

PART XIII: METAL CONNECTOR PLATES

13.1-GENERAL

13.1.1-General Provisions

Provisions for metal connector plates have been part of the Specification since the 1968 edition. Originally, plates which depended entirely on nails for lateral load transfer were required to be designed in accordance with the nail provisions of the Specification. The present procedure of allowing loads for such nailed plates to be based on either nail provisions or metal connector plate provisions was introduced in the 1977 edition.

13.1.2-Quality of Metal Connector Plates

ASTM Standard A446 has been the basis for the property requirements of galvanized sheet steel used in metal connector plates since provisions for this type of joint were introduced in 1968.

13.2-DESIGN VALUES FOR METAL CONNECTOR PLATES

13.2.1-Tests for Design Values

Basing the design value for a metal connector plate on the smaller of $1/1.6$ the test load at slip of 0.03 inches and $1/3$ the ultimate test load has been a provision since the 1968 edition. The ASTM D1761 test method includes provisions for metal connector plates which is a tooth holding lateral resistance test where two end-butteted wood members are joined by metal connector plates on both sides. The 0.03 inch slip of such a joint is equivalent to a slip of 0.015

inches in a joint made of a single wood center member and metal side members. If a linear load-slip relationship is assumed below the 0.03 inch slip level, the wood-to-metal joint slip at a load equivalent to $1/1.6$ of the load at 0.03 inch slip in the standard test is approximately 0.009 inches. However, $1/3$ the ultimate load often will represent a much lower load than that associated with $1/1.6$ the load at 0.03 inch slip and usually controls (69,174).

An alternate more comprehensive test method for tooth holding lateral resistance is given by the Truss Plate Institute (187). This national standard, in contrast to ASTM D1761, provides for testing perpendicular to grain, differentiates between gross versus net area testing, provides for testing metal connector plates embedded in the narrow face of the wood members, provides for the largest metal connector plate to be tested which will induce lateral tooth withdrawal failure, provides for a 7-14 day wait period to allow for fiber relaxation, and provides for matched specimen tests for partial plate embedment.

13.2.2-Different Species of Wood

In the 1986 and earlier editions, the results of tests on one species of lumber could be applied to all other species in the same fastener group. These fastener groups were defined in terms of specific gravity ranges (see Commentary for 12.3.1). The 1991 edition allows metal connector plate design values determined from test results for one species to be applied only to species having the same or higher specific gravity.