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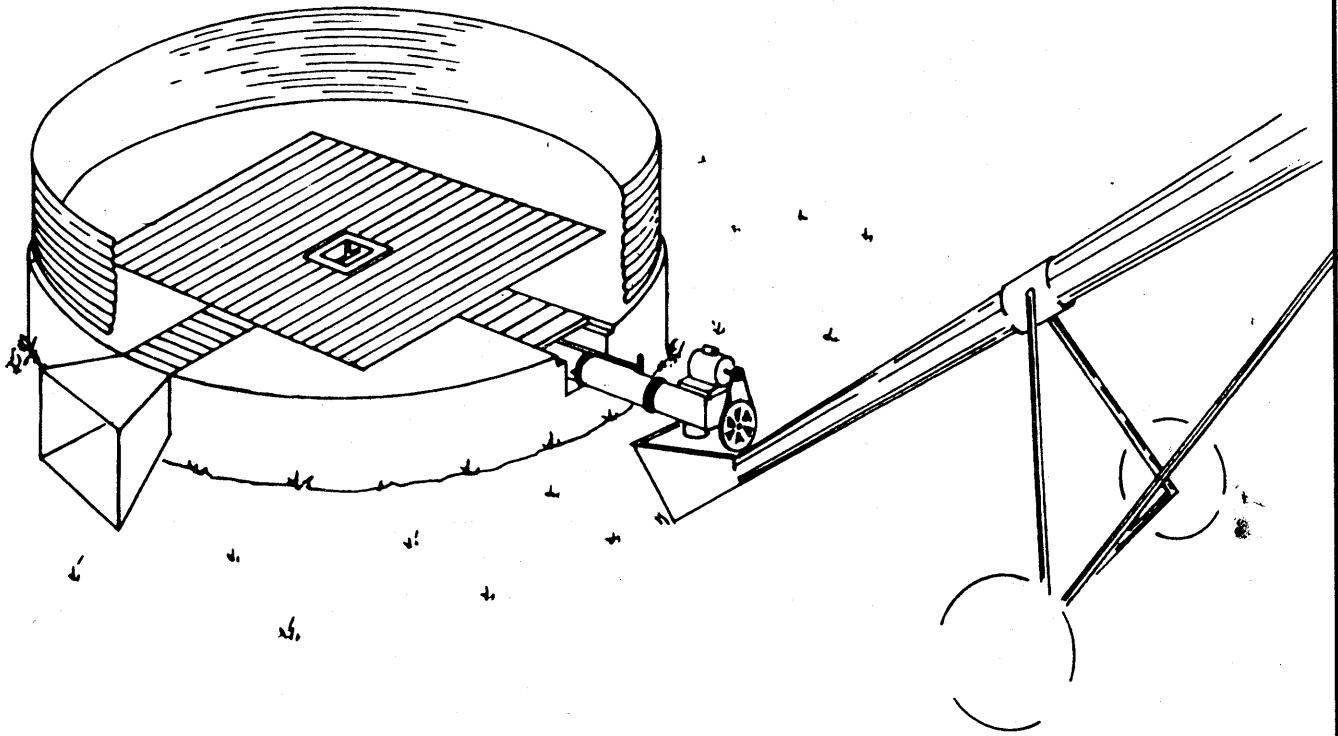
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# Plan S-711

## Natural Air Grain Drying Foundation For Circular Steel Grain Bins

### COMPLETE INSTRUCTIONS



This general purpose concrete foundation plan for circular steel grain bins incorporates a perforated floor for natural air grain drying.

The publication *Natural Air Grain Drying* contains information on principles, management and equipment selection for natural air grain drying systems.

