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Milkhouse with Vestibule
Michigan State University Agricultural Experiment Station
Circular Bulletin – Farm Building Series
James S. Boyd, Agricultural Engineering
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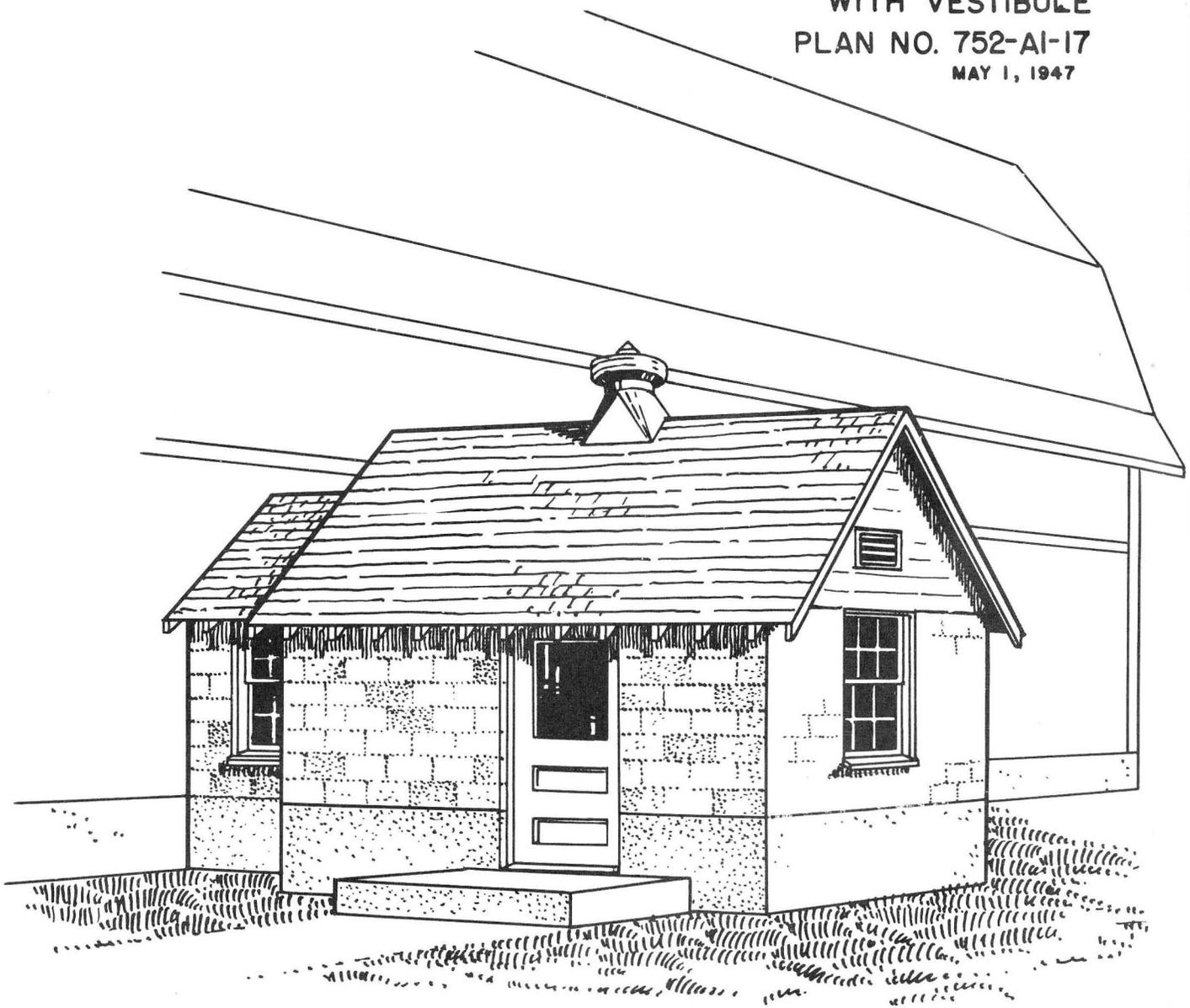
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FARM BUILDING PLAN SERVICE
MICHIGAN STATE COLLEGE

