

Plywood Rigid Frame Structures are Versatile and Quickly Built

Simplicity of construction and versatility of use are the reasons for the widespread popularity of plywood rigid frame buildings. Designed and developed in 1953 by engineers at the Council of Forest Industries of British Columbia, these economical structures are now in use throughout North America and Europe for community centres, churches, vacation cabins, light industrial plants as well as for farm and storage buildings.

This 30.5m long rigid frame barn constructed near Nanaimo, B.C. on the grounds of the Vancouver Island Exhibition Association was built in two weeks for less than \$8000. It is the third rigid frame building erected by the

Association, which uses them to house show animals during its annual two week fair in August. 'We like the rigid frame structures because we can put them up in a hurry for a relatively low price', says Lloyd Cook, President of the Association. 'The open interior provides ideal space for our purposes, and we've found them to be extremely efficient and economical structures'.

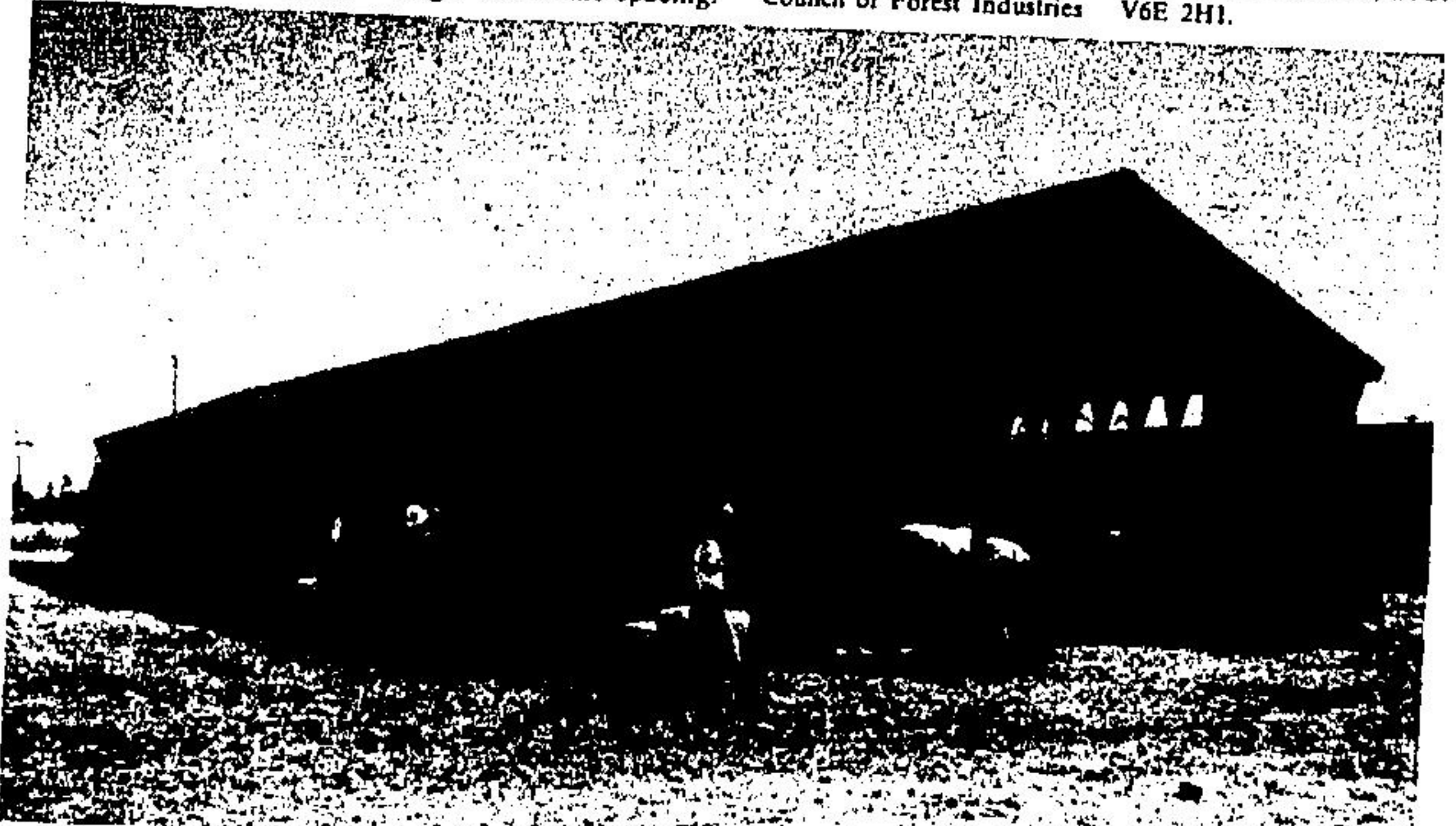
A plywood rigid frame is essentially a three hinged arch formed by four straight pieces of lumber joined at the crown and haunches by nailed COFI EXTERIOR Douglas fir gussets. Once assembled, the frames become rigid load carrying structural units. And when erected and sheathed with

plywood, they result in one of the most economical clear span structures available. Many different architectural

approaches to the rigid frame building are possible by varying the shape, span height and frame spacing.

