HARVARD UNIVERSITY

UNIVERSITY PLANNING OFFICE

Space Documentation Requirements

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INTRODUCTION

This standard has been developed to inform Harvard staff and consultants about how space in Harvard facilities is to be identified, measured, classified, and documented. Work products are designed to facilitate the import of space information into existing space and facility management systems.

The Postsecondary Education Facilities Inventory and Classification Manual (FICM) 2006 Edition, published by the National Center for Educational Statistics, is the foundation for space measurement and classification at Harvard.

This document clarifies and supplements the FICM standard in the following areas:

        (1) Spatial Unit Definition, Identification and Measurement
        (2) CAD Production
        (3) Space Classification
        (4) Final Product Submittal

CAD layer names specified in this document are based on the United States National CAD Standards, published by the buildingSMART Alliance, modified to include some Harvard specific layers.

All specified materials must be submitted to the appropriate Harvard project manager or representative in accordance with production standards and special instructions described throughout this document before closeout and final payment of space documentation projects can be rendered.

A signed copy of the Electronic File Quality Assurance Checklist (Appendix B) must also be submitted with final work products at project closeout. Thereby, the vendor is assuring that all materials adhere to the standards and guidelines set forth in this document.

Please note that Harvard specifies error-free file compatibility with AutoCAD software. If a vendor must translate their native CAD file format into AutoCAD format, please refer to Appendix C for Harvard's policy on CAD file translation.

The University Planning Office is responsible for the maintenance of this standard. Please direct any questions or comments about this document to the address below:

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1. Spatial Unit Definitions, Identification and Measurement

1.1 Building

Definition. A building is defined as a roofed structure for permanent or temporary shelter of persons, animals, plants, materials or equipment. A building may encompass many different types of structures including research vessels, aquarium structures and trailers that are not on wheels and are used for offices, residences and storage.

The following types of buildings are typically not inventoried by Harvard if they do not house functions considered part of the institution's academic mission:

- Investment properties that are buildings used only for revenue generation and do not have institutional uses.
- Hospitals not owned by the institution, except for any space in the hospital used, leased, or controlled by the institution
- Public schools not owned by the institution but used for practice teaching
- Federal contract research centers identified by the Office of Management and Budget.

Minor structures are considered buildings and include those attached to a foundation, with a roof, and serviced by a utility (such as telephone) other than lighting and require maintenance and repair. Example of a minor structure is an information or traffic booth.

When Harvard occupies space not owned by the institution or that is shared with other non-Harvard tenants, only that portion of the building leased or controlled by the institution and it's prorate share of gross area, assignable area, and non-assignable area is typically inventoried.

Identification. Unique identification of buildings is critical to space documentation and tracking methods. A list of buildings owned and leased by Harvard is maintained in the Capital Project's building database. This list tracks building attributes that can be provided on request. Two attributes from the CAPS building database that are to be included in space information data sets are:

> **Building Number** – Building Numbers must match the last five digit segment in Harvard's chart of accounts, called the Root Number. All building Root numbers begin with zero (0). (Example: 06043 = Holyoke Center Office Tower)

> **Building Name** – This is the primary name of a building as defined by the CAPS system (Example: Holyoke Center Office Tower)

Measurement. Generally speaking, Harvard measures gross building area to the outer face of exterior walls, excluding major vertical penetration areas (e.g. atriums), low height spaces (e.g. attic eaves), unexcavated basement areas, and other significant voids.

The sum of all exterior gross floor areas for the building, minus the sum of all gross exclusion areas on each floor, equals the total FICM Gross Building Area, expressed in square feet. Refer to Chapter 3 Section 2.1 of the 2006 FICM document for a full definition of the Gross Area measurement.

1.2 Floor

Definition. A floor is defined as a structure consisting of a space or set of spaces on a single level along a vertical scale. If there is a significant change in elevation across the floor with stairs and ramps, it is left to the discretion of the Harvard building owner as to whether they constitute the same floor or should be identified separately.

Floors may be split within a structure if the structure is comprised of more than one building. Holyoke Center is the primary example, with some floors split between the Health Services building and the Tower building. For reporting purposes the Holyoke Center structure is considered a complex.

Identification.   Unique floor identification is critical to space documentation and tracking methods. Unique floor identifiers must be recorded on CAD plans as text labels and correspond with those listed in the space inventory.

The following attributes will need to be tracked for any floor being inventoried:

> **Floor Number** – The Floor Number is typically an abbreviated alphanumeric string that is 2 to 3 characters in length. It reflects how the Harvard owner refers to the floor. Generally, floors should be numbered sequentially upwards from the first floor (01, 02, 03, etc.) and downward from the first floor (-1, -2, -3, etc). Alpha characters are sometimes added to indicate specific floor types (e.g. 01M for first floor mezzanine, or 10P for tenth floor penthouse.)
>
> Specific floor identification standards vary by Harvard building owner. If no other instructions are provided to identify floors in CAD drawings or space inventory lists, follow the instructions provided above and in Section 2.2.

> **Floor Name** – This is a text description of the floor that correlates to floor number and/or how the owner refers to the floor. For example: Basement, First, Second, Second Mezzanine, etc.

Building Number + Floor Number should constitute a unique identifier for a floor in a building.

Measurement. Unless otherwise instructed, only one floor plan should be represented per CAD drawing file. All gross floor area boundaries and distinct exclusion areas must be graphically delineated in the CAD plan using closed polygon drawing objects.

Refer to Chapter 3 Section 2.1 of the 2006 FICM document for a full definition of the Gross Area measurement.

Generally speaking, Harvard measures gross floor area to the outer face of exterior walls, excluding major vertical penetration areas (e.g. atriums), low height spaces (e.g. attic eaves), unexcavated basement areas, and other significant voids. The sum of all exterior gross floor areas for the floor, minus the sum of all gross exclusion areas for the floor, equals the total FICM Gross Floor Area, expressed in square feet.

In buildings not owned by Harvard where partial floors are occupied by a Harvard party, gross floor area measurement methods may vary. Special instructions for measuring will be provided in those cases.

1.3 Rooms (Spaces and Measured Areas)

Definition. A room is floor area usually defined by walls or other partitions. It may or may not be fully enclosed space, but must have an enclosed physical boundary represented as a closed polygon object in a CAD drawing.

