

**AG FACTS**

# Pesticide Storage Facility

Agricultural Experiment Station and Cooperative Extension Service

**Dennis K. Kuhlman**  
Extension Agricultural Engineer

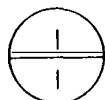
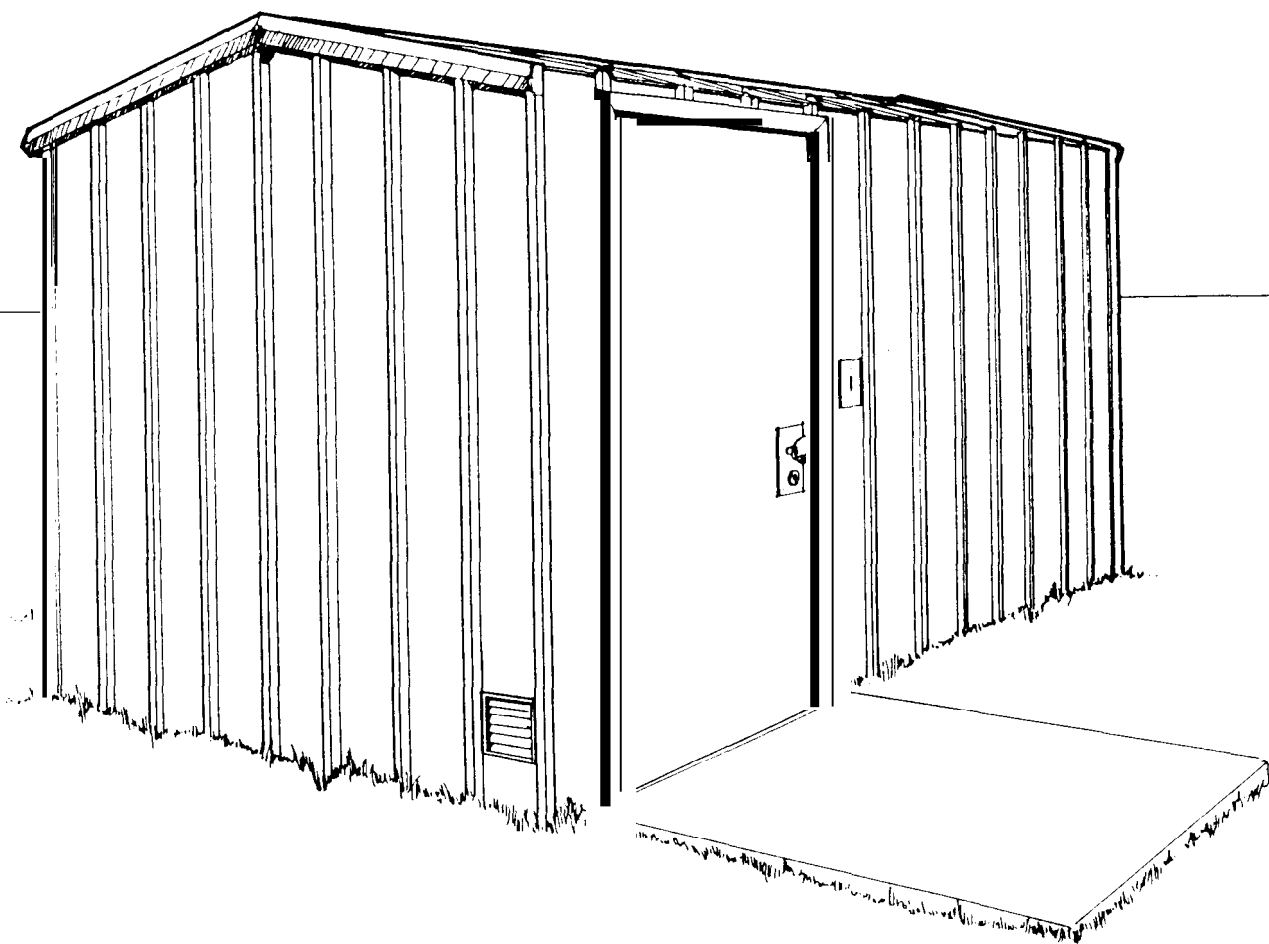
**John W. Slocombe**  
Agricultural Mechanization

**Clarence W. Swallow**  
Department of Agronomy

Pesticides require proper storage to ensure that they retain their performance abilities. Farmers, custom pesticide applicators, pesticide dealers and distributors, greenhouse operators, pest control operators, and similar businesses need the same chemical storage conditions and facilities, but on differing scales.

