In fabrics in columns to improve their load

In recent years, many researchers have focused on compositematerials and hybrid designs, which can be considered as a derivative of thesematerials. Composite materials have required properties and are preferred in awide variety of fields including the construction sector. Fiber-reinforcedplastic (FRP) compounds are one of these composite types. In addition to theirhigh strength and good behavior against environmental factors, these materialsare preferred because they possess all the properties desired by theresearchers and can be produced in different combinations. In addition to itssuperior mechanical strength, the new generation of composites attracts researchers’attention because of it following properties.

· Light weight· Consistentquality· Low density· Highstrength/density ratio· Good surfacefinish· Non-corrosiveand chemical resistant· Non-magnetic· Maintenancefree· Transparent toradio frequencies· Excellent creep& fatigue performance· Electrical& Thermal insulationThe useof lightweight and high corrosion resistant FRC material in repair andrehabilitation works has been observed to be increased significantly inPakistan in the recent past. Repair and rehabilitation works generally involvethe use of FRP laminates on the bottom surfaces of beams for flexuralstrengthening, use of FRP fabrics to improve the shear capacity of beams anduse of FRP fabrics in columns to improve their load carrying capacity bylateral confinement. The mostrecent research and development studies have concentrated on the use of hybridsystems where conventional construction materials particularly such as concreteand composite materials are used in combination. Recently most of the researchhas concentrated on

hybrid FRP columns formed by concrete-filled or hollow FRPpipes. The trends in scientific studies clearly shows that in the near future, the use of FRP composites in new buildings will mainly concentrate on the useof hybrid structure. Many studieshave shown that using of FRP composites with conventional materials likeconcrete is one of the solutions to eliminate certain deficiencies and disadvantagessuch as relatively low elastic modulus, structural design being governed bydeflection and buckling limitations rather than strength. The useof fiber -reinforced polymer (FRP) as structurally integrated stay in placeformwork for concrete structures maximize the advantages of both FRP andconcrete, while simplifying the construction procedure, particularly when usingclosed tubular sections. The tube provides lightweight permanent formwork andnon-corrosive reinforcement simultaneously.

Largely concrete filled circularFRP tubes have been studied in bending and under axial loads whereas verylimited studies have been conducted on square or rectangular FRP concretehybrid systems. Therefore, this study aims to examine the flexural behavior ofrecycled aggregate concrete filled square GFRP beams.