


Requests for Collaboration

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Research Interests	
<ul style="list-style-type: none">● Behavior of Concrete Filled Steel Tubular● Strengthening by Fiber Reinforced Cementitious Composite	
Creative Achievements in The Application of New and Existing Science and Technology	
<p>(1) Study on concrete-filled steel tubular members with extremely thin walled cross section aims to investigate experimentally mechanical characteristics of CFT beam under bending-shear loading test. Selected test parameters are shear span and width-to-thickness ratios, which are ranging from 1.0 to 2.0 and 62.5 to 200, respectively. As the results, experimental strength of the specimens with shear span ratio between 1.0 and 1.5 can be predicted by the accumulative strength being composed of RC deep beam and web steel plate.</p> <p>(2) Shear loading test has been conducted in order to establish shear strengthening design procedure to existing beam by DFRCC (Ductile Fiber Reinforced Cementitious Composite) U-shaped winding. Finite element nonlinear analysis has been also carried out to explain not only test results but observed significant phenomena as well. Through comparison with past studies including rebar anchorage, steel plate and reinforced fiber sheet strengthening technologies, it is presented that further more shear capacity increase can be assured by the present construction joint technique with water jet treatment to existing beam. Practical design equation is conclusively proposed focusing on additional shear capacity increase due to crack width control by DFRCC winding.</p>	
Technology (Product, Process, Device, Service etc.) That I Want to Request for Collaboration	
<ul style="list-style-type: none">● Connection method using concrete filled double skin tubular members● New fiber for fiber reinforced concrete	
A List of 5 Key Publications	
<ul style="list-style-type: none">• Kojiro Uenaka and <u>Hisao Tsunokake</u> : Concrete Filled Square Steel Tubular Deep Beam subjected to Bending-shear, Materials science, Engineering and Chemistry, EDP Sciences, Vol. 138, No. 02014, 8pages, 2017• Kojiro Uenaka and <u>Hisao Tsunokake</u> : Behavior of Concrete Filled Elliptical Steel Tubular Deep Beam under Bending-shear, Structures - Research Journal of The Institution of Structural Engineers, Elsevier, Vol. 10, pp. 89-95, 2017• <u>Hisao Tsunokake</u>, Satoshi Oya, and Hideyuki Kubo : Study on Shear Strengthening Effect of RC Beams Strengthened by DFRCC, Journal of structural engineering. B, Vol. 62A, pp. 850-859, 2016 (Japanese)• Hajime Ohuchi, Tetsuya Ogasawara and <u>Hisao Tsunokake</u> : Shear Strengthening Technique by DFRCC U-Shaped Winding, Journal of JSCE, E2, Vol.68, No.4, pp.251-270, 2012 (Japanese)• Tetsuya Ogasawara, Chunri Jin, Yuji Inoki, <u>Hisao Tsunokake</u> and Hajime Ohuchi: Strengthening Technique of the Marine Pier Beam by DFRCC, The 4th Structural Engineers World Congress, 2011(CD-ROM)	