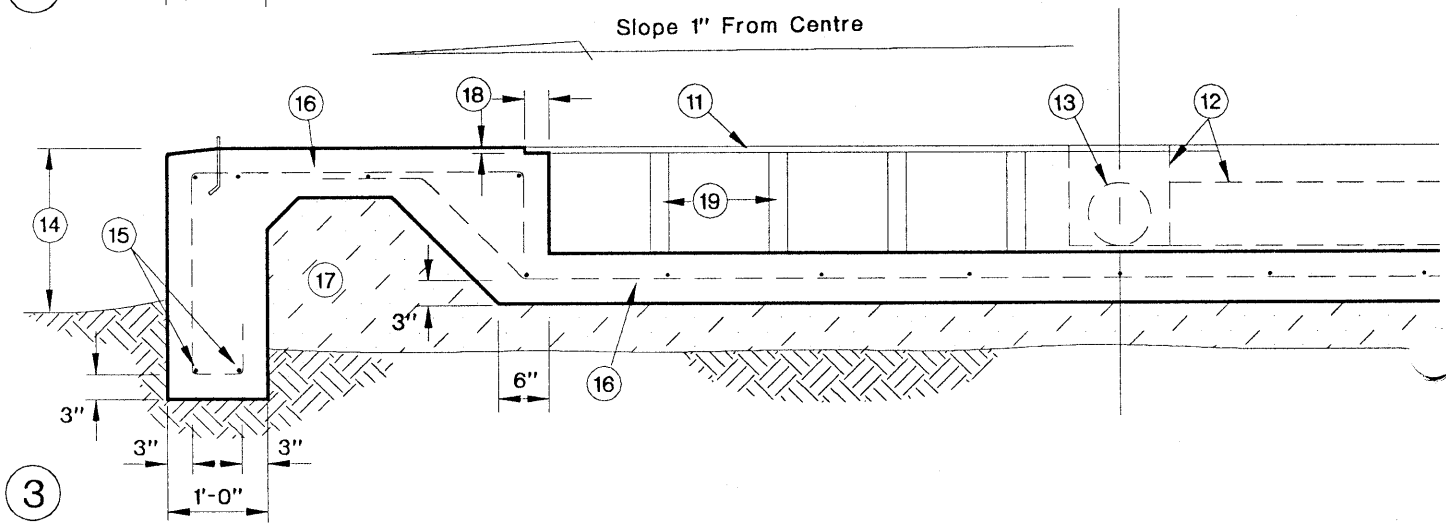
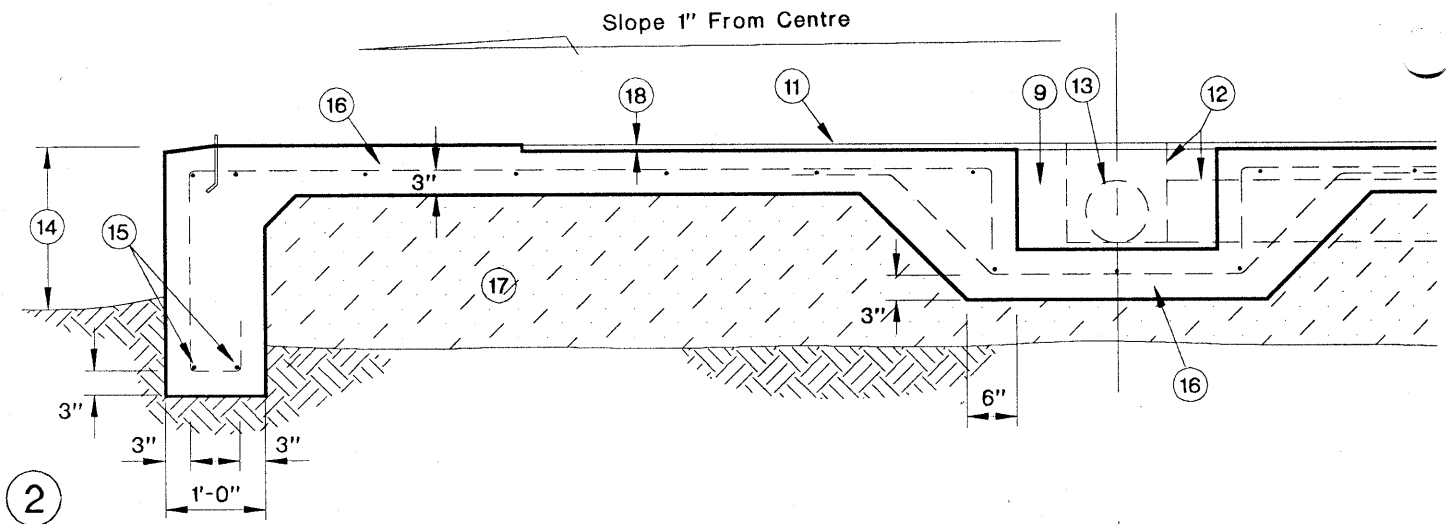
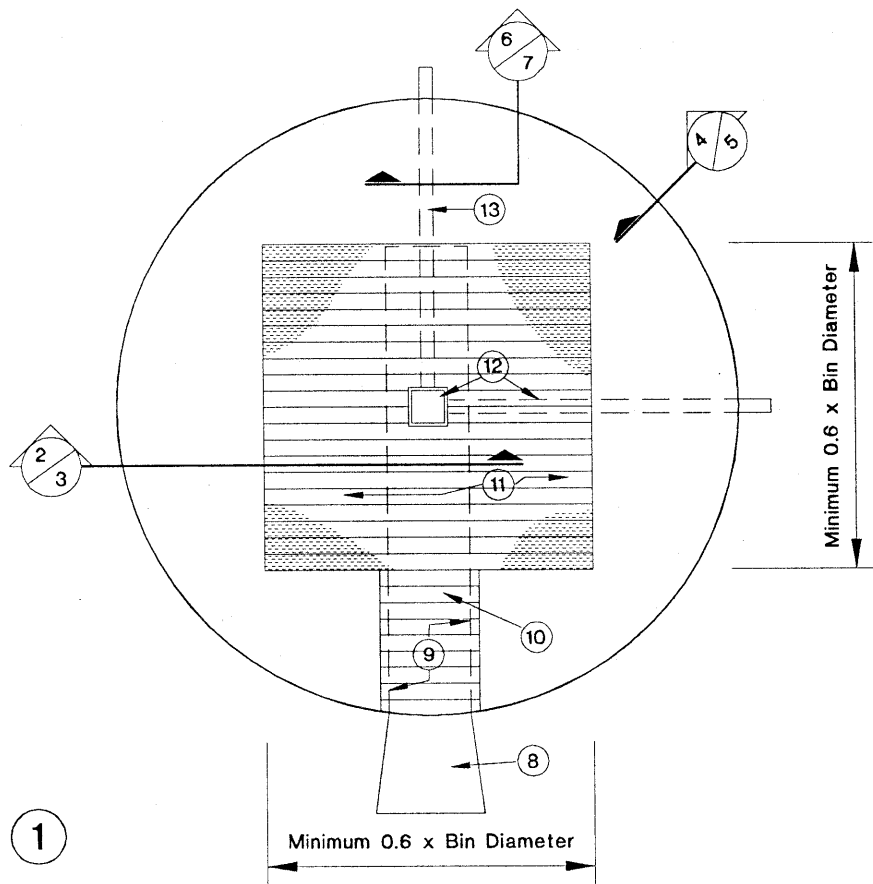
This plan shows a partially perforated square floor. The perforated floor area should be a minimum of 0.6 times the bin diameter on each side. Ducts should be large enough to give an air velocity of 1500 ft./min. or less.

