UMass Chan Medical School

Office of Facilities

CAD Standards

Design Technology Group

December 2025

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INTRODUCTION

This document is a guide for Project Managers, Architects, Engineers, and Contractors working on UMass Chan construction and renovation projects. It outlines the requirements for project closeout documentation and standards for creating and delivering these documents.

- **Section 1**: Lists required drawing document types due at closeout.
- **Sections 2-5**: Describe standards for creating and delivering project deliverables.

The standards promote the development of consistent and compatible electronic drawings and models, enhancing their value to UMass Chan's Office of Facilities. Deliverables may vary by project size and type, but all must adhere to the outlined standards to ensure accurate records and long-term value. Non-compliance may delay final payment.

- **Appendices A & B**: Summarize deliverable types and format standards.
- **Appendices C & D**: Must be completed and submitted with project drawing sets.

See UMass Chan Construction Document Requirements for more information related to project close out documents.

❖ CAPITAL, RENOVATIONS, AND SPACE CHANGE PROJECT REQUIREMENTS

For renovation and space change projects, Designers must submit construction documents (CDs) to UMass Chan before construction begins. During construction, Contractors submit As-Built documentation electronically, and Designers submit record documents based on this. All documents must meet the outlined criteria.

Designers unfamiliar with UMass Chan CAD requirements should meet with the UMass Chan Project Manager and Design Technology Group to discuss project specifics and obtain existing drawings.

Designers should meet with the UMass Chan Project Manager and Design Technology Group early on to discuss electronic requirements and obtain existing drawings. Revit and AutoCAD file requirements depend on project cost, with most projects designed in Revit. Exceptions apply for projects under $1M. Additional documents can be requested through the Project Manager.

CAD Standards apply to renovation or space change projects with a Total Project Cost (TPC) under $1 million, or when specifically authorized by UMass Chan. All other projects are required to follow the BIM Standard and Execution Plan. All standards can be found on our Facilities Engineering & Construction (FEC) webpage, as shown below.

https://www.umassmed.eu/facilities/fpec/

❖ MILESTONE DELIVERABLES

For typical Renovation and Space Change projects, the following documentation shall be delivered to UMass Chan at the following project milestones:

Design: When the project is at the end of the design development phase (DD phase), the Designer shall submit a complete set of Design Documents (100% DD) in electronic format to UMass Chan. These documents will be archived as a record of the project and will also be used for initial room numbering purposes. Please contact UMass Chan Space Management and Planning for all room numbers.

Construction: When the project enters the construction phase, the Designer shall submit a complete set of 100% Construction Documents (100% CD) in electronic format to UMass Chan. These files will be archived as a record of the project and will be used for room numbering verification. Please refer to UMass Chan Space Management and Planning for all room numbering during the construction process.

Completion: When the project has been completed, the Contractors shall submit a complete set of As-Built (AB) Documents to the project team as described in their contract (electronic format). This will reflect any field changes and deviations from the original design. Designers are to submit the Record Drawings based on these As-Builts and need to meet the format requirements outlined in this document. This document will reflect the final constructed conditions using the as-built as a reference.

❖ CONTACT INFORMATION

Group Name: UMass Chan Design Technology Group

- Email: DesignTechGroup@umassmed.edu

Group Name: Facilities Engineering and Construction Management

- Email: FECRequests@umassmed.edu

Group Name: UMass Chan Space Management and Planning

- Email: CAFMRequests@umassmed.edu

DELIVERABLES

- ➔ Upload closeout to the appropriate folders in PMIS, and/or email to the UMass Chan Project Manager.
- ➔ Complete and submit the Drawings Index (Appendix D) with all drawing sets.

1. REQUIRED DOCUMENT TYPES

As-Built Drawings: Definitions may differ depending on organization, but UMass Chan defines As-Built drawings as drawings that are prepared at the end of the project by the Contractor. These drawings/plans show the work as installed.

Record Drawings: Record drawings are prepared by the Architect and reflect on-site changes the contractor noted in the As-Built drawings. They are often compiled as a set of on-site changes made for the owner/architect contract. Record drawings must NOT include options, alternatives, or bid deducts. Only constructed conditions.

1.1 DRAWINGS REQUIREMENTS

- ➔ All drawings should be stamped and signed showing actual construction; drawings should not show alternatives or different options. Mark drawings as “As-Built.”
- ➔ All drawings should have an additional logo of who produced the drawing in addition to the UMass Chan logo on the title block.
- ➔ Submit each drawing separately as a single sheet.
- ➔ Submit 2 sets of drawings in total, 1 set of CAD files, and 1 set of .pdf files.
- ➔ There will be an interim check for compliance with our standard once contract documents reach a CD level.
- ➔ Record Drawings and As-Built drawings will be checked for compliance with our standard.

1.2 GENERAL PRODUCTION

- ➔ Drawings will be reviewed upon submission, and if all required documentation is not received, and/or submitted per requirements, the project will not close out and final payment will be delayed until documentation is received and approved.
- ➔ The Project Architect / Engineer should work with the contractor regarding the project CAD drawings; either to utilize these CAD files to produce as-built drawings or pay the contractor to produce the project As-Built CAD files.

- ➔ For UMass Chan in-house designed projects, coordinate with the project manager to determine if UMass Chan will produce the CAD As-Built and if so then what allowance will be given for this from the contractor.

1.3 ELECTRONIC FILE FORMAT

- ➔ As-Built and Record Document drawings must be submitted in all of the file format as seen in Appendix B. Other formats are not acceptable without the prior consent of UMass Chan Design Technology Group.

1.4 LAND SURVEYS

- ➔ Coordinate with UMass Chan Project Manager to receive data for utility drawings maintained on our ArcGIS as needed.
- ➔ When the land surveys are complete submit CAD and .pdf. If BIM is applicable submit that format, .jpg is optional.

1.5 PMIS

- ➔ When working within the Project Management Information System (PMIS), all required project documentation - including As-Built (AB) Documents, Record Drawings, and other specified deliverables - must be uploaded directly into the PMIS when finalized. Contractors are responsible for entering information and ensuring documents are uploaded as outlined in project requirements.

