1. Reinforced concrete foundation with "K-type" aeration duct
2. Reinforced concrete foundation with "Y-type" aeration duct
3. Reinforced concrete foundation with "L-type" aeration duct, for bins not over 18'-0" dia.
4. Reinforced concrete foundation with "Full floor aeration system"; system consists of piers, steel or concrete block supports, perforated plain flooring, and flashing to seal bin; see manufacturer
5. Aeration duct extension or fan transition
6. Aeration duct with floor panels or use perforated flooring
7. Center bin wall and unloading auger
8. Unloading auger trench with removable solid floor
9. Intermediate bin wall (optional); do not use to start emptying a full bin

Specifications

Before constructing foundation consult manufacturer of steel grain bins for details such as: foundation and bin diameter, bin anchorage, under floor and sweep augers, aeration ducts and fan outlets. Also consult local authorities for compliance with codes.

The design of this plan considered a max. bin diameter of 22'-0" with a max. depth of 10'-5" (shallow bin). For greater bin depths and diameters increase the perimeter footing width and circumference reinforcing.

The minimum soil safe bearing pressure must be larger than 1200 psf. Unless otherwise specified, all cast-in-place concrete to be mix 3000 psi at 28 days, 60% air-entrainment. The plan user must ensure that the foregoing requirements are met. Consult an engineer if you are not familiar with the details required or if your bin and soil do not fall within these limits.

All reinforcing steel to be min. 46 ksi, deformed bars provide 2" min. concrete cover over reinforcing steel.

All exposed steel to be galvanized or painted to resist corrosion from moisture.
1. Reinforced concrete foundation with 'X-type' aeration duct (rebar size and spacing is identical to foundations with 'Y-type' or 'L-type' aeration ducts.

2. Outside diameter of foundation is bin diameter plus 2 x 0.67.

3. Section with footing depth 2'-6" to 3'-2" for in-floor auger, unloading into second conveyor.

4. Footing depth 12" minimum for in-floor unloading auger with universal joint drive or cast-in-place.

5. Foundation with inclined auger unloading.

6. Aeration duct, notch floor for perforated flooring.

7. Remove top soil and compact soil at foundation ring location.

8. Aerates: place 12-16", and pour concrete footing.

9. 5/8" continuous rebar, ends overlapped by 1'-4"; 2 rebar for footing depth of up to 1'-4"; 3 rebar for up to 3'-2".

10. 2 - 20" continuous rebar, ends overlapped by 1'-4".

11. 5/8" temperature l-rebar @ 1'-8" oc.

12. Compacted granular fill.

13. 6 mil polyethylene liner.

14. 6" reinforced concrete floor, slope 2% from center.

15. 5/8" temperature rebar south ways @ 1'-4" oc.

16. 5/8" rebar @ 1'-8" oc. bend to suit aeration duct design, overlap with 12" by 1'-4".

17. 1/8" x 6" anchor bolt @ 10'-6" on, or as req'd to pull bin into concrete moisture test.

18. 5" minimum (greater for larger bins).


20. Protective coating or bin sheets.

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COOPERATIVE EXTENSION SERVICE
AGRICULTURE AND HOME ECONOMICS
UNITED STATES DEPARTMENT OF AGRICULTURE COOPERATIVES

FOUNDATIONS FOR CIRCULAR STEEL GRAIN BINS UNDER 22 FT DIAMETER

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