



Test Report

*Commercial
fire test*

ITS Intertek Testing Services

Intertek Testing Services NA, Inc.

8431 Murphy Drive, Middleton, Wisconsin 53562, Tel: 608-836-4400, Fax: 608-831-9279

October 30, 2000

Mr. Robert Martin
Reddi-Wall Inc.
1075 Rochester Rd.
Oakland, MI 48363

Subject: ITS Letter Report No. J20022860-231

Dear Mr. Martin:

A vertical fire test was conducted at Intertek Testing Service NA Inc. (ITS) of Middleton, Wisconsin on October 30, 2000. The results described in this report are limited to the submitted test assembly.

This was a pilot scale (48" high x 72" wide) fire endurance test to investigate the possibility for 120 minute fire rating of a wall. This test was conducted for compliance with ASTM E119-95a "*Standard Test Methods of Fire Tests of Building Construction and Materials*", CAN/ULC-S101, NFPA 251 (1999), UBC Standard 7-1 (1997) and UL 263 (1997).

If you have any questions or if we may be of further assistance, please do not hesitate to contact Andrew Hyun at (608) 836-4400.

Sincerely yours,

Reviewed by,



Mark Wegner
Engineering Technician



Andrew Hyun, Ph.D.
Project Manager

INTRODUCTION

The Middleton Wisconsin fire testing laboratory of Intertek Testing Services NA (ITS)/Warnock Hersey conducted a pilot scale vertical fire test. This report gives the results of the evaluation of a fire resistance property. The test results described in this report are limited to the tested items.

The test was conducted in accordance with ASTM E119-95a "*Standard Test Methods of Fire Tests of Building Construction and Materials*", CAN/ULC-S101, NFPA 251 (1999), UBC Standard 7-1 (1997) and UL 263 (1997).

TEST MATERIAL

WALL: A 48" high x 72" wide wall consisting of 10" wide polystyrene honeycomb blocks. The bottom layer of blocks is placed on a 1" high x 2" wide steel "C track" to keep the blocks straight (see figure A). The rest of the blocks were then glued to each other in regular stagger pattern. A piece of #4 steel rebar (3/8" thick) was placed into the bottom most horizontal column and into every other vertical column (20" on center). The wall was filled with concrete and covered with 2 layers of 5/8" Type X gypsum on both sides. Secured with 3-1/2" drywall screws spaced 8" on center into the 3/4" x 3/4" steel vertical track that is spaced 10" on center and anchored into the concrete. All joints were taped and treated with joint compound and all screw heads were treated with joint compound as well.

Note: No wood 2" x 4" were used in the construction of the footing.

TEST PROCEDURE

After positioning the test assembly to cover the furnace opening, the burners were ignited and a timer started. Temperatures within the furnace were monitored using thermocouples attached to the data logger (Inventory #326). The burners were controlled to keep the furnace temperatures within the allowable limits specified in the test standards.

Periodic observations were made of the exposed and unexposed surfaces of the test assembly during the fire endurance test. The observations are included in this report.

Pressure taps were installed through the furnace wall adjacent to the top of the test assembly. The pressure taps were attached to the pressure gauge (Inventory #93).

Immediately after the Fire Endurance Test, the test assembly was moved into position for a Hose Stream (Inventory #372) Test. The exposed surface of the test assembly was subjected to the impact, erosion, and cooling effects of a hose stream described in the test standards.

FIRE ENDURANCE TEST OBSERVATIONS**FIRE ENDURANCE**

<u>TIME</u> (min:sec)	<u>EXPOSED FACE</u>
00:00	Furnace ignited.
03:19	Gypsum panel paper ignited.
13:48	Vertical crack forming in gypsum panel approximately 4" away from tapped vertical joint.
20:00	Vertical crack entire height of sample 1/8" wide. Small horizontal cracks at mid height.
30:00	Vertical crack 1/4" wide. Horizontal crack full width of sample 1/8" wide. Horizontal crack approximately 5" from top forming starting to spread towards edges 1/8" wide.
50:00	All cracks increasing in width. Vertical crack 1/2" wide.
60:00	Largest vertical crack 3/4" wide.
75:31	Flaming coming out of cracks in gypsum, second layer of gypsum cracking.
90:00	First panels cracks now 1" wide. Second panel cracks spreading.
105:00	First layer of gypsum falls off; cracks in second layer now 1/4" wide. Flaming from cracks increases.
110:00	Top quarter of first layer gypsum panel fell of into the furnace.
120:00	Test stopped.

