CAD & Image Standards for Construction Projects & Facility Documentation

Version 3.0

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Beth Israel Deaconess Medical Center
Facilities Planning, Design and Construction
330 Brookline Ave (OV-400B)
Boston, MA 02215

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1.0 INTRODUCTION

1.1 Overview: This document outlines how to produce and deliver as-built construction documents as CAD drawings and images (PDF format) to the Beth Israel Deaconess Medical Center (BIDMC) Facilities Department in a way that maximizes the short and long term utility of CAD data and ensures the integrity of our archives.

The Facilities Planning, Design and Construction department at BIDMC maintains this document as a means to standardize incoming CAD data and ensure an unimpeded transfer of information to the Medical Center's space inventory database.

All materials specified in this document must be provided in compliance with the BIDMC CAD standards at the time of project close out. Final payment from BIDMC will only be rendered upon the delivery of said materials with a signed copy of the CAD Standards Checklist. The checklist can be found attached to this document as *Appendix C.*

The BIDMC CAD standards comply with *The United States National CAD Standard® Version 5.0* (USNCS). **If formatting information not outlined in this document is required, refer to the USNCS for guidance.**

Questions or comments regarding the information in this document can be directed to:

Beth Israel Deaconess Medical Center
Facilities Planning, Design and Construction
330 Brookline Ave (OV-400B)
Boston, MA 02215
(p) 617.975.9910
(f) 617.975.9900
bidmc_dcg@bidmc.harvard.edu

1.2 Review Process: This section contains a workflow required for review of CAD drawing submissions to BIDMC during the design and construction phases.

Design Phase
- The lead designer is responsible for ensuring that all members of the A/E design team comply with the BIDMC CAD Standards.
- Room Numbers: The lead designer shall submit a PDF of the proposed new work plan with room numbers to BIDMC for review and approval.
- Construction/Permit Drawing Review: The lead designer shall submit CAD files of the final Construction/Permit Documents along with a signed BIDMC CAD Standards Checklist (*Appendix C*) for review and approval.
- Construction/Permit Drawing Distribution: The lead designer shall issue BIDMC approved CAD files to the selected/awarded contractor.

Construction Phase
- The BIDMC Close-Out Checklist, including the BIDMC CAD Standard Checklist (*Appendix C*), is reviewed during the kick-off meeting.
- A/E team incorporates any changes from construction (RFI's, Bulletins, etc) into the drawings (aka the "Backgrounds").
- BIDMC reviews modified Background Drawings for compliance. Drawings that do not conform to BIDMC standards are returned for revision.
- A/E team provides approved Background Drawings to the Contractor for As-Builts.
- Contractor submits As-Builts, BIDMC CAD Standard Checklist (*Appendix C*), and Index of Electronic Files (*Appendix D*) to BIDMC.
- BIDMC reviews As-Builts for compliance. Drawings that do not conform to BIDMC standards are returned for revision. Once approved, the final phase of the closeout process can be completed.

2.0 FILE FORMAT and SETUP

2.1 File Format

2.1.1 Archival File Format (PDF): An image in PDF format must be submitted for each drawing sheet. This is a duplicate of each sheet at the same scale and must be functionally identical to a hard copy generated from the electronic file.

The files may be uncompressed or compressed using LZW lossless data compression. All PDF images should be created at a resolution of 300ppi. At this resolution a 24"x36" original will result in an image 7,200 pixels by 10,800 pixels. Higher resolution may be used if 300ppi will not accurately reproduce all content on a sheet. Do not adjust paper settings to achieve 300ppi.

No PDF should be created with a bit depth greater than 8-bit, unless prior arrangements have been made with the Facilities Department at BIDMC.

2.1.2 Electronic File Format: The following pages must also be submitted in CAD, and must be compatible with AutoCAD® 2013:

- Architectural floor plans & reflected ceiling plans
- Equipment plans
- Structural plans
- Electrical plans & riser diagrams
- Mechanical plans & riser diagrams

2.1.3 Revit: BIDMC does not assist with translation from Revit to AutoCAD nor does BIDMC provide assistance with layer conversion. If the consultant produces a Revit file, please submit the file during closeout as a .ZIP folder along with all linked files. The Revit file will not be reviewed for standards at this time.

2.2 File Setup

2.2.1 Scale, Units and Tolerances: Drawing models in CAD should be in architectural units and drafted at full scale. One drawing unit is to equal one inch. Drawing tolerances should be consistent with industry standards.

2.2.2 Text Styles and Fonts: Arial is the preferred text font, but other TrueType fonts packaged with the AutoCAD® software are allowed. Special fonts not part of the AutoCAD software package are not allowed. Any printed text (labels, dimensions or notes) must be a minimum of 1/8" in height.

2.2.3 Title Block: Each file should have a title block that contains the following information:

Project Information	BIDMC Logo*	Provided by BIDMC
	Project Name	Provided by BIDMC
	CTS Number	Provided by BIDMC
	Firm Name	Provided by consultant
Sheet Information	Drawing Title	Identifies drawing content
	Building Name	Identifies drawing content
	Floor Number	Identifies drawing content
	Phase Number	Identifies drawing content (if applicable)
	Sheet ID	Unique sheet number (see section 4.1)
	As-Built Stamp*	If applicable
	Drawing Scale*	If applicable
	Key Plan*	Indicate scope of work and drawing view if applicable

* Recommended but not required for CAD files

2.2.4 Blocks: All entities within a block must be created on Layer 0 and be set to ByLayer properties. Drawing entities translated into blocks from non-AutoCAD® systems must revert to layer 0 when exploded in AutoCAD®. File translation from other systems which result in wall blocks are unacceptable.

2.2.5 AutoCAD Model/Paper Space: All building information and associated annotation should be drawn in model space at full scale. One drawing unit equals one inch or one millimeter. Only the title block may be drawn in paper space. Please include a construction limit line in model space outlining the scope of work.

BIDMC will accept files formatted in any North American architectural paper size; ARCH C, ARCH D, or ARCH E preferred.

2.2.6 External Reference Files: BIDMC will not accept the submission of any CAD drawing deliverable that contains unbound external references to drawing source files. All externally referenced data sources that were used during the production of as-built CAD drawings should be inserted and retained as a block within a single drawing file, including the title block, upon project completion and prior to drawing delivery. The resulting self-contained drawing file is an acceptable deliverable to BIDMC.

2.2.7 Image Files (JPGs, BMPs, PNGs): BIDMC will not accept the submission of any CAD drawing deliverable with referenced images. All images included in a drawing must be cut-and-pasted into the drawing so that they are embedded within the CAD file. If it is not possible to embed the images please contact the BIDMC Facilities staff to determine an alternative. This also applies to consultant logos.

2.2.8 File Naming Conventions: All CAD & PDF files should be named with the following information:
- Sheet ID number
- Drawing title
- Phase number (if submitting separate drawing sets for each phase)
- Both the CAD & PDF files should have the same name if they represent the same content. File names should be formatted in the following way:

Discipline Code	-	Sheet ID	Drawing Title

*Refer to 4.1 Sheet Identification

Example: A-100 FIRST FLOOR PLAN.dwg and A-100 FIRST FLOOR PLAN.pdf

3.0 LAYER STANDARD

BIDMC has adopted the layer naming conventions defined in *The United States National CAD Standard version 5.0* (USNCS). The rules and layer names listed in this section are a subset of those found in the standard that shall suffice for most projects. Consult the USNCS for more a more detailed layer list and complete coverage of the layer naming rules.

Consultants provided with historical CAD files at the beginning of a project are responsible for ensuring that any incorrect layers and lineweights are addressed and not carried over into the new project. BIDMC's archival CAD files may contain errors from past design teams.

Architectural layers have been modified to match BIDMC needs and standards (refer to Appendix B). No additional layers should be added to the architectural category. Refer to USNCS for additional layers in all other disciplines.