Harvard splits rooms into two categories for space tracking purposes:

> **Spaces –** Rooms/areas that are assignable to tenants.

> **Measured Areas** – Rooms/areas that are not assignable to specific tenants, and that generally serve a common floor or building function (e.g. public circulation; public bathrooms; mechanical rooms).

Identification. Rooms must be uniquely identified on each floor in order to track corresponding attributes in an inventory. Unique room numbers (identifiers) must be generated based on signage when existing. Space and measured area identifiers must be tracked on separate CAD layers (see Section 2.3) and in separate inventory lists when both are being documented (see Section 4.2).

These are the minimum attributes to be collected that describe location identification:

> **Space Signage / Measured Area Signage –** Door or wall signage stating the room number, expressed as an alphanumeric string (e.g. 103, 203A, or E2). It should be unique to the floor, but may sometimes not be unique, if signage numbers are duplicated.   Duplicate room number signage should be recorded as encountered. May be left blank when no signage exists.

> **Space Number / Measured Area Number** – This represents the unique room identifier for space inventory purposes. It is generally based on existing room number signage described above, supplemented by assigned ids for rooms that have no signage. Harvard owners may have different standards for assignment of room numbers that do not correspond to signage. Standard methods for assignment of room numbers may also vary for spaces that are assignable versus measured areas that are not assignable.

> *Room Numbering Rules.*   Unless special instructions are provided by the Harvard owner, numbers should be assigned using these rules:

> *General* –
> 1. The first digit of the room number should typically be used to represent floor level.
> 2. Rooms should be logically numbered to facilitate spatial orientation and way-finding.
> 3. Assigned room numbers should always respect the existing room number schema, if one exists, and should also take into consideration building systems/operations, building programs, and the numbering schema of connecting buildings.
> 4. Where no room numbering schema already exists, rules outlined in this section should apply.

For Spaces Only –
1. Number spaces sequentially using x01-x99 in smaller buildings (where x represents the floor number) or using x001-x999 in larger buildings.
2. Assign even spaces on the left side of a corridor and odd spaces on the right side, unless an existing room number schema exists that is opposite.
3. Leave occasional gaps in number sequencing to allow for subdivision or reconfiguration of space.
4. Alpha designators may be assigned within suites for rooms that are accessed from a main space (e.g. 101A and 101B may be assigned if accessed through room 101). Similarly, alpha-numeric may also be used sparingly if necessary (e.g. 101A1 and 101A2 may be assigned if accessed through room 101A.)

For Measured Areas Only –
1. Measured Area room numbers should be constructed as follows:
Floor Number(x) + Alpha Character for Room Type + Type Count

Room Type (Alpha Character)	Examples
Building Service Areas	
- Janitor Closets (J)	xJ01, xJ02, etc
- Restrooms (R)	xR01, xR02, etc
Mechanical Areas	
- Electrical Closets (E)	xE01, xE02, etc
- Mechanical Rooms (M)	xM01, xM02, etc
- Data/Voice/Tel Closets (D)	xD01, xD02, etc
- Utility / Shaft / Chase (U)	xU01, xU02, etc
- Firm Alarm Rooms (F)	xF01, xF02, etc
Circulation Areas	
- Vestibule / Lobby (V)	xV01, xV02, etc
- Corridors (C)	xC01, xC02, etc
- Stairs (S)	xS01, xS02, etc
- Elevators (EV)	xEV01, xEV02, etc
- Loading Docks (LD)	xLD01, xLD02, etc

Space Description / Measured Area Description – This may be used to capture the generic use of a room (e.g. "Women's Room") or the specific name of a room (e.g. "Annenburg Hall"). This may also be used for general notes about use, finish, content, or occupant, etc (e.g. "locked – unable to verify space").

Measurement. Every room must be drawn on a CAD plan represented as a closed polygon drawing object. Space and measured area polygons must be organized on separate layers in the drawing (see Section 2.3).

Refer to Chapter 3 Section 2.2 through 2.6 of the 2006 FICM document for a full definition of Room Area measurements.

Generally speaking, Harvard draws room areas by snapping to the inside face of surfaces that form the boundaries of the designated areas (such as walls), excluding areas that are also excluded from the gross floor area. Room measurements are expressed in net square feet (NSF).

Open areas that accommodate more than one type of space use should be further broken down into separate abutting polygons, if necessary, so that distinct space type coding and square footage tracking can be applied (e.g. the reference desk area within a library study space).

2. CAD Production

2.1 Overview

Each floor should have a corresponding CAD plan on which floor gross areas and room areas are delineated and labeled in model space. Contractors and consultants shall deliver clean CAD plans using the following guidelines. Guidelines may vary depending on the specific project, Harvard client, or Harvard owner.

Harvard will typically provide CAD plans that can be used as the background for space documentation projects. These have been generated using a variety of methods and may require field verification. When no pre-existing CAD plans are available consultants will be required to produce all new floor plans entirely from field measurements. Use the CAD production guidelines provided below when this occurs.

CAD drawings provided by Harvard may or may not already meet the production guidelines outlined in this section. Refer to the requirements of the Harvard owner regarding consultant's responsibility to conform existing CAD drawings to this standard.

Content.

Basic Floor Plan. Only basic architectural and interior floor plan elements as described in Section 2.3 should reside in the CAD drawing as a back ground for documenting space.

Title Block. A formal title block is not required, but the following information should be recorded on a separate drawing layer in model space immediately below the bottom left corner of the plan to identify content when printed from AutoCAD:
- Building Number and Building Name
- Floor Number and/or Floor Name
- Date of Last Drawing Revision.

Gross Floor Boundary Polygons. All gross floor area boundaries and distinct exclusion areas must be graphically delineated in the CAD plan as closed polygon drawing objects. These objects should be organized on layers described in Section 2.3 and be created as described in Section 1.2 and as follows:

Drawing rules:
1. Gross floor polygons should be created using snap commands, and must exist as stand-alone objects. In other words, do not connect non-contiguous polygon areas.
2. Gross exclusion area polygons must be contained completely within exterior gross polygons.
3. Exterior gross polygon(s) should reside on the same drawing layer but be distinguished from all gross exclusion area polygons by color assignment.
4. Exterior gross polygons should be assigned color 6 by entity, and exclusion area polygons should be assigned color 211 by entity.

