

**Version 2018.1**





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## I. DOCUMENT STANDARDS OVERVIEW

- A. Long Beach Unified School District (LBUSD) has prepared these Document Standards to provide a consistent and predictable approach to producing documents for construction of new and renovation projects. The LBUSD Document Standards establish process and procedures for producing documents using AutoCAD format drawings or Revit format drawings and provides section outlining protocols for BIM models and drawings. It also covers process documentation including color boards, specifications and quality control.
- B. These guidelines are intended as instructions for specific requirements related to LBUSD project documents. They are not intended to replace standard industry practices for a discipline; standard industry practices should be incorporated as a foundation for each discipline and is the responsibility of the Design Professional.
- C. Review all sections of the Document Standards prior to commencing the project. All drawings will be delivered on a standard LBUSD [Title Block](#).
- D. Objectives
  - 1. The principle objective of incorporating standards is to improve the quality of the design solutions, and to provide a framework for a consistent approach to producing drawings and documentation for construction projects.
  - 2. It is the intent of the Document Standards to achieve the following:
    - a. Consistency in content and appearance of LBUSD projects.
    - b. To address unique conditions and practices required by LBUSD for conformance and quality control.
    - c. Develop a consistent drawing product.
    - d. Define BIM modeling and data exchange protocol.
    - e. Facilitate a collaborative project environment between all parties.
    - f. Facilitate project coordination between LBUSD and the Design Professional.

**Note:** Throughout the Document Standards, Long Beach Unified School District may be referred to as LBUSD or, simply, the District.

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## II. PROJECT MILESTONES

### A. Conceptual Design (Pre-Design) Phase Services

1. When required by the Agreement, the Design Professional shall prepare and present, based on a campus evaluation, the following items to be used as guidance for the duration of the project:
  - a. Goals and vision for the project
  - b. Construction budget
  - c. Project schedule
  - d. Project delivery method
2. This phase does not require formal documentation or submittal.

### B. Schematic Design Phase Services

1. Upon written District approval of Conceptual Design Phase and when required by the Agreement, the Design Professional shall prepare drawings, sketches, and design narratives that include:
  - a. Schematic Plans, Studies, and Design Analysis:
    - i. Architectural:
      1. Overall site plan including buildings, access roads, paving, site walls and fencing, structured parking facilities, and paved parking lots;
      2. Floor plans showing complete building layout, identifying major and minor spaces and their relationships;
      3. Preliminary exterior elevations indicating the fundamentals of the architectural concept;
      4. Preliminary building sections; and
      5. Building and room area tabulations to show conformance with the program requirements.
    - ii. Structural:
      1. Floor plan showing layout of structural systems with dimensions and floor elevations
    - iii. Mechanical:
      1. Floor plan showing location and preliminary sizing of all major equipment and ductwork in allocated space;
      2. Single line diagram of all mechanical equipment spaces, ductwork and pipe chases; and
      3. Temperature control zoning
    - iv. Electrical:
      1. Floor plan showing location and preliminary sizing of all major electrical systems and components; and
      2. Single line diagram showing major distribution system
    - v. Civil:

1. Site plan showing preliminary finish grades and drainage
  - b. Design Narratives:
    - i. Architectural: a narrative including possible CHPS strategies, building design alternatives, initial code analysis, potential fire life safety and accessibility issues.
    - ii. Structural: identification, description, and cost analysis of structural systems that appear compatible with the building design.
    - iii. Mechanical: a description of at minimum two (2) HVAC systems that appear compatible with the building design, including a life cycle cost analysis.
    - iv. Plumbing: a description of proposed plumbing system.
    - v. Electrical: a description indicating lighting concepts, low voltage and communication loads, major electrical equipment, and approximate location of electrical distribution system, including service entry, switchboards, motor control centers, panels, transformers and emergency generator.
    - vi. Civil: identification, description, and cost analysis of site utility systems, surface improvements, drainage systems and finish grade.
    - vii. Landscape: a description of landscape design concepts that appear compatible with the building design, including analysis of existing conditions
  - c. Construction Cost Estimate.
  - d. Project Schedule through final completion.
  - e. A Set of Colored Drawings: indicating proposed building location for the purpose of communicating to the public the intended location of the building.
  2. Refer to [Appendix: LBUSD Deliverable Requirements Checklist](#) for additional information on deliverable requirements.
- C. Design Development Phase Services
1. Upon written District approval of Schematic Design Phase, when required by the Agreement, and including any District authorized adjustments, the Design Professional shall prepare Design Development Documents for the District's approval. The documents shall illustrate refinement of design, relationships, form, size, and appearance of the project. The Design Development Documents shall include:
    - a. Drawings:
      - i. Architectural:
        1. Site plan showing major developments including dimensions and details;
        2. Floor plans including space assignments, dimensions, and location of fixed and moveable equipment and furniture that affects the design of the spaces;
        3. Code analysis plan;
        4. Exterior building elevations, including exterior design elements and features, such as windows, materials, and mechanical and electrical features on walls and roofs;
        5. Interior elevations of major spaces indicating features such as casework, equipment, and systems locations;



- 
6. Reflected ceiling plans indicating ceiling materials, heights, and all architectural, mechanical and electrical devices and equipment;
  7. Building and wall sections including floor-to-floor dimensions, major features, and coordination between disciplines;
  8. Typical and unique details;
  9. Schedules including but not limited to doors and finishes; and
  10. Outline specifications for architectural, structural, mechanical, electrical, civil and landscape.
- ii. Civil:
    1. Further refinement of site plan to include grading, cut and fill calculations, paving, storm drainage, wet utilities, entry points, demolition, off-site requirements, easements, and setbacks.
  - iii. Landscape:
    1. Preliminary plans to include proposed materials, planting, irrigation system layout, demolition, planting schedule, and irrigation legend.
  - iv. Structural:
    1. Preliminary foundation, floor, and roof framing plans with grid schema;
    2. Details and notes to show the structure's significant design elements.
  - v. Mechanical:
    1. Further refinement of floor plans indicating equipment locations, duct layout and sizes, thermostats, and fire smoke dampers;
    2. Preliminary roof plans indicating equipment locations;
    3. Section through critical areas showing coordination between disciplines;
    4. Heating and cooling load calculations; and
    5. Schedules including but not limited to HVAC equipment.
  - vi. Plumbing:
    1. Preliminary floor plans indicating fixture locations, pipe layout and sizes, points of connection, and equipment;
    2. Building sections through critical areas showing coordination between disciplines; and
    3. Schedules including but not limited to plumbing fixtures and equipment.
  - vii. Fire Protection:
    1. Preliminary floor plans indicating fire riser, sprinkler piping, and sprinkler heads.
  - viii. Electrical:
    1. Further refinement of floor plans indicating equipment locations such as transformers, switch gear, generator sets, and panels;
    2. Preliminary reflected ceiling plan indicating lighting layout coordinated with the established ceiling system;

3. Preliminary low voltage floor plans indicating layout and device locations for MDF, IDF, fire alarm system, security system, intercom clock and bell system, telephone system, AV system, cable TV and data networks;
4. Schedules including but not limited to lighting, equipment, panel, and circuit.
- b. Updated Construction Cost Estimate.
- c. Updated Project Schedule through final completion.
- d. Outline specifications in 6-digit C.S.I. MasterFormat with District provided Division 0.
- e. 3D Renderings and BIM models.
- f. Facilities Design Conformance Letter with Approved Variances.
2. Refer to [Appendix: LBUSD Deliverable Requirements Checklist](#) for additional information on deliverable requirements.

**D. Construction Documents Phase Services**

1. Upon written District approval of Design Development Phase, when required by the Agreement, and including any District authorized adjustments, the Design Professional shall prepare Construction Documents for the District's approval. Where required by the Agreement, submit a fifty percent (50%) or ninety percent (90%) Construction Document set. The one-hundred percent (100%) submittal set must be one-hundred percent (100%) complete with firm quality control prior to submitting for constructability review. The Construction Documents shall consist of Drawings and Specifications properly coordinated for construction of the Project with compliance to all applicable codes and consideration of all legal requirements and shall include:
  - a. Drawings:
    - i. Architectural:
      1. Code analysis plans;
      2. Site plan;
      3. Enlarged site plans;
      4. Site details;
      5. Demolition plans;
      6. Floor plans;
      7. Enlarged floor plans;
      8. Roof plans;
      9. Reflected ceiling plans;
      10. Exterior elevations;
      11. Building sections;
      12. Wall sections;
      13. Interior elevations;
      14. Finish schedule;
      15. Door schedule;

- 
16. Signage schedule; and
  17. Details.
- ii. Civil:
    1. Demolition plan;
    2. Horizontal control plan;
    3. Grading plan;
    4. Site plan;
    5. Drainage plan;
    6. Utility plan (water, waste, drainage);
    7. Erosion control plan;
    8. Off-Site plans; and
    9. Site details.
  - iii. Landscape:
    1. Demolition plan;
    2. Planting plan;
    3. Irrigation plan;
    4. Planting and irrigation schedules; and
    5. Details.
  - iv. Structural:
    1. Demolition;
    2. Foundation plans;
    3. Floor framing plans;
    4. Roof framing plans;
    5. Wall sections;
    6. Elevations;
    7. Schedules; and
    8. Details.
  - v. Mechanical
    1. Floor plans;
    2. Roof plans;
    3. Enlarged floor plans;
    4. Building sections;
    5. Equipment schedules;
    6. System diagrams;
    7. Details; and

- 
8. Title 24 calculations.
  - vi. Plumbing
    1. Site plan;
    2. Floor plans;
    3. Roof plans;
    4. Schedules;
    5. Details; and
    6. Diagrams.
  - vii. Fire Protection
    1. Site plan;
    2. Floor plans;
    3. Building sections;
    4. Fixture schedule;
    5. Calculations; and
    6. Details.
  - viii. Electrical:
    1. Site plan;
    2. Lighting reflected ceiling plans;
    3. Lighting calculations;
    4. Power floor plans;
    5. Signal floor plans;
    6. Enlarged floor plans;
    7. Schedules;
    8. Riser diagrams;
    9. Single line diagrams;
    10. MDF and IDF rack elevations;
    11. Details; and
    12. Title 24 calculations.
  - ix. Fire Alarm:
    1. Fire alarm plans;
    2. Riser diagram;
    3. Calculations; and
    4. Details.
  - x. Food Service:
    1. Floor plans;

