

# MWPS-72343

## 104-Heifer Free Stall Barn

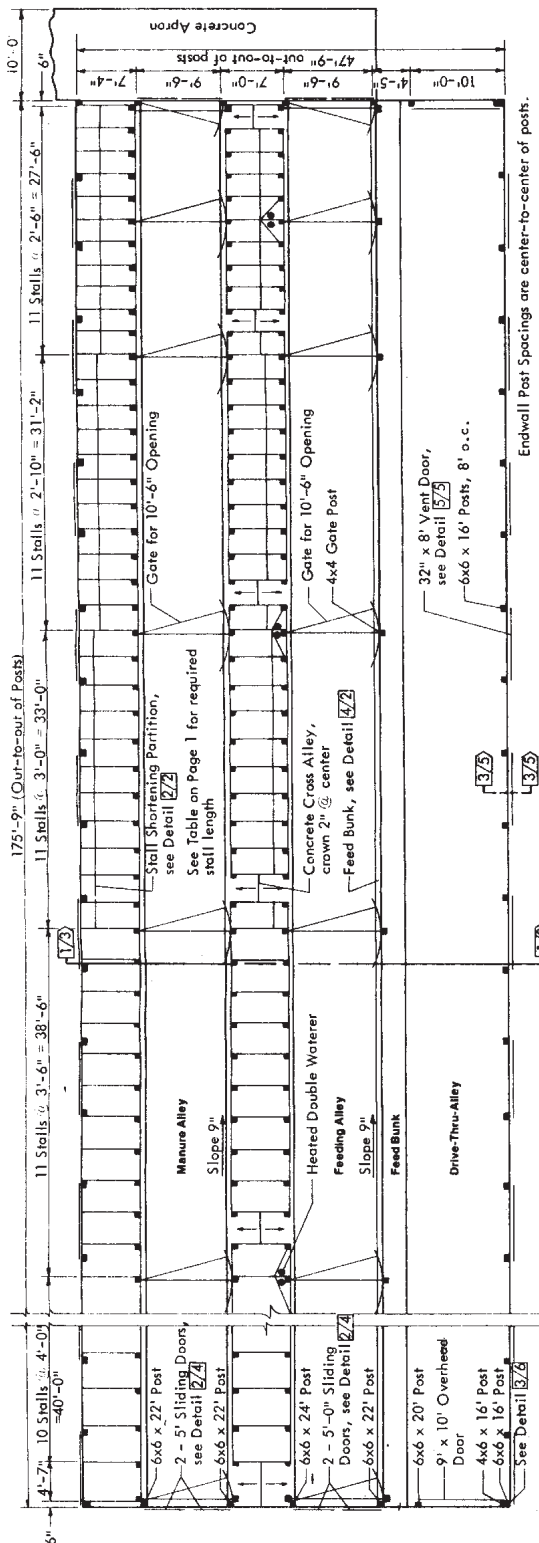
### **CAUTION!**

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**

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Cooperative Extension Work in Agriculture and Home Economics and Agricultural Experiment Stations of North Central Region - USDA Cooperating
104-Heifer Free Stall Barn
Title Page
MIDWEST PLAN NO. 72343



FLOOR PLAN—1/1

A 100 cow milking herd has about 21 animals in each age group.

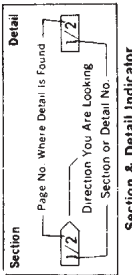
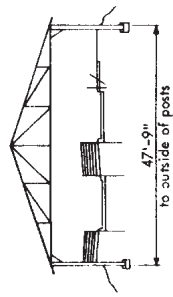
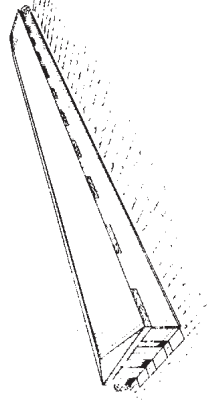
Age months	Weight lb.	Free Stall Size width x length
2-7	1,450	2'-6" x 4'-6"
7-12	450-650	2'-10" x 5'-0"
12-18	650-875	3'-0" x 5'-6"
18-24	875-1150	3'-6" x 7'-0"
Dry Cows	1150+	4'-0" x 7'-0"

