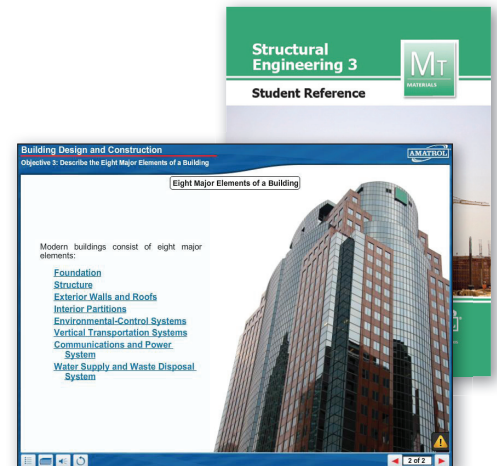


# Structural Engineering 3 Learning System

96-SE3



96-SE3 Components Used to Mix and Form Concrete Beams



Multimedia Curriculum and Student Reference Guide

## Learning Topics:

- Beam Deflection
- Column Buckling
- Safety Factors
- Concrete Mixing and Placement
- Concrete Testing
- Building Design
- Building Construction
- Building Loads
- Building Research

Amatrol's Structural Engineering 3 Learning System (96-SE3) covers a variety of foundational industrial topics including: concrete mixing, placement, and testing; how to control column and beam deflection; preventing columns from buckling; and designing buildings to both support normal loads and to stand up to environmental elements. These skills can be used to move into fields like construction, engineering, and architecture. The 96-SE3 utilizes components from the Structural Engineering 1 Learning System (96-SE1) and builds on knowledge introduced in that system.

The Structural Engineering 3 Learning System includes concrete and metal beam component sets and a building component set that allow learners to practice real-world skills while they study the safety steps, advantages of certain materials, and overall theoretical knowledge behind these foundational engineering concepts. Some of the major topic areas covered by the 96-SE3's curriculum include beam and column design, the fundamentals of concrete, building design, and building construction. This interlacing of theoretical knowledge and hands-on skills builds learner competencies and gives them the knowledge to move on to more advanced structural engineering topics.



## Technical Data

Complete technical specifications available upon request.

### Concrete Beam Component Set 1

- Concrete Mold Base (2)
- Concrete Mold Side (4)
- Concrete Mold End (4)
- Concrete Mold Clamp (14)
- Wing Nut 10-24 (28)
- SAE #10 Flat Washers (28)
- Mixing Box, Concrete
- 5-in x 11-in Brick Trowel
- Beaker, 1000-ml
- Support, Concrete Beam (2)
- Load Bar, Concrete Beam
- Concrete Protector

### Building Component Set 1

- Load Beam (2)
- Load Saddles (4)
- Building Load Rod
- Hex Nut 3/8-16 (2)
- Polyurethane Flat Disk Spring (6)
- Fender Washer 3/8 x 1-1/4 (12)
- Beam, 12.125-in (6)
- Beam, 12.125-in with Strain Gauge (2)
- Cross Braces (8)

### Beam Component Set 2

- Steel Beam
- Aluminum Beam
- Buckling Member (10)

### Skyscrapers DVD

### Multimedia Curriculum (MB805)

### Instructor's Guide (CB805)

### Installation Guide (DB805)

### Student Reference Guide (HB805)

### Additional Requirements:

Structural Engineering 1 Learning System (96-SE-1)

Computer: See requirements: <http://www.amatrol.com/support/computer-requirements>

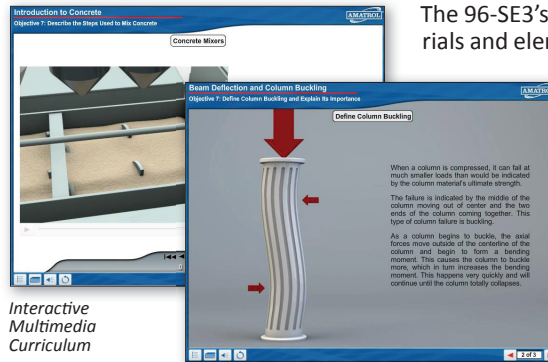
## Mix and Form Concrete Beams and the Perform Rupture Tests

Structural Engineering 3 features concrete molds, clamps, a mixing box, and a brick trowel that learners can use to perform skills like mixing and forming concrete beams with and without coarse aggregate, performing rupture tests, and examining the effects of coarse aggregate on concrete strength. This system also includes test beams for practicing skills like calculating the deflection of a beam, calculating the critical load for buckling a column, determining building load paths, and analyzing building loads.



Ruptured Concrete Beam

## Learn About Vital Elements and Materials Used to Construct Safe, Sturdy Buildings



Interactive Multimedia Curriculum

The 96-SE3's curriculum covers some of the basic materials and elements that go into designing and constructing a safe, stable building. Specifically, topical objectives include: how to use a factor of safety in the design of a structural element; how to reinforce concrete; and how buildings are designed to withstand environmental factors. This curriculum is presented in a stunning interactive multimedia format. The multimedia features vibrant 3D graphics, videos, interactive quizzes and exercises, and voiceovers of the curriculum's text.

## Project-Based Learning: Introducing Future Workforce Members to Careers in Engineering, Construction, Industrial Maintenance, and More!

Structural Engineering 3 is the final learning system in Amatrol's Project Based Learning Structural Engineering line. However, additional learning opportunities abound within this program in many other areas, such as electrical, fluid power, machining, and automation to name a few. Amatrol's Project Based Learning Systems are specifically designed for high school students in order to build strong teamwork, STEM, and problem-solving skills, as well as to introduce future members of the workforce to careers in engineering, construction, industrial maintenance, and more!

## Student Reference Guide

A sample copy of the Structural Engineering 3 Student Reference Guide is also included with the system for your evaluation. Sourced from the system's curriculum, the Student Reference Guide takes the entire series' technical content contained in the learning objectives and combines them into one perfectly-bound book. Student Reference Guides supplement this course by providing a condensed, inexpensive reference tool that learners will find invaluable once they finish their training making it the perfect course takeaway.

