

# MWPS-72326

## Dairy Barn, 40 Tie-Stalls

Gothic Arch, Barn Cleaner

### **CAUTION!**

Additional professional services will be required to tailor this plan to your situation, including but not limited to: assurance of compliance with codes and regulations; review of specifications for materials and equipment; supervision of site selection, bid letting and construction; and provision for utilities, waste management, roads or other access. **Furthermore, any deviation from the given specifications may result in structural failure, property damage, and personal injury including loss of life.**

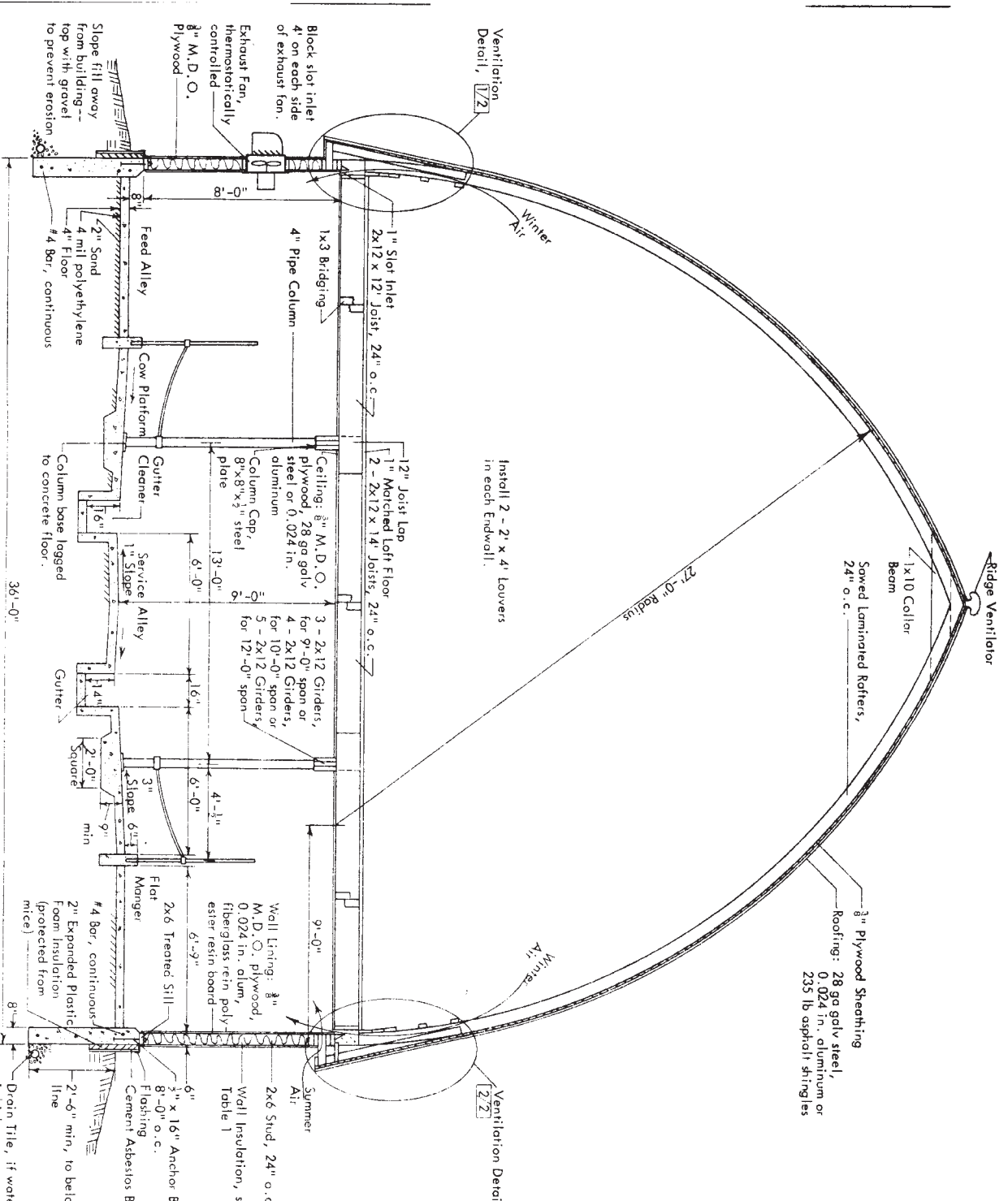
### **WARRANTY DISCLAIMER**

This plan provides conceptual information only. **Neither midwest plan service nor any of the cooperating land-grant universities, or their respective agents or employees, have made, and do not hereby make, any representation, warranty or covenant with respect to the specifications in this plan.** Additional professional services will be required to tailor this plan to your situation, including but not limited to: assurance of compliance with codes and regulations; review of specifications for materials and equipment; supervision of site selection, bid letting and construction; and provision for utilities, waste management, roads or other access.

