Interior Health Authority – Capital Planning and Projects
BIM & CAD Standards

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SECTION 1 – ACRONYMS AND INTRODUCTION

ACRONYMS

AIA – American Institute of Architects

ASCII – American Standard Code for Information Interchange

CAD – Computer Aided Drafting

BIM – Building Information Modeling

FM – Facilities Management

FTP – File Transfer Portal

HSA – Health Service Area

IHA CPP – Interior Health Authority – Capital Planning and Projects

LOD – Level of Development

PM – Project Manager

USB – Universal Serial Bus

XREFs – External Reference Files

INTRODUCTION

The Architectural Technologist provide continuity, quality control, cost reduction, and aid in the communication of Building Information Modeling (BIM), and Computer Aided Drafting (CAD) for over 630,000 square meters of owned and leased sites across the Interior Health Authority (IHA). The standardized collection of this information is critical to the program's ability to manage our real property and capital assets. Throughout the project contact Interior Health Authority – Capital Planning and Projects (IHA CPP) employees along with our Consultants will:

- Consult on and monitor the compliance of IHA CPP BIM & CAD Standards and procedures;
- Integrate record/as-built drawings into the IHA CPP existing condition drawings and update department changes ;
- Provide Consultants with access to our current record/as-built drawings to be used as a base for future facility projects; and
- Provide customers with updated information on IHA CPP's facilities as requested.

The purpose of this document is to serve as a specification for producing and delivering BIM and CAD drawings for IHA CPP and Facilities Management (FM). These standards have been developed to organize the data captured in BIM and CAD drawings. It is necessary to establish these standards to promote the sharing of information and facilitate long term cost savings. To maintain the integrity of the system, BIM and/or CAD drawings are required for all projects, regardless of the size, or complexity. No other system is acceptable unless data compatibility is tested and accepted through written confirmation by the IHA CPP.

Before a project can be closed out all specified materials must be submitted to the appropriate IHA CPP Project Manager (PM) or representative in accordance with production standards and special instructions described throughout this document.

SECTION 2 – DRAWING PRODUCTION

FILE FORMAT & SETUP

Electronic AutoCAD File Format

CAD drawings must be submitted to IHA CPP in full compliance with Autodesk AutoCAD software (file extension = .DWG). Throughout this document, the use of the name AutoCAD always implies "Genuine AutoCAD Software" unless otherwise noted. See *Appendix B.*

Electronic Revit File Format

Firms using Autodesk Revit, are required, to submit the complete Building Information Model (BIM) in Revit format (.RVT). IHA CPP will accept Central Revit files in replacement of CAD drawings if Central drawing can be open free of major clash errors and it's the primary system used for design by all disciplines. Revit files need to mirror CAD Standards to the best of their abilities; for example: File Name Convections. IHA CPP has the right to request the model at any stage throughout the project, however the party that generates the model is still responsible in submitting record/ as-built drawings at project close-out.

Level of Detail Required:

All projects must model elevations, grids, and the surrounding area related to the project. IHA CPP has implemented American Institute of Architects (AIA) guidelines on Level of Development (LOD), published in E203 – 2013 Building Information Modeling and Digital Data Exhibit. IHA CPP requires 200 LOD or higher when submitting record/ as-built drawings.

Central Revit Model Submission

Consultants need to complete the following before submitting Central Revit files to IHA CPP:

- Synchronize all local drawing to the Central file;
- Open the Central file and check Audit and Detach From Central, uncheck Create New Local;
- Select Detach & Reserve Worksets;
- Correct major Clash Errors that prevent users from opening the model;
- Purge all unused items in the project, including unused views and sheets;
- Remove unused links:
  - If links are required, Consultants are to include the files when submitting.
- Save As, Project and check under the Options that Make this a Central File and Compact File are clicked;
- Then save this file as its' original name but in a different location:
  - For submittal, IHA CPP will only accept Central Files as "IHA Project Number – IHA Project Name Central Model".
- Synchronize and modify settings to relinquish all Worksets and Compact Central Model.

Scale and Units

All CAD drawings should be drafted at full scale in metric units, such that one drawing unit equals one millimeter.

Tolerances

For projects, tolerances for construction drawings are implicit within professional service contracts.

Fonts and Text Styles

Text styles and fonts may vary, the use of font ARIAL is preferable. Special fonts not packaged within AutoCAD or Revit are not allowed.

Blocks

IHA CPP is currently not imposing the use of any particular block definitions or block libraries. However, IHA CPP requires that the following general rules be employed when handling block entities:

- All entities within a block must be created on layer 0;
- Drawing entities translated into AutoCAD blocks from non-AutoCAD systems must revert to layer 0 when exploded within AutoCAD; and
- File translations from non-AutoCAD systems, which result in wall blocks within AutoCAD, are unacceptable.

Policy on Model Space and Paper Space

IHA CPP requires that each CAD file submitted as a project deliverable contains only one drawing model with one title block, using the following setup method.

- Each CAD file is set up to have only one layout tab containing one title block which references the building model contained in model space; and
- Ensure that all items (title block, drawing, etc.) in the layout tab are within the selected paper size.

Cover Sheet & Title Blocks

In paper space, title block should be placed in the lower left hand corner point inserted at a coordinate location of (0, 0, 0). The drawing's title block should contain all information in the edit attributes dialog box, which is essential for IHA CPP to store and retrieve each drawing in its library.

Cover Sheet:
- Site Code - as specified by IHA CPP;
- IHA CPP Project Number - assigned by IHA CPP;
- Project Name - as specified by IHA CPP;
- Site Address - as specified by IHA CPP;
- Primary Consultant and Sub-Consultant Firm Names - representing the drawing authors; and
- Building Name - *specify only if the project name does not include this information already, and the project is building specific.*

Title Block:
- Project Key Plan - site plan indicating location of project & north arrow;
- Site Code - as specified by IHA CPP;
- IHA CPP Project Number - assigned by IHA CPP;
- Project Name - as specified by IHA CPP;
- Site Address - as specified by IHA CPP;
- Drawing Title - indicating the drawing content, e.g. floor plan, section, detail, etc.;
- Consultant/Vendor Project Number - assigned by vendor;
- Drawing Scale - representing the intended plot scale of the drawing with title block;
- Date of Drawing - original drawing date including significant revision dates and status; and
- Drawing Number.

