

Building Construction in Nagaland

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SYNOPSIS

The building practices in the eastern frontier of our country, particularly in the hilly region of Nagaland State, are very much different with the traditional one, adopted in the other parts of the plains. As such, the peoples in plains are quite unfamiliar; as regards to their design, use of material and the procedure of construction. The paper describes briefly about the type of houses, which were normally adopted by the P.W.D., their specifications, material used and the construction procedure in the previous decade.

INTRODUCTION

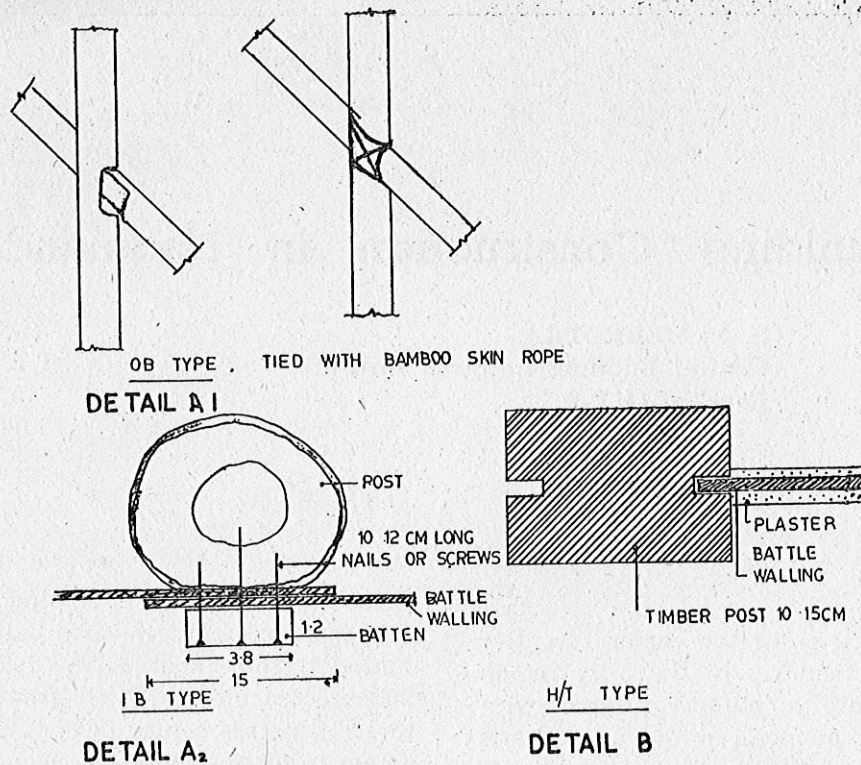
After independence the eastern frontiers of our country have gained much strategic importance, and hence the construction activities have been considerably increased in that region. However, peoples in plains are not very much familiar about the type of construction in that area. An attempt therefore has been made in this article to describe briefly various building construction methods adopted in the 'Nagaland', which are quite similar to the types of building construction in hills of Assam and other eastern frontier. The description does not, however, include the houses of 'tribals' and is restricted mainly to the buildings constructed by the Government in the urban areas. Broadly, they may be classified into three categories, namely, (i) Ordinary Basha (O/B) type, (ii) Improved Basha (I/B) type, and (iii) Hill (H/T) type, which are mainly in single storey construction.

TYPES OF HOUSES CONSTRUCTED

(i) Ordinary Basha Type

It is for a temporary nature of construction required for the houses to be used for shorter

period. It consists of sloping thatch roof and frame made of jungle wood bally post 102 to 153 mm dia. and about 3.657 to 5.822 metres long and erected on a levelled ground at about 1.219 to 1.524 metres centre to centre and are fixed in 61 cm to 91 cm (approx.) deep holes, dug at required spacing after applying a coat of hot bitumen (Fig. 1). The bally posts are kept in position by fixing horizontal cross bally bracings of 76 mm to 102 mm in dia. The first bracing is provided at 228 mm from the ground level, the other at about 1 metre c/c from the ground level member and the last one at the top of bally post, coinciding with the ceiling height. They are joined with posts by cutting the rebate making of lap joint and then tied by bamboo rassi (prepared from the bamboo skin) or fixed with nails (Detail A₁, Fig. 1). The width of the individual room or the whole building commonly vary to maximum 6.096 metres. The roofs are sloping either of king or queen post trusses depending upon span of the building and are made of ballies of thickness, varying from 76 to 102 mm dia. The purlin and other members, also of wooden ballies are joined in the same manner as described above. The roof is covered with palm leaves, several placed, one above the other to form a 92 to 152 mm thick thatch, tied over the frame of split bamboo with the help of bamboo rassi (Fig. 1). The walling is made out of splitted bamboos knitted in the form of mat called 'battle walling', prepared in many pieces and erected vertically on the other face of the frame work, with the joints overlapped for about 152 mm and is tied with help of bamboo rassi to the frame (Detail A₂, Fig. 1). The opening for the doors, windows and ventilators are cut out from these battle walling. The door and