|   |
|---|
| <b>MIDWEST PLAN SERVICE</b>   |
| Cooperative Extension Work in<br>Agriculture and Home Economics<br>and Agricultural Experiment Stations<br>of North Central Region - USDA Cooperating |
| Dairy Barn, 40 Tie-Stalls   |
| Title Page  |
| MIDWEST PLAN NO. 72326  |



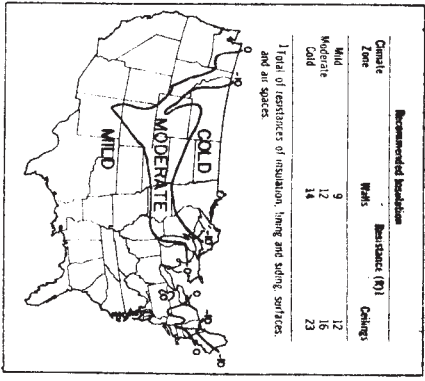




**CROSS SECTION - 1/3**  
 Optional gutter, manger, and foundations are shown on page 2.  
 Choose the ones that best fit your needs.

Use this foundation in soils susceptible to frost heave.

**Table 1. Winter Climate Zone Map.**



**LUMBER SPECIFICATIONS**

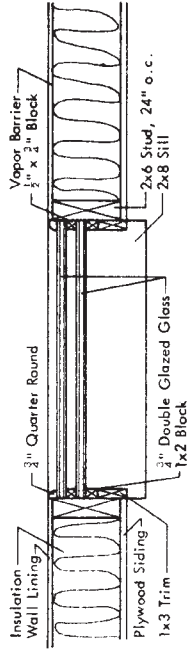
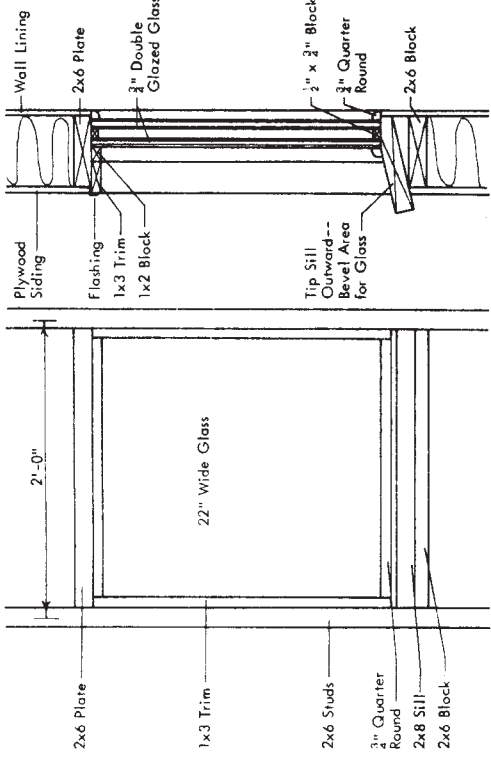
- Rafters: Constructed: Grade (Doug Fir or Southwestern Yellow Pine)
- Girders and Joists: No. 2 (Doug Fir or Southern Yellow Pine) or Select Structural (Hem-Fir)
- Studs: No. 2 (Doug Fir, Southern Yellow Pine or Hem-Fir)
- Roof Sheathing: 3/8" C-C Ext (Tide-n-Tite) or 1/2" Plywood
- Siding and Wall Lining: 3/8" C-C Ext (Tide-n-Tite) or 1/2" Plywood
- Pressure Preservative Treated (Southwestern Yellow Pine or equivalent) Creosote - 8 pct. Pentachlorophenol (PCP) - 0.25 pct. A.C.A. or CCA (Type A or B) - 0.25 pct.

