

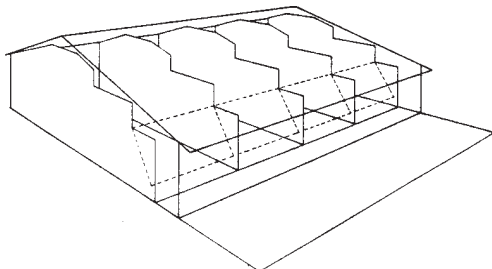
# MWPS-74402

## 40' x 48' Bulk Fertilizer Storage, Post Frame

Four 12' x 36' bins are lined with 2x6s and plywood for bulk fertilizer storage and handling. Steel tie rods brace walls. Sliding access doors. Roof loading hatch. Capacity is 400-600 ton.

### 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 Agriculture and Home Economics and Agricultural Experiment Stations of North Central Region - USDA Cooperating
<b>BULK FERTILIZER STORAGE</b>
Title Page
MIDWEST PLAN NO. 74402

## **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.**

**MWFS Plan 74402**

**40' x 48' Post Frame Bulk Fertilizer Storage Building**  
 Bulk fertilizers exert a much higher pressure than commonly stored grains. Fertilizers vary in weight up to 70 or 80 pcf. This building is designed for storage of an 80 pcf material.

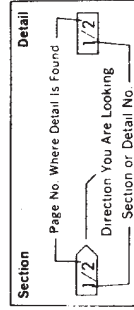
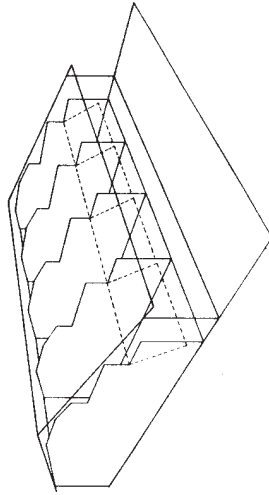
Use air-entrained concrete at 3000 psi in 28 days.  
 Welded rods are shown with this plan for wall support. Turnbuckles, threaded tie rods and chains have been used successfully. Connections of these types can be weaker than the tie itself. Consult a professional engineer for design.  
 Do not handle any fertilizer with added fungicide or herbicide with the equipment used to handle commercial grain.  
 Use zinc-coated nails to reduce the effects of corrosion.

Fertilizers can absorb moisture from the air or from contact with free water causing caking. Caking can also be caused by the pressure of the fertilizer itself and by the presence of fine materials in the fertilizer. Urea and ammonium nitrate tend to cake most. Do not store urea and ammonium nitrate together as their tendency to absorb water greatly increases when combined.

Double walls and light colored exterior surfaces can reduce caking. Seal all joints at the roof, wall and floor with a caulking compound or rubber filler strips. Cover auger openings with a polyethylene vapor barrier when not in use.

Coat all exposed metal with an epoxy-tar paint.  
 Minimize augering as it tends to break down fertilizer. Power requirements are increased 2 to 3 times over that required for grains. Power requirements increase with angle of elevation. Select augers with bearings outside the tube to reduce corrosion effects. Belt conveyors cause less breakdown of material and require less power but may be more expensive.