**General Management**

The layout includes 2 rows of free stalls extending over the length and along one side of the building. The stalls are arranged tail to tail with a 9" wide manure alley. A stall space is omitted at intervals along the interior row to allow the animals access to the 10' wide feeding alley. A feed bunk and driveway extend the length of the building. The building is divided into 6 sections by gates. These sections allow for separating the herd into groups based on size and aggressiveness. The youngest animals are placed in either of 2 sections at one end. Stalls in this section are sized for animals aged 2-7 months. As the animals mature they are moved to the next section. The remaining 4 sections each have 21 stalls

**PREFERRED LUMBER SPECIFICATIONS**

- Wall Girts: No. 2 (Doug Fir or Southern Yellow Pine) Max. Spacing 32'
- Trusses, Headers, Top Girts: No. 2 (Doug Fir or Southern Yellow Pine) or 1500' machine rated (Doug Fir or Southern Yellow Pine)
- Posts and Splashboards: 4" x 4" or 6" x 6" (Doug Fir or Southern Yellow Pine) or 4" x 4" or 6" x 6" (Type A or B) 50 pcf retention Use C-C-Ext. unseasoned.
- Alternate Lumber Specifications: 2x6 Girts (No. 2 Hem-Fir) Max Spacing 24'
- See Truss Page 606 = ASH or ASPE Class 7, 4.6 Top Diameter Posts (Round & Square)



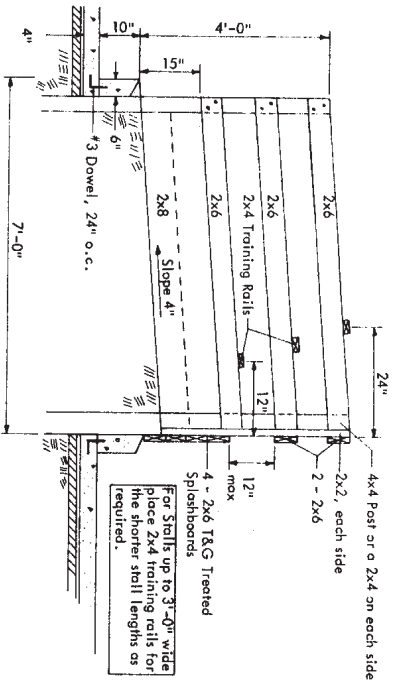
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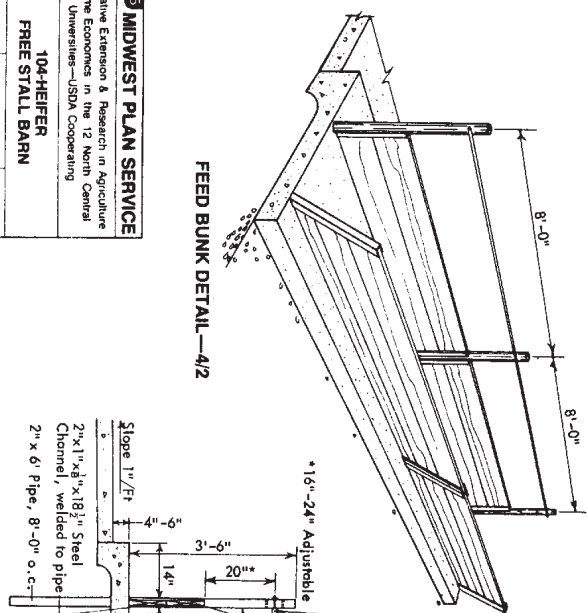
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**104-HEIFER FREE STALL BARN**

