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ANALYSIS AND DESIGN OF DYNAMIC GREEN BUILDING

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Global Warming is one of the serious problem in the world, it is the gradual increase in the overall temperature generally attributed to the greenhouse effect caused by increased levels of carbon dioxide, chlorofluorocarbons, and other pollutants.

Buildings contribute a large portion in emission of the said gases. If new technologies in construction are not adopted, emission will be doubled in the near future.

The study aims to design Dynamic Green Building with solar panel that rotates and follow the path of the sun that is to absorb and generate more energy compare to static structure. It does not intent to answer the problem in gas emission of buildings, but also to propose to boost tourism in Clark, Pampanga. Due to its common appearance and structure, the building can be considered a landmark not only in Pampanga but for the whole Philippines.

Design approach has been done by following specifications and recommendations under the National Structural Code of the Philippines (NSCP) and ASEP Steel Handbook; applying what we have learned in our curriculum subjects, and gathering data from experienced Civil Engineers. Based on the result, the structure can be designed and is safe.

DARA FALLS RESORT (LAND OF BUILDINGS POWERED BY HYDROELECTRIC ENERGY)

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The proposal aims to preserve the beauty of Dara Falls and re-introduce the place to the public by building an eco-friendly resort that will bring tourists in Porac, Pampanga. It will also help the community near the area by providing employment opportunities and livelihood. Unfortunately, the Dara Falls is not as good as before because there was no existing sole institution in charge of the maintenance and protection of the place. Another problem was the lack of facilities that may be used by tourists visiting the area and therefore, there was no guarantee of their safety, be it a place to secure their belongings or a comfortable place for sanitation and personal hygiene. The proposal of the project was not made just to bring solutions to these problems, but rather, the deepest encouragement was being offered to interested investors, because the place has this huge potential to the leading amusement place in the field of Eco-tourism in the region when built. And once the project was built, problems of the place itself and surrounding community will be given solution that, consequently, will solve the cause. The project development of Dara Falls Resort will be designed for natural relaxation and a one-of-a kind place to spend time with your friends, family, and even suitable to serve as a venue for meetings and conferences of the companies. It will offer facilities and different recreational activities that adapts the natural environment while making people to feel comfortable and enjoy the natural beauty of the place.

DESIGN OF A FLAT PLATE USING YIELD LINE ANALYSIS OF A THREE-STOREY STRUCTURE

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This study is consisting of a design of a flat slab using Yield Line Analysis. This method provides ultimate load analysis. It establishes either the moments in an element (e.g. loaded slab) at the point of failure or the load at which an element will fail. It may be applied to many types of slab, both with and without beams. The researchers adopted the Work Method which is most popular and easiest way of applying Yield Line theory from principles. The EUROCODE2 provides the applicable specification for Yield Line Analysis. This specification is adopted in United Kingdom, Japan, United Arab Emirates and other countries.

This study aims to give knowledge to students and engineers, especially civil engineers to use Yield Line Analysis to know the step by step in designing a flat plate. The researchers wanted to introduce new method in designing flat plate structure using Yield Line Analysis. This study is that Yield Line Analysis method can be used in designing flat plate to produce no beam structure in a simple and easy way.

The researchers also recommend searching more of the other method like the formulate method. Also, using computer software is recommended by the researchers for them to acquire fair results in the

DESIGN OF A SELF-OPERATING HYDRAULIC RAM PUMP (HYDRAM): BRINGING CLEAN
WATER IN SITIO CAMACHILE, NABUCLOD, FLORIDABLANCA, PAMPANGA

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A Hydraulic Ram Pump or Hydram is a cyclic water pump powered by hydropower. Water is taken in one “hydraulic head” (pressure) and flow rate, and outflow is at a higher hydraulic head and lower flow rate. The device uses the water hammer effect to develop pressure that allows the portion of the input water that powers the pump to be lifted to a point higher than where the water originally came from. The hydraulic ram is mostly used in remote areas, where there is both a source of low-head hydropower and a need for pumping water to a destination higher elevation than its source. In this situation, the ram is often useful, since it requires no outside source of power other than the kinetic energy produced by the following water.

The study presents the design of a hydram that has practically no running cost, only needing minimum maintenance, simple in construction and fulfilling the required specifications. This aims to provide isolated villages with clean water supply and also as a replacement to generator-driven pumps.

