ENGINEERING RESEARCH INSTITUTE
UNIVERSITY OF MICHIGAN
ANN ARBOR

SUPPLEMENTARY REPORT

STUDIES TO EVALUATE HEAT-TRANSFER COEFFICIENTS OF INSULATED PANELS. III

By

A. B. EPPLE
Associate Professor of Mechanical Engineering

Project 2017-5-6-7

GIFFELS and VALLET, INC.
DETROIT, MICHIGAN

March, 1954

SUPPLEMENTARY REPORT

STUDIES TO EVALUATE HEAT-TRANSFER COEFFICIENTS OF INSULATED PANELS. III

This report covers work done under Project 2017-5-6-7, "Heat-Transfer Coefficients of Insulated Panels III," sponsored by Giffels and Vallet, Incorporated. Three different panels were submitted by Detroit Steel Products Company and the test results are tabulated after an identifying drawing number:

Drawing Number	Overall Transmission Rate Btu/Hr/sq ft/°F
X957	.189
X961	.157
X956A	.170

DESCRIPTION OF PANELS AND ASSEMBLIES

All panels were made of metal facings enclosing three inches of Fiberglas insulation. All units were erected on wood supporting members to set them approximately two feet above the floor line. Boxes for the first two tests listed below were assembed under the direction of a factory representative, and the third was erected without factory supervision but by the same sheet-metal workmen that erected the first two.

Differences in panel construction and assembly may be seen from the following descriptions:

Panel Drawing X957

No felt strips were used to isolate angles from panels in assembling this box. Sheet-metal channels with two rows of preforations were used to separate the inside and outside metal facing of individual panels.

Panel Drawing X961

Felt strips approximately 1/8 inch thick were used to separate the angles from the panel facings in assembling this box. The channels separating the inside and outside metal facings had three rows of preforations.

Panel Drawing X956A

Felt strips approximately 1/8 inch thick were used to separate the angles from the panel facings in assembling this box. Sheet-metal channels having three rows of preforations closed off the ends of each panel, but preforated "S" shaped sheet-metal pieces closed off the sides of the panel.

INSIDE DIMENSIONS AND SURFACE AREAS OF PANEL ASSEMBLIES

Drawing No.	Length	Width	Height	Area(sq ft)
X957	87	40	46.37	130.0
X961	87	40	46.37	130.0
X956A	86	40	46.25	128.7

INSTRUMENTATION AND EQUIPMENT

Instrumentation and equipment are the same as those described in the Report of Studies to Evaluate Heat-Transfer Coefficients of Insulation Panels I, Project M905.

PROCEDURE

Procedure followed is also described in report on Project M905.

RESULTS

The following table is a summary of the principal results used to calculate the overall coefficient of heat transfer:

SUMMARY OF RESULTS

Drawing Number	Energy Input Btu/Hr	Inside Air Temp.°F	Room Air Temp°F	Inside Area sq ft	U Btu (Hr)(sq ft)(°F)
X957	1950	157.7	78.6	130	.189
X961	1259	144.6	83.0	130	.157
X956A	1610	150.6	76.8	128.7	.170