

Last Updated: November 2020

Supplement to DCM

The Design and Construction Manual is hereby changed. The following articles are added or replace those in the 2006 and 2009 editions. All other articles remain applicable.

Article 2 CODES AND STATUTORY REQUIREMENTS

2.2 Building Codes.

- A. All projects shall be designed in accordance with the following codes:
 - 1. National Fire Protection Association (NFPA) 101, Life Safety Code: Consult the State Fire Marshal's office for the adopted edition.
 - 2. Illinois Energy Conservation Code and the Federal Energy Policy Act: Consult CDB's website for additional information.
 - 3. Illinois Plumbing Code: Consult the Illinois Department of Public Health for the most current version.
 - 4. The Illinois Accessibility Code and the 2010 Americans with Disabilities Standards for Accessible Design (2010 ADA Standards) whichever is most stringent.
 - 5. All projects outside the City of Chicago shall be designed in compliance with the International Building Code, current edition or most recent preceding edition (published by the International Conference of Building Officials, International Code Council, 5203 Ceesburg Pike, Suite 708, Falls Church, VA 22041-3401 (703/931- 4533)). The A/E shall document any additional building code requirements required by the local authority that are more stringent than the IBC and confer with CDB on which requirement to follow. Projects within the City of Chicago shall be designed in compliance with the current edition of the Chicago Building Code.
- B. Approval by CDB is required for designs which deviate from required codes. In design documents, when "approval by local authority" or "authority having jurisdiction" is referenced, substitute CDB for the local authority.
- C. Bid documents shall be prepared in accordance with codes in effect at the start of program analysis. Codes shall be mutually agreed upon by CDB and the using agency in consultation with the A/E, and shall be identified in the program analysis submittal.
- D. The A/E shall provide code analysis as described in Appendix 2 with each review submittal. Code analysis shall be included on the bid documents and record document.

2.4 Special Statutory Requirements

- C. Major statutory requirements include:
 - 9. Domestic Products Act

2.8 Illinois Works Apprenticeship Initiative. The goal of the Illinois Works Jobs Program Act Apprenticeship Initiative is that, for projects estimated to cost \$500,000 or more, apprentices will perform either 10% of the total labor hours actually worked in each prevailing wage classification or 10% of the estimated labor hours in each prevailing wage classification, whichever is less.

- A. **Applicable Goal.** For projects with an estimated total project cost of \$500,000 or more and for which 50% or more of the project is being funded by appropriated capital funds, the 10% apprenticeship goal applies to all prevailing wage eligible work on the project. For projects receiving \$500,000 or more of appropriated capital funds but for which the appropriated capital funds are less than half of the total project costs, the 10% apprenticeship goal only applies to prevailing wage eligible work being funded by the appropriated capital funds. Only certain types of work performed by A/Es in specific counties is considered prevailing wage eligible. The 10% apprenticeship goal does not apply to projects with an estimated total project cost of less than \$500,000 or to projects with an estimated total project cost of \$500,000 or more but for which the appropriated capital funds for the project are both less than \$500,000 and less than 50% of the estimated total project costs.
- B. **Illinois Works Budget Supplement.** Submission of the Illinois Works Jobs Program Act Apprenticeship Initiative Budget Supplement shall be a post-award requirement and shall be provided to CDB with any insurance information. The Budget Supplement shall contain a complete and thorough estimate of all the labor hours for the project, broken down by prevailing wage category. The Budget Supplement shall be used in determining the appropriate number of hours to be performed by apprentices, if applicable.
- C. **Reporting Requirements.** When the A/E will be performing prevailing wage eligible work either through its own staff or through consultants, the A/E shall submit monthly reports of its hourly workforce utilization including all apprenticeship hours to CDB's Fair Employment Practices Unit on Illinois Works Apprenticeship Initiative Reporting Forms.
- D. **Reduction or Waiver of Goal.** If, at any point during the project, the A/E determines that it may not meet the apprenticeship goal for any prevailing wage classification, the A/E shall submit a request for a reduction or waiver of that particular goal, indicating why the goal may not be met. The A/E shall include all documentation supporting the request.
- E. **Certification of Completion.** As part of its final close-out package, the A/E shall submit a certification demonstrating that it has met the 10% apprenticeship goal or received a reduction or waiver of the 10% apprenticeship goal for each prevailing wage classification.

3.2 Green Building Requirements

- A. For all new construction, additions and major renovation projects (defined as 40% the replacement cost of the building or more), the project shall comply with the requirements in the Green Building Act. Projects that are 10,000 square feet and over, must either achieve a minimum of the United States Green Building Council's LEED Silver certification or an equivalent standard including, but not limited to, a two-globe rating from the Green Building Initiative. Projects less than 10,000 square feet should also be designed to meet these standards but certification will not be required.
- B. The A/E shall design all new construction, additions and major renovations to incorporate maximum LEED points within practical, scope and budgetary limits.
- C. Buildings that are not comfort conditioned shall be exempted from these standards.
- D. Waivers will be granted when an applicant can demonstrate to CDB that meeting the standards causes:
 - 1. An unreasonable financial burden, taking into account the operating and construction costs over the life of the building and the total cost of ownership of the building;
 - 2. An unreasonable impediment to construction;
 - 3. An impairment of the principal function of the building; or
 - 4. A compromise to the historic nature of the structure.
- E. All new construction and major renovation projects must implement at least one LEED alternative transportation criterion for public transportation or bicycle access.
- F. For all CDB projects, when a green building certification is being sought, a LEED or other green building rating checklist shall be completed and submitted with all design submittal phases. For those projects where no certification is required, a LEED or other green building rating checklist shall be completed and submitted with the 100% design submittal. For any criterion on the checklist that do not apply to the project, "N/A" should be noted.

