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A review on Highway Pavements

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Abstract:

In this research paper, Slag can be ferrous example iron steel and non ferrous example lead, zinc, Coppe . Slag is a totally waste by product which can be produced by manufacturing of pig steel and pig iron which is mainly used to remove waste in metal smelting.

Introduction:

Slag is a by-product generated during manufacturing of pig iron and steel. It is produced by action of various fluxes upon gangue materials within the iron ore during the process of pig iron making in blast furnace and steel manufacturing in steel melting shop. Primarily, the slag consists of calcium, magnesium, manganese and aluminum silicates in various combinations. The cooling process of slag is responsible mainly for generating different types of slags required for various end-use consumers. Although, the chemical composition of slag may remain unchanged, physical properties vary widely with the changing process of cooling.

The blast furnace (BF) is charged with iron ore, fluxing agents (usually limestone and dolomite) and coke as fuel and the reducing agent in the production of iron. The iron ore is a mixture of iron oxides, silica, and alumina. From this and the added fluxing agents, alkaline earth carbonates, molten slag, and iron are formed. Oxygen in the preheated air blown into the furnace combines with the carbon of the coke to produce the needed heat and carbon monoxide. At the same time, the iron ore is reduced to iron, mainly through the dioxide. The oxides of calcium and magnesium combine with silica and alumina to form slag. The reaction of the carbon monoxide with the iron oxide yields carbon dioxide (CO_2) and metallic iron. The fluxing agents dissociate into calcium and magnesium oxides and carbon dioxide.

Flexible Pavements

Flexible pavements will be a scope for the researcher in the field of specific various ways for their use to transmit wheel load stresses on the lower part of the sub layers under the action of various grain-to-grain load transfer of the various systematic loading conditions which is directly influence under the granular structure while we are designing and analysis of various types of flexible pavements design features under different loading conditions. In these types of pavements, the performance is based on the different end condition which directly affects the system under various dynamics loading conditions. The flexible pavement is mainly constructed using various bituminous material content under the loading conditions.

Rigid pavements

Now a day's researcher have keen interest to analysis the properties and behaviors of rigid pavements design system with the target values of the experiments which will be obtains by the use of various end condition under substantial loading construction by using a various experimental and conventional methods. The use of various conventional methods may directly effects of the exact system by use of exact solution of the given equations on the basic of different systems. But while we are study about the design and construction affects of rigid pavements is based on the slab action on the various end boundary conditions.

The flexural strength of rigid pavement play very important role while traffic is moving with a certain impact types of loading. The bending stresses and the hoops stress while we are design the action of rigid pavements are quite apt under the various types of loading conditions. There is only one layers in existence of the given formulated conditions.

Design Life & maintenance Period:

One of the most well known advantages of concrete is its superior durability and longer structural life. A 1998 life cycle cost report by ERES Consultants Inc. indicates that the expected life of an asphalt road is 17 years compared to 34 years for concrete. The report also indicates that asphalt highways require maintenance activities every three to five years and major rehabilitation becomes more and more frequent after the initial 17th year overlay. Maintenance cost is large sealing cracks; potholes, resurfacing and resealing are done frequently. Major maintenance / rehabilitation required after few years of service. Traffic adversely affected due maintenance creating extra difficulties in urban areas. Audit of maintenance is difficult and gives opportunity for misuse of public funds. Maintenance budget is relatively smaller. Requires less maintenance cost. Use of CRCP reduces number of joints and hence their maintenance.

Life Cycle Cost Analysis (LCCA):

When LCCA is used, concrete pavement is often cost-effective than asphalt pavement of equivalent design for high truck traffic highways. Because flexible pavement needs more frequent maintenance work than rigid pavement and its design life is also smaller.

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