MILKHOUSE
WITH VESTIBULE
PLAN NO. 752-AI-17
MAY 1, 1947

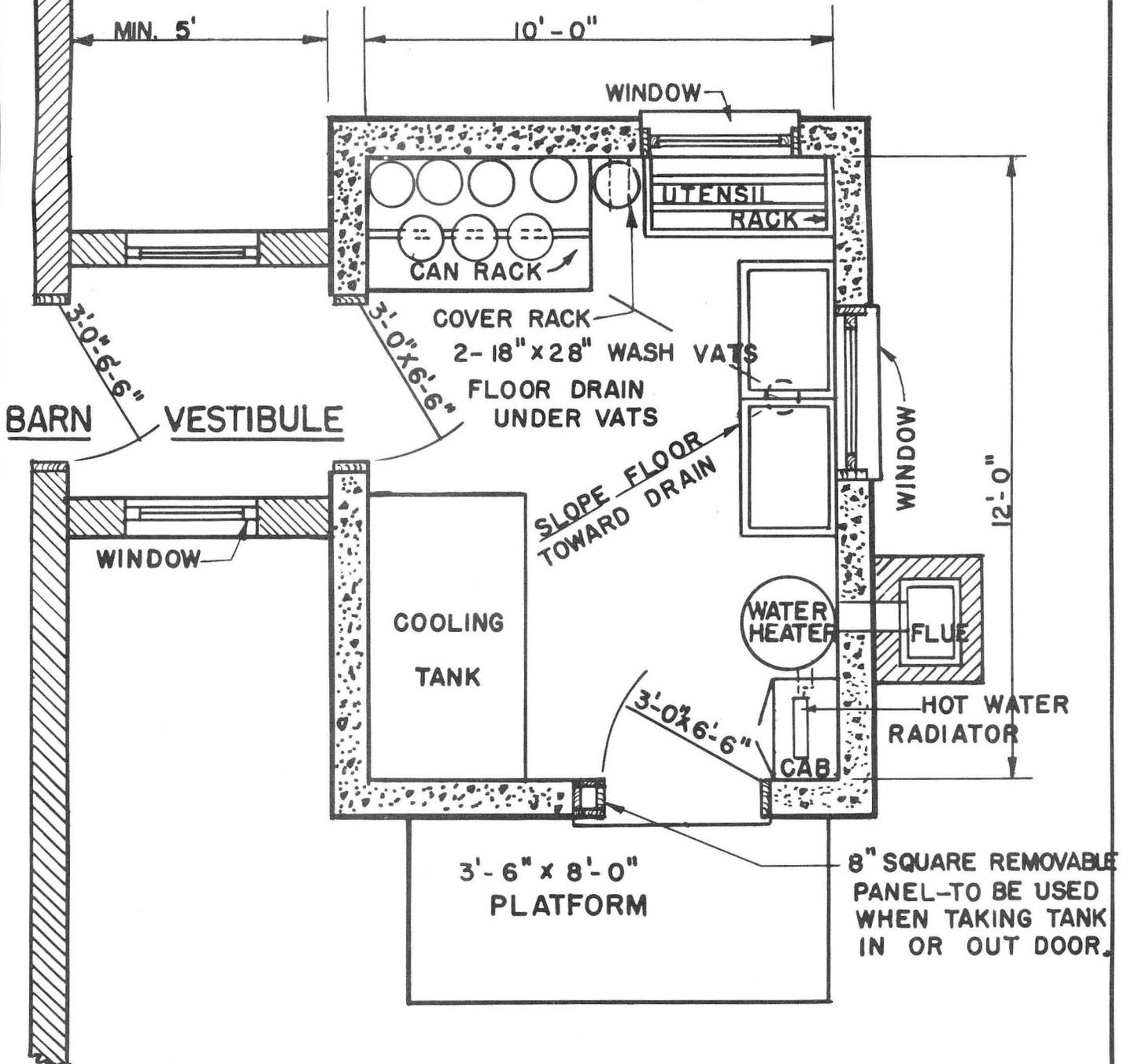


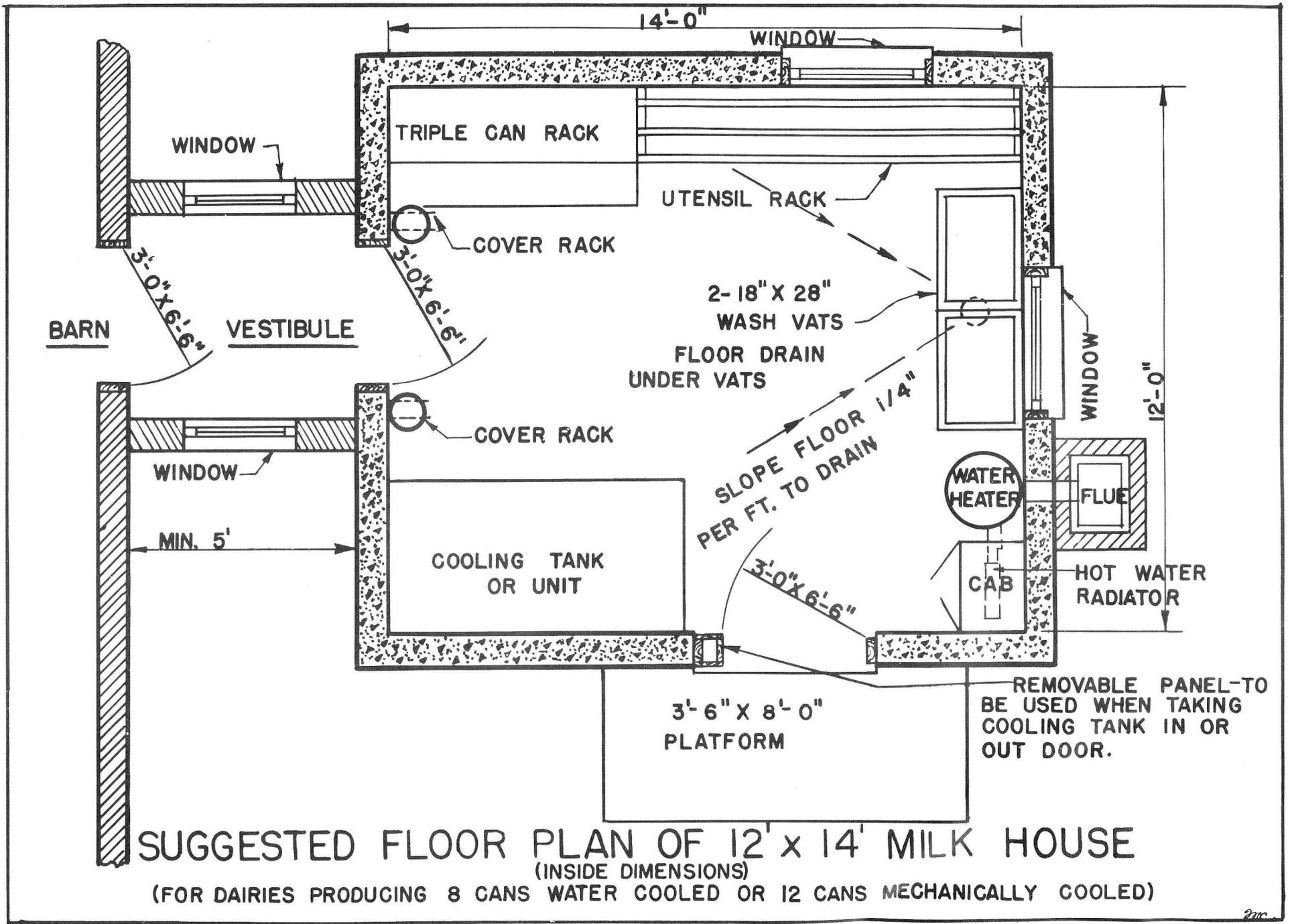
MICHIGAN STATE COLLEGE
EXTENSION SERVICE
DEPARTMENTS OF
AGRICULTURAL ENGINEERING AND DAIRY
COOPERATING
EAST LANSING
BY