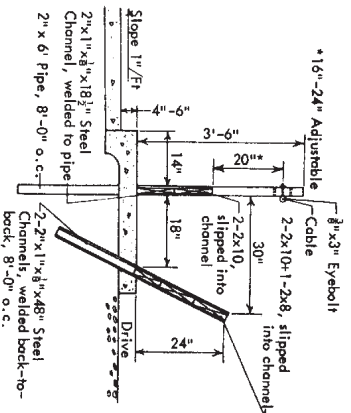


FREE STALL DETAIL—1/2

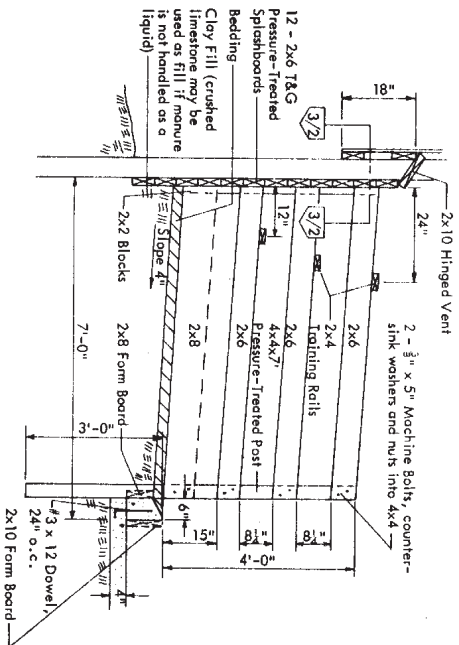
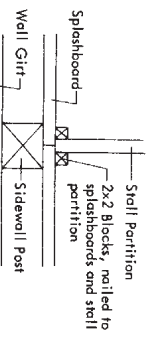


FEED BUNK DETAIL—4/2

No.	Description
8	2x10 x 8'
2	2x8 x 8'
2	2x6 Pipe
4	2"x1"x8" x 18 1/2" Channel
4	2"x1"x8" x 48" Channel
2	3/4" Eyebolt
1	1/2" Cable

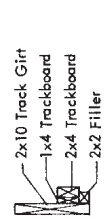
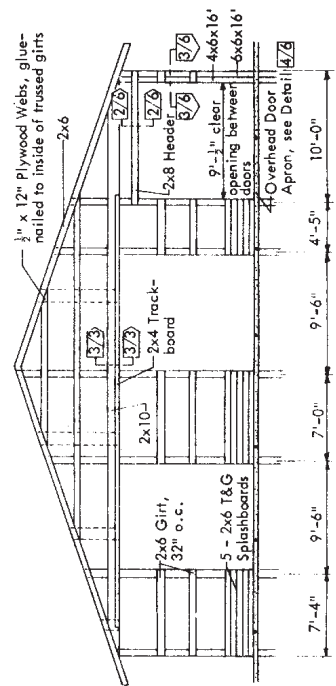
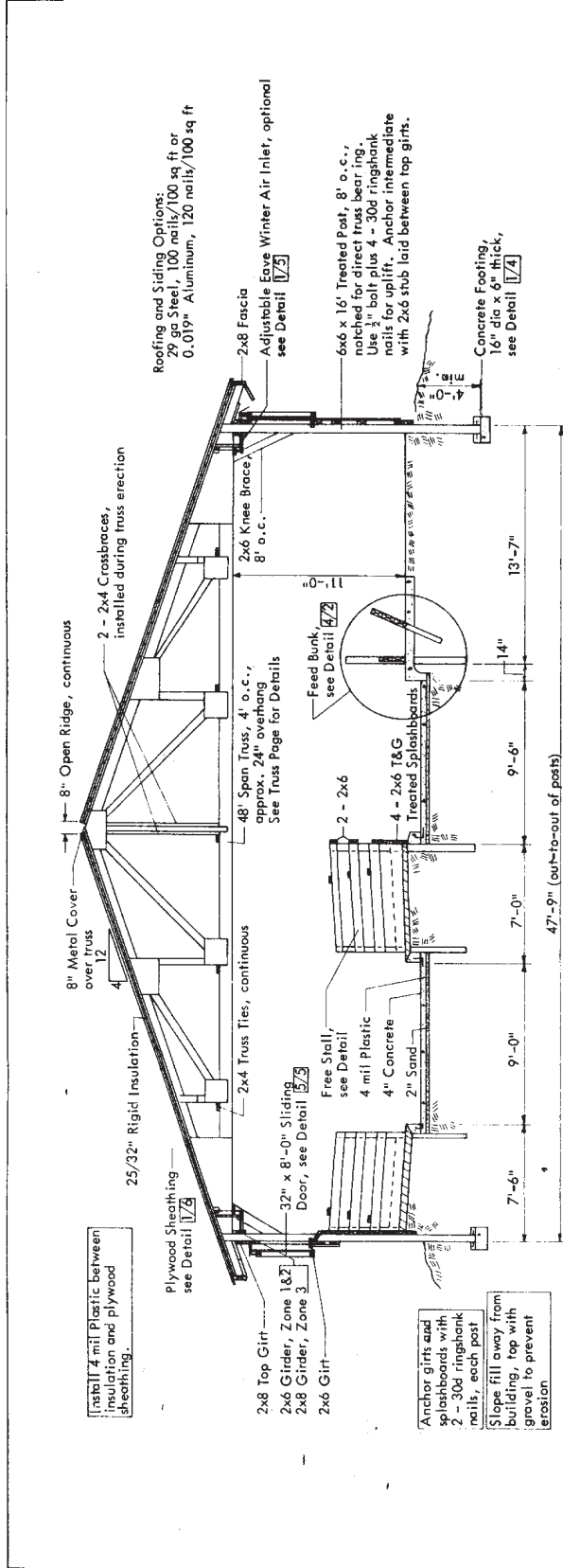


