



BOTHWELL-ACCURATE
E S T A B L I S H E D 1 9 2 7

**LIGHTWEIGHT INSULATING CONCRETE ROOF INSULATION SYSTEMS
STEEL DECK DESIGN PERFORMANCE IMPACT
BULLETIN 4 - SRIS-0904**

Building envelope design and construction issues, including related costing models, are simplified by using Lightweight Insulating Concrete Roof Insulation Systems.

Placement of lightweight insulating concrete is an extremely economical method of enhancing the roof diaphragm performance of steel deck. The effect is to increase the shear strength and shear stiffness of the metal panels without the use of additional bracing in the interior of the building. Following is an example:

Rigid Insulation

1 1/2" B deck, 20-gauge
Bar joist 4'0" o.c.
30/4 welding pattern
4 side fasteners per span
Diaphragm shear = 515 lb/ft

Lightweight Insulating Concrete

15/16" Galvanized deck, 26-gauge
Bar joist 5'0" o.c.
30/4 welding pattern
4 side fasteners per span
Diaphragm shear = 532 lb/ft

The ability of light weight insulating concrete roof insulation systems to optimize the amount of steel used in roof assembly construction minimizes the material resource requirements for steel components such as metal deck and bar joists. In addition to enhancing shear strength and shear stiffness, incorporating a lightweight insulating concrete deck system can have significant financial impact by reducing metal deck cost.

Example: 50,000 sq. foot project - metal cost (G-60 galv.)

	<u>2007</u>	<u>2008</u>	<u>2009</u>
B-20	\$1.00 / ft ²	\$1.31 / ft ²	\$0.82 / ft ²
B-22	\$0.80 / ft ²	\$1.27 / ft ²	\$0.69 / ft ²
26 ga/inch	\$0.55 / ft ²	\$0.89 / ft ²	\$0.48 / ft ²

Numerous regulatory approval listings are available for Lightweight Insulating Concrete Roof Insulation Systems. Please check Factory Mutual RoofNav, Underwriter's Laboratories, and Miami Dade NOA listings for specific requirements.