When planning facilities to store today's

agricultural chemicals, consideration should be given to situations such as fire, wind and flood. Each facility or plan should be carefully evaluated to see that it meets minimum state and federal regulations. In some cases, a specially designed storage facility for pesticides may be needed. For others, an area in an existing building may be modified and designated for pesticide storage.



AGRICULTURAL PESTICIDE STORAGE BUILDING

## Storage considerations

Several factors may be involved in planning pesticide storage facilities, depending on the size of operation and the amount of material to be stored.

1. Pesticide storage areas should be on the ground floor. Within the storage area, separate pesticides by group (herbicides, insecticides, etc.) to prevent accidental misuse or contamination.

2. Never place pesticide containers in or front of windows. Exposure to sunlight may cause chemical breakdown or overheating. Pesticides generally should be stored at temperatures above 40°F and below 90°F. Humidity should be kept low to prevent lumping or degradation of powder formulations and to reduce corrosion of metal containers.

3. Store glass containers closest to the floor, and metal containers highest. This arrangement will help to prevent contamination by other materials from rusting or leaking containers and will reduce splash exposure from breakage of glass containers.

4. Do not store fertilizers and other non-pesticide products in the pesticide storage area.

5. The storage building or area should be well marked with durable warning signs on all doors and windows, and should be kept locked.

6. Offices should not be located in the pesticide storage building or area.

7. Building materials should be fire-resistant or used to construct a fire-resistant structure.

8. Install fire protection, alarms, sprinklers, extinguishers, etc., as needed. A floor plan showing the location and nature of the pesticides should be filed with the local fire department.

9. Plans should include provisions for proper handling and containment of fire-fighting water, which may be heavily contaminated with pesticide mixtures in case of fire.

10. Floors, walls, etc. should be sealed (epoxy paint may be used) to prevent absorption of spilled pesticides.

11. Sinks and showers are needed for clean-up. Drains that may contain pesticide solutions resulting from clean-up, mixing or maintenance operations must not connect to sewer systems or be openly discharged. Water that contains pesticide solution should be stored temporarily in holding tanks until it can be used as a distant or disposed of properly. Observe state and federal regulations in the storage and disposal of pesticide waste.

12. Store protective clothing in a convenient location away from pesticides and their fumes. Disposable safety clothing is preferred.

13. Clean-up materials and equipment (kitty litter, sawdust or other absorbent material, plastic-lined container, small shovel, broom, dustpan, etc.) should be readily available

14. Install exhaust fans that will provide from three to six air changes per hour. Large storage areas, when occupied, may require up to 20 air exchanges per hour.

15. Explosion-proof electrical wiring, switches and outlets may be required depending on the size, location, materials stored, and the type of facility.

16. Store pesticides only in their original labeled containers. Using other containers can lead to accidents.

17. Pesticide containers should be tagged or marked with the date of purchase for a "first bought, first used" policy. This practice will help ensure that pesticides will be used within their shelf life.