3.3 Division of the Work. As determined by CDB, projects may be designed as single or multiple prime. For multiple prime projects, the A/E shall divide the work into at least five distinct trade contracts as required by CDB and in accordance with the Illinois Procurement Code. They are:

- 1. General
- 2. Plumbing
- 3. Heating
- 4. Ventilation
- 5. Electrical

This division shall be clear, concise and comprehensive. All work must be explicitly assigned to a particular trade contract. The A/E shall not include any clause or provision in the contract documents that attempts to assign any of the work by common trade practice, by indirect linkage, etc.

- A. If the A/E estimate for an individual trade is less than \$50,000, that trade's work may be combined with another trade. The A/E shall discuss with and obtain concurrence from the CDB PM before combining trades in the bidding documents.

- B. Documents shall not reference a "mechanical contractor." Documents shall refer specifically to the individual Plumbing, Heating, Ventilating, or Sprinkler contractors.
- C. The required five trade contracts may be expanded as appropriate for the project. The A/E shall confer with the PM for the appropriate contract trade designations. Some examples of additional designations are:
 - 1. General/Roofing
 - 2. General/Paving
 - 3. Asbestos Abatement
 - 4. Sprinkler
 - 5. Test and Balance
 - 6. Temperature Control/Building Automation
 - 7. Electrical/Communications
- D. Project Manual. The trade contracts and the work assigned to each shall be described in Paragraph 1.1 of each specification section (as illustrated in [Article 8](#)).
- E. Drawings. An appropriate letter identification (as described in [Article 9](#)) shall be used on the drawings to designate separate contracts within the project.
 - 1. 'M' **shall not** be used as a drawing letter identification.
 - 2. If work of a trade other than that indicated by the drawing letter designation is depicted on a drawing, that work must be clearly noted and distinguished from the other work on the drawing.

3.10 Civil

- H. Geotechnical & Environmental Studies
 - 1. Geotechnical Testing and Reports
 - a. For a new building, addition, or other project requiring excavation and removal of soil, the A/E and/or their geotechnical consultant shall investigate and present a report which considers the engineering implications of all available information and data. This shall include the review of available documents such as aerial photography; USDA/SCS reports; topographic, pedologic, bedrock surface, geologic and quaternary deposits maps; and other pertinent studies which have been completed for and near the project site. The report shall also document existing weather conditions when the samples are taken and special features of the area such as slope cuts, quarries, gravel pits, strip mines, springs, and caverns. The report shall include a separate section describing any treatments necessary to provide a stable platform for the construction. All soil and subgrade recommendations must be specific to certain locations, lengths, depths, and types of treatment that the designer can use to calculate plan quantities.
 - b. The locations and sampling frequencies for subgrade borings shall be at such intervals as to allow the identification of all soil types, the water table elevation, and bedrock that would impact the proposed project. In areas or sites where the building footprint will be located, minimum soil borings per the table below or as recommended by the A/E in coordination with their geotechnical consultant shall be provided. The A/E shall also provide an additional boring for each specialty feature such as elevator pits, deep basements, concentrated heavy loads, and locations where deep fill or irregular subsurface conditions have been discovered.

- c. Soil boring requirements and testing for roadway, civil structure, or parking lot design shall follow IDOT's Geotechnical Manual or as recommended by the A/E in coordination with their geotechnical consultant. The A/E shall provide 1 additional boring per each major specialty feature such as storm water detention systems. The borings should, at a minimum, extend through the pavement through the sub-base to sound material.

BUILDING FOOTPRINT SIZE	MINIMUM BORING REQUIREMENTS
Less than 5,000 SF	Minimum 2 borings
5,000 SF to 20,000 SF	2 to 4 borings
20,000 SF to 40,000 SF	4 to 6 borings
40,000 to 60,000 SF	1 boring per 10,000 SF, plus 1 boring for each 400 LF of building perimeter
Over 60,000 SF	1 boring per 10,000 SF, plus 1 boring for each 500 LF of building perimeter
Specialty Feature	1 boring per specialty feature listed above
Test for Contamination	1 test per 10,000 SF building footprint per disturbed layer
References	Naval Facilities Engineering Command (NAVFAC) DM7.01, Chapter 2.

ROADWAY OR PARKING LOT	MINIMUM BORING REQUIREMENTS
Road, parking lot, or civil structure	Minimum 2 borings plus 1 per 10,000 SF of improvement
Specialty Feature	1 boring per specialty feature listed above
Test for Contamination	1 test per 10,000 SF of improvement per disturbed layer
References	IDOT Geotechnical Manual, Jan 1999, or latest edition.

- 2. Environmental Testing and Reports
 - a. For a new building, addition, or other project requiring excavation and removal of soil, the A/E and/or their geotechnical consultant shall investigate and present a report on previous use and owners of the site for the past 100 years as part of the PA/DD submittal package. This is also known as an IEPA Level 1 investigation. If a Level 1 investigation yields suspicion of contaminated material, then a Level 2 investigation is warranted and shall be performed to determine and delineate those soils which cannot be disposed of in a CCDD or standard landfill.
 - b. If hazardous chemicals or other contaminants are found such that soil would be required to be disposed of as a 'special waste' or a 'hazardous waste' during the soil boring process, sufficient borings and tests shall be made to delineate the area and depth of the 'special waste' or 'hazardous waste' soil with a minimum of one boring per 1500square feet or as recommended by the A/E.
 - c. The soil report shall include specific recommendations for use or disposal of soils, and clearly describe limitations on use or disposal of 'special waste' or 'hazardous waste' soil.

