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Review Paper on Three Gorges Dam

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Abstract : The Three Gorges Dam is a hydroelectric dam that spans the Yangtze River by the town of Snooping, located in Yelling District, Yinchuan, Hubei province, China. The Three Gorges Dam is the world's largest power station in terms of installed capacity (22,500 MW). The dam is the largest operating hydroelectric facility in terms of annual energy generation, generating 83.7 TWh in 2013 and 98.8 TWh in 2014, while the annual energy generation of the Itaipú Dam in Brazil and Paraguay was 98.6 TWh in 2013 and 87.8 in 2014.

KEYWORD: Yangtze River, Hydroelectric, Flood control, Power generation, Navigation, Environment, Biodiversity, Resettlement.

Introduction:

The Project consists of dam, flood release structures, power stations, and navigation structures. The implement scheme is "the first grade development, one-time construction, water storage by stages, continuous resettlement". The dam is concrete gravity dam, overflow dam is in the middle, the two power plants are on both sides. The total length of dam axis is 2309.47m with the crest elevation of 185m and the maximum dam height of 181m. The normal reservoir storage water level is 175 m, the total reservoir storage capacity is 39.3 billion m3, of which flood control reservoir storage capacity is 22.15 billion m3. The Three Gorges Project has the comprehensive functions of flood control, power generation, navigation, etc. The first goal of the Three Gorges Project construction is flood control. When the construction is to be finished, it will impound flood coming from Upper Yangtze River, which makes flood control standard of Jing River reach downstream enhance from 10-year to 100-year period. The Three Gorges Project has 26 units with a single unit capacity of 700 MW, the total installed capacity of 18200 MW, and annual power production of 84.68 TWh. Its

huge and clean energy will be sent continuously to Middle China, East China, Guangdong Province and Chongqing City, etc. Navigation construction is double-line five-step ship lock and a vertical ship lift. Annual one-way transportation capacity is 500 million tonnes. The completed project can improve 660 km long navigation passing from Yichang City to Chongqing City; the ten-thousand-ton-rank fleet can arrive at directly Chongqing City.

Dam is made of concrete and steel, the dam is 2,335 m (7,661 ft) long and the top of the dam is 185 metres (607 ft) above sea level. The project used 27.2 million cubic metres (35.6×106 cu yd) of concrete (mainly for the dam wall), 463,000 tonnes of steel.

The concrete dam wall is 181 metres (594 ft) high above the rock basis. When the water level is at its maximum of 175 metres (574 ft) above sea level, which is 110 metres (361 ft) higher than the river level downstream, the dam reservoir is on average about 660 kilometres (410 mi) in length and 1.12 kilometres (3,700 ft) in width. It contains 39.3 km3 (31,900,000 acre·ft) of water and has a total surface area of 1,045 square kilometres (403 sq mi).

UTILITIES OF THREE GORGES DAM:

There are further Advantages/Utilities of THE GORGES DAM are:

1. The project can effectively adjust the upstream flood of Yangtze River, which will assure a flood control standard of the Jingjiang section, a downstream reach to Three Gorges of Yangtze River, arise from currently preventing 10-year flood to controlling 100-year flood. 2. Compared to the coal-fired power stations with equivalent electricity generation, Three Gorges Power Plant will decrease emission of 100 million tons of CO2, 2 million tons of SO2, 0.37 million tons of nitrogen oxide and a lot of waste water and solid waste. 3. It will bring a great benign influence in improvement of environment, especially preventing acid rain and greenhouse effect in East and Central China. 4. As the world's largest power station of 22,500 MW, Three Gorges Dam project has installed 32 main turbines with two smaller generators to power the plant itself. 5. The Three Gorges reservoir, after the project is completed, will improve the weather in this area, be favourable for agriculture, and improve water quality.

Results Analysis :

The purpose of this study was to compare the relative effectiveness of selected techniques for fastening the individual and paneled thin bricks to various substrates. A distinction of the thin brick was that it was light weight and easy-to-handle. The material retained a fair amount of moisture when removed from the shipping containers, as evidenced by the smell and color of the product. The thin brick panels appeared to be especially moisture retentive. As the Portland cement cured and the moisture was released, the ends of the panels tended to curl up. The panels were rotated daily and weight was added to force the panels to lay flat. Some of the application tests were affected by using panels that were not flat.

The aesthetics offered by the aniline dyes appeared to be acceptable and did not affect the flexural bond strength of the adhesion method (figures 4 and 5). The bricks were not sealed, which allowed the color residue to release onto the hands of the tile setter when handling the bricks.

The individual bricks were machined prior to shipping in order to attain an accurate, straight offset edge. Some of the bricks, however, retained a curved offset edge. These were removed using a small-blade knife, which added to installation time and compounded straightness irregularities of the grout lines.

The shortest application time per square foot was Method 11, in which three panels were applied to primed cdx plywood using mechanical fasteners. The panels were set into place then secured using a Paslode Impulse angled Finish Nail Gun with 1¼" 16 gauge angled finish nails. The nails were placed in the horizontal grout lines of the panels approximately every 5". The application of panels with the Paslode Impulse Angled Finish Nailer took 10 minutes. Using this method, fifty three square feet per hour can be applied.

Method 8 was a test of applying three square feet of individual brick applied to unprimed cinderblock using polyurethane construction adhesive. Vertical strips of adhesive were applied to the cinderblock approximately 2" apart. The individual brick were pressed into place beginning with a full brick on the bottom row. A brick was cut at 3 5/8" long to begin the second and fourth rows. The application of adhesive in vertical strips 2" apart and pressing individual bricks into place took 12 minutes. It was the most efficient method tested for applying individual bricks at 12.7 square feet per hour.

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