18. Consult pesticide labels for special storage instructions.

## Storage Facility Plans

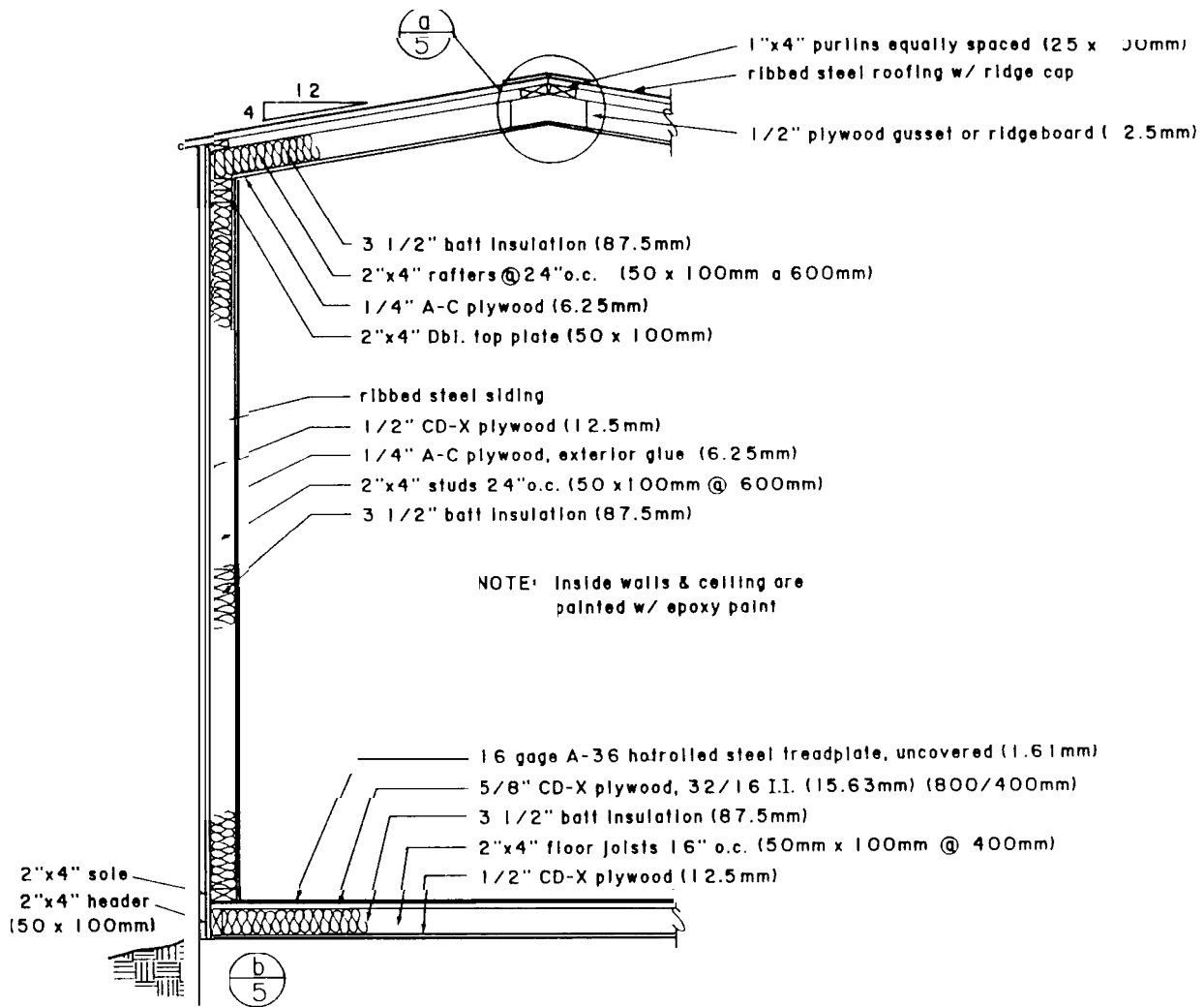
The pesticide storage facility plan in this publication may be used as a guide for small- to medium-quantity storage facilities. This portable building was designed with stud frame, gable roof, insulation materials and heating equipment to prevent temperatures under 40°F. The building has a ventilation system that provides three to six air exchanges per hour and a weatherproof electrical disconnect on the exterior. It can be locked securely and posted with OSHA-approved labels. Interior surfaces are coated with epoxy paint to provide a nonabsorbent surface.

