January 18, 2006

Charles Anderson
ICF Consulting

Dear Mr. Anderson:

Draft 1 of the ENERGY STAR Version 2.0 Roof Products Specification has been reviewed as requested leading to this response. There are several minor comments on the base document and there is one comment on an item that was not included in this revision. Please see the following recommendations for the roof products specification:

EMISSIVITY: The addition of the material property Emissivity is indorsed. This property can contribute to the improved heat dissipation of the energy that is absorbed by the roofing material in turn reducing the heat gain into the building.

REFLECTIVITY - NEW: The present minimum requirement for reflectivity of .65 is considered to be a very acceptable level. The question was asked if the value should be moved to .70 to line up with other standards that are on the street. It makes logical sense to do this but at the same time is move would eliminate a number of roofing products. There are a number of colored roofing materials that fall in this range of .65 to .70 that are not only used in commercial roofing but also are moving into low sloped residential. These colors offer the residential customer some options to just a harsh white product. It is recommended that the reflectivity be held at .65 to continue to offer the customer several options for color that can be placed on the structure. If the value is moved to .70, it is recommended that the manufacture be giving three years to comply with the new standard if their product falls in the range between .65 and .70. In most cases the manufacture has the ability to adjust the material to comply with the .70 value but it takes three years to have the field data to verify the aged data. That leaves the customer without these options for that time period.

REFLECTIVITY – AGED: Disallowing the membrane to be washed before taking the reflectivity of the field aged material is going to be a tough standard. There will be many products that will drop off the ENERGY STAR product listing because they will not be able to meet this requirement due to the way some materials collect dirt. It is like telling a used car dealer that he cannot wash the road grime off the car before putting the car on the sales lot. However, we will accept it for roofs will very rarely be washed.

COOL BALLASTED ROOFS:

A roof system defined as a Cool Ballasted Roofing System has been identified as an option to an ENERGY STAR roof. Under the auspices of the Single Ply Roofing Industry (SPRI), Oak Ridge National Laboratories conducted extensive studies evaluating the thermal performance of stone ballasted roofs with ballast weight of 10, 17 and 24 pounds per square foot (psf), paver ballast at 24 psf, and controls of a white TPO and black EPDM roof membranes. This study showed that when the ballast weight is a minimum of 15 psf or greater, the ballasted system, stone or paver, performs the same or better than the ENERGY STAR listed TPO product. This study was presented to EPA and a submittal was made to have this Cool Ballasted system listed as a qualified ENERGY STAR roof product. However, Draft 1 of the new standard did not contain this option. It is being recommended that this be included in Draft 2.

To further clarify the Cool Ballasted roof system, the submittal states that the roof system is to be installed to the national standard ANSI/SPRI RP 4, "Wind Design Standard for Ballasted Single-ply Roofing Systems". This standard defines the stone and paver types that can be used with single ply systems and the minimum weights required to meet the wind loads for the various parts of the country. The Cool Ballast system then identifies the minimum weight for the ballast to be 15 psf to be quality as a cool system. The RP 4 standard is to be updated to include this new category for ballasted systems.

The general practice of the single ply industry and the specific practice of the two largest suppliers of the ballasted roofing system is to issue a warranty on every roofing project. This warranty covers the components of the system, the water tightness of the roof, the workmanship, and gives a level of wind resistance performance. Before this warranty is issued, the roof must be inspected by the manufacture's employee to assure the roof conforms to the specifications and details of the project. If the roof does not comply, a work order is issued to have the roof deficiencies corrected. The roof must conform to the specs and details or the warranty is not issued by the manufacture. The control in this process is the building owner who holds back money from the contractor. The contractor is not paid until the warranty is delivered. This procedure will be in place for the Cool Ballast design as with any of the other single ply systems. The manufacturer would confirm through their inspection that the roof meets the Cool Ballast design specification.

Those are the extent of the comments on the Draft 1 of the ENERGY STAR Version 2.0 Roof Products Specification. We concur that it is a good practice to update performance standards periodically to keep them current with the latest technologies that were recently developed. That is why we feel it is important that the Cool Ballasted Roof System be an

addition to the ENERGY STAR roofing products listing. Thank you for taking action on this recommendation.

Sincerely,

Richard J. Gillenwater