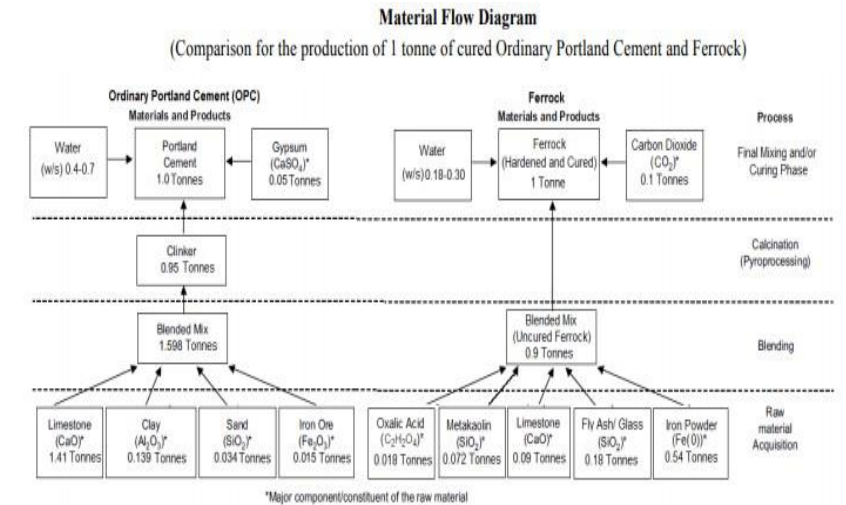
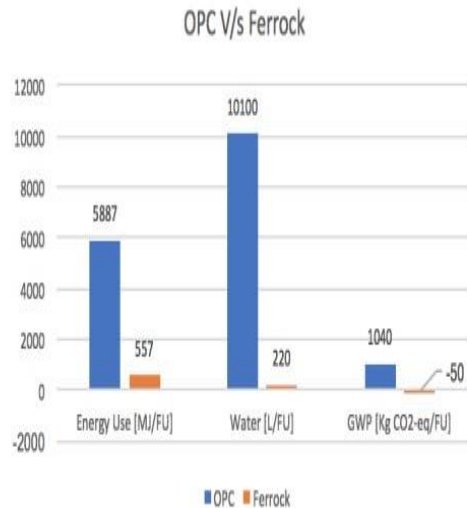


Analyzing More Sustainable Alternatives Than Using Ordinary Portland Cement in Commercial Construction

The purpose of this Senior Project is to look at more sustainable alternative options for concrete use for California Commercial Contractors. This paper analyzes the more sustainable options for concrete and came to conclusions on how effective the alternative options are for protecting the environment, sustainability, cost, and effectiveness in building. This project provides data on the negative impact concrete use has had on the environment and data on potential concrete substitutes that can be used to alleviate this. This project also analyzes how cost effective the alternative options are to see if the alternative options are realistic and affordable to use in place of ordinary Portland cement. This paper provides data on the negative impact that concrete use has had on the environment through CO2 and terminating our resources. This is mainly from Portland cement which is made from chalk and clay. Ordinary Portland Cement is responsible for 7% of worldwide CO2 emissions. Geopolymers concrete is one alternative to Ordinary Portland Cement that has a ton of potential. Geopolymer concrete is based on fly ash a fine waste collected from the emissions liberated by coal burning power stations. This is activated by an alkaline activator that has potential to lower the significant carbon footprint of Ordinary Portland Cement. Ferrock concrete is potentially the most worthy alternative for OPC, it is around 95% made from recycled materials and iron carbonate. It is created from waste steel dust that would normally be discarded from industrial processes and silica from ground up glass. The main ingredient is metallic iron powder which is a by product of shot blasting, a finishing technique for steel manufacturing. Ferrock concrete can be up to three times stronger than Ordinary Portland cement while being significantly better for the environment.



Grade of concrete	Cost of production of 1m ³ of OPC	Cost of production of 1m ³ of GPC	Savings in Cost (Rs)	Savings in %
M30	5780	5883.5	-103.5	-1.7 %
M50	6618	5864	754	11%

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