A plan for a large storage building suitable for pesticide mixing and storage with a concrete washdown and refill area is available from Midwest Plan Service Iowa State University, Ames, Iowa 50011 (Plan No. 74002). This facility has a shower, toilet and lockers for safety equipment, and storage, mixing and equipment washdown areas.

Site selection is very important when constructing a new building or modifying an existing one. The site should be down-wind and downhill from houses, yards and play areas, gardens, ponds or feedlots. Pesticides that may be present in rinsate, spills, seepage from storage or heavy runoff from fire-fighting must be controlled through the use of dikes, collecting pools, washing slabs, sumps or holding tanks.

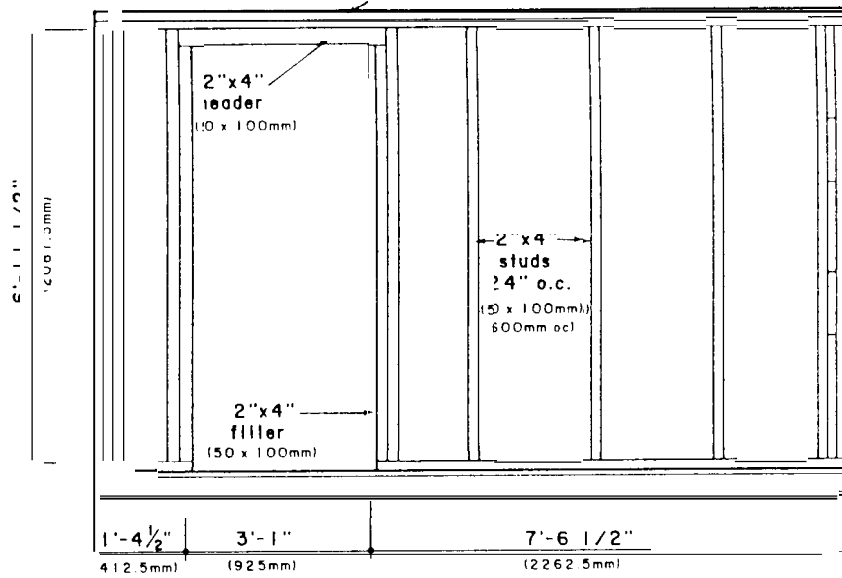
The pesticide storage area must be child-proof. The facility should be enclosed by a fence that cannot be climbed and a locked gate to prevent unauthorized entry. The fence, gate, doors and windows should be posted with identification and warning signs.