- 
2. Interior elevations; and
  3. Details.
- xi. Other (Theaters and specialty sheets):
    1. Plans
    2. Details
  - b. Updated Construction Cost Estimate.
  - c. Updated Project Schedule through final completion.
  - d. Specifications in 6-digit C.S.I. MasterFormat with District provided Division 0.
  - e. CAFM Plans.
  - f. Structural Calculations.
  - g. Storm Water Prevention Pollution Plan.
  - h. 3D Renderings and BIM Models.
  - i. Facilities Design Conformance Letter with Approved Variances.
2. Refer to [Appendix: LBUSD Deliverable Requirements Checklist](#) for additional information on deliverable requirements.
- E. Agency Approval Phase Services
1. In accordance with the Agreement, include one-hundred percent (100%) completed Construction Documents and one-hundred percent (100%) completed Specifications. Review comments are to be incorporated. Submit to DSA and other approval jurisdictions as necessary for the specific project requirements.
- F. Bidding and Contract Award Phase Services
1. In accordance with the Agreement, the Design Professional shall assist the District in preparing, reviewing, and finalizing the bid documents. The Design Professional shall assist the District in reviewing bids and make recommendations for award of the contract.
- G. Construction Phase Services
1. In accordance with the Agreement, the Design Professional shall provide general administration of the Construction Documents including but not limited to: visiting the site, attending regular meetings, producing documents as required by government agencies, reviewing product substitutions, preparing change orders, and producing punch lists.
- H. Project Close-Out Phase Services
1. In accordance with the Agreement, once construction for a facility is substantially complete, the Construction Documents shall be revised to reflect actual conditions at the completion of construction. Provide the coordinated final BIM model in conjunction with the Contractor that incorporates the as-built conditions, operation and maintenance information. Include the traditional as-built 2D drawing set. Also provide all required DSA close-out documents and final certification.

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### III. REQUIRED DOCUMENT CONTENT FOR EACH DELIVERABLE PHASE

- A. The Owner/Architect agreement defines the required deliverables for the project. [Appendix: LBUSD Deliverable Requirements Checklist](#) is a comprehensive list of deliverables that are typically required. The deliverable checklist identifies the level of development required for each submittal phase and is more specific than the Owner/Architect agreement. The Design Professional shall complete LBUSD's Deliverable Requirements Checklist at each phase of the project and submit with the delivery.
- B. In addition to physical submittals, Portable Document Format (PDF) files are to be submitted at every phase. Upon completion of the Construction Documents Phase, Revit or AutoCAD files for drawings and Word documents for specifications should also be submitted. The District reserves the right to request these files during any phase throughout the design and construction process.

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**IV. COST ESTIMATING**

- A. Please refer to the Owner-Architect Agreement for when cost estimates are required and additional estimating requirements.
- B. Cost estimates shall be provided in the current Construction Specifications Institute (CSI) Master Format. Separate line item totals shall be prepared for Site Work, Demolition, and Construction. Site Work shall be further broken down by off-site and on-site. Site line items will conform to OPSC funding categories and allowed unit costs if the project is State funded.
- C. Conceptual Design Estimates may be prepared on a square foot cost basis; all other phased submittal estimates shall be prepared on unit cost basis.
- D. All required OPSC documentation will be required including but not limited to site development worksheets.

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## V. COLOR AND MATERIAL SELECTION

- A. Color and material selection are to be completed by the end of the Design Development Phase. A meeting with the District is required to be scheduled by the Design Professional in sufficient time to complete the color and material selection before the end of the Design Development Phase.
- B. The Design Professional is to bring loose samples to the meeting for the District's review. The samples should include the materials with options for colors, patterns, and textures. Limit the number of options to those that would be acceptable on the project. Limit colors to two or three palettes that would be acceptable for the project.
- C. At the end of the 50% Construction Document Phase, finalize the color board per the following requirements:
  - a. Color Boards are to be on 17-inch by 22-inch boards. Boards are to be a minimum of ¼ inch thick and rigid enough to support the material with the board in a vertical position. Use multiple boards if necessary. Include a title block along the short edge of the board with the relevant information from the Drawing's title block.
  - b. Color boards are to include material samples, showing texture and color samples for painted surfaces. Each color and material in the project must be represented on the board. Photographs or digitally produced color boards are not acceptable.
  - c. A list of materials is required to be attached to the back of the color board. The list is to include:
    - i. Manufacturer
    - ii. Name of pattern or texture
    - iii. Color by name and number
    - iv. Location where used

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## VI. SPECIFICATIONS

- A. Specifications will use the most current version of the CSI Master Format, six digit section numbering. The format, conventions, titles, and numbers shall comply with CSI requirements.
- B. Each section shall have the same footer that alternates between odd and even pages. There should be no information in the header. The footer shall be formatted as follows:

*Odd Page Footer (include the line shown)*

---

Project Name	Section Name
Long Beach Unified School District	Section number - Page number
Date of Submittal	

*Even Page Footer (include the line shown)*

---

Section Name	Project Name
Section number - Page number	Long Beach Unified School District
	Date of Submittal

- C. Outline Specifications
  - a. Outline specifications shall contain sufficient information for LBUSD to confirm the major components of the project meets the District's requirements. The Outline Specifications shall be in CSI three part format and include at a minimum, the items noted in the Design Guidelines. A table of contents or list of equipment is not sufficient.
- D. Final Specifications
  - a. The final specifications shall be printed on two sides. Use different odd-even page setups so that the page numbers are always on the outside and a binding gutter alternates between sides.
  - b. Specifications shall be project specific. Edit-out items not included in the project. Font, line spacing, and other formatting features must be consistent throughout the entire volume. For larger projects, separate the Specifications into two volumes, Divisions 1 through 14 and 15-49.
  - c. Obtain the General and Special Conditions and Division 1 from the District and coordinate the content with the technical sections. Modify Division 1 to conform to the project. Modify the Special Conditions if required to suit the project.
  - d. Prepare a table of contents that includes the Instructions to Bidders, General and Special Conditions, Division 1 and the technical specifications. Include a table of contents in each volume.
  - e. Refer to the District Volume 2 Specifications and incorporate all applicable requirements provided.

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## VII. QUALITY CONTROL

- A. Each firm is required to perform a quality control review of the phase submittal documents. The details of the review process will be determined by the Design Professional. The Design Professional is responsible for completing the quality control process in time to meet the project deadlines.

**Note:** See previous section that outlines the specific [Deliverable Requirements](#) for each project phase. Each phase submittal requires an accompanying [Letter of Standards Conformance](#) and a completed [Document Deliverable Checklist](#).

B. *Conceptual Design Review*

- a. A review that verifies the following, but is not limited to:
- i. Project program has been incorporated.
  - ii. District design guidelines have not been violated.
  - iii. General code conformance has been verified.

C. *Design Development Review*

- a. A review that verifies the following, but is not limited to:
- i. LBUSD's programming and scope documents have been incorporated into the Documents.
  - ii. The project meets the requirements of the Building Codes
  - iii. The structural, plumbing, mechanical and electrical systems chosen for the project are appropriate.
  - iv. The consultant drawings are in the same format as the architectural drawings.
  - v. The Drawings are sufficiently advanced to meet LBUSD's requirements for Design Development.
  - vi. The outline specifications have been received and include the major components of the projects.
  - vii. The Project Check List has been completed and signed by each discipline.

D. *Final Quality Control Documentation*

- a. A statement must be prepared by the lead Design Professional that the above items have been reviewed. The statement should describe the deficiencies and how they will be addressed.
- b. Construction Document quality control process will be a detail review that includes all of the Contract Documents at no less than 100 percent complete.
- c. The Design Professional must document the following:
- i. An individual in the firm has overseen and coordinated the quality control process.
  - ii. The Drawings have been reviewed and corrections have been noted (either on the drawings or in spreadsheet format).
  - iii. The corrections have been reviewed by the design lead for each discipline.
  - iv. The corrections have been made, or have been resolved in some other fashion.

- 
- v. The original checker has reviewed the corrections and confirmed that they have been completed.
    - vi. The Specifications have been checked and corrected.
  - d. Documentation supplied to LBUSD should include the original corrections and an indication that the correction has been made and checked.
- E. Quality Control Compliance Requirements
- a. At each submittal phase the Design Professional shall submit a letter to LBUSD stating that the submittal is in conformance with the Facility Design Standards, refer to [Appendix: Sample Conformance Letter](#). Any exceptions or proposed variance to the Design Guidelines will be outlined and explained in the letter. The letter shall include a narrative of changes from the previous submittal made to materials, colors, or scope, or a statement that there have been no such changes.
  - b. In addition to the documentation noted above, the Project Checklist (in the Design Guidelines) will be required to accompany each submittal.



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## VIII. DRAWING CONTENT FORMAT AND REVIEW

- A. Sheets shall use the LBSD standard title block and follow the guidelines outlined in the [Title Block section](#). Title blocks in the approved authoring software formats are provided and shall be used as sheet backgrounds.
- B. Plan set sheets are to have the same building and site backgrounds, drawn at the same scale and in the same orientation.
- C. On renovation projects, the room designations and building names must match actual designations at the site.
- D. Plan set shall have a 40lb weight limit. For sets exceeding that amount, divide the set into separate volumes at an appropriate location.
- E. Symbols and abbreviations must be consistent throughout the documents and between each discipline.
- F. Coordination and Review
  - a. Coordination of architectural, engineering, and other associated design documents shall occur at each design phase and shall be the responsibility of the Architect. Where a BIM model is also commissioned, additional coordination is required for analysis and clash detection. See the section on [BIM Execution Plan](#) for detailed model analysis and interference checking requirements.