Policy on External Reference Files (XREFs)

IHA CPP will not accept the submission of any CAD drawing deliverable which contains references to external source drawing files. All externally referenced data sources that were used during the CAD drawing production phase should be inserted, bound and retained as a block within a single drawing file, including the title block, upon project completion and prior to drawing delivery to IHA CPP. All file types used such as logos, images, excel spreadsheets, etc. are to be embedded. The resulting self-contained drawing file is an acceptable deliverable to IHA CPP.

LAYERING

IHA CPP has adopted most of the layer name and use rules recommended by the CAD Layer Guidelines published in 2005 by AIA. However IHA CPP has supplemented the AIA guidelines with its own rules and standards, as necessary.

Layer Name Formatting

As recommended by the 2005 AIA CAD Layer Guidelines, layer names may be as short as six characters (discipline code + major group) or as long as sixteen characters (discipline code + major group + minor group + status). Here are the four examples of acceptable formula variations, with explanations of formula variables found below:

#1	A-WALL	=	discipline code	+	major group			
#2	A-WALL-FULL	=	discipline code	+	major group	+	minor group	
#3	A-WALL-DEMO	=	discipline code	+	major group	+	status code	
#4	A-WALL-FULL-DEMO	=	discipline code	+	major group	+	minor group	+ status

Discipline Code:

The discipline code is a two-character field with the second characters either a hyphen or a user-defined modifier. The predefined discipline codes are the same for both layer names and file names. For a complete list of discipline codes, see *Appendix D.*

Major Group:

The major group designation is a four-character field that identifies the building system, such as doors, walls, windows, etc. Although most major groups are logically associated with specific discipline codes, it is possible to combine major group codes with any of the discipline codes. For example, A-WALL or I-WALL.

Minor Group:

This is an optional, four-character field for further differentiation of major groups. For example, partial height walls (A-WALL-INTR-PRTH) might be differentiated from full height walls (A-WALL-INTR-FULL). The following common modifiers defined by the AIA can also be used in the minor group field:

IDEN	Identification tags	example: A-DOOR-IDEN; and
PATT	Cross hatching	example: A-WALL-INTR-PATT.

If necessary, the minor group field may also be defined by the user, allowing additional layers to be added to accommodate special project requirements. However, this should only be done after checking the Master Layer List in the 2005 AIA CAD Layer Guidelines to see if any of the predefined layer names in that list would meet the special project requirements.

Status Field:

The status field is an optional four-character designator that differentiates new construction from remodeling and existing to remain. It is only needed when phases of work must be differentiated, and can be used in place of or in addition to a minor group designation, such as A-WALL-INTR-NEWW or A-WALL-INTR-FULL-NEWW. In either case, the status field is always the last four-characters of the layer name. Defined values for this field as defined are as follows:

NEWW	New work;
EXST	Existing to remain;
DEMO	Existing to demolish;
FUTR	Future work;
TEMP	Temporary work;
MOVE	Items to be moved;

RELO	Relocated items;
NICN	Not in contract; and
PHS 1-9	Phase number (1-9).

Status Field / Dominant Phase Rule:

This rule pertains to the use of the status field in naming layers for construction projects, and is based on the 2005 AIA CAD Layer Guidelines. It states that layers representing the dominant phase of a project can be represented without a status field. For example, in a small remodeling project, NEWW would indicate new construction, while layers without status fields would indicate parts of the existing building to remain. Conversely, a remodeling project consisting of mostly new construction might use EXST to indicate "existing to remain" building systems while all layers without a status field designator would represent new construction.

Annotation and Title Blocks:

These rules also come from the 2005 AIA CAD Layer Guidelines, which define annotation as comprising text, dimensions, title block and sheet borders, detail references and other elements on CAD drawings that do not represent physical aspects of a building. The major group ANNO, which can be combined with any discipline code, designate annotation. Types of annotation are designated below (asterisk represents any discipline code):

*-ANNO-DIMS	Dimensions;
*-ANNO-KEYN	Keynotes;
*-ANNO-LEGN	Legends and schedules;
*-ANNO-NOTE	Notes;
*-ANNO-NPLT	Construction lines, non-plotting information, viewports;
*-ANNO-REDL	Redlines;
*-ANNO-REVS	Revisions;
*-ANNO-SYMB	Symbols;
*-ANNO-TEXT	Text; and
*-ANNO-TTLB	Title blocks and sheet borders.

Annotation can be placed in both model space and paper space (see Policy on Model Space and Paper Space). Dimensions, symbols and keynotes would typically be placed in model space. Legends, schedules, title blocks, and sheet borders would typically be placed in paper space. The same layer names would be used in both cases.

Elevations, Sections, and Three-Dimensional Drawings:

Per the 2005 AIA CAD Layer Guidelines, special groups of layers within each discipline are defined for elevations, section, details, and three-dimensional views. Defined layer groups are as follows (asterisk represents any discipline code):

*-ELEV	Elevations;
*-ELEV-IDEN	Component identification numbers;
*-ELEV-OTLN	Building outlines;
*-ELEV-PATT	Textures and hatch patterns;
*-SECT	Sections;
*-SECT-MBND	Materials beyond section cut;
*-SECT-MCUT	Materials cut by section;
*-SECT-PATT	Textures and hatch patterns;
*-SECT-IDEN	Component identification numbers;
*-DETL	Details;
*-DETL-IDEN	Component identification number;
*-DETL-MBND	Material cut by section; and
*-DETL-PATT	Textures and hatch patterns.

AIA guidelines further recommend that the minor group ELEV can be added to any major group layer (A-WALL-ELEV, A-DOOR-ELEV, etc.) to identify information inly seen in 3D views. This

facilitates integrated three-dimensional CAD models with two-dimensional plans, as shown by this example:

A-WALL-INTR	Walls in plan view; and
A-WALL-INTR-ELEV	Wall surfaces in 3D view.

Attributes (Colors and Linetypes):

The layers found in the IHA CPP Core Layers table below have been assigned specific attribute values by IHA CPP according to the following categories: color and linetype. Attributes that have not been pre-defined by IHA CPP may be assigned at the discretion of the user.