JAMES S. BOYD

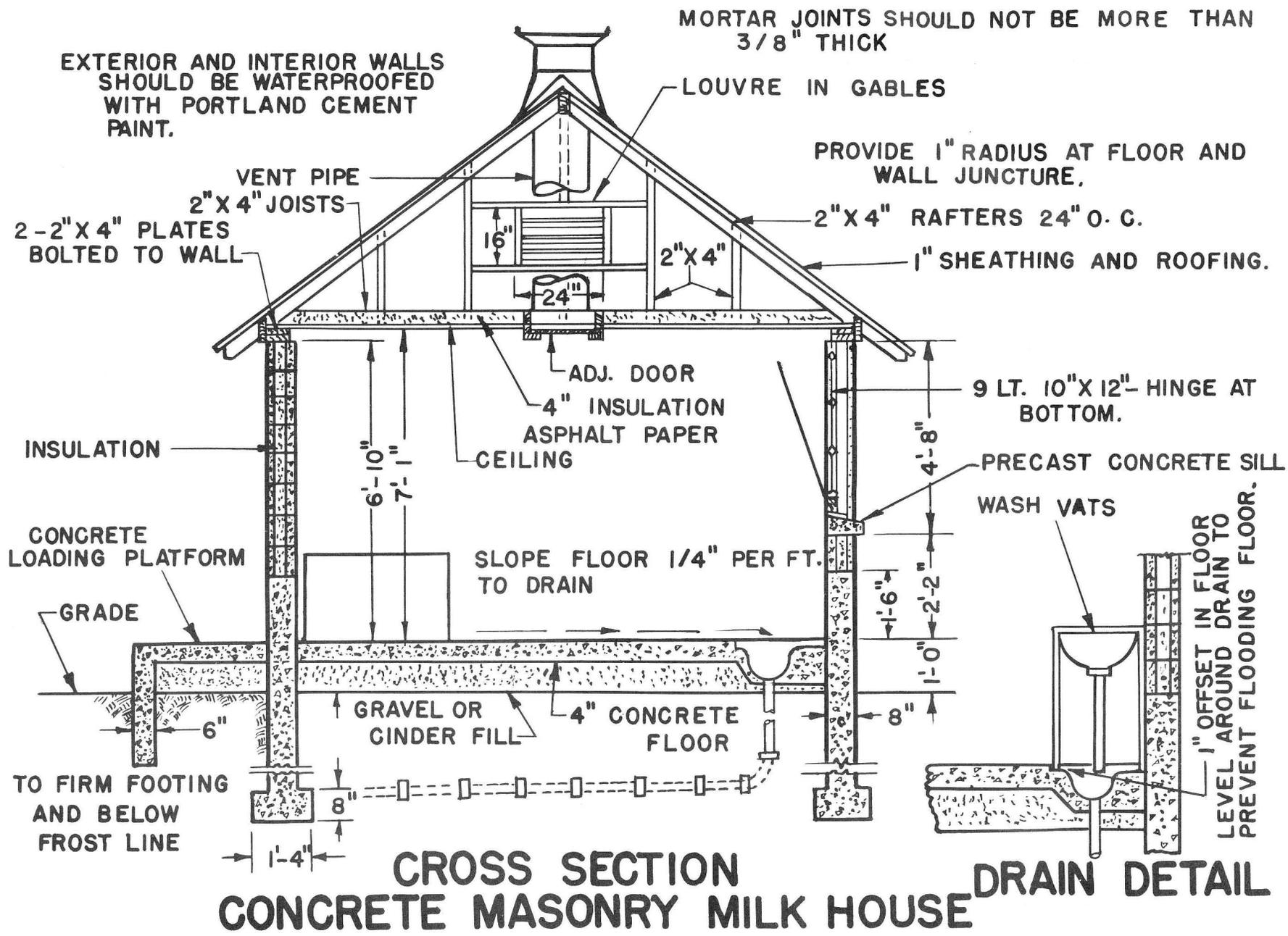
ACKNOWLEDGEMENT IS MADE FOR FINANCIAL ASSISTANCE FROM
SWIFT AND CO. AND FOR VALUABLE COUNSEL AND SUGGESTIONS
FROM LANSING, DETROIT, AND STATE DAIRY INSPECTION OFFICIALS
AND THE PORTLAND CEMENT ASSOCIATION