Room Polygons and Identification Labels. Room polygons should be created using snap commands. Space and measured area polygons and labels must be organized on separate drawing layers as described in Section 2.3. Two ID labels should be documented for each room as described in Sections 1.3 and 2.3:
- Existing Room Number Signage (as found on door plates)
- Unique Room Number Identifier for Inventory Purposes

Electronic File Format. CAD drawings must be submitted in full compliance with AutoCAD software 2007 drawing file format (file extension = .DWG). Throughout this document, the use of the name AutoCAD always implies "AutoCAD 2007 file format" unless otherwise noted.

Scale, Units, Coordinate System and Orientation. CAD drawings should be drafted at full scale in architectural units, such that one drawing unit equals one inch. The User Coordinate System (UCS) for all CAD drawings should be set to World. The floor plan should be oriented perpendicular to the World UCS icon, and the origin point (0,0,0) should be located at the most prominent southwest corner of the building common to all floors. North orientation should be toward the upper half of the view.

Tolerances. When projects require creation of new CAD floor plans from field measurements, exterior building dimensions should reconcile to within 1 inch of actual building dimensions as measured in the field. Interior building dimensions must reconcile to within 1/2 inch of actual field dimensions. However, individual project specifications may vary. Please confirm requirements with your Harvard client representative.

Fonts & Text Styles. Only font ROMANS.shx is approved for use, unless otherwise specified by the Harvard client.   Any text styles using this font would be allowed. All text style definitions must have text height set to zero ("0") units. Use only single line text; multi-line text is not allowed.

Dimensions, labels and notes should not appear larger than 1/4" or smaller than 1/8" height on printed drawings, and drawing titles should not appear larger than 1/2" height on printed drawings.

Blocks. Harvard is currently not imposing the use of any particular block definitions or block libraries. However, the following rules must be employed when handling block entities:

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

Policy on External Reference Files (XREFs). Harvard will not accept the submission of any CAD drawing deliverable which contains references to external source drawing files.

2.2 File Naming

CAD drawing files should be named using a combination of the Building Number and Floor Number separated by the underscore (_) character.

Unless specified by the Harvard owner, floor levels should be numbered as follows:

Floor Level	Floor Number	Note
Subbasement (s)	_-2, _-3, etc	If present, follow the number sequence below the floor above.
Lower Level (s)	_-2, _-3, etc	If present, follow the number sequence below the floor above. _-2 = First Lower Level, _-3 = Second Lower Level, etc.
Basement	_-1, _-2,	_-1 if no Ground Floor is present. _-2 if Ground Floor is present.
Ground Floor	_-1	
First Floor	_01	
Second Floor	_02	
Tenth Floor	_10	
Mezzanine	_[floor below]M	Example: _03M = Mezzanine above the Third Floor
Library Stack A, B, C, etc For stacks above grade:	_[floor below]A	Example: _02A = First Stack above the Second Floor. Example: 02B = Second Stack above Second Floor (but below the Third Floor)
Library Stack A, B, C, etc For stacks below grade:	_[floor below]A	Example: _-1A = First Stack accessible from Lower Level 1. Example: _-1B = Second Stack accessible from Lower Level 1, below Stack A. Example: -2C = Third Stack accessible from Lower Level 2, below Stack B
Penthouse	_[floor level]P	Only include gross floor area on this level that houses usable area.
Roof	_[floor level]R	Typically no gross floor area or rooms exist on this level.

Examples:
06043_-1.dwg = Holyoke Center Office Tower, Basement Level
06043_01M.dwg = Holyoke Center Office Tower, Mezzanine above the First Floor Level
06043_02.dwg = Holyoke Center Office Tower, Second Floor Level
06043_11R.dwg = Holyoke Center Office Tower, Roof above the 10th Floor Level

2.3 Layers

Harvard will typically provide CAD plans that can be used as the background for space documentation projects. These have been generated using a variety of methods and may require field verification. When no pre-existing CAD plans are available consultants will be required to produce floor plans entirely from field measurements. Use the layer guidelines provided below when this occurs.

Drawings provided by Harvard may or may not already meet the basic floor plan layer standards outlined in this section. Refer to the requirements of the Harvard owner regarding consultant's responsibility to conform existing CAD drawings to this standard.

Layers For Basic Floor Plan. CAD floor plans are to include building features that provide the physical boundaries necessary to define space, such as: exterior walls, full and partial height interior walls, doors, glazing, elevator shafts, stair wells and other changes in floor elevation, built-in furniture and/or office cubicles.

A list of the basic layers and data elements is provided below. Contractors and consultants shall adhere to these layer standards as much as possible, although additional layers, conforming to standard, may be necessary, and some layers may not be applicable to every space documentation project (furniture, roof lines, etc).

CAD layers should be named in accordance with the latest U.S. National CAD Standard (NCS) which can be obtained from the National Institute of Building Sciences. Custom layers added by Harvard begin with U-. The specific name of custom layers may vary slightly by Harvard owner.

Layer	Description	Color
A-DOOR	Doors, jams (and headers, if applicable)	2 (yellow)
A-FLOR	Floor lines showing change of grade, ramps, etc	2 (yellow)
A-FLOR-EVTR	Elevators	2 (yellow)
A-FLOR-STRS	Stairs, steps	2 (yellow)
A-FLOR-ANNO	General floor information text	7 (white)
A-FLOR-TPTN	Toilet partitions	2 (yellow)
A-GLAZ	Windows, glazing	2 (yellow)
A-ROOF	Roof lines	1 (red)
A-WALL-EXTR	Exterior walls	7 (white)
A-WALL-INTR	Interior walls	9 (lt grey)
A-WALL-PRHT	Partial height walls	2 (yellow)
I-FURN	Furniture (if applicable)	1 (red)
I-FURN-CASE	Casework/cabinetry that defines notable change of space use pattern	1 (red)
I-FURN-PNLS	System furniture panels that define a notable change of space use pattern	1 (red)
P-FIXT	Plumbing fixtures	3 (green)
S-COLS	Columns	6 (magenta)
U-ANNO-TEXT	Floor info/general text	4 (cyan)
U-ANNO-TITLE	Drawing title information (text, north arrow, etc)	7 (white)

Layers For Space Polygons and Labels. These layers should be used to record information described in Section 1.3, with regard to Spaces only (rooms that are assignable to tenants).

