1. All room numbers are finalized by FM Space Management.
2. The Project Team shall obtain the room number layout as soon as the basic floor plan has been approved in the Schematic Design phase or no later than the beginning of Design Development.
3. Refer to Chapter 03 – Drawing and Design Requirements by Discipline for Room Numbering Standard.

D. Categorical Identifiers:

1. A categorical identifier corresponds to a component (product, System, equipment, finish or style) per the AiM System.
 - a. For more information, contact Project Representative.
2. Categorical identifiers allow the users of the System to do a number of FM oriented tasks including component tracking, automatic bill of material generation, maintenance tracking, etc.

E. Unique Identifiers:

PART II – CSU FACILITIES PLANNING, DESIGN AND CONSTRUCTION STANDARDS

CHAPTER 04 – DRAWING AND DOCUMENT ADMINISTRATION

1. Unique identifiers work with the categorical identifiers that have been assigned to components specified and located by CSU.
2. Unique identifiers in use at CSU include:
 - a. CSU Property Management inventory codes
 - b. CSU Key Management

402 – BUILDING INFORMATION MODELING (BIM)

402.1 – General Requirements:

- A. When modeling software such as Autodesk REVIT, Sketchup, etc. is used for the Project, the Project Team shall submit the complete Electronic Building Model during Project Closeout.

403 – SPECIFICATIONS

403.1 – General Requirements:

- A. The Project Team shall provide complete Project Specifications in the Project Manual.
 1. Specifications shall include all Specifications and criteria required to construct or prepare Design/Build proposals to construct the Project, including General Requirements, Detail Specifications, product data sheets (if required), finish/room schedules, door schedules, equipment schedules, hardware schedules, fixture schedules and other appropriate schedules, tables, figures and charts.
- B. The Project Team shall prepare Division 01 – General Requirements in accordance with the Project-specific Agreement and OSA requirements.
 1. The Project Representative shall review prior to finalization.
- C. The Project Representative and Project Team shall jointly prepare Division 01 – General Requirements as noted below. The Project Team shall be responsible for preparing Divisions 02 through 49 – Detail Specifications.
- D. Follow the recommendations and three–part style of the Construction Specification Institute (CSI) Manual. Divide the Specifications according to the six–digit section numbers of CSI MasterFormat 2018.
 1. Typical CSU projects shall involve Divisions 02 through 33.
 2. Occasionally, projects may involve Divisions 34 – 49.
- E. Only include information related to the Project Scope of Work.

403.2 – Standard Text Elements:

- A. Each page of the Specifications shall bear the following identifying information:
 1. Colorado State University
 2. CSU Project Name
 3. CSU Project Number

PART II – CSU FACILITIES PLANNING, DESIGN AND CONSTRUCTION STANDARDS

CHAPTER 04 – DRAWING AND DOCUMENT ADMINISTRATION

4. CSI Section Name
5. CSI Section Number
6. Project Phase
7. Section Page Number
8. Issue Date

B. Format shall be 8–1/2” x 11” page.

C. Use of the following format is preferred for all design disciplines:

1. Margins:
 - a. Top and bottom margin, 0.5”, 0.0 Gutter, 0.5” Header and Footer margins. Left and Right Margins 1.0”.
2. Typeface and Line Spacing:
 - a. Typeface in 10 pt. Arial normal type with 10 pt. Bold Section Titles in upper case, Line spacing is single space unless specified otherwise.
3. Indent/Tab Set:
 - a. Use indents, not space or tabs for paragraph indents.
 - b. Set indent/tab at 0.5” max.
4. Header:
 - a. Margins 1” left and right. Typeface 8 pt. upper case Arial bold

Line 1:	Flush left	“SPECIFICATIONS – VOLUME 1” (if multiple volumes)
	Flush right:	“COLORADO STATE UNIVERSITY”
Line 2:	Flush left:	CSI Division number and name
	Flush right:	CSU Project Name
Line 3:	Flush left:	CSI Section number and Section Name
	Flush right:	CSU Project Number

Provide a bottom border followed by an 8 pt. line return at the bottom of the header.