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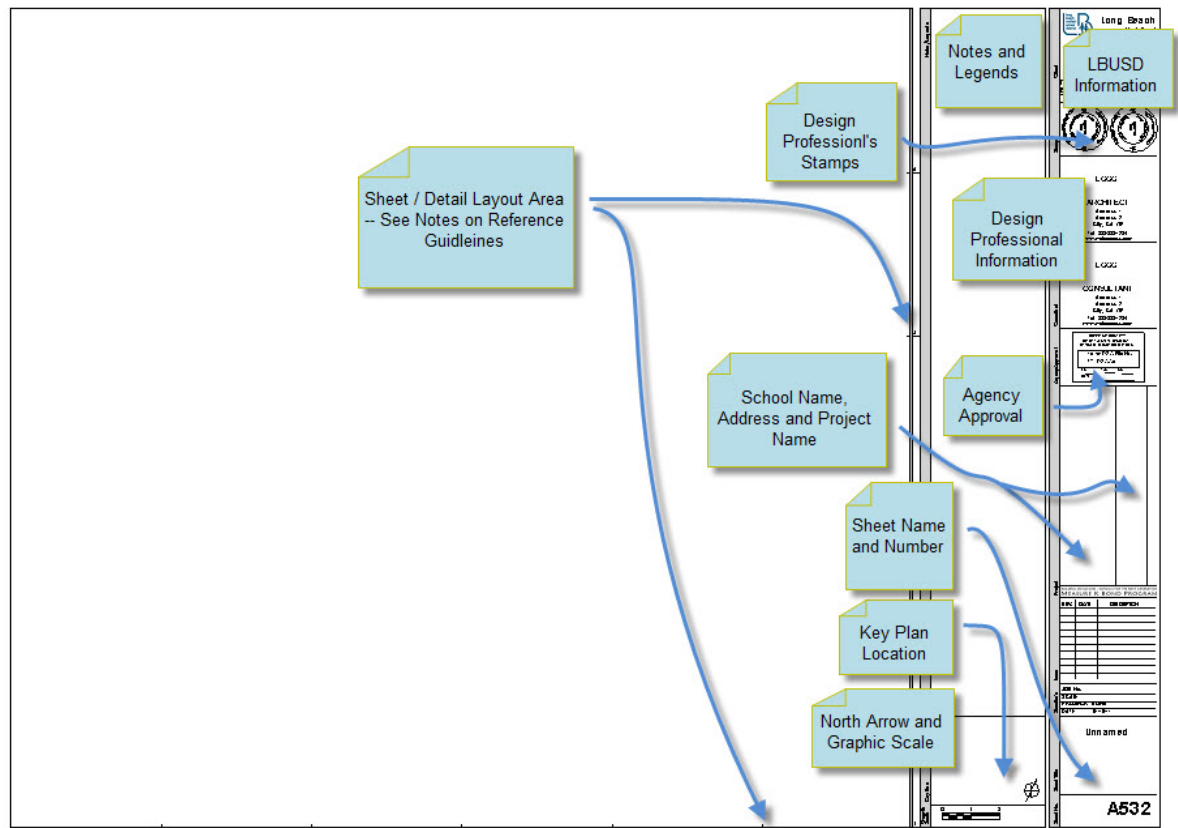
## IX. TITLE BLOCK AND BORDERS


### A. General Requirements

- a. The LBUSD standard project sheet size standard is E1 – 30-inch by 42-inch. The title block layout shall be used as a sheet border for all construction documents. Requests for an alternate sheet size or title block layout changes require pre-approval from a LBUSD project representative. LBUSD provides title block templates for both BIM and AutoCAD projects. See [Appendix: Revit Model Templates and Support Files](#) and [Appendix: AutoCAD Templates and Support Files](#) for links to these files.
- b. All off-site improvements plans must utilize the City of Long Beach's title block, see [Appendix: City of Long Beach Standards](#)

**Note:** Title Block templates for BIM projects reference intelligent data fields defined by the Project Information setups.

### B. Overall Layout Diagram



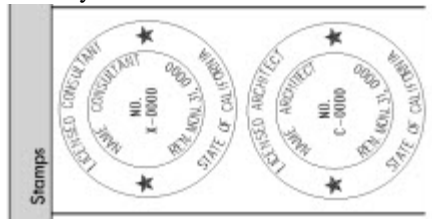
Client	 <b>Long Beach Unified School District</b> 2425 Webster Avenue Long Beach, CA 90810	
	LBUSD No.:	001.01.001
	PTN No.:	001-123456
	Facilities Management	

- LBUSD Logo and Client Name.
- Assigned Project Number by LBUSD, issued with the project contract.
- CA Department of General Services (DGS) tracking number.
- Projects are funded through the Maintenance and Operations Department or the Facilities Management Department.

**Note:** In the BIM template, toggle responsible LBUSD Department by selecting a Sheet Type, either 'M and O' or 'FM'. In the AutoCAD template, this is a layer option: G-TTLB-MO or G-TTLB-FM.

#### C. Design Professional Stamps

- Directly below the Client Information section, are the Design Professional Stamps.



#### D. Design Professional Information

- The Architect and Consultant sections are allocated for the Design Professional to input specific company information and logo. If only one Design Professional will be required for the project, the other section shall be left blank. It is not permissible to edit the size of the space allocated.

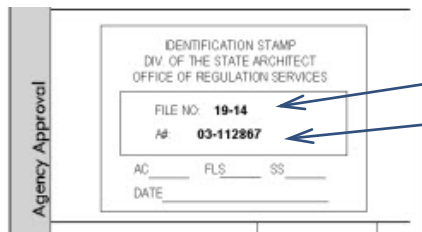
Architect	<b>LOGO</b>
	<b>ARCHITECT</b>
	Address 1
	Address 2
	City, CA ZIP
	Tel: 888-888-1234 www.webaddress.com

- The logo shall not exceed the space allocated.
- Include the full company name; use two lines if required.
- Address of the office assigned to the project.
- Include local phone number.
- Company web address.

#### E. Agency Approval

- Projects designated for California Division of the State Architect (DSA) review shall show the DSA stamp with the assigned DSA file number and the DSA Application (A) Number in the agency approval section. Check with the LBUSD project representative if the project will not

require DSA review. In the event that no agency review will be required, the title block should not show any agency stamps; this section can be left blank, but not removed.



Agency Approval

IDENTIFICATION STAMP  
DIV. OF THE STATE ARCHITECT  
OFFICE OF REGULATION SERVICES

FILE NO: 19-14

As: 03-112867

AC: FLS: SS:

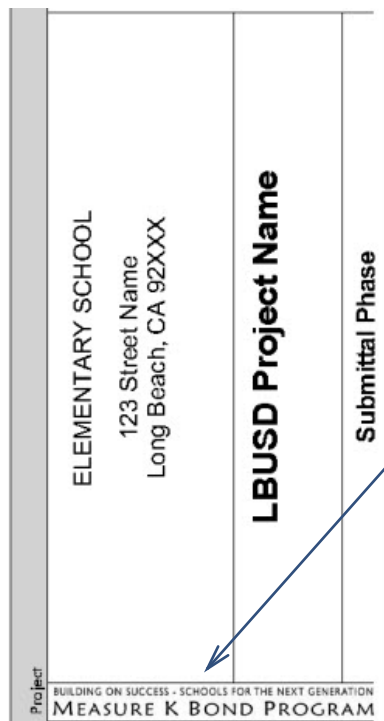
DATE:

- DSA Assigned File Number.
- DSA Application Number.

**Note:** For BIM projects the DSA information is entered under the Project Information data; the DSA stamp is an option to toggle on or off, as required. For AutoCAD projects, the DSA information will be on layer G-TTLB-DSA and can be turned off.

#### F. Project Information

- The section designated for Project Information is oriented vertically on the sheet, so that it reads from the right side of the print. Each submittal set shall identify the correct Submittal Phase on the document set. For detailed information on Submittal Milestones see the [Deliverable Requirements](#) section.



ELEMENTARY SCHOOL  
123 Street Name  
Long Beach, CA 92XXX

**LBUSD Project Name**

Submittal Phase

- Identify the LBUSD School Name for the project.
- School Address (Project Address if not a school project).
- List the specific Submittal Phase for the document set.
- Projects funded by the Measure K Bond Program must display this logo. If not a Measure K project, the logo does not display.

Project

BUILDING ON SUCCESS - SCHOOLS FOR THE NEXT GENERATION  
MEASURE K BOND PROGRAM

**Note:** The project address shall be determined by the street location where the Fire Department will enter the building.

**Note:** For BIM projects, the Project Status field in the project information section updates the Submittal Phase shown here in the title block.

### G. Issue

- a. The Issue Block shows the chronological revisions or addendums to the sheet. Revisions and addendums shall be tracked and given a delta number, issue date, and description. Revision clouds, referencing the delta number, shall be called out on the sheet. See the [Revisions and Addenda](#) document for more detailed information on LBUSD requirements for revisions.

[illegible]

- Issue delta number
- Issue date
- Description

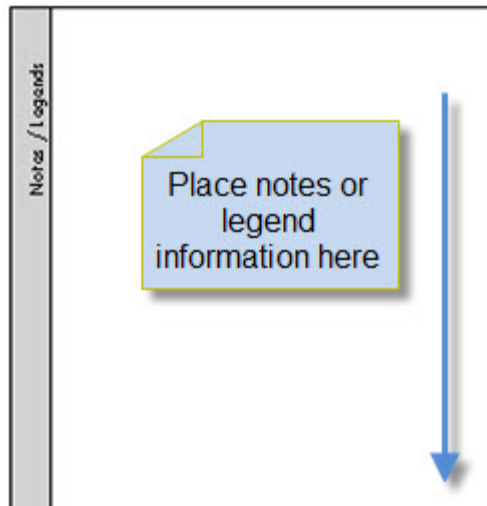
## H. Sheet Information

Sheet No.	Sheet Title	Sheet Info
		JOB No.: 001.01.001
		SCALE: 1/8" = 1'-0"
		PROJ MGR: Author
		DATE: 01/10/11
		SHEET NAME
		A001

- The job number field indicates the Design Professional's assigned project number.
- The Date in the Sheet Info section **MUST** be the date associated with the Submittal Phase. See Project Information.

## I. Notes and Legends

- a. The area immediately to the left of the title block information blocks is reserved for notes and legends.



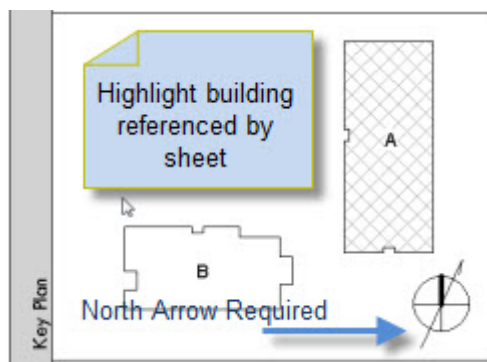
## J. Graphic Scale

- a. Sheets with scaled views are required to have a representative graphic scale corresponding to the scale defined for views placed on the sheet.



## K. Key Plan

- a. Directly above the Graphic Scale section, is the area reserved for a Key Plan. The Key Plan may represent a specific area in a building, or indicate a building within a campus. Each sheet should have a keyplan representing the campus layout with building or area represented on the sheet highlighted with a pattern. The LBUSD Title Block template has an example key plan layout, edit this to reflect the project conditions.
- b. Key Plans shall have a north arrow representing Project North and True North.



