



**H.H. Arnold High School  
Electronics and Technology Education  
Frank C. Pendzich**

**ASSIGNMENT CHECK-LIST  
08/07/00**

Course # Course Title  
**TED303 Engineering Drawing**

Area Competency  
**Y DESIGN AND MODELING PROJECT - MODEL TRUSS BRIDGE**

<u>Task</u>	<u>Task/Skill</u>	<u>Started</u> <u>mm/dd/yy</u>	<u>Completed</u> <u>mm/dd/yy</u>
<b>1</b>	<b>CADDing and Modeling the Truss Bridge (Theory)</b>	( / / )	( / / )

This project introduces the CADD student to the various methods of design and modeling. Once this project is complete the student should be able to identify various truss bridge designs and determine their appropriate applications. They will also answer questions regarding design specifications for truss bridge contesting and the history of bridges in general.

<u>Sub</u>	<u>Init</u>	<u>Code</u>	<u>Type of Task</u>	<u>Task Description</u>
a	( )	<b>Y1a</b> <b>Source:</b> <b>Unit:</b>	<b>Reading Assignment</b> The Pitsco Bridge Book 1, 2, & 3 <b>Page:</b> 1 - 13	The Pitsco Bridge Book  <b>Min. Score:</b> %
b	( )	<b>Y1b</b>	<b>Reading Assignment</b>	Bridge Building Contest Rules
c	( )	<b>Y1c</b>	<b>Video Tape Inst.</b>	Bridge Design
d	( )	<b>Y1d</b> <b>Source:</b>	<b>Computer Aided Inst.</b> <b>West Point Bridge Design</b>	West Point Bridge Design
e	( )	<b>Y1e</b> <b>Source:</b>	<b>Homework Assignment</b> The Pitsco Bridge Book	Test Your Knowledge Crossword Puzzle
f	( )	<b>Y1f</b> <b>Source:</b>	<b>Computer Aided Inst.</b> www.pbs.org/wgbh/nova/bridge	Nova Bridge Web Site
g	( )	<b>Y1g</b>	<b>Computer Test</b>	Modeling the Truss Bridge
h	( )	<b>Y1h</b>	<b>Notebook</b>	Notebook Review

<u>Task</u>	<u>Task/Skill</u>	<u>Started</u> <u>mm/dd/yy</u>	<u>Completed</u> <u>mm/dd/yy</u>
<b>2</b>	<b>DRAFT - The Design Sketch</b>	( / / )	( / / )

The student will sketch a three view (Top, Front, and Right Side) of the bridge they intend to build. With the help of the instructor, they will analyze and redesign their bridge to use the least amount of material while supporting the most amount of weight.

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Lastname, First

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Student Number

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Period

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<u>Sub</u>	<u>Init</u>	<u>Code</u>	<u>Type of Task</u>	<u>Task Description</u>
a	( )	<b>Y2a</b>	<b>Project</b>	Bridge - The Three View Design Sketch
		<b>Source:</b>	The Pitsco Bridge Book	
		<b>Unit:</b>	3	
			<b>Page:</b>	
				<b>Min. Score:</b> 85%

<u>Task</u>	<u>Task/Skill</u>	<u>Started</u>	<u>Completed</u>
<b>3</b>	<b>DRAFT - Three View Drawing</b>	<u>mm/dd/yy</u> ( / / )	<u>mm/dd/yy</u> ( / / )

The student will draft a full scale three-view (Top, Front, and Right Side) stick drawing of their bridge design complete with dimensions for span, length, substructure depth, superstructure height, and road bed width. All specifications must adhere to the published guidelines for model truss bridge contesting.

<u>Sub</u>	<u>Init</u>	<u>Code</u>	<u>Type of Task</u>	<u>Task Description</u>
a	( )	<b>Y3a</b>	<b>Project</b>	Bridge - Drafting the Three View Drawing

<u>Task</u>	<u>Task/Skill</u>	<u>Started</u>	<u>Completed</u>
<b>4</b>	<b>CADD - 3D Wire Frame</b>	<u>mm/dd/yy</u> ( / / )	<u>mm/dd/yy</u> ( / / )

The student will CADD a full scale wire frame drawing of their assembled bridge design with the orientation of the bridge - Lateral Truss FRONT and Sub/Superstructure Trusses RIGHT. The drawing will represent the thickness of the wood and show joint details. The drawing will be placed in an appropriate border and each truss will be grouped, on separate levels, and color coded.

