

## 1. General Product Information

### 1.1 What is Autodesk Building Systems?

Autodesk® Building Systems 2004 is Autodesk's premier software solution for engineers to use in the design, development, and construction documentation of mechanical, fire protection, electrical, and plumbing systems. With intelligent engineering objects at its core, Autodesk Building Systems incorporates these building engineering disciplines to provide an all-in-one MEP solution that enhances project coordination by reducing drafting inaccuracies as well as workflow inefficiencies that typically occur during the complex building design process.

Autodesk Building Systems 2004 takes coordination to even greater heights with its new drawing management functionality. It improves productivity enhancements for drafting, design, and documentation tasks, and introduces improvements to design visualization.

The result is a powerful building systems engineering software package that produces rich digital design data, helps reduce errors and costs during construction, and provides increased value to every member of the project team, from architects, to engineers, to contractors, to building owners.

### 1.2 What are the top 10 features in Autodesk Building Systems 2004?

- **Duct, Pipe, Conduit, and Cable Tray:** Increase your productivity by letting Autodesk Building Systems help you route duct, pipe, conduit, and cable tray using your preferred fittings in seconds. The software automatically generates 3D views, suggests layouts, inserts fittings, maintains angles via a compass, and provides snaps unique to Autodesk Building Systems.
- **Catalog-Driven Design:** Autodesk Building Systems uses standard parts from extensive catalogs that are completely customizable and can include manufacturer parts available on the Web. Completed layouts automatically convert into schedules of parts that match manufacturer offerings. Catalog-driven design ensures accuracy by using the appropriate part with the correct dimensions every time. The extensive content libraries and catalogs matched to standards make it easy to find the right part with the right data at the right time. And the link between layouts and schedules saves time and ensures accuracy.
- **Electrical Circuiting and Engineering Tools:** Electrical circuiting and engineering tools, such as panels, devices, wires, and circuits work together as an electrical system that is analyzed live while you draw. Plus you can export data to schedules in AutoCAD® or Microsoft® Excel software. Concurrent design and drawing with real-time calculations ensures proper ratings of all components, helping to avoid mistakes, overloads, and

rework. Plus it increases productivity and enables you to quickly total loads and generate reports for easy documentation.

- **Plumbing, Fixture Units, and Code Calculators:** With 2D plumbing layouts and fixtures that are automatically rendered in 3D, you can quickly and easily create drawings as well as visually pleasing presentations. Plus you increase productivity while adhering to plumbing codes by using code-based pipe sizing calculators. Pipe sizing data tables can be customized to meet local codes.
- **Isometric and Plan Schematics:** Fast, integrated schematic drawing tools—including extensive content, isometric layout, and orthogonal layout—make it easy to create riser, one line, logic, and process and instrumentation diagrams.
- **Parametric and Block Content Tools:** Quickly make your own parts from existing block content or use parametric solid modeling tools to create thousands of part sizes from scratch using one model—saving weeks of design time.
- **Intelligent Objects in Relationships:** Intelligent engineering objects know what they are, how to behave, and how to join together as systems. You can take advantage of intelligent objects to lay out systems accurately, the first time. Systems that automatically respond and resize upon modification. Feedback, such as interference detection, increases building model accuracy and minimizes costly errors. Intelligent objects and their properties are reflected in scheduling and tagging, property set definitions, and so forth.
- **Construction Documents:** To easily make 2D construction drawings, simply change the display of your designs with the click of a button, without layer manipulation. Display representations such as haloed lines, layer keys, and drawing sheets make it easy to create many construction drawings from just one model. For example, you can easily change a design's view from a demolition floor plan to a final ductwork design plan without having to create separate drawings for each view. Because each view is based on your design, you can be assured that any change you make is properly reflected throughout all views of your design data.
- **Built on the Same Technology as Autodesk Architectural Desktop 2004 and AutoCAD 2004:** Autodesk Building Systems 2004 provides all the updates and improvements seen in AutoCAD® 2004 and Autodesk® Architectural Desktop 2004, including interface enhancements and highly visual and customizable tool palettes. Because everyone is using the same technology, architectural and engineering designs are fully coordinated.
- **Drawing Management:** With drawing management tools you can create projects, manage levels, and automate sheet creation from a centralized project environment to ensure consistency throughout all aspects of your projects. You can be assured that everyone on your design team is accessing the most current documents—from project templates to sections and elevations—from a centralized location.

