

POULTRY MANURE STACK FACILITY

CONSTRUCTION SPECIFICATIONS

Location: Locate poultry litter stack facilities where movement of any odors toward neighbors will be minimized. For recommended setbacks from residences, wells, roads, etc, follow Practice Standard Code 313, Appendix B. Stack facilities shall not be located in floodplains. Buffer areas, vegetative screens, and natural landscape features can help minimize the effects of odors. The stack facility shall not be located on an isolated hill, ridge or escarpment without special design considerations.

Stack facilities should not be located closer than 50 feet to any other structure because of the possible fire hazard. If state or local codes are more stringent, then their spacing shall be used. The landowner should be made aware of the potential fire hazard. The building should be oriented on the ground so that the open ends are opposite the normal direction of prevailing wind.

Site Preparation: Grading and shaping of the site shall consist of the removal and disposal of all grass, roots, stumps and other vegetation and shaping of the ground surface to the dimensions shown on the drawings. Any fill material shall be placed in 9" thick layers and compacted by 3 passes of heavy grading equipment over the entire layer prior to placement of another layer. The entire foundation shall be uniformly compacted whether or not fill is required.

Proper drainage shall be provided around the entire structure so that runoff water does not enter or pond near the structure. Designs for roof runoff management shall be in accordance with Practice Code 558 – Roof Runoff Management or other suitable method for the site.

Timber Fabrication and Installation: Dimensions and spacings shown on the plans and drawings were prepared in accordance with Practice Code 313 - Waste Storage Facility and Georgia Building Code (International Building Code 2000). Depending on the standard drawing used, the structure is designed to 1) sustain wind speeds up to 90 mph with snow loads of 10 psf or 2) sustain wind speeds of 100 – 120 mph with no snow load. These dimensions and spacings may be altered if the result is a stronger structure, with prior approval of the engineer. In no case will the dimensions and spacings be modified in a way which would reduce the strength of the structure. All framing shall be true and exact. Timber shall be accurately cut and assembled to a close fit. Appropriate bracing for safety and structural stability during construction shall be used.

Wood and Timber: All material shall be new, sound wood that is free from decay. All lumber shall be Southern Pine No. 2 or better. All timber beams shall be dense, structural quality, and graded in accordance with the Standard Grading Rules for

Southern Pine Lumber. Unless otherwise specified, all timber and lumber shall be furnished in American Standard dressed sizes.

All structural timber, posts, and lumber in contact with litter or concrete shall be pressure treated. The minimum net retention of the preservative is shown in the following table:

<i>MINIMUM RETENTION RATES IN PCF</i>				
<i>USE</i>	<i>CCA</i>	<i>ACQ</i>	<i>CBA-A</i>	<i>CA-B</i>
Above Ground	0.25	0.25	0.2	0.10
Ground Contact or Fresh Water	0.40	0.40	0.41	0.21
Important Structural Members	0.60	0.60	0.61	0.31

*CCA – chromated copper arsenate, ACQ – alkaline copper quaternary, CBA-A & CA-B – copper azole

Posts shall be set plumb and to the depths shown on the drawings. Backfill around posts/holes shall be concrete as shown on the drawings. Posts shall be temporarily braced until girders, plates or other members are installed to maintain plumb alignment.

Handling and Storing: All timber and lumber stored at the site shall be neatly stacked on supports above the ground surface and protected from the weather by suitable covering. Untreated material shall be so stacked and stripped as to permit free circulation of air between the tiers and courses. Treated timber may be close-stacked. The ground underneath and in the vicinity of all stacks shall be cleared of weeds and rubbish. The use of cant hooks, peavies, or other pointed tools, except end hooks, will not be permitted in the handling of structural timber or lumber. Treated timber shall be handled with rope slings or other methods which will prevent the breaking or bruising of outer fibers, or penetration of the surface in any manner.