TIME **UNEXPOSED FACE**

<u>TIME</u> (min:sec)	<u>UNEXPOSED FACE</u>
00:00	Ambient temperature = 62 °F.
30:00	No change.
60:00	No smoke/No change.
90:00	No change.
120:00	Test stopped.

HOSE STREAM TEST OBSERVATION

A Hose Stream Test was conducted for 36 seconds at 30 psi. Test assembly passed hose stream test with no through opening and allowable movement limits.

FIGURE 1 : TIME-TEMPERATURE and PRESSURE CURVE

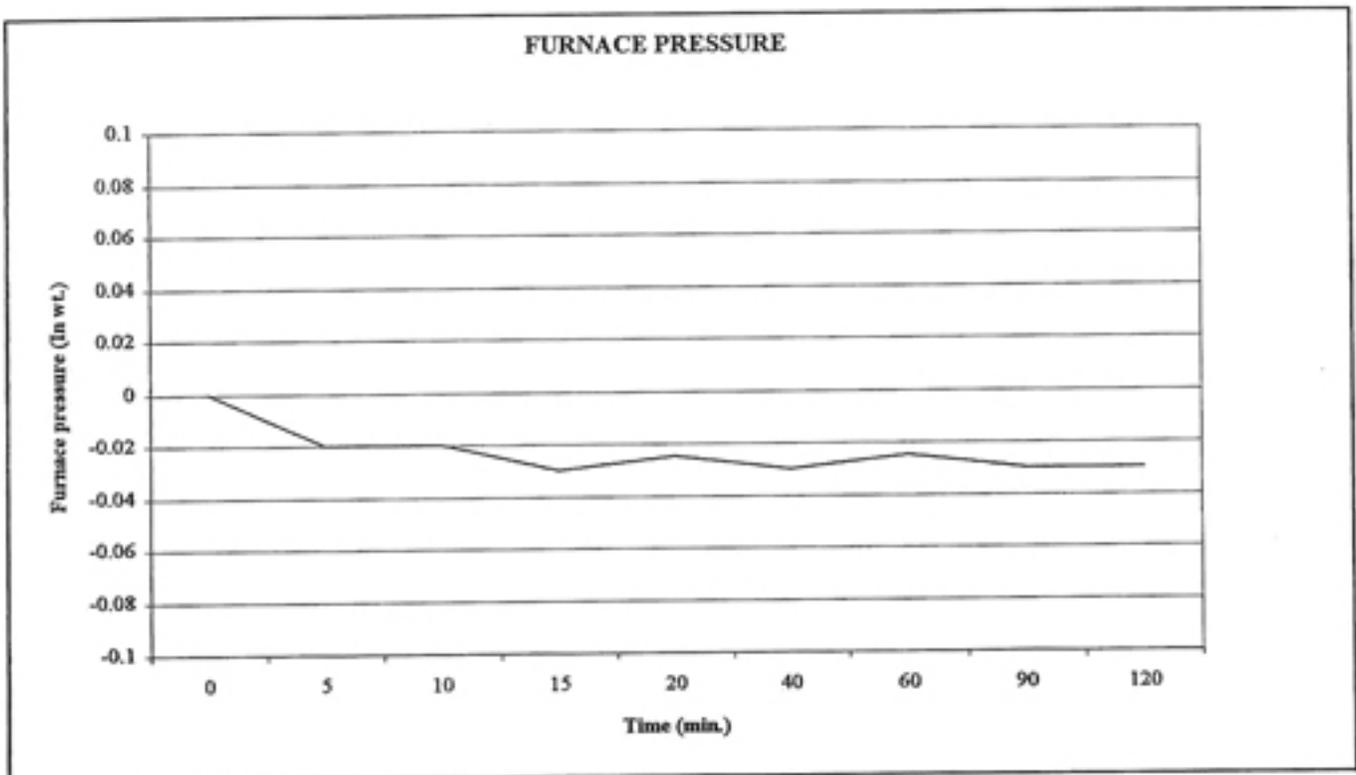
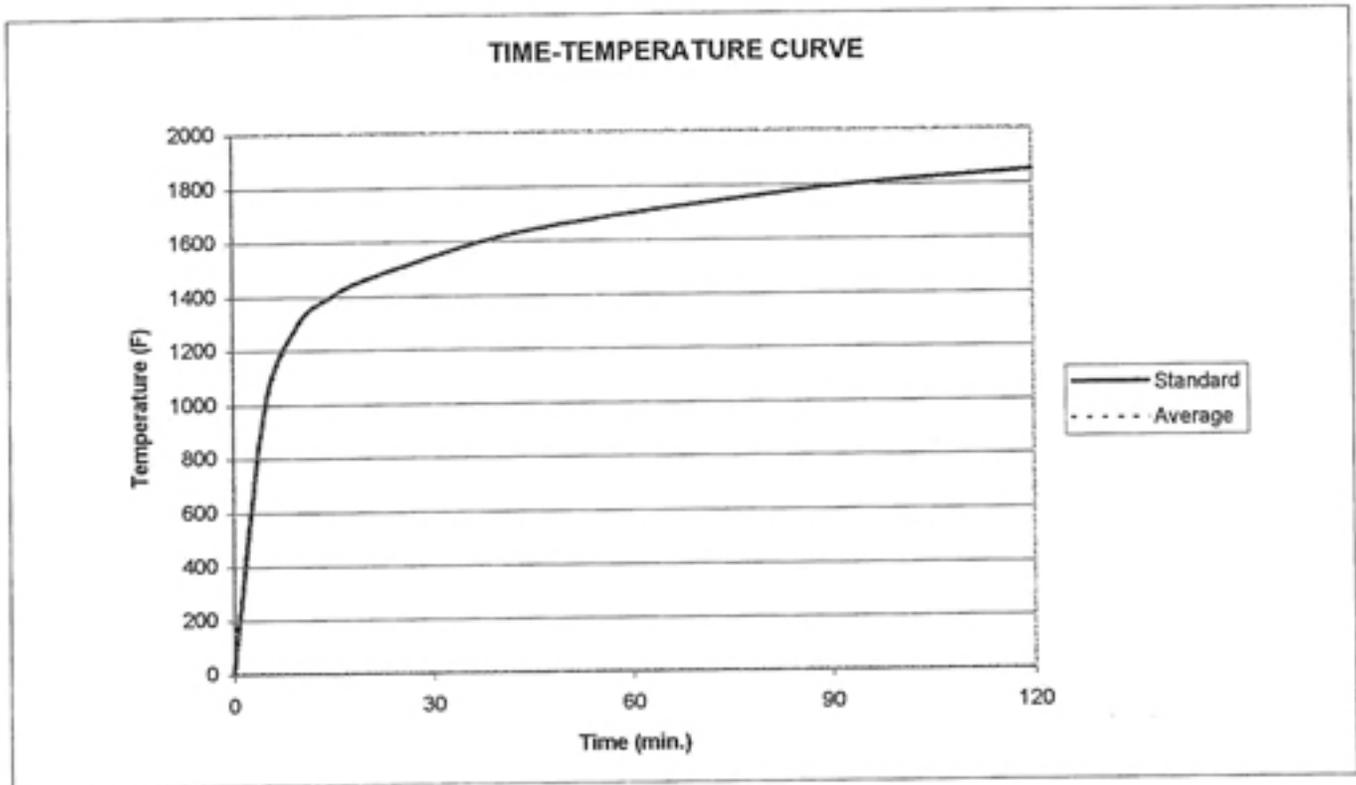
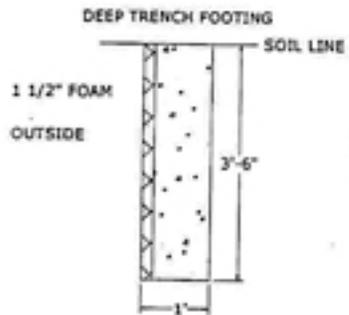
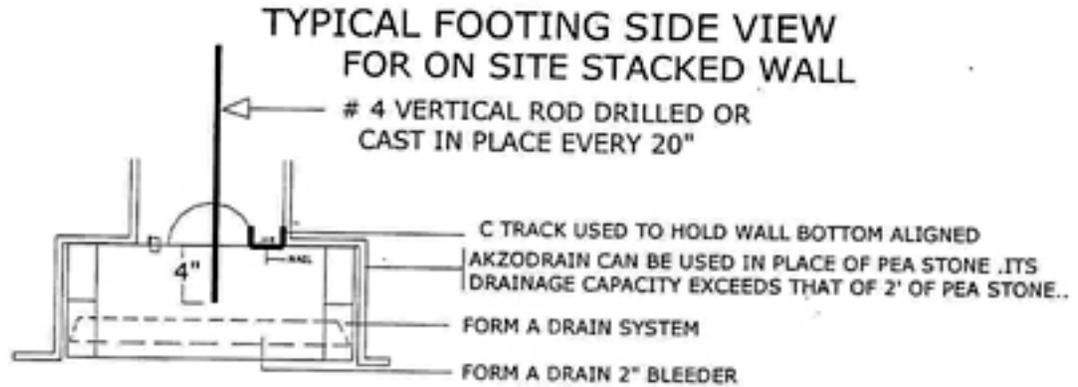


