

*Technical
English for
Civil
Engineers.*

CONSTRUCTION
& ENGINEERING
BASICS

COURSE DESCRIPTION

- The activities for this module are intended for Spanish students of Civil Engineering who have an intermediate level of English and are already acquainted with the basic vocabulary of construction.
- The units have been devised to help learners at this level to improve their knowledge and use of English in an engineering environment. Each standalone unit covers vocabulary related to a particular topic area –such as harbours, bridges, tunnels etc–, and is designed to reinforce the grammar knowledge of students and improve their communicative skills.
- The texts and multimedia reflect an authentic use of the language so that students will get a detailed understanding of the terminology.
- Further bibliography for both the students who study on their own and the teacher in the classroom is provided at the end of each unit.

Technical English for Civil Engineers:
Construction & Engineering Basics
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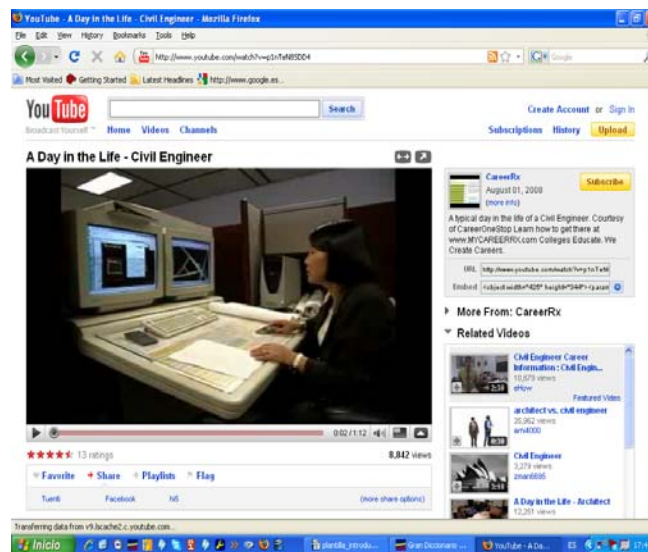


ACTIVITY 1.

A. Work in pairs. Can you provide a definition of Civil Engineering?

B. Watch the following video: “What do civil engineers do?”
(See Appendix for transcript)

[Video Source: <http://www.youtube.com/watch?v=p1nTeN8SDD4>]



Make a list of the words that you hear following these categories:

JOBS:

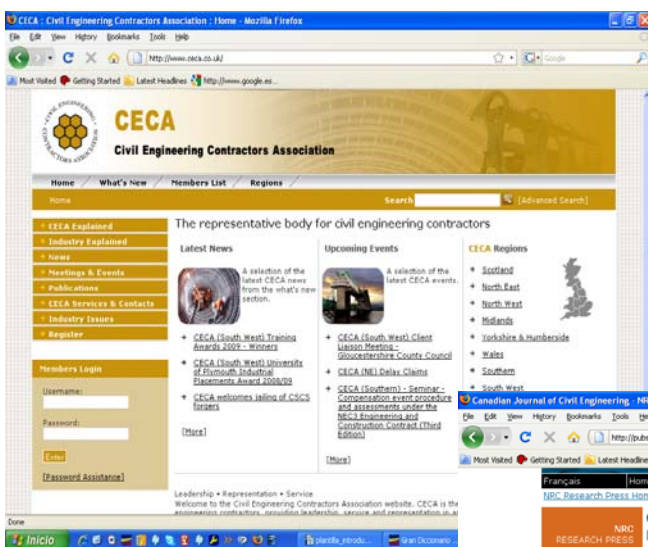
STRUCTURES::

C. Work in pairs. Discuss the topic of the video with your partner. Who do you think the target audience of the video is?

“The term civil engineering describes engineering work performed by civilians for non-military purposes. In general it describes the profession of designing and executing structural works for the general public and the communal environment. Civil engineering covers different areas of engineering, including the design and construction of large buildings, roads, bridges, canals, railway lines, airports, water-supply systems, dams, irrigation, harbour, docks, aqueducts, and tunnels.”