Layer	Description	Color
U-SPACE-POLY	Space polygons – drawn to inside face of walls	4 (cyan)
U-SPACE-NUMB	Unique space number text labels	4 (cyan)
U-SPACE-SIGN	Door or Wall Signage text labels	4 (cyan)

Layers For Gross and Measured Area Polygons and Labels. These layers should be used to record information described in Section 1.3 with regard to Measured Areas only (rooms that are not assignable to tenants) and in Section 1.2 with regard to Gross Floor Areas.

Layer	Description	Color
U-AREA-GROS-EXTR	Gross floor area polygons – drawn to outer face of building's exterior walls	6 (magenta)
U-AREA-GROS-EXCL	Polygons representing areas excluded from gross floor area (vertical penetrations, low-height, etc)	211 (pink)
U-AREA-POLY	Measured Area polygons – drawn to inside face of walls	5 (blue)
U-AREA-NUMB	Unique measured area numbers, text labels	5 (blue)
U-AREA-SIGN	Door or Wall Signage text labels	5 (blue)

3. Space Classification

3.1 Overview

Individual rooms must be classified according to standards explained in Chapter 4 of the NCES Postsecondary Education Facilities Inventory and Classification Manual, 2006 Edition. FICM outlines a two-tiered classification and coding system that Harvard has adopted as a general framework, and adapted to its own use. Harvard has also added a third tier to allow more detailed tracking of space.

Tier 1. At the highest level of the classification hierarchy FICM uses 13 categories to break down spaces by type. Harvard has added two additional categories to Tier 1, and changed the codes used to identify four FICM categories, to better accommodate space data management systems presently on campus.

Tier 1 FICM Categories, adapted by Harvard

FICM Code	Category Description	Harvard Code
100	Classroom Facilities	100
200	Laboratory Facilities	200
300	Office Facilities	300
400	Study Facilities	400
500	Special Use Facilities	500
600	General Use Facilities	600
700	Supporting Facilities	700
800	Health Care Facilities	800
900	Residential Facilities	900
000	Unclassified Assignable	A00
WWW	Circulation (Nonassignable)	C00
XXX	Building Service (Nonassignable)	B00
YYY	Mechanical (Nonassignable)	M00
n/a	Unclassified (Nonassignable)	U00
n/a	Exclusion Areas	Z00

Tier 2. At the second highest level of the classification hierarchy, the FICM standard carries over 125 categories that each roll up to one of the Tier 1 space categories. The Harvard standard retains all of the Tier 1 FICM categories but carries down coding format changes to this level, and adds a few additional categories, mostly to further distinguish between types of non-assignable space. At both the Tier 1 and Tier 2 levels, Harvard retains the three-character coding format set by the FICM standard. Refer to Chapter 4 of the FICM standard for detailed category definitions for Tiers 1 and 2.

Tier 3. Harvard adds a third tier at the bottom of the space type hierarchy. There are about 370 categories at this level. Each one rolls up to a single Tier 2 category. A four-character coding format is used to distinguish Tier 3 codes from the higher tiers.

Space documentation projects must classify spaces and measured areas using the Tier 3 codes. Only one code may be assigned per room number. Tier 3 codes ending in "--00" or "--50" are general codes carried down from higher tiers and shall be used only when specific room use detail is not available.

3.2 Standard

For a complete list of Space Classification codes and descriptors for all tiers, see Appendix A.

4. Final Product Submittal

Final electronic materials submitted to Harvard must accompany a signed copy of Appendix B (Quality Assurance Checklist) and a transmittal that lists the names and types of all files being transferred.

4.1 Space Drawings

Unless variations are specified by the Harvard client, electronic drawing content and organization must comply with the standards set forth in this document.

4.2 Space Inventory

Spaces and Measured Area Reports. Detailed room listings should be provided separately in Microsoft Excel 2003 format (or later) for spaces and measured areas, corresponding with floor plan polygon objects and identification labels (room numbers). Room listings should be indexed by building, floor, and room number, and contain the following attribute information:

- Building Name (per Section 1.1)
- Building Number (per Section 1.1)
- Floor Name (per Section 1.2)
- Floor Number (per Section 1.2)
- Space Signage / Measured Area Signage (per Section 1.3)
- Space Number / Measured Area Number (per Section 1.3)
- Space Description / Measured Area Description   (per Section 1.3)
- NSF   (per Section 1.3)
- Tier 3 Space Type Code (per Section 3)
- Tier 3 Space Type Description   (per Section 3)
- Tier 2 Space Type Code (per Section 3)
- Tier 2 Space Type Description (per Section 3)
- Tier 1 Space Type Code (per Section 3)
- Department Name (only if required by Harvard client)

Refer to the requirements of the Harvard client regarding additional room attributes or reports, if any. Depending on the project, the Harvard owner may also request summary reports generated from the detailed room listings, such as:

- NSF by Tier 1 Space Type by Building
- NSF by Tier 1 Space Type by Floor

Gross Floor Area Report. When gross floor areas have been generated by a project, a list of floors indexed by building should be submitted, with the following attributes:

- Building Name (per Section 1.1)
- Building Number (per Section 1.1)
- Floor Name (per Section 1.2)
- Floor Number (per Section 1.2)
- Total Exterior Gross SF (per Section 1.2)
- Total Excluded Gross SF (per Section 1.2)
- FICM Gross Floor Area (per Section 1.2)

Refer to the requirements of the specific Harvard owner regarding additional gross area report deliverables, if any.

APPENDICES

A. Space Classification Codes and Descriptions – All Tiers

B. Electronic File Quality Assurance Checklist

C. Policy on CAD File Translation

A. Space Classification Codes and Descriptions – All Tiers

This table is also available in Excel spreadsheet format, upon request.