### 1.3 What are the primary benefits of Autodesk Building Systems software?

- **Design Efficiently with Data-Rich Content:** Autodesk Building Systems provides an extensive library of content, as well as access to manufacturer content so standard components can be represented quickly and accurately, and you can spend your time solving project-specific design issues. You can also create custom content, using catalog editors and parametric content builder routines, to create project-specific or unique content quickly and accurately.

- **Save Time and Improve Coordination with Automated Management Routines:** Autodesk Building Systems gives you more time for design and solving real MEP engineering problems by providing tools such as the Display Manager, Layer Manager, and Drawing Manager that reduce the tedium of CAD management. These tools accurately manage views, layers, and project organization, so you can stay focused on design.
- **Draft Accurately with Engineering-Specific Tools:** An extensive library of pre-defined content based on industry- or manufacturer-standards, combined with engineering-specific tools to facilitate system layout and design, allow you to eliminate guesswork and quickly and accurately layout building systems and components. In the process, you are creating a building model that dynamically links all design changes. That means your team is always working with the most current design data, ensuring high-quality construction documents and full coordination of engineering documentation.
- **Ensure Coordination with Intelligent Engineering Objects:** System-based rules, parametric content, and intelligent documentation routines, such as schedules, sections, and elevations, ensure that every design is well-coordinated with your construction documents. Modify the sizing of a duct and transitions change accordingly, automatically updating sections, elevations, and schedules as well.
- **Collaborate Effectively with Your Extended Design Team:** Because Autodesk Building Systems is interoperable with other building design applications from Autodesk and developer partners, you can be sure that extensive software applications are available for you and your extended design team to get your project done efficiently. This wide variety of software enables you to extract vital information from your data-rich building systems design that can be used to save time and money during analysis, estimating, procurement, construction, and management of the building throughout its lifecycle.

### **1.4 Do I need to purchase Autodesk Architectural Desktop 2004 in order to run Autodesk Building Systems 2004?**

No. Building Systems 2004 is built on the same technology as Autodesk Architectural Desktop 2004 – which includes all of AutoCAD 2004 – providing an all-in-one MEP solution. There is no need to purchase separate licenses of those products to use Autodesk Building Systems 2004. Of course, in the context of your total organization's needs, some mix of all of those products, as well as Autodesk® Revit®, may be the best total solution for your organization. Your local Autodesk Authorized Reseller ([www.autodesk.com/reseller](http://www.autodesk.com/reseller)) can help guide you toward that optimal solution.

### **1.5 Who should consider purchasing Autodesk Building Systems?**

Those who should consider Building Systems software include professionals from MEP engineering firms and architecture-engineering firms for its benefits as a design and construction documentation tool. Building owners as well as contractors can also benefit from using this product to model projects to reduce coordination issues, since the MEP disciplines are often involved in some of the most expensive and time-consuming field coordination issues. It is suitable for commercial, residential, and institutional design and construction.

## 1.6 What are the system requirements for Autodesk Building Systems?

The system requirements for Autodesk Building Systems are as follows:

Minimum	Recommended
Intel® Pentium® 4 with 1.4 GHz processor or AMD-K7® with 1.4 GHZ processor	Pentium 4 with 1.7 GHz processor or AMD-K7 with 1.7 GHz processor, or better
512 MB RAM	1024 MB Ram
Microsoft® Windows® XP Professional or Home Edition (SP1 or later), Windows 2000 (SP3 or later), or Windows NT® 4.0 (SP6a or later) operating system*	Windows XP professional (SP1 or later), Windows 2000 (SP3 or later), or Windows NT 4.0 (SP6a or later) operating system*
1024x768 VGA video display	1280x1024 VGA video display
Windows video display driver with 16 MB RAM	Windows video display driver with 64 MB RAM
Pointing device (mouse or digitizer with Wintab driver)	Pointing device (mouse or digitizer with Wintab driver)
CD-ROM drive	CD-ROM drive

\* Windows 95 and 98 are no longer supported.

