672 – Building Envelope Improvement Specifications

In general keeping with longstanding NRCS policy, all improvements must be fully installed, functional, and comprehensive across the planning unit (here, a building) to be certified as complete and qualify for the practice payment. For example, conversion of sidewall curtains to permanent walls must be done on both walls of a broiler house, not just the north wall. However, the following exemption applies for poultry houses: Roll-up doors do not have to be installed at all vehicular door openings.

Attic Insulation

This improvement provides for the *addition* of insulation providing R-15 *additional* thermal resistance. NRCS currently has no restrictions on the insulation type. For example, a fresh-installed depth of 4.7 inches of blown-in cellulose is needed for R-15 thermal resistance. And a depth of 6.1 inches is needed for R-15 using blown-in fiberglass.

Wall Insulation (FY2014)

This improvement provides for the addition of spray foam insulation or the replacement of deteriorated fiberglass batt insulation. Any deteriorated existing insulation must be removed. New insulation must receive physical protection as appropriate for location. *This improvement must not be used to insulate sidewall curtains or other flexible wall materials of an agricultural building.*

Insulation and protection options currently include the following:

1) polyurethane spray foam, 1” thickness (R-7) minimum, from top of footing to eave:
    a. Within bird reach (typically the lower 2 ft), the foam must be 10 lb/cf density minimum throughout its thickness.
    b. Above bird reach, the foam must be 2 lb/cf density minimum throughout its thickness.

OR

2) fiberglass batts, 3.5” thick (R-11), along with a vapor barrier and a protective barrier of interior plywood or OSB sheathing; all three components must be new.

Other construction options must be pre-approved by a GS-11 or higher engineer.

Spray foam insulation must be applied by a professional contractor using materials approved for poultry production facilities. The type, quality of work, and quantity required prohibits the use of foam insulation merely from an aerosol can. Before application of the foam insulation, application areas must be reasonably cleaned with compressed air or mechanical means. Foam insulation must not be applied to sidewall curtains or other flexible wall materials and must not be applied through wire screen.

The intent of this improvement is to increase thermal conduction resistance *and to nearly eliminate air movement* through the wall. Therefore, any insulation option used must provide air-tightness equal to or better than that of sealing with spray foam.

Sidewall Renovation

The sidewall curtain, or other flexible wall material, and wire screen must be removed. A permanent exterior siding must be installed across the former window opening. The siding must be new sheet metal, minimum thickness of 29 ga, or new material equivalent to the existing siding, and the new siding must be lapped with the old siding or sealed in an appropriate manner to prevent water intrusion. All areas of curtains or flexible walls, except those functioning as tunnel ventilation inlets, must be converted to permanent walls to complete this improvement as a comprehensive certifiable practice.

The wall must be reinsulated from the top of the footing to the eave, and the insulation must receive appropriate physical protection. Insulation and protection options currently include the following:

1) polyurethane spray foam, 1" thickness (R-7) minimum, from top of footing to eave:
    a. Within bird reach (typically the lower 2 ft), the foam must be 10 lb/cf density minimum throughout its thickness.
    b. Above bird reach, the foam must be 2 lb/cf density minimum throughout its thickness.

OR

2) fiberglass batts, 3.5" thick (R-11), along with a vapor barrier and a protective barrier of interior plywood or OSB sheathing; all three components must be installed from the top of the footing to the eave.

Other construction options must be pre-approved by a GS-11 or higher engineer.

Spray foam insulation must be applied by a professional contractor using materials approved for poultry production facilities. The type, quality of work, and quantity required prohibits the use of foam insulation merely from an aerosol can. Before application of the foam insulation, application areas must be reasonably cleaned with compressed air or mechanical means. Foam insulation must not be applied to sidewall curtains or other flexible wall materials and must not be applied through wire screen.

The intent of this improvement is to increase thermal conduction resistance *and to nearly eliminate air movement* through the wall. Therefore, any insulation option used must provide air-tightness equal to or better than that of sealing with spray foam.

Sealant—Open Truss or Drop Ceiling

This improvement is the interior-face sealing of the cracks and holes in the exterior walls of an existing agricultural building. The improvement is not intended to provide additional insulation on the flat planes of the building panels. Rather, the improvement must seal the cracks which exist at the linear junctions of the flat planes, cracks around fan and door frames, and miscellaneous holes and cracks in the flat planes of the building panels. In a poultry house with a dropped ceiling, the typical sealing lines are the junction of the exterior walls with the stem wall (or footing) and the junction of the ceiling with the endwalls. In a poultry house with open truss-work, the typical sealing lines are the ridge cap, gable ends, eaves, and the junction of exterior walls with the stem wall. Cracks in the concrete footing must be sealed but general insulating of the interior vertical face is not required.

A professional contractor must perform the sealing using a foam approved for production facilities of interest. The type, quality of work, and quantity required prohibits the use of foam sealant merely from an aerosol can. For poultry houses, sealant above bird access must be a minimum of 2 lbs/cf polyurethane or equivalent. Sealant within bird reach (typically 2 ft of floor) must be a minimum of 10 lbs/cf polyurethane or equivalent. Before application of the sealant, the lines or areas to be sealed must be reasonably cleaned with compressed air or mechanical means.

Roll-Up Door

Roll-up doors must provide a positive means of sealing against air leaks during cool-season ventilation. Roll-up doors must provide a thermal resistance of at least R3 (equivalent to the air films along three parallel sheets of building material separated by air gap).