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| C:\Users\Ram Computer\Downloads\qqqqqqqqqqqqqq.png | **TISHK INTERNATIONAL UNIVERSITY****Civil Engineering Department****Graduation Project Proposal Form** |

**Project Information**

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| **Title of the Project** |
| Properties of Sustainable Polymer Recycled Aggregate Concrete |
| **Project Description** |
| This project aims to obtain the properties of recycled aggregate concrete mixed with a polymer; styrene-butadiene rubber (SBR) and to know the effect of SBR on the fresh and hardened recycled concrete, and on the durability of the new material. Method: The concrete samples shall be prepared to achieve targeted cylinder strength *fc* of say 21 MPa. The mixture shall be prepared by adding 0%, 5%,10%, 15%, and 20% of SBR polymer–cement ratio to check the properties of fresh concrete (slump test), while rebound hammer test, ultrasonic pulse velocity test (UPV), compressive strength test, and flexure strength test will be performed at 7th, 14th, and 28th days. Also, a durability improvement is expected by reducing the concrete permeability which will be tested also.Findings: it is expected that compressive strength and flexural strengths are boosted by the increase % of SBR polymer in recycled concrete as compared to control concrete. The fresh concrete behavior with a rise in the amount of SBR polymer in concrete will be checked, and durability test on concrete permeability will be performed. |

**Project’s Supervisor**

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| Name | Prof. Dr. Bayan Salim Al Numan | E-mail | bayan.salim@tiu.edu.iq |

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| **Project Justification/Characteristics** |
| New Aspects/Challenging Problems and Issues (if any) | Improvements in properties of recycled aggregate concrete are expected with the use of polymers both in fresh and hardened states. Also, durability of the product is expected to be improved.Testing condition for fresh, hardened states, and permeability test should be available according to specifications. |
| Related Civil Engineering Science Fields and Subfields | * Materials Engineering: investigating recycled aggregate concrete improved by polymer use in mixtures.
* Structural Engineering: The improved polymer recycled aggregate concrete is investigated as a structural, durable construction material.
* Construction: Considers the practical applications and feasibility of using the polymer recycled concrete in construction projects.
* Sustainable engineering: recycling material with improved properties.
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| Tools | Laboratory equipment for concrete preparation and testing, including mixers, molds, and compression/flexural testing machines, and permeability test setup. |
| Labs Needed for this Project | Concrete Lab.  |