Tier 1 - FICM	Tier 2 - FICM	Tier 3 - HU Custom	Origin
100 Classroom Facilities	100 Classroom Facilities	1000 Classroom Facilities	FICM Basic
	110 Classroom	1100 Classroom	FICM Basic
		1101 Classroom Movable Seating	HU Custom
		1102 Classroom Seminar Table Chairs	HU Custom
		1103 Classroom Fixed Seating	HU Custom
		1105 Classroom Computer	HU Custom
		1106 Classroom Teaching Workroom Multiuse	HU Custom
		1107 Classroom Lecture Balcony	HU Custom
		1108 Classroom Lecture Sloped	HU Custom
		1109 Classroom Alcove	HU Custom
		1110 Classroom Lecture Multi Level	HU Custom
		1111 Classroom Tutorial	HU Custom
	115 Classroom Service	1150 Classroom Svc	FICM Basic
		1151 Classroom Svc Demo Prep	HU Custom
		1152 Classroom Svc AV	HU Custom
		1153 Classroom Svc Locker Rm	HU Custom
200 Lab Facilities	200 Lab Facilities	2000 Lab Facilities	FICM Basic
	210 Class Lab	2100 Class Lab	FICM Basic
		2101 Class Lab Biology	HU Custom
		2102 Class Lab Chemistry	HU Custom
		2103 Class Lab Eng Physics	HU Custom
		2104 Class Lab Music	HU Custom
		2105 Class Lab Psychology	HU Custom
		2106 Class Lab Computer	HU Custom
		2107 Class Lab Art Studio	HU Custom
		2108 Class Lab Museum Collections	HU Custom
	215 Class Lab Service	2150 Class Lab Svc	FICM Basic
	220 Open Lab	2200 Open Lab	FICM Basic
		2201 Open Lab Art Rm_Studio	HU Custom
		2202 Open Lab Music Practice	HU Custom
		2203 Open Lab Dance Studio	HU Custom
	225 Open Lab Service	2250 Open Lab Svc	FICM Basic
	250 Research Lab	2500 Research Lab	FICM Basic
		2501 Dry Lab General	HU Custom
		2502 Lab Clean Rm	HU Custom
		2503 Lab Computer	HU Custom
		2504 Lab Engin Physics	HU Custom
		2505 Lab Growth Chamber	HU Custom
		2506 Lab Instrument	HU Custom
		2507 Lab Mass Spectrometer	HU Custom
		2508 Lab Microscope Rm	HU Custom
		2509 Lab NMR	HU Custom
		2510 Lab Optics Lasers	HU Custom
		2511 Lab Xray	HU Custom
		2512 Lab Radioactive	HU Custom
		2513 Lab Prep	HU Custom
		2514 Lab Acoustic Rm	HU Custom
		2515 Lab Office	HU Custom
		2516 Lab Procedure	HU Custom
		2517 Lab Operating Rm	HU Custom
		2518 Lab Observation	HU Custom
		2519 Lab Psychology Testing Rm	HU Custom
		2530 Lab Wet General	HU Custom
		2531 Lab Biology	HU Custom
		2532 Lab Chemistry	HU Custom
		2540 Museum Conservation Lab	HU Custom
		2541 Museum Curatorial Workroom	HU Custom
		2542 Museum Collection Research	HU Custom

Tier 1 - FICM	Tier 2 - FICM	Tier 3 - HU Custom	Origin
200 Lab Facilities (continued)	255 Research Lab Service	2550 Research Lab Svc	FICM Basic
		2551 Lab Svc Darkroom Dry	HU Custom
		2552 Lab Svc Darkroom Wet	HU Custom
		2553 Lab Svc Electronics Shop	HU Custom
		2554 Lab Svc Enviro Rm Cold	HU Custom
		2555 Lab Svc Enviro Rm General	HU Custom
		2556 Lab Svc Enviro Rm Warm	HU Custom
		2557 Lab Svc Glass Shop	HU Custom
		2558 Lab Svc Glass Wash Rm	HU Custom
		2559 Lab Svc Equipment Rm	HU Custom
		2560 Lab Svc Machine Shop	HU Custom
		2561 Lab Svc Media Prep	HU Custom
		2562 Lab Svc Stock Rm	HU Custom
		2563 Lab Svc Storage Chem Gas	HU Custom
		2564 Lab Svc Meeting Space	HU Custom
		2565 Lab Svc Tissue Cell Culture	HU Custom
		2566 Lab Svc Mech Pumps	HU Custom
		2567 Lab Svc Hazardous Waste	HU Custom
		2568 Lab Svc Electron Microscope	HU Custom
		2570 Lab Svc Shower	HU Custom
		2571 Lab Svc Insectiary	HU Custom
		2572 Lab Svc Autoclave Rm	HU Custom
		2573 Lab Svc Ante Rm gowning	HU Custom
		2575 Lab Svc Interation Area	HU Custom
		2577 Lab Svc Equipment Corridor	HU Custom
		2578 Lab Svc Steril Rm	HU Custom
		2579 Lab Svc Photo	HU Custom
		2581 Lab Svc Enviro Rm Freezer	HU Custom
		2582 Lab Svc Fumehood Alcove	HU Custom
		2583 Lab Svc Storage_Utility	HU Custom
		2584 Lab Svc Circulation	HU Custom
		2585 Lab Svc Morgue	HU Custom
300 Office Facilities	300 Office Facilities	3000 Office Facilities	FICM Basic
	310 Office	3100 Office	FICM Basic
		3101 Office Private	HU Custom
		3102 Office Shared	HU Custom
		3104 Office Partitioned Space	HU Custom
		3105 Office Supplemental Workspace	HU Custom
		3107 Office Workroom	HU Custom
		3108 Office WalkThrough	HU Custom
		3109 Office Reception	HU Custom
	315 Office Service	3150 Office Svc	FICM Basic
		3151 Office Svc Closet	HU Custom
		3152 Office Svc Copy Rm	HU Custom
		3153 Office Svc Kitchen	HU Custom
		3154 Office Svc Storage	HU Custom
		3155 Office Circulation	HU Custom
		3156 Office Restroom	HU Custom
		3157 Office Lounge	HU Custom
		3158 Office File Rm	HU Custom
		3159 Office Svc Pantry	HU Custom
	350 Conference Rm	3500 Conference Rm	FICM Basic
	355 Conference Rm Service	3550 Conference Rm Svc	FICM Basic