Nails and Spikes: Nails and spikes shall be driven with just sufficient force to set the heads flush with the surface of the wood. Pressure treated lumber does not hold nails as well as untreated lumber because the preservatives act as a lubricant. Spiral or annular ring shank nails shall be used in these connections because they have a higher withdrawal resistance. Nails to fasten rafters, girders, cleats, scabs, wooden sidewalls, and/or braces to the pressure treated poles shall be as specified on the drawings. Untreated framing members shall be fastened as specified on the drawings. Various galvanized metal fasteners, with appropriate joist or deck nails, may be used to facilitate assembly, as approved by the engineer.

Bolts, Washers, Nuts, Nails and other Hardware: All fasteners exposed to rain or litter shall be galvanized unless otherwise specified. Holes for machine bolts shall be bored with a bit of the same diameter as the bolt. Appropriately sized washers shall be used with all bolt heads and nuts that would otherwise be in contact with the wood.

Wood Trusses: Trusses shall be designed to meet state and local building codes, whichever is more stringent, and shall be installed as shown on the drawings. Truss spacing shall be 4' or 5' on center depending on the post spacing used. Trusses shall have a minimum of 18 inches of overhang.

Manufactured trusses will be installed in accordance with the manufacturer's instructions. **All trusses used will be of a design approved by a registered professional engineer. A copy of the truss certification shall be provided to the NRCS approving authority prior to truss installation.** Used trusses will not be allowed unless a new truss certification is provided by a professional engineer registered by the State of Georgia. Truss anchorage and associated supports shall be as shown on the drawings or other acceptable methods as approved by the engineer.

Roofing and Sidewalls: The lower portion of the side walls (interior) shall be constructed 5 feet high with dressed 1 1/2" or nominal 2" pressure treated lumber or 3/4" pressure treated plywood as shown on the drawings. The exterior side walls shall have metal siding beginning at top of sidewall and extending upward to within 2 feet of the top of the support post. The gable ends shall be enclosed down to at least the top of the support post. The upper portion of the roof and side wall shall be new, ribbed, galvanized metal (minimum 29 gauge) in standard lengths and widths. Roofing and side walls shall be installed in accordance with manufacturer's recommendations. Nails used to attach roofing material to the purlins shall be lead-headed nails, aluminum nails with neoprene washers, or other type as approved by the NRCS approving authority. Some type of truss to truss bracing shall be installed as recommended by the truss manufacturer. An example would be the use of 2x4's as bottom chord bracing along with either vertical or horizontal diagonal bracing.

Concrete Reinforcement: Concrete floors shall be **fiber reinforced**. The fiber shall consist of 3/4" length virgin homopolymer polypropylene fibers, either the collated fibrillated type or the monofilament type.

The minimum rate of application is 1.5 lbs. of fiber per cubic yard of concrete. **The addition of fiber to a concrete mix may cause an apparent reduction in slump. However, no additional water shall be added to the mix to improve workability. If needed, a suitable plasticizer should be added to the concrete mix, not to exceed manufacturer's recommendations.**

Concrete walls and footers shall be **steel reinforced**. Steel reinforcement shall be Grade 60 steel. The steel schedule in the drawings shall be followed for size of each bar. Placement of steel rebar shall be as shown on the drawings.

Concrete Mix Design: **The concrete mix shall contain no less than six bags of cement per cubic yard. The water content shall not exceed 6 gallons per bag of cement in the mixture. Any mix selected shall have a designed minimum 28 day compressive strength of 3,000 pounds per square inch (psi).** The

concrete shall contain a standard known brand of Portland cement with washed sand and gravel. Clean water shall be used in the mix. Calcium Chloride and other chemical admixtures for concrete will not be accepted unless expressly specified in the drawings or specifications. Plasticizing and water reducing/set retarding admixtures may be used if used as recommended by the manufacturer.