Colors:

IHA CPP recommends the use of specific colors for core layers and annotation layers only (see IHA CPP Core Layers). The color assignment of these layers can be found in the Standard Layer Listing. All other layers must have their colors assigned at the discretion of users.

As a general rule for all projects, drawing entities should assume the color property of the layer on which they reside. This means that the color of individual entities should be assigned 'by layer' as opposed to 'by entity.' Entities, which have been translated from non-AutoCAD based CAD systems, often fail to meet this requirement.

Linetypes:

The default linetype of each layer is typically CONTINUOUS unless otherwise specified.

IHA CPP Core Layers

Drawings produced by IHA CPP have the core layers that are identified below by a diamond symbol (♦). Core layers should be used as the basis for construction drawings, supplemented as necessary by other layers in *Appendix D*.

CORE	LAYER		ATTRIBUTE	
	Name	**Description**	**Color**	**Linetype**
♦	A-ANNO-NOTE	Job Notes	1-red	as required
♦	A-ANNO-SYMB	Symbols	7-white	as required
♦	A-ANNO-TEXT	Text	1-red	as required
♦	A-AREA-SPCE	Shafts	9-lt.grey orange	as required
♦	A-CLNG-GRID	Ceiling Grid	7-white	as required
♦	A-DOOR-EXTR	Exterior Doors	3-green green	as required
♦	A-DOOR-INTR	Interior Doors	4-cyan	as required
♦	A-EQPM-FIXED	Equipment - built in (Coolers, Lockers etc.)	210-pink	as required
♦	A-EQPM-MOVE	Equipment - movable (Fridge, Stove etc.)	210-pink	as required
♦	A-FLOR-EVTR	Elevator cars and equipment	41-light orange	as required
♦	A-FLOR-IDEN	Room numbers, names	4-cyan	as required
♦	A-FLOR-LEVL	Level changes, ramps, pits, depressions	4-cyan	as required
♦	A-FLOR-STRS	Stair treads, escalators, ladders	41-light blue	as required
♦	A-FLOR-WDWK	Architectural Millwork	5-dark blue	as required
♦	A-GLAZ-EXTR	Exterior Windows	95-dark green	as required
♦	A-GLAZ-INTR	Internal Windows	91-light green	as required
♦	A-ROOF	Roof Line	12-dark red	as required
♦	A-WALL-EXTR	Exterior Building Walls	2-yellow	as required
♦	A-WALL-INTR	Interior Building Walls	1-red	as required

♦	A-WALL-MOVE	Movable partitions	1-red	as required
♦	A-WALL-PRTH	Partial-height walls	12-dark red	as required
♦	P-FIXT	Plumbing fixtures, toilets, sinks	6-magenta	as required
♦	S-COLS	Columns	10-red	as required
♦	S-GRID	Column grid	3-green	as required
♦	U-CRTN-PTNT	Patient Curtains	11-light pink	as required
♦	U-FLOR-BLOW	Information from floor below	3-green	as required
♦	U-ROOF-ABOV	Information from floor above	9-lt.grey	as required

FILE NAME CONVENTIONS

As explained previously in the section titled Policy on Model Space and Paper Space, it is requires that each CAD file submitted as a project deliverable contain only one drawing model with one title block i.e. one layout sheet per CAD file. Use the following convention shown below.

File name:	=	discipline code	+	drawing number	+ Sheet name
Format:	=	2 characters	+	2 characters	+ Sheet name

Example:

S-01 Main Floor Plan.dwg = Structural code *S-* + First drawing, number + *Main Floor Plan* 01 (10, 100)

Discipline Codes:

A-	Architectural	M-	Mechanical
C-	Civil	P-	Plumbing
E-	Electrical	Q-	Equipment
F-	Fire Protection	S-	Structural
G-	General	T-	Telecommunications
H-	Hazardous Materials	U-	(IHA CPP defined)
I-	Interiors	X-	Other disciplines
L-	Landscape	Z-	Contractor / shop drawings

Note: Raster files are to be per page and named in the above format (Example: S-01 Main Floor Plan.pdf)

POLICY ON CAD FILE TRANSLATION

Error-free AutoCAD Drawing Deliverables:

IHA CPP recognizes that many of its construction service providers do not use the same CAD systems as IHA CPP and FM Department. However, IHA CPP expects that service providers who work with non-AutoCAD file formats will submit DWG formatted CAD files upon project closeout that are fully compliant with all of the standards outlined herein, and which have no significant loss of drawing entities or project data that can result from standard CAD file translation procedures. Central Revit files in replacement of CAD drawings will be accepted by IHA CPP only if Central drawing can be open free of errors and abide to this document.

All CAD drawing submitted at the end of a project must be able to be manipulated using standard AutoCAD drafting procedures. ***Non-compliance with this document may result in the rejection of CAD or Revit files submitted at project closeout in addition to delayed rendering of final project payment***. DXF files or PDFs submitted in place of DWGs, will not be accepted at project closeout as a substitution for CAD file deliverables.

Translation Testing Recommended:

For firms translating their native CAD file format into AutoCAD format also requires delivering error-free CAD files to IHA CPP 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.

SECTION 3 – DELIVERABLES & PROJECT CLOSEOUT

DELIVERABLES

This section is a summary of what is expected from our Consultants in the closeout phase with regard to record/as-built drawings. The section is subdivided as follows:

- Record/As-Built Drawings.
- File Structure Format.
- Drawing Catalog Information in Excel Format.
- Closeout Steps.

Record/ As-Built Drawings:

At the completion of a project, during the closeout phase **as noted in the contract**, the Consultant will provide all closeout deliverables including record/as-built drawings to the assigned IHA CPP Project Manager. The record/as- built drawings shall be provided in the following formats:

CAD Files*	-All floor plan drawings;
Revit File(s)	-Central Revit file;
Raster Files	-All drawings (one page per document);
Drawing Catalog Info	-All information in ASCII format; and
Prints	-All drawings, one sets of full size.