SPECIFICATIONS – VOLUME 1
DIVISION 01 – GENERAL REQUIREMENTS
SECTION 01 14 00 – WORK RESTRICTIONS

COLORADO STATE UNIVERSITY
CSU PROJECT NAME
CSU PROJECT NUMBER

(Return)

Footer: Margins 1” left and right. Typeface 8 pt. lower case Arial bold.
Border on top with one return above.
Flush Right: Place initials/abbreviated name of author of Specification Section
Centered: Section number and automatic page number
Flush Left – Issue for (phase) (date)
Indicate the Design Phase such as “Issue for DD Review: 13 MAR 09”.
At Issue for Bid, enter “Issue for Bid” and the date of advertisement
At Issue for Construction enter “Issue for Construction” and the date of the bid opening.
At record Drawing phase, enter “Project Record” and the date of Final Acceptance.
Provide a top border preceded by an 8 pt. return at the top of the footer

PART II – CSU FACILITIES PLANNING, DESIGN AND CONSTRUCTION STANDARDS

CHAPTER 04 – DRAWING AND DOCUMENT ADMINISTRATION

(Return)

Issue for Bid: 18 August, 2021

01 14 00 – 1

Project Team Initials

403.3 – Table of Contents, Section Titles and Pagination:

A. Table of Contents:

1. Each volume of Specifications shall begin with a single-spaced Table of Contents.
2. "TABLE OF CONTENTS" shall appear in the left header and "TOC" in the footer.

B. Page Numbers:

1. Number pages in each section beginning with section number and hyphenated page number.
2. Restart page numbering at each section.

C. Pagination:

1. Each section shall begin on a new odd (right hand) page.

D. Section Title:

1. 10 pt. upper case Arial Bold at beginning of the first page of the section
2. Section number, followed by a hyphen and section title, as demonstrated below

E. Recommended Text Format:

1. Construction Specification Institute style, as demonstrated below:

09 51 00 – ACOUSTICAL CEILINGS

PART 2 – PRODUCTS

2.01 – MANUFACTURERS

A. Ceiling Type C4.4

1. Tile: White mineral lay-in boards, 24" x 48", 5/8" thick, square edge, NRC rating .5– to .60, Class A fire rating.
 - a. Acceptable Manufacturers:
 - i. Celotex Corporation

403.4 – Schedules, Tables and Charts:

A. Schedules and tables shall be provided and incorporated into the text as MS Word tables or embedded MS Excel spreadsheets.

B. Figures and charts inserted as images or objects shall also be submitted as separate electronic files with descriptive names.

1. Full page charts or tables immediately follow the page they illustrate. They may be either horizontal or vertical.

PART II – CSU FACILITIES PLANNING, DESIGN AND CONSTRUCTION STANDARDS

CHAPTER 04 – DRAWING AND DOCUMENT ADMINISTRATION

2. Always allow 1" along the binding edge to assure legibility after reproduction and 3-hole punch.
 3. Identify tables and figures by section and number them in series (Table 080607.03)
- C. Provide indices of schedules, tables and charts immediately after the Table of Contents.
1. Designate them as List of Tables and List of Figures in the page header and footer.

403.5 – Nomenclature:

A. Terminology:

1. Terminology used in all documents shall be in accordance with the terms established in the CSU Facilities Planning, Design and Construction Standards and generally accepted throughout the industry and must be consistent throughout the documents.
2. The Project Team and Specification Subcontractors, if any, shall clarify the meaning of any terminology that may be ambiguous, convoluted or otherwise confusing due to unusual or nonstandard wording.

B. Abbreviations:

1. Abbreviations shall be avoided unless listed and fully explained in Division 01 – General Requirements or within the Specification section the abbreviation occurs.

403.6 – Procurement and Contracting Requirements:

A. Design/Bid/Build and Competitive Sealed Best Value procurements are facilitated by FM Construction Procurement Office.

1. The University Procurement Representative shall develop and furnish Division 00 documents, utilizing Colorado Office of the State Architect standard forms including but not limited to:
 - a. Advertisement for Bids
 - b. SBP-6.12 Information for Bidders
 - c. SBP-6.13 Bid Form
 - d. SBP-6.131 Bid Alternates
 - e. SBP-6.133 Unit Pricing Form
 - f. SBP-6.134 Multiple Project Bid Form
 - g. SBP-6.14 Bid Bond
2. Review of Division 00 is coordinated with Project Team prior to bidding.
3. Procurements of Subconsultants and/or Subcontractors are facilitated by Project Team:
 - a. Division 00 documents, including but not limited to procurement, bidding, Agreement, General Conditions and Supplemental Conditions of the Agreement and additional forms shall be developed and furnished by the Project Team.