“The civil engineer needs a thorough knowledge of surveying, of the properties and mechanics of construction materials, of the mechanics of structures and soils, and of hydraulics and fluid mechanics. Today civil engineering includes the production and distribution of energy, the development of aircraft and airports, the construction of chemical process plants and nuclear power stations, and water desalination”

Brieger, N. & Pohl, A. *Technical English Vocabulary and Grammar*. Oxford: Summertown, 2002. p.44





ACTIVITY 2.

Read the following paragraphs on the story of William Kamkwamba. Can you put them into the correct order?

Malawi windmill boy with big fans

Excerpts adapted from ©BBCNews World Service
By Jude Sheerin
BBC News

The extraordinary true story of a Malawian teenager who transformed his village by building electric windmills out of junk is the subject of a new book, *The Boy Who Harnessed the Wind*

Self-taught William Kamkwamba has been **feted** by climate change campaigners like Al Gore and business leaders the world over. His achievements are more remarkable considering he was forced to **quit** school aged 14 because his family could no longer afford the fees.

The teenager had a dream of bringing electricity and **running water** to his village. And he was not prepared to wait for politicians or **aid groups** to do it for him. The need for action was greater after the 2002 drought. Unable to attend school he kept up his education by using the local library. Fascinated by science, his life changed one day when he picked up a textbook and saw a picture of a windmill.

Mr. Kamkwamba's story was sent through the blogosphere when a reporter from the Daily Times newspaper in Blantyre wrote an article about him in November 2006. **Meanwhile**, he installed a solar-powered mechanical pump, donated by **well-wishers**, adding water **storage** tanks and bringing the first potable water source to the entire region around his village.

But his neighbours' were amazed when Mr. Kamkwamba climbed up the windmill and hooked a car light bulb to the turbine. As the blades began to spin, the bulb **flickered** to life. The crowd went wild. Soon the kid's wonder was pumping power into his family's mud brick **compound**.

Neighbours were perplexed at the youngster spending so much time **scouring** rubbish tips. "People thought I was smoking marijuana", he said. Mr. Kamkwamba, who is now 22 years old, **assembled** a turbine from spare bicycle parts with other objects, and **fashioned** blades from plastic pipes, **flattened** by being held over a fire. "I got a few electric shocks climbing that Windmill", he says.

Mr. Kamkwamba told the BBC News website: "I was very interested when I saw the windmill could make electricity and **pump** water." "I thought: 'That could be a defence against hunger. Maybe I should build one myself.'"

Then he built a new windmill, and a water pump to irrigate his family's field. The fame of his **renewable** Energy project grew, and he was invited in 2007 to the prestigious Technology Entertainment Design Conference in Tanzania. He is now on a scholarship at the elite African Leadership Academy in Johannesburg, South Africa. Mr. Kamkwamba has the world at his feet, but is **determined** to return home after his studies. The hero **aims** to finish bringing power to all Malawians

GLOSSARY:

AID GROUPS: grupos de ayuda

AIMS TO: proponerse

ASSEMBLE: unir

COMPOUND: residencia (barracones)

TO BE DETERMINED TO: estar decidido a

FASHIONED: crear, formar

FETED: celebrado, conocido, famoso

TO FLATTEN: aplanar, allanar

TO FLICKER: parpadear, titilar

MEANWHILE: mientras

PUMP: bombear

QUIT: salir, dejar, abandonar

RENEWABLE: renovable

RUNNING WATER: agua corriente

SCOURING: restregar, erosionar

STORAGE: depósito, almacenamiento

WELL-WISHERS: alguien que desea lo mejor a otra persona

COMMUNICATIVE SKILLS

We use the following expressions to suggest solutions and ideas:

One option is... Another option would be...

Alternatively...

What about...? (+ing)

Why don't we...? (+inf. without to)

Why not...? (+ing)

PRACTICE: Work in pairs. Suggest ideas to improve Mr. Kamkwamba's project in Malawi using the expressions above.



ACTIVITY 3. Grammar. Revision



REMEMBER!