***If some CAD drawings cannot be submitted due to Intellectual Property rights, they must be submitted in Raster format (PDF). All CAD floor plans MUST be submitted – No Exceptions!**

Note: See table below for more detailed information about Record/As-built Drawing formats

Deliverable	File Type and File Extension	File Content
Consultant Transmittal	Adobe .pdf	TRANSMITTALS Consultant's contact information, IHA project number and name, summary of deliverables, along with the submittal date are to be indicated.
CAD Files	AutoCAD .dwg	ALL DRAWING SHEETS A complete set of drawings will be provided not later than AutoCAD 2008 and no earlier than AutoCAD 2020 DWG version. One purged CAD file for each drawing in the drawing set and ***ALL external reference files (XREF's) must be bound to the drawing. See "Policy on External Reference Files"*** The record/as-built drawings will show the condition of the building as it was constructed (not necessarily how it was designed), and shall incorporate all of the modifications made during the construction of the building. Each sheet must be electronically stamped.

Raster Files	Adobe .pdf	<u>ALL DRAWING SHEETS</u> A complete set of drawings will be provided in the raster format. All raster images will be: • Scanned at 300 DPI • De-skewed • Cropped • Right reading (black image on white background) • De-speckled • Landscape format The sheet number and name of the drawing, which is located in the title block, will be used as the save name of the raster file. The raster file name will have the extension of '.pdf '.
Drawing Catalog Information	Microsoft Excel .xls	<u>DRAWING SHEET INFORMATION</u> A document containing information about each drawing in the set. See *Drawing Catalog Info in Microsoft Excel Format* for an example.
Revit Files	Revit .rvt	<u>ALL DRAWING SHEETS</u> If applicable, Building Information Model (BIM) in Revit format must be submitted by firms using Autodesk Revit. Central Revit files will be provided no earlier than Revit 2020 RVT version. See *Central Revit Model Submission.* The Record/As-built Drawings will show the condition of the building as it was constructed (not necessarily how it was designed), and shall incorporate all of the modifications made during the construction of the building. Each sheet must be electronically stamped.
Prints	Hard Copy 1 sets of full size	<u>PAPER PRINTS/PLOTS</u> Prints will be provided for verification and review purposes. Once reviewed the drawings will be referenced when updating the existing condition drawings.

File Structure Format:

The Consultant is required to provide an USB or FTP containing CAD/ Revit drawings, raster images, and catalog drawing information as mentioned in the previous section *Record/As-built Drawings.*

A single folder will be created with IHA CPP Project Number and IHA CPP Project Name. This file will contain the deliverables Transmittal, CAD Folder, PDF Folder, RVT Folder and Catalog Information List. The file structure will be in the following format:

> 9909117 KGH Energy Upgrade:
> a. Transmittal Letter (.pdf);
> b. CAD Folder;
> c. PDF Folder;
> d. RVT Folder; and
> e. Catalog Information (.xls).

CAD and PDF Folder Structure
The structure within (b) CAD Folder and (c) PDF Folder will contain 4 characteristic discipline codes, which will contain the corresponding drawings. Structure as followed:

b. CAD Folder / c. PDF Folder
> i. Arch.

      ii.   Civi.
     iii.   Elec.
     iv.   Mech.
      v.   Plum.
     vi.   Struc.

Note: All folders may not be required for each submitted project. Revit Folder (d.) will contain the central file along with another folder containing supporting links.

Drawing Catalog Information in Microsoft Excel Format:

Consultant is required to provide drawing catalog information as mentioned in the previous section *Record/As-built Drawings.* The information is to be placed in Microsoft Excel spreadsheet file. A separate record must be created for each sheet submitted. If a sheet has information for more than one floor or building, create another record.

Example of spreadsheet with information entered:

HSA Code	Site Code	Project Number	Drawing Date	Drawing Consultant	Drawing Number	Project Name	Drawing Description
OK	KGH	9909117	June 25, 2011	Keen Engineering	A-01	Energy Upgrade	Main Floor Plan

Note: The drawing date is the Record/As-built drawing date and not the date drawn.

A partial list of HSA and Site Codes can be found in *Appendix C.* Contact your IHA CPP Project Manager for missing Site Code and the Building Code that pertains to your project.

CLOSEOUT STEPS

- Create 2 copies of the following files. One copy will be placed on an USB and submitted to the site and one USB or FTP copy sent to the assigned IHA CPP Project Manager, containing the specified information:
  - Consultant's Transmittal Letter (.pdf);
  - All record/as-built drawings in an AutoCAD format (.dwg);
  - All record/as-built drawings in PDF file format (Raster files);
  - If applicable, detached central record/as-built drawings in Revit file (.rvt);
  - Drawing Catalog Information file (excel format); and
  - If applicable, Operating and Maintenance Manual.
- The Consultants will forward the USB or FTP to IHA CPP Project Manager and Architectural Tech for review for compliance to the IHA BIM & CAD Standards and for inclusion into the existing condition drawings.
- A signed hard copy drawing is to be submitted directly to the site.
- Two complete hard copies of the Operating and Maintenance Manuals including their USB's/ CD's are to be forwarded directly to the site.

SECTION 4 – CAD QUALITY ASSURANCE CHECKLIST

The following checklist should be used to ensure that the submitted drawings conform to IHA CPP CAD Standards.

CHECKLISTS:

File Format and Setup

- ☐ Electronic File Format
- ☐ Scale, Units & Tolerances
- ☐ Blocks
- ☐ Cover Sheet & Title Blocks
- ☐ Policy on Model Space and Paper Space
- ☐ Policy on External Reference Files (XREFs)

Revit Submission

- ☐ Level of model detail
- ☐ Synchronize of Central file
- ☐ Major clash free errors
- ☐ Purged and deleted unused components

Layering

- ☐ Layer Name Formatting
- ☐ Layer Attributes (Colors, Pens, Linetypes)

File Name Conventions

- ☐ Discipline Codes
- ☐ Drawing Numbers
- ☐ Drawing Title Name

Policy on CAD File Translation

- ☐ Full AutoCAD Compliance
- ☐ Translation Testing Procedures (If Applicable)

Project Closeout

- ☐ USB's (or FTP- only excepted by IHA CPP) containing:
  - o Consultant's Transmittal Letter;
  - o All project Record/As-built CAD Drawings in DWG format;
  - o All project Record/As-built Drawings in PDF format;
  - o If applicable, Central Record/As-built Drawings in Revit format;
  - o Drawing catalogue file in MS Excel format; and
  - o Deliverables in File Structural Format.
- ☐ A signed As-Built Hard Copy Drawing for site (Full Size, min. A1 metric)
- ☐ If applicable, 2 hard sets of compete Operation and Maintenance Manuals including 1 separate USB's/ CD's for site

DXF files or PDFs submitted in place of DWGs, will not be accepted at project closeout as a substitution for DWG CAD files deliverables.