## 2. The Technology

### 2.1 What are intelligent engineering objects?

Intelligent engineering objects are entities that know their form, fit, and function within your design and therefore behave like real physical objects. The ObjectARX® technology used in Autodesk Building Systems improves software performance, ease of use, and flexibility in design. These intelligent objects, like cable tray, duct, and pipe, respond directly to standard AutoCAD editing commands making them easy to manipulate as you design. And they have the ability to display according to context and to interact with other building objects intelligently. For example, a valve understands its relationship to a pipe – if the pipe moves the valve moves with it. Or ductwork, fittings, dampers, and other disparate elements of an HVAC system behave as a system, incorporating the appropriate transitions or other fittings when elements of different sizes connect. Object-based technology transforms ordinary geometry into intelligent engineering objects whose behavior models that of their real-world counterparts.

### 2.2 Why should I be interested in the 3D capabilities of Autodesk Building Systems?

Because the intelligent engineering objects know their form, fit, and function, as you design with them, the data to support a 3D model of your design is automatically generated. Therefore, by creating a 3D model of ductwork, piping, plumbing, and electrical systems, you are able to check for interference, create an accurate bill of materials, and visualize the interaction between building systems and the building structure. Downstream in the process, contractors can use models for shop drawing creation; and the building owner can use them for facilities planning and management. Coordinating, communicating, and

visualizing designs with accurate 3D models can reduce errors and accelerate the design process.

### **2.3 Can I display crossed objects with a different linetype?**

Yes. Autodesk Building Systems 2004 uses display representations to show crossed objects as dashed, hidden, or whatever linetype you choose.

### **2.4 Does Autodesk Building Systems 2004 include any new routing features?**

Yes. Now you can preview the bends and turns in duct, piping, conduit, or cable tray systems before you lay them out. There is also a suggested layout path capability that suggests routes for ductwork, piping, conduit, and cable tray between two known points. This feature saves you valuable design time by minimizing tedious drafting tasks like stretching and erasing.

### **2.5 Is any content provided within Autodesk Building Systems?**

Yes. The solution includes extensive content libraries for mechanical, plumbing, and electrical. Building Systems 2004 has added more content from the previous release to all modules and has also added content for designing fire protection systems.

### **2.6 Does Autodesk Building Systems provide a tool to easily create custom equipment for mechanical, fire protection, electrical, and plumbing designs?**

Yes, Building Systems provides several ways to create custom content.

- The MvPart Builder provides an easy-to-use interface to create custom equipment. For example, if you wanted to use a certain manufacturer's air handler, you would simply look up the dimensions of that piece of equipment, create a model drawing based on those dimensions, and insert parameters such as connection points and view representations into the MvPart Builder. MvPart Builder enables you to quickly create an entire library of customized content.
- The Content Builder is a parametric modeler used to create content for Autodesk Building Systems. You can use the Content Builder to model a fitting or a piece of equipment in a single size and then specify parametric properties so that the equipment can resize itself to fit wherever you need. This tool is especially useful when you need many sizes of a single type of part.
- Device styles enable electrical engineers to quickly and easily create new style-based electrical devices. You can then add the devices to the current drawing or to the Building Systems content folders for reuse in other drawings or projects.
- You can create schematic symbols in much the same way as device styles. You create a block and, by adding different views and connectors, specify how that symbol interacts with other building systems schematic objects.

You can also specify common content locations so that users on the same network can share content and CAD managers can easily manage that content.

## **2.7 How does Autodesk Building Systems address the need for flow diagrams and detailed schematics?**

Building Systems has a group of features devoted to schematic diagrams. With the schematic builder tools, you can create detailed schematics of chilled water systems, air systems, electrical power riser diagrams, plumbing details, and even different isometric diagrams. All the schematic symbols provided with Autodesk Building Systems have intelligent connectors that can anchor to a schematic line so you can connect to schematic lines without the time-consuming hassle of trimming lines, rotating symbols, or repairing broken lines.

## **2.8 Can I assign a layer to a schematic system without having to manually change its properties?**

Yes. Now you can assign schematic system definitions that work in the same way as mechanical and electrical system definitions. Assigning a system definition enables you to assign system properties such as layer, linetype, display representation, and much more.