DRAINAGE MASTER PLAN STUDY FOR THE CITY OF SAN FERNANDO SUBBASIN

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The City of San Fernando is one of the front-liners in the Region 3 terms of urban development but flooding has become one of its major burdens. The flooding problem may be rooted unto the lack of Storm Drainage Master Plan (SDMP).

Coordination with agencies such as, but not limited to: the Department of Public works and Highways (DPWH), and City Engineering Office, were done to gather secondary data. Field survey were done to check the secondary data and collect primary data such as, but not limited to: cover description, river cross section data, and topography.

A hydraulic analysis of the existing conditions, 10% urbanization and 20% urbanization using 10-, 15-, 20-, 25-, 50-, and 100-year return periods were done using the Hydraulic Engineering Center – Hydraulic Modelling system (HEC – HMS) to drive peak flows. Hydraulic analysis for the existing conditions was also done by the use of the Hydraulic Engineering Center – River analysis System (HEC – RAS) with the help of Quantum Geographic Information System (QGIS) for the 20 year design storm to produce flood map which show the areas flooded. Hydraulic design was done by modifying the initial conditions hydraulic model to the proposed mitigated schemes. The study produced a plan where excavations and multiple heights of floodwalls are proposed and are mapped.

LEAF SPRING DAMPER: ALTERNATIVE SUSPENSION SYSTEM FOR EARTHQUAKE RESISTANT STRUCTURE

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Earth is the planet where people live. How old is the earth now? It is a known fact that the earth is tremendously old now and had been damages by several natural phenomena due to improper acts and deeds of human beings. Several disaster happen in the most unexpected time and cause several damages not only to the planet where people live but also to human beings.

Earthquake is the most hazardous and unpredictable disaster in the world. It can be cause great damages not only to the structures but also to the human lives. Earthquakes could not be avoided but at least people could do many things to lessen its effects and damages. Since almost all establishments, commercial and residential are in building structures. The researchers would like to ensure that all the structures are capable to hold any load acting on it, by providing a Leaf Spring Damper that would counteract all the forces produced by the said calamity.

The Leaf spring Damper was developed to provide a suspension system for earthquake resistance. Its main function is to mitigate damages caused by both vertical and horizontal impacts. The technology was known for automotive applications but it was adapted by the researchers due to its simplicity and stiffness. Rigid link bars are also necessary to avoid leaf spring deformation known as “wrap up” which might cause dis-alignment of the structure.

In this research, all necessary information from the materials, designs and procedure including calculations are provided to give a clear view, idea and an effective concept of structuring an earthquake resistance in more practical and economical approach.

METANOIA: A FAST PHASE DESIGN OF RECOVERY CENTER USING PRECAST MATERIALS

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Since Duterte's administration began, war against drugs became one of the main concern of the government. Thousands of people surrendered themselves to the authority to show their voluntary support on the government's campaign. But with these, thousands of people are also a big challenge where to put these surrenderees. According to Dangerous Drugs Board, Pampanga is one of the province with the huge number of drug dependents and victims. Rehabilitation or recovery centers are one of the nation's biggest needs.

The study presents the fast design of a recovery center. Using precast materials, it can be constructed in a very short period of time. This will be a main advantage in the country's need of rehabilitation facilities. This recovery center will be a home of change for those victims who are willing to undergo treatment and medication for a faster recovery.

This facility can reduce the burden of the government for it can accommodate thousands of people especially in Pampanga.

TRAFFIC MANAGEMENT SYSTEM IN EPZA-PULUNG MARAGUL ROAD

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Traffic congestions on our roads are a common sight. Traffic congestion leads to other problems such as road rage and road bullies in addition to fatal accidents. As the economy grows and income of household increases, vehicle population surges up, contributing to traffic congestion. This study assessed how congestion affects the people and economic growth in the area. The study also aimed to lessen the traffic congestion in the area by some solutions. Narrow roadway, small distanced setbacks of some infrastructures contributes to the occurrence of traffic problems in the area. To achieve the recommended solutions, a thorough study and assessment of traffic in the area was done. Descriptive statistics were used to analyse data needed. Questionnaires were also used to know the insight of the people affected by the traffic in the area. The results from the analysis indicated that traffic congestion caused travel delays, particularly during peak hours. Therefore improvement in traffic management and specific solutions such as road widening should be given attention to ease the traffic problems in the area.