

Safeguarding steel storage bin structures



Annual steel storage bin checklist

Sample checklist

The following information may be collected and verified for each steel grain storage bin at the property and stored in a centralized location.

Designation/ name of structure	_____
Date of construction	_____
USDA warehouse diagram (bin chart)	Showing bin layout and bushels per foot _____
Make / Model	Bin model number _____ Bin diameter _____ Bin eave height _____ Bin capacity _____
Vendors	General contractor _____ Purchase agreement _____ Concrete engineer _____ Concrete contractor _____ Bin manufacturer _____ Bin jacker / erector _____ Geotechnical firm _____
Plans	Foundation plans _____ Bin construction manual _____ Bin operation manual _____
Equipment	Flow diagram _____ Equipment list and age _____ Equipment capacities _____
Operations	Structure erector / designer operational manual _____ Written fill procedures _____ Written emptying procedures _____ Written fan operation procedures _____ Written maintenance procedures _____ Written bin entry procedure _____ Written lock-out-tag-out procedures _____
Inspections	Photo documentation during construction _____ Photo documentation of last significant remodel / repair _____ Date of last inspection _____ Previous inspection report _____
Maintenance	Record of past maintenance _____ Dates _____ Activities _____ Contractors involved _____ Photos _____
Site training	Site plan map with evacuation route clearly posted _____ Topic and date of last site training _____ Number of previously trained employees still at location _____

Annual inspection when empty

The following information may be collected and verified for each steel grain storage bin on the property annually at a time when the structure is empty.

**Designation/
name of structure** _____

Date of inspection _____

Foundation

Verify water flows away from the foundation _____
Verify that water does not pond on the foundation or near the bin wall _____
Verify bin is tight to the foundation _____
Verify that all anchor bolts are present, that all anchor bolts are tight, and that all baseplates are adequately supported by shims in full bearing under vertical stiffener baseplates _____
Identify and document any foundation cracks _____
Verify the foundation is level _____
Identify and document areas of differential settlement _____
Verify that concrete at and near bin anchor bolts are in good structural condition _____

Bin walls

Verify all wall panel bolts are in place and tight _____
Clean-up all loose/extra bolts on site to make monitoring for new broken bolts possible _____
Verify that localized wall and stiffener buckling or bin wall sheet re-corrugation are not visible _____
Verify all wind rings are properly adjusted _____
Verify that vertical stiffeners at or near aeration trenches are adequately supported _____
Verify that all truck spout openings have flume hoods in place _____
Verify that localized rusting and/or deterioration are not visible _____

Bin roof

Verify all roof wind rings are properly adjusted _____
Verify roof sheet slopes are uniform and do not show signs of localized buckling or movement _____
Verify roof mounted equipment is properly secured _____
Verify the bin roof overhang is uniform around the perimeter of the bin at eave _____
Verify roof is not leaking _____

Man doors

Verify that man access door component parts are in place and in good structural condition _____
Verify that there are no visible signs of shifting or leaning of bin wall and man door assembly _____
Verify that there are no torn wall sheets or broken bin bolts/welds at man door assembly _____

Sump openings

Verify that the center sump and sweep pivot (if equipped) is in good structural condition _____
Verify all off center floor sumps are closed and padlocked shut to prevent accidental use _____

Ladders/Stairs

Verify inside ladder is in good structural condition _____
Verify outside ladder or stairway is in good structural condition _____
Points of entry (ladders, doors, cages etc.) properly protected to prevent trespassing _____

Equipment

Operate the following to assure proper function

- All grain handling equipment used to place grain into the bin _____
- Aeration fans _____
- Ventilation and exhaust fans _____
- Discharge gates, sumps and/or slides _____
- Reclaim conveyor _____
- Sweep auger and/or kanal type unloading systems (if installed) _____

Safety equipment

- Motor, equipment, and drive assembly guarding in place _____
- What types of hazard monitoring equipment in place? _____
- All hazard monitoring equipment operating properly _____
- Are extraction tie-off points present? _____

Housekeeping

- Update and review written housekeeping plan to assure it is appropriate _____
- Verify housekeeping plan is being implemented _____
- Verify that all spouts and conveyors are in good condition and “dust tight” _____
- Verify that grain is not actively leaking from the structure _____
- Verify that grain is not actively leaking from grain handling equipment _____

Greasing and lubrication

- Update and review written greasing and lubrication plan to assure it is appropriate and being adequately implemented _____
- Where bearings require sufficient greasing to cause grease to be expelled from the bearing assembly assure that all expelled grease is cleaned away to prevent build-up near rotating components _____

Training

- Provide annual refresher training for proper loading and unloading of structure _____
- Provide annual refresher training on lock-out-tag-out procedures _____
- Provide annual refresher training on bin/silo entry procedures _____

Miscellaneous

- Verify all elevated landings, walkways and ladders are structurally stable _____
- Verify that temperature cables are adequately supported and in good working condition _____
- Enter into the bin and verify that no points of light (which generally indicate a hole or opening in the bin wall) are visible _____
- Verify there are no visible signs of grain stuck on the inside of the bin wall that could be an indication of water leaks or grain management problems _____

Annual inspection when full

The following information may be collected and verified for each steel grain storage structure on the property annually after it has been filled as a follow-up to the inspection when empty.

Designation/ name of structure	_____
Date of inspection	_____
Foundation movement	The foundation, reclaim tunnel and any concrete cracking or movement that may have been present prior to filling look generally the same after filling with grain _____ Visible indications of differential settlement (tipping or leaning) are not observed _____
Bin walls and openings	No visible indications of new movement, tipping, leaning, crushing or re-corrugation _____
Equipment operation	All previously tested equipment operates / functions as desired after loading _____
Roof	No visible indications of new movement at bin roof to wall construction joint _____
Openings	Check man access doors and equipment entry doors for damage _____
Housekeeping	Verify that grain is not actively leaking from the structure _____ Verify that grain is not actively leaking from grain handling equipment _____
Fall protection (if applicable)	Fall protection anchorage is sound _____ Fall protection lanyard and harness inspections are current _____



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contact us at RMSolutions@nationwide.com or 1-800-260-1356.**

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