SUGGESTED FLOOR PLAN OF "10' x 12' MILK HOUSE" (INSIDE DIMENSIONS)

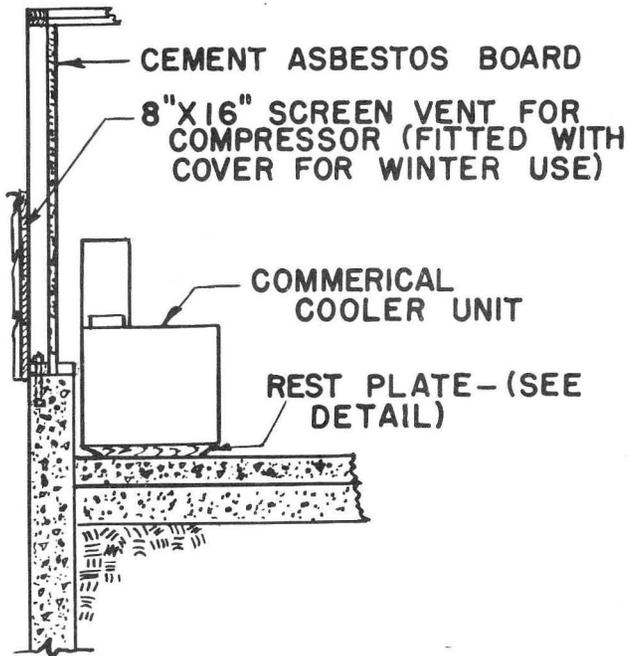
(FOR DAIRIES PRODUCING - 6 CANS WATER COOLED)
- 8 " MECHANICALLY ")