- Word order I: Verb + Object + Place + Time
- Word order II: Position of Adverbs with the verb:
 - Main Vb+Adv
 - Adv+To be
 - Aux Vb + Adv + Main Vb

KEY: Murphy, R. *English Grammar in Use*. Cambridge: CUP, 2004, pp. 218-9.

Choose from page 5 one sentence which fits each of the above structures. Can you write another example?



ACTIVITY 4. Vocabulary. Classify the words below into the following three categories:

Camber	Clapper	Pavement	Well
Dam	Drainage	Lock	Underdrain
Crown	Lift	Pothole	Main
Culvert	Arch	Flume	Bascule
Kerb/Curb	Manhole	Sewer	Cantilever
Barrage	Metal	Soft Shoulder	Crossover
Span	Viaduct	Suspension	Macadam
Pedestrian Crossing	Suspender	Cable	Dike
Paddle	Pier	Swing	Sluice
Watercourse	Weir	Tarmac	Footbridge
Aqueduct	Water main		

Roads

Bridges

Waterways

Write five sentences using the vocabulary above. Can you find their equivalents in Spanish?



ACTIVITY 5. Watch the following video and answer the questions:



[Video Source: <http://www.bobthebuilder.com/usa/videos.asp>.]

A. What are they doing? Match the items on the left with an appropriate action

Digger 1	Pick up sand
Digger 2	Lorrying something down to the builders
Digger 3	Put the dirt at the back of the truck and hold the dirt away
Truck	Dump sand
Builder	Clear away concrete
Cranes	Pad down the sand

B. Watch the video again. Can you hear any synonym for soil and for construction crane? Where does the term kanga-hammer come from?

C. Self study. Read the transcript of the video paying attention to the technical words of the unit (see appendix).



ACTIVITY 6. Grammar. Revision



REMEMBER!

We use **prefixes** and **suffixes** to form new words:

UN- IN- IL- IR- DIS-
 RE- OVER- MIS-
 -MENT -ION -ATION -ING
 -NESS -ITY
 -ER -IST
 -OUS -AL -Y -IVE
 -ABLE -IBLE
 -FUL -LESS

KEY: McCarthy, M. & O'Dell, F. *English Vocabulary in Use (pre-intermediate & intermediate)*. Cambridge: CUP, 1994, pp.18-23.

Work in groups. Play noughts and crosses with the following words. Use the prefixes and suffixes above to form new words. Each correct answer gets one point!

Legal	Accurate	Calculate	Number
Satisfactory	Moral	Build	Do
Convenient	Acceptable	Understand	Charge
Experienced	Sufficient	Appropriate	Modern
Loaded	Organised	Probable	Respectful
Healthy	Hospitable	Estimate	Privileged
Value	Complete		

IL-	UN-	IN-	MIS-
OVER-	LESS-	-ITY	IM-
-IST	OUT-	DIS-	-ING
IN-	MIS-	OVER-	UNDER



ACTIVITY 7. Vocabulary. Match the following words for civil engineering tools and equipment with an appropriate image:

- | | | | |
|--------------------|--------------|--------------|-------------|
| Construction crane | Dump truck | Shovel | Earth Mover |
| Bulldozer | Back hoe | Dredger | |
| Track excavator | Wheel Loader | Motor grader | |
| Back hoe | Cement truck | Road Roller | |



http://www.gamestronics.com.au/cw2/Assets/product_thumb/4098.png



http://www.floatingplantservices.com/_files/picture_1/Small%20dredger%201.jpg



http://img.diytrade.com/cding/713016/5691958/0/1208507896/SR20M_Road_Roller.jpg



<http://www.okrental.biz/images/case58-BackHoe.jpg>



<http://www.triplesauction.net/images/WebPage/Bulldozer.jpg>



<http://mditkof.com/miningShovel.jpg>



<http://sharonb.hypermart.net/cementgrn.gif>



http://image.ec21.com/image/ldhexport/oimg_GC01377039_CA01418466/Dump_Truck.jpg



http://wb7.itrademarket.com/pdimage/57/707357_motor-grader-xg31801_.jpg



ACTIVITY 8. Think about a project which could improve the welfare of your community. Write a short description of the project (max.350 words).