DETAILS

Fig 1.

window shutters for this type of houses are also prepared from split bamboo knitted battle walling frames with half bamboo and tied to the walling with the help of bamboo rassi through which it operates. Sometimes wooden doors and windows are also provided. The ceiling is of palm leaf mat fixed at the bottom of trusses with the help of nails. The floor is prepared by filling the fresh earth mixed with bhusa and consolidating neatly finished with gobri wash. Sometimes split bamboo knitted floor similar to that of walling is also provided over this earth floor. The height of the ceiling is generally kept from 2.436 to 3.048 metres, slightly lower due to heavy winds and storms prevailing in that area. Baths are provided in the main house and the kitchen is also constructed with the same specification but a little away from the main house. Dry pit type latrines are provided away from the house. These houses are constructed almost with the help of locally available materials, hence the cost differs from place to place. However, an approximate cost of Rs. 50 to 60/- per sq. metre was prevailing in the year 1960 in that area.

(ii) Improved Basha Type

This is an improvement over the ordinary basha type house. The structure is of jungle wood bally post frame, similar as in the case of O/B type houses with the difference that larger diameter and uniform size ballies are used. All the members of the structure are joined with nails and screws, rectangular pannel of the walling is made of tightly knitted smaller size and finer quality splitted bamboo with the smooth part of bamboo's facing outside (Detail A₂, Fig. 1). The wall pannels are erected vertically with over-lapped joints about 152 mm and fixed to the bally post by means of 38 x 12 mm wooden battens and 101 to 126 mm long nails over the external face of the bally post. The roofing material used is mostly CGI sheets fixed over truss with the help of J hooks, coach screw, etc. (Fig. 2). The ceiling is provided either from bamboo mat or hession cloth fixed over the ceiling joists with the help of wooden battens and nails. The door and window frames and shutters are from sawn seasoned timber, which is available in abundance in this area and provided with required fitting. The window frame is supported

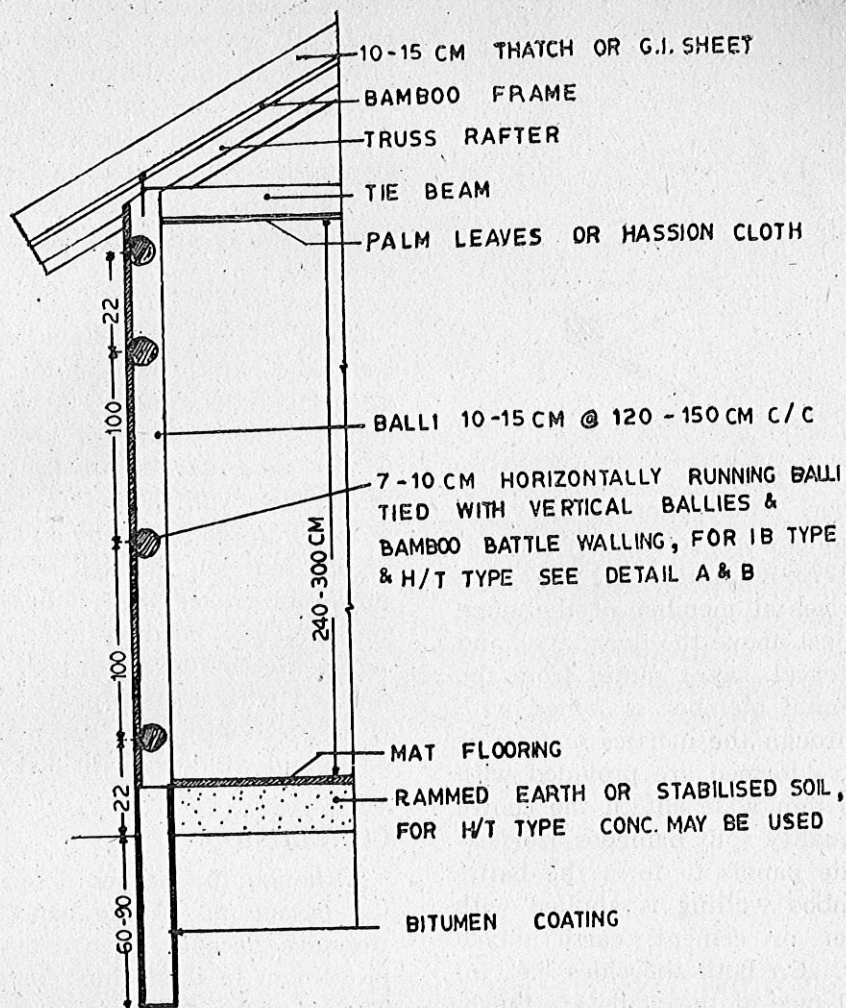


Fig. 2

on the horizontal bally member and the required opening is cut out of the bamboo battle walls. The door and window frames are fixed with the help of beading and nails over the walling. The floor is of earth mixed with bhusa, consolidated in layers and properly rammed and smoothed with gobri wash. In some houses stabilised soil cement floors or cement concrete floor is also provided. An approximate rate of Rs. 70 to 80 per sq. m. was prevailing in 1960.