CAD DRAWINGS

2. REQUIRED FOLDER ORGANIZATION FOR CAD

- Project Name — UMass Chan Project Name
  - Active
    - Working — WIP Files
    - Sheet Files — Construction Documents
  - Archived
    - YYYY-MM-DD_30 Schematic Design
      - 0000_Project Name_Arch_YYYY-MM-DD_30SD.pdf
    - YYYY-MM-DD_60 Design Development
      - 0000_Project Name_Arch_YYYY-MM-DD_60DD.pdf
    - YYYY-MM-DD_90 Construction Documents
      - 0000_Project Name_Arch_YYYY-MM-DD_90CD.pdf
    - YYYY-MM-DD_100 Construction Documents
      - 0000_Project Name_Arch_YYYY-MM-DD_100CD.pdf
  - Photos
  - Published
    - 0000_Project Name_Arch_YYYY-MM-DD_Record.pdf
  - Bidding Documents

Keep in Mind:

- 0000 is the Project Number (Ex. PRJ25-124).
- For sheet files, file naming convention should be aligned with sheet naming convention as outlined in this document.
- Drawings (.dwg) and pdfs (.pdf) file naming convention to be the same as needed per phase.
- For the drawing title in the Title Block do not use (/) only (,) due to how the pdf converts into UPST for bidding.
- Sub folders are allowed.
- Do not remove, change, or modify any files from past submissions in the project folder. Drawing sheets that have been removed, renumbered, or renamed between submissions should remain in the folder as they were in previous submissions.

2.1 VERSION

- ➔ AutoCAD versions 2020 or newer are acceptable file formats for As-Built and project drawings. All drawings prepared for UMass Chan must be submitted in .dwg format.

2.2 GENERAL PRODUCTION

- ➔ CAD files containing multiple drawing sheets must be broken down into separate drawings containing single sheets.
- ➔ In special circumstances (Ex. University Combined), where there are multiple buildings in one CAD file viewports will not be scaled to fit. Coordinate with Design Tech Group or use existing viewports if editing an existing file.
- ➔ All CAD drawings shall be purged of empty, unused, or non-essential drawing data prior to submittal. This includes all unused layers, line types, blocks, fonts and entities.
- ➔ All CAD drawing models should be drafted at full scale in architectural units, such that one drawing unit equals one inch.

2.3 TITLE BLOCK REQUIREMENTS

- ➔ For UMass Chan FEC Design projects, use the UMass Chan Medical School Title Block provided by the Design Technology Group. **FEC-Titleblock_UMass Chan-2025.dwt**
- ➔ Contractor/consultant to place their logo in the Title Block in the designated area.
- ➔ Electronic drawing files must contain only one drawing and one Title Block per file.
- ➔ Title block information must contain the following information:
    - A/E/C – Consultant responsible for producing the drawings should be clearly identified. Their logo should be on each sheet.
    - Project Name – Assigned by UMass Chan.
    - Project Number – Assigned by UMass Chan.
    - Building Name – Name of the building as per UMass Chan naming convention.
    - Level(s) – Floor location and wing if applicable.
- ➔ For **design document sets**, design drawing sheets must be size Arch D (24” x 36”).
- ➔ Do not forget to renumber sheets if needed.
- ➔ Within UMass Chan **as-built data management** each full floor plan As-Builts must ensure the Title Block is set up on each level with sheets sized 11x17, 18x24, 24x36. Use scale to fit in viewport in As-Built Title Block for scaling.
- ➔ For planning department purposes use **PPMGT New Drawing Template.dwt** or **PPMGT UMass Chan Logo Template.dwt** for the UMass Chan Title block
- ➔ For AimCAD management involving UMass Memorial Health and UMass Chan use the dual Title Block provided by the Design Technology Group. **AiMCAD Template.dwt** and **FM-DATA Template.dwt**

2.4 SHEET IDENTIFICATION REQUIREMENTS

- ➔ Drawing title – Describes the drawing content.
- ➔ Sheet identification – Follow the Sheet Identification Requirements in Section 3.
- ➔ Date – Date of the drawing at final revision, As-Built.
- ➔ North Arrow showing orientation of the drawing.

2.5 FONTS AND TEXT STYLES

- Use text style Arial for room numbering and all other text in AutoCAD.
- Room Number text should be on Layer RN or SRN see 2.9.9. for more information.
- Use only UMass Chan CAD fonts, line types, and hatch patterns (reference Layering Standards).
- Postscript fonts shall not be used.
- Do not use custom fonts, line types, and hatch patterns, including any provided by 3rd party.
- Use DrawingControls_Text for size in text example file.
- If there are any request to go outside these standards, the contractor must reach out to the Design Tech Group.

2.6 EXTERNAL REFERENCES

- UMass Chan will not accept CAD drawings submissions that reference external reference files (XREFS). We do not accept embedded image files either.
- All XREFS must be “bound” to the final drawing.

2.7 MODEL AND PAPER SPACE STANDARDS

- Place Title Blocks, schedules and general notes at full-scale in paper space whenever possible.
- Label scaled viewports with appropriate scale in model space.
- Do not place or draw model-related blocks, tags and objects in paper space. The layer inside blocks should be on layer zero.
- Draw all model space objects at full scale. The drawing precisions must be set to a precision of 0’ - 0 1/6”.
- Drawing context in model space must begin at 0,0,0.
- Scale objects using paper space viewports – zoom viewports to the appropriate scale.

2.8 USE DISCLAIMER REQUIREMENTS

- All final as-built drawings/plans must include the following disclaimer: *“Warning: This document may contain sensitive and/or proprietary information and therefore must be treated as a confidential document. Acceptance of this document constitutes an agreement that this document and the information contained herein shall be maintained and transmitted in a confidential manner. No part of this document shall be reproduced, released or distributed without the express written permission of UMass Chan Medical School and any distribution to Non-UMass Chan Medical School entities or persons must be subject to a written confidentiality agreement.”*
- All drawings must not deviate from the UMass Chan Medical School standard.
- Designers can add layers, but must follow naming convention, ensure plot style color associated with layer has been accounted for and does not eliminate existing plot style configuration.
- Must purge documents before sending or drawings will not be accepted

2.9 LAYERING

- ➔ The following information below is a guide to UMass Chan Medical School Layering System.