3.1 BIDMC Layer State

The easiest way to ensure that all layers within a drawing are compliant with the latest BIDMC CAD Standards is to use the BIDMC layer state, named BIDMC Layer State Version 3.0.las, available for download on the BIDMC Facilities website. Appendix A outlines the process of downloading and importing the layer state into a drawing.

3.2 Layer Name Formatting

A layer name consists of four hyphen-separated fields. The first two (discipline code and major group) are mandatory. The second two (minor group and status code) are optional. A layer name may include both optional fields, just one, or none. They combine in the following format, with the optional fields in grey:

A-FLOR-HRAL-E = Discipline Code + Major Group + Minor Group + Status Code

3.2.1 Discipline Code: This is a one letter field that designates the discipline or trade that the layer belongs to. The USNCS provides for an optional second character that may be useful on large, complex projects. For most projects the one letter discipline code will be plenty. The following table shows the allowed values.

Discipline Code Table

A	Architectural	**M**	Mechanical
B	Geotechnical	**O**	Operations
C	Civil	**P**	Plumbing
D	Process	**Q**	Equipment
E	Electrical	**R**	Resource
F	Fire Protection	**S**	Structural
G	General	**T**	Telecommunications
H	Hazardous Materials	**V**	Survey/Mapping
I	Interiors	**X**	Other Disciplines
L	Landscape	**Z**	Contractor/Shop Drawings

3.2.2 Major Group: This is a four letter field that designates the major building system. Things like doors, walls, floors, and glazing each have a major group. Any major group defined in the USNCS can be paired with any discipline code, but use combinations that make logical sense like A-WALL.

Major groups must come from the list contained in the USNCS. User defined major groups are not allowed. To ensure you comply with the standard use names from the layer list in Appendix B.

3.2.3 Minor Group: This is an optional four letter field that further defines the major group designation. For example A-WALL-FULL would designate full height walls as opposed to partial height walls (PRHT). E-LITE-IDEN would be for light fixture identification tags.

Any minor group can be used with any major group and, while optional, they should be used as often as possible.

New minor groups can be defined as needed, but consult the list in the USNCS before doing so to ensure that none of the predefined values meet your needs. *Always prefer the predefined values*.

3.2.4 Status Code: This is an optional single letter field that designates the status of work. In general, status codes should be used on layers that are not part of the dominant phase of a project. Most layers should have no status code, while those that "stand out" should use one. Choose from the table below.

Status Code Values

E	Existing to Remain
N	New Work
X	Not in Contract
1-9	Phase Numbers
D	Demo Work

3.2.5 Sections, Elevations, and Details: In addition to major groups that designate major building systems there are major groups defined for sections, elevations, and details. They are as follows, with commonly associated minor groups (where □ is any discipline code).

□-DETL-IDEN	Identification tags	
□-DETL-MBND	Material beyond section cut	Only to be used on detail sheets; do not use on as-built plans.
□-DETL-MCUT	Material cut in section	
□-DETL-PATT	Textures and hatch patterns	

□-ELEV-IDEN	Identification Tags	
□-ELEV-OTLN	Outline	Only to be used on elevation sheets; do not use on as-built plans.
□-ELEV-PATT	Textures and hatch patterns	

□-SECT-IDEN	Identification tags	
□-SECT-MBND	Material beyond section cut	Only to be used on section sheets; do not use on as-built plans.
□-SECT-MCUT	Material cut by the section	
□-SECT-PATT	Textures and hatch patterns	

3.2.6 Annotation Layers: The major group ANNO is for annotative information. This includes notes, leaders, and symbols, and also drawing elements that do not represent the physical aspects of a building like schedules, title blocks, and logos.

The ANNO major group should be used with all discipline codes for annotative information. The annotation layers listed in Appendix B show minor groups typically used with ANNO. These can also be used to modify any major or minor group in the list. In particular IDEN can be used on layers for ID tags that identify specific equipment or building elements like E-LITE-IDEN, or A-FLOR-IDEN.

3.2.7 Revisions: There should be no revision layers on final the as-built submission. The as-built should have all final changes architectural changes that were made throughout the project and match what is built.

3.3 Layer Attributes

BIDMC assigns attributes per layer. All drawing entities should have their line weight, line type, and color set to "ByLayer."

3.3.1 Line Weight: BIDMC no longer uses line weight dependent layer standards. All line weights should be set to Default.

3.3.2 Layer Color: Appendix B specifies the color for each layer and contains a table equating colors to their plot properties.

3.3.3 Line Type: All layers shall be Continuous unless specified otherwise in Appendix B.

3.4 Plotting

All electronic drawing deliverables must be able to accurately reproduce hard copy deliverables when plotted from AutoCAD using one of the given BIDMC plot style tables.

3.4.1 Plot Styles: BIDMC will provide plot style tables for black and white plotting with and without screening, and for color. The most current plot style, BIDMC pens 2017, will be available for download on the BIDMC Facilities website.

3.4.2 Screening: Specify whether the screened or non-screened style table is required for each file in the electronic file index that is submitted with as-built documents.

For convenience, if one or more files in a discipline require the unscreened style table specify no screening for the entire discipline. Otherwise specify screened printing by default.

4.0 DRAWING SET ORGANIZATION

BIDMC has adopted the sheet identification and organization standards defined in *The United States National CAD Standard version 5.0* (USNCS). We recommend the format outlined below, but if you would like to deviate from this structure, please consult the USNCS and submit an alternate proposal for approval to BIDMC prior to the first standards review.

4.1 Sheet Identification

The sheet identifier has three parts. The discipline designator, sheet type designator, and the sheet sequence number. They combine in the following format, where A is a letter and N is a number.

A · N N N	A · **N** N N	A · N **N** **N**
Discipline	Sheet Type	Sequence Number

4.1.1 Discipline Designator: This is a single character, always followed by a hyphen, which designates the discipline of the content in the drawing. Acceptable values are the same as those used for layer names. See section 3.2.1 for a list.

4.1.2 Sheet Type Designator: This is a single numerical character that identifies the sheet type, as defined in the following table. On small projects where more than one type may be placed on the same sheet the lowest applicable sheet type should be used.

Sheet Type Designators

0	General	Symbols legend, notes, drawing list, etc.
1	Plans	Horizontal views
2	Elevations	Vertical views
3	Sections	Sectional views, wall sections
4	Large-Scale Views	Drawings from 1, 2, or 3 at larger scale
5	Details	Non-typical details
6	Schedules & Diagrams	
7	User Defined	Typical details or types that do not fall in other categories
8	User Defined	Types that do not fall in other categories
9	3D Representations	Isometrics, perspectives, photographs

4.1.3 Sheet Sequence Number: This is a two digit number that identifies each sheet in a particular discipline and sheet type. Each sequence begins with **01** (do not use 00) and runs through **99**. Always use both digits, regardless of the number of sheets required in a sequence.

Sheet numbers need not be sequential. Gaps in the sequence can accommodate the insertion of additional sheets as the project matures, and allow for further organization within sheet types. Sub-sequences created in this way should begin on the tens, i.e. at 10, 20, 30, etc.

5.0 DELIVERABLES

5.1 Required Documents: At project closeout, the following information should be submitted:

- Signed CAD Standards Checklist
- Completed Index of Electronic Files
- One PDF file per drawing sheet (see **2.1.1 Archival File Format)**
- One DWG file per drawing sheet (where required -- see **2.1.2 Electronic File Format**)

5.2 Error-free AutoCAD® Drawing Deliverables: BIDMC recognizes that many of its architects, engineers and construction managers do not use the same version of AutoCAD®. However, BIDMC requires that firms who work with other file formats shall submit DWG formatted CAD files that are fully compliant with BIDMC CAD standards outlined herein. Drawings that have significant loss of drawing entities or project data resulting from standard CAD file translation procedures will not be accepted.

