



# California Vocational Agriculture Curriculum Guidelines Instructional Unit

## PROJECT SELECTION & CONSTRUCTION

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## PROJECT SELECTION & CONSTRUCTION

### Unit Goal

The goal of this unit is to assist the student to develop the knowledge required to plan and complete a construction project.

### Unit Objectives

Upon completing this unit the student will be able to:

1. Plan a construction project.
2. Work in less crowded shop area.
3. Layout a construction project.
4. Assemble and finish a project.

## Teaching Outline

### I. Introduction

Most shops do not have sufficient stations for all students to work on one skill at the same time, therefore, better use can be made of the shop and facilities if students can work in different areas on different skills. In order to accomplish this the instructor must have in mind and communicate to the students what is expected of them in each area.

Quality of projects is very important. One poorly made project will bring much more negative comments than the positive comments regarding a well made project. Quality is expected and not as noticeable as inferior work.

### II. Selection

The instructor should define and list the skills that will demonstrate completion of the course of study. With the list of skills in mind, projects can be selected that include those skills.

- A. Required projects: some students may not have an interest, need or the finances to build a personal project. Therefore, required projects financed by the school budget or chapter are essential.
- B. Alternate projects: students may have a need for a project other than those required. The instructor can inspect the plan submitted by the student to determine skills involved (assess feasibility) and authorize (or reject) the project indicating for which required project the alternate will substitute.
- C. Group projects: a large project may be taken on as a service to a local farmer -- repair or construction -- which can provide skill development for an entire class.

### III. Planning

- A. Required projects usually will have a specific plan to follow, as well as tolerances allowed. The students may be required to calculate a bill of materials or "cut list."
- B. Alternative projects should have working drawings and a material list for construction, fasteners and finishing. The student should be able to discuss the materials, types of joints involved, fasteners required, time required for construction, and time needed.

### IV. Layout

- A. If more than 8 units, the same are to be built it may pay to construct a jig to insure uniformity.
- B. Plan cuts -- insure kerf on waste side of work
- C. Projects should be "dry fit" before assembly to insure proper dimensions
- D. Perform tasks in logical order, and stockpile components as prepared.
- E. Alignment: Components clamped or tack welded and checked for square, proper fit, prevention of distortion, dimensions and overall alignment.
  - 1. Use steel square
  - 2. Diagonal measure for rectangles
  - 3. 3, 4, 5 principle for large pieces
  - 4. Use level to check base and plumb

SUGGESTED LEARNING ACTIVITIES

1. Have the students select a required or alternate project plan and complete the project.

SUGGESTED RESOURCE MATERIALS

- I. Various plan books or kits.

Duplicate existing object, i.e., sawhorse, etc.

Working in Agricultural Mechanics, Activity Guide and Project Plan Book, Shinn & Weston, McGraw-Hill

Agricultural Mechanics Plans, T-781-900, V.E.P.

#### IV. F. Assembly

1. Consider material, does it need pre-treatment before joining (pre-heating for welding, gluing on wood).
2. Position material so work is easiest. Flat welds vs. overhead etc.
3. Allow time to cool or cure before next step undertaken.

#### G. Finishing

1. Clean off excess glue while it is soft
2. Chip and wire brush, wipe off smoke deposits
3. Grind sharp edges and splatter
4. Prep metal if necessary to help paint adhere or remove deposits which would be damaging to paint. Prepare area to minimize mess
5. Apply finish prime and finish coat. Protect until dry.
6. Clean up paint equipment and project area before paint hardens. Much easier than trying to clean up hardened paint in equipment and shop later.
7. When welding always allow weld to show. (Never grind it off)  
It indicates the quality of work and also will result in a stronger joint.

### SUGGESTED LEARNING ACTIVITIES

1. Observe samples in surrounding area.
2. Visit farm equipment shows, county and state fairs and progressive farm construction shops in area.
3. Find suitable project and bring it in to copy so you don't make engineering mistakes, just improvements.

### SUGGESTED RESOURCE MATERIALS

1. Local welding shop.
2. Equipment dealers.
3. Farmer projects, farm equipment from local farms

### Student Evaluation

Project Selection and Construction is a guide unit to help a student make a good selection. As such there isn't a formal evaluation. Evaluation is based on the completed project and may be conducted on several levels:

1. Teacher grading of the finished project.
2. Competition with projects from other schools at a fair.
3. Teacher evaluation of submitted plans.
4. The ultimate evaluation of the project comes when it is used. Does it work as planned? Does it last?

### General References

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