

Program title: **“Integrated BIM and Design Review for Safer, Better Buildings,” (06/07, page 191).** AIA/CES Credit: This article will earn you one AIA/CES LU hour of health, safety, and welfare credit. (Valid for credit through June 2009). **Directions:** Refer to the Learning Objectives for this program. Select one answer for each question in the exam and fill in the box by the appropriate letter. A minimum score of 80% is required to earn credit. **To take this test online, go to <http://construction.com/CE/>**

## LEARNING OBJECTIVES

### After reading this article, you should be able to:

- Apply the productivity and safety benefits of operating in a collaborative design process.
- Communicate the use of 3-D graphic design tools across multiple organizations using diverse technology platforms, resulting in better, safer outcomes.
- Evaluate the use of integrated design tools, BIM and design review for reducing project uncertainties, waste, risk, and creating safer projects for owners and developers

## Questions

### 1. With BIM design review software, any project team member can change the work in the model by other project team members.

- a. True  
 b. False

### 2. The use of BIM for “clash detection” or conflict resolution means that

- a. users can determine where building components interfere with each other.  
 b. users can reduce the number of change orders.  
 c. arguments between engineers, architects and contractors are identified and resolved.  
 d. 3-D elements of building models are automatically reconciled.

### 3. Which is NOT a health, safety & welfare benefit of BIM and design review at the construction site?

- a. Reducing errors and corrections in the field  
 b. Comparing “what-if” scenarios for logistics, sequencing and hoisting  
 c. Automatically sampling air quality at the job site  
 d. Incorporating more prefabricated construction components

### 4. For healthcare facilities, BIM and design review have provided:

- a. life safety benefits.  
 b. coordinated fire-protection and plumbing information.  
 c. savings on installed costs.  
 d. All of the above

### 5. Recent uses of BIM technology include:

- a. identifying coordination issues to increase project risk and liability.  
 b. preventing the movement of equipment within healthcare facilities.  
 c. assessing a building’s performance for ADA, egress and daylighting.  
 d. wireless building permit applications.

### 6. Research labs designed without BIM may have heating energy requirements that are how many times higher than those for buildings designed with BIM?

- a. 100 times  
 b. 2-4 times  
 c. 17 times  
 d. 0 times

### 7. Which is NOT a documented benefit of using BIM for sustainable design?

- a. Analysis of commuting costs for the occupants  
 b. Study of daylight penetrations and views  
 c. Modeling of cooling and heating loads  
 d. Accounting of recyclable content in building products used

### 8. How can BIM assist in making building operations safer and more efficient?

- a. By providing building component warranty and replacement information.  
 b. By integrating maintenance schedules and MEP systems information.  
 c. By providing as-built drawings to facilities managers and safety officials.  
 d. All of the above.

### 9. For the Letterman Digital Arts Center, integrated design-review tools \_\_\_\_\_.

- a. coordinated the installation of graphics workstations  
 b. increased the project cost  
 c. identified hundreds of design and construction discrepancies  
 d. contributed to a utility rebate

### 10. How did BIM improve the scheduling of the project at the Flint V6 plant?

- a. Reduced time needed for steel fabrication and delivery.  
 b. Made it a LEED Platinum design.  
 c. Allowed project to proceed without structural drawings.  
 d. Maximized use of prefabricated components.

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**Material resources used:** Article: This article addresses issues concerning health and safety.

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