sherwood
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products

DOE/R5/10246-1

MASTER

BOX 48, WAVERLY, OHIO 45690

PHONE: (614) 947-2755 or 947-4779

SOLAR KILN DEMONSTRATION PROJECT

Semi-Annual Progress Report

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The Solar Kiln Demonstration Project was funded by the Department of Energy effective September 1, 1980. Activities completed or initiated during the reporting period September 1, 1980 through February 27, 1981 are as follows:

Design Phase

Preliminary design work was completed during the reporting period. Dr. Paul S. Hoover and Mr. David Panich, Registered Architect, consulted with project staff to develop the design of the solar kiln. The most interesting activity during this period was computer modeling performed by Dr. Hoover. Dr. Hoover developed a program whereby the performance of the solar kiln could be carefully evaluated by inputting hour by hour weather data and evaluating the results. This allowed us to study a number of design options under consideration. These options included collector angle, insulation values of the various surfaces, single versus double glazing, collector thickness, ventilation rates, collector area to board feet of lumber ratios, etc. The modeling

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program verified a number of preliminary design decisions made prior to the development of the modeling program.

Our design work in broad terms also verified information obtained during a site visit with Dr. Gene Wengert of the Virginia Polytechnic Institute. Dr. Wengert has been working with small solar kilns for a number of years and provided us with a variety of "rules of thumb" for solar kilns.

We anticipate the modeling program will be most useful to us during the actual operation of the kiln. We will be able to simulate drying runs while inputting weather data. This should allow us to learn a great deal about the drying process prior to and during the operation of the kiln.

Overall, the design work verifies the original projections in our proposal submission and we anticipate the solar kiln will perform as expected.

Submission of construction plans to the State of Ohio Department of Industrial Relations will occur in late March or early April. Construction will follow soon thereafter. This puts us approximately one month behind schedule but should not pose a threat to the completion of the project.

Site Development

Site development work was initiated during the late fall of 1980. This work has been slightly more expensive and more time consuming than anticipated. A problem under consideration is that soil analysis indicates a high percentage of moisture

content. The load bearing potential of the soil is being studied and the possibility of a sub surface drainage requirement exists. This activity will be undertaken if necessary. This also raises the possibility that cost sharing by Sherwood Forest Products may need to be increased.

Material Acquisition

Some materials for the project have been acquired. In particular local lumber products which will be used during construction have been acquired in order that the material may be kiln dried and ready for use by the time construction begins.

General

We feel the project is within the parameters of the original proposal submission. There is perhaps a one month delay in the beginning of the construction phase. Design work is completed and leads us to believe that the kiln will perform as well as or better than anticipated.

for SHERWOOD FOREST PRODUCTS CORP.
U.S. ROUTE 23 NORTH
WAVERLY, OHIO

INDEX of DRAWINGS

1. SITE PLAN and TITLE
2. FOUNDATION PLAN and FLOOR PLAN
3. FRAMING PLAN and STRUCT. SECTIONS
- 4.

FOUNDATION and SLAB PLAN

1/8" = 1'-0"

1 GRADE BEAM
2 3/4" = 1'-0" SEE 4/2 FOR MATERIALS NOT INDICATED

2 GRADE BM/FOOT WALL
2 3/4" = 1'-0" SEE 4/2 FOR MATERIALS NOT INDICATED

3 COLUMN FOOTING
2 3/4" = 1'-0" SEE 4/2 FOR MATERIALS NOT INDICATED

4 SLAB EDGE
2 3/4" = 1'-0"

FLOOR PLAN

1/8" = 1'-0"

GENERAL NOTES:

1. ALL FOOTINGS TO BE MIN. 2'-0" BELOW FIN. GRADE OR AS REQ'D TO BE ON UNDISTURBED SOIL
2. CONCRETE FOR FOOTINGS AND SLABS: 3500 PSI (3/2 BREA MIN) W/ 2" MIN. SLUMP AND 4" MAX. SLUMP

A
B
STRUCTURAL SECTION
 $\frac{1}{8}'' = 1'-0''$

B
3
STRUCTURAL SECTION

WEST ELEVATION
1/8" = 1' 0"

SOUTH ELEVATION
1/8" = 1' 0"

EAST ELEVATION
1/8" = 1' 0"

NORTH ELEVATION
1/8" = 1' 0"