All DWG files and CAD drawing submissions must be able to be manipulated using standard AutoCAD® drafting procedures. Non-compliance with this policy will result in the rejection of CAD files. In addition, rejection of drawings submitted at project closeout could delay of final project payment. Note, DXF files will not be accepted at project closeout as a substitution for DWG CAD file deliverables.

5.3 Translation Testing: For firms translating their native CAD file format into AutoCAD® format and are concerned about delivering error-free CAD files to BIDMC upon project closeout, it is strongly recommended that thorough file translation testing be conducted **before** the drawing development phase of the project. This will assure early detection of file conversion issues, if any, and allow for corrective measures to be taken before the project closeout period.

5.4 Review Period: BIDMC reserves the right to review the final submission for up to one year after delivery and resubmit the files to the consultant for correction *at no charge* to BIDMC.

6.0 SPACE IDENTIFICATION & USE DATA

Room numbers and space usage shall be reviewed by BIDMC and updated by the design team accordingly prior to issuing As-Built drawings.

6.1 Room Numbering: All room numbers are to be approved by BIDMC during the design phase. All room numbers should be on the A-AREA-RMNO layer.

6.2 Space Use Information: All spaces in scope should have an area polyline on the A-AREA layer, and should appear only in model space (no plot). Each space should have its use clearly labelled, and in the case of complex projects, the name of department using the space. If using Revit, please provide BIDMC with the room schedule.

APPENDIX A

BIDMC Layer State

This document outlines how to import the Beth Israel Deaconess Medical Center (BIDMC) Facilities Department layer state into a CAD drawing. Using a preset layer state file ensures that all layers within a drawing are compliant with the latest BIDMC CAD Standards, Version 3.0.

NOTE: Importing the BIDMC layer state will update any existing layers in the file if their names match the BIDMC layer names. For example, layer E-POWR-PANL will be updated with new attributes because that name exists in the BIDMC standards, but E-POWR-PNLS will not be updated. Thus, please make sure that layers are named according to BIDMC standards before importing the BIDMC layer state.

Questions or comments regarding the information in this document can be directed to:

Beth Israel Deaconess Medical Center
Facilities Department
300 Brookline Ave (OV-400B)
Boston, MA 02215
(p) 617.975.9910
(f) 617.975.9900
bidmc_dcg@bidmc.harvard.edu

DOWNLOAD AND IMPORT

Downloading the BIDMC Layer State: The BIDMC layer state, named BIDMC Layer State Version 3.0.las, is available for download on the BIDMC website at: http://www.bidmc.org/Centers-and-Departments/Departments/Facilities/Standards.aspx

Importing the BIDMC Layer State:

- Open the drawing whose layer properties need to be updated to BIDMC standards.

- Type the LAYERSTATE command to open up the Layer States Manager.

- On the right-hand side of the Layer States Manager window, select Import.
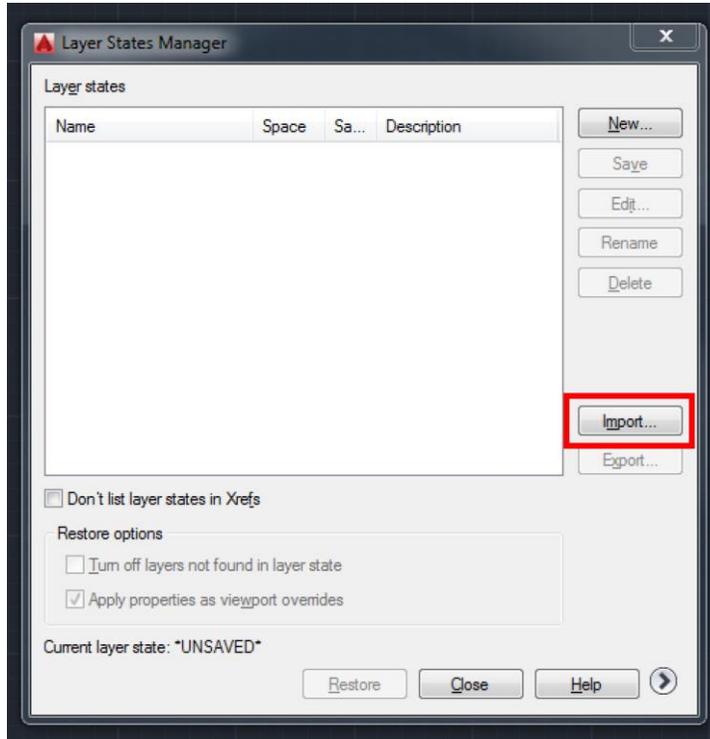
- Browse and select the downloaded layer state file BIDMC Layer State Version 3.0.las, then choose Open. A message saying, "Restore could not restore all line types" may appear – click OK.
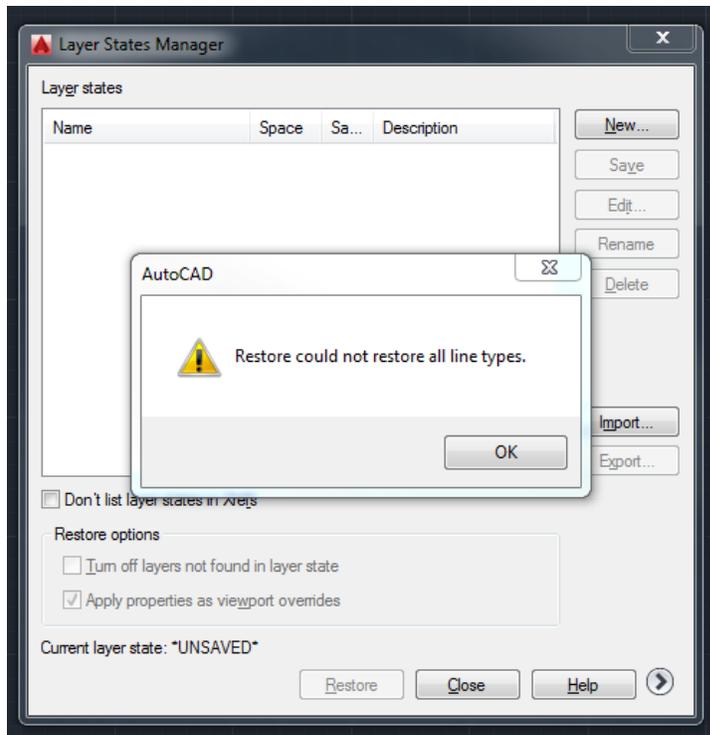
- A window will appear informing you that the import was successful and ask if you want to restore any layer states. Select Restore States.
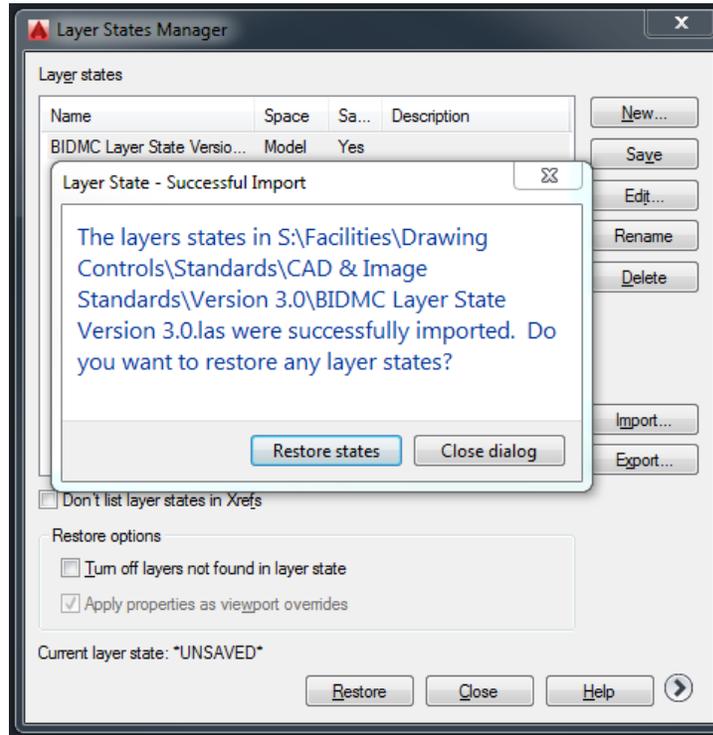
- Layers will instantly auto-update in the file. They will now have the correct color-based properties and display accordingly in model and paper space.

