

HARVARD UNIVERSITY



UNIVERSITY PLANNING OFFICE

# Capital Project Closeout

## Construction Documentation

## Requirements

**Guidelines for Architects, Contractors, and Project Managers**

For further information about this document contact:

**PROPERTY INFORMATION RESOURCE CENTER**

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## I. Introduction

This document is for the use of Project Managers, architects, and contractors working on Harvard University capital projects and provides a description of:

- 1) **Architect Deliverables** per Item #14 and Attachment #4 (“Materials Checklist”) in the Harvard Attachment to the B151 Agreement between Owner and Architect; and
- 2) **Contractor Deliverables** per Item 2 (“Materials Checklist”) and 9 (“Project Binder”) of Attachment 1 to the A201 General Conditions of the Contract for Construction (Agreement between Owner and Contractor).

Capital projects cannot close and final payment cannot be rendered until all documentation described in the Materials Checklist (*see Section II*) has been submitted.

### Documentation Required by the PIRC

The University Planning Office’s Property Information Resource Center (PIRC) has specific requirements for administrative and construction documents, construction drawings, land surveys, and facility documentation that must be submitted prior to project close-out. These requirements are specified in the Materials Checklist.

Materials submitted to the PIRC should be coordinated with the Harvard Project Manager and delivered by a representative from the submitting firm rather than by a courier service. The adequacy of the documentation will be reviewed by PIRC staff before a sign-off is completed. Submittals must be accompanied by the “Transmittal for Materials Required by the PIRC” (*see Section III*).

### Project Manager Responsibilities

Individual faculties will have requirements in addition to PIRC’S requirements; Project Managers should convey these additional requirements to the architect or contractor and may alter the number of required copies in the Project Manager column of the Materials Checklist.

All documents required as part of project close-out must be submitted in the formats described in the Materials Checklist. To ensure consistency of data, the Project Manager should confirm that the following templates and standards are used (*see Section III*):

## Templates and Standards

- Transmittal for Materials Required by the PIRC (Template 1A)  
The architect or contractor should use this transmittal, which lists all materials required at project close. The completed transmittal form must accompany the submission to the PIRC.
- Transmittal for Materials Required by the Project Manager (Template 1B)  
The architect or contractor should use this transmittal, provided by the Project Manager, which lists all materials required at project close. The completed transmittal form must accompany the submission to the Project Manager.
- Capital Project Contact List (Template 2)  
The Project Manager should provide information for each person or firm (architects, contractors, sub-contractors, etc.) involved in the project.
- Electronic File Quality Assurance Checklist (Template 3)  
The architect or contractor must sign and submit this checklist, which ensures that all electronic materials adhere to the standards and guidelines set forth in the University Planning Office's *CAD Standards* publication.
- Electronic Files Indices Guidelines (Template 4)  
Architects and contractors must supply indices that conform to the contents and formats presented in this guideline.
- CAD Standards (2009 Version)  
([http://www.upo.harvard.edu/CampusProjects/Std/CAD\\_Standards.pdf](http://www.upo.harvard.edu/CampusProjects/Std/CAD_Standards.pdf))  
This document provides specifications for producing and delivering CAD drawings for as-builts and facility documentation.
- Survey Specifications  
(<http://www.upo.harvard.edu/CampusProjects/standards.html#survey>)  
This document describes the coordinate system used by Harvard University and the basic standards that need to be followed to insure compatibility with the University geographic information system.

All templates, CAD Standards, and Surveying Standards and Recovery Notes can be found at: <http://upo.harvard.edu/campusprojects/standards.html> or by contacting the PIRC (contact information on front page).

## II. MATERIALS CHECKLIST

Effective as of September 17, 2007

All architects, engineers or contractors and their sub-contractors completing capital projects must provide following close-out materials, as specified below, to the Property Information Resource Center via the Harvard project manager.