Tier 1 - FICM	Tier 2 - FICM	Tier 3 - HU Custom	Origin
400 Study Facilities	400 Study Facilities	4000 Study Facilities	FICM Basic
	410 Study Space	4100 Study Space	FICM Basic
		4101 Open Reading Rm	HU Custom
		4102 Closed Reading Rm	HU Custom
		4103 Library Study Faculty	HU Custom
		4104 Library Seminar Rm	HU Custom
		4105 Study Carrels	HU Custom
	420 Stacks	4200 Stacks	FICM Basic
		4202 Stacks Closed	HU Custom
		4203 Stacks Open	HU Custom
		4204 Stacks Open Compact Shelving	HU Custom
		4205 Stacks Closed Compact Shelving	HU Custom
	430 Open Stack Study	4300 Open Stack Study Rm	FICM Basic
	440 Library Ops and Processing	4400 Library Ops or Processing Rm	FICM Basic
		4401 Library Reference Area	HU Custom
		4402 Library Circulation Reserve	HU Custom
		4403 Library Catalog Public	HU Custom
		4404 Library Security	HU Custom
	455 Library Study Service	4550 Library Study Svc	FICM Basic
		4551 Library Study Storage	HU Custom
		4552 Library Storage Unprocessed Materials	HU Custom
500 Special Use Facilities	500 Special Use Facilities	5000 Special Use Facilities	FICM Basic
	510 Armory Military Support	5100 Armory Military Support	FICM Basic
	515 Armory Service	5150 Armory Svc	FICM Basic
	520 Athletic or Phys Ed	5200 Athletic or Phys Ed	FICM Basic
		5201 Athletic Gymnasium	HU Custom
		5202 Athletic Swimming Pool	HU Custom
		5203 Athletic Squash Courts	HU Custom
		5205 Athletic Multiuse	HU Custom
		5206 Athletic Fitness Center	HU Custom
		5207 Athletic Exercise Rm	HU Custom
		5208 Athletic Tennis Court	HU Custom
		5209 Athletic IceRink	HU Custom
		5210 Athletic Boathouse	HU Custom
		5212 Athletic Field	HU Custom
	523 Athletic Facility Spectator Seating	5230 Athletic Facility Spectator Seating	FICM Basic
		5231 Athletic Spectator Seating Indoor	HU Custom
	525 Athletic or Phys Ed Support	5250 Athletic or Phys Ed Support	FICM Basic
		5252 Athletic Shower Rm W	HU Custom
		5253 Athletic Shower Rm M	HU Custom
		5254 Athletic Lockers Showers W	HU Custom
		5255 Athletic Lockers Showers M	HU Custom
		5256 Athletic Equipment Rm	HU Custom
		5257 Athletic First Aid	HU Custom
		5258 Athletic Coaches Nonoffice Rm	HU Custom
		5260 Athletic Lockers Showers	HU Custom
		5261 Athletic Sauna	HU Custom
		5262 Athletic Restroom W	HU Custom
		5263 Athletic Restroom M	HU Custom
		5264 Athletic Locker Rm W	HU Custom
		5265 Athletic Locker Rm M	HU Custom
	530 Media Production	5300 Media Production	FICM Basic
		5301 Media Broadcast Studio	HU Custom
		5302 Media Production Studio	HU Custom
		5303 Darkroom	HU Custom
		5304 Audio Video Projection	HU Custom
		5305 Media Technologies Control Rm	HU Custom
	535 Media Production Service	5350 Media Production Svc	FICM Basic
		5351 Media Production Closet	HU Custom

Tier 1 - FICM	Tier 2 - FICM	Tier 3 - HU Custom	Origin
500 Special Use Facilities (continued)	540 Clinic	5400 Clinic	FICM Basic
		5401 Clinic Testing Rm	HU Custom
		5402 Clinic Consultation Rm	HU Custom
		5403 Clinic Examination Rm	HU Custom
	545 Clinic Service	5450 Clinic Svc	FICM Basic
		5451 Clinic Waiting Rm	HU Custom
		5452 Clinic Observation Rm	HU Custom
	550 Demonstration	5500 Demonstration	FICM Basic
	555 Demonstration Service	5550 Demonstration Svc	FICM Basic
	560 Field Building	5600 Field Building	FICM Basic
	570 Animal Quarters	5700 Animal Qtrs	FICM Basic
		5701 Animal Qtrs Procedure Rm	HU Custom
		5702 Animal Qtrs Animal Rm	HU Custom
		5703 Animal Qtrs Outside Cage	HU Custom
		5704 Animal Qtrs Animal Holding	HU Custom
	575 Animal Quarters Service	5750 Animal Qtrs Svc	FICM Basic
		5751 Animal Qtrs Cage Washing	HU Custom
		5752 Animal Qtrs Animal Feeding_Mixing Rm	HU Custom
		5753 Animal Qtrs Lockers_Gowning	HU Custom
		5754 Animal Qtrs Circulation	HU Custom
		5755 Animal Qtrs Air Lock	HU Custom
	580 Greenhouse	5800 Greenhouse	FICM Basic
	585 Greenhouse Service	5850 Greenhouse Svc	FICM Basic
	590 Other All Purpose	5900 Other All Purpose	FICM Basic
600 General Use Facilities	600 General Use Facilities	6000 General Use Facilities	FICM Basic
	610 Assembly	6100 Assembly	FICM Basic
		6101 Theater Stage Concert Hall	HU Custom
	615 Assembly Service	6150 Assembly Svc	FICM Basic
		6151 Theater Svc Backstage	HU Custom
		6152 Theater Svc Dressing Rm	HU Custom
	620 Exhibition	6200 Exhibition	FICM Basic
		6201 Museum Collections Exhibit	HU Custom
	625 Exhibition Service	6250 Exhibition Svc	FICM Basic
		6251 Museum Exhibit Prep or Workroom	HU Custom
	630 Food Facility	6300 Food Facility	FICM Basic
		6301 Dining Rm	HU Custom
		6302 Dining Rm Private	HU Custom
		6303 Food Prep Kitchen	HU Custom
		6305 KitchenCommon	HU Custom
		6306 KitchenetteCommon	HU Custom
		6307 Cafeteria Common	HU Custom
		6308 Vending	HU Custom
		6309 Food Servery	HU Custom
		6310 Student Grill	HU Custom
	635 Food Facility Service	6350 Food Facility Svc	FICM Basic
		6351 Food Prep Svc	HU Custom
		6353 Food Storage	HU Custom
	640 Day Care	6400 Day Care	FICM Basic
		6401 Day Care Activity Rm	HU Custom
	645 Day Care Service	6402 Day Care Lavatory	HU Custom
		6450 Day Care Svc	FICM Basic
	650 Lounge	6500 Lounge	FICM Basic
	655 Lounge Service	6550 Lounge Svc	FICM Basic
	660 Merchandising	6600 Merchandising	FICM Basic
		6601 Ticket Office	HU Custom
	665 Merchandising Service	6650 Merchandising Svc	FICM Basic
	670 Recreation	6700 Recreation	FICM Basic
		6701 Recreation Game Rm	HU Custom
		6702 Recreation TV Rm	HU Custom
	675 Recreation Service	6750 Recreation Svc	FICM Basic
	680 Meeting Rm	6800 Meeting Rm	FICM Basic
	685 Meeting Rm Service	6850 Meeting Rm Svc	FICM Basic

