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<b>Abstract</b> : This is the final report of a Grant-in-Aid project of the Aeronautics Research and Development Board. The report contains details of the construction of two types of electroslag welding units. Using these, sound welds free from cracks, with smooth bead appearance and good side wall penetration have been obtained on plates of mild steel, a medium carbon pressure vessel steel, En 24 steel, an armour steel and an austenitic stainless steel. The microstructure and mechanical properties of the weldment and heat affected zone have been studied.			