**MIDWEST PLAN SERVICE**

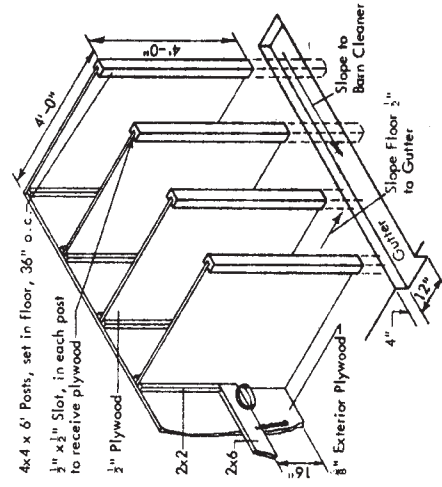
Cooperative Extension Work in Agriculture and Home Economics  
 Dairy Cattle and Horse Experiment Stations  
 and Agricultural Experiment Stations  
 of North Central Region - USDA Cooperating

**DAIRY BARN, 40 TIE-STALLS**  
 Gothic Arch, Barn Cleaner

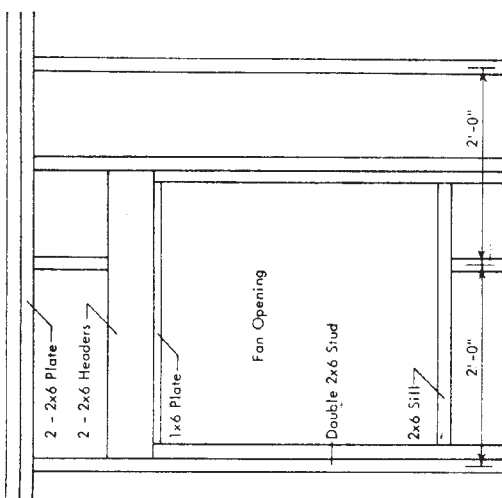
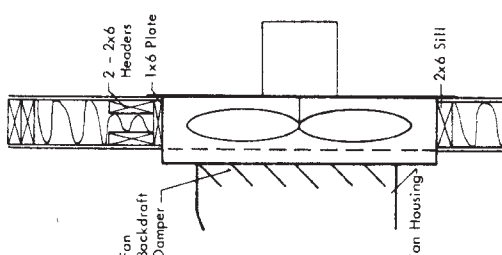
MIDWEST PLAN NO. 73326  
 Page 3 of 7 Pages  
 Copyright © 1974 Midwest Plan Service