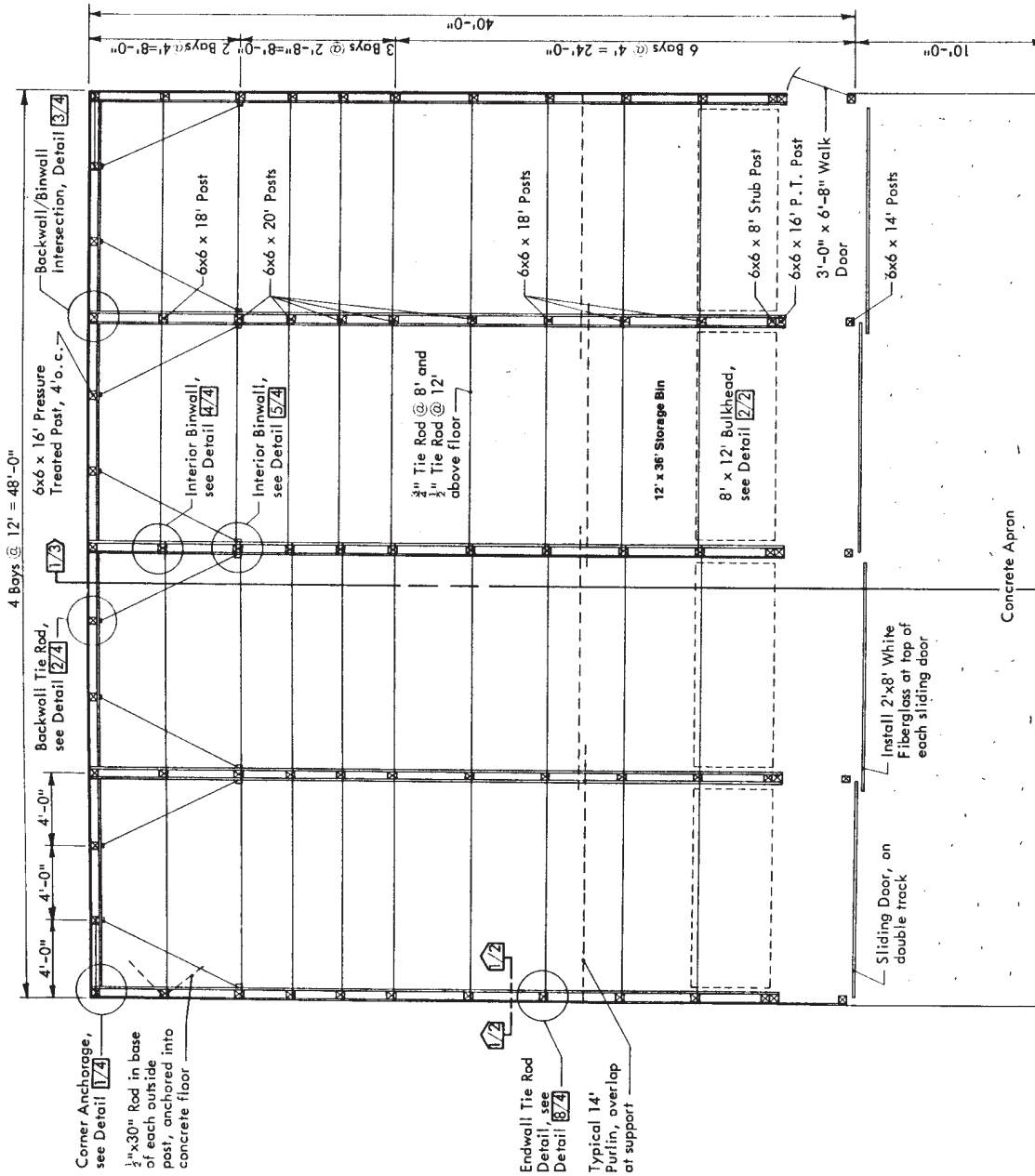
Dust-tight, 150-watt light fixtures inside each bin and over work alley. Sealed, "Press-Switch"-type wall switches for all 110-volt service. PVC plastic conduit and pipe fittings.



