

Technical Bulletin

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No. 26: Insulating Kneewalls

SCOPE

Building inspectors responsible for verifying compliance with Model Energy Code-based state energy codes need to know how kneewalls are best insulated to meet code. Questions arise as to whether open-backed kneewalls should be insulated as walls or similar to the adjoining roof/ceiling system. Opinions vary. Fiberglass batts are the insulation most often installed in kneewalls. Various sprayed insulations are also in use. Sprayed insulations are often proprietary. Inspectors should refer to specific manufacturer recommendations for kneewalls.

This bulletin is intended to present information and provide guidance. The recommendations presented herein apply to both insulating skylight shafts and insulating kneewalls.

DISCUSSION

ICAA holds that kneewalls are walls and should be insulated as exterior walls. However, ICAA recognizes that kneewalls present some questions:

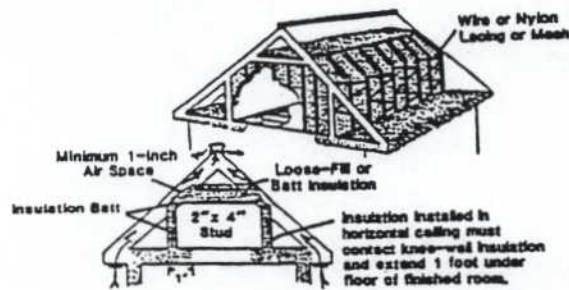
- Since insulation installed in open-back kneewalls is not supported as in exterior wall insulation, back support may be provided. *If no back support is provided, there is no assurance that insulation in open-back kneewalls will remain in place for the life of the structure. ICAA, therefore, recommends back support.*
- Will the exposed back surface of the insulation cause R-value reduction due to windwashing? *Windwashing should not be a problem; air velocities in interior kneewall areas are typically not high enough to reduce R-values. (The same is true of conventional attics.)*

RECOMMENDATIONS

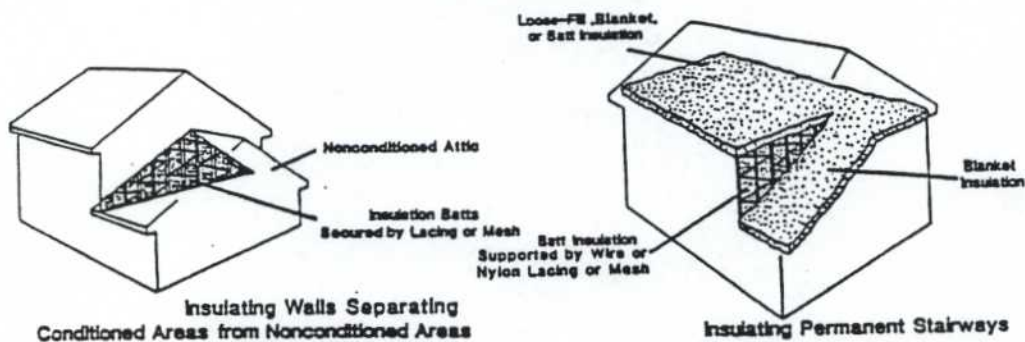
Best results must consider ease of application, availability of materials, and cost effectiveness. ICAA's recommendations are believed to present the best approach with these factors considered.

- **Kneewall batts should be approximately the same thickness as the framing.** If studs are 2 x 4s, then 3 1/2" thick batts having at least the same R-value as those installed in other exterior walls should be used; generally, R-13 batts. Likewise, at least 6 1/4" thick R-19 batts should be used with 2 x 6 framing. For best kneewall performance, high density R-15 (3 1/2") and R-21 (5 1/2") are recommended.
- **Staple strapping or lacing to the back side of the studs against which batts are pressed.** Support should occur within 8" of the top and bottom plates, and intermittently at no more than 24" o.c. between. Strapping/lacing should be durable. Acceptable materials include wire, nylon, and strapping similar to that used to package tubes of batts or that used in various building material packaging.

Manufacturers now offer encapsulated batts. These batts are enclosed on their back side with factory applied sheet material. These batts may not require back support. An alternative to encapsulated batts is air barrier sheeting ("Tyvek" etc.) applied to the back side of the studs prior to installing batts.



Insulating a Finished Attic



NOT RECOMMENDED

■ **R-30 or R-38 batts.** Some well-intentioned building officials have insisted upon R-30 or R-38 batts being installed in kneewalls to match the R-value of the adjacent contiguous roof/ceiling assembly. ICAA's concern is that these batts, if unsupported, may pull away and separate from their facings.

■ **Unfaced batts should never be installed in kneewalls without adequate back side support.**

SUMMARY

These recommendations reflect the experience of insulation manufacturers and ICAA member contractors. They are intended as general recommendations. Building officials are asked to contact ICAA should they encounter conditions not addressed by this bulletin. As energy codes are updated and upgraded, new materials will become available to offer cost beneficial solutions to special situations encountered in constructing the thermal envelope. This bulletin will be revised from time to time as new products evolve.