**FIXED WINDOW FRAMING—2/4**  
Seal trim and quarter round with latex caulking.



**FLOOR LEVEL THE STALLS—3/4**



**FAN OPENING FRAMING—1/4**  
Seal fan housing with latex caulking.

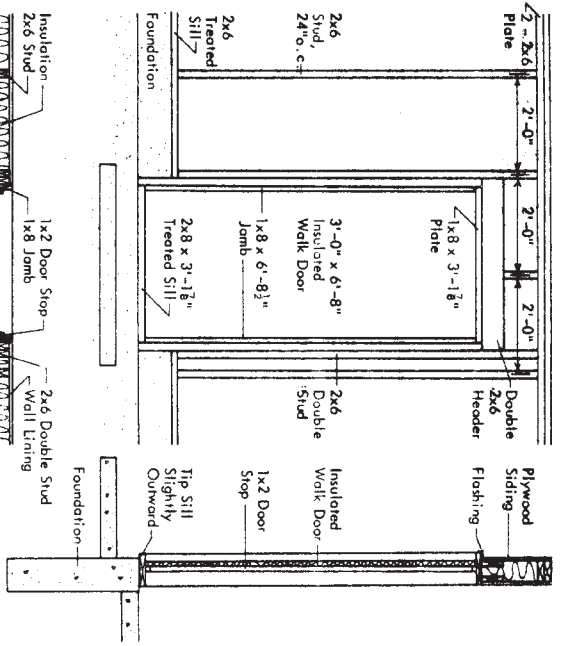
**ESTIMATING LIST**

|                                       |      |
|---------------------------------------|------|
| Concrete, cubic yards                 | 98   |
| Steel, Grade 36, lbs                  | 450  |
| Rafters, 27' Radius                   | 134  |
| Steel Columns, 4" dia                 | 26   |
| Studs and Plates                      | 2400 |
| 2x6's, feet                           | 340  |
| Sills (pressure preservative treated) | 3400 |
| 2x6's, feet                           | 950  |
| Joists, Girders & Blocking            | 4800 |
| 2x12's, feet                          | 4000 |
| Rafters & Blocking                    | 8850 |
| 2x4's, feet                           | 2700 |
| Left Floor                            | 3    |
| 1" matched, sq ft                     | 40   |
| Siding                                | 4    |
| 3/8" M.D.O. plywood, sq ft            | 8    |
| Sheathing                             | 5    |
| 3/8" Sheathing plywood, sq ft         | 340  |
| Wall Lining, sq ft                    |      |
| Roofing, sq ft                        |      |
| Roofing, sq ft                        |      |
| Insulating, sq ft                     |      |
| Sliding Doors, 8' & 4'                |      |
| Stanchions                            |      |
| Pens                                  |      |
| Calf Stalls                           |      |
| Fans                                  |      |
| Barn Cleaner, feet                    |      |

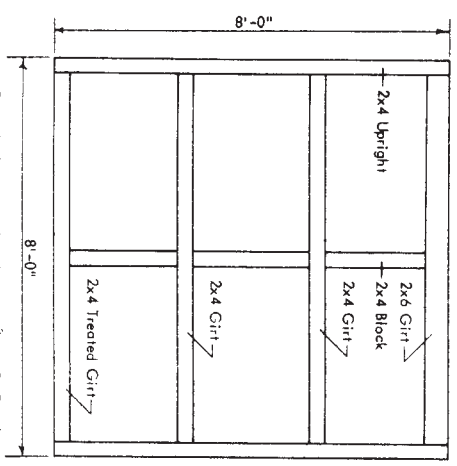
**MIDWEST PLAN SERVICE**  
Cooperative Extension Work in  
Agriculture and Home Economics  
and Agricultural Experiment Stations  
of North Central Region - USDA Cooperating

**DAIRY BARN, 40 THE-STALLS**  
Gaffic Arch, Barn Cleaner

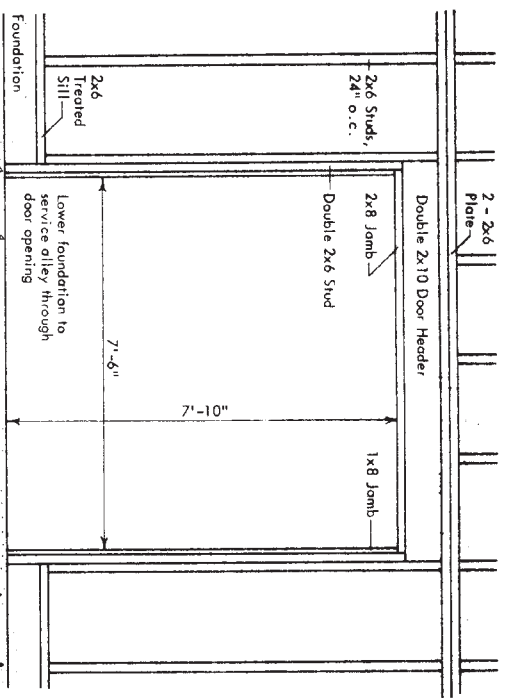
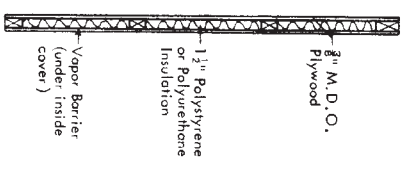
Page 4 of 7 Pages  
MIDWEST PLAN NO. 72326