22.2 Record Construction Drawings. Prior to submitting the A/E's final payment request, the A/E shall submit to CDB revised contract documents labeled "Record Drawings," with a Record Drawing Date located in the Revisions section of the title block on all sheets. The Record Drawings shall show all changes reported by the contractor(s), all changes made by change orders or addenda, and any clarifications made by the A/E during construction.

- A. Document Requirements
 - 1. A complete electronic set of "Record Drawing" drawings and specifications are required.
 - 2. See CDB's "Policy for Bid Set & Record Drawing Electronic Submittals Revised December 2011" located in the reference library on CDB's website (A/E Electronic Submittal Form) for submittal requirements. CDB's reference library can be found at www.illinois.gov/cdb/business/library
- B. The electronic submittal shall be accompanied by the Record Drawing Certification Form located in the CDB Reference Library under "A/E Electronic Submittal Form."
- C. The A/E will provide the CDB PM with one set of record drawings and support files on CD or by submitting a Zip file through the state's FTP site (<https://filet.illinois.gov/filet/pimupload.asp>) for CDB and one set of record drawings on CD for the Using Agency central office; black line print paper copy may also be required for the Using Agency. The A/E shall verify requirements with the CDB PM.
- D. For asbestos abatement projects and projects that included asbestos abatement, the A/E shall complete an Asbestos Abatement Project Summary Report. The report shall be submitted to the CDB PM on CD or by a file through the state's FTP site (<https://filet.illinois.gov/filet/pimupload.asp>) within 60 days of final clearance testing. The report format can be found in the Project Manual Workbook for Asbestos, Lead, UST and PCB (Appendix 5) and on the website. Supplemental Sampling Reports shall also be submitted on CD or through the state's FTP site for any sampling done as part of the project.

Appendix 1 STATUTORY REQUIREMENTS

9. Procurement of Domestic Products Act

- 9.1. The Procurement of Domestic Products Act, 30 ILCS 517/30, requires each purchasing agency making purchases of procured products to promote the purchase of and give preference to manufactured articles, materials, and supplies that have been manufactured in the United States.
- 9.2. "Manufactured in the United States" means, in the case of assembled articles, materials, or supplies, that design, final assembly, processing, packaging, testing, or other process that adds value, quality, or reliability occurs in the United States.
- 9.3. The Capital Development Board is exempt from the requirements of this Act with respect to a specific project if (i) the project is too complex to identify the numerous individual procured products required for the project or (ii) the procured products required for the project are too numerous or complex to be able to efficiently assess the sites where manufactured.
- 9.4. The A/E shall make the determination whether the project can meet the requirements of the Domestic Products Act or whether the exemption should apply. The A/E will then complete number 9 in Division 01 11 00 – Project Summary. If the A/E determines the promotion and preference for domestic products is applied to the project, Document 00 41 00 – Bid Form should include a choice for the bidder to request this preference. This determination will be submitted as part of the 100% design review submittal.

APPENDIX 2 CHECKLISTS (PADD, 50% / 75%)

CDB REVIEW CHECKLIST

Program Analysis (PA) Phase submittal
Design Development (DD) Phase submittal

Date _____
Project Number _____
CDB PM _____
A/E Representative _____

*These checklists have been prepared to provide clarity and instruction to A/E's in the preparation of the PA/DD submittal(s). They are intended to clarify the requirements stipulated in CDB's Design and Construction Manual (DCM), and **neither alter nor eliminate** the requirements set forth in the DCM or in the Professional Services Agreement. CDB recognizes that unique challenges and solutions are inherent in each project. Therefore these requirements should be addressed by the A/E **only as applicable** to each project and scope of work. Submittals which combine the PA and DD phases should include all applicable requirements for each phase.*

PA Submittal

- Narrative indicating the scope of work and a complete basis for the project design
- Diagrams (i.e., floor plans, site plans, flow diagrams, etc.) to graphically supplement the narrative
- Preliminary Code analysis (See template on following page)
- Statement of compliance with Flood Plain Construction Policy
- Proposed Project Cost Budget form
 - Cost estimate for each trade
- Estimated construction schedule
- LEED checklist (if applicable)

New buildings, additions

- Space itemization analysis
 - Function and size of space
 - Number and classification of occupants
 - Type and quantity of equipment
 - Required utilities
 - Special environmental and/or system requirements
- Total area of program spaces
- Report on historical uses of the site
- Masonry wall dew point calculation

Remodeling projects

- Statement of the status of asbestos and other hazardous materials (see DCM 5.3.C.5)
- If required, involvement of the Illinois Historic Preservation Agency has been acknowledged
- Required general phasing of work has been identified

DD submittal

Budget

- Proposed Project Cost Budget form
- Cost estimate for each trade and major work item

Project Manual

- Project Summary section 01 11 00 is complete
- Outline specification for each major project component. A *Table of Contents* list is not acceptable.

Drawings

- Comprehensive Code Analysis (See template on following page)
- Site Plan
 - Each building located
 - Existing CDB Building Numbers are indicated
 - Existing and finished contours
 - Ground floor elevations
 - Roads, walks, parking areas
 - Utilities
 - Other site construction
 - Limits of the contract
 - Floor Plans
- All exterior elevations
- Vertical building sections
- Location and type of primary structural members
- Fixed Equipment, including utility service req's.
 - Plumbing fixtures
 - Heating
 - Ventilating
 - Electrical
 - Areas requiring acoustical treatment are identified

Other Requirements

- Current project schedule (not necessarily *contractual* schedule)
- Soil testing as required by DCM 3.09.H)
- Seismic design criteria (DCM 3.11.D)
- Life cycle cost analysis for each alternative energy system considered
- Statement of compliance with Federal Energy Policy Act and ASHRAE 90.1 (DCM 2.2.B)
- Model or rendering (if required)
- Area analysis tabulation (PA comparison)
- Illumination levels
- LEED checklist (if applicable)
- Other negotiated requirements

Code Analysis Template

The following information shall be included in the drawing set for each submittal, bid documents, issued for construction documents and record documents as it applies to the project, plus additional code critical information pertinent to the project. The format below is recommended, but other formats that clearly document code requirements may be provided.