## **2.9 Does Autodesk Building Systems offer tools to make it easier to develop isometric diagrams?**

Yes, the software provides tools that assist you in laying out isometric diagrams. After you select Isometric Mode in either the Schematic Line or Schematic Symbols dialog box, the cursor, as well as symbols, and fittings, adjust to the correct iso-plane, saving you time by minimizing tedious drafting tasks.

## **2.10 Can I scale schematic symbols easily?**

Yes. You can easily scale devices and schematic symbols using the AutoCAD Scale command. Additionally, each symbol has a unique scale override capability.

## **2.11 How can I check for interferences?**

There are two ways to check for interferences. The first method is by visually inspecting the 3D model from different perspectives. The second method is by turning on the Building Systems Interference Detection setting. This tool highlights conflicts between building systems objects, even across xrefs. This capability is especially helpful for large projects that have extensive building systems.

## **2.12 Does Autodesk Building Systems track heights?**

Yes. Heights are tracked as the design rises and drops based on a justification point. Building Systems also provides a way to preset important elevations to help with the organization of different building component elevations. Autodesk Building Systems 2004 also introduces a new Elevation Lock feature that makes it extremely easy to connect branches to vertical headers.

### **2.13 Can I automatically create schedules using the engineering objects in a drawing?**

Yes. Using the scheduling routines in Autodesk Building Systems, you can automatically create schedules of building systems components from the design data in the drawing. When you modify design data, schedules automatically update to reflect those modifications. Schedules can now be generated across xrefs and in paper space, making it possible to schedule an entire building model created using the new drawing management feature. This capability helps ensure accuracy as the project evolves and coordination of project information across the entire project.

### **2.14 Can I automatically create a section view from the building model in Autodesk Building Systems?**

Yes. You can use Autodesk Building Systems to create sections and elevations of your building model when a simple plan view just won't do. And because you are using the model to create the section, you can be assured that the design data and construction documentation data remain consistent.

### **2.15 Does Autodesk Building Systems support metric content?**

Yes. Building Systems supports both U.K.- and U.S.-based metric content. The metric content provided in the catalogs is a solid foundation for other metric standards that differ from the U.S. standard, which is based on GSA (General Services Administration) guidelines.

### **2.16 What are GSA metric guidelines?**

The GSA metric guidelines, established by the General Services Administration, represent the conventions that engineers should follow when designing with metric units for GSA projects.

### **2.17 Can I create my own metric content in Autodesk Building Systems?**

Yes. All part libraries are based on a combination of XML and DWG file descriptions, making them open for customization and development.

### **2.18 What does the U.S. metric content address?**

The U.S. metric content addresses metric sizes for the engineering objects in Autodesk Building Systems. These objects are sized using the metric guidelines set forth by the GSA.

### **2.19 Can I create metric content that is not U.S.-based?**

Yes. The Content Builder and Catalog Editor provide the ability to create equipment and modify the U.S. metric content using your local standard metric dimensions. The U.K.-based metric content provides building systems content that is commonly used in the U.K. and may provide a good base for the development of metric content for other local standards as well.

### **2.20 Can I display hidden objects using dashed lines or hidden lines?**

Yes. Autodesk Building Systems enables you to portray hidden objects using various linetypes while automatically maintaining label and centerline visibility. This capability is set within the object property and now works across xrefs, thus requiring minimal effort.

### **2.21 Is there an easy way to “flatten” designs so I can share them with project team members who are not using Autodesk Building Systems?**

Yes. The Export to AutoCAD feature in Building Systems “flattens” the design to basic AutoCAD entities, making it easy to collaborate with members of your extended design team who may not be using Autodesk Building Systems software.

### **2.22 How do I assign a layer to a building systems component?**

The Layer Manager automates the layering process, eliminating the tedium of manual layer management. Simply pick from a predefined layer standard or even create your own. Autodesk Building Systems automatically places objects on their correct layer as you draw. This simplifies the implementation and enforcement of effective graphics standards throughout your design process.

### **2.23 Can I install Autodesk Architectural Desktop and Autodesk Building Systems on the same machine?**

Yes. You can run Autodesk Building Systems 2004 and all versions of Autodesk Architectural Desktop on the same machine.