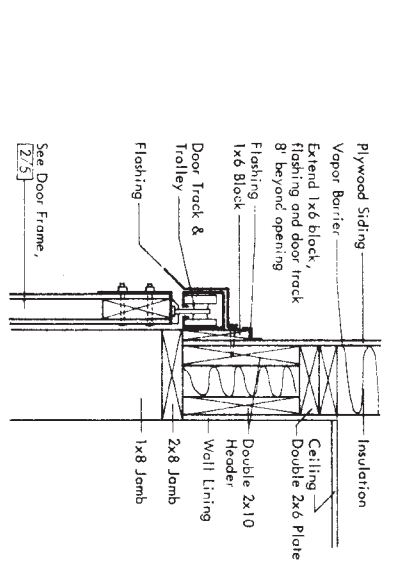
**WALK DOOR FRAMING—1/5**  
Seal trim with latex caulking.



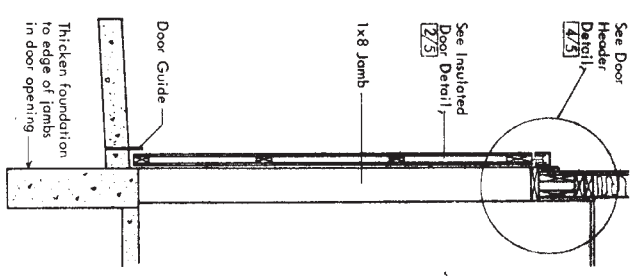
Cover both sides with 4 sheets of 3/4" M. D. O. plywood.  
**SLIDING DOOR FRAME—2/5**



**SLIDING DOOR FRAMING—3/5**  
Seal trim, door track and flashing with latex caulking.



See Door Frame, 2/5.  
**SLIDING DOOR HEADER DETAIL—4/5**  
Seal door track and flashing with latex caulking.