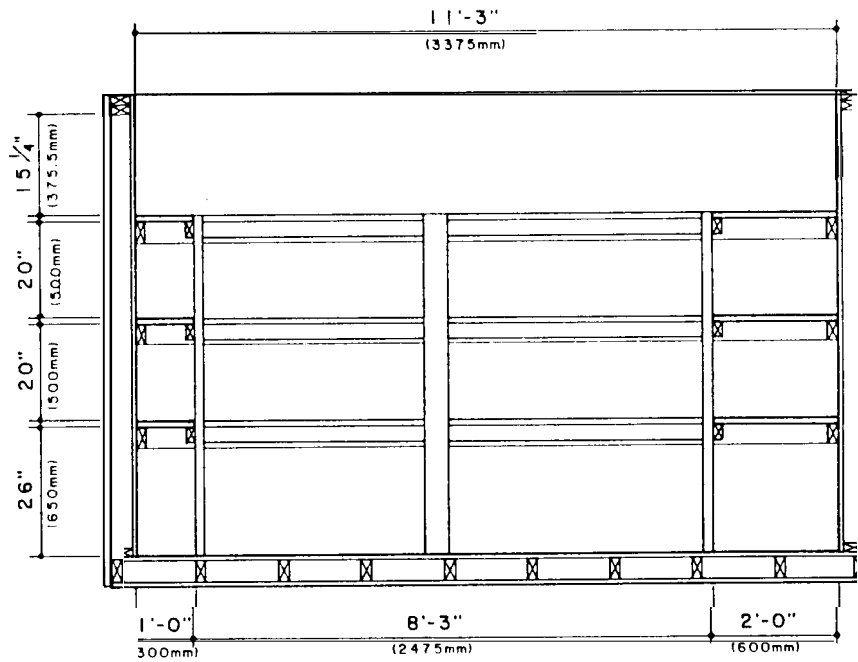


1  
3

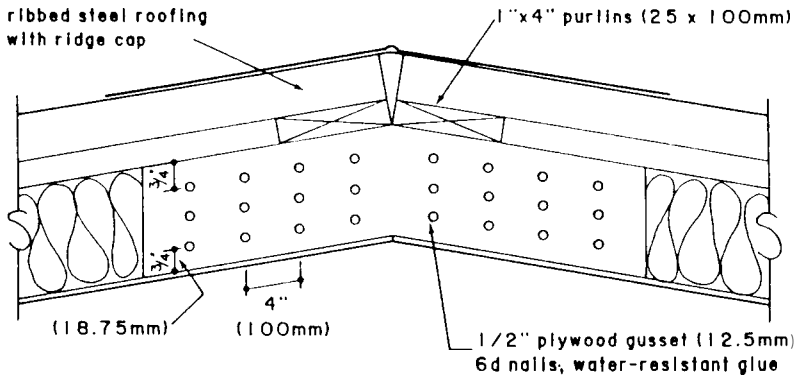
WALL SECTION A-A



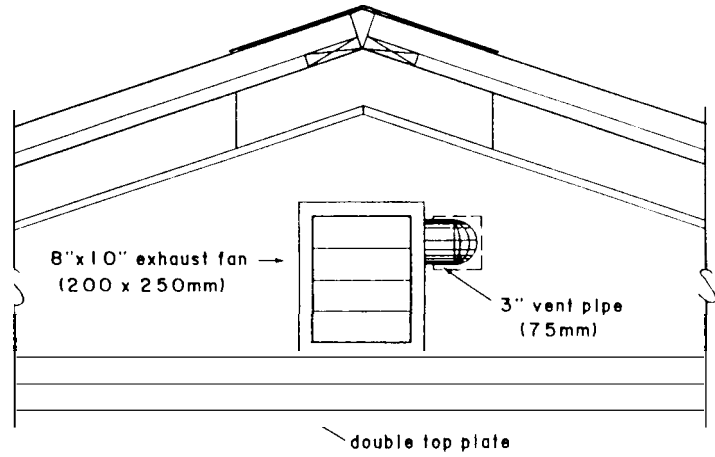
1 FRAMING DETAIL  
4



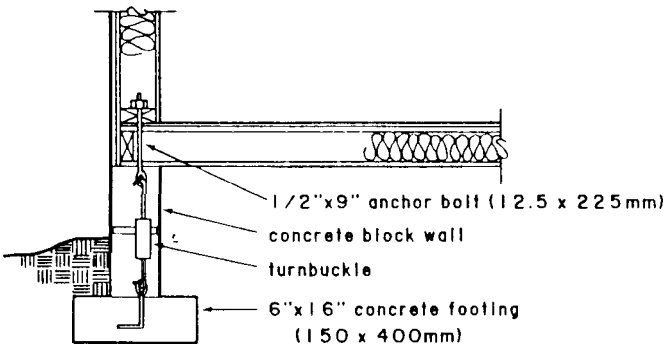
2 SHELVING DETAIL  
4



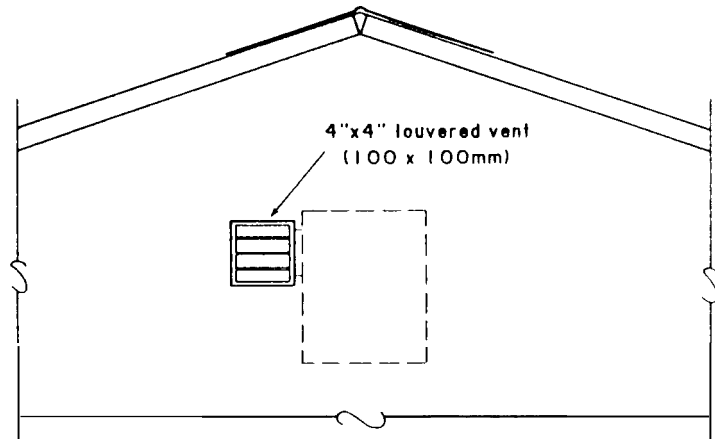
**a**  
 5 ROOF DETAIL



**c**  
 5 FAN B: INTERIOR VIEW



**b**  
 5 FOUNDATION DETAIL



**d**  
 5 FAN B: EXTERIOR VIEW

## Pesticide Storage Facility Bill of Materials

No. Pieces	Size		Description	Grade	Unit Cost	Total cost
	T	x W x L				
14	½"	× 4' × 8'	Plywood	CDX	.24/ft <sup>2</sup>	\$107.52
10	2"	× 4" × 7'	Floor Joists	Construction	.26/bdft	12.13
2	2"	× 4" × 12'	Floor Joists Headers	Construction	.26/bdft	4.16
3	¼"	× 4" × 8'	Plywood	CDX	.36/ft <sup>2</sup>	34.56
173 ft <sup>2</sup>	3 ½"	× 24"	Floor & Ceiling Batt Insulation	R19	.17/ft <sup>2</sup>	29.41
28	2"	× 4" × 83 ½"	Studs	Construction	.26/bdft	33.77
6	2"	× 4" × 12'	Sole & Top Plates	Construction	.26/bdft	12.48
6	2"	× 4" × 6' 5"	Sole & Top Plates	Construction	.26/bdft	6.67
258 ft <sup>2</sup>	3 ½"	× 16"	Side Wall Batt Insulation	R19	.17/ft <sup>2</sup>	43.86
13	¼"	× 4' × 8'	Plywood	A-C	.28/ft <sup>2</sup>	116.48
4	1"	× 4" × 12'	Purlins	Construction	.55/bdft	8.80
4	2"	× 4" × 16'	Rafters	Construction	.26/bdft	11.09
1	16 ga.	× 7' × 12'	Steel Treadplate		135.00	135.00
8	28 ga.	× 3' × 8' ¼"	Steel Ribbed Siding			
