

Flaunt it!

It is with great pride we flaunt the designs of budding civil engineers from our institute.



M. Dhivakar Karthick

He has completed his Civil Engineering and is associated with CADD Centre, Lakshmi Nagar, Erode. He has designed the following in Revit Architecture.



S. Rajavel

He has designed the following building using Revit Architecture. He is a student of CADD Centre, Mayiladuthurai.



Book Post

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Share your views with all your peers.

Your contributions have been published in the flaunt it section. We look forward to more. Keep designing, **Keep Sending!**

Mail us your designs to corpcom@caddcentre.ws

We hope your submissions will reach us before the 20th of each month and that the images would be in the jpg format and articles within 250 words. We wish you all the best!



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your CAD / CAM highway

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FLAUNT it!

Be the Engineer of your career

Don't fit in when you were born to stand out!

This issue of the CADDZOOM, we continue our "Be the engineer of your career" series by taking an in-depth look into civil engineering.

Engineering is one of the oldest professions in the world. Around 2550 BC, Imhotep, the first documented engineer, built the famous stepped pyramid of King Zoser, located at Saqqarah. Ancient monuments like the pyramids still hold their sway over modern Civil Engineering.

Today too, engineers continue to revolutionize the world. It is for this reason that engineers must be encouraged to stay true to their passions. A deeper insight into the different streams of engineering helps aspiring engineers remain inspired.

Civil Engineering – creating the world!

"You can't have civilization without civil engineering."

Civilization relies on teams of inventive people to design, build and maintain sophisticated infrastructure that surround us. It is this group of inventive people who are known as civil engineers. One cannot think of a society whose foundations haven't been laid by civil engineers. The influence of civil engineering in our life is tremendous: from our water delivery system at our homes to the road networks that we use for transportation, civil engineering can positively impact the quality of our life.

Civil engineering is the oldest of the engineering disciplines.

The first engineering school, the National School of Bridges and Highways, was opened in 1747 in France.

What do civil engineers do?

Civil engineers are responsible for designing, building and maintaining all types of structures. The wide range of civil structures includes water-supply and sewer systems, railroads and highways, and planned cities. Civil engineering, therefore, comprises of various subfields such as environmental engineering, geotechnical engineering, geophysics, geodesy, control engineering, structural engineering, biomechanics, nanotechnology, transportation engineering, earth science, atmospheric sciences, forensic engineering, municipal or urban engineering, water resources engineering, materials engineering, coastal engineering, surveying, and construction engineering.

Reference: www.whatiscivilengineering.csce.ca



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Falkirk Wheel

A marvel of Civil Engineering!

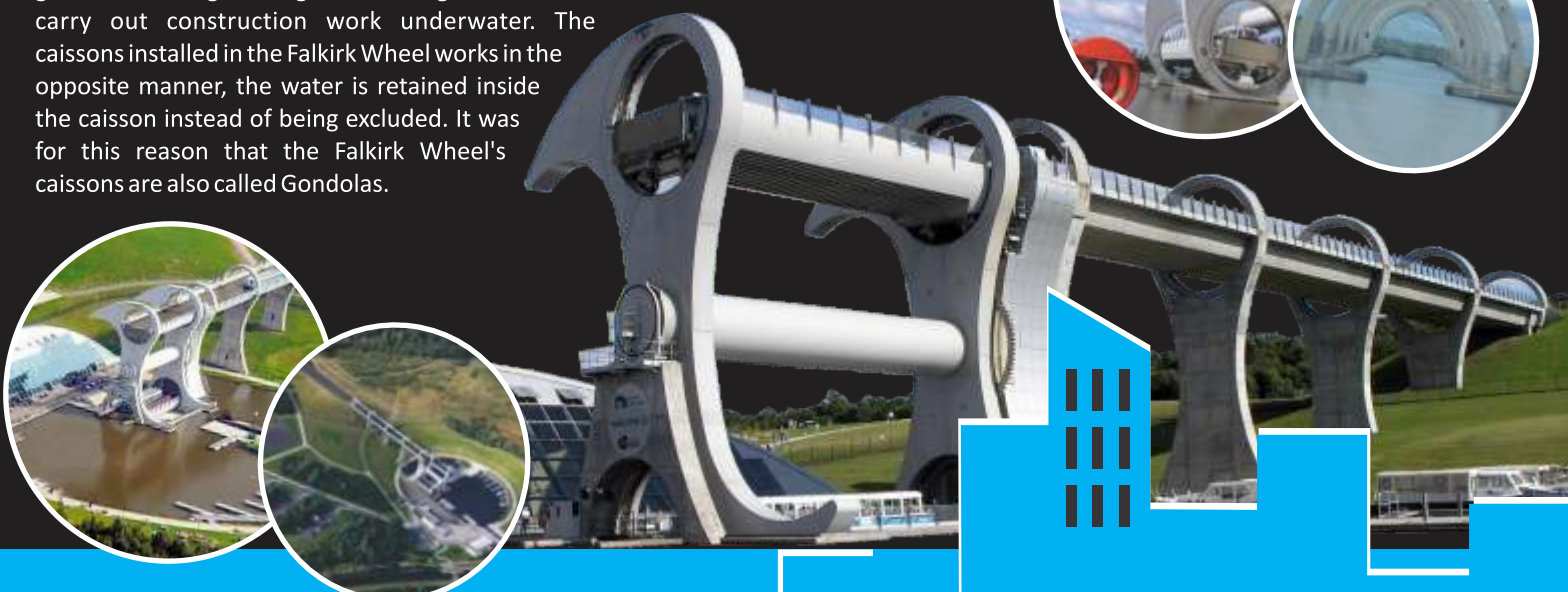
The Falkirk Wheel, located in Scotland, is truly an engineering marvel, presented to the world by Civil Engineers. To put it simply – the Falkirk Wheel allows boats to fly. It was built to connect two different canals, providing a way for boats to travel without a natural waterway. The Falkirk Wheel connects two canals with a height difference of 35 meters.