2.9.1. General Layering Standards:

- ➔ Use only the latest version of UMass Chans layer names.
- ➔ Use the minimum number of layers necessary to adequately separate entities in each drawing, and layers should not contain extraneous, redundant, or overly detailed layer names.
- ➔ Purge each drawing of unused layers prior to submittal. The drawing file should contain only those layers necessary for displaying and plotting the information and drawing entities contained in each drawing. To ensure that subsequent prints made from each CAD drawing match the original, unused or unnecessary layers must be purged from the drawing prior to delivery.
- ➔ All layer names and conventions to be in all capitalization.
- ➔ The layer name format is organized as a hierarchy. This arrangement allows users to select from several options for naming layers according to the level of detailed information desired. Layer names consist of distinct data fields separated from one another by dashes. A detailed list of abbreviations, or field codes, is prescribed to define the content of layers. Most field codes are English abbreviations of construction terminology that are easy to remember.
- ➔ Layer name data fields: Discipline Designator, Major Group, and Minor Group. The discipline Designator and Major Group fields are mandatory. The Minor Groups are optional. Each data field is separated from adjacent fields by a dash ("-") for clarity.

2.9.2. Entity Properties:

- ➔ Entity colors must be defined by layer, not entity.
- ➔ Inside of a block, it must be on layer 0 (zero). No exceptions.
- ➔ All attributes must be created on layer 0 (zero). No exceptions.

2.9.3. Layer Name Format:

- ➔ UMass Chan follows a naming schema that is organized as a hierarchy. Layer names are defined using characters identifying disciplines, major and minor groups.

2.9.4. Discipline Designator, Level 1:

- ➔ The Discipline Designator denotes the category of subject matter contained on the specific layer. The Discipline Designator is a two-character field. The first character is the discipline character, and the second character is an optional modifier (Level 2). The example denotes Architectural, Wall.

A	Architectural

B	Geotechnical
C	Civil
D	Process
E	Electrical
F	Fire
G	General
H	HazMat
I	Interiors
L	Landscape
M	Mechanical
P	Plumbing
Q	Equipment
R	Resource
S	Structural
T	Telecom
V	Survey / Mapping
W	Other Disciplines
Z	Contractor / Shop Drawings

Example Level 1: A-WALL

2.9.5. Discipline Designator, Level 2:

➔ The optional second character is used to further define the discipline character with a dash separating from the Level 1 Designator. The example denotes Architectural Demolition, Wall.

A-D	Architectural Demolition
A-I	Architectural Interiors
A-N	Architectural New Work
A-S	Architectural Site
A-X	Architectural Existing

Example Level 2: A-D-WALL

2.9.6. Major Group

➔ The Major Group is a four to six - character field that identifies a major building system. The prescribed Major Group field codes (four-to-six-character abbreviations) shown on the Layer List are logically grouped with specific discipline designators.

ANNO	Annotation	
CASE	Casework	
COLS	Column	
CLG	Ceiling	
DETL	Detail	
DOOR	Door	
EQUIP	Equipment	
EVTR	Elevator	
FIXT	Fixture	
FLOR	Floor	
FURN	Furniture	
HRAL	Handrail	
ROOF	Roof	
STAIR	Stair	
WINDOW	Window	The entire window will be on one layer
VERTP	Vertical Penetrations	For Shafts

Example Major Group: A-WALL

2.9.7. Minor Group

➔ This is an optional four-character field to further define Major Groups. The example denotes Architectural, Wall, Full-Height.

BUB	Bubble	For Column Grid
ELEV	Elevation	
EXT	Exterior	
FULL	Full Height	
GRID	Grid	For Column Grid Line
HALF	Half Height Wall	
PATT	Pattern	
RN	Regular Text	Room Number Regular Size
SECT	Section	
SRN	Small Text	Room Number Small Size
TXT	Text	

Example Minor Group: A-WALL-FULL

2.9.8. Layers for Planning Department (Special)

- ➔ The UMass Chan Planning department uses the FF layers specifically when translating into our planning system program. This must be kept on all as-built drawings and must be a polyline, no individual segments allowed. Once they have been created and used, please freeze and turn off the layer before submitting final to UMass Chan. These layers will be maintained by CAFMRequests@umassmed.edu.
- ➔ FF-CUBE is used to illustrate cubicles size. Draw a polyline around the extents of each individual cubicle.
- ➔ FF-LOCATION is used to draw polylines on the interior facing sides of a wall in every room, circulation space, and shaft. When there is a door, continue the polyline past it to the next snapping edge.

FF-CUBE
FF-LOCATION

2.9.9. Layering for Annotations and Texts

- ➔ Annotations consist of text, dimensions, notes, sheet borders, detail references and other elements on CAD Drawings that do not represent physical aspects of a building. Use of the Major Group ANNO allows all annotation to be placed in a defined group of layers. The Minor Groups are as follows.

DIMS	Dimensions
IDEN	Identification Tags
KEYN	Keynotes
LABL	Labels
LEGN	Legend, Symbol Keys
MARK	Markers, Break Markers, Leaders
REVC	Revision Cloud
SCHD	Schedules
SYMB	Reference Symbols
TEXT	Text
TABL	Data Tables
TITL	Drawings Detail Titles
TTLB	Border and Title Block

Example: A-X-ANNO-DIMS

- ➔ There are two text sizes per identified room. This is so that depending on the viewport scale in paper space there are options for our as-built and record drawings.
- ➔ All drawings must have both texts sizes in each space. Regular (RN) room numbering sized text and (SRN) small room numbering text.