6	28 ga.	× 3' × 8' 11"	Steel Ribbed Siding		806.63	806.63
8	28 ga.	× 3' × 3' 8"	Steel Ribbed Roofing			
1		3' × 6' 8"	Insulated Metal Door		163.00	163.00
1			Ventilation Fan	100 CFM	17.95	17.95
1			Ventilation Vent		2.00	2.00
1			Weatherproof Electrical Disconnect	30A	21.50	21.50
4			Electrical Circuit Breakers		5.00	20.00
1		8'	2-Bulb Fluorescent Light		37.50	37.50
2			SPST Switch	120V, 15A	.89	1.78
1			Weatherproof Switch Box		12.00	12.00
2			Electrical Gang Box		1.00	2.00
1			Duplex Receptacle	120V, 20A	.79	.79
1			Electric Heater		143.00	143.00
1 gal.			Marine Enamel Paint		9.99/qt	39.96
			<b>TOTAL COST</b>			<b>\$1844.04</b>

---

**Kansas State University Agricultural Experiment Station and Cooperative Extension Service**

AF-169

April 1988

---

It is the policy of Kansas State University Agricultural Experiment Station and Cooperative Extension Service that all persons shall have equal opportunity and access to its educational programs, services, activities, and materials without regard to race, color, religion, national origin, sex, age or disability. Kansas State University is an equal opportunity organization. Issued in furtherance of Cooperative Extension Work, Acts of May 8 and June 30, 1914, as amended. Kansas State University, County Extension Councils, Extension Districts, and United States Department of Agriculture Cooperating. Marc A. Johnson, Director.