FIGURE A: FOOTING WITH C-TRACK



USE WITH PANEL WALLS

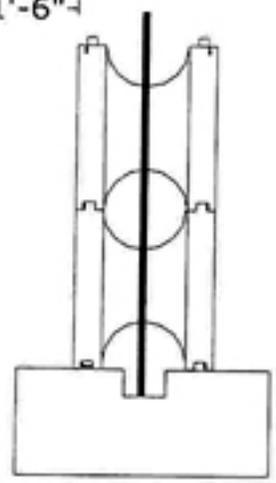
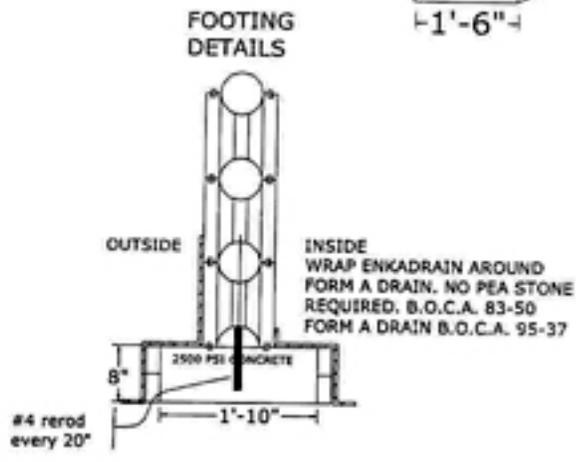
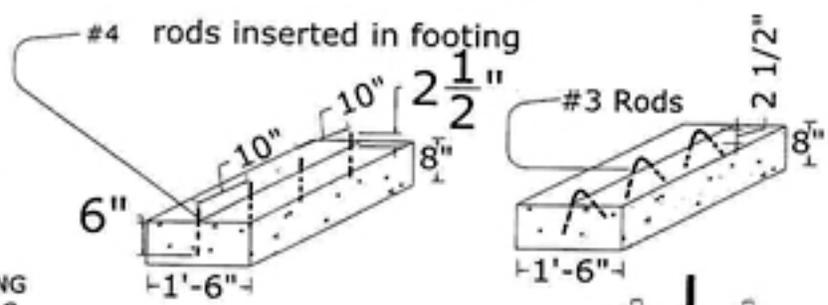