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**L. Cover Sheet**

- a. The Cover Sheet will be numbered G001, the first sheet in the document set. The items listed below are required pertinent information to be placed on the cover sheet to allow LBUSD and agency review access to the information required from the document set.
- b. In addition to the items identified in this section on Title Blocks, these items are required to appear on the Title Block.
  - i. Directory List with Company Name and Address
    1. Owner
    2. Architect
    3. Civil Engineer
    4. Structural Engineer
    5. Mechanical / Plumbing Engineer
    6. Electrical Engineer
    7. Landscape Architect
    8. Food Services
    9. Theater
  - ii. Sheet Index by Discipline (include all discipline documents and sheets in all volumes)
  - iii. Location Map
  - iv. Vicinity Map
  - v. Project Scope
  - vi. Building Data
    1. Lot Size
    2. Type of Construction
    3. Building(s) Area in S.F.



## X. FILE NAMING CONVENTIONS

### A. Discipline Conventions

- a. Files shall have a discipline letter to identify the owner or Design Professional responsible for the file type. Follow current standards outlined by The Uniform Drawing System, published by the Construction Specifications Institute (CSI) for disciplines not listed below.

Code	Description
<b>G</b>	General
<b>C</b>	Civil / Site
<b>L</b>	Landscape
<b>A</b>	Architectural
<b>S</b>	Structural
<b>M</b>	Mechanical
<b>P</b>	Plumbing
<b>F</b>	Fire Protection/Suppression
<b>E</b>	Electrical
<b>FA</b>	Fire Alarm
<b>FS</b>	Food Service
<b>T</b>	Theater

### B. AutoCAD File Naming Structure

- a. **AutoCAD** files are classified as two distinct types: Model Files and Sheet Files. **AutoCAD** file names shall be limited.

### C. AutoCAD Model Files

[Site Name]\_[LBUSD Site Code]\_[Discipline]\_[Building]\_[Floor].extension

- a. **LBUSD Site Name** – All model files shall have this prefix. For example, if the official site name is Perry Lindsey Academy, the drawing shall have Lindsey as the site name. The other portions of the name are not necessary to include in the file name.
- b. **LBUSD School Site Code** – LBUSD assigns a school site code for each school site. Contact the District Representative for the correct School Site Code number.
- c. **Discipline** – Reference the Design Professional discipline category. The **Discipline Suffix Conventions** are noted at the start of this section.
- d. **Building** – The building designation shall include the Building Name. For example “BLDG B” represents that the drawing is of the B Building.
- e. **Floor** – The floor designation shall be two digits. For example, “01” indicates the first floor.

**Example:** AutoCAD 2011 Project (Structural): **ADDAMS\_410\_S\_BLDG C\_02.dwg**

### D. AutoCAD Sheet Files

[LBUSD Project Goal #]-[LBUSD Site Code]-[Discipline]-[Building]-[Sheet No.].extension

- a. **LBUSD Project Goal #** – All model files shall have this prefix. LBUSD assigns a project goal number for each project. Contact the appointed District Representative for the correct Project Goal Number.
- b. **LBUSD School Site Code** – LBUSD assigns a school site code for each school site. Contact the District Representative for the correct School Site Code number.
- c. **Discipline** – Reference to the Design Professional discipline category. The **Discipline Suffix Conventions** are noted at the start of this section.
- d. **Sheet Number** – Designate the exact sheet number associated with the file.

**Example:** AutoCAD 2011 Project (Structural) – **9004-698-S-B100-S101**.dwg

**Note:** All sheet files shall represent one, and only one, sheet in a document set. It is not permissible to define multiple sheets in a single AutoCAD file.

#### E. Revit Model Files

[**LBUSD Project Goal #**]-[**LBUSD Site Code**]-[**App+Rev**]-[**Discipline**]-[**Building**].extension

- a. **LBUSD Project Goal #** – All model files shall have this prefix. LBUSD assigns a project goal number for each project. Contact the appointed District Representative for the correct Project Goal Number.
- b. **LBUSD School Site Code** – LBUSD assigns a school site code for each school site. Contact the appointed District Representative for the correct School Site Code number.
- c. **App+Rev** – Indicates the BIM application and Revision used for the file. This is important in discipline collaboration and as a reference for archived files.
- d. **Discipline** – Reference to the Design Professional discipline category. The **Discipline Suffix Conventions** are noted at the start of this document.
- e. **Building** – The building designation is mandatory depending on project type. A project with multiple buildings shall always designate separate model files for each building.

**Example:** Revit 2011 Project (Architectural) – **9004-698-Rev11-A-B100**.rvt

#### F. Component Files

- a. LBUSD provides standard **BIM Templates** for Revit projects and embedded within those model templates are the components required by LBUSD as a BIM standard.
- b. Beyond the standard components in the BIM template, Design Professionals may include their own discipline components. Naming conventions for components are not prescribed, but should be descriptive and easily understood by other Design Professionals referencing the models.

## **XI. SHEET NAMES AND ORGANIZATION**

- A. Sheet numbering shall follow the current version of The Uniform Drawing System, published by the CSI. Drawings must be assigned a sheet number. The sheet number should appear in the lower right corner of the drawing.
- B. The first letter of a sheet number indicates the discipline area. Immediately after this is a three-digit number indicating the type of drawing and its sequence in the set. A typical drawing sheet number would look like this: **A101**. In this example, the sheet is the first architectural plan, usually the first floor plan. The 100 sequence indicates the sheet type, in this example – plans. Sheets should be numbered consecutively within a series from 01 to 99.
- C. Sheets to be organized in the following sequence of disciplines:
- G** General
    - Cover Sheet (provide at each volume if the set is divided)
    - Abbreviations and Symbols
    - Application Codes and Standards
    - General Notes
  - C** Civil
    - Earthwork, cut and fill, retaining walls, ponds,
    - Parking lots, streets, sidewalks, utilities (sewer and water)
    - Building Utilities
  - L** Landscape
    - Irrigation
    - Topsoil, trees, shrubs, turf, ground cover, brick or stone paving benches
  - A** Architectural
    - All design intent elements (walls, floors, ceilings, roof, doors, windows, etc.)
  - S** Structural
    - All structural content
  - M** Mechanical
    - Heating, ventilating, and air conditioning
  - F** Fire Protection / Suppression
    - Fire sprinklers, standpipes, fire extinguishers
  - P** Plumbing
    - (inside building)
  - E** Electrical
    - Power and lighting
  - FA** Fire Alarm

- All fire alarm content

**FS** Food Service

- All food service content

**T** Theater

- All theater service content

**D. Sheet Set Organization**

- a. Drawings within a discipline are to be numbered sequentially with three-digit numbers according to the following system:
  - i. **001 series** General Information, Code Compliance
  - ii. **010 series** Site plans, site details.
  - iii. **100 series:** Floor plans, and reflected ceiling plans, selective demolition plans - starting with the first floor, A101.
  - iv. **200 series:** Exterior elevations - starting with A201
  - v. **300 series:** Building sections and wall sections - starting with A301
  - vi. **400 series:** Enlarged plans and interior elevations - starting with A401
  - vii. **500 series:** Details - starting with A501
  - viii. **600 series:** Schedules (such as room finish schedules, door schedules, window schedules) and diagrams (plumbing riser diagrams, single line electrical diagrams) - on small projects, schedules and diagrams can be included on one sheet - starting with A601

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## XII. BIM PROJECTS OVERVIEW

- A. For projects utilizing BIM this document outlines how to produce and deliver BIM drawings at all phases of project document development. Prior to commencing a project, confirm the BIM technology requirements specific to the project undertaking.
- B. Landscape and civil drawings do not need to be a part of the BIM model; however, planters or planting that can affect the method of construction should be shown in the model.
- C. BIM Modeling Requirements
  - a. The BIM model shall be used for all site development and building design through all phases of a project. This includes, but is not limited to, architectural, structural, mechanical, electrical, plumbing and fire protection documents.
  - b. BIM shall be used to perform visualization during project design.
  - c. File Format
    - i. Project drawings shall be submitted in Revit® RVT format in the version of the [Approved Authoring Software](#) as outlined in the project scope. [File Naming Conventions](#) as outline in this document shall be followed explicitly.
  - d. Fonts and Text Styles
    - i. Special fonts which are not packaged with software are not allowed. Dimensions, labels and notes, should be not less than 1/8 inch height on printed drawings.

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### **XIII. BIM EXECUTION PLAN**

#### **A. BIM Expectations**

##### **a. Design professional shall demonstrate:**

- i. Regular review of design proposals through 3D visual presentations.
- ii. Validate sustainable design decisions.
- iii. Improve discipline model coordination through clash detection analysis.
- iv. Utilize BIM to facilitate more accurate cost-analysis estimates.
- v. Utilize scheduling tools to coordinate demolition and construction phasing.
- vi. Utilize available structural analysis tools too measure stresses on structural elements of the design.

##### **b. Clash Detection**

1. Clash detection shall be set to at least a minimum ¼ inch tolerance.
2. Clash detection reports shall be provided regularly and as defined by the project scope.
3. Use the Clash Analysis Table to outline and schedule clash detection responsibilities.
4. A final report resolving all clashes shall be submitted to LBUSD prior to DSA approval.

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## XIV. AUTOCAD PROJECTS OVERVIEW

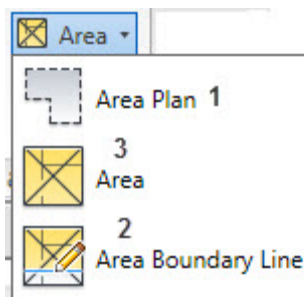
- A. For projects utilizing AutoCAD this document outlines how to produce and deliver AutoCAD drawings at all phases of project document development.
- B. Prior to commencing a project, confirm the AutoCAD technology requirements specific to the project undertaking.
- C. AutoCAD Drafting Requirements
  - a. File Format
    - ii. Project drawings shall be submitted in AutoCAD® DWG format in the version of the [Approved Authoring Software](#) as outlined in the project scope. [File Naming Conventions](#) as outline in this document shall be followed explicitly.
  - b. Layers
    - i. Follow the AIA Standard Layering practice as outlined by the National AutoCAD Standard and the American Institute of Architects.
  - c. Fonts and Text Styles
    - i. Special fonts which are not packaged with software are not allowed. Dimensions, labels and notes, should be not less than 1/8 inch height on printed drawings.
  - d. Symbols
    - i. Industry standard symbols should be used whenever possible, consistently throughout the plans, and defined with a symbol legend.
    - ii. Symbols used on drawing shall be assigned the appropriate discipline layer.
  - e. External References
    - i. During the development of design drawings, external references will be required. Upon submission of any AutoCAD drawing deliverable to LBUSD or external agencies for review. Transmit the file to ensure all external references are included in the file and can be opened without any missing files.
  - f. Room Identification
    - i. LBUSD requires that all rooms be outlined with a closed polyline assigned to layer **RM**. Each room shall be identified by the appropriate room name standard as defined in the [Appendix: Room Field Conventions](#). This is a requirement of the LBUSD CAFM system. For more information, review the section on [Export for CAFM System](#).

