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## An experimental study of embedded connection for lightweight steel square tube filled with adhesives

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Recently, various types of steel connection technique has been developed, which aims to possess the multi-demands on steel structures. In this study, a new fitting connection technique for steel square tube is suggested, and this joint consists as follows; lightweight steel square tube is just embedded to steel connector, and an adhesive is filled to the clearance between each member as filler, and a pin is inserted as a fail-safe mechanism against the uplift of the column. The adhesives adopted on this connection are widely used to adhere nonstructural members such as tiles and marbles in Japanese architectural building field. The advantage of this connection is not only improvement of workability due to needless of bolting and welding but also the adjustment of the bending strength and rigidity by filling methods and materials. This study investigates the resistant mechanism subjected to bending experimentally. Herein, the loading test is conducted as parameters with the existence of adhesives, pin and loading path. From test results, it is confirmed that the bending strength and rigidity are improved by the filling effect of adhesives, and the maximum bending strength is enhanced by the resistance of a pin during the ultimate state. Furthermore, the stress diagram subjected to bending is investigated from the test results, and a kinematic model of this connection considering the exfoliations of adhesives is suggested. It can almost evaluate the strength of the test results well.

### Biography

Itsuki Yagi has completed his Bachelor of Engineering degree in 2016. He has been a Master's student at Tokyo University of Science and investigated about Steel Structural Engineering. In research activities, he submitted some papers to academic journals of architectural institute of Japan.

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