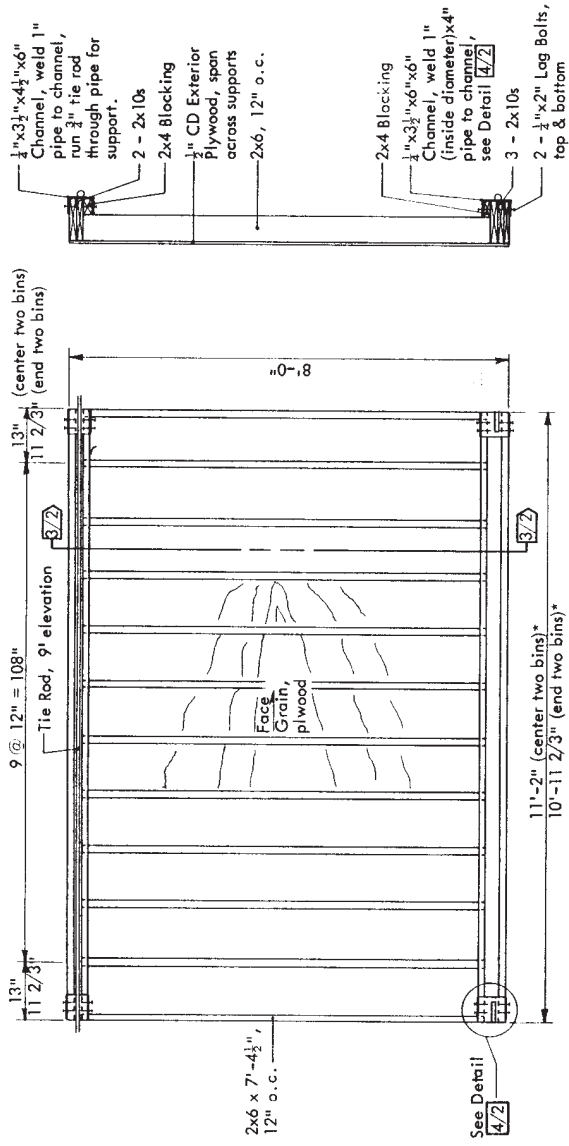
**Section & Detail Indicator**

<b>MWFS MIDWEST PLAN SERVICE</b>	
Cooperative Extension & Research in Agriculture & Home Economics in the 12 North Central Universities—USDA Cooperating	
<b>Bulk Fertilizer Storage Building</b>	
Post Frame 500-600 Ton Capacity	
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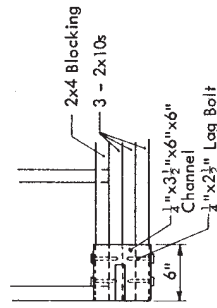


You may require professional services to complete this general plan, and to include consideration of: site selection and preparation; provisions for utilities, waste management, and roads or other access; assurance of compliance with codes and regulations; specifications for some materials and equipment; and supervision of bidding and construction.

