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HOW LONG TO ERECT A JOB SHACK?

ANALYZED

BY

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Truck loaded with prefabricated panels for walls and roof arrives at site where D.B.R. held time studies on erection. Panel and wall panels are 4 ft. wide and either 10 or 11 ft. long. Longest rafters are 20 ft.

How long to erect a job shack?

Division of Building Research records time it takes crews to erect and dismantle Army-type prefabricated job shacks.

One of the problems of the contractor in all branches of construction is the provision of his office accommodation for the job and allied temporary buildings. It is a usual requirement of contract specifications that the contractor shall provide also similar accommodation for the job representatives of architects and engineers.

These temporary buildings are usually necessary right at the outset of jobs. All too often they are rushed up because of this urgency without much preliminary study or planning. Not infrequently the final cost is greater than that originally contemplated and little or no salvage return is obtained.

For smaller jobs there has developed the very convenient practice of utilising old buses or large trailers for providing this temporary accommodation. The use of such mobile buildings is strictly limited to small jobs so that the problem of providing necessary temporary accommodation for larger jobs still awaits a convenient solution.

The Division of Building Research of the National Research Council faced a somewhat similar problem at the start of its operations ten years ago. It had no building to use and the accommodation kindly made available for it in buildings of the Division of Mechanical Engineering, at the Montreal Road Laboratories of the Council, at the east outskirts of Ottawa, was soon utilised to the full.

At about this time the Canadian Army was experimenting with prefabricated wooden hut buildings designed for general military use and so fabricated that they could be erected and dismantled easily and with little risk of damage. The Division of Building Research was able to procure three of the Army prefabricated huts Mark II.

Appreciating the corresponding problem of general contractors, and at the suggestion of Mr. Alan C. Ross, of Ross Meagher Ltd., the Division took careful records of the man hours involved in erecting these buildings and in dismantling them when the time came for them to be removed or moved from their locations. The two permanent huts have now been placed in what will be a fixed position. This paper gives a summary of the records thus obtained in the hope that they will be of service to general contractors as showing the economy to be gained by the use of this type of prefabricated building for the provision of temporary accommodation.

The huts are formed by assembling standard panels 4 ft. wide and ranging in length from 10 ft. wall panels to 11 ft. roof panels, easily handled by 2 men. The longest components are rafters and roof beams 20 ft. long. All joints are either nailed, screwed or bolted requiring only one size of spanner, a hammer and a screwdriver.

The accompanying table is a summary of most

careful records taken of the time required for the erection and dismantling of the three huts. The work was done by men on the staff of the Plant Engineering Division of the National Research Council. Although trained craftsmen, they had no previous experience with this type of building. The man hours tabulated under "Erection" include all operations starting with the removal of the components from the stacks into which they were placed on delivery, up to the complete erection of the building in a state ready for the installation of services. The "Dismantling" man hours include all operations down to the stacking of the individual components, the work starting after services had been removed from the building.

Foundations varied with the site and the use to which the huts were to be put, but the final erection of the two permanent buildings was on a plain concrete slab. Variation in foundation type did not appear to affect the erection time after the floor had been completed.

In some cases specially made garage doors were required for storage access, and in the case of M13D the restricted site area dictated an L-shape instead of the regular rectangular shape. In order to give a more representative comparison of man hours and building area, the extra work required in these particular instances has not been recorded, although the custom made connection between the wings of the L-shaped building added almost 20 man hours.

No serious difficulty was encountered in any of the operations, despite the inexperience of the workmen. It was noted that some of the panels were not as "square" as desired and did not line up as expected. This minor distortion of the roof panels in particular, accentuated in extremely cold weather, emphasized the importance of the caulking operation required to waterproof the roof joints. Some of the leaks that occurred made it difficult to separate the rafters from the wall panels because the wall joints had become wet. In only one case was it found necessary to jack the rafters out of their wall slots and to use screw clamps for those more solidly wedged.

The only modification made to these buildings during their use by the Division of Building Research throughout the period of 8 years has been the introduction of small steel angle brackets connecting the roof panels to the rafters near the walls, purely as a precaution against lifting of the roof panels in wind gusts over 60 mph. When the two permanent buildings were re-erected on their concrete foundation a layer of rolled felt roofing was installed over the original roof panels to avoid the rain leaks previously mentioned.

The Division's use of prefabricated buildings represents just the type of service that would be required by contractors. It is therefore hoped that this record of actual service use and actual erection and dismantling times will prove of assistance to contractors in Canada faced with the problem of providing temporary accommodation on their construction jobs. *By A. W. Smith and R. F. Legget, Division of Building Research, N.R.C., Ottawa.* **END**

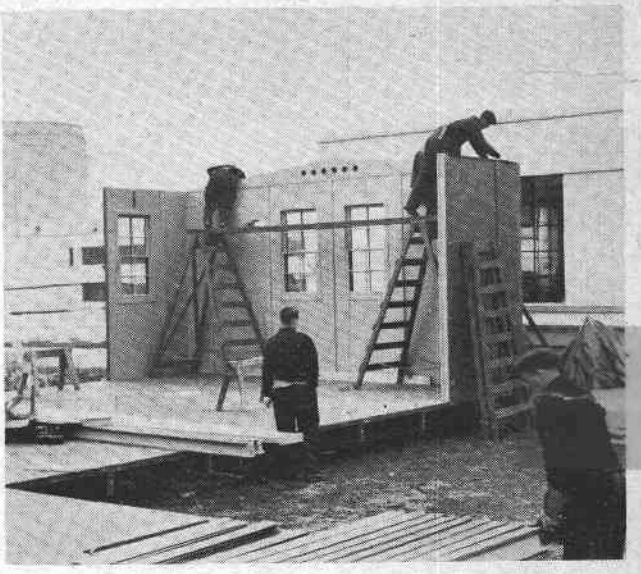
TIME FOR ERECTION

BUILDING	WALLS	RAFTERS	ROOF	MISC.	TOTAL	FLOOR etc.
M13D*	33.6	28.3	22.2	4.0	88.1	Concrete
M13F	← 85 →				85.0	88
No. of Men	4	2–4	6–11	2–3	——	

TIME FOR DISMANTLING

BUILDING	ROOF	WALLS	RAFTERS	FLOOR etc.	MISC.	TOTAL
M13D	11.8	24.4	9.5	16.5	2.5	64.7
M13E	7.8	—— 29.0 ——		19.0	1.7	57.5
M13F	18.7	—— 41.2 ——		7.9	1.8	69.6
No. of Men	6–14	6–8		2–6	2–4	—

ALL RECORDS IN MAN-HOURS
ALL BUILDINGS 20 FT. X 84 FT.
*but 13D arranged as an 'L' 20 ft. by 48 ft. and 20 ft. by 32 ft.)
(**Misc. Item** includes entrances, all skirtings, facing, and flashings but excludes roof caulking, painting and all interior work.



Prefabricated parts for job shack fit together quickly. Each panel or rafter can be handled by two men.

Distortion of roof panels emphasized importance of caulking. Shack was ready for use in 88 man-hours.