APPENDIX B

BIDMC CAD Layer List 3.0

Linetypes are continuous unless noted otherwise. Custom linetypes are allowed as long as the linetype definition is embedded in the file. See the table in this list for Linetype Codes.

□ = any discipline code

Linetype Codes	
1 - DOT	7 - CENTER
2 - HIDDEN	8 - 1HR_Fire_Barrier
3 - DASHED	9 - 2HR_Fire_Barrier
4 - DASHDOT	10- Smoke_Barrier
6 - DIVIDE2	

Lineweights			
Display Color	**No.**	**Width**	**Plot Color**
Red	1	0.25	Black
Yellow	2	0.5	Black
Green	3	0.25	Black
Cyan	4	0.18	Black
Blue	5	0.15	Black
Magenta	6	0.25	Black
White	7	0.6	Black
Dark Gray	8	0.15	Dark Gray
Light Gray	9	0.18	Light Gray
Medium Red	10	2	Red
Light Red	11	0.18	Black
Bright Blue	170	2	Bright Blue
Bright Yellow	50	0.18	Bright Yellow
Light Green	71	0.18	Light Green

Name	Color	Linetype Code	Description
Annotation			
□-ANNO-DIMS	4		Dimensions
□-ANNO-HTCH	any		Colored hatches for diagrammatic purposes
□-ANNO-IDEN	3		Identification tags, room numbers
□-ANNO-KEYN	4		Keynotes
□-ANNO-LABL	4		Labels
□-ANNO-LEGN	4		Legends, symbol keys
□-ANNO-LOGO	4		Company logos
□-ANNO-MARK	4		Markers, break marks, leaders
□-ANNO-MATC	4	7	Match lines
□-ANNO-NOTE	4		Notes
□-ANNO-NPLT	4		Non-plotting graphic information
□-ANNO-PROS	4		Date / Time / File name stamp
□-ANNO-RDME	4		Read-me layer (not plotted)
□-ANNO-REFR	4		Reference, external files
□-ANNO-REVS	3		Revision clouds
□-ANNO-SCHD	4		Schedules
□-ANNO-STMP	4		Professional stamps
□-ANNO-STRS	50		Hatch over fire rated stairs (if needed)
□-ANNO-SYMB	4		Reference symbols
□-ANNO-TABL	4		Data tables
□-ANNO-TEXT	4		Text
□-ANNO-TITL	4		Drawing or detail titles
□-ANNO-TTLB	7		Border and titleblock
Flexible Minor Groups			
□-□□□□-PATT	8		Cross-Hatching, poche
□-□□□□-IDEN	7		Identification tags
□-□□□□-ELEV	2		Elevation (Vertical Surfaces in 3D)
□-□□□□-NEWW			New Work
□-□□□□-EXST			Existing to Remain
□-□□□□-DEMO			Demolition
□-□□□□-FUTR			Future Work
□-□□□□-TEMP			Temporary work
□-□□□□-MOVE			Items to be Moved
□-□□□□-RELO			Relocated Items
□-□□□□-NICN			Not in Contract
□-□□□□-PHS1-9			Phase Numbers (choose 1 through 9)
X-RDME	1		
Architectural			
A-AREA	8		Area: boundary calculation lines by room

A-AREA-IDEN	4		Area: space use information
A-AREA-OCCP	3		Area: occupant or employee names
A-AREA-PATT	8		Area: hatching
A-AREA-RMNO	4		Area: room numbers
A-CLNG	5		Ceiling
A-CLNG-ACCS	5		Ceiling: access
A-CLNG-GRID	1		Ceiling: grid
A-CLNG-OPNG	4		Ceiling: openings and penetrations
A-CLNG-SUSP	6		Ceiling: suspended elements
A-CLNG-TEES	1		Ceiling: main tees
A-COLS	8		Columns
A-COLS-ENCL	2		Columns: enclosures
A-DOOR-FULL	1		Doors
A-DOOR-GLAZ	11		Doors: glass
A-DOOR-OVHD	1	2	Doors: overhead and garage doors
A-DOOR-PRHT	1		Doors: partial height (swing and leaf)
A-EQPM	6		Equipment
A-EQPM-ACCS	6		Equipment: access
A-EQPM-FIXD	6		Equipment: fixed
A-EQPM-IDEN	3		Equipment: identification numbers
A-EQPM-MOVE	5		Equipment: moveable
A-EQPM-NICN	8		Equipment: not in contract
A-EQPM-OVHD	5	2	Equipment: overhead
A-FLOR	8		Floor
A-FLOR-CASE	1		Casework
A-FLOR-CASE-HIDD	9	3	Casework: hidden
A-FLOR-CASE-OVHD	1	2	Overhead wall cabinets
A-FLOR-EVTR	3		Floor: elevator cars and equipment
A-FLOR-HRAL	5		Floor: handrails / guard rails
A-FLOR-FIXT	6		Floor: miscellaneous fixtures
A-FLOR-IDEN	3		Floor: identification tags
A-FLOR-LEVL	1		Floor: level changes (ramps, pits, depressions)
A-FLOR-OTLN	1		Floor: outline
A-FLOR-OVHD	8	2	Floor: overhead conditions
A-FLOR-PATT	8		Floor: paving, tile, carpet patterns
A-FLOR-RAIS	9		Floor: access (raised) flooring
A-FLOR-RISR	8		Floor: risers
A-FLOR-SIGN	8		Floor: signage
A-FLOR-SPCL	3		Floor: specialties (toilet room accessories, display cases)
A-FLOR-STRS	1		Flor: stair treads, escalators, ladders
A-FLOR-TPTN	1		Floor: toilet partitions
A-FLOR-WDWK	3		Floor: architectural woodwork
A-FURN	56		Furniture to be provided in architectural contract
A-FURN-FILE	8		Furniture: file cabinets
A-FURN-FIXD	1		Furniture: fixed
A-FURN-FREE	8		Furniture: free standing
A-FURN-PLNT	3		Furniture: plants
A-FURN-PNLS	56		Furniture Component System: panels