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## XV. CAFM SYSTEM REQUIREMENTS

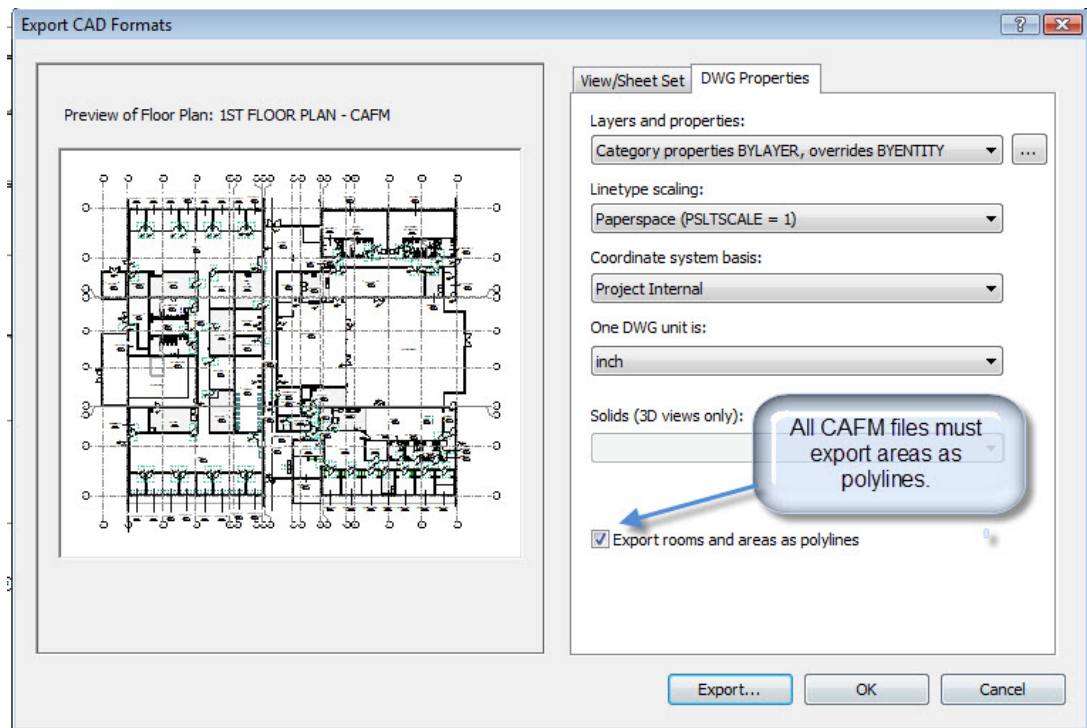
- A. LBUSD utilizes a CAFM (Computer-Aided Facility Management) system to support on-going maintenance and asset tracking for school facilities. As drawings are developed in either BIM models or traditional AutoCAD files, DWG files are required at 100% Construction Documents Phase and/or upon request. This section outlines the drafting procedures and file naming conventions required for preparing those drawings.
- B. CAFM Layer Requirements
  - a. Polylines must be assigned to specific layers in an AutoCAD file or, exported from a BIM model in specific layers per Item C.iv below. In a BIM model the layer is assigned when the sheet or plan is exported to an AutoCAD 'dwg' file format. BIM models must export using the LBUSD BIM template to assign layers correctly to 'dwg' format AutoCAD files.
- C. Export for CAFM System
  - a. The CAFM system analyzes plan drawings based on a closed polyline loop defining building perimeter and room interior space per BOMA (Building Owners and Managers Association) standards, center to wall. See the examples in [Appendix: CAFM Exhibits](#) for a visual overview of how to outline the closed polylines. All three methods shown on the Appendix, Exhibits A, B, and C, are required.
  - b. BIM (Revit) Models
    - i. **View Definition** -- Outline the building area boundary on a CAFM Area View created for each level of the overall building plan. These views will be used exclusively for CAFM content. Walls, curtain walls, doors, windows, floors, furniture, casework, room names, and the building outline are the sample components that should be visible in these views.
    - ii. **Building Perimeter** – Use the Area functions in Revit to:
      1. Define an Area View – For each building plan level defines an Area View.
      2. Define an Area Boundary Line – Outline the building perimeter to the interior face of walls.
      3. Identify the Area – Identify the area defined in step two.

The model line should follow the face of the interior walls and include all useable space. See [Appendix: CAFM Exhibits](#).



- iii. **Room Interiors** – Every area in a building plan from a BIM model must be assigned as a Room with a room name as outlined in [Appendix: Room Field Conventions](#). The Room Tag defined in the Revit template has parameters that correspond to the [Appendix: Room Field Conventions](#). Rooms identified in the BIM model will

automatically create polyline outlines when exported to a dwg file if that option is checked on the export dialog. Use the settings below.



- iv. **BIM Export Layer Assignments** – Export layers required by the CAFM system are as follows:

<b>Room Polylines</b>	RM	4
<b>Room Tags</b>	RMSTXT	2
<b>Rooms</b>	RMS	2

<b>Area Load Tags</b>	GROSSTXT	2
<b>Area Polylines</b>	GROS	6
<b>Area Tags</b>	GROSSTXT	2
<b>Areas</b>	GROSS	
<b>Color Fill</b>	Color Fill	6
<b>Interior Fill</b>	Interior Fill	4
<b>Reference</b>	Reference	

Use the [File Naming Conventions](#) outlined in the next section to name a Facilities Management file for each building floor.

- c. AutoCAD Model Space

- i. **Building Perimeter** – Using the polyline function in AutoCAD, define the building perimeter on layer **GROS**. Outline the building perimeter to the face of the interior walls. The polyline must be closed.



- ii. **Room Interiors** – Every room should be enclosed with closed polylines, per BOMA standards, on layer **RM**. See the examples in [Appendix: CAFM Exhibits](#)
- d. CAFM File Naming Conventions
  - i. Files created for the CAFM system must be in 'dwg' AutoCAD file format. For a complete explanation of the LBUSD file naming convention, reference the section on [File Naming Conventions](#).

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## XVI. PROJECT AS-BUILT & RECORD DRAWING DELIVERABLES

- A. This section outlines the project final deliverable requirements that shall be submitted to LBUSD upon substantial completion. Upon completion of project, all related project documents, including record drawings and contractor field as-built drawings, are to be provided to the District for record.
- B. BIM Deliverables
  - a. It is the responsibility of the Design Professional to coordinate updated model data for all disciplines. Information that matures during the construction process is to be captured in the appropriate models on an on-going basis throughout the construction phase.
  - b. Upon substantial completion, BIM model files for each discipline category shall be submitted to LBUSD, and shall be purged of extraneous “scrap” or “working space” layers, stories, abandoned designs, object creation and testing places, empty levels, and other content which is typically produced in BIM production.
  - c. Unless otherwise specified by LBUSD project representative, the following are required:
    - i. 3D Geometric Deliverables - Construction Coordination Model
      - 1. The Design Professional shall be responsible for providing consolidated as-built model(s) for all building systems. The Model(s) shall be fully coordinated and align with the Design Model for architecture and structure. The authoring software and revision date shall be noted on the delivered package.
        - a. The Contractor shall update the BIM update with shop drawings and as-built conditions on a continuous basis, throughout the construction process. The Design Professional is responsible for reviewing and accepting the Contractor’s BIM model on a monthly basis as a condition for payment to the Contractor.
        - b. Project approved authoring software file format of the final consolidated as-built model(s) for building systems used in the multi-discipline coordination process (version as outlined in the project scope).
- C. AutoCAD Deliverables
  - a. Design Professional shall provide the following upon substantial completion of the project. The authoring software and revision date shall be noted on the delivered package.
    - i. The Design Professional shall coordinate with all project disciplines to provide as-built drawing sheets in a single file PDF format with fully bookmarked pages.
    - ii. A complete set of DWG format (latest current version) sheets with bound views (external references) to each sheet. Follow [File Naming Conventions](#) outlined in this document.
      - 1. Where projects are completed in AutoCAD, provide as-built drawings in the same format based on the Contractor’s field set. The Architect is responsible for reviewing and accepting the Contractor’s field set of as-builts on a monthly basis as a condition for payment to the Contractor.
      - 2. Project approved authoring software file format of the final consolidated as-built plans for building systems used in the multi-discipline coordination process.
- D. CAFM Deliverables
  - a. See [CAFM System Requirements](#).
- E. Digital Deliverables
  - a. All digital deliverables are to be submitted electronically, with the data clearly organized, and software version(s) labeled.

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## **XVII. APPENDICES**

- Appendix A: Not Used
- Appendix B: Room Field Conventions
- Appendix C: Approved Authoring Software
- Appendix D: Not Used
- Appendix E: Not Used
- Appendix F: Revit Model Templates and Support Files
- Appendix G: AutoCAD Templates and Support Files
- Appendix H: Not Used
- Appendix I: CAFM Exhibits
- Appendix J: City of Long Beach Standards
- Appendix K: LBUSD Deliverable Requirements Checklist
- Appendix L: Sample Conformance Letter
- Appendix M: Room Numbering Conventions

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## **APPENDIX A: NOT USED**

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## APPENDIX B: ROOM FIELD CONVENTIONS

- A. All projects should follow the subsequent room field conventions. In the table below, the Room Name (right column) is the description for rooms as they appear on the drawings. See the section on [Room Attribute Tags](#) for a description of the hidden fields required by the CAFM system.

