Cement batch

Name: Instructor: Course: Date: Cement batch A cement batch or a cement plant is a piece of equipment that mixes different components such as aggregate, water, cement and sand to form concrete.

The most common types of concrete plants are central mix and ready mix plants. Concrete batches are designed by different companies, but all structures have similar parts such as horizontal mixers, aggregate batchers, cement silos, cement batchers, radial stackers, cement bins, heaters, chillers and dust collectors. The mixer is the center of the whole machine where two major types of mixers are used. The twin shaft mixer creates a smooth combination of concrete on a large scale. The difference in the cement batches is in the procedure of operation. Where as the ready mix plant works by combining all the elements except water beforehand, the central mix plant mixes some of the elements in a central location that is then transported to the site of construction. Central mix plants are preferred by most engineers and constructors as they produce smoother concrete since all the ingredient mixing is completed in a central location and is controlled by computers.

The inclusion of a concrete mixer therefore, makes a concrete plant becomes central mix type (O’Neal 18). Both types of concrete batch plants employ the usage of computerized systems to aid in increasing the accuracy, speed and efficiency of selecting and mixing the ingredients needed to make different types of concrete. The computerization also ensures safety and increases coordination within the plant. These computerized precautions are implemented to counter effects of the changes in weather, water density and quality all of which have an impact on the quality of concrete.

Devices such as moisture probes approximate the amount of water in the rock and sand and adjust the amount of to be added respectively, thus ensuring the mix is evenly balanced. Other equipment includes material weighing systems, control systems and storage protocols. The regular activity that happens in a cement batch plant involves several steps. The elements to be mixed are gravity-fed from the weight hopper into the mixer trucks. The actual mixing of the concrete happens within the truck on the way to the site where it will be used.

Other plants have a different system in that the concrete is manufactured in a central mix and then switched into the waiting transport truck. Some of the concrete products are precast and transported as concrete bricks, bridge girders and cladding panels. The raw materials (sand, water and cement) are transported to the cement plants using rail, ship or trucks.

The cement is stored in elevated silos. It is from these silos that the weigh hoppers are fed material using conveyor belts and front-end loaders. The process of concrete preparation has various environmental consequences that must be dealt with in order to ensure that a company is not blacklisted by the local authorities. Safe disposal of the particulate matter must be done to ensure that no soil pollution occurs. The disposal of the pozzolan dust and cement residues are examples of the material that can pollute the environment. Dust emissions are also common around the plant.

These emissions and wastes are controlled by water sprays, central duct collection systems, curtains and hoods. The roads surface is also constantly irrigated to reduce the emission of dust as heavy trucks move over unpaved

areas or dusty roads (Gibbs 27). Present day concrete batch plants have been commercialized to appoint where construction engineers make orders for different qualities and amounts of ready-made concrete that is then delivered to the sites. The scope of the batch plants also differs from large plants that produce large volumes of concrete to smaller units for small sites. An example of a prominent cement batch plant was the 1937 plant that was constructed by Hoover Dam near Lake Mead. The batch plant was used in the construction of the dam and was designed to have a spinning arm at the center that mixed the concrete. Work cited Gibbs, Victor.

Cultural Resources Survey of a 22. 027 Acre Parcel for a Proposed Jobe Mcnary Concrete Batch Plant Near Esperanza, Hudspeth County, Texas: Final. Plano, Tex: Geo-Marine, 2002.

Print. O’Neal, Robert D. Noise Control Evaluation for a Concrete Batch Plant.

The Journal of the Acoustical Society of America. 127. 3 (2010): 1831. Print