### **2.24 Is a network version of Autodesk Building Systems 2004 available?**

Yes. Enhanced FLEXlm<sup>®</sup> 8.3 software helps you get the full benefit from your Autodesk Building Systems 2004 licenses. For example, with the new license-borrowing feature you can install a time-limited license on your computer while disabling the license on the server for that same period. You can then run Building Systems 2004 without a connection to the license server.

Also note, that improved side-by-side installation compatibility of Building Systems 2004 with other Autodesk applications, makes it easier to provide more flexible and reliable network implementations of Autodesk Building Systems 2004.

### **2.25 Can I install Autodesk Architectural Desktop or AutoCAD extensions on top of Autodesk Building Systems?**

Yes. Extensions of both AutoCAD 2004 and Autodesk Architectural Desktop 2004 can be installed on top of Autodesk Building Systems 2004.

Note: Extensions released for prior versions of AutoCAD and Autodesk Architectural Desktop are generally rolled up into subsequent releases, therefore, the capabilities of these earlier extensions are generally inherited by later releases of the full product. Since Autodesk Building Systems 2004 is built on AutoCAD 2004 and the same technology as

Autodesk Architectural Desktop 2004, there is no benefit to installing prior AutoCAD or Architectural Desktop extensions on Autodesk Building Systems 2004.

### **2.26 Can I install Autodesk Raster Design with Autodesk Building Systems?**

Yes. Autodesk® Raster Design 2004 is specifically designed to be used with Autodesk Building Systems 2004. The hybrid drawing approach that Raster Design makes possible can be a very effective tool for rehab and retrofit projects.

### **2.27 Does Autodesk Building Systems contain all the Architectural Desktop capabilities, such as walls, doors, and windows?**

Yes. After loading Autodesk Building Systems, you have access to all Autodesk Architectural Desktop commands. To access the menus, use the MENULOAD command and load the Architectural Desktop menu file. Then load any of the menu selections you need. You can also type the command at the command prompt.

### **2.28 Does Autodesk Building Systems include tutorials for mechanical, electrical, and plumbing modules?**

Yes. Building Systems includes a tutorial for each module, as well as a comprehensive Content Builder tutorial.

### **2.29 Is courseware available for Autodesk Building Systems?**

Not yet. Courseware is not available for Autodesk Building Systems 2004 at this time; however, the in-depth tutorials included with the software are a valuable learning tool. Courseware is expected to be available within a few months after the release of the software.

### **2.30 How do I view Autodesk Building Systems files with Autodesk Architectural Desktop or AutoCAD software?**

Autodesk Building Systems 2004 ships with an object enabler that makes viewing Building Systems designs possible with both Architectural Desktop 2004 and AutoCAD 2004. To view Autodesk Building Systems 2004 designs in previous Architectural Desktop or AutoCAD versions, you can use the Export to AutoCAD feature.

### **2.31 Are templates provided for mechanical, plumbing, and electrical drawings?**

Yes. Various templates are available in imperial and metric units for Autodesk Building Systems software. These templates provide all the settings, styles, and part selections you need to get up and running fast. These templates also provide a valuable basis for creating your own templates that match your office standards.

## **3. Mechanical Module**

### **3.1 Are duct fittings and pipe fittings automatically inserted as I draw?**

Yes. Because duct fittings and pipe fittings are automatically inserted as you draw, you can concentrate on the design as a whole instead of on individual system components.

### **3.2 How easy is it to edit ducts or pipes after they are drawn?**

As a building systems modeling tool, Autodesk Building Systems features intelligent objects that interact with their neighbors through connectors to become intelligent systems. You can easily modify whole runs of ductwork or piping using the relationships established by these connectors. For example, if a duct run needs to be resized below a transition and that section includes multiple 90-degree elbows, you simply select the last piece of duct on that run, choose Duct Modify, and select the new size. The software then asks if you want to modify only that section or all the ductwork and elbows back to the transition, as well as modify the transition accordingly. The intelligent objects and connectors provided with Building Systems greatly simplify this kind of modification.

### **3.3 Do mitered elbows have turning vanes?**

You can add turning vanes or remove them from any mitered elbow using the DuctVanesAdd or DuctVanesRemove command.

### **3.4 Does Autodesk Building Systems automatically label duct and pipe?**

Yes. Ductwork, as well as piping, cable tray, and conduit, is labeled automatically if specified. By establishing label styles, you can customize properties such as prefix, separator, or suffix to achieve the style of labeling you want.