APPENDIX

TRANSCRIPT 1: WHAT DO CIVIL ENGINEERS DO?

[Video Source: <http://www.youtube.com/watch?v=p1nTeN8SDD4>]

Civil Engineers design roads, bridges, tunnels, dams and airports. They combine a knowledge of material science, engineering, economics, physics, geology and hydraulics to create the physical infrastructure that is central to modern life. Naturally, there are numerous sub-specialties: surveying and mapping engineers identify the best sites for construction. Hydraulic and irrigation engineers focus on dams, flood control wells and reservoirs. Environmental engineers deal with waste water products, garbage disposal and recycling plants. And traffic engineers specialize in designing people moving systems be they underground subways, commuter railroads or new or improved roads and highways. A bachelors degree is the minimum educational requirement. At some universities this is a five-year program but co-op, junior-colleges and night-school options are also available. Becoming a civil engineer is a lot of work but if you like the idea of being part of big complex projects to improve people's lives it could be just the profession for you.

TRANSCRIPT 2: FIRST STAGE OF BUILDING

[Video source: <http://www.bobthebuilder.com/usa/videos.asp>]

The digger takes the dirt out. It puts the dirt at the back of the truck and when it's full the truck holds the dirt away. There's another digger. It's clearing away a lot of small pieces of concrete that nobody needs anymore. And here is another digger. It's dumping sand in a big pile and driving off to get some more. Here's all that's been dug already. This truck has picked up lots of sand to put at the bottom of the hole ready for concrete to be poured on top. There it goes!

This builder is padding down the sand with a kanga-hammer. It squashes the sand so that it's really hard and flat. Here comes more sand. That special digger with a caterpillar truck is delivering it. The kanga-hammer bounces up and down. It's called the kanga-hammer because it's like a kangaroo. Kangaroos bounce up and down and so does this hammer. The builder has to be very careful when he's using this hammer. It's very powerful.

Here are the tower cranes. They work high up in the sky. Look! They can see the whole foundation underneath them. Cranes are lorrying something down to the builders. I wonder what it is! I see it's a big bundle of special metal rods. These rods are called rebars. The builders lay them on top of the foundation just before they pour in the concrete. That way the foundation is made out of concrete and metal so that it's very very strong. Metal bars have to be put together just like a big jigsaw puzzle. The builders melt the end with a special flint torch. That way, different pieces of rebar can be joined together

Glossary:

BAR: barra

BUNDLE: ló, fardo.

BOUNCE UP AND DOWN: rebotar

CLEAR AWAY: recoger, retirar

DUMP: descargar, verter

FLAT: plano, llano

LORRY: remolcar, transportar

MELT: derretir

PAD: rellenar, amortiguar, almohadillar

PILE: montón, pila

POUR: verter, echar

REBAR (reinforcing bar): barra de armadura

ROD: barra, vara de medir

SQUASH: aplastar

TORCH: soplete

UNDERNEATH: debajo de

REFERENCES:

Brieger, N. & Pohl, A. *Technical English Vocabulary and Grammar*. Oxford: Summertown, 2002. p.44

McCarthy, M & O'Dell, F. *English Vocabulary in Use (pre-intermediate & intermediate)*. Cambridge: CUP, 1994.

Murphy, R. *English Grammar in Use*. Cambridge: CUP, 2004.

<http://www.bbc.co.uk>

<http://www.bobthebuilder.com/usa/videos.asp>

<http://www.ceca.co.uk>

<http://www.laces.org>

<http://www.youtube.com/watch?v=p1nTeN8SDD4>

FURTHER STUDY:

Ibbotson, M. *Cambridge English for Engineering*. Cambridge: Cambridge University Press, 2008. p.48-9.

Swan, M. *Practical English Usage*. Oxford: Oxford University Press, 1995, pp. 606-14

White, L. *Engineering Workshops*. Oxford: Oxford University Press, 2003, p.2