Further information on rigid frame design and construction is available from the Council of Forest Industries

of British Columbia, 1500-1055 West Hastings Street, Vancouver, B.C. V6E 2H1.



An ideal multi-purpose structure because of its clear span interior and flexible design, rigid frame buildings are simple and economical to build. The Vancouver Island Exhibition Association erected this 30.5 metre rigid frame animal show barn in less than two weeks.

Plywood Manufacture

Over 85% of all Canadian plywood is produced in British Columbia whose vast forests contain over half of Canada's merchantable timber. Plywood is made from peeler logs, usually the biggest and best timber in a stand. At one time Douglas fir peelers were used exclusively, now, as production techniques have improved, many other species are also used. In addition to fir, other specially selected coniferous species such as hemlock, true fir, spruce and pine are peeled and make up nearly one fifth of the softwood logs used for plywood manufacturing in British Columbia.

These high quality logs destined for plywood production are cut in the woods to multiples of the finished plywood panel length plus a cutting allowance. The logs are yarded to the loading area where they are transported to tidewater on giant trucks and dumped at the sorting ground. They are sorted by grade and species into boom formations and towed to a plywood mill where manufacture begins.

The logs are barked, cut into peeler blocks and then positioned on a lathe where a continuous ribbon of veneer is peeled off.

Semi-automatic clippers cut the veneer into various widths. The operator can also set the clipper blades to manually remove defective pieces of veneer.

Clipped veneer is dried in steam or gas heated ovens to a moisture content of about 5%. After drying, the veneer is graded and sorted into face pieces, cross bands and centres. The best veneers are used for face pieces on the outside of the plywood panels; cross bands, the pieces of veneer immediately beneath the face and back, are made up of random width veneer; the centre plies form the core of the panel.

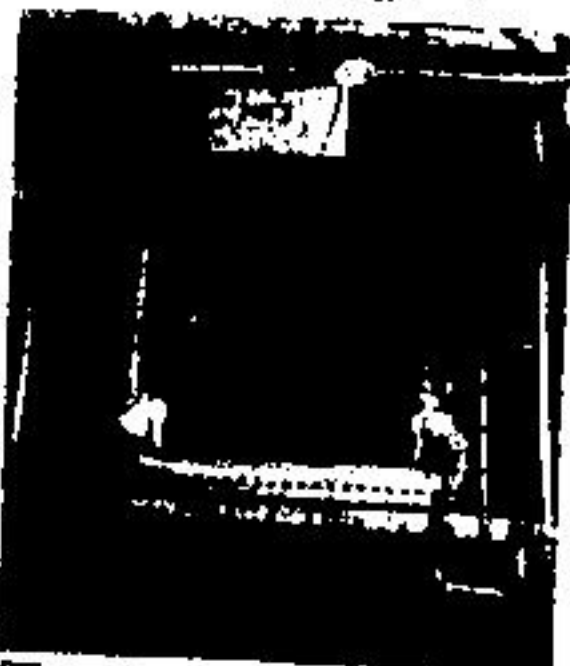
At the glue spreader and lay-up table, veneer sandwiches are prepared using phenol formaldehyde resin glue. They are loaded into the hot press which subjects the panels to a temperature of 150°C and a pressure of 1.38 mega pascals (200psi). With this combination of heat, pressure and waterproof glue, the veneer lay-ups become permanently bonded into

plywood.

All plywood produced by member mills of the Council of Forest Industries of British Columbia is Quality Certified. It is stamped with the industry's registered certification mark before packaging and shipping. The mark, COFI EXTERIOR, means that the plywood is bonded with waterproof glue and guarantees that the plywood bearing it has been manufactured under strict quality control and meets the specifications of the Canadian Standards Association.



The phenol formaldehyde resin glue is applied to sheets of veneer that have been peeled from the log.



The hot press cures the phenol formaldehyde resin under heat and pressure to form a completely waterproof glue bond.

The development of a waterproof glue in the 1930's sparked a technological revolution in the manufacture and use of plywood. This glue, a synthetic resin of phenol formaldehyde and alkali, is fully resistant to extremes of moisture, heat and cold. All COFI EXTERIOR plywood manufactured in British Columbia uses this waterproof adhesive.

The ten plywood producing member companies of the Council of Forest Industries of British Columbia (COFI), operate 18 plywood mills in the Vancouver area, on Vancouver Island and in the interior of the province. COFI's members manufacture over 85% of Canada's softwood plywood.

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