Note that compliance with NFPA 101 Life Safety Code, 2000 Edition is required by the Office of the State Fire Marshal.

ITEM	CODE SUBJECT	MODEL CODE/ EDITION	CHAPTER/ SECTION/ TABLE	REQUIREMENT/ ALLOWABLE	ACTUAL
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PART 1 – BUILDING REQUIREMENTS

1.01	Occupancy classification				
	Occupancy category				
	Building occupancy				
1.02	Height/area limitations				
	Number of stories				
	Automatic sprinkler system increase				
	Height				
	Area per story				
1.03	Types of construction				
1.04	Required hours of fire resistance				
	Exterior bearing walls				
	Interior bearing walls				
	Floor construction				
	Structural frame				
	Roof construction				
	Walls between compartments				
1.05	Fire resistive requirements				
	Exterior wall fire resistance rating (separation distance)				
	Elevator hoistway				
1.06	Opening protectives				
	Door at 2 hour walls				
	Door at 1 hour fire partition corridor & storage walls				
	Door at exterior walls				

1.07	Incidental use areas				
	Boiler room				
	Storage > 100 S.F.				
	Flammable material storage				

PART 2 – EXIT REQUIREMENTS

2.01	Standpipes				
2.02	Fire alarm pull boxes				
2.04	Means of egress				
	Exit signs				
	Tactile exit signs				
2.05	Portable fire extinguishers				
2.06	Means of egress illumination				
	Illumination level				
	Emergency power source				
2.07	Exit Access Requirements				
	Min. number building exits				
	Maximum number occupants for single exit				
	Maximum occupant load for non-panic hardware				
	Min. exits per space				
	Maximum common path of egress travel distance				
	Maximum travel distance to an exit access				
	Egress through intervening spaces				
	Maximum dead end corridor length				
	Minimum corridor width				
	Exit door capacity				

PART 3 – ACCESSIBILITY (ILLINOIS ACCESSIBILITY CODE)

3.01	Exceptions/Waivers				
3.02	Parking requirements				

3.03	Van accessible parking				
3.04	Elevators				
	Basements				
	Mezzanines				
3.05	Areas of Rescue Assistance				
	Two-way communication				

PART 4 – STRUCTURAL REQUIREMENTS

4.01	Drawing documents				
	Roof & floor live loads				
	Ground snow load				
	Basic wind speed				
	Seismic design category				
	Seismic site class				
	Flood design data				
	Special purpose loads				
	Essential facility				
4.02	General design requirements				
	Strengths of materials				
	Special inspections				

PART 5 – CIVIL REQUIREMENTS

5.01	Storm Water Pollution Prevention Program				
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PART 6 – PLUMBING REQUIREMENTS

	Illinois Plumbing Code				
6.01	Fixture requirements				
	Water closets/urinals				
	Lavatories				
	Drinking fountains				

PART 7 – MECHANICAL REQUIREMENTS

7.01	Ventilation				
7.02	Equipment efficiency				

PART 8 – FIRE ALARM REQUIREMENTS

8.01	Manual fire alarm system				
	Manual FA boxes				
8.02	Automatic smoke detection				
	Smoke detectors				
	Smoke alarms				

8.03	Notification appliances				
	Audible alarms				
	Voice alarm systems				
	Visible alarms				

In addition to the code information required above, provide drawings showing the following requirements:

1. If building includes more than one occupancy type, identify occupancy of each space.
2. Rated wall, floor and roof assemblies in both plan and section. Indicate rating requirements.
3. Maximum allowable and actual occupant load for each space.
4. Path of travel to exit access. Indicate allowable and actual distance in feet.
5. Common path of egress travel – allowable and actual distance and feet.
6. Dead end corridors – allowable and actual distance in feet.
7. Graphically identify all required exit discharges.
8. Graphically identify all horizontal exits.
9. Indicate number of allowable and assigned occupants for each exit access and each exit discharge throughout exit access corridors.
10. Location of all required exit lights and pull stations.
11. Location of all required fire extinguishers.
12. Location of all required areas of rescue assistance including two-way communication.

CDB REVIEW CHECKLIST

50% or 75% Design Submittal

Date _____

Project Number _____

CDB PM _____

A/E Representative _____

*This checklist has been prepared to provide clarity and instruction to A/E's in the preparation of the 50% design submittal. It indicates information that is generally expected by CDB at the 50% phase, and **neither alters nor eliminates** the requirements set forth in the Design and Construction Manual or in the Professional Services Agreement. CDB recognizes that unique challenges and solutions are inherent in each project. Therefore, these requirements should be addressed by the A/E **only as applicable** to each project and scope of work.*

Cost Estimate

- "Proposed Project Cost Budget" form including all applicable trades and the Construction Administration Fee (CAF) for each trade.
- Cost estimate
Costs are identified for each trade and a breakdown of work items within each trade. Major budgetary decisions are established, including construction cost, base bid and alternates.