APPENDIX A – DEFINITIONS

INTENDED USE OF DRAWINGS

Interior Health Authority, Capital Planning and Projects maintains two types of CAD files.

1. Composite drawings (existing condition based on the record/as-built drawings); and
2. Record/as-built drawings (includes project as-built drawings and raster files).

COMPOSITE RECORD DRAWINGS

[Maintained by IHA CPP's Architectural Technologist]
The **composite record drawings,** are used by IHA CPP to track space utilization and the most current configuration of a given building by floor. These drawings will be provided to the Consultant for use as background drawings for new projects. IHA CPP maintains these drawings by updating the information as construction projects are completed.

RECORD/ AS-BUILT DRAWINGS

[Typically produced by the Design Professional responsible for the construction/ working drawings]
The **record/as-built drawings** from a completed construction project are an updated version of the construction/working drawings. These drawings are to depict the as-built condition of the project/building. The information from the record/as-built drawings is used by IHA CPP to update the composite record drawings. The record/as-built drawings are then archived for historical purposes as a record of a completed project. Portions of the record/as-built drawings may be used as a base or background drawing in future renovation projects.

RASTER FILES

[Produced by scanning Vendor with originals supplied by the Design Consultant]
The **raster files** are used to archive project information. In the past, reproducible drawings (usually called 'Mylar's') from completed projects were maintained in hang-file cabinets as a record of a completed project. The raster files are meant to replace these reproducible drawings, and are now maintained in a raster format on a networked computer system with viewing and printing capabilities. As with the reproducible drawing, the raster files are not altered.

APPENDIX B – INTERNAL IHA CPP APPLICATIONS

IHA CPP and FM utilizes or will in the future the following CAD tools:

Product	Purpose
AutoCAD 2020 by Autodesk AutoCAD converse compliant: AutoCAD Lite	• Maintain Existing Composite Record Drawings • Develop Record/As-built Drawings & •
Revit 2020 by Autodesk Revit converse compliant: Revit Lite	• Maintain Existing Composite Record Drawings • Develop Record/As-built Drawings & •
Acrobat Viewer 8 by Adobe	• Gives users' access to Hard Copy PDFs from the central file server.
DWG TrueView by Autodesk	• Gives Project and Plant Managers access to drawing from the central file server.

APPENDIX C – HSA, SITE & CODES

HSA CODES

HSA CODE	HSA
EK	East Kootenays
KB	Kootenay Boundary
OK	Okanagan
TCS	Thompson, Cariboo, Shuswap

SITE CODES

SITE CODE	SITE NAME
AHH	Ashcroft Hospital and Community Health Care Centre
AHH	Jackson House
ALH	Arrow Lakes Hospital
ALR	Minto House
AOP	Alexis Creek Health Centre
BAC	Barriere Health Centre
BDH	Boundary Hospital
BKN	Brookhaven Care Centre
BOP	Blue River Health Centre
BPL	Bastion Place
CBK	Cranbrook Health Centre
CDF	Adult Day Program
CDF	Chase Health Clinic
CDH	Castlegar and District Community Health Centre
CDH	Castlegar Mental Health
CGH	Gillis House
CHC	Castlegar Health Centre
CLH	Columbia House (On Hospital Site)
CLO	Kootenay Clover Club House
CMH	Cariboo Memorial Hospital
CMN	Creston Mental Health Centre
COH	Central Okanagan Hospice House
CRP	Corporate Office, OK
CSC	Granby Clubhouse
CTW	Cottonwoods Care Centre
CVH	Creston Valley Hospital & Health Centre
CVL	Columbia View Lodge
CWC	East Kootenay Administration Office
CWC	Cranbrook Wellness Centre
DAD	Day-Break Adult Day Centre
DEN	Deni House
DHH	Dr. Helmcken Memorial Hospital and Health Centre
DLJ	David Lloyd Jones Home
DUR	Henry Durand Manor
EDH	Enderby Community Heath Centre
EDR	Edgewood Health Centre
EHC	Elkford Health Care Centre
EKH	East Kootenay Regional Hospital
ESC	East Shore Community Health Centre
EVH	Elk Valley Hospital
FFC	Friend of Friends Clubhouse
FHC	Fernie Health Centre (in Elk Valley Hospital)
FVP	Forest View Place
FWG	Dr. F.W. Green Memorial Home
GDH	Golden & District Hospital
GHS	Golden & District Home Support
GIF	The Gateby
GLD	Golden Health Centre
GMH	Boundary Mental Health & Addictions Services
GWC	Gordon Road Wellness Centre

GWY	Gateway Crisis Stabilization Unit
HBH	Harbour House
HLS	Hillside Centre - Interior Adult Psychiatric Centre
IDH	Invermere & District Hospital
IHC	Invermere Health Centre (Located in Hospital)
KBA	KBHSA Corporate Office
KBH	Kootenay Boundary Regional Hospital
KGH	Kelowna General Hospital
KLH	Kootenay Lake Hospital
KLH	Kootenay Lake Hospital Annex
KSH	Kimberley Special Care Home
KWC	Kiro Wellness Centre (Formerly Kiro Manor)
LIH	Lillooet Addiction Services
LIH	Lillooet Home & Community Care
LIH	Lillooet Hospital & Health Centre (Including Sumac Suites)
LLC	Logan Lake Health Centre
MBC	May Bennett Wellness Centre
MCC	Queen Victoria Hospital Residential Cottages
MCK	McKim Cottage
MKP	McKinney Place Extended Care
MKP	Speech Language Services
MSE	Fidyk House
MSL	Mill Site Lodge
MVL	Mountain View Lodge
NHS	Noric House
NJM	Nelson Jubilee Manor
NVH	Nicola Valley Hospital and Health Centre
OKH	Okanagan House
OLH	Oliver Health Centre
OSH	Osoyoos Health Centre
OVH	Overlander Extended Care
PGH	Princeton General Hospital
POL	Polson Extended Care
PON	Ponderosa Lodge
POP	Poplar Ridge Pavilion - located at KBRH
PRC	Princeton Health Centre
PRH	Penticton Regional Hospital
PVC	Armstrong Community Services
PVC	Pleasant Valley Health Centre
PVM	Pleasant Valley Manor (on PVHC site)
PVP	Parkview Place
QVH	Queen Victoria Hospital and Health Centre
RBH	Bateman House (Drop in Center)
RIH	Royal Inland Hospital
RML	Cranbrook Home Support Services
RWL	Ridgewood Lodge
SBC	Sunnybank Retirement Centre
SBH	St. Bartholomew's Health Centre
SCA	South Cariboo Health Centre and Fischer Place
SCH	Res Care: Slocan Community Health Centre
SCH	Slocan Community Health Centre
SGH	Dr. Andrew Pavilion
SHC	Summerland Health Centre
SHL	South Hills Tertiary Psychiatric Rehabilitation Centre
SHL	Apple Lane Tertiary Mental Health Geriatric Unit
SLH	Shuswap Lake General Hospital
SMN	Hardy View Lodge - located at Boundary Hospital
SMP	Clinical Academic Campus
SOG	South Okanagan General Hospital
SSH	South Similkameen Health Centre
SVL	Swan Valley Lodge
SWH	Sparwood Primary Health Care
TAM	Tamarack Cottage
TCC	Trinity Care Centre