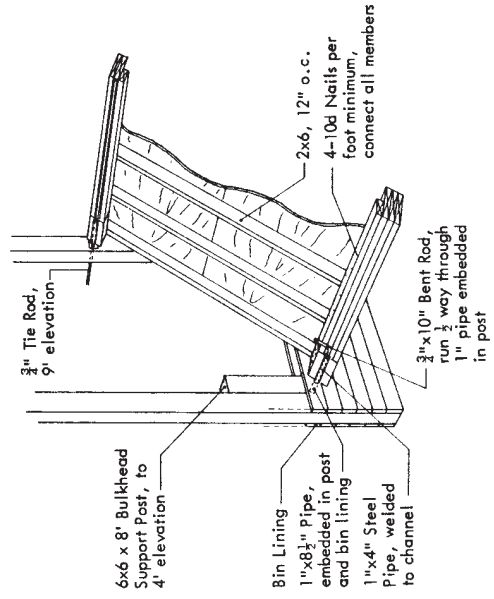


BULKHEAD CROSS SECTION—3/2

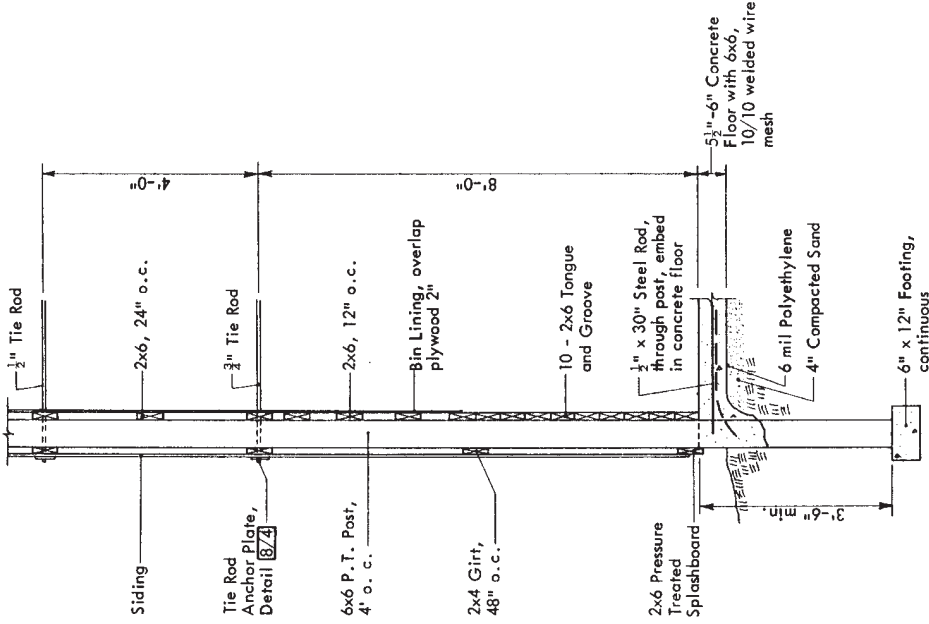
BULKHEAD DETAIL—2/2



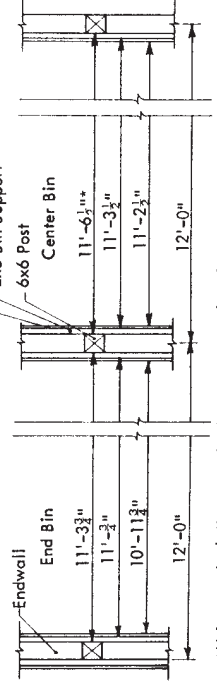
DETAIL—4/2



BIN BULKHEAD DETAIL—6/2

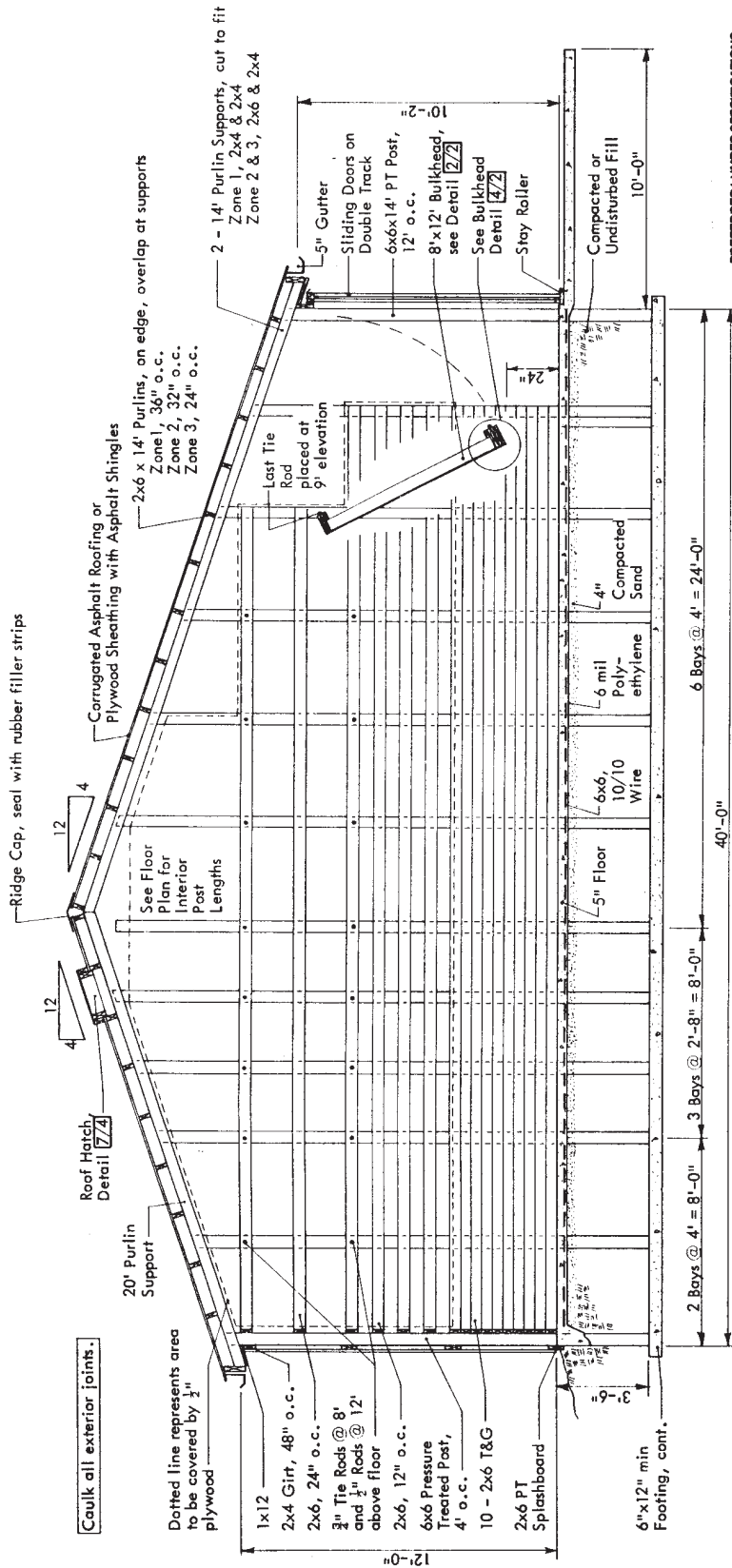


ENDWALL DETAIL—1/2



BIN CLEARANCE DETAIL—5/2

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Bulk Fertilizer Storage Building	
Post Frame 500-600 Ton Capacity	Page 2 of 4
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**CROSS SECTION—1/3**

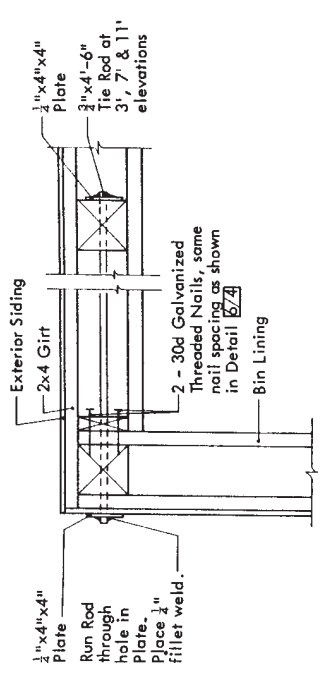
**Siding Options:**  
 Exterior Plywood, stained or MDO Plywood, painted, caulk or batten all joints or non-corrosive siding such as corrugated asphalt, see mfgs specifications for application details