Project Manual

- Divisions 00 and 01 are 95% complete
 - Table of Contents is completeThe following sections are complete and coordinated with the technical specifications sections:
 - 01 33 23 · 01 45 29
 - 01 78 23 · 01 78 36
- Hazardous materials are identified
- Alternate bids are established
- Each technical specification section is partially complete in standard CDB format (as per CDB's Design and Construction Manual). A list of products and execution processes is required.
- All technical specification sections are in correct Base Bid / Alternate format (as per CDB's Design and Construction Manual), assigning work to the correct trade/contractor(s).
- Single- and dual-source products have been identified
 - Letters of request from the A/E and the Using Agency have been submitted to CDB.
- Roofing sections are complete
As per CDB's Membrane Roofing Program Handbook
- Roofing sections have been submitted to the specified roofing system manufacturers for the signing and returning of the Roofing System Manufacturer's Certificate

Drawings

General information

- Comprehensive code analysis (See template)
 - Cover Sheet G-1 is complete
 - Standard CDB title block
 - State Building Inventory numbers and names
 - Maps
 - Index of Drawings
- Key to symbols, abbreviations and material indications is provided

Civil Drawings

- Site Plan includes utility locations, topographic drawings, site drainage, parking areas, roads, sidewalks, survey control points, grades and radii
- Details are partially complete
- Cross sections are established
- Soil investigations, including septic analysis

Architectural

- Floor Plans are complete
Includes dimensions, room names, room numbers, door numbers, large equipment items, section symbols, detail symbols and interior elevation symbols
- Reflected ceiling plans are complete
Includes heights, materials finishes, light fixtures and grills
- Roof Plan is complete
As per CDB's Membrane Roofing Program Handbook
- Building elevations are complete
- Building sections are complete
- Wall sections are complete
Includes a section at each significant wall configuration
- Details
 - All connections of new work to existing structures
 - All enlarged details of wall sections
 - Roofing and flashing details
- ASHRAE 90.1 building envelope compliance forms attached
- Complicated interior elevations are complete
- Door Schedule is partially complete
Door numbers, locations, types and sizes are indicated
- Room Finish Schedule is partially complete
Room names, room numbers, finishes and ceiling heights are indicated.

50% / 75% checklist

Drawings, *continued*

Structural

- Structural Notes include information pertaining to applicable building codes, strengths of materials, live loads, dead loads, lateral loads, seismic provisions and other general notes.
- Foundation Plan is established
 - Footing schedules are partially complete
- Framing plans are complete
 - Framing systems and preliminary sizes of members are indicated
 - Frame elevation sheets are partially complete
 - Column schedules are partially complete

Plumbing

- Plumbing plans indicate fixture locations, equipment locations, gas, water, interior storm, sanitary waste and vent pipe routing.
- Plumbing equipment schedules are partially complete.
Indicates capacities of major equipment
- Basic installation details of major equipment
- Source of utilities
May be located on Site Plan or Site Utility Plan

Fire Protection

- Plans indicate sprinkler riser, standpipe riser, fire department (Siamese) connection and areas to be protected by sprinkler system or other automatic extinguishing system
- Source of water / connection to existing system

Heating

- Heating plans indicate major equipment, heating water and chilled water piping
- Equipment schedules are partially complete.
Indicates capacities of major equipment
- Basic installation details of major heating equipment

Ventilating

- Ventilating plans indicate major equipment, duct routing and location of required fire or smoke dampers
- Equipment schedules are partially complete.
Indicates capacities of major equipment
- Basic installation details of major ventilating equipment
- Provision for oversized or backup equipment
In consideration of future capacity

Temperature Controls

- Sequence of operations for major equipment
- Preliminary points list
- Temperature control / building automation system connection to existing system
- ASHRAE 90.1 mechanical system compliance forms attached

Electrical

- Electrical plans indicate fixtures, devices, symbols, mechanical equipment and special systems, including fire detection/alarms
- Ratings are partially determined *Service entrance equipment, switchgear, panelboards, motor services and other equipment*
- All feeders 100A and larger that are shown should show conduit routing *Home run symbols are not acceptable*
- Code-required clearances are established
- Equipment schedules are partially complete, identifying all equipment
- Power one-line diagrams are partially complete
Indicates all panels, transformers, voltages, main overcurrent devices and amp ratings
- Panel schedules are partially complete
Indicates the load requirements per circuit, the total panel connected loads and any de-rated load calculations
- Special systems one-line diagrams show all major equipment
- Grounding electrode system and connections are shown
- Illumination levels are indicated, and light sources are identified
- ASHRAE 90.1 electrical system compliance forms attached

Miscellaneous

- List of required construction phase tests
- Utility contact information – names, phone numbers, etc.
- LEED checklist (if applicable)

Appendix 5

PROJECT MANUAL WORKBOOK for ASBESTOS, LEAD, UST and PCB

PROJECT MANUAL WORKBOOK for ASBESTOS, LEAD, UST and PCB

**November
2016**

Illinois Capital Development Board

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Article 1 PROJECT MANUAL WORKBOOK FOR ASBESTOS, LEAD, UST & PCB

1.1 General. This workbook has been prepared for use with the current edition of the “Standard Documents for Construction” (SDC) and this “Design & Construction Manual.”

1.2 Material Included. This manual/workbook contains instructions and forms. Guide specification sections available on CDBs website are the minimum requirements for the preparation of the specific Project Manual sections. However, the material in this workbook, including instructions, is mandatory.

Instructions to the A/E reference the Associated Regulatory Requirements.

1.3 CDB’s Web Site. CDB documents, forms and publications are available on CDB’s web site Reference Library (www.illinois.gov/cdb).

Article 2 ASBESTOS PROJECTS

2.1 General. Asbestos abatement requires compliance with regulatory requirements and the use of Illinois Department of Public Health (IDPH) licensed personnel. Each A/E shall comply with the following procedures if asbestos is encountered.

2.2 Administration.

A. CDB shall assign a Project Manager (PM) for all abatement projects. The PM’s will coordinate with the A/E, CDB staff and the User for asbestos projects including inspections, sampling, management plan and abatement design required for remodeling/rehabilitation projects.