➔ See DrawingControls_Graphic Symbols for Example File

Example: A-X-ANNO-RN and A-X-ANNO-SRN

2.10 TEMPLATES

2.10.1. Title block

- ➔ Use our standard title blocks when setting up layouts (.dwt).
- ➔ All title blocks have a logo of designer's firm in addition to UMass Chan logo.
- ➔ For drawings done only by UMass Chan, remove area meant for additional logo and stamp as needed per drawing.
- ➔ For Facilities Engineering Construction Documents use FEC-Titleblock_UMass Chan-2025.dwt. As a reminder to remove extra logo and stamp location if not needed.
- ➔ For the Department of Space Management & Planning use. PPMGT UMass Chan Logo Template.dwt (For dual logo w/ Memorial) or PPMGT New Drawing Template.dwt (For only UMass Logo) as needed.

2.10.2. Plotting

- ➔ This section refers to the (.ctb) files that coincide with UMass Chan's Layer Standards.
- ➔ Use the UMass Chan Typical Pen Assignments-2025.ctb when plotting for all drawings except FEC Internal As-Builts. This pen type is FEC Chan Fine Pen Assignment-2025.ctb.
- ➔ Use the UMass Chan Fine Pen Assignments when plotting an entire building on one sheet, typically used for As-Builts. This pen type plots with no line thicknesses. There are additional templates available per request if working internally with CAFM.

SHEET IDENTIFICATION

3. GENERAL REQUIREMENTS

- Each sheet must have a corresponding .pdf and .dwg file. The sheet and the digital files must all follow the same naming convention.

3.1 SHEET IDENTIFICATION

- The sheet identification format goes by first the Discipline Designator, Sheet Type Designator, then Sheet Sequence Number.

3.1.1. Discipline Designator

- See 2.9.4. for Discipline Designator.

3.1.2. Sheet Type Designator

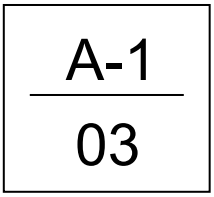
- The Sheet Type Designator is a single numerical character that identifies the sheet type. All sheet types may apply to all discipline designators. It is not necessary to use all the sheet types for a project or within a discipline.

0	General	Symbols, legend, notes, etc.
1	Plans	Horizontal views and combination plan & profile
2	Elevations and Profiles	Vertical views
3	Sections	Sectional views, wall sections
4	Large Scale Views	Scaled up reproduction plans, elevations, or sections that are not details
5	Details	
6	Schedules and Diagrams	
7	User Defined	For types that do not fall in other categories, including typical detail sheets
8	User Defined	For types that do not fall in other categories
9	3D Representation	Isometrics, Perspectives, Photographs

3.1.3. Sheet Sequence Number

- The Sheet Sequence Number is a two-digit number that identifies each sheet in a series of the same discipline and sheet type. Sequence numbering starts with 01; sheet number 00 is not permitted. The first sheet of each series is numbered 01, followed by 02 through 99. The example below denotes Architectural Plans Sheet 3.

  Example Sheet Numbering:



BUILDING INFORMATION STANDARDS (BIM)

4. OVERVIEW

UMass Chan utilizes a BIM Execution Plan (BIMxP) for the majority of our capital projects. At project closeout, the designer and/or contractor/Construction Manager are required to submit all Revit and/or Navisworks models as part of the deliverables. Please consult UMass Chan's latest BIM Standard for detailed requirements. For questions about BIM files, contact DesignTechGroup via email. The PDF version of our BIM Standard is available on the external FEC website.

https://www.umassmed.edu/Facilities/fpec/

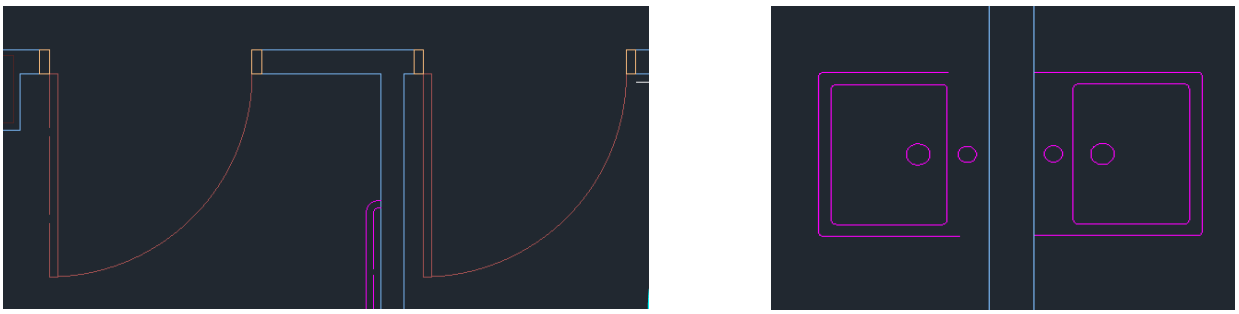
4.1 REVIT TO AUTOCAD

While we are transitioning to using Revit models as our primary internal as-built documentation for the campus, there is still a need to export Revit models to AutoCAD. Please note that the example image below shows a CAD file previously submitted to CAFM; however, the layer colors do not reflect our finalized standards.

When exporting from Revit to AutoCAD, certain elements—such as doors, plumbing fixtures, millwork, grab bars, and toilets—may occasionally be corrupted. Accessories or components located above the cut line can result in segmented lines and inaccuracies, as visible on the left side of each image.

All files converted from Revit to AutoCAD must be thoroughly reviewed to ensure they accurately represent building elements, as illustrated by the image on the right. Please adhere to this visual standard when submitting your AutoCAD files. Submissions with corrupted or segmented lines will be rejected and must be corrected prior to acceptance.

Architect/Engineers must run a final purge, audit, and overkill before submission. There will be a CAD quality Assurance (QA) check-in before submission.



Examples of Improper Exporting

The UMass Chan Design Technology Group is actively updating the BIM Template to include an additional view template in the file. This enhancement will make it easier to export Revit files to CAD for planning purposes. The update is expected to be released in Version 2, scheduled for early 2026.

