



REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS
OFFICE OF THE SECRETARY
Manila

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DEPARTMENT ORDER)
NO. **51**)
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SUBJECT: TYPHOON RESISTANT
SCHOOLBUILDINGS AND
OTHER STRUCTURES

To All Bureau Directors,
Regional Directors,
District Engineers,
PMO's and
all concerned

Reports on typhoon damaged schoolbuildings and other structures attribute several causes of failure to the following:

1. Poor siting - exposure of buildings to impact of severe winds
2. Design deficiency - as in the case of the Marcos Pre-Fab types wherein rafters were not provided with struts and purlins without sag rods.
3. Construction deficiency - connection details shown on plans were not implemented in actual construction.
4. Lack of regular maintenance - termite infestation, corrosion and clogging of drains.

In most cases roofs were blown off due to insufficient connection of purlins to trusses. Sometimes truss cross bracings were not provided, or anchorage of trusses to their supports were inadequate.

In view of the foregoing, the following measures must be undertaken so that damages to buildings during typhoons can be avoided:

- a) In locating new buildings take advantage of natural windbreaks such as rows of trees, hedges or hills which will reduce impact of severe winds.

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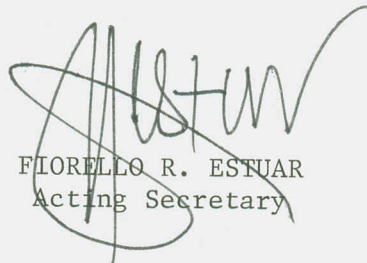
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- b) Buildings should be designed adequately to resist lateral/uplift forces taking into consideration bracings and anchorages. Standard plans as developed by the Bureau of Design, improving on some aspects of the ESF-Type 3-room schoolbuildings which have shown adequate resistance to typhoons, may be adopted for the schoolbuilding program.
- c) Construction supervision should be meticulous specially on concrete mix, anchorages, roof to purlin attachments following details and specifications.
- d) Periodic maintenance should be made with special attention to the structural integrity of the building, settlements, termite infestation, leaks, corrosions, etc. in order to prolong the serviceable life of the structures.

For your information, guidance and implementation.



FIORIELLO R. ESTUAR
Acting Secretary