403.7 – Contents:

A. Division 01 shall include the following items, when applicable:

PART II – CSU FACILITIES PLANNING, DESIGN AND CONSTRUCTION STANDARDS

CHAPTER 04 – DRAWING AND DOCUMENT ADMINISTRATION

SECTION TITLE	INCLUDES
01 10 00 Summary of Work	
01 14 00 Work Restrictions	
01 18 00 Utilities Interface	
01 23 00 Alternates	Allowances, Unit Prices
01 25 00 Substitutions	
01 26 00 Contract Modification Procedures	
01 29 00 Payment Procedures	
01 31 00 Project Management and Coordination	
01 31 19 Project Meetings	
01 32 00 Construction Progress Documentation	Schedules, Photographs
01 33 00 Submittal Procedures	
01 35 23 Safety	
01 41 00 Regulatory Requirements	
01 42 00 References	Industry Standards, Definitions, Abbreviations
01 45 00 Contractor Quality Control	Mockups
01 45 23 Testing and Inspecting Services	
01 45 33 Code Required Special Inspection	
01 46 00 Owner Quality Assurance	Non-Conformance, Remedial Action
01 50 00 Temporary Facilities and Controls	Access and Parking
01 56 00 Temporary Barriers	Air/Dust, Noise, Fencing, Tree Protection
01 57 00 Temporary Erosion and Sediment Control	
01 71 13 Mobilization	Protecting Stored Materials
01 71 23 Field Engineering	Construction Layout and Surveying
01 73 30 Alteration Project Procedures	
01 74 00 Cleaning and Waste Management	
01 75 00 Systems Starting and Adjusting	
01 77 00 Closeout Procedures	
01 78 23 Operation and Maintenance Data	
01 78 36 Warranties	
01 79 00 Demonstration and Training	

403.8 – Divisions 02 through 49 – Detail Specifications:

- A. The Detail Specifications describe specific project requirements and quality of materials, processes, and workmanship.
- B. Specifications shall include the following items, when applicable:
 - 1. Names of Manufacturers, minimum of three
 - 2. Trade names and model numbers of products
 - 3. Type, grade, and quality of materials
 - 4. Alloy of metals
 - 5. Type and grade of finishes
 - 6. Physical properties
 - 7. Required performance, tests, and submittals

PART II – CSU FACILITIES PLANNING, DESIGN AND CONSTRUCTION STANDARDS

CHAPTER 04 – DRAWING AND DOCUMENT ADMINISTRATION

8. Methods of fabrication
9. Methods of installation
10. Tolerances
11. Warranties

C. Sole Source Products and Materials:

1. Specific, sole source or proprietary products or materials may be required by the CSU Facilities Planning, Design and Construction Standards to maintain design continuity, engineering efficiency and ease of maintenance.
2. These “required” products or materials must be included in Design Review Process.
3. Specifications for these products shall be annotated “NO SUBSTITUTION”.

D. Redundancy:

1. Care must be taken to assure that information contained in any section is not redundant, in conflict or at variance with General Conditions, Special Conditions, Detail Specifications or Drawings.
2. To avoid conflicts, Specification terminology shall not be used in annotation of the Drawings.

E. Reference:

1. Define the limits of the Work described in each Section of the Detail Specifications by listing the other Sections where related Work is specified.

F. Applicable Codes and Industry Standards:

1. Applicable codes and industry standards may be referenced in the detail Specifications in order to require compliance with these codes and standards.
2. Such references shall not be used as a means to supersede the design indicated on the project Drawings, and shall not take the place of a complete design.
3. The Project Team shall have ready access to a current copy of all referenced codes and standards, and make it available for review in a timely manner and at no cost to the Project upon request by the Project Representative.

G. CSU Facilities Planning, Design and Construction Standards:

1. The Specifications shall not contain any reference to compliance with the CSU Facilities Planning, Design and Construction Standards by name.
2. The Standards are to be used as a guide to the design of a Project and not as an Agreement Document for construction.