SUBMITTING ELECTRONIC PROJECT DELIVERABLES

5. UPLOADING FILES TO PMIS FOLDERS

- All electronic drawing files must be accompanied with a drawing index (Appendix D)
- UMass Chan is in the process of introducing their PMIS (Project Management Information System) to deliver capital projects for UMass Chan clients and its use is required by all vendors that provide services for capital projects.

5.1 OTHER METHODS

- Project closeout electronic files must be sent to the UMass Chan Project Manager or PMIS system when finalized. The PM will notify the Design Technology Group for their review. As a reminder, Architect/Engineers must run a final purge, audit, and overkill before submission. There will be a CAD quality Assurance (QA) check-in before submission. All CAD closeout deliverables will be reviewed for compliance by the Design Technology Group before final payment.

APPENDICIES

A. DELIVERABLES CHECKLIST

Submit deliverables as applicable in specified format.

- As-Built Drawings - Contractor
  - PDF
  - CAD
  - JPEG
- Record Drawings - Designer
  - PDF
  - CAD
  - JPEG
- Construction Drawings
  - PDF
  - CAD
- Design Drawings
  - PDF
  - CAD
- Survey Drawings
  - PDF
  - CAD

Keep in mind:

- Not all deliverable required, it is dependent on the project, coordinate with UMass Chan PM.

B. PHASING CHECKLIST

UMass Chan will require the following information and documents as required for each project. Requirements will differ per project.

➔ Concept Design 15%

Conceptual Design is the process of creating the initial idea for a project and establishing its broad outlines. It's an early stage in the design process that involves research, brainstorming, and developing ideas into tangible solutions.

➔ Schematic Design 30%

Schematic design (SD) phase often produces a site plan, floor plan(s), sections, an elevation, and other illustrative materials, computer images, renderings, or models. Typically, the drawings include overall dimensions, and a construction cost is estimated.

➔ Design Development 60%

Design Development (DD) phase typically includes plans, sections, elevations, and details with dimensions. This drawing set also includes structural drawings, MEP (mechanical, electrical, and plumbing) drawings, civil engineering drawings, landscape architecture drawings, and initial specifications.

➔ Construction Documents 90%

Construction Documents (CD) phase, a full bid set is required with plans, costs, submittals, and specifications.

➔ Record Drawings

Record drawings are prepared by the architect or engineer and reflect on-site changes documented by the contractor in the as-built drawings. They compile all changes made during construction and are provided to the owner as required by the owner-architect contract. Record drawings are sometimes referred to as the "design intent model."

C. QUALITY ASSURANCE CHECKLIST

CAD drawings delivered at closeout of a capital project must be accompanied by this checklist and a signed letter on firm letterhead stating that all materials adhere to the standards set forth in the UMass.

FILE FORMAT AND SETUP

- Electronic File Format
- Scale, Units, & Tolerances
- Fonts and Text Styles
- Blocks
- Title Blocks (Firm Logo)
- Policy on Model Space and Paper Space
- Policy on External Reference Files (XREFs)

LAYERING

- Standard Layer List
- Layering Name Formatting
- General Rules about Naming and Uses
- Layer Attributes (Colors, Pens, Line types)
- For CAFM drawings – All drawings checked against CAFM FF layers (FF-Cube, FF-Location) must be closed polylines

CAD & TIFF FILE NAME CONVENTIONS

- Building and Floor Identification Codes
- Discipline Identification Codes
- Drawing Type Codes
- Drawing Numbers

POLICY ON CAD FILE TRANSLATION

- Full AutoCAD Compliance
- Translation Testing Procedures (If applicable)

POLICY ON JPEG FILE TRANSLATION

- Scale at 300 ppi at hard copy dimensions (24”x36”)
- Files must be uncompressed

POLICY ON PDF FILE TRANSLATION

- Scale at 300 ppi at hard copy dimensions (24”x36”)
- Files must be uncompressed

Name of Accountable Vendor Representative (Please Print)	Signature of Accountable Vendor Representative
Phone Number: (Please Print)	Date: (Please Print)

D. DRAWINGS LOG TEMPLATE

To have a template emailed to you, email DesignTechGroup@umassmed.edu

UMass Chan Project Name	
UMass Chan Project Number	
Firm	

					Check (X) all formats delivered	
Item #	Sheet #	Drawing Title	E-File Name	PDF	JPEG	DWG

UMass Chan Project Name: Name of the project consistent with name assigned by UMass Chan

UMass Chan Project Number: Number assigned to the project

Firm: Name of your business / organization

Item #: Itemized total number of drawings in set, example, 2 of 40, or 7 of 10

Sheet #: The sheet identification number on the drawing, example, A-1

Drawing Title: The description of drawing given as title, example, Floor plan

E-File Name: The title given to the file of corresponding drawing, example, A-1 Floor Plan

Formats: Check (X) all formats that are being submitted

E. GLOSSARY OF TERMS

As-Built Drawings:

As-built drawings are prepared by the contractor. They show, in red ink, on-site changes to the original construction documents. This set of drawings depicts the actual conditions of the completed construction “as it was built”.

Basis of Design:

The basis of design is the documentation of the primary thought processes and assumptions behind design decisions that were made to meet the Owner’s Project Requirements. The basis of design describes the systems, components, conditions, and methods chosen to meet the intent. Some reiteration of the Owner’s Project Requirements may be included.

Bid Documents:

Documents required to be submitted in response to an Invitation to Bid (ITB). These include the prescribed bid form, drawings, specifications, timelines, charts, price breakdowns, etc.

Construction Drawings:

Drawings that provide all the necessary information, both graphic and written, to build the project. These drawings provide specific, detailed information regarding walls, doors, furniture, equipment, lighting, outlets, and so on.

Design Drawings:

Technical drawings are used to define requirements fully and clearly for engineered items so that they may conform to the design aesthetic. The purpose of such a drawing is to capture all the geometric features of a product or a component that will allow a manufacturer to produce that component accurately and unambiguously.

Owner’s Project Requirements:

A dynamic document that provides an explanation of the ideas, concepts and criteria that are very important to the owner. It is initially the outcome of the programming and conceptual design phases.