- a. Consistency - The amount of water used in the concrete shall be the minimum (not to exceed 6 gallons per bag of cement) necessary to obtain the required workability. The consistency of the concrete shall be such that it can be worked readily into the corners and angles of the forms and around reinforcement but without permitting the materials to segregate or excess free water to collect on the surface. The slump shall be between 2 and 5 inches as tested by "The Test for Slump for Portland Cement Concrete", ASTM Specification C-143.
- b. Timing and Temperature - Concrete shall be placed within 1 1/2 hours after introduction of water to the cement and aggregates. Concrete shall not be placed when the outside temperature is expected to fall below 40°F at the time the concrete is delivered and placed at the work site. Concrete shall not be exposed to freezing temperatures during the seven day curing period. Concrete, when deposited in the forms during hot weather, will have a temperature not greater than 90°F at the time of placement. Ice may be used as a portion of the mixing water to control temperature provided all ice is melted in the mixing process. When the outside temperature reaches or exceeds 90°F, the concrete shall be placed within 45 min. after batching.
- c. Conveying and Placing - No concrete shall be placed until the approving official has given approval of the in-place subgrade, forms, reinforcing steel, and any other items involved or affected by the concrete placement.

Concrete shall be conveyed from mixer to forms as rapidly as practicable by methods which will prevent segregation or loss of ingredients.

The graded and compacted earth for floor slabs shall be level or graded as shown on the plans. The concrete thickness and surface uniformity shall be controlled by the use of screeds. Unless otherwise authorized, all concrete shall be placed upon clean, damp surfaces free from frost, ice, standing and running water, and never upon soft mud, dried porous earth, or fill that does not meet specified compaction requirements. Soft mud or other unacceptable foundation material shall be removed and replaced with gravel or other approved material.

Concrete shall be deposited as close as possible to its final position in the forms. Concrete shall be thoroughly consolidated by rodding or mechanically

vibrating the concrete in place or by hand-spading and tamping to remove air voids.

- d. Forms - Forms shall be of wood, steel, or other approved material. Forms shall be true to line and grade, mortar tight, and sufficiently rigid to prevent objectionable deformation under load. Form surfaces shall be smooth, free from irregularities, dents, sags or holes when used for permanently exposed surfaces.

All form removal shall be accomplished in such a manner as to prevent injury to the concrete. Forms for floor slabs and walls may be removed after a minimum of 12 hours.

- e. Curing - Concrete shall be prevented from drying for a curing period of at least 7 days after it is placed. All concrete shall be cured by keeping continuously moist for the entire curing period, or until curing compound is applied. Moisture shall be maintained by sprinkling, flooding, fog spraying, or by covering with materials kept continuously moist such as canvas, cloth mats, straw, sand, polyethylene, or other approved material. Wood forms (except plywood) left in place during the curing period shall be kept wet. Formed surfaces shall be thoroughly wetted immediately after forms are removed and shall be kept wet until patching and repairs are completed. Water or covering shall be applied in such a way that the concrete surface is not eroded or otherwise damaged.

If a curing compound is used, two coats of it will be applied to all concrete surfaces except construction joints and surfaces to which other concrete will be bonded. The compound shall be sprayed on the moist concrete surfaces as soon as free water has disappeared, but shall not be applied to any surface until patching, repairs, and finishing of that surface are completed.

Grading, Shaping and Vegetating: The area adjacent to and in the immediate vicinity of the structure shall be graded and shaped to blend with the natural surroundings and to complement the structure and work area around it. Shaping shall be in such a way as to drain or divert all overland and roof runoff safely away from the structure and surrounding work area.

All disturbed areas around the structure, including spoil areas, shall be vegetated and/or surfaced with gravel or some other acceptable covering as permitted by the NRCS approving authority. Spoil areas not used for farm traffic shall be vegetated. Permanent vegetation will be established according to NRCS Critical Area Planting Standard – Code 342. All vegetating of disturbed areas will be done as critical area planting and shall include liming, fertilizing, seedbed preparation, seeding and mulching. Temporary vegetation may be used when conditions or seeding dates are not suitable for the establishment of permanent vegetation. Disturbed areas shall be

mulched regardless of seeding dates. If farm animals will have access to the vegetated area, it will be appropriately fenced until vegetation is well established.