(iii) Hill Type

This is classified as a building of permanent nature, generally adopted by the Government for all permanent construction similar to the type adopted in the plains of Assam and other eastern region where bamboo is available in abundance subject to some local adjustment in specifications. The detailed specifications are given in Assam PWD specification, however, a

brief description is given below. The frame work is of sawn timber, the vertical post varying from 101 to 152 mm sq. depending upon the span of the building fixed over the cement concrete pillars of 228 to 305 mm sq. in section and about 61 to 76 cm high from the ground level, and taken 91 to 121 cm below ground level depending upon the site conditions (Fig. 3). The spacing of pillars is 1.22 to 1.83 metre c/c depending upon the spans. The concrete pillars are cast with the help of wooden shuttering, along with the two M.S. flats of 38 x 3 mm having 2 to 3 holes; embedded in them, the wooden posts are then brought in vertical position and fixed tightly with the help of nuts and bolts. The floor joists are also laid over these concrete pillars whenever needed and fixed between the M.S. flats alongwith the vertical posts, over which wooden floor with 152 mm wide, 18 to 25 mm thick planks with lap joints are laid over these floor joists. The frame work is of good quality

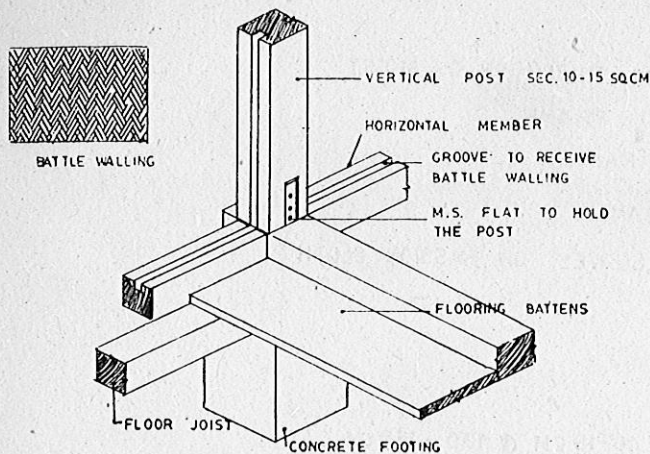


Fig. 3

seasoned sawn timber. The section of the vertical post for the frame work commonly adopted is rectangular of 127 x 76 mm or 101 x 152 mm divided by the horizontal member of the same section. First one just above the floor level, and others at equal interval, say 1 metre from the lowest. The horizontal member is joined with the vertical post through the mortice and tenon joint. The panels so formed are provided with 12 mm deep and 6 mm wide slit in the centre in which the fine quality split bamboos are fastened vertical in the panels to form the battle walling. This bamboo walling is applied with cement-sand plaster or cement, earth mixed with bhusa plaster. On both the sides, i.e., internal and external face of the walls are finished with plaster and whitewash. The ceiling is provided of hessian cloth, tightly with the help of wooden beading over the ceiling joist, provided along with tie beam. The roof is sloping with CGI sheets fixed over the roof truss made out of sawn timber. With normal timber joints of the roof truss and other members with M.S. flats fastening strap nuts and bolts etc. The sheets are fixed with the help of 'J' hooks, coach screw bitumen washer etc. In addition to the usual fittings the CGI sheets are provided with wind tie and eve boards. Kitchens, which are situated away from the main house are provided with a standard Assam type chullah and smoke outlet with a raised double roofing along the length of ridge. Kitchen block is connected with the main building along with a covered corridor.

Doors are usually 1/3rd panel and 2/3rd glazed and windows are fully glazed with guard bars with all necessary fittings as usual. Latrines provided are mostly pit types i.e., about 3 to 4 metres deep and 200 mm square and provided with the wooden platform and plain GI sheet, sloping pan, as no sewage system exists in most of the towns. In few major towns, where water supply has been completed, W.Cs. have been provided.

Some of the buildings are provided with cement concrete flooring for which plinth walls all around the centre of the pillars are erected and flooring is laid as usual. In some areas where good quality of timber is available in plenty, the walling and the ceiling are provided with 228 to 304 mm wide and 25 mm thick planks of different length fixed over the framework of the building and the joints covered with 25 x 12 mm wooden beading fixed with nails. These walls are whitewashed and the wood work is finished with enamel paints. The G.I. sheet roof is painted with red oxide or green paint and doors and windows with distinct shade of paints.

CONCLUSION

Although the houses described in the foregoing paragraphs of the paper were built in the previous decade, further development and improvement in them must have been taken place. They may be still proving to be useful and economical, as they must have during all these years stood the test of weather conditions as well as proved quite comfortable to the inhabitants. These methods are simple in construction and easily adoptable as they are based on the local practice, and there is a good scope of further development. Hill type houses give a good aesthetic appearance.

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