TLM	Three Links Manor
TRP	Talarico Place
VCC	Vernon Community Care Health Services
VHK	Kaslo Primary Health Centre
VHK	Victorian Community Health Centre of Kaslo
VJH	Vernon Jubilee Hospital (including Polson Tower)
WCN	West Chilcotin Health Centre
WLD	Williams Lake Dialysis
WLV	Willowview

Contact your IHA CPP Project Manager for the standard building identification codes that pertain to your project.

APPENDIX D – IHA CPP Standard Layer List

IHA CPP STANDARD LAYER LIST (CONSTUCTION PROJECTS)

CORE		LAYER	ATTRIBUTE
♦	NAME	Description	Linetype
Architectural			
♦	A-ANNO-NOTE	Job Notes	as required
	A-ANNO-REDL	Redlines	as required
♦	A-ANNO-SYMB	Symbols	as required
	A-ANNO-LEGN	Legends and schedules	as required
	A-ANNO-DIMS	Dimensions	as required
	A-ANNO-TTLB	Border and Title Block	as required
♦	A-ANNO-TEXT	Text	as required
	A-ANNO-NPLT	Construction lines, nonplotting information, viewports	as required
	A-ANNO-KEYN	Key notes	as required
	A-AREA	Area calculation boundary lines	as required
	A-AREA-IDEN	Room numbers, tenant identifications, area calcs	as required
	A-AREA-OCCP	Occupant or employee names	as required
	A-AREA-PATT	Area cross hatching	as required
♦	A-AREA-SPCE	Shafts	as required
	A-CLNG	Ceiling information	as required
♦	A-CLNG-GRID	Ceiling grid	as required
	A-CLNG-PATT	Ceiling patterns	as required
	A-CLNG-SUSP	Suspended elements	as required
♦	A-DOOR-EXTR	Exterior Door	as required
♦	A-DOOR-INTR	Interior Door	as required
	A-DOOR-IDEN	Door number, hardware group, etc.	as required
	A-EQPM-CLNG	Ceiling-mounted or suspended equipment	as required
♦	A-EQPM-FIXD	Fixed equipment	as required
	A-EQPM-IDEN	Equipment identification numbers	as required
♦	A-EQPM-MOVE	Moveable equipment	as required
♦	A-FLOR-EVTR	Elevator cars and equipment	as required
	A-FLOR-HRAL	Stair and balcony handrails, guard rails	as required
♦	A-FLOR-IDEN	Room numbers, names, targets, etc.	as required
♦	A-FLOR-LEVL	Level changes, ramps, pits, depressions	as required
	A-FLOR-PATT	Paving, tile, carpet patterns	as required
	A-FLOR-SIGN	Signage	as required
♦	A-FLOR-STRS	Stair treads, escalators, ladders	as required
	A-FLOR-TPTN	Toilet partitions	as required
♦	A-FLOR-WDWK	Architectural woodwork (field-built cabs/counters)	as required
♦	A-GLAZ-EXTR	Exterior Windows	as required
♦	A-GLAZ-INTR	Interior Windows	as required
	A-GLAZ-FULL	Full-height glazed walls and partitions	as required
	A-GLAZ-IDEN	Window number	as required
	A-GLAZ-PHRT	Windows and partial-height glazed partitions	as required
	A-GLAZ-SILL	Window sills	as required
♦	A-ROOF	Roof line	as required
	A-ROOF-LEVL	Level changes	as required
	A-ROOF-OTLN	Roof outline	as required

	A-ROOF-PATT	Roof surface patterns, hatched	as required
♦	A-WALL-EXTR	Exterior Building Wall	as required
	A-WALL-FIRE	Fire wall patterning	as required
	A-WALL-FULL	Full-height walls, stairs and shaft walls	as required
	A-WALL-HEAD	Door / window headers (on reflected ceiling plans)	as required
♦	A-WALL-INTR	Interior Building Wall	as required
	A-WALL-JAMB	Door / window jambs (on floor plans only)	as required
♦	A-WALL-MOVE	Moveable partitions	as required
	A-WALL-PATT	Wall insulation, hatching and fill	as required
♦	A-WALL-PRHT	Partial-height walls (on floor plans only)	as required