Record Drawings:

Record drawings are prepared by the architect or engineer and reflect on-site changes documented by the contractor in the as-built drawings. They compile all changes made during construction and are provided to the owner as required by the owner-architect contract. Record

drawings are sometimes referred to as the "design intent model." Record drawings must NOT include options, alternates, or bid deducts—only the actual constructed conditions.

Sketches:

A simple, technical drawing created to isolate a particular engineering/architectural item and provide specific requirements related to that item.

Survey Drawings:

A CAD plan prepared by a licensed surveyor, which shows all essential measurements taken in the survey. Each survey drawing will be tied into the UMass Chan Medical School control network and be submitted in North American Datum of 1983.

Working Drawings:

A complete set of plans and specifications showing and describing all phases of a project; architectural, structural, mechanical, electrical, civil engineering, and landscaping systems, to the degree necessary for the purposes of accurate bidding by contractors and for the use of artisans in constructing the project.

F. LIST OF ALL THE LAYERS

General Layers

General Layers	Color	Linetype	Width(In.)	Black/Shade
0	7	Continuous	0.020	Black
DEFPOINTS	7	Continuous	0.020	Black
A-NPLT	9	Continuous	0.016	Black
G-ANNO-TITL	125	Continuous	0.008	Black
G-ANNO-TTLB	7	Continuous	0.020	Black
G-VPORT	252	Continuous	0.004	Black
G-XREF	7	Continuous	0.020	Black

Fully Formatted Example Line

Annotation Layers

Annotation Layers	Color	Linetype	Width(In.)	Black/Shade
A-ANNO-BDRY	6	Hidden	0.014	Black
A-ANNO-DETL	125	Continuous	0.008	Black
A-ANNO-DIMS	85	Continuous	0.008	Black
A-ANNO-ELEV	125	Continuous	0.008	Black
A-ANNO-MATC	145	Divide	0.008	Black
A-ANNO-TEXT	45	Continuous	0.008	Black
A-ANNO-REVS-#	1	Continuous	0.012	Black
A-ANNO-SCHD	145	Continuous	0.008	Black
A-ANNO-SECT	125	Continuous	0.008	Black
A-ANNO-SYMB	145	Continuous	0.008	Black

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Architectural - New Work Layers

Architectural Layers	Color	Linetype	Width(In.)	Black/Shade
A-N-CASE	125	Continuous	0.008	Black
A-N-CLNG	236	Continuous	0.030	Black
A-N-CLNG-GRID	84	Continuous	0.010	Black
A-N-CLNG-LITE	61	Continuous	0.016	Black
A-N-COLS	164	Continuous	0.020	Black
A-N-COLS-GRID	27	Continuous	0.004	Black
A-N-COLS-BUB	13	Continuous	0.014	Black
A-N-DOOR	44	Continuous	0.010	Black
A-N-EQUIP	95	Continuous	0.010	Black
A-N-EVTR	91	Continuous	0.016	Black
A-N-FLOR	167	Continuous	0.004	Black
A-N-FLOR-OVHD	3	Overhead	0.008	Black
A-N-FURN	75	Continuous	0.010	Black
A-N-HRAL	94	Continuous	0.012	Black
A-N-PLUM	115	Continuous	0.010	Black
A-N-PRKG	5	Continuous	0.006	Black
A-N-ROOF	30	Continuous	0.020	Black
A-N-STAIR	91	Continuous	0.016	Black
A-N-VERTP	20	Continuous	0.020	Black
A-N-WALL	255	Continuous	0.020	Black
A-N-WALL-HALF	251	Continuous	0.004	Black
A-N-WALL-HATCH	245	Continuous	0.010	50% Shade
A-N-WINDOW	135	Continuous	0.010	Black

Architectural - Existing Layers

Architectural Layers	Color	Linetype	Width(In.)	Black/Shade
A-X-CASE	166	Continuous	0.006	Black
A-X-CLNG	192	Continuous	0.016	Black
A-X-CLNG-GRID	137	Continuous	0.005	Black
A-X-CLNG-LITE	61	Continuous	0.016	Black
A-X-COLS	253	Continuous	0.020	Black
A-X-COLS-GRID	45	Center2	0.008	Black
A-X-COLS-BUB	153	Continuous	0.014	Black
A-X-DOOR	16	Continuous	0.007	Black
A-X-EQUIP	136	Continuous	0.007	Black
A-X-EVTR	24	Continuous	0.010	Black
A-X-FLOR	87	Continuous	0.004	Black
A-X-FLOR-OVHD	157	Overhead	0.005	Black
A-X-FURN	8	Continuous	0.004	Black
A-X-HRAL	46	Continuous	0.006	Black
A-X-PLUM	56	Continuous	0.007	Black
A-X-PRKG	8	Continuous	0.004	Black
A-X-ROOF	21	Continuous	0.016	Black
A-X-STAIR	24	Continuous	0.010	Black
A-X-VERTP	127	Continuous	0.004	Black
A-X-WALL	240	Continuous	0.020	Black
A-X-WALL-HALF	227	Continuous	0.004	Black
A-X-WALL-HATCH	243	Continuous	0.010	50% Shade
A-X-WINDOW	195	Continuous	0.010	Black

Fully Formatted Example Line

Architectural – Demolition Layers

Architectural Layers	Color	Linetype	Width(In.)	Black/Shade	Fully Formatted Example Line
A-D-CASE	196	Hidden2	0.007	Black	
A-D-CLNG	253	Hidden2	0.020	Black	
A-D-CLNG-GRID	17	Hidden2	0.005	Black	
A-D-CLNG-LITE	193	Hidden2	0.014	Black	
A-D-COLS	212	Hidden2	0.020	Black	
A-D-DOOR	224	Hidden2	0.008	Black	
A-D-EQUIP	176	Hidden2	0.007	Black	
A-D-EVTR	126	Hidden2	0.006	Black	
A-D-FLOOR	227	Hidden2	0.004	Black	
A-D-FURN	156	Hidden2	0.007	Black	
A-D-HRAL	128	Hidden2	0.006	Black	
A-D-PLUM	146	Hidden2	0.006	Black	
A-D-PRKG	17	Hidden2	0.005	Black	
A-D-ROOF	203	Hidden2	0.012	Black	
A-D-STAIR	126	Hidden2	0.006	Black	
A-D-VERTP	14	Hidden2	0.012	Black	
A-D-WALL	202	Hidden	0.014	Black	
A-D-WALL-HALF	214	Hidden	0.012	Black	
A-D-WALL-HATCH	167	Hidden2	0.004	50% Shade	
A-D-WINDOW	204	Hidden2	0.010	Black	