<u>Sub</u>	<u>Init</u>	<u>Code</u>	<u>Type of Task</u>	<u>Task Description</u>
a	( )	<b>Y4a</b>	<b>Project</b>	Lateral Truss - 3D Wire Frame
b	( )	<b>Y4b</b>	<b>Project</b>	Substructure Truss - 3D Wire Frame
c	( )	<b>Y4c</b>	<b>Project</b>	Superstructure Truss - 3D Wire Frame
d	( )	<b>Y4d</b>	<b>Project</b>	Assembled Bridge - 3D Wire Frame

<u>Task</u>	<u>Task/Skill</u>	<u>Started</u>	<u>Completed</u>
<b>5</b>	<b>CADD - Orthographic Projection</b>	<u>mm/dd/yy</u> ( / / )	<u>mm/dd/yy</u> ( / / )

The student will CADD a full scale orthographic projection (Top, Front, Right Side, and Isometric) of their bridge design. The drawing will be placed in an appropriate border and include overall dimensions. The border, dimensions, and each view of the bridge will be placed on separate levels. Each view will be plotted as a template for bridge construction.

<u>Sub</u>	<u>Init</u>	<u>Code</u>	<u>Type of Task</u>	<u>Task Description</u>
a	( )	<b>Y5a</b>	<b>Project</b>	Truss Bridge Orthographic Proj.
b	( )	<b>Y5b</b>	<b>Project</b>	1:1 Plot of Lateral Truss(es)
c	( )	<b>Y5c</b>	<b>Project</b>	1:1 Plot of Substructure Truss(es)

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- d ( ) Y5d Project 1:1 Plot of Superstructure Truss(es)
- e ( ) Y5e Project 1:1 Plot of Top View

<u>Task</u> <b>6</b>	<u>Task/Skill</u> <b>MODEL - Building the Model Truss Bridge</b>	<u>Started</u> mm/dd/yy ( / / )	<u>Completed</u> mm/dd/yy ( / / )
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Using the 1:1 plots of their model truss bridge design, the student will construct their bridge. The student must use only the materials specified in the guidelines for bridge contesting. Each truss will be constructed separately and then assembled together to complete the project.

<u>Sub</u>	<u>Init</u>	<u>Code</u>	<u>Type of Task</u>	<u>Task Description</u>
a	( )	<b>Y6a</b> Source: Unit: 4	<b>Reading Assignment</b> The Pitsco Bridge Book Page: 14 - 18	Building Your Model Truss Bridge  <b>Min. Score:</b> %
b	( )	<b>Y6b</b>	<b>Project</b>	Construct Lateral Trusses
c	( )	<b>Y6c</b>	<b>Project</b>	Construct Substructure Trusses
d	( )	<b>Y6d</b>	<b>Project</b>	Construct Superstructure Trusses
e	( )	<b>Y6e</b>	<b>Project</b>	Truss Bridge Assembly

<u>Task</u> <b>7</b>	<u>Task/Skill</u> <b>MODEL - Testing the Bridge</b>	<u>Started</u> mm/dd/yy ( / / )	<u>Completed</u> mm/dd/yy ( / / )
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The student will subject their bridge to destructive testing to determine the efficiency of their design and bridge construction. The results will be recorded to determine the bridge's ranking among other students.

<u>Sub</u>	<u>Init</u>	<u>Code</u>	<u>Type of Task</u>	<u>Task Description</u>
a	( )	<b>Y7a</b> Source: Unit: 5	<b>Reading Assignment</b> The Pitsco Bridge Book Page: 19 - 20	Testing the Model Truss Bridge  <b>Min. Score:</b> 85%
b	( )	<b>Y7b</b>	<b>Performance Test</b>	Destructive Testing

<u>Task</u> <b>8</b>	<u>Task/Skill</u> <b>MODEL - Truss Bridge Design Analysis</b>	<u>Started</u> mm/dd/yy ( / / )	<u>Completed</u> mm/dd/yy ( / / )
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Based upon the results of the destructive testing, the student will analyze the design of their bridge and prepare a report proposing changes to improve its performance. The report will include sections describing the Design Problem, Limitations and Specifications, Results, and Proposed Improvements. Also included in the report will be the original sketches and drawings as well as a drawing identifying the proposed design changes.

<u>Sub</u>	<u>Init</u>	<u>Code</u>	<u>Type of Task</u>	<u>Task Description</u>
a	( )	<b>Y8a</b>	<b>Technical Report</b>	Model Truss Bridge Design Analysis

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