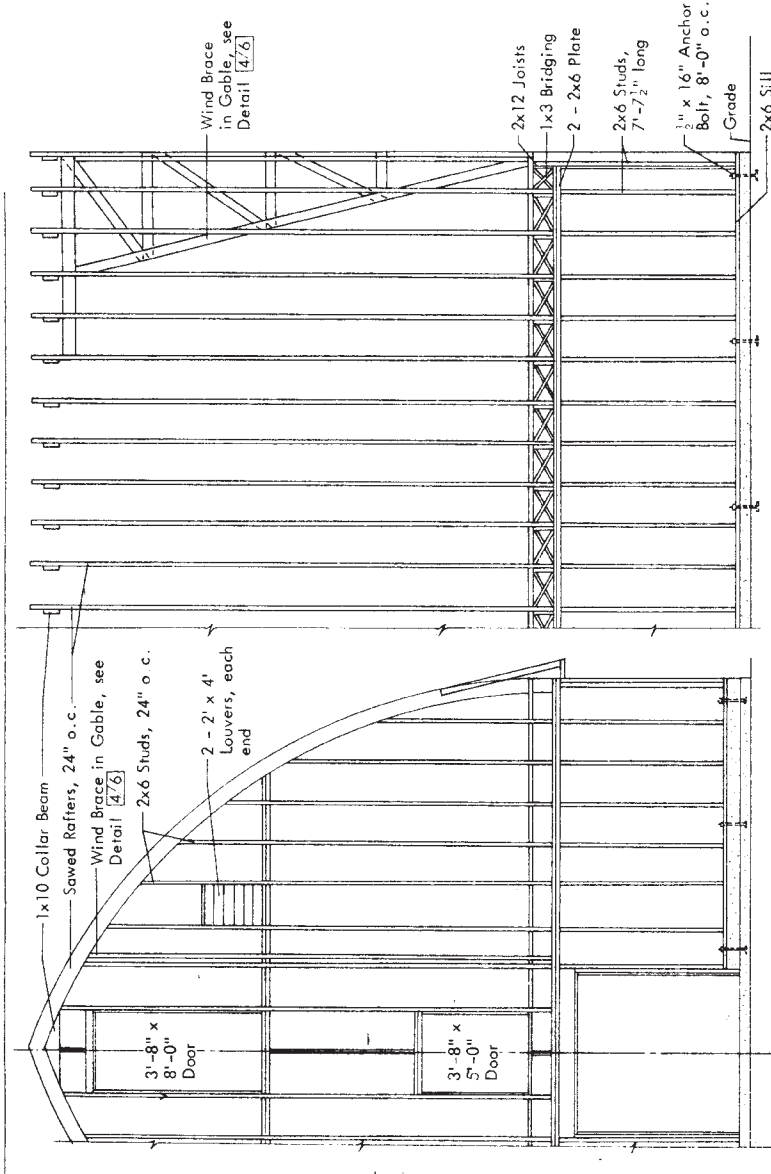


**MIDWEST PLAN SERVICE**

Cooperative Extension Work in  
Agriculture and Home Economics  
and Agricultural Experiment Stations  
of North Central Region - USDA Cooperating

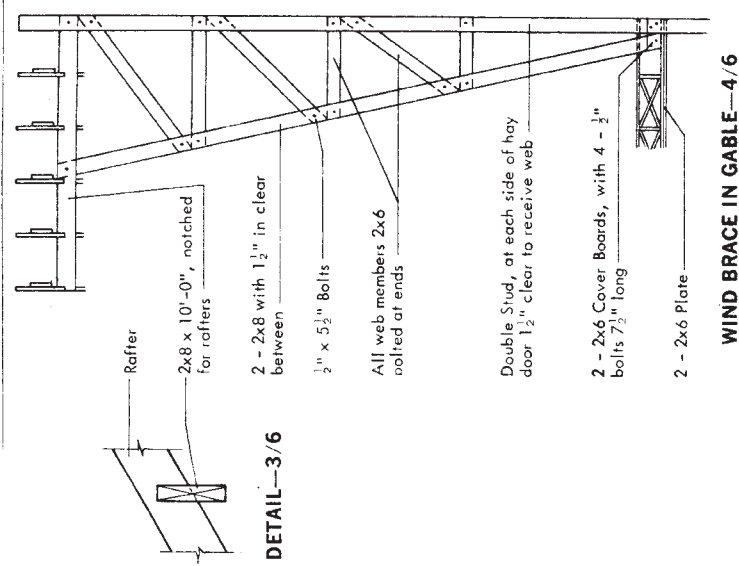
**DAIRY BARN, 40 TIE-STALLS**  
Gothic Arch, Barn Cleaner