B. The A/E shall design the abatement of asbestos (ACM) to minimize asbestos exposure to all individuals involved in the project. This includes building occupants, contractors, employees, and A/E staff.

If an A/E encounters asbestos during a routine remodeling project and the A/E does not employ licensed staff as described above, the A/E shall contract with a CDB prequalified firm to provide the necessary asbestos abatement services.

C. All bulk samples for analysis shall be collected by IDPH-licensed Building Inspectors. All inspection, sampling and management planning services shall comply with the A/E Manual of Procedures for Asbestos Inspections and Management Plans (Asbestos Protocol).

2.3 Design Criteria

- A. Rules and regulations for asbestos abatement promulgated by the IDPH shall be used for asbestos abatement: Rules for Asbestos Abatement for Public and Private Schools and Commercial and Public Buildings (77 Ill. Admin. Code 855, Subpart E). This includes the same format for abatement Completion Reports [855.170(a)(5)] (APM Report). Variances shall be approved in writing by CDB (and IDPH, if the project involves elementary or secondary schools) with the following exceptions:
1. All projects not under IDPH jurisdiction shall utilize a dual role APM/ASP unless otherwise directed by CDB.
 2. All tent enclosures shall require a minimum 6-hour hang time.
 3. All floor tile and floor tile mastic abatement projects not under IDPH jurisdiction shall utilize a single layer of poly sheeting on wall surfaces, unless otherwise directed by CDB.
 4. All projects not under IDPH jurisdiction shall utilize PCM clearance, unless otherwise directed by CDB.
 5. All projects which involve demolition of an unoccupied facility shall follow applicable IEPA & NESHAP regulations.
 6. All non-friable, floor tile abatement projects not under IDPH jurisdiction shall require a specific variance from CDB. CDB will require engineering controls during abatement, area air monitoring, clearance air monitoring and notification of all non-friable projects.
 7. The APM Final Report shall include documentation of medical clearance for all supervisors, workers and the APM/ASP.
- B. All asbestos abatement work will be performed using appropriate respiratory protection in accordance with applicable OSHA regulations (29 CFR 1910.134; 29 CFR 1910.1001; 29 CFR 1926.103 and 29 CFR 1926.1101).

2.4 Preliminary Design Phase

- A. For an asbestos abatement project, the A/E's Preliminary Design Phase Services are modified as follows. Whenever Inspection and sampling has not previously occurred, the A/E shall provide inspection and sampling prior to the preliminary design. The documents shall be prepared in accord with CDB's *A/E Manual of Procedures for Asbestos Inspections and Management Plans*.
- B. A Management Plan may be required if all of the identified asbestos is not removed during construction.

2.5 Bidding Documents Phase

- A. CDB has developed guide specifications sections, edited versions of which may be used as appropriate by the A/E on abatement projects.
- B. The A/E shall coordinate with the building user to determine when abatement may occur.
- C. If the abatement work is less than the small project threshold (verify with CDB project manager) or more than \$15M single prime contract, the asbestos work may be done by a subcontractor. All other abatement work will be a separate trade assigned to the coordinating contractor.
- D. Any variance request must be approved in writing by CDB, and IDPH when applicable, prior to being incorporated in the plans and specifications by the A/E.
- E. The A/E shall consider notification and other regulatory requirements in determining the construction schedule.

2.6 Construction Phase

- A. The A/E shall provide an Asbestos Project Manager/Air Sampling Professional (APM/ASP) whose full-time responsibility during construction shall be monitoring the asbestos contractor's or subcontractor's methods and procedures to ensure all specified rules and regulations for abatement are followed. The APM/ASP shall be licensed as defined in the IDPH Rules and Regulations.
- B. The Asbestos Project Manager/Air Sampling Professional (APM/ASP) shall be inside containment a minimum of two hours each half day of work. The APM/ASP may spend additional time in containment whenever air sampling indicates higher than normal fiber counts, or during cleaning periods prior to final clearance to verify all ACM has been properly removed. Failure of the APM/ASP to comply with the above will result in a decrease in the payment to the A/E for the APM/ASP services.
- C. The A/E will submit copies of the APM FINAL REPORT to the Contractor, CDB, IDPH (when applicable) and two copies to the Using Agency within 60 days of final clearance testing. All APM Final Reports shall be submitted in electronic .pdf format.

- D. Required Air Sampling:
 - 1. Maximum of seven (7) samples/day per contained work area which includes: two (2) inside work area, two (2) outside work area, one (1) at the negative air, one (1) field blank, one (1) lab blank for 02 82 13 projects. All OSHA samples are the contractor's responsibility (for AHERA follow IDPH rules).
 - 2. Maximum of three (3) samples for glovebag/tent enclosures.
 - 3. Non friable projects:
 - a. representative sample of worker exposure.
 - b. minimum one day for each work activity.
- E. All air monitoring is to be conducted as per IDPH Rules and Regulations.
- F. Air monitoring procedures for glovebag removal is to be conducted following IDPH Section 855.480 of IDPH Rules and Regulations.
- G. Personal air monitoring for CDB Projects is the contractors' responsibility under OSHA Regulations. Only AHERA projects under IDPH jurisdiction will have personal sampling performed as part of CDB's responsibility.