### ACADEMIC

	ROOM TYPE / USE	ROOM NAME
GENERAL	GENERAL CLASSROOM	CLASSROOM
	GRADE 01	CLASSROOM
	GRADE 02	CLASSROOM
	GRADE 03	CLASSROOM
	GRADE 04	CLASSROOM
	GRADE 05	CLASSROOM
	KINDERGARTEN	KINDERGARTEN
SCIENCE	BIOLOGY	BIOLOGY LAB
	CHEMISTRY	CHEMISTRY LAB
	GENERAL	GENERAL LAB
	PHYSICS	PHYSICS LAB
	SCIENCE	SCIENCE LAB
MATH	ALGEBRA	CLASSROOM
	GENERAL	CLASSROOM
	GEOMETRY	CLASSROOM
LANGUAGE	ENGLISH	CLASSROOM
	FOREIGN	CLASSROOM
	READING	CLASSROOM
	WRITING	CLASSROOM
SOCIAL STUDIES	BUSINESS	CLASSROOM
	GOVERNMENT	CLASSROOM
	HISTORY	CLASSROOM

<b>MUSIC / PERFORMING ARTS</b>	BAND	BAND ROOM
	CHORUS	CHORUS ROOM
	DANCE	DANCE ROOM
	DRAMA	DRAMA ROOM
	KEYBOARDING	KEYBOARDING
	PREPARATION	MUSIC PREP
	REHEARSAL	MUSIC ROOM
<b>LAB</b>	COMPUTER	CLASSROOM
	FOREIGN LANGUAGE	LANGUAGE LAB
	GENERAL	CLASSROOM LAB
	MUSIC	MUSIC LAB
<b>PHYSICAL EDUCATION</b>	AEROBICS DANCE	DANCE ROOM
	HEALTH	CLASSROOM
	JROTC CLASSROOM	CLASSROOM
	PHYSICAL EDUCATION CLASSROOM	CLASSROOM
	TRAINING	TRAINING ROOM
	WEIGHT	WEIGHT ROOM
	WRESTLING	WRESTLING ROOM
<b>VOCATIONAL</b>	AUTO SHOP	AUTO SHOP
	HOME ECONOMICS	HOME ECONOMICS
	PAINT SHOP	PAINT SHOP
	ROP	ROP
	CTE / FLEXIBLE LAB	FLEXIBLE LAB
<b>VISUAL ARTS</b>	DIGITAL PHOTOGRAPHY	DIGITAL PHOTOGRAPHY ROOM
	3D ART ROOM – CERAMICS	CERAMICS ROOM
	2D ART ROOM	CLASSROOM
	DRAFTING LAB / PRINTMAKING STUDIO	CLASSROOM
	GRAPHIC ART / ANIMATION / CAD / REVIT	COMPUTER LAB
	3D ART ROOM – SCULPTURE	SCULPTURE ROOM
	TV PRODUCTION	TV PRODUCTION ROOM
<b>STUDENTS WITH DISABILITIES</b>	ADAPTIVE PE	ADAPTIVE PE
	GENERAL SPECIAL NEEDS	SPECIAL NEEDS
	ENGLISH AS A SECOND LANGUAGE (ESL)	CLASSROOM
	MODERATE SPECIAL NEEDS	SPECIAL NEEDS
	RESOURCE SPECIALIST PROGRAM (RSP)	RESOURCE
	SEVERE SPECIAL NEEDS	SPECIAL NEEDS

<b>PRE-K / BEFORE &amp; AFTER SCHOOL CARE</b>	CHILD DAY CARE	CLASSROOM
	FIRST 5	CLASSROOM
	HEADSTART	CLASSROOM
	KIDS CLUB	CLASSROOM
	WRAP	CLASSROOM
<b>ANCILLARY SPACES</b>	ART STORAGE / WORKROOM	STORAGE / WORKROOM
	CERAMICS KILN	KILN ROOM
	CHILDREN'S DENTAL	CHILDREN'S DENTAL
	CHILDREN'S HEALTH	CHILDREN'S HEALTH
	GENERAL STORAGE	STORAGE
	INTAKE / PRE-ASSESSMENT ROOM	INTAKE
	JROTC STORAGE	STORAGE
	MUSIC STORAGE	STORAGE
	PHYSICAL ED STORAGE	STORAGE
	SCIENCE PREPARATION / STORAGE	PREP ROOM
	SPECIAL NEEDS STORAGE	STORAGE

**WELCOME CENTER / ADMINISTRATIVE**

	<b>ROOM TYPE</b>	<b>ROOM NAME</b>
<b>OFFICE</b>	ASSISTANT PRINCIPAL	ASSISTANT PRINCIPAL
	CLERICAL	OFFICE
	COUNSELOR	COUNSELOR OFFICE
	NURSE	NURSE
	PRINCIPAL	PRINCIPAL
	RECEPTION	RECEPTION
	SECURITY	SECURITY
	STAFF	OFFICE
	SUPERVISOR	SUPERVISOR OFFICE
<b>SHARED</b>	STAFF MAIL / COPY / WORKROOM	WORKROOM
	CONFERENCE	CONFERENCE ROOM
	COPY	COPY ROOM
	LOBBY / RECEPTION / WAITING AREA	LOBBY
	STUDENT	WORKROOM
	STAFF LOUNGE	STAFF LOUNGE

***MEDIA CENTER / LIBRARY***

<b>ROOM TYPE / USE</b>	<b>ROOM NAME</b>
AV STORAGE	STORAGE
BOOK STACKS	BOOK REFERENCE
MEDIA CENTER	MEDIA CENTER
MEDIA CENTER WORKROOM	MEDIA CENTER WORKROOM
TEXTBOOK STORAGE	STORAGE

***GYMNASIUM / PHYSICAL EDUCATION***

<b>ROOM TYPE / USE</b>	<b>ROOM NAME</b>
ATHLETIC DIRECTOR'S OFFICE	OFFICE
BOY'S LOCKER	BOY'S LOCKER ROOM
CONCESSION ROOM	CONCESSION ROOM
GIRL'S LOCKER	GIRL'S LOCKER ROOM
MULTI-PURPOSE	MULTI-PURPOSE
NATATORIUM	SWIMMING POOL
PE LARGE	GYMNASIUM
PE SMALL	GYMNASIUM
SHOWER	SHOWER
STAFF LOCKER	STAFF LOCKER ROOM
TEACHER / COACHES' OFFICE	OFFICE
TICKET BOOTH	TICKET BOOTH

***MUSIC / PERFORMING ARTS***

<b>ROOM TYPE / USE</b>	<b>ROOM NAME</b>
AUDITORIUM / MAIN THEATER	AUDITORIUM
CONTROL BOOTH	CONTROL BOOTH
DRAMA CLASSROOM / BLACK BOX	DRAMA ROOM
LECTURE HALL	LECTURE HALL
MAKEUP / DRESSING ROOM	DRESSING ROOM
PRACTICE ROOM	PRACTICE ROOM
SCENE SHOP AND STORAGE	SCENE SHOP AND STORAGE
STAGE	STAGE
UNIFORM STORAGE	STORAGE





**CAFETERIA / NUTRITION SERVICES**

	<b>ROOM TYPE / USE</b>	<b>ROOM NAME</b>
<b>KITCHEN</b>	COOLER / FREEZER	REFRIGERATOR /FREEZER
	DRY FOOD STORAGE	DRY FOOD STORAGE
	KITCHEN MANAGER OFFICE	OFFICE
	PREPARATION	KITCHEN
<b>DINING</b>	BREAK ROOM	BREAK ROOM
	STUDENT	CAFETERIA
	STAFF	FACULTY DINING
	OUTSIDE COVERED	LUNCH AREA
	TABLE AND CHAIR STORAGE	STORAGE

**RESTROOMS**

	<b>ROOM TYPE / USE</b>	<b>ROOM NAME</b>
<b>STAFF</b>	MEN	MEN'S RESTROOM
	UNISEX	UNISEX RESTROOM
	WOMEN	WOMEN'S RESTROOM
<b>VISITOR</b>	MEN	MEN'S RESTROOM
	UNISEX	UNISEX RESTROOM
	WOMEN	WOMEN'S RESTROOM
<b>STUDENT</b>	BOYS	BOY'S RESTROOM
	GIRLS	GIRL'S RESTROOM
	UNISEX	UNISEX STUDENT

## SERVICE

	ROOM TYPE / USE	ROOM NAME
MECHANICAL / ELECTRICAL	BOILER	MECHANICAL ROOM
	ELECTRICAL	ELECTRICAL ROOM
	GENERATOR	GENERATOR
	INTERMEDIATE DISTRIBUTION FRAME	IDF ROOM
	MACHINE / ELEVATOR EQUIPMENT	MACHINE / ELEVATOR EQUIPMENT
	MAIN DISTRIBUTION FRAME	MDF ROOM
	GAS	MECHANICAL ROOM
	HEATER	MECHANICAL ROOM
	TRANSFORMER	TRANSFORMER
	CHILLER ROOM	CHILLER ROOM
	COOLING TOWER	COOLING TOWER
	CENTRAL PLANT	CENTRAL PLANT
COMMON	CORRIDOR	CORRIDOR
	LOBBY	LOBBY
	STUDENT	BREAKOUT AREA
	VESTIBULE	VESTIBULE
VERTICAL PENETRATIONS	DUCT SHAFT	SHAFT
	ELEVATOR	ELEVATOR
	FIRE RISER	FIRE RISER
	OPEN	OPEN
	STAIRWELL	STAIR
	CUSTODIAL CLOSET	CUSTODIAL CLOSET
	CUSTODIAL OFFICE	CUSTODIAL OFFICE

## APPENDIX C: APPROVED AUTHORIZING SOFTWARE

- A. Projects issued by LBUSD will be designated as authored by either a BIM or AutoCAD application software.
- B. Participating Design Professionals shall procure the required BIM, AutoCAD or analysis application at their own expense.
- C. Participants commit to coordinate documents and maintain a common application version.

**Note:** Software not listed will require prior approval from the LBUSD Project Representative.

Long Beach Unified School District Approved Authoring Software	
Function	Approved Software
BIM Authoring – Architectural	Revit Architecture
BIM Authoring – Structural	Revit Structural
BIM Authoring – MEP	Revit MEP
AutoCAD Authoring – All disciplines	Autodesk AutoCAD
Authoring – Civil	Autodesk Civil 3D, AutoCAD
Coordination / Clash Detection	Navisworks
Energy Analysis	To be determined – consult LBUSD Project Rep.
Daylight Analysis	To be determined – consult LBUSD Project Rep.

**Note:** Contractor will be utilizing trade specific modeling programs.

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## APPENDIX D: NOT USED

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## APPENDIX E: NOT USED

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## APPENDIX F: REVIT MODEL TEMPLATES AND SUPPORT FILES

- A. LBUSD provides a base template for Revit projects with a minimum of styles, families and components defined. The base template is available on the Measure K website [http://measurek.net/fds/volume3\\_documentstandards.html](http://measurek.net/fds/volume3_documentstandards.html) for the Design Professional to download. It is expected that the Design Professional will start each Revit model with this template as a base resource and include their own families and component setups. This is acceptable as long as the original project, parameter, text, dimension and base tags are retained as a base standard.
- B. Template
  - a. LBUSD provides a Revit template with LBUSD required Title Block Family.

