NEW ZEALAND EARTH BUILDING STANDARDS

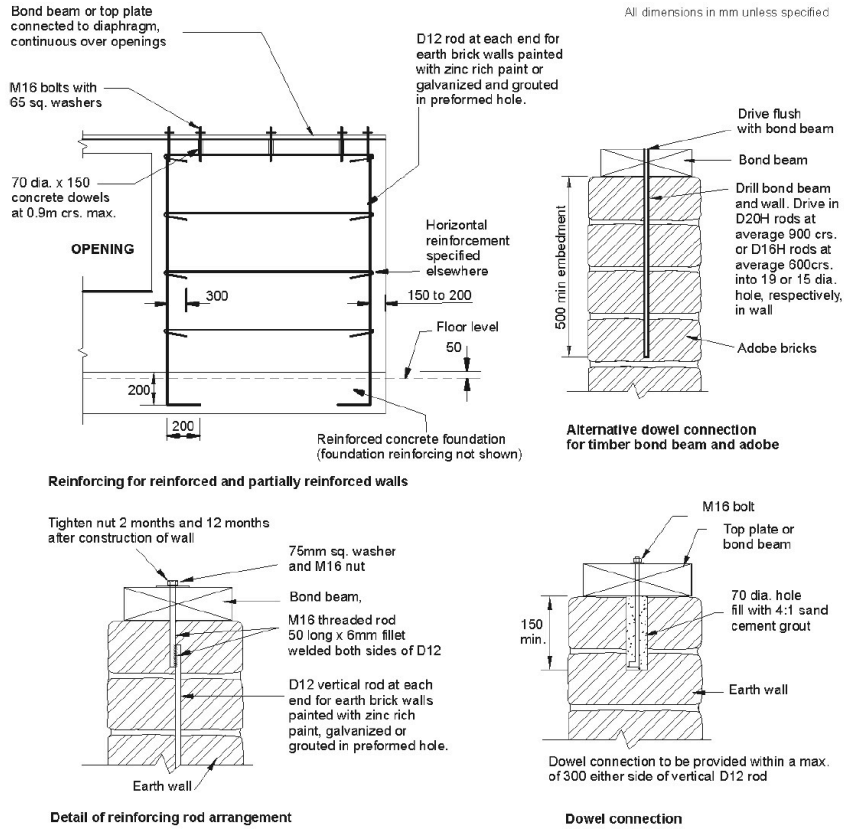
New Zealand has the most comprehensive earth building standards in the world. Development was finished in 1998 and is the result of cooperation between Standards New Zealand (SNZ) and a group of volunteer specialists knowledgable in the many facets of earth building. Using these NZS standards, experience has shown that safe and durable earth-wall structures can be designed and constructed. Such structures can be expected to withstand the natural forces of gravity, earthquakes, and extreme winds. These standards consists of three volumes.

NZS 4297 Engineering design of Earth Buildings,specifies design criteria, methodologies and performance aspects for earth wall buildings with wall heights limited to 6.5 m (21.3 ft.) and is intended for use by structural engineers.

NZS 4298 Materials and Workmanship for Earth Buildings defines the requirements to produce earth walls which, when designed in accordance with NZS 4297 or NZS 4299, will have the strength and durability to satisfy requirements of the New Zealand Building Code

NZS 4299 Earth Buildings Not Requiring Specific Design. In addition to New Zealand, these standards are used internationally and are cited by **ASTM E2392 in 2010 Standard Guide for design of Earth Wall Buildings**. This volume contains comprehensive earth wall construction details based on the best practice in New Zealand and Australia, The more significant failures observed in the Darfield earthquake would have been avoided if the construction details in the NZS 4299 standards had been followed.

Some of these typical details are shown below. It should be noted that these details while designed and drawn as metric based earth brick or block construction in New Zealand, can also be adapted to Imperial / US unit based cob construction. The unspecified horizontal reinforcing shown can be either polypropylene geogrid or steel used horizontally.



TYPICAL CONSTRUCTION DETAILS FROM NEW ZEALAND STANDARDS 4299