A-FURN-SEAT	8		Furniture: seating	
A-FURN-STOR	56		Furniture Component System: storage	
A-FURN-WKSF	8		Furniture Component System: work surface	
A-GLAZ	11		Glazing: Windows, Window Walls, Curtain Walls, Glazed Partitions	
A-GLAZ-FRAM	11		Glazing: window frame	
A-GLAZ-FULL	11		Glazing: full-height	
A-GLAZ-PRHT	11		Glazing: partial-height	
A-GLAZ-SILL	11		Glazing: window sills	
A-HVAC-RDFF	6		HVAC systems: return air diffusers	
A-HVAC-SDFF	5		HVAC systems: supply diffusers	
A-LITE	3		Lighting	
A-ROOF-HRAL	5		Roof: handrails / guardrails	
A-ROOF-LEVL	1		Roof: level changes	
A-ROOF-OTLN	8		Roof: outline	
A-ROOF-RFDR	1		Roof: roof drains	
A-ROOF-RISR	1		Roof: risers	
A-ROOF-STRS	1		Roof: stair treads, ladders	
A-ROOF-WALL	6		Roof: parapet walls and wall caps	
A-WALL	2		Walls	
A-WALL-SMOKE-1HR~	170	10	Walls: fire protection: 1 hour barrier line	*[1]
A-WALL-FENC	8		Walls: fence	
A-WALL-FIRE-1HR~	10	8	Walls: fire protection: 1 hour barrier line	*[1]
A-WALL-FIRE-2HR~	10	9	Walls: fire protection: 2 hour barrier line	*[1]
A-WALL-FULL	2		Walls: full-height	
A-WALL-HEAD	2		Walls: door / window headers (on reflected ceiling plans)	
A-WALL-HRAL	5		Walls: mounted handrails	
A-WALL-JAMB	2		Walls: door / window jambs	
A-WALL-MOVE	2		Walls: moveable partitions	
A-WALL-PATT	8		Walls: insulation, hatching and fill	
A-WALL-PRHT	11		Walls: partial-height (on floor plans only)	
Civil				
C-BLDG-DECK	2		Buildings: decks (attached, no roof overhead)	
C-BLDG-OTLN	2		Buildings: outline	
C-BLDG-OVHD	1	2	Buildings: overhead	
C-BLDG-PRCH	2		Buildings: porch (attached, roof overhead)	
C-CATV-OVHD	1	2	Cable TV system: overhead	
C-CATV-POLE	3		Cable TV system: pole	
C-CATV-UNDG	6	4	Cable TV system: underground	
C-COMM-OVHD	1	2	Telephone communications: overhead	
C-COMM-POLE	3		Telephone communications: pole	
C-COMM-UGND	6	4	Telephone communications: underground	
C-DFLD-OTLN	9		Drain fields: outline	
C-DFLD-PROF	9		Drain fields: profile	
C-FENC-GRAL	1		Fences: guard rail	
C-FENC-POST	1		Fences: post	

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[1] Please adjust Global Width to 1'

C-FENC-STEL	1		Fences: steel (chain link)
C-FENC-WOOD	1		Fences: wood
C-FIRE-HYDT	6		Fire protection: hydrants and connections
C-FIRE-PIPE	6		Fire protection: piping
C-FIRE-UGND	6	4	Fire protection: underground
C-LOCN	7		Limits of construction
C-PROP-LINE	7	6	Property boundry: lines
C-ROAD	11		Road
C-ROAD-CURB	11		Road: curbs
C-ROAD-FLNE	1		Road: fire lane
C-ROAD-FLNE-MRKG	3		Road: fire lane: pavement markings
C-ROAD-FLNE-SIGN	3		Road: fire lane: signage
Electrical			
E-ALRM	2		Alarm System
E-AUXL	3		Auxiliary system
E-CABL-COAX	2	2	Cable systems: coax cable
E-CABL-FIBR	2		Cable systems: fiber optic cable
E-CABL-MULT	2		Cable systems: multi conductor cable
E-CABL-TRAY	2		Cable systems: cable trays and wireways
E-CCTV	2		Closed-circuit TV system
E-COMM-CIRC	2		Telephone communications: circuits
E-COMM-CLNG	2		Telephone communications: ceiling
E-COMM-CNMB	3		Telephone communications: circuit numbers
E-COMM-EQPM	2		Telephone communications: equipment
E-COMM-WALL	2		Telephone communications: wall
E-DATA-CIRC	2		Data / LAN system: circuits
E-DATA-CLNG	2		Data / LAN system: ceiling
E-DATA-CNMB	3		Data / LAN system: circuit numbers
E-DATA-EQPM	2		Data / LAN system: equipment
E-DATA-FLOR	2		Data / LAN system: floor
E-DATA-WALL	2		Data / LAN system: wall
E-DIAG-BKRS	1		Diagrams: breakers
E-DIAG-BUSS	1		Diagrams: bus duct
E-DIAG-ENCL	1		Diagrams: equipment enclosures
E-DIAG-EQPM	1		Diagrams: equipment
E-DIAG-FEED	1		Diagrams: feeders
E-DIAG-FLOR	1		Diagrams: floor
E-DIAG-GRND	1		Diagrams: ground
E-DIAG-SWCH	1		Diagrams: switches
E-DIAG-XFMR	1		Diagrams: transformers
E-FIRE-CIRC	2		Fire protection: circuits
E-FIRE-CLNG	2		Fire protection: ceiling
E-FIRE-CNMB	3		Fire protection: circuit numbers
E-FIRE-EQPM	2		Fire protection: equipment
E-FIRE-WALL	2		Fire protection: wall
E-GRND-CIRC	2		Ground system: circuits
E-GRND-CLNG	2		Ground system: ceiling
E-GRND-CNMB	3		Ground system: circuit numbers

E-GRND-DIAG	1	Ground system: diagrams
E-GRND-EQPM	2	Ground system: equipment
E-GRND-EQUI	2	Ground system: equipotential
E-GRND-WALL	2	Ground system: wall
E-INTC	2	Intercom / PA system
E-LITE-CIRC	2	Lighting: circuits
E-LITE-CIRC-CRIT	2	Lighting: circuits: critical
E-LITE-CIRC-EMER	2	Lighting: circuits: emergency
E-LITE-CLNG	2	Lighting: ceiling
E-LITE-CLNG-CRIT	2	Lighting: ceiling: critical
E-LITE-CLNG-EMER	2	Lighting: ceiling: emergency
E-LITE-CNMB	3	Lighting: circuit numbers
E-LITE-CNMB-CRIT	1	Lighting: circuit numbers: critical
E-LITE-CNMB-EMER	6	Lighting: circuit numbers: emergency
E-LITE-EMER	2	Lighting: emergency
E-LITE-EQPM	2	Lighting: equipment
E-LITE-EQPM-CRIT	2	Lighting: equipment: critical
E-LITE-EQPM-EMER	2	Lighting: equipment: emergency
E-LITE-EXIT	2	Lighting: exit
E-LITE-EXTR	2	Lighting: exterior
E-LITE-FLOR	2	Lighting: floor
E-LITE-JBOX	2	Lighting: junction box
E-LITE-OTLN	2	Lighting: outline
E-LITE-ROOF	2	Lighting: roof
E-LITE-SPCL	2	Lighting: special
E-LITE-SWCH	2	Lighting: switches
E-LITE-SWCH-CRIT	2	Lighting: switches: critical
E-LITE-SWCH-EMER	2	Lighting: switches: emergency
E-LITE-WALL	2	Lighting: wall
E-LITE-WALL-CRIT	2	Lighting: wall: critical
E-LITE-WALL-EMER	2	Lighting: wall: emergency
E-LITE-WALL-EXIT	2	Lighting: wall: exit
E-LTNG-CIRC	2	Lightning protection system: circuits
E-LTNG-CLNG	2	Lightning protection system: ceiling
E-LTNG-CNMB	3	Lightning protection system: circuit numbers
E-LTNG-EQPM	2	Lightning protection system: equipment
E-LTNG-WALL	2	Lightning protection system: wall
E-NURS-CIRC	2	Nurse call system: circuits
E-NURS-CLNG	2	Nurse call system: ceiling
E-NURS-CNMB	3	Nurse call system: circuit numbers
E-NURS-EQPM	2	Nurse call system: equipment
E-NURS-WALL	2	Nurse call system: wall
E-PGNG	2	Paging system
E-POWR-BUSW	2	Power: busways
E-POWR-CABL	2	Power: cable systems
E-POWR-CIRC	2	Power: circuits
E-POWR-CIRC-CRIT	2	Power: circuits: critical
E-POWR-CLNG	2	Power: ceiling

