

COMPARISON OF THE DIFFERENCE BETWEEN ESTIMATED AND ACTUAL LABOR HOURS ON 2 HOUSES
DUE PRIMARILY TO EFFECT OF INCLEMENT WEATHER

Operation description	1,300-square-foot house started in January		1,600-square-foot house started in April	
	Man-hours		Man-hours	
	Estimated	Actual	Estimated	Actual
Rough grading.....	23	53	50	58
Restaking.....	2	10	2	2
Weather labor ¹	10	62	12	2
Dig crawl space, pads and piers.....	6	18	15	11
Set and pour foundation walls, pads, and piers.....	12	28	35	37
Backfill foundation.....	11	40	11	9
Insulate foundation, lay vapor barrier, set beams.....	9	15	10	7
Total.....	73	226	135	126
Difference.....		+153		-9

¹ Weather labor is time allowed for items such as breaking frost, excavating mud and replacing with sand, setting up heaters, covering the site to thaw frozen ground prior to foundation construction, covering concrete against freezing, plowing snow, extracting equipment from mud, and related items.

The builder states that the difference in labor time between estimated and actual is the result of the effect of bad weather in the case of the house started in January. For the house started in January, mud, rain, snow, and frost increased labor time by 153 man hours. At the builder's average cost of \$5.50 an hour including pension, welfare, insurance, social security, unemployment compensation, and related fringe costs, this amounts to a little over \$840.00. The difference between estimated and actual hours for the house started in April for the items set forth above is minus 9 man hours which is not consequential and falls within the estimating tolerance. The house started in late January referred to in the table, represents nearly the extreme extra weather-caused labor for this builder. Three of his other similar homes started in mid and late March had extra weather-related times for the operations noted in the table of 37, 62, and 77 man hours. During the past twenty years this builder has developed a number of anti-bad-weather building methods. He also has alternate labor plans for inclement weather including a shop in which he fabricates components and can "store" labor. It is fair to say that his extra labor hours experience represents advance practice for his climate.

RESEARCH TO REDUCE THE EFFECT OF WEATHER

For the past 13 years, the National Association of Home Builders through its Research Institute and now the NAHB Research Foundation, Inc., have been designing and building research homes. For each such home, certain research objectives are established. For each of the 7 research house projects, one of the objectives has been to reduce the effect of weather. For the first 4 dwellings, panels and components were developed to allow the houses to be "closed in" faster to minimize the effect of weather. Today the state of the art is such that except during extreme weather conditions, builders can "close in" a dwelling in one or two days.

In our fifth research home, we used components, developed an all-weather foundation system, and utilized prefinished exterior materials. This home was started during the winter, and the ground was frozen. Pier holes were dug with a post hole digger attached to the back of a small tractor. The light gage steel foundation frame, beams and columns were set and suspended over the pier holes and a small pad of concrete was poured (below frost line) into the bottom of each pier. The next day temporary supports were removed, and construction proceeded