WALL CONNECTION—3/2

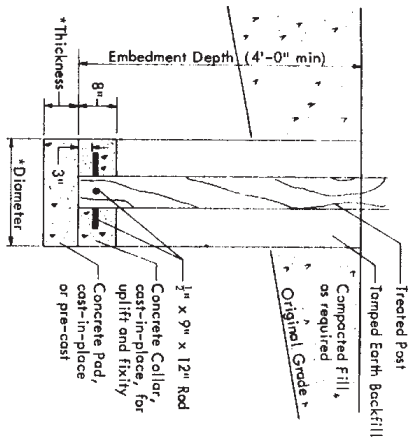


STALL DETAIL—2/2

Install 2x4 training rails if cows turn around in stalls or de-post manure at back of stall—3 rails will force the cow to move back as it gets up so its shoulders can't get caught under the top rails. Install 2x8 bottom stall partition board if cows move fill and bedding from stall to stall causing deep holes in stalls.

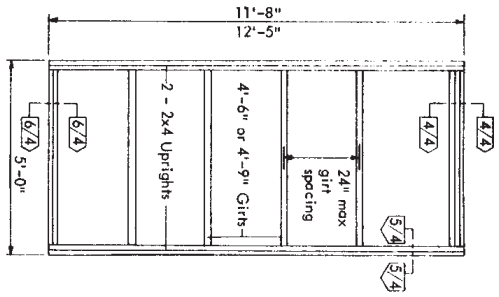


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6 Pages Plus	Plan No.
48" Truss Sheet	rwgps: 72343
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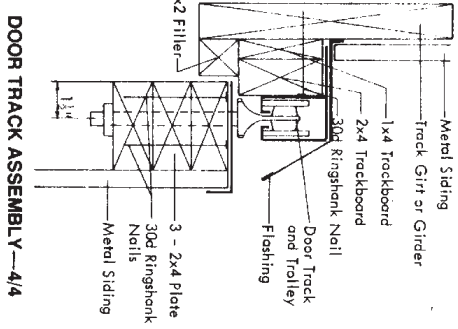


POST FOOTING DETAIL—1/4

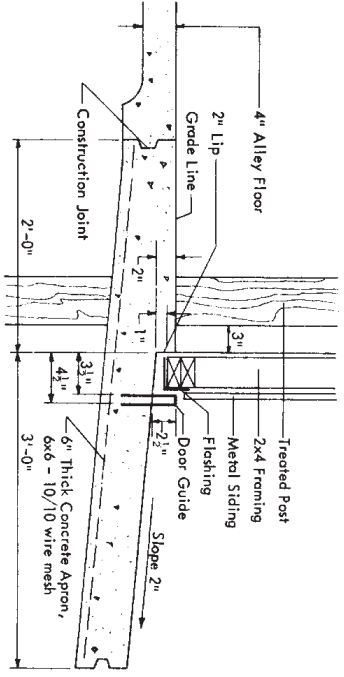
\*Footing Size  
 12" Dia x 6" Thick Endwall Posts  
 16" Dia x 6" Thick Sidewall Posts  
 Extend embedment depth as required to place footing on undisturbed soil. For large diameter footings, use smaller diameter auger and flare the bottom of the hole with Lineman's spoon.