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## **APPENDIX G: AUTOCAD TEMPLATES AND SUPPORT FILES**

- A. LBUSD provides a base template in AutoCAD DWG format for AutoCAD projects with a minimum of styles, families and components defined. The base template is available on the Measure K website [http://measurek.net/fds/volume3\\_documentstandards.html](http://measurek.net/fds/volume3_documentstandards.html) for the Design Professional to download. It is expected that the Design Professional will start each AutoCAD file with this template as a base resource and include their own blocks, line styles, and patterns setups. This is acceptable as long as the original project, text, dimension and base tags are retained as a base standard.
- B. Template
  - a. LBUSD provides an AutoCAD template with LBUSD required Title Block Family.

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## APPENDIX H: NOT USED

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## **APPENDIX I: CAFM EXHIBITS**

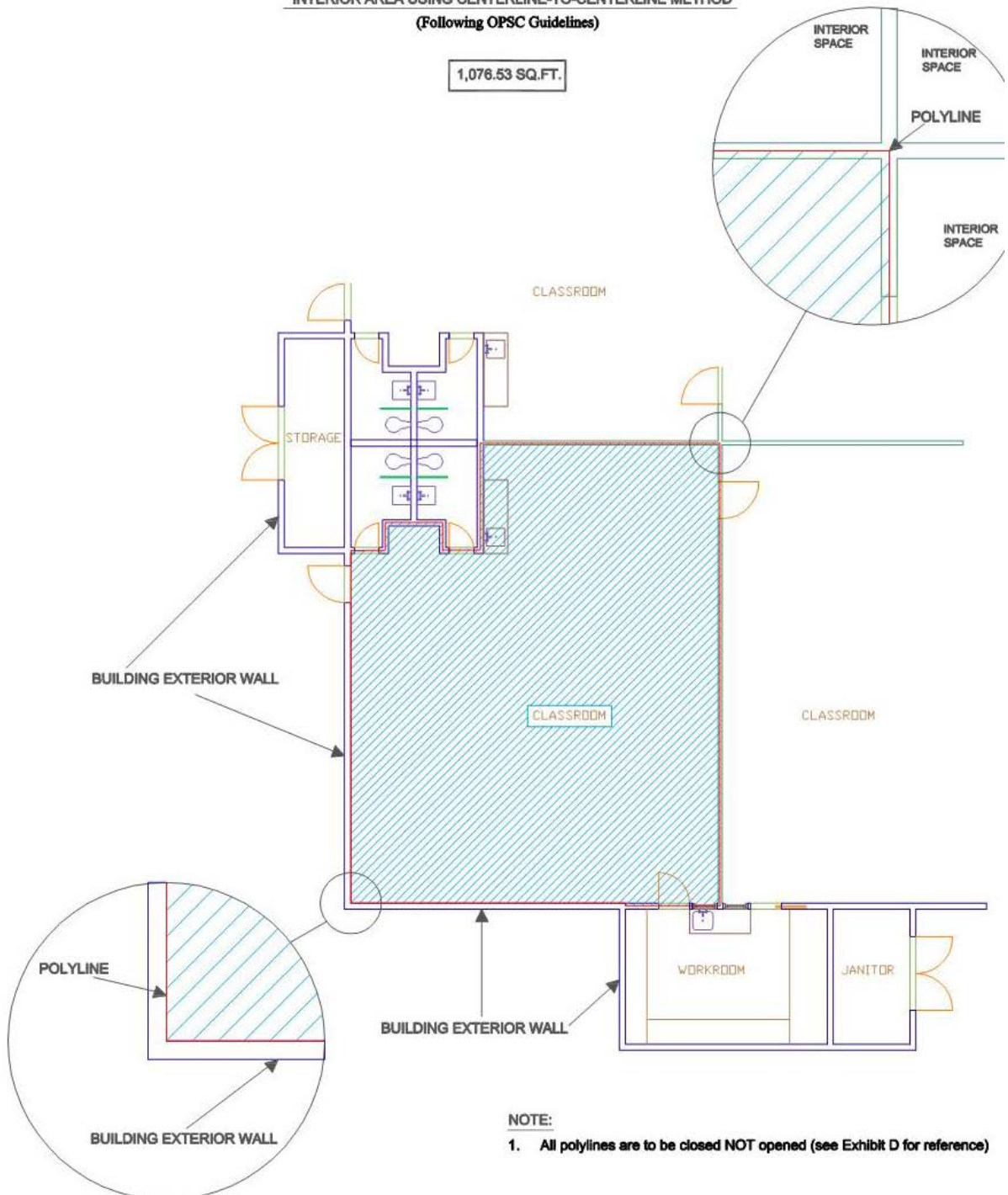
The following exhibits illustrate the location and function of the closed polyline loops to define building outlines and room bounding interiors for the CAFM (computer aided facilities management) system. See section [CAFM system requirements](#) for detailed directions.

## EXHIBIT A

INTERIOR AREA USING CENTERLINE-TO-CENTERLINE METHOD

(Following OPSC Guidelines)

1,076.53 SQ.FT.



**NOTE:**

1. All polylines are to be closed NOT opened (see Exhibit D for reference)

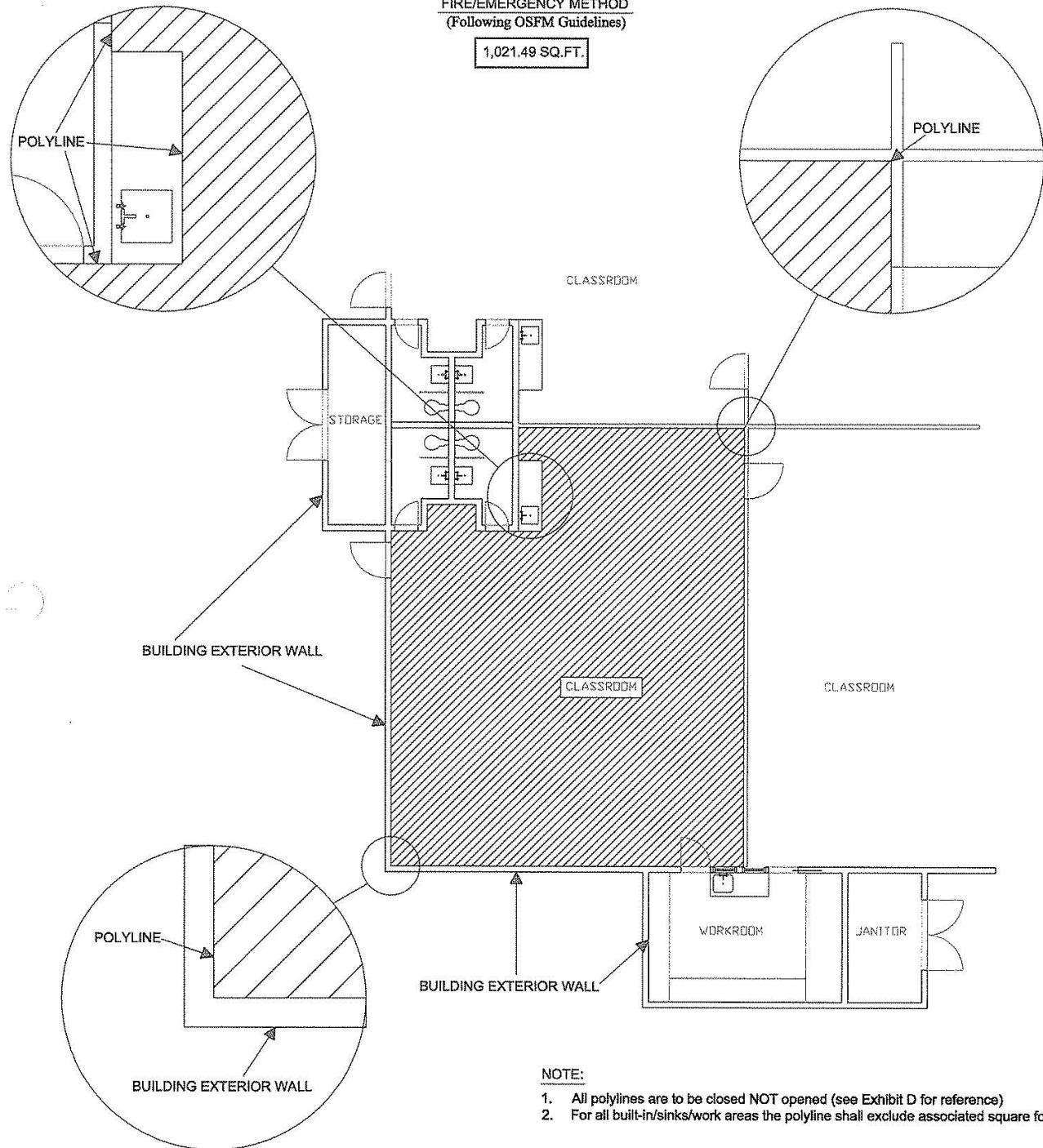
Reference Note:  
Architect's Submittal Guidelines (September 2010) Appendix 1; Glossary; Page 27  
[www.opsc.dgs.ca.gov](http://www.opsc.dgs.ca.gov)



## EXHIBIT B

FIRE/EMERGENCY METHOD  
(Following OSFM Guidelines)

1,021.49 SQ.FT.