Line Safety / Fire Rating Layers

New Work Layers	Color	Linetype	Width(In.)	Black/Shade
LS-EQUIP	6	Continuous	0.014	Black
LS-SMOKE	3	Continuous	0.008	Black
LS-EXIT	2	Continuous	0.010	Black
LS-SYMBOLS	1	Continuous	0.012	Black
LS-RATING-1HR	97	Continuous	0.008	Black
LS-RATING-2HR	1	Continuous	0.012	Black
LS-RATING-3HR	40	Continuous	0.020	Black
LS-RATING-SM	6	Continuous	0.014	Black

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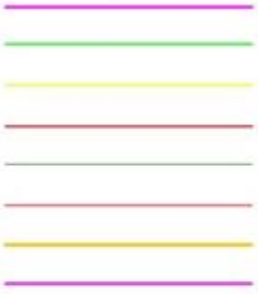

FM Space Layers

FM Space Layers	Color	Linetype	Width(In.)	Black/Shade
A-ANNO-RN	4	Continuous	0.008	Black
A-ANNO-SRN	1	Continuous	0.012	Black
FF-CUBE	5	Continuous	0.006	Black
FF-GROSS	7	Continuous	0.020	Black
FF-LOCATION	6	Continuous	0.014	Black

Fully Formatted Example Line

Mechanical Layers

New Work Layers	Color	Linetype	Width(In.)	Black/Shade
M-N-CONT-THER	52	Continuous	0.016	Black
M-N-EQUIP	40	Continuous	0.020	Black
M-N-HVAC-EXHS	80	Continuous	0.020	Black
M-N-HVAC	160	Continuous	0.020	Black
M-N-HVAC-OTHR	4	Continuous	0.008	Black
M-N-HVAC-RDFF	1	Continuous	0.012	Black
M-N-HVAC-SDFF	7	Continuous	0.020	Black

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Existing Layers	Color	Linetype	Width(In.)	Black/Shade
M-X-CONT-THER	57	Continuous	0.005	Black
M-X-EQUIP	36	Continuous	0.007	Black
M-X-HVAC-EXHS	86	Continuous	0.006	Black
M-X-HVAC	35	Continuous	0.010	Black
M-X-HVAC-OTHR	250	Continuous	0.004	Black
M-X-HVAC-RDFF	24	Continuous	0.010	Black
M-X-HVAC-SDFF	164	Continuous	0.020	Black

Fully Formatted Example Line

Demolition Layers	Color	Linetype	Width(In.)	Black/Shade
M-D-CONT-THER	194	Hidden2	0.020	Black
M-D-EQUIP	184	Hidden2	0.020	Black
M-D-HVAC-EXHS	173	Hidden2	0.004	Black
M-D-HVAC	194	Hidden2	0.020	Black
M-D-HVAC-OTHR	202	Hidden2	0.014	Black
M-D-HVAC-RDFF	193	Hidden2	0.014	Black
M-D-HVAC-SUPP	193	Hidden2	0.014	Black

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Electrical Layers

New Work Layers	Color	Linetype	Width(In.)	Black/Shade
E-L-N-LITE	55	Continuous	0.010	Black
E-L-N-MISC	64	Continuous	0.010	Black
E-P-N-OUTLET	56	Continuous	0.007	Black
E-P-N-PANEL	74	Continuous	0.012	Black
E-P-N-RACE	96	Continuous	0.007	Black
E-P-N-EQUIP	84	Continuous	0.010	Black
E-P-N-WIRE	75	Continuous	0.010	Black

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Existing Layers	Color	Linetype	Width(In.)	Black/Shade
E-L-X-LITE	8	Continuous	0.004	Black
E-L-X-MISC	252	Continuous	0.004	Black
E-P-X-OUTLET	8	Continuous	0.004	Black
E-P-X-PANEL	251	Continuous	0.004	Black
E-P-X-RACE	109	Continuous	0.002	Black
E-P-X-EQUIP	251	Continuous	0.004	Black
E-P-X-WIRE	107	Continuous	0.004	Black

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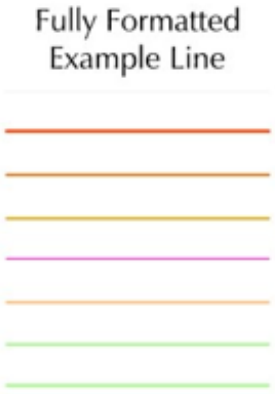
Demolition Layers	Color	Linetype	Width(In.)	Black/Shade
E-L-D-LITE	175	Hidden2	0.010	Black
E-L-D-MISC	216	Hidden2	0.007	Black
E-P-D-OUTLET	206	Hidden2	0.006	Black
E-P-D-PANEL	223	Hidden2	0.008	Black
E-P-D-RACE	226	Hidden2	0.006	Black
E-P-D-EQUIP	225	Hidden2	0.008	Black
E-P-D-WIRE	215	Hidden2	0.010	Black