E-POWR-CLNG-CRIT	2		Power: ceiling: critical
E-POWR-CNMB	3		Power: circuit numbers
E-POWR-CNMB-CRIT	1		Power: circuit numbers: critical
E-POWR-DEVC	2		Power: devices
E-POWR-EQPM	2		Power: equipment
E-POWR-EQPM-CRIT	2		Power: equipment: critical
E-POWR-EXTR	2		Power: exterior
E-POWR-FEED	2		Power: feeders
E-POWR-FLOR	2		Power: floor
E-POWR-FLOR-CRIT	2		Power: floor: critical
E-POWR-JBOX	2		Power: junction boxes
E-POWR-PANL	2		Power panels
E-POWR-UCPT	1		Power: under-carpet wiring
E-POWR-URAC	1	3	Power: underfloor raceways
E-POWR-WALL	2		Power: wall
E-POWR-WALL-CRIT	2		Power: wall: critical
E-POWR-XFMR-PADM	6		Power: transformers: pad-mounted
E-POWR-XFMR-POLM	6		Power: transformers: pole-mounted
E-SITE-OVHD	2	2	Site features: overhead
E-SITE-POLE	2		Site features: pole
E-SITE-UGND	2	4	Site features: underground
E-SOUN	2		Sound / PA system
Fire Protection			
F-AFFF-EQPM	3		Aqueous film-forming foam system: equipment
F-AFFF-PIPE	3		Aqueous film-forming foam system: piping
F-CO2S-EQPM	3		CO2 system: equipment
F-CO2S-PIPE	6		CO2 system: piping
F-HALN-EQPM	3		Halon: equipment
F-HALN-PIPE	6		Halon: Piping
F-IGAS-EQPM	3		Inert gas: equipment
F-IGAS-PIPE	6		Inert gas: piping
F-PROT-ALRM	2		Fire protection system: alarms
F-PROT-EQPM	3		Fire protection system: equipment (incl. hose cabinets)
F-PROT-EXTI	1		Fire protection system: extinguishers
F-PROT-HOSE	1		Fire protection system: hoses
F-PROT-HYDT	1		Fire protection system: hydrants and connections
F-PROT-RATE	1		Fire protection system: ratings
F-PROT-SMOK	2		Fire protection system: smoke detectors/heat sensors
F-SPKL-CLHD	3		Sprinkler: ceiling heads
F-SPKL-EQPM	3		Sprinkler: equipment
F-SPKL-OTHD	3		Sprinkler: other heads
F-SPKL-PIPE	2		Sprinkler: piping
Mechanical			
M-BRIN-EQPM	3		Brine systems: equipment
M-BRIN-PIPE	2		Brine systems: piping
M-CHIM	2		Chimneys and stacks
M-CMPA-EQPM	7		Compressed / processed air systems: equipment
M-CMPA-PEQP	7		Compressed / processed air systems: process equipment

M-CMPA-PIPE	1		Compressed / processed air systems: piping
M-CMPA-PPIP	1		Compressed / processed air systems: process piping
M-CNDW-EQPM	3		Condenser water systems: equipment
M-CNDW-PIPE	2		Condenser water systems: piping
M-CNDW-RETN	2		Condenser water systems: return
M-CNDW-RETN-PIPE	2		Condenser water systems: return: piping
M-CNDW-RETN-SKCH	2		Condenser water systems: return: sketch
M-CNDW-SPLY	2		Condenser water systems: supply
M-CNDW-SPLY-PIPE	2		Condenser water systems: supply: piping
M-CNDW-SPLY-SKCH	2		Condenser water systems: supply: sketch
M-CONT	6		Controls and instrumentation
M-CONT-THER	6		Controls and instrumentation: thermostats
M-CONT-WIRE	6	2	Controls and instrumentation: wiring (low voltage)
M-CWTR-CNDS	2		Chilled water systems: condensate piping
M-CWTR-EQPM	3		Chilled water systems: equipment
M-CWTR-PIPE	2		Chilled water systems: piping
M-CWTR-RETN	2		Chilled water systems: return
M-CWTR-RETN-PIPE	2		Chilled water systems: return: piping
M-CWTR-RETN-SKCH	2		Chilled water systems: return: sketch
M-CWTR-SPLY	2		Chilled water systems: supply
M-CWTR-SPLY-PIPE	2		Chilled water systems: supply: piping
M-CWTR-SPLY-SKCH	2		Chilled water systems: supply: sketch
M-DOMW	2		Domestic water systems
M-DOMW-MKUP	2		Domestic water systems: make-up water
M-DUAL-EQPM	3		Dual temperature systems: equipment
M-DUAL-RETN	2		Dual temperature systems: return
M-DUAL-RETN-PIPE	2		Dual temperature systems: return: piping
M-DUAL-RETN-SKCH	2		Dual temperature systems: return: sketch
M-DUAL-SPLY	2		Dual temperature systems: supply
M-DUAL-SPLY-PIPE	2		Dual temperature systems: supply: piping
M-DUAL-SPLY-SKCH	2		Dual temperature systems: supply: sketch
M-DUST-DUCT	2		Dust and fume collection systems: ductwork
M-DUST-DUCT-CNTR	11	7	Dust and fume collection systems: ductwork: center
M-DUST-EQPM	3		Dust and fume collection systems: equipment
M-ENER	1		Energy management systems
M-ENER-EQPM	3		Energy management systems: equipment
M-ENER-WIRE	3		Energy management systems: wiring
M-EXHS-DUCT	2		Exhaust system: ductwork
M-EXHS-DUCT-CNTR	11	7	Exhaust system: ductwork: center
M-EXHS-EQPM	3		Exhaust system: equipment
M-EXHS-RFEQ	3		Exhaust system: rooftop equipment
M-FUEL-EQPM	7		Fuel systems: equipment
M-FUEL-GGEP	2		Fuel systems: gas general piping
M-FUEL-GGEP-HPIP	2		Fuel systems: gas general piping: high-pressure piping
M-FUEL-GGEP-LPIP	2		Fuel systems: gas general piping: low-pressure piping
M-FUEL-GGEP-LQPG	2		Fuel systems: gas general piping: liquid petrolium gas
M-FUEL-GGEP-MPIP	2		Fuel systems: gas general piping: medium pressure piping
M-FUEL-GPRP	2		Fuel systems: gas process piping