Tier 1 - FICM	Tier 2 - FICM	Tier 3 - HU Custom	Origin
700 Supporting Facilities	700 Supporting Facilities	7000 Supporting Facilities	FICM Basic
	710 Central Computer or Telecom	7100 Central Computer or Telecom	FICM Basic
		7101 Workroom Adaptive Technology	HU Custom
		7102 IT Helpdesk	HU Custom
		7103 Computers Servers Machine Rm	HU Custom
		7104 Computers General Access Area	HU Custom
		7105 Computer Rm General Use	HU Custom
	715 Central Computer or Telecom Service	7150 Central Computer or Telecom Svc	FICM Basic
	720 Shop	7200 Shop	FICM Basic
		7201 Electronics Shop	HU Custom
		7202 Carpentry Shop	HU Custom
		7203 Machine Shop	HU Custom
		7204 Paint Shop	HU Custom
		7205 Workshop multifunction	HU Custom
	725 Shop Service	7250 Shop Svc	FICM Basic
	730 Central Storage	7300 Central Storage	FICM Basic
		7302 Storage Archives File	HU Custom
		7303 Storage Vault	HU Custom
		7304 Storage Lockers	HU Custom
		7305 Storage Central Food	HU Custom
	735 Central Storage Service	7350 Central Storage Svc	FICM Basic
	740 Vehicle Storage	7400 Vehicle Storage	FICM Basic
		7401 Parking _ Garage	HU Custom
	745 Vehicle Storage Service	7450 Vehicle Storage Svc	FICM Basic
	750 Central Service	7500 Central Svc	FICM Basic
	755 Central Service Support	7550 Central Svc Support	FICM Basic
	760 Hazardous Materials	7600 Hazardous Materials	FICM Basic
	761 Fuel	7610 Fuel	HU Custom
	762 SPCC Satellite Accumulation Site	7620 SPCC Satellite Accumulation Site	HU Custom
	765 Hazardous Materials Service	7650 Hazardous Materials Svc	HU Custom
	770 Hazardous Waste Storage	7700 Hazardous Waste Storage	FICM Basic
	775 Hazardous Waste Storage Service	7750 Hazardous Waste Storage Svc	FICM Basic
	780 Unit Storage	7800 Unit Storage	FICM Basic
800 Health Care Facilities	800 Health Care Facilities	8000 Health Care Facilities	FICM Basic
	810 Patient Bedroom	8100 Patient Bedroom	FICM Basic
	815 Patient Bedroom Service	8150 Patient Bedroom Svc	FICM Basic
	820 Patient Bath	8200 Patient Bath	FICM Basic
	830 Nurse Station	8300 Nurse Station	FICM Basic
	835 Nurse Station Service	8350 Nurse Station Svc	FICM Basic
	840 Surgery	8400 Surgery	FICM Basic
	845 Surgery Service	8450 Surgery Svc	FICM Basic
		8451 Surgery Svc Gowning	HU Custom
		8452 Surgery Svc Instrument Corridor	HU Custom
		8453 Exam Svc Sterile Rm	HU Custom
	850 Treatment_Examination	8500 Treatment_Examination	FICM Basic
	855 Treatment_Examination Service	8550 Treatment_Examination Svc	FICM Basic
		8551 Exam Svc Xray	HU Custom
		8552 Exam Svc Lockers	HU Custom
	860 Diagnostic Service Lab	8600 Diagnostic Svc Lab	FICM Basic
	865 Diagnostic Service Lab Support	8650 Diagnostic Svc Lab Support	FICM Basic
		8651 Morgue	HU Custom
	870 Central Supplies	8700 Central Supplies	FICM Basic
	880 Public Waiting	8800 Public Waiting	FICM Basic
	890 Staff OnCall Facility	8900 Staff OnCall Facility	FICM Basic
	895 Staff OnCall Facility Service	8950 Staff OnCall Facility Svc	FICM Basic

Tier 1 - FICM	Tier 2 - FICM	Tier 3 - HU Custom	Origin
900 Residential Facilities	900 Residential Facilities	9000 Residential Facilities	FICM Basic
	901 Common Study Rm	9010 Common Study Rm	HU Custom
	902 Common Rm	9020 Common Rm	HU Custom
	903 Common Rm with Kitchen	9030 Common Rm with Kitchen	HU Custom
	904 Resident's Storage Rm Area	9040 Resident's Storage Rm Area	HU Custom
	905 Play Rms	9050 Play Rms	HU Custom
	906 Common Balcony	9060 Common Balcony	HU Custom
	907 Guest Rm	9070 Guest Rm	HU Custom
	908 Housemaster Apartment	9080 Housemaster Apartment	HU Custom
	910 Sleep_Study Without Toilet or Bath	9100 Sleep_Study Without Toilet or Bath	FICM Basic
	915 Toilet or Bath	9150 Toilet or Bath	FICM Basic
		9151 Women's Bath	HU Custom
		9152 Men's Bath	HU Custom
	916 Laundry	9160 Laundry	HU Custom
	917 Laundry Rm Closet	9170 Laundry Rm Closet	HU Custom
	920 Sleep_Study With Toilet or Bath	9200 Sleep_Study With Toilet or Bath	FICM Basic
	930 Bedroom	9300 Bedroom	HU Custom
		9301 Bedroom With Toilet or Bath	HU Custom
	935 Sleep_Study Service	9350 Sleep_Study Svc	FICM Basic
		9355 HallwayBathroom	HU Custom
	950 Apartment or Suite	9500 Apartment or Suite	FICM Basic
		9501 InSuite Bedroom	HU Custom
	955 Apartment or Suite Service	9550 Apartment or Suite Svc	FICM Basic
		9551 InSuiteCirculation	HU Custom
		9552 InSuiteKitchenette	HU Custom
		9553 InSuiteClosets	HU Custom
		9554 InSuiteBathroom	HU Custom
		9555 InSuiteSink	HU Custom
		9557 InSuiteCommonStudy	HU Custom
		9558 InSuiteKitchen	HU Custom
		9559 InSuiteLaundry	HU Custom
		9560 InSuiteToiletRm	HU Custom
		9561 InSuiteShowerRm	HU Custom
	960 Resident Storage	9600 Resident Storage	HU Custom
	970 House	9700 House	FICM Basic
A00 Unclassified Facilities Assignable	A00 Unclassified Facilities Assignable	A000 Unclassified Facilities Assignable	FICM Basic
	A10 Unknown	A100 Unknown	HU Custom
	A50 Inactive Area	A500 Inactive Area	FICM Basic
	A60 Alteration or Conversion Area	A600 Alteration or Conversion Area	FICM Basic
	A70 Unfinished Area	A700 Unfinished Area	FICM Basic