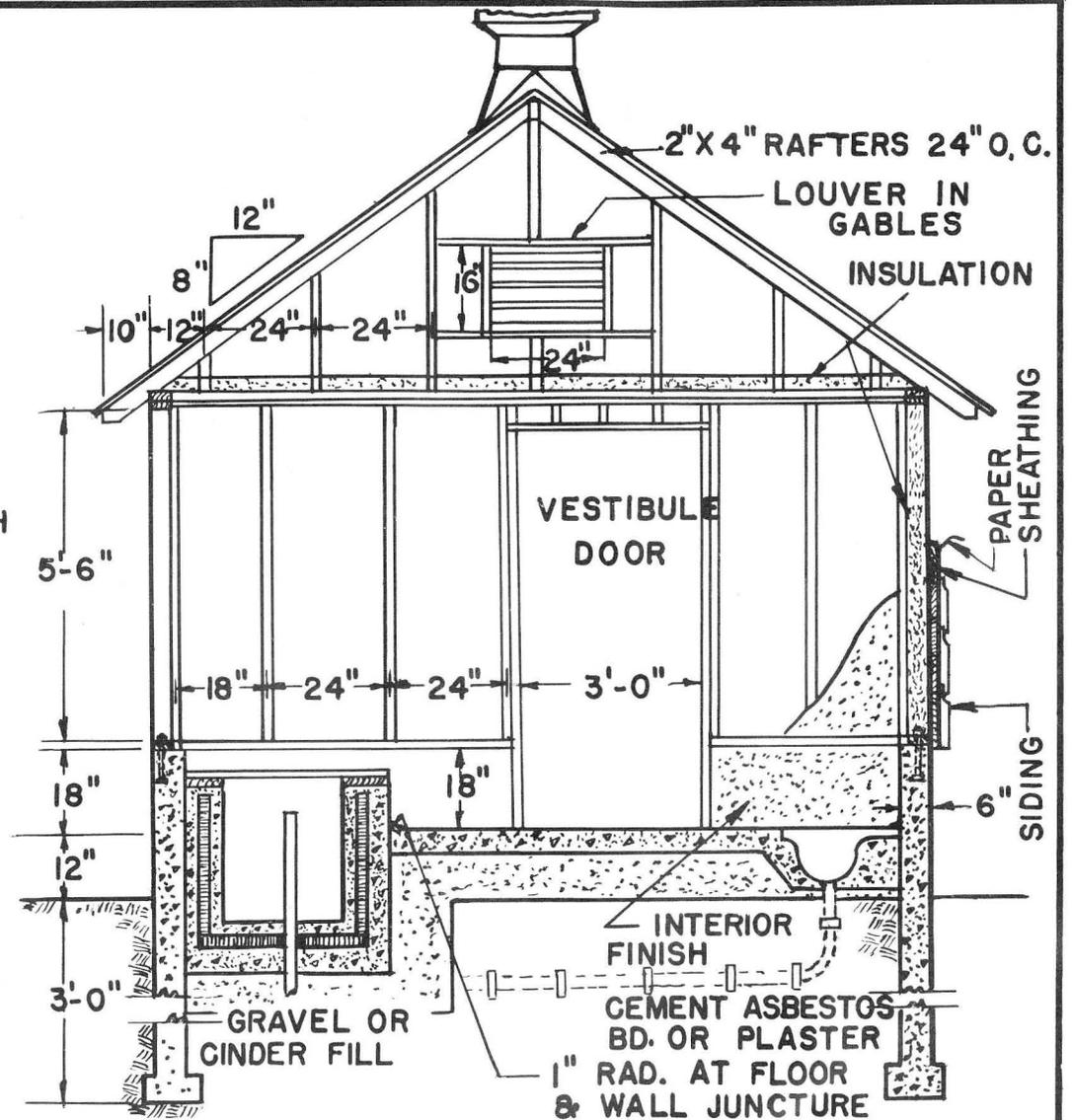


2"X2" WOOD PLATE
2 REQ'D.
REST PLATE FOR
COMMERICAL COOLING UNIT



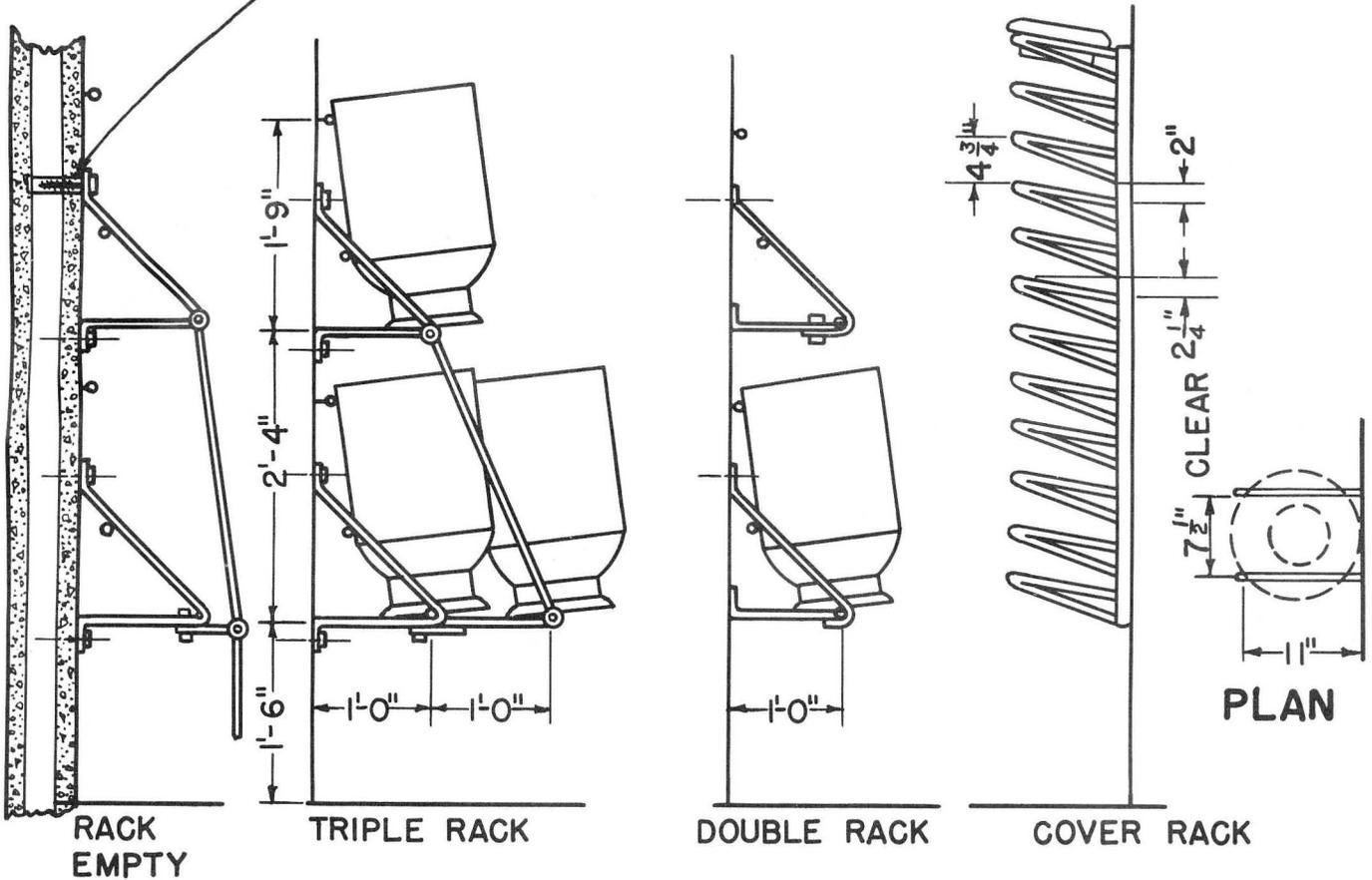
**SECTION SHOWING
COMMERICAL COOLER**

NOTE: TREAT INSIDE OF TANK WITH
WATERPROOF MATERIAL.

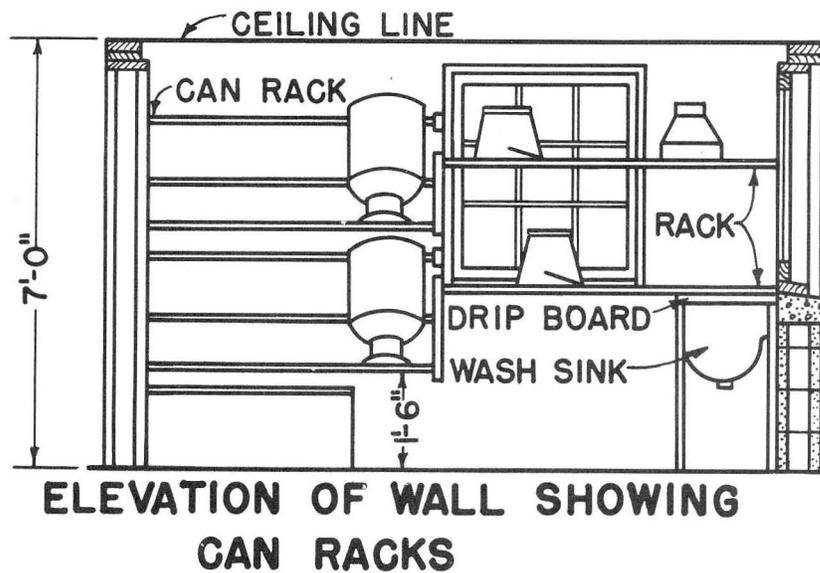


**CROSS SECTION
FRAME MILK HOUSE**

FASTEN EXPANSION SHIELDS IN MORTAR JOINTS OR DRILL HOLES IN BLOCKS FOR HANGER BOLTS OR LAG SCREWS.



SUGGESTED RACKS FOR MILK CANS AND COVERS



Estimated Materials for Milk Houses
(Does not include materials for cooling tank)

SUGGESTIONS

	Size of Milk House	
	12' x 10'	12' x 14'
Foundation, Floor and Platform -- Concrete Masonry Houses		
Footings and Foundation (1;2-3/4; 4 mix)	7.1 cu. yd.	8.6 cu. yd.
Floor and Platform (1;2 1/4; 3 mix)	2.0 cu. yd.	2.6 cu. yd.
Portland Cement	52 sacks	66 sacks
Sand	5 cu. yd.	6.5 cu. yd.
Gravel or Crushed Stone	7 cu. yd.	9.1 cu. yd.

Foundation, Floor and Platform - - Frame Houses

Foundation Wall (1;2-3/4; 4 mix)	5.8 cu. yd.	6.8 cu. yd.
Floor and Platform (1;2 1/4; 3 mix)	2.0 cu. yd.	2.6 cu. yd.
Portland Cement	47 sacks	56 sacks
Sand	4.0 cu. yd.	4.9 cu. yd.
Gravel or Crushed Stone	6.4 cu. yd.	7.0 cu. yd.