### **3.5 Does Autodesk Building Systems support folding and unfolding of pipes, curves, cones, and so forth, for calculating sheet metal or surface area requirements?**

Not at this time. However, several independent application developers have expressed an interest in providing this functionality at a later date.

### **3.6 Is mechanical equipment available to insert into a design?**

Yes. This product is rich with content stored in catalogs. Here is a small sample of the equipment available in the Autodesk Building Systems mechanical module:

- Air terminals
- Chillers
- Cooling towers
- Fans
- Modular air handlers
- Pumps
- Split system air handlers
- Split system heat pumps
- Unit heaters
- VAV boxes
- Water source heat pumps

Additionally, Autodesk Building Systems 2004 provides i-drop<sup>®</sup> technology, which enables you to download content from manufacturers' websites such as [www.marinsoft.com](http://www.marinsoft.com).

### **3.7 Does Autodesk Building Systems include any calculation and analysis tools for mechanical engineering design?**

Not yet. All the objects and framework in Building Systems were designed to support engineering calculation and analysis through the use of connection graphs and property sets. Independent application developers can extend their products to interact with the intelligent mechanical objects in Autodesk Building Systems. For example, Marinsoft has developed Duct Calculator. Duct Calculator provides familiar duct calculation capabilities that are integrated with Building Systems 2004, allowing Duct Calculator to obtain duct properties from the building model and update duct sizes in the model based on its calculations. For more information or to download a fully functional demonstration version of Duct Calculator, visit Marinsoft's website at [www.marinsoft.com](http://www.marinsoft.com).

### **3.8 Can I still create single-line drawings with this software?**

Yes. You can create single-line documentation by setting the display representation of the building systems objects. For example, by turning off the contours and connections for the duct and duct fitting representations, you can create a single-line drawing using the same objects. Setting different views of the same building model gives you customized construction documents without the need to redraw anything, so you can focus on design rather than on tedious drawing work.

## **4. Plumbing Module**

### **4.1 Is there an easy way to create isometric diagrams of plumbing piping systems?**

Yes. Autodesk Building Systems has integrated isometric design tools. After you select Isometric Mode in either the Schematic Line or Schematic Symbols dialog box, the cursor, as well as the symbols, and fittings, adjust to the correct iso-plane, saving you time by minimizing tedious drafting tasks.

#### **4.2 Does the software include plumbing systems definitions to use as a guideline for other systems?**

Yes. The software includes system definitions for a domestic cold water system, hot water system, hot water recirculation system, sanitary waste system, sanitary vent system, and others, already set up to use as a guideline to create your own plumbing systems.

#### **4.3 Are there any pipe-sizing tools available?**

For 2D schematic plumbing piping, Autodesk Building Systems provides pipe-sizing tables for supply piping (hot and cold domestic water) and sanitary waste. Sizing is based on plumbing code tables, including a fixture unit table, that are fully customizable so you can create your own to match the applicable code for the job. The software uses these tables to automatically size various plumbing piping systems, decreasing project cycle times and reducing expenses.

#### **4.4 Does the plumbing piping work with plumbing fixtures laid out in Autodesk Architectural Desktop?**

No. The plumbing fixtures in Architectural Desktop 2004 do not have the intelligent connectors needed for Autodesk Building Systems plumbing piping. All intelligent plumbing fixtures are in the Building Systems plumbing module. However, all the plumbing content in Architectural Desktop is reproduced as intelligent MvParts in Autodesk Building Systems 2004, so you can quickly swap them out one for one.

#### **4.5 Does Autodesk Building Systems track invert elevation of pipe?**

Yes. Elevation and slope of pipe can be automatically tracked and labeled at crucial points in the piping design.