Tier 1 - FICM	Tier 2 - FICM	Tier 3 - HU Custom	Origin
B00 Building Service Nonassignable	B00 Building Service Nonassignable	B00 Building Svc Nonassignable	FICM Basic
	B10 Custodial Supply Closet	B10 Custodial Supply Closet	FICM Basic
	B20 Janitor Rm	B20 Janitor Rm	FICM Basic
	B30 Public Rest Rm	B30 Public Rest Rm	FICM Basic
		B31 Female Public Rest Rm	HU Custom
		B32 Male Public Rest Rm	HU Custom
		B33 HP Public Rest Rm	HU Custom
		B34 Unisex Public Rest Rm	HU Custom
	B35 Showers Lockers	B35 Showers Lockers	HU Custom
	B40 Trash Rm	B40 Trash Rm	FICM Basic
		B41 Trash Rm Recycling	HU Custom
	B50 Laundry Rm	B50 Laundry Rm	HU Custom
		B51 Linen Rm Closet	HU Custom
	B60 Mail Facility Receiving	B60 Mail Facility Receiving	HU Custom
	B70 Telephone Booth	B70 Telephone Booth	HU Custom
	B80 Security	B80 Security	HU Custom
C00 Circulation Nonassignable	C00 Circulation Nonassignable	C00 Circulation Nonassignable	FICM Basic
	C10 Bridge	C10 Bridge	FICM Basic
	C15 Tunnel	C15 Tunnel	FICM Basic
	C20 Elevator	C20 Elevator	FICM Basic
		C21 LULA	HU Custom
		C22 Dumb Waiter	HU Custom
	C30 Escalator	C30 Escalator	FICM Basic
	C40 Loading Dock	C40 Loading Dock	FICM Basic
	C50 Lobby	C50 Lobby	FICM Basic
		C51 Elevator Lobby	HU Custom
		C52 Vestibule Entryway	HU Custom
	C60 Public Corridor	C60 Public Corridor	FICM Basic
	C70 Stairway	C70 Stairway	FICM Basic
	C71 Ramp	C71 Ramp	HU Custom
M00 Mechanical Nonassignable	M00 Mechanical Nonassignable	M00 Mechanical Nonassignable	FICM Basic
	M10 Central Utility Plant	M10 Central Utility Plant	FICM Basic
	M20 Fuel Rm	M20 Fuel Rm	FICM Basic
	M30 Shaft Space	M30 Shaft Space	FICM Basic
	M40 Utility Rm	M40 Utility Rm	FICM Basic
		M41 Electrical Rm	HU Custom
		M42 Electrical_Telecom Rm	HU Custom
		M43 Telecom Rm	HU Custom
		M44 Plumbing	HU Custom
	M50 Mechanical Rm	M50 Mechanical Rm	FICM Basic
		M51 HVAC Mechanical Rm	HU Custom
		M52 Elevator Machine Rm	HU Custom
	M60 Fire Rm	M60 Fire Rm	HU Custom
U00 Unclassified Nonassignable	U00 Unclassified Nonassignable	U00 Unclassified Nonassignable	HU Custom
Z00 Exclusion Areas Nonassignable	Z00 Exclusion Areas Nonassignable	Z00 Exclusion Areas Nonassignable	HU Custom
	Z10 Unexcavated Area	Z10 Unexcavated Area	HU Custom
	Z20 Low Height Area	Z20 Low Height Area	HU Custom
	Z30 Atrium	Z30 Atrium	HU Custom
	Z40 Void	Z40 Void	HU Custom

B. Electronic File Quality Assurance Checklist

Final electronic materials submitted to Harvard must be accompanied by a signed copy of this checklist. When a checklist has been signed and submitted, the vendor is assuring that all materials adhere to the basic standards and guidelines set forth in this document, where appropriate to the project.

Submittals must also be accompanied by a transmittal that lists the names and types of all files being transferred.

<u>Space Drawings (CAD File Production)</u>

☐ Basic Floor Plan Content

☐ Gross Floor Area Polygons and Exclusions

☐ Space Polygons and Identification Labels

☐ Measured Area Polygons and Identification Labels

☐ Room NSF Labels

☐ Space Classification Code Labels

☐ Department Name Labels (if required)

☐ Drawing Title Information

☐ Electronic File Format

☐ Scale, Units, Coordinate System and Orientation

☐ Tolerances

☐ Fonts and Text Styles

☐ Blocks

☐ Layer Names, Usage and Color Assignments

☐ Electronic File Naming

☐ Policy on External Reference Files (XREFs)

☐ Policy on CAD File Translation

<u>Space Inventory (Spreadsheet Production)</u>

☐ Electronic File Format

☐ Indexed Space Inventory Listing with Attributes

☐ Indexed Measured Area Inventory Listing with Attributes

☐ Indexed Gross Floor Area Listing

Signature of Accountable Vendor Representative_____

Print Name of Accountable Vendor Representative_____

Phone Number _____

Date _____

C. Policy on CAD File Translation

Error-Free AutoCAD Drawing Deliverables

Harvard University recognizes that many of its vendors do not use the same CAD systems as the University. However, the University 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.

All DWG files and CAD drawing entities submitted at the end of a project must be able to be manipulated using standard AutoCAD drafting procedures. Non-compliance with this policy may result in the rejection of CAD files submitted at project closeout in addition to delayed rendering of final project payment. DXF files will not be accepted at project closeout as a substitution for DWG CAD file deliverables.

Translation Testing Recommended

If vendors must translate their native CAD file format into AutoCAD format and is concerned about delivering error-free CAD files to Harvard 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.