Wall Materials for Concrete Masonry Houses

8" x 8" x 16" Plain Cinder Units	135	175
8" x 8" x 16" Corner Cinder Units	35	35
8" x 8" x 16" Sash and Jamb Units	32	32
8" x 8" x 8" Sash and Jamb Units	32	32
Slip Sills 3' - 4" long	2	2
Sash Doors 3' - 0" x 6' - 6"	1	1
Sash Door 3' - 0" x 6' - 6"	1	1
Door Frames 2" x 6" Material	34 lin. ft.	34 lin. ft.
Window Frames 2" x 6" Material	24 lin. ft.	24 lin. ft.
Wall Plates 2" x 4"	88 lin. ft.	104 lin. ft.
Anchor Bolts 1/2" x 12"	12	14
Windows 9 Lights 10/12 Glass	2	2
Insulation - Fill Type	52 cu. ft.	61 cu. ft.

Wall Materials for Frame Houses

Studs, 2" x 4" Material 5' - 6" Long	26 pieces	30 pieces
Sills, 2" x 4" Material	38 lin. ft.	46 lin. ft.
Wall Plates 2" x 4" Material	94 lin. ft.	108 lin. ft.
Sash Door 3' x 0" x 6' - 6"	1	1
Common door 3' - 0" x 6' - 6"	1	1
Windows 9 Light 10/12 Glass	2	2
Insulation - Fill or Loose type	57 cu. ft.	80 cu. ft.
Door Frames 2" x 4" Material	34 lin. ft.	34 lin. ft.
Window Frames 2" x 4" Material	30 lin. ft.	30 lin. ft.
Siding Lap (20% added for Matching)	250 bd. ft.	300 bd. ft.
Trim 1" x 4" Material	80 lin. ft.	80 lin. ft.
Anchor Bolts 1/2" x 8"	12	14
Wall Lining - Cement Asbestos	190 sq. ft.	240 sq. ft.
Sheathing, Wall (10% added)	230 sq. ft.	275 sq. ft.
Paper	210 sq. ft.	250 sq. ft.

Roof Framing Including Gables - Same for Concrete Masonry and Frame Housing

Rafters 2" x 4" x 10' - 0"	14	18
Sheathing (10% added for waste) Roof	270 bd. ft.	350 bd. ft.
Roof Covering - Wood Shingles	2 1/2 sq.	3 1/2 sq.
Trim 1" x 4" Material	40 lin. ft.	40 lin. ft.
Ceiling Joists 2" x 4" x 14' - 0"	0	16
Ceiling Joists 2" x 4" x 12' - 0"	12	0
Ceiling (10% added)	132 sq. ft.	185 sq. ft.
Gable Studs 2" x 4"	32 Lin. ft.	32 lin. ft.
Siding, Gables Lap	70 bd. ft.	70 bd. ft.
Sheathing, Gables	70 bd. ft.	70 bd. ft.
Louvre & Frame 1" x 4" Material	28 lin. ft.	28 lin. ft.
Insulation - Fill	40 cu. ft.	56 cu. ft.
Paper	40 sq. ft.	40 sq. ft.

Hinges, Nails, Paint, Door locks, etc.

- 1 - A metal floor grating or plate is recommended around the cooling tank where cans are rolled.
- 2 - Some type of interior heating should be provided to prevent freezing during winter.
- 3 - Milk house may be attached directly to barn, and if so, a vestibule is provided, which must be sealed, equipped with self closing doors, a window and be ventilated.
- 4 - Walls and ceiling should be insulated.
- 5 - It is recommended that where a concrete tank is used, it be insulated with 3" of rigid type insulating material which is moisture proofed. The insulation board must be cut to fit tank and cover and painted with 2 coats of hot asphalt, all joints must also be sealed with hot asphalt.
- 6 - The 3'-8" door is shown on the plans to admit a commercial cooling unit. A standard 3' door plus removable panel may be used.
- 7 - Arrangement of equipment, doors and windows is optional to suit the milk house location.
- 8 - Provision should be made for water supply with a frost-proof hydrant.
- 9 - All of the equipment shown on the floor plans is highly desirable for the production of high quality milk.
- 10 - Cooling tank capacity should be sufficient to hold both evening and morning milk at peak flow. If an Electric Refrigerator is used, it need only be large enough to hold amount secured from the largest single milking.
- 11 - Louvre openings should be screened with ordinary fly screen.
- 12 - Vent duct with damper shall start at ceiling line and connect to roof vent. A minimum of 100 square inches in area should be allowed. A 10" x 10" square area or a circle 11" in diameter is sufficient.
- 13 - The sewage system should include a floor drain (without trap) and overflow from the cooling tank piped to a trap on exterior of milk house. From the trap, sewage flows to a field drain or filter

Estimated Materials for Milk Houses - (Continued)

