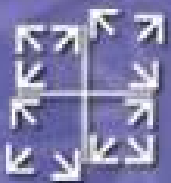


VENDOR CAD GUIDELINES MANUAL



BSC
Beaumont Services Company, LLC

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GENERAL INFORMATION

The guidelines in this manual have been developed to help architects, engineers, contractors and Beaumont Services Company, L.L.C (BSC) perform CAD work more efficiently.

These guidelines provide the basis by which BSC will accept or reject submitted CAD drawing files.

Please direct any questions or comments about this document to:

**Technical Information Group
3601 W. Thirteen Mile Road
Royal Oak, MI 48073-6769
Phone: 248.551.3257**

CAD DRAWING PRODUCTION

File Format and Set-Up

Electronic File Format

- All CAD drawings must be submitted to BSC fully compatible with AutoCAD 2008 software (with a file extension of .dwg)

Scale and Units

- All CAD drawings are to be drawn at full scale in architectural units so that one drawing unit equals one inch.
- It is important that all drawings are setup with the intention of being plotted at 1/8" scale in paper space.

Dimensions

- Automatic dimensioning by AutoCAD cannot be relied on for accuracy and must be verified by the submitter of the CAD file.
- Dimensions will be rounded by the nearest 1/4" unless greater accuracy is required.
- All dimensions shall be read left to right or top to bottom.
- All dimensions should be given in feet and inches (except for dimensions less than twelve inches).
- Extension lines shall break when crossing dimension lines.
- The spacing between dimension lines should be a minimum of 1/4" (plotted)
- When applying a series of dimensions, the longest dimension should be farthest away from the object to avoid interference between the dimension line and extension line.

Dimensional Accuracy

On projects involving **new construction only**, wall columns and column lines should be drawn first and input to exact dimensions by centerlines. All drawing offsets should be measured from the nearest column grid. The accuracy of the CAD drawing should be +/- 2” for any one room dimension. Wall thickness should be to the nearest quarter inch.

On projects including remodeling or expansion where the contractor starts work with plans obtained from BSC, the contractor shall perform all field verifications unless otherwise specified by BSC. BSC must be notified if the results of the verification are substantially different from the CAD drawing(s) provided by BSC.

The supplier is responsible for the accuracy of the CAD drawings submitted to BSC. The supplier will correct any and all errors found in the accuracy of the CAD drawings provided to BSC **at any future date**. All errors will be corrected without charge to BSC.

Fonts and Text Styles

- All text will be UPPERCASE.
- Only the ARIAL font is approved for use.
- Text width will be 1.0”. All text in model space is to have a height of nine inches. All paper space text is to have a height of 1/8” or 3/32”.
- All plotted text should be readable at 1/8” scale with a minimum height of 3/32”.
- The use of vertical, backward, or upside-down text is not permitted.
- Text is to be placed neatly and must be legible. Text cannot be located over walls or other objects that affect the clarity of the text.
- Text style names will vary with the type of text to be used.
 - Ex: Use “Notes” as the style name for notes and “Details” for text in details.
 - If more than one type of style is needed use a number as a suffix
Ex: Use “Notes - 1” if more than one style of notes is in a drawing.

Blocks

- All blocks shall be created on layer “0” with the color “**by-layer**.”
- Blocks are **NOT** to be inserted with varying X,Y scale factors, nested or redefined.
- Blocks are **NOT** to be exploded unless they require editing within the drawing.
- File translation from non-AutoCAD systems which result in wall blocks within AutoCAD are **not** acceptable.
- All blocks should be inserted with a scale factor of 96.

Title Blocks

Every drawing turned over to B.S.C. can have only one title block.

Title blocks must contain the following project information:

- Name of company that made the drawing.
- B.S.C. project number.
- Project name.
- Name of B.S.C. project manager.
- Vendor's project number.

Title blocks must contain the following drawing information:

- Drawing title (indicating the type of drawing, i.e. floor plan, section, detail.)
- Drawing number.
- Current issue name (Review, Record Set, Construction Issue, As-built) placed in the appropriate place.
- Drawing date (original drawing dates and revision dates.)
- Drawing scale.
- North arrow.

Model Space and Paper Space

Each CAD file is to contain only one title block in paper space which references the drawing contained in model space. (If a vendor chooses not to use paper space then both the drawing and title block are to be contained on the same model space tab.) **All entities in model space should be drawn at a scale of 1 to 1.**

Acceptable entities in model space:

- Text that is project specific and pertinent to conveying essential project information.
- Entities, notations & text that are pertinent to the model (room names, duct sizes, etc.)
- XREF background, floor plans.
- Details that are substantially modified as per floor plans.

Acceptable entities in paper space:

- Title blocks, general notes, legends, schedules and additional disclaimer information.
- Standard details that are not modified including not-to-scale (NTS) details that are properly noted.
- Standard sections and details that require minor modifications.

External Reference Files (XREF's)

- XREF files will consist of only master floor plans or details.
- All XREF master floor plans shall have an insertion point of 0,0,0

- All XREF files are to be inserted in the XREF layer
- In project drawings, XREF files will only be used for the construction set. The as-built set will have the XREF bound or inserted as a block for archiving purposes.

LAYERING

The layer system for model space is based on industry standards. **BSC uses the layer name and use rules contained in the American Institute of Architects document, *CAD Layer Guidelines, Third Edition*.**

The system is set up to allow the separation of layers by disciplines or trade, such as architectural, electrical or mechanical. This separation is known as the Major Group. Within the disciplines, the system allows for Minor Groups and Modifiers, which allow for ease of handling sets of objects within the drawing file.

The layering system utilizes a three-tiered name to allow more flexibility when necessary. Layer names will therefore look like the following:

- Discipline code – one or two character
- Major group – four characters
- Minor or Status group – no more than four characters

X-XXXX-XXXX

EX: A-WALL-NEW

DISCIPLINE CODES:			
A	Architectural	L	Landscape
C	Civil	M	Mechanical
E	Electrical	P	Plumbing
F	Furniture	S	Structural
FA	Fire alarm	U	Underground
FP	Fire protection		

STANDARD SYMBOL / DETAIL LIBRARY

It is the intent of this system to have standard blocks and symbols defined for most cases. If a block exists for the entity that is being drawn, the proper blocks **MUST** be utilized. However, if no detail exists for an entity the user should create a new detail based on these standards to meet the need.

GRAPHICAL ACCURACY

All drawings must be produced following good CAD practices. AutoCAD object snaps must be used for all line intersections to ensure that all corners meet. All drawing elements (doors, windows, etc.) will be drawn on the correct layer, with the correct block names.

Lines should not be drawn with more segments than necessary and with no duplicated elements

DRAWING LIMITS

The limits and the extents of a drawing must be checked to ensure there are no objects left outside the drawing limits unless specifically requested by BSC.

All drawings should be submitted with the drawing zoomed to the extents and in paper space.

SYSTEM VARIABLES

If any AUTOCAD system variables are changed the drawings must be set back to the AUTOCAD default settings described under AUTOCAD System Variables.

QUALITY AUDITS

Suppliers must establish procedures to ensure that drawings adhere to the guidelines and accuracy requirements set out in this document.

PURGING DRAWINGS

All drawings must be PURGED of all unreferenced line types, layers, blocks, shapes and text styles before submittal.

CAD COMPLIANCE CHECKLIST

CAD drawings delivered at the end of a project must be accompanied by a completed signed checklist. When a checklist has been signed and submitted, the vendor (architect, engineer, contractor, etc.) is stating that all materials comply with the standards and guidelines contained in this manual.