#### **4.6 What fixtures and equipment can I expect to see in the Autodesk Building Systems plumbing module?**

Autodesk Building Systems software provides the following fixtures and equipment, among others:

- Appliances: dishwashers and washing machines
- Boilers: hot water boilers
- Drains: rectangular and round floor drains
- Emergency eye washes
- Filters: sand filter, rack mounted, wall mounted
- Fountains: handicap, recessed, rectangular, wall mounted
- Heaters: cabinet unit heaters, baseboard, steam heaters, unit heaters
- Lavatories: oval, rectangular, vanity, wall mounted
- Pressure regulators: hand-knob operated, wrench operated
- Pumps: horizontal discharge sewage, pressure operated, inline, vertical discharge sewage, vertical pressure operated
- Showers: corner shower stall, rectangular shower stall, rectangular shower stall with seat
- Sinks: floor sink, two-compartment sink, three-compartment sink, service sink, scrub sink, utility sink

- Strainers: basket
- Suction diffusers: flanged suction, threaded suction
- Tanks: vertical storage tanks, fuel tanks, mixing tanks
- Toilets: bidet, floor mounted, flush tank, wall mounted
- Tubs: whirlpool, bathtub
- Urinals: wall hung, urinal stall
- Water heaters: instantaneous hot water heater, standard water heater
- Water softeners

#### **4.7 How easy is it to change plumbing piping and fittings after they are drawn?**

Using the intelligent connectors that come with Autodesk Building Systems, you can easily modify pipes and fittings in your plumbing systems. For example, if a cold-water domestic line needs to be resized, simply grip-edit the pipe, right-click, and then choose Schematic Pipe Modify from the shortcut menu. You can then change the system type, elevation, slope, or size. The intelligent objects and connectors provided with Building Systems simplify this kind of modification.

#### **4.8 Does Autodesk Building Systems automatically label plumbing pipe?**

Yes. Plumbing piping can be labeled as you draw, if specified. By establishing label styles, you can customize properties such as prefix, separator, or suffix to achieve the style of labeling you want.

#### **4.9 Are there any calculation and analysis tools for plumbing engineering design?**

Yes. Autodesk Building Systems 2004 includes a calculation and analysis tool for pipe sizing. In addition, the objects and framework in the plumbing module were designed to support engineering calculation and analysis through the use of connection graphs and property sets. Independent application developers can extend their products to interact with the intelligent plumbing objects in Building Systems.

## **5. Electrical Module**

#### **5.1 Does the electrical module in Autodesk Building Systems handle multipole circuits?**

Yes, you can define voltage definitions for single-, two-, and three-pole circuits. The new circuit objects and intelligent connectors in Building Systems recognize the number of poles associated with each and are scheduled as such.

#### **5.2 Can I connect devices to more than one circuit?**

Yes, devices can have multiple connectors, and each connector can be connected to a different circuit or panel.

### **5.3 What kind of equipment is available with the electrical module for Autodesk Building Systems?**

Here is a partial list of equipment available with the Building Systems electrical module:

- Automatic transfer switches
- Emergency power generators
- Equipment switches
- Junction boxes
- Modular control centers
- Motor starters
- Power transformers
- Switchboards
- Termination boxes
- Uninterruptible power supplies
- Variable frequency drives

Additionally, Autodesk Building Systems 2004 provides i-drop technology that enables you to download content from manufacturers' websites such as [www.marinsoft.com](http://www.marinsoft.com).

### **5.4 Can devices be connected to panels without wiring?**

Yes. With the Circuit Manager in Autodesk Building Systems, it's easy to assign circuits to devices without wiring. The connectors on devices have a circuit property that enables you to connect a device to a panel with a logical "circuit" object, rather than requiring you to use wiring between all devices in the drawing.

### **5.5 How easy is it to edit the electrical system after it is drawn?**

By using the connectors that come with Autodesk Building Systems, you can easily modify your electrical systems. For example, if the architect moves the ceiling grid, you can simply stretch the light fixture to the new location in the ceiling grid and the circuiting remains intact. No rewiring is necessary. The intelligent objects and connectors provided with Building Systems make this kind of modification easy.

### **5.6 How do I label electrical components?**

You can use one of two tools to provide construction documentation of your design:

- Labels: Simply select the Add Label command on the MEP Common menu. You are prompted to select the object you want to label. By establishing label styles, you can customize properties of the selected object as well as prefix, separator, or suffix, for example, to achieve the style of labeling you want.
- MvBlocks and Property Sets: Using the combination of MvBlocks and property set definitions, you can create custom labels in accordance with your project and design standards.

### **5.7 Are there any calculation and analysis tools for electrical engineering design?**

Yes. The circuits and the Circuit Manager automatically calculate load, circuit length, and other circuit properties as you add panels, devices, and their associated circuits.