Code	Num	Description
M-FUEL-OPRP	2	Fuel systems: oil process piping
M-FUEL-OGEP	2	Fuel systems: oil general piping
M-FUEL-OGEP-DISC	2	Fuel systems: oil general piping: discharge
M-FUEL-OGEP-FLLW	2	Fuel systems: oil general piping: flow
M-FUEL-OGEP-GAGE	2	Fuel systems: oil general piping: gauge
M-FUEL-OGEP-RETN	2	Fuel systems: oil general piping: return
M-FUEL-OGEP-SPLY	2	Fuel systems: oil general piping: supply
M-FUEL-OGEP-VENT	2	Fuel systems: oil general piping: vent
M-FUME	1	Fume hood
M-FUME-DUCT	2	Fume hood: ductwork
M-FUME-EQPM	3	Fume hood: equipment
M-GLYC-EQPM	3	Glycol systems: equipment
M-GLYC-RETN	2	Glycol systems: return
M-GLYC-RETN-PIPE	2	Glycol systems: return: piping
M-GLYC-RETN-SKCH	2	Glycol systems: return: sketch
M-GLYC-SPLY	2	Glycol systems: supply
M-GLYC-SPLY-PIPE	2	Glycol systems: supply: piping
M-GLYC-SPLY-SKCH	2	Glycol systems: supply: sketch
M-HVAC-BOXD	2	HVAC systems: mixing box, dual duct
M-HVAC-BOXES	2	HVAC systems: mixing box, single duct
M-HVAC-CDFF	6	HVAC systems: ceiling diffusers
M-HVAC-CLDA	6	HVAC systems: cold air
M-HVAC-CLDA-DUCT	2	HVAC systems: cold air: ductwork
M-HVAC-CLDA-EQPM	3	HVAC systems: cold air: equipment
M-HVAC-CLDA-RSCH	6	HVAC systems: cold air: sketch line round or oval duct
M-HVAC-CLDA-SECT	6	HVAC systems: cold air: section
M-HVAC-CLDA-SIZE	6	HVAC systems: cold air: ductwork size
M-HVAC-CLDA-SSCH	6	HVAC systems: cold air: sketch line rectangular duct
M-HVAC-DMPR	6	HVAC systems: fire, smoke, volume damper
M-HVAC-DOOR	3	HVAC systems: equipment doors
M-HVAC-EFAN	3	HVAC systems: equip. with electric fans
M-HVAC-EPDU	3	HVAC systems: equip. with piping, ductwork, and elec.
M-HVAC-EPIP	3	HVAC systems: equip. with piping and electricity
M-HVAC-EQPM	3	HVAC systems: equipment
M-HVAC-EXHS	6	HVAC systems: exhaust air
M-HVAC-EXHS-DUCT	2	HVAC systems: exhaust air: ductwork
M-HVAC-EXHS-EQPM	3	HVAC systems: exhaust air: equipment
M-HVAC-EXHS-GRIL	6	HVAC systems: exhaust air: grilles
M-HVAC-EXHS-RSCH	6	HVAC systems: exhaust air: sketch line round or oval duct
M-HVAC-EXHS-SECT	6	HVAC systems: exhaust air: section
M-HVAC-EXHS-SIZE	6	HVAC systems: exhaust air: ductwork size
M-HVAC-EXHS-SSCH	6	HVAC systems: exhaust air: sketch line rectangular duct
M-HVAC-HOTA	6	HVAC systems: hot air
M-HVAC-HOTA-DUCT	2	HVAC systems: hot air: ductwork
M-HVAC-HOTA-EQPM	3	HVAC systems: hot air: equipment
M-HVAC-HOTA-RSCH	6	HVAC systems: hot air: sketch line round or oval duct
M-HVAC-HOTA-SECT	6	HVAC systems: hot air: section
M-HVAC-HOTA-SIZE	6	HVAC systems: hot air: ductwork size

M-HVAC-HOTA-SSCH	6		HVAC systems: sketch line rectangular duct
M-HVAC-ODFF	6		HVAC systems: other diffusers
M-HVAC-PIPE	2		HVAC systems: piping
M-HVAC-RDFF	6		HVAC systems: return air diffusers
M-HVAC-RETN	6		HVAC systems: return
M-HVAC-RETN-CNTR	11	7	HVAC systems: return: center
M-HVAC-RETN-EQPM	3		HVAC systems: return: equipment
M-HVAC-RETN-RSCH	6		HVAC systems: return: sketch line round or oval duct
M-HVAC-RETN-SECT	6		HVAC systems: return: section
M-HVAC-RETN-SIZE	6		HVAC systems: return: ductwork size
M-HVAC-RETN-SSCH	6		HVAC systems: return: sketch line rectangular duct
M-HVAC-SDFF	6		HVAC systems: supply diffusers
M-HVAC-SPLY	6		HVAC systems: supply
M-HVAC-SPLY-CNTR	11	7	HVAC systems: supply: center
M-HVAC-SPLY-EQPM	3		HVAC systems: supply: equipment
M-HVAC-SPLY-RSCH	6		HVAC systems: supply: sketch line round or oval duct
M-HVAC-SPLY-SECT	6		HVAC systems: supply: section
M-HVAC-SPLY-SIZE	6		HVAC systems: supply: ductwork size
M-HVAC-SPLY-SSCH	6		HVAC systems: supply: sketch line rectangular duct
M-HWTR-EQPM	3		Hot water heating system: equipment
M-HWTR-PIPE	2		Hot water heating system: piping
M-HWTR-RETN	2		Hot water heating system: return
M-HWTR-RETN-PIPE	2		Hot water heating system: return: piping
M-HWTR-RETN-SKCH	2		Hot water heating system: return: sketch
M-HWTR-SPLY	2		Hot water heating system: supply
M-HWTR-SPLY-PIPE	2		Hot water heating system: supply: piping
M-HWTR-SPLY-SKCH	2		Hot water heating system: supply: sketch
M-LGAS	2		Laboratory gas
M-LGAS-EQPM	3		Laboratory gas: equipment
M-LGAS-PIPE	2		Laboratory gas: piping
M-MACH	1		Machine shop
M-MDGS-CAIR	2		Medical gas: compressed air
M-MDGS-EQPM	7		Medical gas: equipment
M-MDGS-NITG	2		Medical gas: nitrogen
M-MDGS-NOXG	2		Medical gas: nitrous oxide
M-MDGS-OXYG	2		Medical gas: pure O2
M-MDGS-PIPE	2		Medical gas: piping
M-MDGS-SAIR	2		Medical gas: scavenge air
M-MDGS-VACU	2		Medical gas: vacuum
M-MKUP-CDFF	1		Make-up air systems: ceiling diffusers
M-MKUP-DUCT	2		Make-up air systems: ductwork
M-MKUP-EQPM	3		Make-up air systems: equipment
M-MPIP	2		Miscellaneous piping systems
M-MPIP-PIPE	2		Miscellaneous piping systems: piping
M-NGAS	1		Natural Gas
M-NGAS-EQPM	3		Natural Gas: equipment
M-NGAS-PIPE	2		Natural Gas: piping
M-PROC	1		Process systems

M-PROC-EQPM	3		Process systems: equipment
M-PROC-PIPE	2		Process systems: piping
M-RAIR	1		Relief air systems
M-RCOV	1		Energy recovery systems
M-RCOV-EQPM	3		Energy recovery systems: equipment
M-RCOV-PIPE	2		Energy recovery systems: piping
M-REFG-DISC	2		Refrigeration systems: discharge
M-REFG-EQPM	2		Refrigeration systems: equipment
M-REFG-PIPE	2		Refrigeration systems: piping
M-REFG-RETN	2		Refrigeration systems: return
M-REFG-SPLY	2		Refrigeration systems: supply
M-SMOK-CDFF	1		Smoke extraction systems: ceiling diffusers
M-SMOK-DUCT	2		Smoke extraction systems: ductwork
M-SMOK-EQPM	3		Smoke extraction systems: equipment
M-SPCL	1		Special systems
M-SPCL-EQPM	3		Special systems: equipment
M-SPCL-PIPE	2		Special systems: piping
M-STEM-BLBD	2		Steam systems: boild blow down piping
M-STEM-CONP	2		Steam systems: condensate piping
M-STEM-CONP-SKCH	2		Steam systems: condensate piping: sketch
M-STEM-EQPM	3		Steam systems: equipment
M-STEM-HPIP	2		Steam systems: high-pressure piping
M-STEM-HPIP-SKCH	2		Steam systems: high-pressure piping: sketch
M-STEM-LPIP	2		Steam systems: low-pressure piping
M-STEM-LPIP-SKCH	2		Steam systems: low-pressure piping: sketch
M-STEM-MPIP	2		Steam systems: medium-pressure piping
M-STEM-MPIP-SKCH	2		Steam systems: medium-pressure piping: sketch
M-TEST	3		Test equipment
Plumbing			
P-ACID-EQPM	3		Acid waste systems: equipment
P-ACID-PIPE	2		Acid waste systems: piping
P-ACID-VENT	2	2	Acid waste systems: vents
P-DOMW-CPIP	2		Domestic water systems: cold water piping
P-DOMW-EQPM	3		Domestic water systems: equipment
P-DOMW-HPIP	2		Domestic water systems: hot water piping
P-DOMW-RISR	2	2	Domestic water systems: risers
P-DOMW-RPIP	2		Domestic water systems: recirculation piping
P-MDGS-CAIR	2		Medical gas: compressed air
P-MDGS-EQPM	7		Medical gas: equipment
P-MDGS-NITG	2		Medical gas: nitrogen
P-MDGS-NOXG	2		Medical gas: nitrous oxide
P-MDGS-OXYG	2		Medical gas: pure O2
P-MDGS-PIPE	2		Medical gas: piping
P-MDGS-SAIR	2		Medical gas: scavenge air
P-MDGS-VAC	2		Medical gas: vacuum
P-SSWR-EQPM	3		Sanitary sewer: equipment
P-SSWR-FIXT	1		Sanitary sewer: fixtures
P-SSWR-FLDR	1		Sanitary sewer: floor drains

