

पेटेंट कार्यालय  
शासकीय जर्नल

OFFICIAL JOURNAL  
OF  
THE PATENT OFFICE

---

---

निर्गमन सं. 24/2023

ISSUE NO. 24/2023

शुक्रवार

FRIDAY

दिनांक: 16/06/2023

DATE: 16/06/2023

---

---

पेटेंट कार्यालय का एक प्रकाशन  
PUBLICATION OF THE PATENT OFFICE

(54) Title of the invention : Influence of polypropylene fiber in self-compacting concrete composite column

<p>(51) International classification :C04B 160600, C04B 280200, C04B 280400, D01F 060600, E04C 033400</p> <p>(86) International Application No :PCT// Filing Date :01/01/1900</p> <p>(87) International Publication No : NA</p> <p>(61) Patent of Addition to Application Number :NA Filing Date :NA</p> <p>(62) Divisional to Application Number :NA Filing Date :NA</p>	<p>(71)Name of Applicant :</p> <p><b>1)Paavai Engineering College (Autonomous)</b> Address of Applicant :Paavai Engineering College (Autonomous), Paavai Nagar, Pachal, Namakkal, TamilNadu 637018 Namakkal -----</p> <p><b>2)Prof.K.Sharmiladevi, Paavai Engineering College (Autonomous)</b></p> <p><b>3)Mrs.S.Rajeswari, Paavai Engineering College (Autonomous)</b></p> <p><b>4)Mr.A.Jayapal, Paavai Engineering College (Autonomous)</b></p> <p><b>5)Mrs.B.Kiruthika, Paavai Engineering College (Autonomous)</b></p> <p><b>6)Mr.N.Moorthi, Paavai Engineering College (Autonomous)</b></p> <p><b>7)Mrs.B.Karthiga, Paavai Engineering College (Autonomous)</b></p> <p><b>8)Mr. C.Praveenkumar, Paavai Engineering College (Autonomous)</b></p> <p><b>9)Mr. P.Manoranjan, Paavai Engineering College (Autonomous)</b></p> <p><b>10)Ms. A. Priyanka, Paavai Engineering College (Autonomous)</b></p> <p><b>11)Mr.G.Uthayakumar, Paavai Engineering College (Autonomous)</b></p> <p>Name of Applicant : NA Address of Applicant : NA</p> <p>(72)Name of Inventor :</p> <p><b>1)Paavai Engineering College (Autonomous)</b> Address of Applicant :Paavai Engineering College (Autonomous), Paavai Nagar, Pachal, Namakkal, TamilNadu 637018 Namakkal -----</p> <p><b>2)Prof.K.Sharmiladevi, Paavai Engineering College (Autonomous)</b> Address of Applicant :Associate Professor/HOD, Department of Civil Engineering, Paavai Engineering College (Autonomous), Paavai Nagar, Pachal, Namakkal, TamilNadu 637018 Namakkal -----</p> <p><b>3)Mrs.S.Rajeswari, Paavai Engineering College (Autonomous)</b> Address of Applicant :Assistant Professor, Department of Civil Engineering, Paavai Engineering College (Autonomous), Paavai Nagar, Pachal, Namakkal, TamilNadu 637018 Namakkal -----</p> <p><b>4)Mr.A.Jayapal, Paavai Engineering College (Autonomous)</b> Address of Applicant :Assistant Professor, Department of Civil Engineering, Paavai Engineering College (Autonomous), Paavai Nagar, Pachal, Namakkal, TamilNadu 637018 Namakkal -----</p> <p><b>5)Mrs.B.Kiruthika, Paavai Engineering College (Autonomous)</b> Address of Applicant :Assistant Professor, Department of Civil Engineering, Paavai Engineering College (Autonomous), Paavai Nagar, Pachal, Namakkal, TamilNadu 637018 Namakkal -----</p> <p><b>6)Mr.N.Moorthi, Paavai Engineering College (Autonomous)</b> Address of Applicant :Assistant Professor, Department of Civil Engineering, Paavai Engineering College (Autonomous), Paavai Nagar, Pachal, Namakkal, TamilNadu 637018 Namakkal -----</p> <p><b>7)Mrs.B.Karthiga, Paavai Engineering College (Autonomous)</b> Address of Applicant :Assistant Professor, Department of Civil Engineering, Paavai Engineering College (Autonomous), Paavai Nagar, Pachal, Namakkal, TamilNadu 637018 Namakkal -----</p> <p><b>8)Mr. C.Praveenkumar, Paavai Engineering College (Autonomous)</b> Address of Applicant :Second Year, PG Student, Department of Civil Engineering, M.E.- Structural Engineering, Paavai Engineering College (Autonomous), Paavai Nagar, Pachal, Namakkal, TamilNadu 637018 Namakkal -----</p> <p><b>9)Mr. P.Manoranjan, Paavai Engineering College (Autonomous)</b> Address of Applicant :Second Year, PG Student, Department of Civil Engineering, M.E.- Structural Engineering, Paavai Engineering College (Autonomous), Paavai Nagar, Pachal, Namakkal, TamilNadu 637018 Namakkal -----</p> <p><b>10)Ms. A. Priyanka, Paavai Engineering College (Autonomous)</b> Address of Applicant :Second Year, PG Student, Department of Civil Engineering, M.E.- Structural Engineering, Paavai Engineering College (Autonomous), Paavai Nagar, Pachal, Namakkal, TamilNadu 637018 Namakkal -----</p> <p><b>11)Mr.G.Uthayakumar, Paavai Engineering College (Autonomous)</b> Address of Applicant :Second Year, PG Student, Department of Civil Engineering, M.E.- Structural Engineering, Paavai Engineering College (Autonomous), Paavai Nagar, Pachal, Namakkal, TamilNadu 637018 Namakkal -----</p>
---	--

## (57) Abstract :

The mix design quantity of cement, fine aggregate, and coarse aggregate was weighed and batched. Electric concrete mixers mixed the concrete. Revolving drum mixers combine the materials. Maintaining 90-second mixing time. After filling the drum, this period is counted. Mixing creates a consistent cement, water, fine, and coarse aggregate mixture. Composite columns had empty steel pipes waiting for concrete. Vertically filled tubes. Top-poured concrete filled the steel tube. Before concreting, the tube was smoothed. Needle vibrator compressed concrete. Tamping rod compaction allows concrete to flow over reinforcement with a high-water cement ratio. All mixes were needle vibrated. Compaction reduces honeycombing, makes concrete more impermeable and denser, improves concrete-reinforcement bonding, and improves polish. The concrete was smoothed on top after filling the tube. The casting was at stretch. All combinations have companion specimens of 150 mm cubes and 300 mm cylinders. Mold sides were removed from specimens after 24 hours. The mould's companion specimens were removed. The specimens were immersed in the curing tank for 28 days after casting. Similar circumstances and time cured the companion specimens. Curing prevents concrete from evaporating and developing a significant temperature gradient. Concrete-filled steel tubular short columns were tested under axial compression. This chapter discusses the detailed experimental results. Load Vs Deflection and Strain are examined to understand concrete filled steel tube column behavior under static loads. Experimental and theoretical load bearing capacities of specimens are compared. Micro polypropylene fiber increased compressive, split tensile, and flexural strength by 8.11%, 17.04%, and 5.07%, respectively, but decreased workability. The concrete-encased square section with concrete filling withstood 3.3% more weight than the normal RCC column and had reduced deflection due to load distribution on all four sides. Abaqus 2020 simulations showed that the core, mild steel tube, and exterior concrete weaken in order.

No. of Pages : 12 No. of Claims : 2