Materials		PIRC	Project Manager	Total
<b>A. ADMIN DOCS</b>	<b>Transmittal</b> Use PIRC Transmittal Template <sup>1</sup> General Transmittal Template <sup>1</sup>	1‡	2	3
	<b>Contact List</b> Use Capital Project Contact List Template <sup>1</sup>	1‡	2	3
<b>B. CONSTRUCTION DWGS.</b>	<b>As-built<sup>2</sup> drawings, blacklines printed on Mylar</b> 3-mil thickness Acceptable sizes: <b>24"x36" or 30"x42"</b>	1‡	0	1
	<b>As built<sup>2</sup> drawings, blacklines printed on paper</b>	0	3	3
	<b>TIFF scans of as-built<sup>2</sup> drawings</b> Scanned at 300 dpi resolution at hard copy dimensions; File names must follow conventions in <i>CAD Standards</i> <sup>3</sup>	1	0	1
	<b>CAD files of as-built<sup>2</sup> drawings</b> Must comply with all requirements in <i>CAD Standards</i> <sup>3</sup> In particular, X-refs must be bound; naming conventions must be followed	1	0	1
	<b>Quality Assurance Checklist(s)</b> Use Electronic File Quality Assurance Checklist Template <sup>1</sup> ; Refer to <i>Surveying Standards and Recovery Notes</i> <sup>3</sup> .	1‡	0	1
	<b>Indices of electronic files</b> Use Electronic Files Indices Template <sup>1</sup>	1	0	1
<b>C. CONSTRUCTION DOCS.</b>	<b>Specifications</b> As Built <sup>2</sup> Construction	1‡	2	3
	<b>Operation and maintenance manuals</b>	1‡	2	3
	<b>Guaranty/warranty materials</b>	1‡	2	3
	<b>Addenda, change orders, sketches</b>	0	2	2
<b>D. LAND SURVEYS</b>	<i>If a land survey has been completed as part of a capital project, the following submittals are required: Refer to Surveying Standards and Recovery Notes<sup>3</sup></i>	1‡	0	1
	<b>Blacklines printed on Mylar</b>	0	2	2
	<b>CAD files of land survey</b>	1	0	1
	<b>Associated Reports</b>	1‡	0	1
<b>E. FACILITY DOCUMENTATION</b>	<b>CAD files of Facility drawings</b> Must comply with all requirements in <i>CAD Standards</i> <sup>3</sup> In particular, X-refs must be bound; naming conventions must be followed	1		
	<b>Evacuation Plans</b> Must comply with guidelines provided by Project Manager, if applicable	0		
	<b>Environmental Studies</b> <i>If produced</i>	1‡		

<sup>1</sup> All Templates are in the Capital Projects Closeout Requirements document found at <http://www.upo.harvard.edu/CampusProjects/standards.html#capscloseout>.

<sup>2</sup> The term "as-built" in the B151 and A201 contract documents defines drawings that incorporate the changes made during construction. These drawings should accurately record the actual construction of the building, as opposed to the initial construction documents.

<sup>3</sup> All CAD Standards and Survey Specifications can be found at <http://upo.harvard.edu/CampusProjects/standards.html>.

‡ PIRC requires a hard-copy print out of these materials; additional electronic versions are optional.

### III. TEMPLATES

#### TEMPLATE 1 A

#### TRANSMITTAL FOR MATERIALS REQUIRED BY THE PIRC

Project Name:	Date:
Harvard Project Manager:	Submitted by:
Harvard Capital Project number:	Local Project Number:
Building Number(s):	Building Root Number(s):

**All materials below must be accompanied by this form for submission to the PIRC at project closeout:**

# To PIRC	Materials	Notes	Initials of submitter
1	Contact List	See Template 2	
1	As-built drawings, blacklines printed on Mylar		
1	TIFF scans of as-built drawings	Submit on CD with index See Template 4	
1	CAD files of as-built drawings		
1	CAD files of facility documentation drawings		
1	Quality Assurance Checklist(s)	See Template 3	
1	Indices of electronic files	Submit on CD See Template 4 Include paper copy	
1	Specifications (As-Built Construction)		
1	Operation and maintenance manuals		
1	Guaranty/warranty materials		
1	Land survey, blacklines printed on Mylar, if applicable		
1	CAD files of land survey, if applicable	Submit on CD; with index (See Template 4)	
1	Reports associated with land survey, if applicable		
1	Facilities Drawings	Submit on CD; with index (See Template 4)	
1	Environmental Reports, if applicable		

**TEMPLATE 1 B**

**TRANSMITTAL FOR MATERIALS REQUIRED BY THE PROJECT  
MANAGER**

*Document to be provided by Project Manager*

**TEMPLATE 2**

**CAPITAL PROJECT CONTACT LIST**

Information must be provided for each person or firm (architects, contractors, sub-contractors, etc.) involved in the project.