TABLE 1. UNEXPOSED SURFACE TEMPERATURE RISE

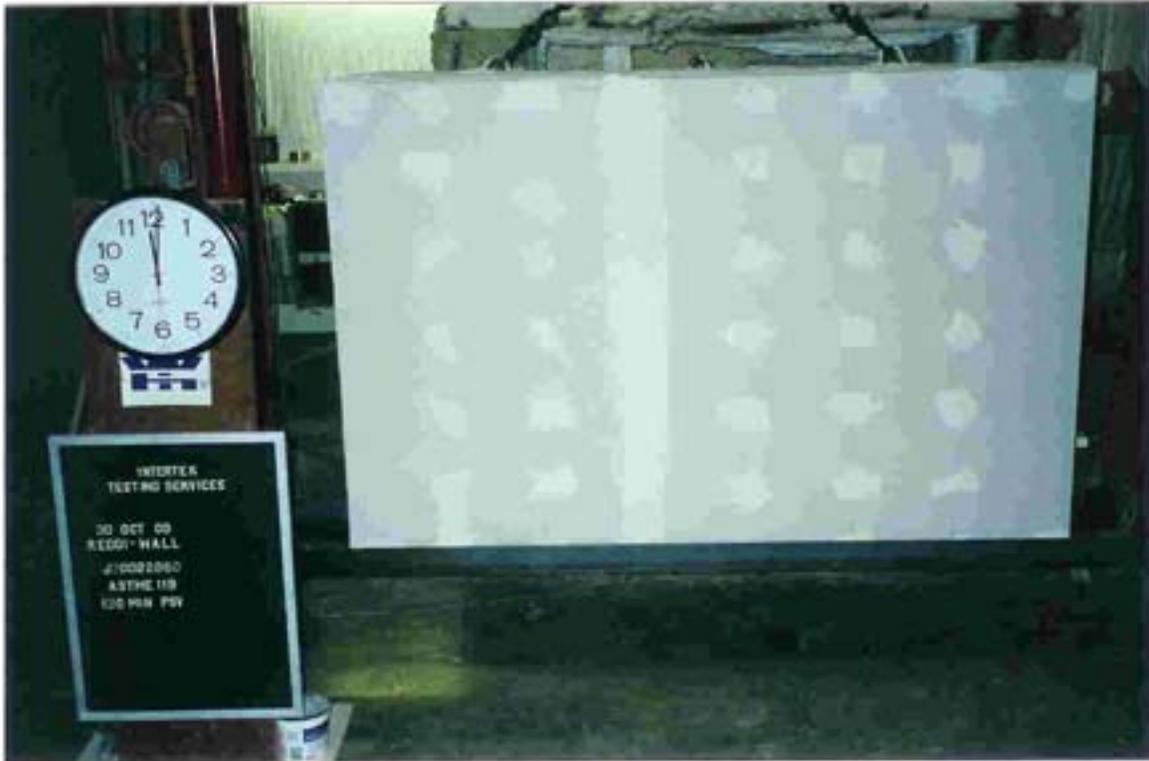
Ambient temperature = 62 °F
Thermocouple Location

<u>Time(min)</u>	<u>#1</u>	<u>#2</u>	<u>#3</u>
0	2° F	2° F	2° F
10	3° F	3° F	2° F
20	3° F	3° F	3° F
30	4° F	3° F	3° F
60	5° F	4° F	4° F
90	6° F	6° F	6° F
120	7° F	8° F	7° F

Note: #1: In open field, top right hand corner.
#2: On tape gypsum panel joint, center of assembly.
#3: On steel reinforcing stud, lower left corner.

PHOTOGRAPHS

BEFORE TEST



FIRE ENDURANCE



AFTER HOSE STREAM TEST