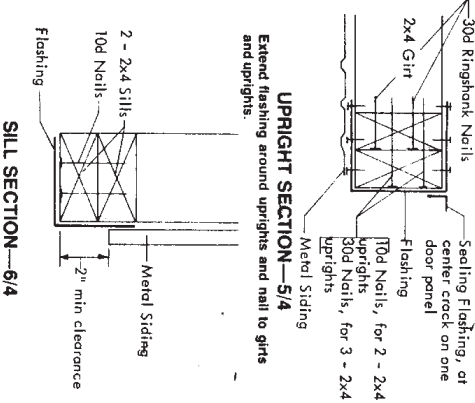
DOUBLE SLIDING DOOR—2/4



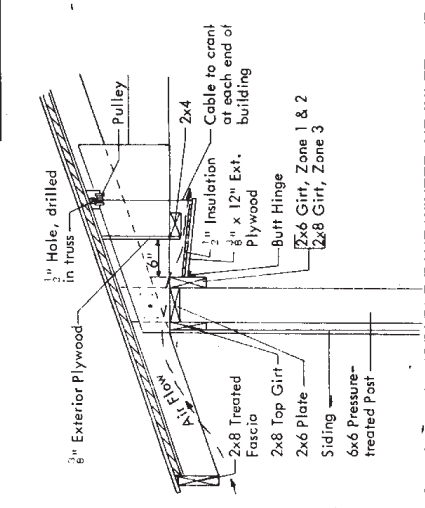
DOOR TRACK ASSEMBLY—4/4



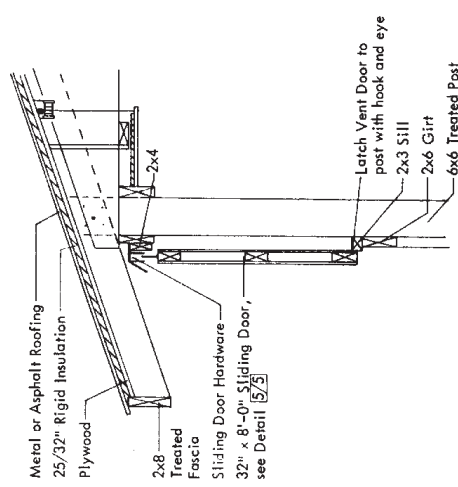
SLIDING DOOR APRON—3/4



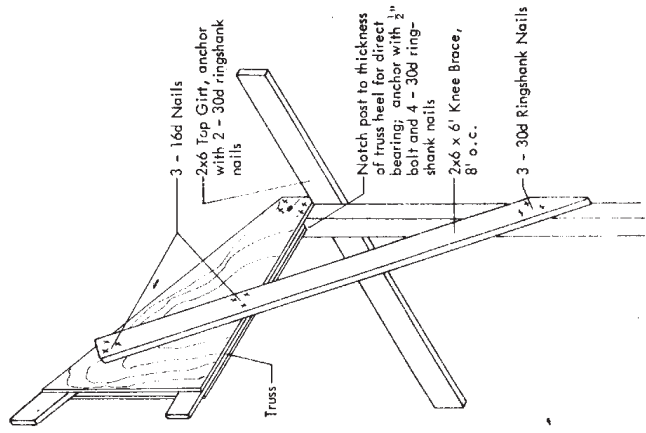
SILL SECTION—6/4



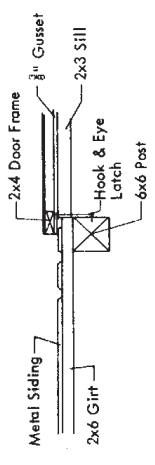
**OPTION—ADJUSTABLE EAVE WINTER AIR INLET—1/5**



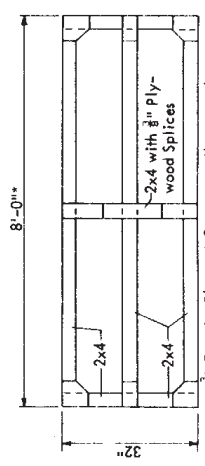
**VENT DOOR SECTION—3/5**



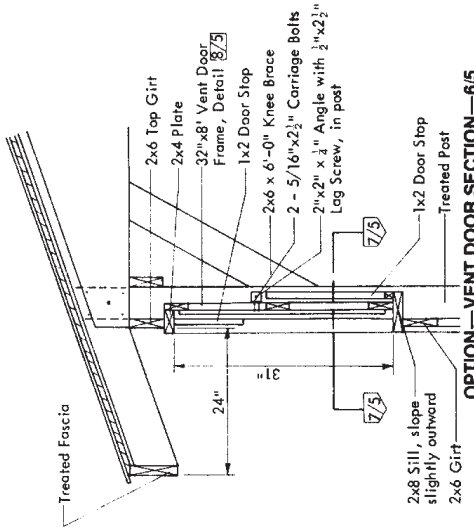
**KNEE BRACE DETAIL—2/5**



**JAMB—4/5**

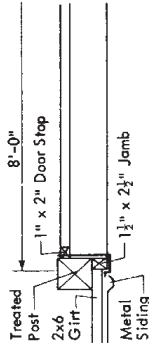


**32" x 8'-0" VENT DOOR—5/5**

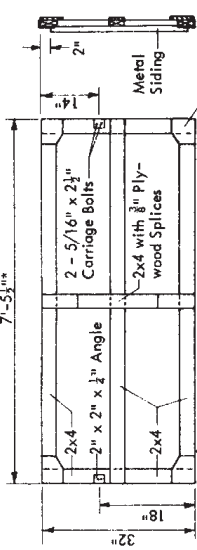


**OPTION—VENT DOOR SECTION—6/5**

Hold vent door open with a light metal chain from the top of the vent door frame to an eye hook in the sill.