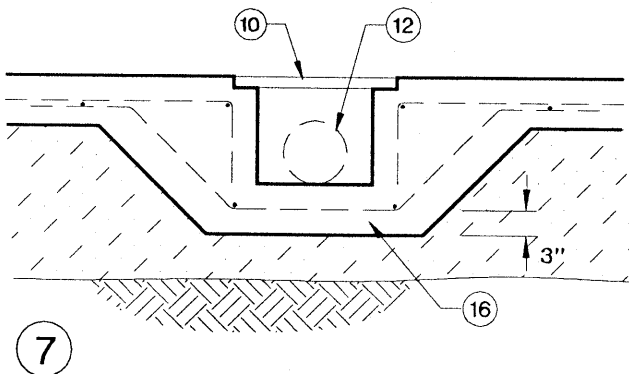
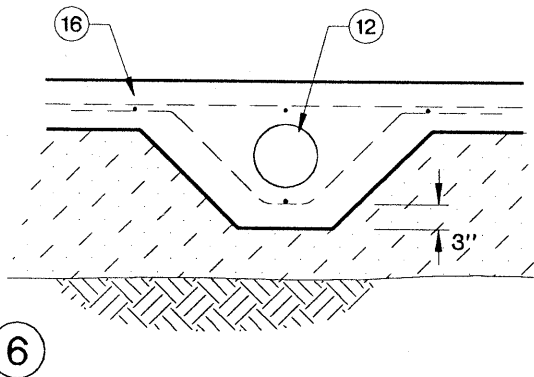
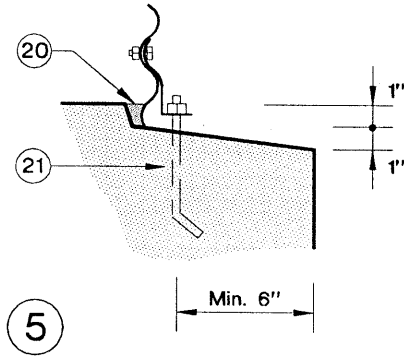
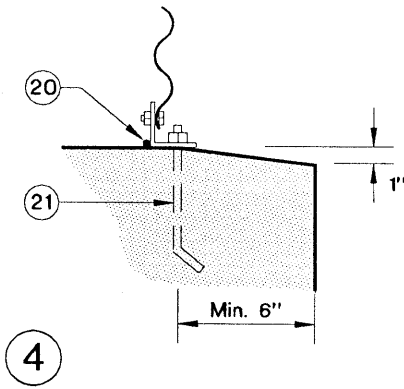
The duct system may also contain the bin unloading equipment, which may require a depth greater than shown to accommodate the auger.

The orientation and height of bin unloading equipment is very important for ease of service if the bin is to form part of a grain storage system (see plans 7111, 7134 and S-720).

A good weather seal at the bin-to-foundation connection is essential to prevent moisture from entering around the outside edge of the bin.