**LIST OF MATERIALS**

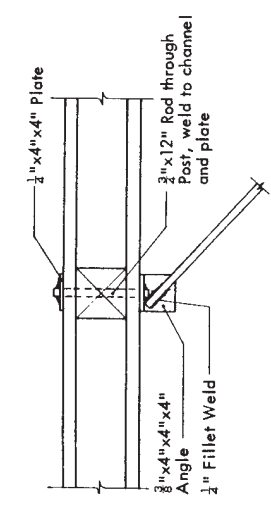
Quantity	Description	2100 ft <sup>2</sup>	1800 ft <sup>2</sup>	Roofing Material	Steel
5	6x6 x 14' Pressure Treated Posts	40	26 x 12' Tongue & Groove, P.T.	1/2" x 5" x 5" Plates	80
18	6x6 x 14' Pressure Treated Posts	80	26 x 16' Tongue & Groove, P.T.	1/2" x 4" x 4" Plates	52
20	6x6 x 18' Pressure Treated Posts	80	26 x 8' Tongue & Groove, P.T.	3/4" x 4" x 4" Angles	16
25	6x6 x 20' Pressure Treated Posts	80	26 x 12' Tongue & Groove, P.T.	3/4" dia x 25' Tie Rods	18
	Purlins	80	26 x 12' Tongue & Groove, P.T.	3/4" dia x 25' Tie Rods	18
Zone 1		108	4 x 8' - 1/2" Plywood	3/4" dia x 9' Tie Rods	11
Zone 2		104	26 x 12'	3/4" dia x 9' Tie Rods	8
Zone 3		64	26 x 16'	3/4" dia x 30' Anchor Rods	33
Purlin Supports		48	Bulkheads (4)	6x6, 10/10 Weided Wire Fabric	2000 ft <sup>2</sup>
Zone 1		20	2x10 x 12'	6 mil Polyethylene	4
Zone 2		12	4 x 8' - 1/2" Plywood	5' Gutter	96 ft
Zone 3		8	2x4 x 12'	2 x 8 White Fiberglass in Sliding Doors	4
Zone 1		8	1/2" x 3/2" x 6' Channels	3' - 6" x 6' - 9" Walk Door	1
Zone 2		4	1/2" x 3/2" x 4 1/2' x 6' Channels	Air-Entrained Concrete	42 yds
Zone 3		64	3/4" dia x 24' Steel Pipe	Sand and Gravel Fill as Required	
10	2x4 x 14'		3/4" x 2' Lag Bolts	Nails	
10	2x6 x 14'		3/4" x 10' Bent Anchor Rods		
5	2x4 x 20'				
5	2x6 x 20'				

**PREFERRED LUMBER SPECIFICATIONS**  
**ROOF PURLINS**  
 2x6 No. 2 (Doug Fir or Southern Pine)  
**WALL GIRTS**  
 2x4 No. 2 (Doug Fir or Southern Pine)  
 Max. Spacing 48" o.c.  
**HEADERS, TOP GIRTS**  
 No. 1 or #3001 machine rated (Doug Fir or Southern Pine)  
**PLYWOOD**  
 5/8" minimum  
 32/16" or 1/2" A-C Ext. Group 1. Span face grain across supports.  
**Roof Sheathing**  
 C-2 Exterior, unspanned  
 Zone 1, 32/16" (1/2" or 5/8")  
 Zone 2, 24/0 (7/8" or 1")  
 Zone 3, 24/0 (7/8" or 1")  
 Span face grain across supports.  
 Identification index—indicates strength  
**POSTS and SPLASHBOARDS**  
 Pressure Preservative Treated (Southern Pine or equivalent)  
 Creosote-10 pcf. Pentac-0.50 pcf. ACA or CCA. (Type A or B)-0.50 pcf retention.