MIDWEST PLAN NO. 72326  
Page 5 of 7 Pages



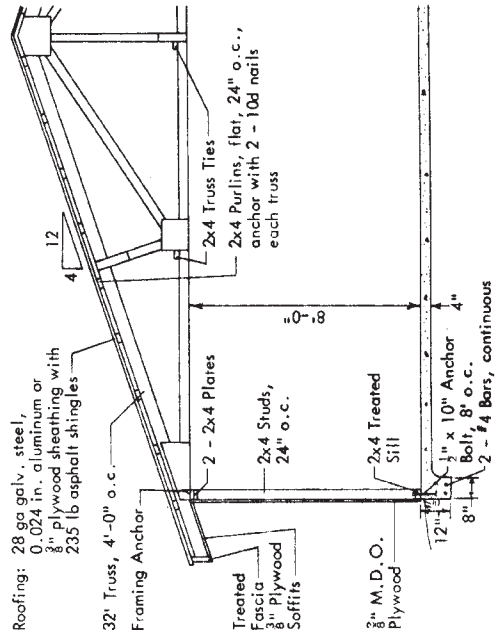
ENDWALL FRAMING—1/6

SIDE WALL FRAMING—2/6

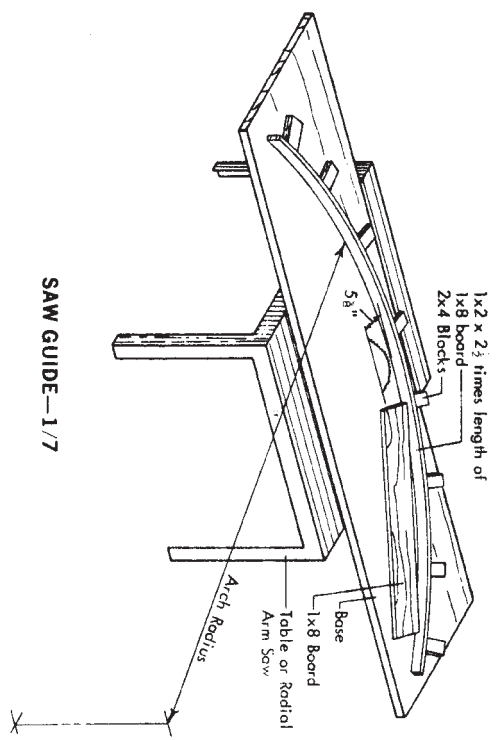


DETAIL—3/6

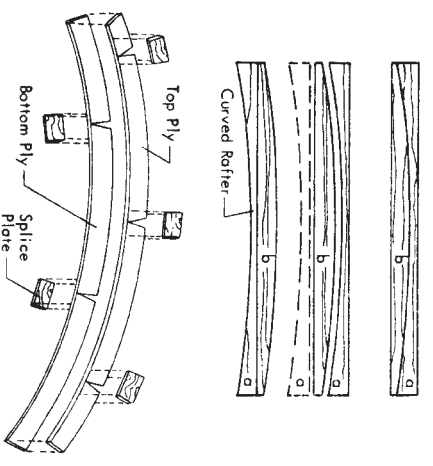
WIND BRACE IN GABLE—4/6



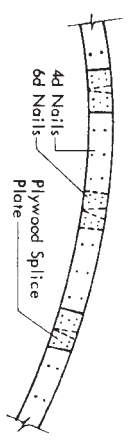
FEED ROOM CROSS SECTION—5/6



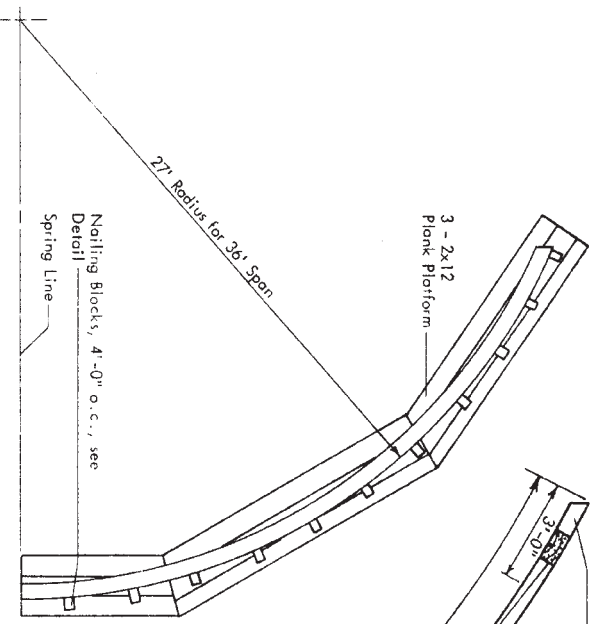
SAW GUIDE—1/7



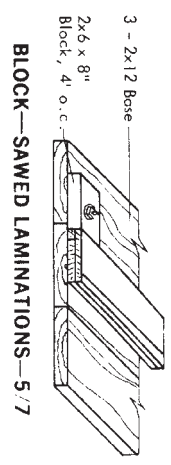
RAFTER CONSTRUCTION DETAIL—2/7



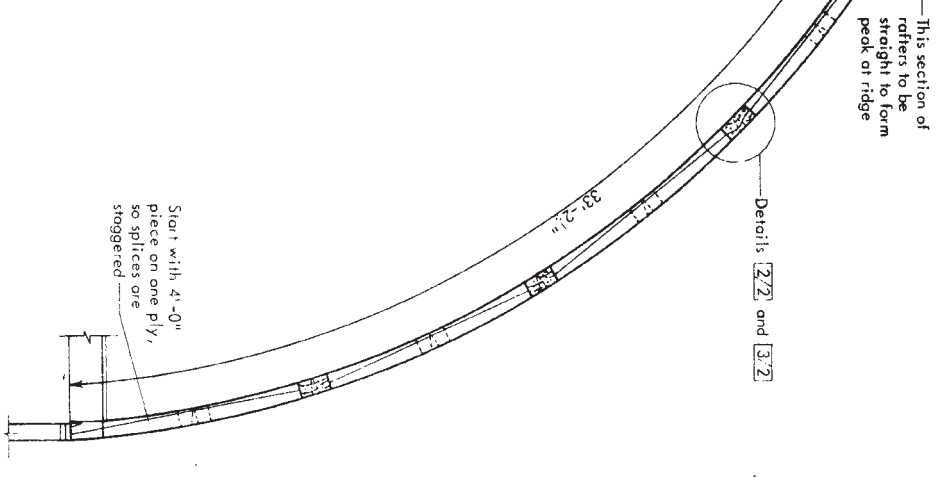
NAILING PATTERN—3/7



SAWED RAFTER JIG—4/7



BLOCK—SAWED LAMINATIONS—5/7



36' Span and 27' Radius  
RAFTER DIMENSIONS—6/7  
Rafters 2'-0" o.c.

- CONSTRUCTION STEPS—SAWED LAMINATIONS**
1. Build the special saw guide shown in Detail [2/7].
  2. Attach guide to your saw. The saw blade must be sharp and have a good set.
  3. Rip enough 1x8 x 8" boards to build the required number of arches. Each arch has two layers of 1x8 boards. See Detail [2/7]. Use Construction Guide Douglas-Fir Lumber or equivalent.
  4. Build a jig as shown in Detail [4/7].
  5. Place the first layer of 1x8's in the jig and space the second layer by the jig.
  6. Spread a thin layer of glue on the faces to be joined, and put in place immediately. See **GLUE TO USE**.
  7. Nail the layers together with 4d and 6d cement coated nails as shown in Detail [2/7].
  8. Glue, place, and nail a 3/8" x 6 7/8" x 12" plywood splice plate over each joint. The outer grain of the plywood should be placed across the rafter. You will be able to cut 36 splice plates from one 4x8 sheet of plywood.
  9. Turn the arch over and repeat step 8.
- GLUE TO USE**  
Casin or resorcinol resin glue may be used. About 2 lb. of dry casin or 7 lb. of resorcinol resin glue are required for each rafter. Mix enough glue for about a 4 hour period at one time. Spread glue on both faces to be joined and nail in place immediately. Some glue should ooze out of the joint when the nails are driven. If it doesn't, you haven't used enough glue.

**MIDWEST PLAN SERVICE**

Cooperative Extension Work in  
Agriculture and Home Economics  
of North Central Region - USDA Cooperating  
DAIRY BARN, 40 TIE-STALLS  
Catholic Arch, Barn Cleaner  
Page 7 of 7 Pages  
MIDWEST PLAN NO. 72326