**OPTION—JAMB SECTION—7/5**

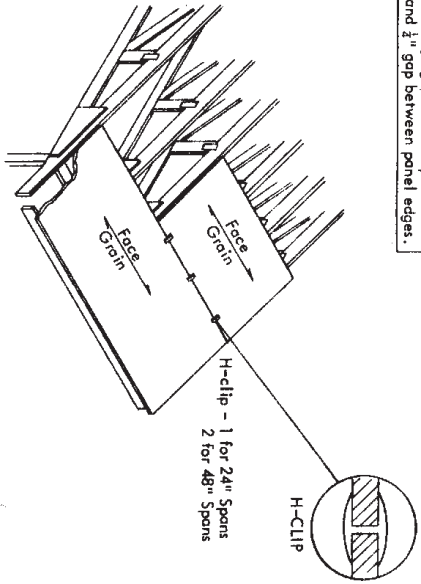


**OPTION—32" x 8' VENT DOOR FRAME—8/5**

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Leave  $\frac{3}{8}$ " gap between panel ends and  $\frac{1}{2}$ " gap between panel edges.



PLYWOOD OVER TRUSS—1/6

Roof Sheathing (face grain perpendicular to framing).

-----Truss Spacing-----

Total roof load, lb/sq ft	24"	48"
15 psf (South)	16/0	30/12
25 psf (Central)	20/0	36/16
35 psf (North)	"	42/20
45 psf (North, heavy)	24/0	48/24
20' 32/16, $\frac{1}{8}$ "		
20' 42/20, $\frac{3}{8}$ "		

Plywood Thickness

$\frac{1}{2}$ " or less

$\frac{3}{8}$ " -  $\frac{5}{8}$ "

1" or more

Space nails 6" o.c. at panel support edges

Nail Size

6d common

8d common

10d common

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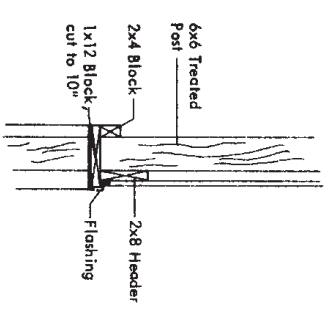
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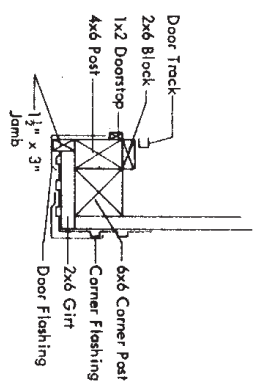
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48" Truss Spacing

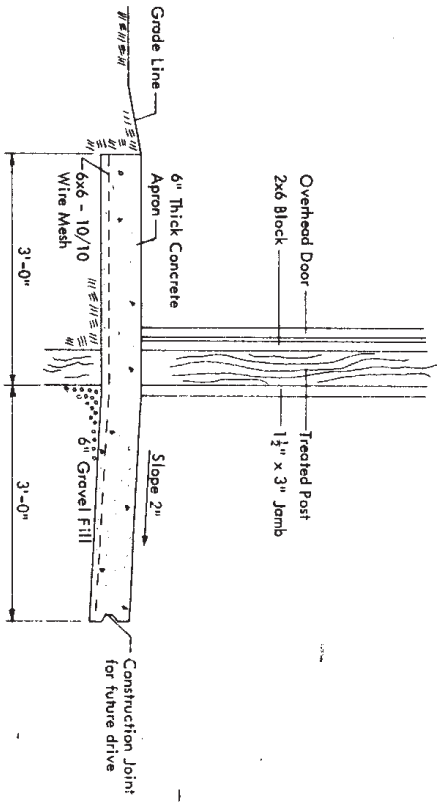
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ENDWALL HEADER SECTION—2/6



CORNER JAMB—3/6



OVERHEAD DOOR APRON—4/6

OVERHEAD DOOR DETAILS