2.7 References located in CDB's reference library.

- A. Sample Specification Section 02 82 11 - Minor Demolition for Non-friable Asbestos Removal
- B. Sample Specification Section 02 82 13 - Asbestos Abatement
- C. Sample Specification Section 02 82 15 - Minor Demolition for Non-friable Asbestos Roof Removal

2.8 Attachments.

- A. Asbestos Abatement Estimate Outline Form with Instructions (Capital Development Board)
- B. APM Report Requirements

GUIDELINES FOR ESTIMATING ASBESTOS ABATEMENT PROJECTS

The attached listing of asbestos abatement work items are provided as a guideline for use in preparing cost estimates during the design phase. It should be used as appropriate; modified, or supplemented when required. The A/E is responsible for the estimate and these guidelines should not be construed as inclusive or the only method which may be used. An estimate of comparable detail is required regardless. Be sure to include asbestos costs on CDB's Proposed Project Cost Budget (PPCB) form.

Preparation -	All costs for mobilization, set-up and area preparation prior to removal of any ACM. Note the inclusion of work items for demolition of non-contaminated building components to gain access to ACM. Verify that this demolition work is truly not contaminated by asbestos prior to including the costs in this section.
Architectural Systems -	This section is for cost of removal of ACM encountered in architectural systems or work normally installed as general work.
Thermal Systems -	This section is for cost of removal of ACM encountered in work originally installed as part of HVAC work, usually by the insulation subcontractor.
Equipment Rental -	The costs of capital equipment used on the project by the contractor. Either direct rental costs or allocation of costs for equipment owned by the contractor.
Final Clean-up & Restoration -	All costs, after removal of the bulk of the ACM to perform final removal and clean up, dismantling, and demobilization required to restore the facility for the owner's use.
General Conditions -	Project costs required by the general conditions and typically estimated by the size and/or duration of the project.
Recapitalization -	For summarizing the costs on the previous sections and adding insurance overhead, profit and contingency.

ESTIMATE RECAPITULATION PROJECT ASBESTOS ABATEMENT ESTIMATE OUTLINE						ESTIMATE NO.		
LOCATION						SHEET NO.		
ARCHITECT/ENGINEER						DATE		
SUMMARY BY			PRICES BY			CHECKED BY		
DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL ESTIMATED MATERIAL COST	UNIT PRICE	TOTAL ESTIMATED LABOR COST	UNIT PRICE	TOTAL
Pre-clean		Square Ft.						
Protection		Square Ft.						
Temp. Partitions		Square Ft.						
Polyethylene		Square Ft.						
Remove Plaster		Square Ft.						
Remove Drywall		Square Ft.						
Remove Ceiling Tile		Square Ft.						
Remove & Clean Light Fixtures		Each						
Protect Grills & Registers		Each						
Remove Fireproofing		Square Ft.						
Remove Boiler Insulation		Square Ft.						
Remove Pipe Insulation by Size		Lineal Ft.						
Abate Fittings by Size		Each						
Remove Breaching of Flue Insul		Square Ft.						
Remove Duct Insulation by Size		Lineal Ft.						
Glove Bags		Each						
Remove V.A.T.		Square Ft.						
Remove Mastic with Solvent		Square Ft.						
Remove Mastic Bead Blast		Square Ft.						
Remove Transite Pipe by Size		Lineal Ft.						
Remove Transite Board		Square Ft.						
Remove Contaminated Soil		S.F. / C.Y.						
Load & Haul Waste		Loads						
Dump Fee		Cubic Yd.						
Final Clean		Square Ft.						
Reinsulation Pipe or Duct by Size		Linear Ft.						
Reinsulate Fittings by Size		Each						
Patch Fireproofing		Square Ft.						
Encapsulate		Square Ft.						
Equipment (Pre-List)		Each						
Scaffolding Per Job								
High-lift								
Electrical with Lighting								
Mechanical - Heat, Vent & Plumb								
General Conditions								
Overhead & Profit								
Bond & Insurance								
CAF								

APM FINAL REPORT REQUIREMENTS

Within 60 days of final clearance testing, the Asbestos Project Manager will submit the Final Report to the following:

A/E:	1 copy
Contractor:	1 copy
Using Agency:	2 copies
CDB:	1 copy
I.D.P.H.:	1 copy (if applicable)

The A/E shall distribute the reports in electronic format with letters of transmittal sent to the CDB Project Manager.

Reports for IDPH-regulated projects shall be submitted on hard-copy, unbound, with tabs. The following information shall be provided on the front cover sheet:

Job Title	Building Name	Building No.
CDB Project Number		<hr/>
Using Agency	City County	State
APM/ASP	Name and Address	<hr/>
Project Designer	Name and Address	Seal and Signature
Date	Date of Final Clearance	<hr/>
CDB Logo		<hr/>

The Final Report is to have a Table of Contents. Each Section of the Report is to be tabbed and titled. Pages within each Section are to be numbered. The report shall follow the IDPH format, shall be submitted to CDB and to the Using Agency in an electronic format and shall include the following:

- Section A) Project Manager’s Report Form provided by IDPH.
- Section B) Items submitted by the Contractor under Section 833.350(a).
- Section C) For clearance air samples, include the location of the sample, start and end times of sampling, sampling air flow rate, volume of air sampled, name and address of laboratory performing the analysis and name and address of the analyst.
 - i) When final air clearance monitoring samples are analyzed by a laboratory using TEM, include a copy of the NVLAP certificate for airborne fiber analysis for the laboratory.
 - ii) When final air clearance monitoring samples are analyzed by PCM in a laboratory, include a copy of the Proficiency analytical Testing (PAT) program’s year-to-date performance report for the laboratory.