The Falkirk Wheel is built around a central wheel that comprises of two opposing arms revolving around a central axle. Each of these arms is fitted with diametrically opposing caissons. A caisson in geotechnical engineering is a watertight chamber used to carry out construction work underwater. The caissons installed in the Falkirk Wheel works in the opposite manner, the water is retained inside the caisson instead of being excluded. It was for this reason that the Falkirk Wheel's caissons are also called Gondolas.

The caisson works on the Archimedes principle. The weight of the caissons is always maintained at 600 tons, whether the caisson is carrying just water or a boat. When the boat enters the caisson the weight of the water displaced is equal to the weight of the boat, allowing it to float. The caissons are rotated in the same speed as the wheel but in the opposite direction this ensures that caissons are always at level.

The caissons lead the boat to an aqueduct which leads the boat to the next canal. An aqueduct is an artificially constructed watercourse to transport water.

Reference: www.falkirk-wheel.com



Civil Engineering today

have sanitation. Water-related diseases are common and life expectancy is only 43 years. Civil engineers designed the Hitosa gravity water scheme, a part of Ethiopia's largest water-supply project. Civil engineers had the vision needed to design and put into practice such a huge scheme, working with 60,000 local people to provide safe water for their communities.

Civil Engineers protect us from natural disasters
Natural disasters are managed better when understanding of the environment is applied to real time situations. This is especially true in coastal areas that are threatened by being worn away by the sea or floods, and inland sites may be contaminated by previous industrial



activities or threatened by subsidence (an area of land gradually sinking or caving in). Extreme heat and cold, winds, earthquakes and risk of flooding cause problems, but civil engineers are using their skills to make areas safer. 'Superadobe' is a beehive-like building developed for future communities on the Moon. It has been adapted to create affordable emergency housing for survivors of disasters like the Asian tsunami.

Civil Engineers help us get from point A to point B

Transport systems join our communities together. Road, rail, air and sea networks span the world. They help us trade, travel, exchange ideas and information, and gain employment, healthcare and education. Civil engineers understand the best ways to move around or across our environment, creating the networks that help take us where we want to go.

The Green Wheel is an excellent example of civil engineering's contribution to transportation. Opened in 2002, it is an 80km network of footpaths and cycle ways around Peterborough, UK, that encourages 'green travel' and sustainable tourism. It includes a series of bridges to carry horses, people on foot and cycles over roads, railways and rivers. The bridges link nature reserves, picnic sites, sculpture trails and small parks, helping local people and visitors to get more enjoyment out of the area.



Civil Engineering with Modern Tools

Today, the civil engineer is equipped with several tools to make his task easy. One such example is Revit - a BIM software.

Revit comes with loads of unique features to help designers and architects design more sustainable, accurate designs with fewer errors and less waste, thus achieve higher profits and more satisfied clients. Some of the features that make Revit Architecture irresistible include:

Analysis: Revit is used to create and capture photo realistic design ideas and contextual environments. It lets the users to capture and analyze design concepts and enables them to take right decisions for sustainable design, clash detection, construction planning, and fabrication.

User friendliness: Users can sketch freely, and create 3D forms quickly, and manipulate forms interactively. The users can prepare their models for fabrication and construction with built in tools for conception and clarification of complex forms.

Manufacturing viability: Engineers and architects can perform daylighting and energy analysis, and gain insights into manufacturing viability and early construction material takeoffs.

Collaboration: It helps them collaborate with engineers, contractors, and owners. Using Revit, engineers and architects can optimize team collaboration, communicate more clearly and reliably the design intent to all stakeholders, including fabricators.

Interoperability: Engineers and architects can bring conceptual massing concepts from applications such as AutoCAD and Autodesk, Maya as well as AutoDesSys form.Z, McNeel Rhinoceros, Google Sketchup, or other ACIS or NURBS based applications into Revit Architecture as mass objects, and begin schematic design.

Reference: www.ice.org.uk

Required skills for Civil Engineers:

- ❖ Autodesk AutoCAD
- ❖ STAAD.Pro
- ❖ Bentley Microstation
- ❖ Bridge design
- ❖ Microsoft PowerPoint
- ❖ Transportation planning
- ❖ Word processing
- ❖ Engineering drawings
- ❖ Hydraulic modeling
- ❖ HEC-RAS
- ❖ Microsoft Project
- ❖ Materials testing
- ❖ Modeling software

These skills enable aspiring civil engineers to gain job profiles such as:

- ❖ Civil Engineer
- ❖ Structural Engineer
- ❖ Project Engineer
- ❖ Geotechnical Engineer
- ❖ Civil Structure Engineer
- ❖ Transportation Engineer
- ❖ Structural Designer
- ❖ Resident Engineer
- ❖ Reservoir Engineer
- ❖ Senior Project Engineer
- ❖ Bridge Engineer
- ❖ Piping Designer
- ❖ Water Resources Engineer

Reference: www.wantedanalytics.com