404 – RECORD DOCUMENTS

404.1 – General Requirements:

PART II – CSU FACILITIES PLANNING, DESIGN AND CONSTRUCTION STANDARDS

CHAPTER 04 – DRAWING AND DOCUMENT ADMINISTRATION

- A. The Project Team is required to maintain its Record Document information on an ongoing basis throughout the Project from Notice to Proceed to commence construction through Final Acceptance.
- B. The A/E's approval of the Project Team's Application for Payment shall be considered certification that the A/E has reviewed the condition of the Project Team's As-Built Record, as applicable per the respective Agreement.
- C. Project Record:
 - 1. The Project Team shall provide an electronic Project Record including, but not limited to, project design and construction administration reports, submittals, requests for information, supplemental instructions, change order documents, administrative logs, electronic mail and correspondence not subject to proprietary or confidentiality Agreements.
- D. Record Drawings:
 - 1. Using AutoCAD format, incorporate all changes and any deviations between the Drawings and the Work actually performed, regardless of deviation, including all clarifications made during construction based on marked-up prints, Change Orders (CO), Requests for Information (RFI), Architectural Supplemental Information (ASI), Change Order Bulletins (COB), Drawing and other data.
 - 2. Annotations in the title block shall be removed and "Project Record" and date of Final Acceptance shall be entered in the Title Block.
- E. Each Drawing sheet shall be submitted in electronic form as:
 - 1. A single Portable Document Format (.pdf) file, and
 - 2. A single current available version REVIT (.rvt) and AutoCAD (.dwg) file with all external references permanently attached/inserted.
 - 3. Submittal shall include every external reference file, shape file, image file, font, custom object (ObjectARX), data-link file (Excel, CSV), photometric data link and color-dependent plot style table file used for producing the drawings.
 - 4. Autodesk REVIT models shall be submitted in .rvt format in the current available version.
 - a. All model sheets shall be submitted as a PDF file.
 - 5. All other BIM files shall be submitted in the current available version of applicable software.
- F. AutoCAD files with separate external references and shape files shall not be accepted in fulfillment of the Project Team's post-construction obligations. This applies to all Subcontractor submittals.
 - 1. File names shall be descriptive, including Drawing Number and Title.
 - a. For example, A101 Floor Plan 1.dwg
 - 2. Raster scans of CAD-based prints are not acceptable as Record Drawings.
- G. File Format Translation:
 - 1. In general, the Project Team is expected to use software capable of directly generating documents and files in the native formats required, without use of intermediate translation software.

PART II – CSU FACILITIES PLANNING, DESIGN AND CONSTRUCTION STANDARDS

CHAPTER 04 – DRAWING AND DOCUMENT ADMINISTRATION

2. The Project Team shall be responsible for the translation of their files to conform to these requirements.

H. Document Protection:

1. All submitted files shall be unprotected. Submittals with password-protected files shall not be accepted in fulfillment of Agreement requirements.

I. Using MS-Word format, incorporate all changes and deviations between the Specifications and the Work actually performed, regardless of deviation, including all clarifications made during construction based on marked-up Specifications, Change Orders (CO), Requests for Information (RFI), Architectural Supplemental Information (ASI), Change Order Bulletins (COB), cut sheets, submittals, and other data.

1. The Project Team shall annotate within each Specification section the product actually used in the construction.
 - a. "Project Record" and date of final changes shall be entered in the footer.
 - b. Underline products or added changes.
 - c. Strikeout products not used or deletions.
 - d. Identify the change (CO or RFI number) in bold typing adjacent to the change.
2. The Record Document Specifications shall be submitted in electronic form as unprotected Portable Document Format (.pdf) files, and unprotected MS-Word (.doc) files.
3. File names shall be descriptive, including section number and name.
 - a. For example, 042223 Arch CMU.doc
4. Raster scans of Specifications are not acceptable as Record Drawings.
5. Provide one As-Built markup copy of printed Specifications.

J. Final Written Report (Conformed):

1. Provide update and any modifications to the final Written Report required due to changes made during the course of construction of the Project.

K. Certification:

1. Include a certification on the cover sheet of drawings and Specifications stating that, to the best of the Project Team's knowledge, all construction shown in these Record Documents has been completed in substantial conformance with the Construction Documents, and that all changes from the Construction Documents as bid have been noted.
2. The Project Team shall include its full business address, phone numbers and a statement of disclaimers where appropriate.

END OF CHAPTER