Materials for Vestibule
MASONRY VESTIBULE

Cinder Blocks 8" x 8" x 16"	40 each	40 each
Cinder Blocks 8" x 8" x 8"	16 each	16 each
Sash Blocks 8" x 8" x 16"	8 each	8 each
Sash Blocks 8" x 8" x 8"	8 each	8 each
Ceiling Joists 2" x 4" x 7'	4	4
Windows 9 lights 8/10 Glass	2	2
Door 3' - 0" x 6' - 6"	1	1
Door Frame 2 x 6 material (Masonry Wall)	16 lin. ft.	16 lin. ft.
Wall plates 2" x 4"	24 lin. ft.	24 lin. ft.
Slip Sills (Masonry Wall) 3/2" long	2	2
Sheathing (10% added) Roof	80 bd. ft.	80 bd. ft.
Roof - Wood Shingles	3 bundles	3 bundles

trench. A trap capacity of approximately 50 gals. made similar to kitchen grease trap in a house sewage system is satisfactory. The 4" floor line drain should be located under wash vats and placed 1 to 2 inches lower than floor line. Overflow pipe in cooling tank to have a coupling at bottom so that overflow pipe can be unscrewed. Top of 4" drain set 1/2" below immediate floor line.

Concrete for Footing and Foundation Wall (1:2-3/4:4 mix)

Portland Cement	10 bags	10 bags
Sand	30.8 cu. ft.	30.8 cu. ft.
Gravel	44 cu. ft.	44 cu. ft.

14 - Window area should be 10% of floor area and provided with storm sash and screens. Glass in milkhouse door is recommended to provide light and visibility in passing in and out of milkhouse. Windows hinged at the bottom, swing in at the top.

Concrete for Floor (1:2-1/4:3 mix)

Portland Cement	3.1 bags	3.1 bags
Sand	6.8 cu. ft.	6.8 cu. ft.
Gravel	9.4 cu. ft.	9.4 cu. ft.

15 - For further information see your County Agricultural Agent, State Dairy Inspector or local dairy fieldman.

For Frame Type Wall Structure

Sills 2" x 4" material	12 lin. ft.	12 lin. ft.
Studs 2" x 4" material 5' - 6" long	8 pieces	8 pieces
Window Frames 2" x 4" material	33 lin. ft.	33 lin. ft.
Door Frames 2" x 4" material	30 lin. ft.	30 lin. ft.
Siding (20% added for matching) Lap.	78 sq. ft.	78 sq. ft.
Trim 1" x 4" material	64 lin. ft.	64 lin. ft.
Sheathing, Wall (10% added)	70 bd. ft.	70 bd. ft.
Paper, Building	70 sq. ft.	70 sq. ft.
Plates (2" x 4")	24 lin. ft.	24 lin. ft.
Sheathing, Roof (10% added)	80 bd. ft.	80 bd. ft.
Roof (Wood shingles)	3 bundles	3 bundles
Ceiling Joists 2" x 4" - 7'	4	4
Windows 9 light 8" x 10"	2	2
Door 3'0" x 6'6"	1	1

Materials for Concrete Cooling Tank
Tank (1-2-3 Mix)

	4 gal.	6 gal.	8 gal.	10 gal.	12 gal.
Cement	9 sacks	11	13	15	17
Sand	3/4 cu. yd.	3/4	1	1	1 1/4
Gravel	1	1 1/4	1 1/2	1 3/4	2
Insulation 3" thick	42 sq. ft.	50	60	70	78
2" Pipe	22"	22"	22"	22"	22"
2" Coupling	1	1	1	1	1
1" Pipe	3/4"	3/4"	3/4"	3/4"	3/4"
Angle Iron	8' 6"	11' 6"	14' 6"	17' 6"	20' 6"

Cover

	15- 42"	20- 42"	24- 42"	29- 42"	33- 42"
1" x 6" D&M boards	15- 42"	20- 42"	24- 42"	29- 42"	33- 42"
2" x 10" Yel. pine	1- 5' 0"	1- 6' 6"	1- 8' 0"	1- 9' 6"	1- 11' 0"
2" x 4" Yel. pine	1- 5' 0"	1- 6' 6"	1- 8' 0"	1- 9' 6"	1- 11' 0"
	2- 32"	2- 32"	2- 32"	2- 32"	2- 32"
2" x 6" Yel. pine	1- 5' 0"	1- 6' 6"	1- 8' 0"	1- 9' 6"	1- 11' 0"
1" x 10" Yel. pine	1- 5' 0"	1- 6' 6"	1- 8' 0"	1- 9' 6"	1- 11' 0"
Gal. Iron 26 ga.	1- 42" x 60"	1- 42" x 78"	1- 42" x 96"	1- 42" x 114"	1- 42" x 132"
Insulation 1" thick	27 sq. ft.	35	43	52	60
Hinge - No.	2	4	4	4	4
1/2 x 8 Bolts	4	4	6	6	8
Nails 8d	5#	6#	7#	7#	8#
Nails 2d	2#	2#	3#	3#	3#
Nails 16d	3#	3#	3#	3#	3#