Civil

C-ANNO-DIMS	Dimensions	as required
C-ANNO-LEGN	Legends and schedules	as required
C-ANNO-NOTE	Notes	as required
C-ANNO-SYMB	Symbols	as required
C-ANNO-TEXT	General Text	as required
C-ANNO-TTLB	Border and Title Block	as required
C-BLDG	Proposed building footprints	as required
C-COMM	Site communication/telephone poles, boxes, towers	as required
C-FIRE	Fire protection-hydrants, connections	as required
C-NGAS	Natural gas-manholes, meters, storage tanks	as required
C-NGAS-UNDR	Natural gas-underground lines	as required
C-PKNG	Parking lots	as required
C-PKNG-ISLD	Parking islands	as required
C-PKNG-STRP	Parking lot striping, handicapped symbol	as required
C-PROP	Property lines, survey benchmarks	as required
C-PROP-BRNG	Bearings and distance labels	as required
C-PROP-CONS	Construction controls	as required
C-PROP-ESMT	Easements, rights-of-way, setback lines	as required
C-ROAD	Roadways	as required
C-ROAD-CNTR	Center lines	as required
C-ROAD-CURB	Curbs	as required
C-SSWR	Sanitary sewer-manholes, pumping stations	as required
C-SSWR-UNDR	Sanitary sewer-underground lines	as required
C-STRM	Storm drainage catch basins, manholes	as required
C-STRM-UNDR	Storm drainage pipe-underground	as required
C-TOPO	Proposed contour lines and elevations	as required
C-TOPO-RTWL	Retaining wall	as required
C-TOPO-SPOT	Spot elevations	as required
C-WATR	Domestic water- manholes, pumping, storage	as required
C-WATR-UNDR	Domestic water-underground lines	as required

Electrical

E-ANNO-TEXT	General Text	as required
E-ANNO-SYMB	Symbols	as required
E-ANNO-LEGN	Legends and schedules	as required
E-ANNO-DIMS	Dimensions	as required
E-ANNO-TTLB	Border and Title Block	as required
E-ANNO-NOTE	Job Notes	as required
E-1LIN	One-line diagrams	as required
E-ALRM	Miscellaneous alarm system	as required

E-AUXL	Auxiliary systems	as required
E-CCTV	Closed-circuit TV	as required
E-COMM	Telephone, communications outlets	as required
E-CRTL	Electric control system	as required
E-CRTL-DEVC	Auxiliary systems	as required
E-CRTL-WIRE	Miscellaneous alarm system	as required
E-INTC	Construction controls	as required
C-PROP-ESMT	Easements, rights-of-way, setback lines	as required
E-LITE	Lighting	as required
E-LITE-CIRC	Lighting circuits	as required
E-LITE-CLNG	Ceiling-mounted lighting	as required
E-LITE-EMRG	Emergency lighting	as required
E-LITE-EXIT	Exit lighting	as required
E-LITE-FLOR	Floor-mounted lighting	as required
E-LITE-IDEN	Luminaire identification and text	as required
E-LITE-JBOX	Junction box	as required
E-LITE-NUMB	Lighting circuit numbers	as required
E-LITE-ROOF	Roof lighting	as required
E-LITE-SPCL	Special lighting	as required
E-LITE-SWCH	Lighting-switches	as required
E-LITE-WALL	Power	as required
E-POWR	Floor-mounted lighting	as required
E-POWR-BUSW	Busways	as required
E-POWR-CABL	Cable trays	as required
E-POWR-CIRC	Power circuits	as required
E-POWR-CLNG	Power-ceiling receptacles and device	as required
E-POWR-EQPM	Power equipment	as required
E-POWR-FEED	Feeders	as required
E-POWR-IDEN	Power identification, text	as required
E-POWR-JBOX	Junction box	as required
E-POWR-NUMB	Power circuit numbers	as required
E-POWR-OTLN	Power outline for backgrounds	as required
E-POWR-PANL	Power panels	as required
E-POWR-SWBD	Power switchboards	as required
E-POWR-URAC	Underfloor raceways	as required
E-POWR-WALL	Power wall outlets and receptacles	as required
E-RISR	Riser diagram	as required
E-SOUN	Sound/PA system	as required

Fire Protection

F-ANNO-TEXT	General Text	as required
F-ANNO-SYMB	Symbols	as required
F-ANNO-LEGN	Legends and Schedules	as required
F-ANNO-DIMS	Dimensions	as required
F-ANNO-TTLB	Border and Title Block	as required
F-ANNO-NOTE	Job Notes	as required
F-CO2S CO2	System	as required
F-CO2S-EQPM	CO_2 equipment	as required
F-CO2S-PIPE CO2	Sprinkler piping	as required
F-HALN	Halon	as required
F-HALN-EQPM	Halon equipment	as required

F-HALN-PIPE	Halon Piping	as required
F-IGAS	Inert gas	as required
F-IGAS-EQPM	Inert gas equipment	as required
F-IGAS-PIPE	Inert gas piping	as required
F-PROT	Fire protection systems	as required
F-PROT-ALRM	Fire alarm	as required
F-PROT-EQPM	Fire system equipment (hose cabinet/extinguishers)	as required
F-PROT-SMOK	Smoke detectors/heat sensors	as required
F-SPRN	Fire protection sprinkler system	as required
F-SPRN-CLHD	Sprinkler head-ceiling	as required
F-SPRN-OTHD	Sprinkler head-other	as required
F-SPRN-PIPE	Sprinkler piping	as required
F-SPRN-STAN	Sprinkler system standpipe	as required
F-STAN	Fire protection standpipe system	as required

Interior

I-ANNO-TEXT	General Text	as required
I-ANNO-SYMB	Symbols	as required
I-ANNO-LEGN	Legends and schedules	as required
I-ANNO-DIMS	Dimensions	as required
I-ANNO-TTLB	Border and Title Block	as required
I-ANNO-NOTE	Job Notes	as required
I-EQPM	Equipment	as required
I-EQPM-MOVE	Moveable equipment	as required
I-FURN	Furniture	as required
I-FURN-CASE	Cabinetry / casement	as required
I-FURN-CHAR	Chairs and other seating	as required
I-FURN-FILE	File cabinets	as required
I-FURN-FREE	Furniture - freestanding (desks, credenzas, etc.)	as required
I-FURN-IDEN	Furniture numbers	as required
I-FURN-PLNT	Plants	as required
I-FURN-PNLS	Furniture system panels	as required
I-FURN-POWR	Furniture system-power designation	as required
I-FURN-WKSF	Furniture system work surface components	as required

Landscaping

L-ANNO-TEXT	General Text	as required
L-ANNO-SYMB	Symbols	as required
L-ANNO-LEGN	Legends and schedules	as required
L-ANNO-TTLB	Border and Title Block	as required
L-ANNO-NOTE	Job Notes	as required
L-PLNT	Plant and landscape materials	as required
L-PLNT-BEDS	Rock, bark, and other landscaping beds	as required
L-PLNT-GRND	Ground cover and vines	as required
L-PLNT-PLAN	Planting plants	as required
L-PLNT-TREE	Trees	as required
L-PLNT-TURF	Lawn areas	as required
L-SITE	Site improvements	as required
L-SITE-BRDG	Bridges	as required
L-SITE-DECK	Decks	as required
L-SITE-FENC	Fencing	as required
L-SITE-FURN	Site furnishings	as required