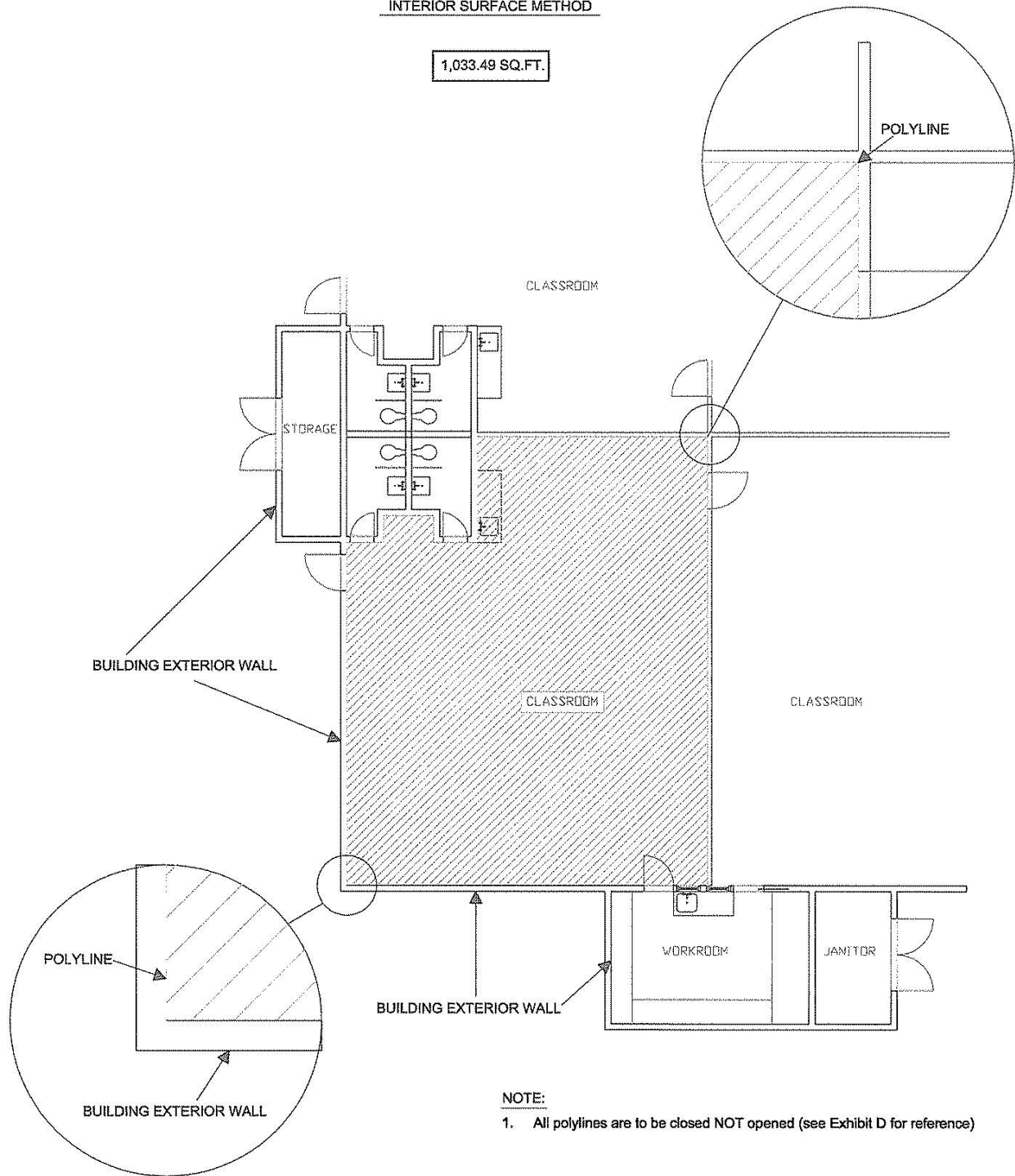


Reference Note:  
The Office of the State Fire Marshal (OSFM)  
<http://osfm.fire.ca.gov/>

## EXHIBIT C

### INTERIOR SURFACE METHOD

1,033.49 SQ.FT.

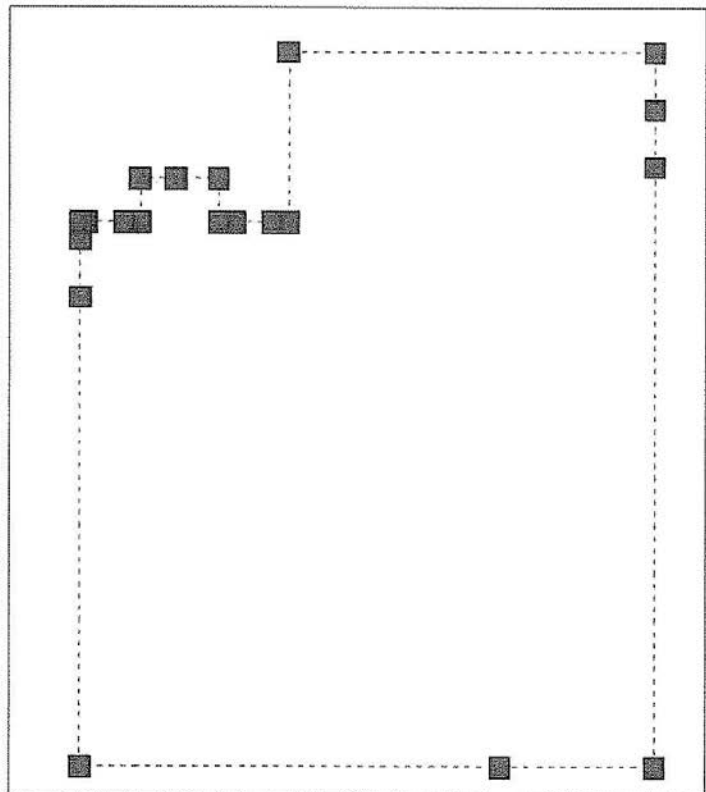
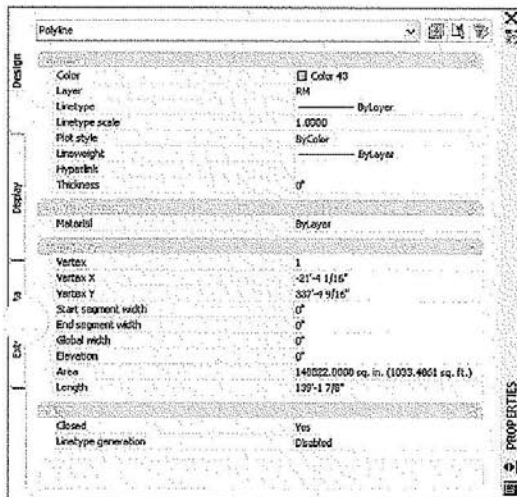


#### NOTE:

1. All polylines are to be closed NOT opened (see Exhibit D for reference)

## EXHIBIT D

### INTERIOR CLOSED POLYLINE REFERENCE



#### NOTE:

1. All polylines are to be closed NOT opened (see Exhibit D for reference)

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## APPENDIX J: CITY OF LONG BEACH STANDARDS

Please refer to the Appendix folder of Volume 3 for the City of Long Beach Standards.

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## **APPENDIX K: LBUSD DELIVERABLE REQUIREMENTS CHECKLIST**

Please refer to the Volume 3 Appendix for the LBUSD Deliverable Requirements Checklist.

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## **APPENDIX L: SAMPLE CONFORMANCE LETTER**

Please refer to the following Conformance Letter Sample.

October 21, 2011

<LBUSD Project Representative>  
LBUSD Measure K Bond Program  
Long Beach Unified School District  
2425 Webster Avenue  
Long Beach, CA 90810

RE: Letter of Conformance for <Deliverable Phase> for <Project Title>, LBUSD Project No. <Number>

Dear <LBUSD Project Representative>:

Per the contract documents, the intent of this letter is to certify that the project documents, including plans and specifications for the <Project Title> project conform to LBUSD's Facilities Design Standards, dated July 1, 2011.

The project documents also include a response to all constructability review comments provided by the District on June 7, 2011.

The following variances from the Facility Design Standards have been reviewed and approved by the Facility Design Standards Committee:

- <Variance Subject/Request>, Approved on <Date>
- <Variance Subject/Request>, Approved on <Date>
- <Variance Subject/Request>, Approved on <Date>

Please find attached the completed LBUSD Project Checklist. <If there are any items missing from the list, please provide an explanation.>

Sincerely,

Anyone Smith, AIA  
Project Architect

SAMPLE

## APPENDIX M: ROOM NUMBERING CONVENTION

A. Apply the following room numbering convention for new construction projects or campus-wide major modernization projects for Elementary, Middle and High Schools. For additions and minor modernization projects, coordinate room numbering with the existing campus room numbering system or review further with the District Representative.

B. Room numbers in **PERMANENT** buildings will consist of FOUR (4) to FIVE (5) digits per the following:

#	#	#	#	#
BUILDING		FLOOR	ROOM	

--

NUMBER ON TACTILE SIGNAGE

Notes/Examples:

- Modular buildings are considered ‘permanent’ buildings
- ROOM# 10205 → located in Building 10,000, Floor 2, Room 05
- ROOM# 3112 → located in Building 3, Floor 1, Room 12

C. Room numbers in **RELOCATABLE** buildings will consist of FIVE (5) digits per the following:

#	#	#	#	#
BUILDING		FLOOR	ROOM	

--

NUMBER ON TACTILE SIGNAGE

Notes/Examples:

- Portables / Bungalows are considered ‘relocatable’ buildings
- Group/cluster of portables on a site will be given a specific ‘building’ number that is higher than number used for permanent buildings on the site. Start with Building ‘25’ and increase as needed.
- ROOM# 25112 → located in portable cluster 25,000, Floor 1, Room 12

#### D. Methodology

##### a. Building Numbering:

- i. Building numbering shall be FOUR (4) to FIVE (5) digits as required. For example, the Administration Building would be 1000 not 1.
- ii. The numbering for permanent buildings should begin with the Administration Building (which should be numbered '1000' and should continue in numerical order in a clockwise direction around the site.
- iii. Relocatable buildings (portable/bungalow) shall be provided with a building number that is HIGHER than any number used for permanent buildings (existing or future) on the site. Relocatable buildings shall typically start with building '25000' and increase as needed.
- iv. Groups/clusters of relocatable buildings located within a specific area of the site should be assigned a 'building number' per notes above. Within that grouping/cluster, each individual relocatable building should be assigned a separate "room number" in sequential order.

##### b. Floor Numbering:

- i. Floor numbering should always be ONE (1) digit. For example, number floor '1' not '01'.
- ii. Floor numbering shall represent the floor where the room is located. For example, if the room is located on the second floor, use '2'.
- iii. Mezzanine floors will use the floor number of the floor above them. For example, if mezzanine is above the 1<sup>st</sup> floor, use floor '2'.

##### c. Room Numbering:

- i. Room numbering shall always be TWO (2) digits. For example number room '05' not '5'.
- ii. Room numbering on any floor should start with '01' not '00'
- iii. The numbering for rooms should start at the front entrance and continue sequentially in a clockwise direction throughout the building. If there are several corridors within a building, number the rooms within one corridor before numbering the next corridor.
- iv. Classrooms are to be numbered first in a clockwise direction until all classrooms are designated a number.
- v. Other rooms (e.g. administrative, service, etc.) directly accessed from the main corridor should be numbered following classrooms. Numbering to occur in a clockwise direction until each room is designated a number.
- vi. Elevators in a building are to be numbered as '00' only on the starting floor of the elevator. No need to number the elevator on each travelled floor.
- vii. Ancillary rooms that are only accessible through another room (e.g. principal's office within administration office) shall be assigned a number last, following the sequence of numbers provided to rooms accessed directly from the main corridor.
- viii. Room numbering for relocatable buildings (portables/bungalows) in any grouping/cluster should start with the building closest to the Administration Building and continue in numerical and clockwise order