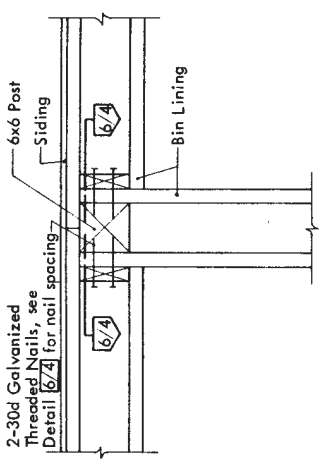
**MIDWEST PLAN SERVICE**  
 Bulk Fertilizer Storage Building  
 Post Frame  
 500-600 Ton Capacity  
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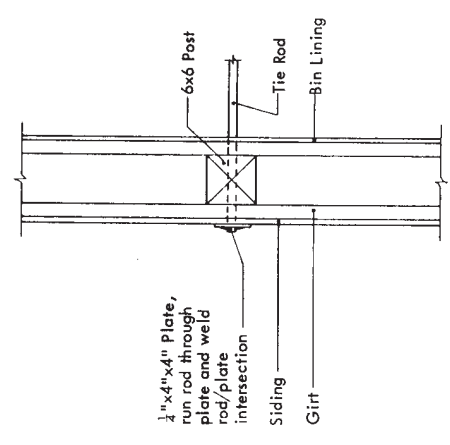
**CORNER DETAIL—1/4**



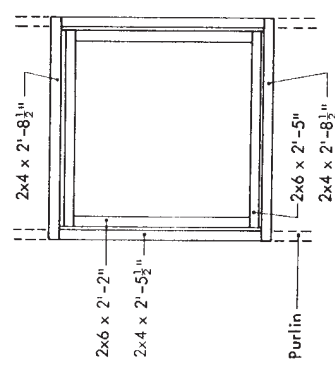
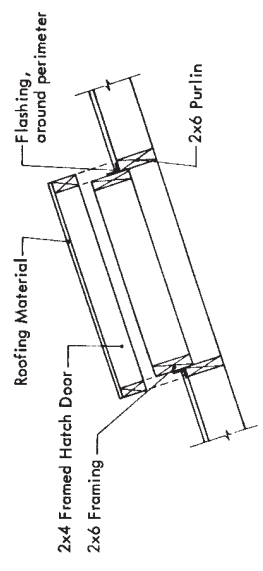
**BACKWALL TIE ROD DETAIL—2/4**



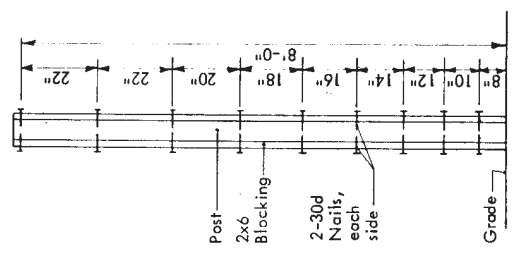
**BACKWALL/BINWALL INTERSECTION—3/4**



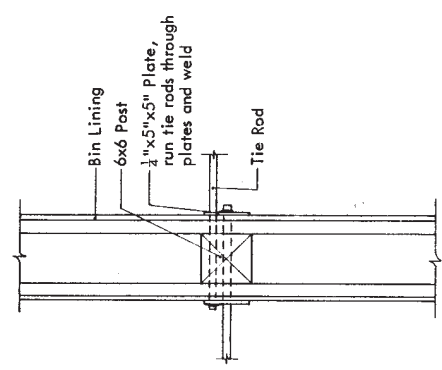
**ENDWALL TIE ROD DETAIL—8/4**



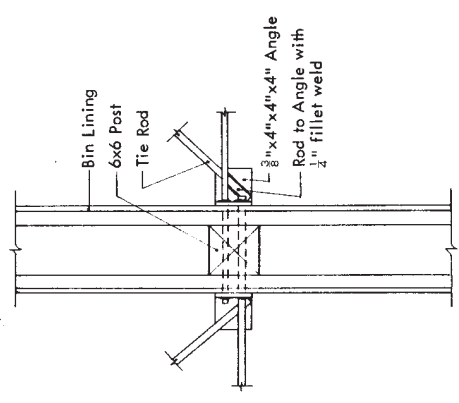
**ROOF HATCH DETAIL—7/4**



**NAILING PATTERN—6/4**



**INTERIOR BINWALL DETAIL—4/4**



**INTERIOR BINWALL DETAIL—5/4**