Project Name:

Date:

Harvard Project Manager:

Submitted by:

Harvard Capital Project number:

Local Project Number:

Building Number(s):

Building Root Number(s):

Last Name	First Name	Title\Project Responsibility	Company	Mailing Address	Phone	E-Mail

## TEMPLATE 3

### ELECTRONIC FILE QUALITY ASSURANCE CHECKLIST

**CAD drawings delivered at closeout of a capital project must be accompanied by this checklist.** When a checklist has been signed and submitted, the vendor (architect, engineer, contractor, etc.) is assuring that all materials adhere to the standards and guidelines set forth in the University Planning Office's *CAD Standards* publication found at <http://www.upo.harvard.edu/CampusProjects/standards.html>.

#### FILE FORMAT AND SETUP

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

#### LAYERING

- Standard Layer List
- Layer Name Formatting
- General Rules about Naming and Uses
- Layer Attributes (Colors, Pens, Linetypes)

#### CAD & TIFF FILE NAME CONVENTIONS

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

#### POLICY ON CAD FILE TRANSLATION

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

#### POLICY ON TIFF FILE TRANSLATION

- Scan at 300 dpi at hard copy dimensions (24"x36" or 30"x42")
- Files must be uncompressed

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Name of Accountable Vendor Representative  
(please print)

Phone number:

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Signature of Accountable Vendor Representative

Date:

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t: 617.496.1862 e: [upo\\_library@harvard.edu](mailto:upo_library@harvard.edu) w: [www.upo.harvard.edu/pirc](http://www.upo.harvard.edu/pirc)

**TEMPLATE 4**

**ELECTRONIC FILES INDICES**

All electronic materials (CAD files, TIFF scans, index table files, etc.) must be delivered on CD-ROM or DVD, formatted using Windows 2000 or higher.

Indices for scans must be submitted in paper format **and** electronically in Microsoft Excel (version 5.0 or later). A blank template of this form is available on the UPO website at <http://upo.harvard.edu/CampusProjects/standards.html>. Scans must be done at a resolution of 300dpi at hard copy dimensions. Indices must contain the following information:

1. File Name
2. Title of Drawing
3. Horizontal Paper Size – measured in inches, indicate the width of the original paper drawing at its widest horizontal dimension
4. Vertical Paper Size – measured in inches, indicate the length of the original paper drawing at its widest vertical dimension
5. Scale – indicate the scale of the original drawing (examples: 1"=20' or NTS)
6. Pixel Depth – indicate color, grayscale, bi-tonal

**Sample Electronic File Index**

<b>PROJECT INFORMATION</b>								
<b>Project Manager:</b> Kate Loosian								
<b>Name of Project:</b> Hemenway Gym Conversion								
<b>CAPS Project #:</b> FAS 05-012								
<b>CAPS Building #:</b> 854								
<b>ELECTRONIC FILE INFORMATION</b>								
<b>DRAWING INFORMATION</b>		<b>CAD FILE INFORMATION</b>		<b>TIFF FILE INFORMATION</b>				
<b>Drawing Title</b>	<b>Architect's Drawing Number</b>	<b>CAD file name</b>	<b>File Version</b>	<b>TIFF file name</b>	<b>Horizontal Dimension</b>	<b>Vertical Dimension</b>	<b>Scale</b>	<b>Pixel Depth</b>
Title Sheet	T1	T-1.dwg	CAD	T-1.tif	30"	42"	1' = 20'	Grayscale
First Floor Demolition Plan	D1	D-1.dwg	CAD	D-1.tif	30"	42"	1' = 20'	Grayscale
Second and Third Floor Demolition Plan	D3	D-2.dwg	CAD	D-2.tif	30"	42"	1' = 20'	Grayscale
Second and Third Floor Plan	A2	A-2.dwg	CAD	A-2.tif	30"	42"	1' = 20'	Grayscale
Elevations	A3	A-3.dwg	CAD	A-3.tif	30"	42"	1' = 20'	Grayscale
Second and Third Enlarged Stair Plan	A4	A-4.dwg	CAD	A-4.tif	30"	42"	1' = 20'	Grayscale