Additionally, overloads are automatically flagged, helping you to avoid potentially costly mistakes.

In addition, the objects and framework in Autodesk Building Systems are designed to support engineering calculation and analysis through the use of connection graphs and property sets. Independent application developers can extend their products to interact with the intelligent electrical objects in Building Systems.

### **5.8 Does Autodesk Building Systems add up circuit loads?**

Yes. Building Systems can total circuit and power loads. Autodesk Building Systems also enables you to generate circuit reports and export them to a Microsoft Excel spreadsheet for easy documentation. Additionally, edits made in the spreadsheet can be used to update the Building Systems model with the click of a button. With the ability to easily create circuit data, you can quickly size wires, panels, and main service lines, enhancing your design productivity.

### **5.9 Does the electrical module for Autodesk Building Systems support drawing cable tray and conduit?**

Yes. Autodesk Building Systems creates 3D cable trays and conduits, further enhancing your electrical designs. There's even a new suggested layout feature in this release that makes routing such components and systems even easier. You can use all of these intelligent capabilities in conjunction with the interference detection capability of Building Systems 2004 to detect conflicts with other building systems components and architectural structural objects. This capability ensures that your documents are well-coordinated, reducing errors and minimizing project design time.

## **6. Availability**

### **6.1 Where is Autodesk Building Systems sold?**

Autodesk Building Systems is available worldwide in Domestic English and International English versions, both of which support use of imperial and metric units and provide imperial and metric standard content. Additionally, a U.K. version is available for the Commonwealth market. Additional localized versions of the product will be available at a later date.

Contact your local Autodesk Authorized Reseller or Distributor or Autodesk Systems Center for more information. To locate one near you, visit [www.autodesk.com/reseller](http://www.autodesk.com/reseller).

### **6.2 What are product extensions?**

Autodesk product extensions are incremental enhancements to Autodesk products that are available only to subscription members. For the latest information on the Autodesk Subscription Program, including availability and purchase requirements, contact your local Autodesk reseller, visit [www.autodesk.com/subscription](http://www.autodesk.com/subscription), or contact your local Autodesk representative.

### 6.3 What are the benefits of subscription for Autodesk Building Systems?

The Autodesk Subscription Program is the easiest way to keep your Building Systems software up-to-date. For an annual fee, subscription provides a budget-conscious way to ensure you are always using the most current technology. Features of the program include

- Access to all upgrades released during the subscription term at no additional cost
- Download of all Autodesk Building Systems extensions that may be released during the subscription term at no additional cost, enabling you to access valuable content and product enhancements in a timely manner

In addition, you can choose to purchase Autodesk direct online support for added assurance. For the latest information on the Autodesk Subscription Program, including availability and purchase requirements, visit [www.autodesk.com/subscription](http://www.autodesk.com/subscription) or contact your local Autodesk representative.

### 6.4 How do I obtain technical support?

Autodesk recommends that you contact your local Autodesk Authorized Reseller to obtain technical product support ([www.autodesk.com/reseller](http://www.autodesk.com/reseller)).

Subscription members may purchase Autodesk direct online support, which delivers direct support via a web-based support interface, for the product extensions, upgrades, and updates received directly from the Autodesk Subscription Program. For the latest information on the Autodesk Subscription Program and its availability in your country, contact your Autodesk representative or visit [www.autodesk.com/subscription](http://www.autodesk.com/subscription).

In the Americas, including the United States, Canada, and Latin America, direct telephone support is available from Autodesk, on a fee-per-incident basis. Access to this service requires a major credit card. For pricing and access details, please go to [www.autodesk.com/safetynet](http://www.autodesk.com/safetynet).

You can find a complete list of support options by product and country at [www.autodesk.com/support-resources](http://www.autodesk.com/support-resources).

## autodesk®

Autodesk, Inc.  
111 McInnis Parkway  
San Rafael, CA 94903  
USA

Autodesk, AutoCAD, i-drop, ObjectARX, and Revit are registered trademarks of Autodesk, Inc., in the USA and other countries. All other brand names, product names, or trademarks belong to their respective holders.

© 2003 Autodesk, Inc. All rights reserved.