L-SITE-PLAY	Play structures	as required
L-SITE-POOL	Pools and spas	as required
L-SITE-SPRT	Sports fields	as required
L-SITE-STEP	Steps	as required
L-SITE-WALL	Walls	as required
L-WALK	Walks and steps	as required
L-WALK-PATT	Walks and steps-cross-hatch patterns	as required
Mechanical		
M-ANNO-TEXT	General Text	as required
M-ANNO-SYMB	Symbols	as required
M-ANNO-LEGN	Legends and schedules	as required
M-ANNO-TTLB	Border and Title Block	as required
M-ANNO-NOTE	Job Notes	as required
M-CMPA	Compressed air systems	as required
M-CMPA-CEQP	Compressed air equipment	as required
M-CMPA-CPIP	Compressed air piping	as required
M-CMPA-PEQP	Process air equipment	as required
M-CMPA-PPIP	Process air piping	as required
M-CONT	Controls and instrumentation	as required
M-CONT-THER	Thermostats	as required
M-CONT-WIRE	Low voltage wiring	as required
M-CWTR	Chilled water systems	as required
M-CWTR-EQPM	Chilled water equipment	as required
M-CWTR-PIPE	Chilled water piping	as required
M-EXHS	Exhaust system	as required
M-EXHS-DUCT	Exhaust system ductwork	as required
M-EXHS-EQPM	Exhaust system equipment	as required
M-EXHS-RFEQ	Rooftop exhaust equipment	as required
M-FUME-EQPM	Fume hoods	as required
M-FUME-EXHS	Fume hood exhaust system	as required
M-HOTW	Hot water heating system	as required
M-HOTW-EQPM	Hot water equipment	as required
M-HOTW-PIPE	Hot water piping	as required
M-HVAC	HVAC system	as required
M-HVAC-CDFF	HVAC ceiling diffusers	as required
M-HVAC-DUCT	HVAC ductwork	as required
M-HVAC-EQPM	HVAC equipment	as required
M-HVAC-ODFF	HVAC other diffusers	as required
M-HVAC-RDFF	Return air diffusers	as required
M-HVAC-SDFF	Supply diffusers	as required
M-MDGS	Medical gas systems	as required
M-MDGS-EQPM	Medical gas equipment	as required
M-MDGS-PIPE	Medical gas piping	as required
M-SPCL	Special systems	as required
M-SPCL-EQPM	Special equipment	as required
M-SPCL-PIPE	Special piping	as required
M-STEM	Steam systems	as required
M-STEM-CONP	Steam systems condensate piping	as required
M-STEM-EQPM	Steam systems equipment	as required
M-STEM-HPIP	High pressure steam piping	as required

	M-STEM-LPIP	Low pressure steam piping	as required
	M-STEM-MPIP	Medium pressure steam piping	as required
Plumbing			
	P-ANNO-TEXT	General Text	as required
	P-ANNO-SYMB	Symbols	as required
	P-ANNO-LEGN	Legends and schedules	as required
	P-ANNO-TTLB	Border and Title Block	as required
	P-ANNO-NOTE	Job Notes	as required
	P-ACID	Acid, alkaline, oil waste systems	as required
	P-ACID-PIPE	Acid, alkaline, oil waste piping	as required
	P-DOMW	Domestic hot and cold water systems	as required
	P-DOMW-CPIP	Domestic cold water piping	as required
	P-DOMW-EQPM	Domestic hot and cold water equipment	as required
	P-DOMW-HPIP	Domestic hot water piping	as required
	P-DOMW-RISR	Domestic hot and cold water risers	as required
	P-EQPM	Plumbing - miscellaneous equipment	as required
♦	P-FIXT	Plumbing fixtures, toilets, sinks	as required
	P-SANR	Sanitary drainage	as required
	P-SANR-EQPM	Sanitary equipment	as required
	P-SANR-FIXT	Plumbing fixtures	as required
	P-SANR-FLDR	Floor drains	as required
	P-SANR-PIPE	Sanitary piping	as required
	P-SANR-RISR	Sanitary risers	as required
	P-STRM	Storm drainage system	as required
	P-STRM-PIPE	Storm drain piping	as required
	P-STRM-RFDR	Roof drains	as required
	P-STRM-RISR	Storm drain risers	as required
Structural			
	S-ANNO-TEXT	General Text	as required
	S-ANNO-SYMB	Symbols	as required
	S-ANNO-LEGN	Legends and schedules	as required
	S-ANNO-DIMS	Dimensions	as required
	S-ANNO-TTLB	Border and Title Block	as required
	S-ANNO-NOTE	Job Notes	as required
	S-BEAM	Beams	as required
♦	S-COLS	Columns	as required
	S-FNDN	Foundation	as required
	S-FNDN-PILE	Piles, drilled piers	as required
	S-FNDN-RBAR	Foundation reinforcing	as required
♦	S-GRID	Column grid	as required
	S-GRID-DIMS	Column grid dimensions	as required
	S-GRID-EXTR	Column grid outside building	as required
	S-GRID-IDEN	Column grid tags	as required
	S-GRID-INTR	Column grid inside building	as required
	S-WALL	Structural bearing or shear walls	as required
Telecom			
	T-ANNO-TEXT	General Text	as required
	T-ANNO-SYMB	Symbols	as required
	T-ANNO-LEGN	Legends and Schedules	as required
	T-ANNO-TTLB	Border and Title Block	as required

T-ANNO-NOTE	Job Notes	as required
T-CABL	Cable plan	as required
T-DIAG	Diagram	as required
T-EQPM	Equipment plan	as required
T-JACK	Data/telephone jacks	as required

User Defined

♦	U-CRTN-PTNT	Patient Curtains	as required
♦	U-ROOF-ABOV	Information from floor above	as required
♦	U-FLOR-BLOW	Information from floor below	as required
	U-FLOR-MGDE	Mechanical floor guide walk	as required
	U-SPAC-ROOM	Net room area boundaries	as required
	U-SPAC-GROS	Gross room area boundaries	as required