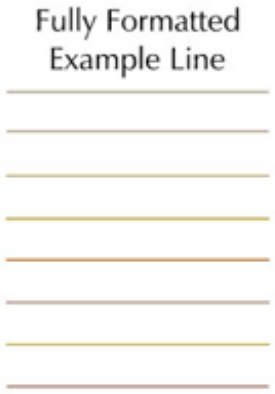
Fully Formatted Example Line

Plumbing Layers

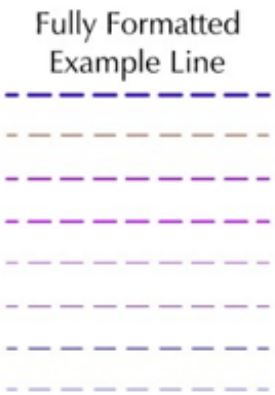
New Work Layers	Color	Linetype	Width(In.)	Black/Shade
P-N-PIPE-CW	7	Continuous	0.020	Black
P-N-PIPE-HW	20	Continuous	0.020	Black
P-N-PLUM	32	Continuous	0.016	Black
P-N-PIPE	42	Continuous	0.014	Black
P-N-PIPE-WASTE	220	Continuous	0.008	Black
P-N-PIPE-STORM	31	Continuous	0.016	Black
P-N-PIPE-SUPPLY	81	Continuous	0.016	Black
P-N-PIPE-VENT	81	Continuous	0.016	Black



Existing Layers	Color	Linetype	Width(In.)	Black/Shade
P-X-PIPE-CW	37	Continuous	0.005	Black
P-X-PIPE-HW	37	Continuous	0.005	Black
P-X-PLUM	45	Continuous	0.008	Black
P-X-PIPE	44	Continuous	0.010	Black
P-X-PIPE-WASTE	34	Continuous	0.012	Black
P-X-PIPE-STORM	25	Continuous	0.008	Black
P-X-PIPE-SUPPLY	44	Continuous	0.010	Black
P-X-PIPE-VENT	26	Continuous	0.006	Black



Demolition Layers	Color	Linetype	Width(In.)	Black/Shade
P-D-PIPE-CW	184	Hidden2	0.020	Black
P-D-PIPE-HW	26	Hidden2	0.006	Black
P-D-PLUM	202	Hidden2	0.014	Black
P-D-PIPE	202	Hidden2	0.014	Black
P-D-PIPE-WASTE	203	Hidden2	0.012	Black
P-D-PIPE-STORM	205	Hidden2	0.008	Black
P-D-PIPE-SUPPLY	174	Hidden2	0.004	Black
P-D-PIPE-VENT	173	Hidden2	0.004	Black



Fire Protection Layers

New Work Layers	Color	Linetype	Width(In.)	Black/Shade
FP-N-SPRNK	90	Continuous	0.020	Black
FP-N-PIPE	201	Continuous	0.012	Black
FP-N-EQUIP	130	Continuous	0.020	Black

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Existing Layers	Color	Linetype	Width(In.)	Black/Shade
FP-X-SPRNK	104	Continuous	0.010	Black
FP-X-PIPE	104	Continuous	0.010	Black
FP-X-EQUIP	8	Continuous	0.004	Black

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Demolition Layers	Color	Linetype	Width(In.)	Black/Shade
FP-D-SPRNK	1	Hidden2	0.012	Black
FP-D-PIPE	1	Hidden2	0.012	Black
FP-D-EQUIP	22	Hidden2	0.014	Black

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Structural Layers

New Work Layers	Color	Linetype	Width(In.)	Black/Shade
S-N-COLS	164	Continuous	0.020	Black
S-N-BEAMS	161	Continuous	0.016	Black
S-N-BRACE	163	Continuous	0.012	Black
S-N-COLS-GRID	27	Center2	0.004	Black
S-N-COLS-BUB	13	Continuous	0.014	Black

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Existing Layers	Color	Linetype	Width(In.)	Black/Shade
S-X-COLS	184	Continuous	0.020	Black
S-X-BEAMS	162	Continuous	0.014	Black
S-X-BRACE	164	Continuous	0.020	Black
S-X-COLS-GRID	45	Center2	0.008	Black
S-X-COLS-BUB	153	Continuous	0.014	Black

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Demolition Layers	Color	Linetype	Width(In.)	Black/Shade
S-D-COLS	212	Hidden2	0.020	Black
S-D-BEAMS	161	Hidden2	0.016	Black
S-D-BRACE	163	Hidden2	0.012	Black
S-D-COLS-GRID	1	Center2	0.012	Black
S-D-COLS-BUB	1	Continuous	0.012	Black

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Tag Layers

Tag Layers	Color	Linetype	Width(In.)	Black/Shade
A-AREA-IDEN	2	Continuous	0.010	Black
A-AREA-SPCE-IDEN	2	Continuous	0.010	Black
A-CLNG-IDEN	145	Continuous	0.008	Black
A-DOOR-IDEN	145	Continuous	0.008	Black
A-EQUIP-IDEN	45	Continuous	0.008	Black
A-FLOOR-IDEN	125	Continuous	0.008	Black
A-CASE-IDEN	45	Continuous	0.008	Black
A-FURN-IDEN	105	Continuous	0.008	Black
A-GLAZ-IDEN	119	Continuous	0.002	Black
A-ROOF-IDEN	2	Continuous	0.010	Black
A-WALL-IDEN	2	Continuous	0.010	Black
A-WALL-FIRE-IDEN	1	Dashed2	0.012	Black
P-PLUM-IDEN	45	Continuous	0.008	Black

Civil / Site Layers

Civil/Site Layers	Color	Linetype	Width(In.)	Black/Shade
C-BLDG	6	Continuous	0.014	Black
C-FENC	56	Continuous	0.007	Black
C-FURN	2	Continuous	0.010	Black
C-PLNT	66	Continuous	0.014	Black
C-PRKG	76	Continuous	0.007	Black
C-PRKG-CARS	75	Continuous	0.010	Black
C-PROP	7	Border	0.020	Black
C-PROP-SBCK	9	Phantom2	0.016	Black
C-RAIL	95	Continuous	0.010	Black
C-ROAD	73	Continuous	0.014	Black
C-STORM	132	Continuous	0.016	Black
C-TOPO	34	Hidden	0.012	Black
C-TOPO-MAJR	34	Hidden	0.012	Black
C-TOPO-MINR	37	Hidden	0.005	Black
C-TREE	63	Continuous	0.012	Black
C-UTIL	1	Continuous	0.012	Black
C-WALK	184	Continuous	0.020	Black
C-WALL	13	Continuous	0.014	Black
C-WETL	4	Dashed	0.008	Black