P-SSWR-PIPE	2		Sanitary sewer: piping
P-SSWR-RISR	2	2	Sanitary sewer: risers
P-SSWR-VENT	2		Sanitary sewer: vents
P-STRM-PIPE	2		Storm sewer: piping
P-STRM-RFDR	6		Storm sewer: roof drains
P-STRM-RISR	2	2	Storm sewer: risers
Structural			
S-ALGN	1	4	Alignments
S-BEAM	2		Beams
S-BEAM-CNTR	11	7	Beams: center
S-BEAM-CONC	2		Beams: concrete
S-BEAM-CONC-PRIM	2		Beams: concrete: primary
S-BEAM-CONC-SECD	1		Beams: concrete: secondary
S-BEAM-STEL	2		Beams: steel
S-BEAM-STEL-PRIM	2		Beams: steel: primary
S-BEAM-STEL-SECD	1		Beams: steel: secondary
S-BRCG-METL	6		Bracing: metal
S-BRCG-STEL	6		Bracing: steel
S-BRCG-STEL-HORZ	6		Bracing: steel: horizontal
S-BRCG-STEL-VERT	6		Bracing: steel: vertical
S-COLS-ABLT	6		Columns: anchor bolts
S-COLS-CNTR	11	7	Columns: center
S-COLS-CONC	1		Columns: concrete
S-COLS-STEL	1		Columns: steel
S-DECK-FLOR	1		Deck: floor
S-DECK-FLOR-OPNG	1		Deck: floor: openings
S-DECK-ROOF	1		Deck: roof
S-DECK-ROOF-OPNG	1		Deck: roof: openings
S-FNDN-CNTR	11	7	Foundation: center
S-FNDN-FTNG	3		Foundation: footings
S-FNDN-GRBM	2		Foundation: grade beams
S-FNDN-PCAP	3		Foundation: pile caps
S-FNDN-PIER	2		Foundation: drilled piers
S-FNDN-PILE	3		Foundation: piles
S-FNDN-RBAR	7		Foundation: reinforcing bar
S-FNDN-RBAR-BOT1	7		Foundation: reinforcing bar: bottom group 1
S-FNDN-RBAR-BOT2	7		Foundation: reinforcing bar: bottom group 2
S-FNDN-RBAR-TOP1	7		Foundation: reinforcing bar: top group 1
S-FNDN-RBAR-TOP2	7		Foundation: reinforcing bar: top group 2
S-FSTN	6		Fasteners and connections
S-GATE	1		Gate
S-GRID	11	7	Column grid
S-GRID-EXTR	11	7	Column grid: exterior
S-GRID-INTR	11	7	Column grid: interior
S-GRLN	3		Grade line
S-GRLN-SURF	3		Grade line: surface areas
S-GRTG	1		Grating
S-GRTG-OVHD	1	2	Grating: overhead

S-JNTS-CNTJ	6	Joints: construction joints
S-JNTS-CTLJ	6	Joints: control joints
S-JNTS-EXPJ	6	Joints: expansion joints
S-JOIS	1	Joists
S-JOIS-BRGX	1	Joists: bridging
S-PADS	1	Pads
S-PADS-EQPM	3	Pads: equipment
S-PLAT	1	Platform
S-PLAT-FRMG	1	Platform: framing
S-PLAT-GRTG	11	Platform: grating
S-SIGN-BOUY	6	Sign: bouy
S-SIGN-FRMG	6	Sign: framing
S-SIGN-GAGE	6	Sign: gauge (staff)
S-SIGN-TEXT	6	Sign: signage text
S-SIGN-XTRU	6	Sign: extrusion
S-SLAB-CONC	1	Slab: concrete
S-SLAB-EDGE	1	Slab: edge
S-SLAB-OPNG	1	Slab: opening
S-SLAB-OPNX	11	Slab: opening indication ("x")
S-SLAB-STEL	1	Slab: steel
S-STIF	6	Stiffener
S-STIF-LONG	6	Stiffener: longitudinal
S-STIF-TRAV	6	Stiffener: transverse
S-STRS	1	Stairs
S-STRS-LADD	1	Stairs: ladders and ladder assemblies
S-TRUS	1	Trusses
S-WALL-CMUW	1	Walls: concrete masonry unit
S-WALL-CONC	1	Walls: concrete
S-WALL-MSNW	1	Walls: masonry
S-WALL-PCST	1	Walls: pre-cast concrete
S-WALL-SHEA	2	Walls: structural bearing or shear walls
S-WALL-STEL	1	Walls: steel stud
S-WALL-WOOD	1	Walls: wood

APPENDIX C

BIDMC CAD Standards Checklist

CAD drawings and image (PDF) files delivered at closeout of a BIDMC project must be accompanied by the following checklist. When this checklist has been signed and submitted, the vendor (architect, engineer, contractor, etc.) is assuring that all materials adhere to the standards and guidelines set forth in the BIDMC *CAD and Image Standards* publication.

PROJECT INFORMATION

Company/Firm Name: _____

Project Name: _____ BIDMC CTS#: _____

Submission Type: _____ BIDMC PM: _____

1.0 OVERVIEW & CAD REVIEW PROCESS

☐ 1.2 We have followed the process outlined

2.0 FILE FORMAT AND SETUP

☐ 2.1.1 Archival File Format (PDF)

☐ 2.1.2 Electronic File Format

☐ 2.1.3 Revit

☐ 2.2.1 Scale, Units and Tolerances

☐ 2.2.2 Text Styles and Fonts

☐ 2.2.3 Title Blocks

☐ 2.2.4 Blocks – On Layer 0

☐ 2.2.5 Policy on Model Space & Paper Space

☐ 2.2.6 - Policy on External References
2.2.7 (XREFs) and Images

☐ 2.2.8 File Naming Conventions

3.0 LAYERING

☐ 3.1 BIDMC Layer State

☐ 3.2 Layer Name Formatting

☐ 3.3 Layer Attributes

☐ 3.3 Plot Styles

4.0 DRAWING SET ORGANIZATION

☐ 4.1 Sheet Identification

5.0 DELIVERABLES

☐ 5.1 Required Documents

☐ Completed Index of Electronic Files

6.0 SPACE IDENTIFICATION & USE DATA

☐ 6.1 Room number approval

☐ 6.2 Space use information

Signature of Accountable Professional Representative: _____

Printed Name of Accountable Professional Representative: _____

Contact Phone #: _____ Date: _____

APPENDIX D

Index of Electronic Files

A completed index sheet must be included with the submission of all drawing files at project closeout. It does not have to exactly match the formatting of this template but it must include all of the same information. To have a template emailed to you, email bidmc_dcg@bidmc.harvard.edu.

PROJECT INFORMATION

Company/Firm Name: _____

Project Name: _____ BIDMC CTS#: _____

Sheet #	Drawing Title	Building and Floor #	PDF	DWG	RVT
A-100	*First Floor Plan*	*Shapiro 01*	x	x	x

Sheet #: sheet identification number on the drawing, *example: A-100*
Drawing Title: description of drawing given as title, *example: First Floor Plan*
Building and Floor #: building(s) and floor(s) this project comprises, *example: Shapiro 01*
Formats: check (x) all formats that are being submitted