- iii) When final air clearance monitoring samples are analyzed by an analyst outside of a laboratory, include a copy of the report of the performance testing under the Asbestos Analyst Registry (AAR) Program for the analyst for the testing round completed prior to the completion of the project, but not after the completion of the project.
- Section D) Names, license numbers, current training certificates and medical clearance certificate for asbestos abatement workers who conducted the abatement.
- Section E) Name, address and license number of the asbestos contractor.
- Section F) Names, addresses, license numbers, initial and current training certificates and certificate of medical clearance for the project designer, project manager and contractor's supervisor(s) and signature of the project manager.
- Section G) Name, signature and license number of each air sampling professional.
- Section H) Log of negative pressure measurements taken by the contractor for contained areas. The readable tape for the manometer shall serve as the log. This is only applicable to IDPH-regulated projects.
- Section I) Variance requests submitted to CDB and/or IDPH and the responses to those requests.
- Section J) Locations, times and results of background, personal and area air samples taken prior to and during the project.
- Section K) A detailed description, diagram or blueprint indicating the location of ACBM abated, locations of barriers and locations of decontamination enclosures.
- Section L) A detailed description of the project, including abatement methods employed, reasons for the project and for the selection of abatement methods, description of types and amounts of ACBM abated, and start and completion dates of the project.
- Section M) Daily log of observations made by the project manager, including a description of project activities, documentation of smoke-testing of barriers by the contractor, documentation of post-abatement visual inspection of each work area, and description of procedures used during clearance air sampling.
- Section N) Items submitted by the contractor under Section 855.350(c)(d).
- Section O) For cleaning performed in accordance with Sections 855.400(f)(1)(A), (D) and (E), include the names of persons performing the cleaning, the date and locations of the cleaning and the methods used.

Article 3 GUIDELINES FOR LEAD

3.1 General

The majority of paint manufacturers utilized lead (Pb) paint formulations prior to 1978. In 1978, the use of lead-based paint for residential use was banned; in 1990 lead-based paint was prohibited for CDB projects. Most paints today do not contain quantities of lead sufficient to be categorized as lead-based coatings; however, there are still some paints which do contain sufficient lead to be categorized as lead-based.

3.2 Sampling (paint chip) & Testing(XRF)

As required by the Professional Services Agreement, the A/E shall provide for the selective testing of materials to be affected by the project. The A/E shall recommend to CDB the number of samples to be taken, and written approval shall be issued by the CDB Project Manager prior to testing. Existing materials integral to the project shall be tested, as well as any adjacent materials that are affected by the construction. Such materials shall be categorized as CDB recommends: walls, ceilings and trim (windows, doors and frames) - 5 samples per category. Sampling shall be conducted by a licensed inspector. If sample analysis is required, then the laboratory used shall be accredited by the Environmental Lead Laboratory Accreditation Program.

Paint containing more than five-tenths of one percent ($\frac{1}{2}\%$ or 0.5%) lead by weight is considered lead-based paint (LBP). Costs incurred in the sampling and testing of materials are reimbursable expenses. Results of the testing shall be included in Section 02 83 19 of the Project Manual.

3.3 Design

Should testing indicate the presence of LBP, regulations established by the Occupational Safety and Health Administration (OSHA) and the Illinois Environmental Protection Agency (IEPA) are applicable to the project. If the project site is utilized for either public housing or for day care purposes, then guidelines established by the U.S. Department of Housing and Urban Development (HUD) are applicable as well.

In the project documents, identify all LBP. The A/E shall indicate in 01 11 00.2.B. of the Project Manual the existing conditions where lead paint is located. See the attached example. Specify remediation in Section 02 83 19 Lead-Based Paint Removal. IDPH notification is required only in residential and day care projects.

If asbestos abatement activities are being conducted in conjunction with lead remediation, then the A/E shall maximize all opportunities to combine similar activities and equipment items such as containment barriers and negative-air machines.

Clearance sampling shall be required following all LBP-related activities and shall conform to current HUD requirements. All interior LPB removal shall be conducted within containment areas. Critical barriers shall be maintained, drop cloths shall be utilized on floors and additional protection of adjacent finishes shall be provided as necessary. If removal is to occur adjacent to an occupied area, or if the site is to be re-occupied, then negative air pressure is required within the containment area. Containment utilizing opaque barriers may be required for all exterior removal

3.4 Construction

The Lead Construction Standard (OSHA 1926.62) has been in effect since June 4, 1993 and all construction activities shall be conducted in accord with this standard. The permissible exposure limit (PEL) for lead is 50 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) and the action level is 30 $\mu\text{g}/\text{m}^3$. Both levels are for an 8- hour time weighted average (TWA). The OSHA standard also requires contractors to perform an exposure assessment for each project. It is the responsibility of the A/E to provide on-site representation during the critical activities.

3.5 Disposal

If demolition/construction debris containing LBP still adhered to the substrate is generated from a non-residential structure, the waste may be handled as general refuse. However, if the LBP is removed from the original substrate to which it was adhered, then the waste is a special waste. The waste shall be analyzed by the Toxicity Characteristic Leaching Procedure (TCLP). LBP waste that meets the definition of special waste is hazardous if it has a concentration of lead equal to or greater than 5.0 mg/l as determined by TCLP. In addition, other parameters shall be below the regulatory limits for toxicity and other characteristics and listings. The Resource Conservation Recovery Act (RCRA) establishes LBP regulations. The handling and disposal of hazardous waste shall be conducted in accordance with the RCRA regulations applicable to the activity being conducted. LBP waste shall be stabilized prior to disposal in a facility that is permitted by IEPA to accept the waste.

3.6 Transportation of LBP Waste. Anyone who hauls or transports special waste shall have a current, valid waste hauling permit issued by the IEPA.

Note: Any person who is transporting special waste for a generator who generates less than 100 kilograms (220 pounds) of special LBP waste in a calendar month is exempt from this requirement. The Contractor shall submit all waste manifests to CDB with their respective pay request.

3.7 References

- A. IDPH Notice of Commencement, Lead Abatement/Mitigation Project.

3.8 Attachments

- A. Section 01 11 00 - Project Summary with Sample Language for Lead Abatement