Site selection should be given a good deal of thought. Good natural or man-made drainage is necessary to reduce grain damage and preserve the structural integrity of the foundation and bin. Plan for space to permit future storage needs and easy maneuvering of trucks (consult publication #1713, *Grain Handling on the Farm*).





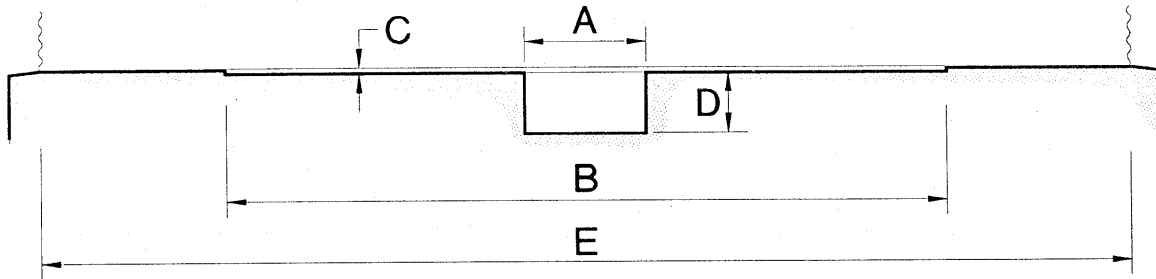
1. Floor Plan of Circular Steel Grain Bin Foundation showing partially perforated floor for natural air drying
2. Bin Foundation Cross Section
3. Alternate Bin Foundation Cross Section
4. Bin Anchorage Detail or as per bin manufacturers specifications
5. Alternate Bin Anchorage Detail or as per bin manufacturers specifications
6. Underfloor Auger Detail
7. Alternate Underfloor Auger Detail
8. transition
9. air duct; dimensions to suit air flow; see sizing guidelines
10. cover over duct
11. perforated steel plank floor
12. underfloor auger with centre well
13. alternate auger location
14. 28" to 38" for underfloor auger unloading into another conveyor
15. 2 - 10M rebar top and bottom
16. min. 6" thick concrete floor @ 20 MPa c/w 10M rebar @ 18" o.c. both ways
17. compacted granular fill; topsoil removed to undisturbed soil
18. dimension to suit perforated plank flooring selected
19. supports for perforated floor; use floor manufacturers specifications
20. sealant
21. M12 x 8" long min. anchor bolts @ 9' centres or as per bin manufacturers specifications

**Note:**

A fully perforated floor is recommended for high airflows and/or high grain moisture contents. Consult the publication *Natural Air Grain Drying*.

Notes thus marked indicate structural choices to be selected to meet design requirements. The plan user must ensure that these requirements are met. Consult an engineer if you are not familiar with the details required.

# Sizing Guidelines



Bin Diameter <b>E</b> (ft.)	Perforated Floor Dimensions <b>B</b> (ft.)	Air Flow (cfm)	Duct Dimensions		Minimum Space Under Perforated Plank <b>C</b> (in.)
			<b>A</b> (ft.)	<b>D</b> (ft.)	
14, 15	9 x 9 min.	500	1.0	1.0 (min)	1.0
		1000	1.0	1.0 (min)	1.0
		1500	1.0	1.0 (min)	1.0
		2000	1.5	1.0	1.0
		2500	1.67	1.0	1.0
	Fully perforated	3000	2.0	1.0	1.5
		4000	2.67	1.0	1.5
19	12 x 12 (min.)	1000	1.0	1.0 (min)	1.0
		2000	1.5	1.0	1.0
		3000	2.0	1.0	1.0
		4000	2.67	1.0	1.5
		4500	2.67	1.0	1.5
	Fully perforated	5000	2.67	1.25	1.5
		6000	2.67	1.5	1.5
22	14 x 14 (min.)	2000	1.5	1.0	1.5
		4000	2.67	1.0	1.0
		6000	2.67	1.5	1.5
	Fully perforated	8000	4.0	1.33	2.0
		10000	4.0	1.67	2.0
		12000	4.0	2.0	2.5
25	16 x 16 (min.)	4000	2.67	1.0	1.0
		6000	2.67	1.5	1.5
		8000	4.0	1.33	1.5
	Fully perforated	10000	4.0	1.67	2.0
		12000	4.0	2.0	2.5
		14000	5.0	1.83	2.5
		16000	5.0	2.0	3.0

**Note:**

Duct cross sectional area (ft.<sup>2</sup>) = A x D @ 1 square foot per 1500 cfm air flow with a minimum of 1 ft. x 1 ft.

Perforated floor area (ft.<sup>2</sup>) = B x B @ 1 square foot per 30 cfm air flow with a minimum of B=0.6 x diameter

Roof vent area (ft.<sup>2</sup>) = 1 square foot per 1000 cfm air flow

If dimension A is greater than the allowable span for the perforated steel plank flooring used, a support will be required. Check with the manufacturer.