

**STEAM ACTIVITY**

# It's time to get creative with Legos.



**Let's tap into our imagination and use our critical thinking skills to design a Lego community.**

Can you use Legos to construct buildings, trees, plants, animals, and even your local water reclamation plant?

**Challenge Level 1**

What animals and plants live in or along our local waterways? Use the Legos to create an animal or plant.

**Challenge Level 2**

What does your community look like? Use the Legos to create a community inspired by your own.

**Discussion**

After completing your design, think about the following questions.

Did you have a lot or a limited quantity of Lego parts and colors? Did this influence your creative process or fuel it?

What was your process in constructing the animal, plant, and/or community?



If you did this activity again, would you do it the same way or make it better? If you want to make it better, how would you do this?

My name is \_\_\_\_\_

and I am a future engineer.

\* Many companies offer tuition assistance if you can take classes part-time while working. This can launch or elevate your engineering career.

**ANSWER KEY**

**Put the Engineering Design Process in the correct order.**

A successful design requires an engineer to imagine a unique solution to a challenge; plan and create; test and evaluate; then continuously make improvements until the solution is at its best.

1. Identify the Problem
2. Explore
3. Design
4. Create
5. Try it Out
6. Make it Better

[mwr.org](http://mwr.org)



**Metropolitan Water Reclamation District of Greater Chicago**

**STEAM ACTIVITIES**

# Work in Water as an Engineer

## MWRD Engineers Help Design Stormwater Playground



**Wadsworth Elementary School, in Chicago's Woodlawn community, received a new Space to Grow playground in 2016.**



**BEFORE**

It is a unique outdoor space where students can play and learn, all ages can gather in a relaxing green environment, and more than 130,000 gallons of rainwater is captured.

This campus, which used to have unusable and unsafe play equipment, now has a beautiful schoolyard designed to reduce neighborhood flooding and keep the city's water resources clean.

The area includes an artificially turfed athletic field, a running track, a basketball court, a playground with a rubberized surface, trees, and rain gardens.

# Engineers are curious.

They design and build systems, machines, or structures to solve specific problems.



If you like water and want to help protect this valuable resource and the environment, consider a future career in the water industry!

There are many types of jobs, from skilled trades professionals to scientists, technology professionals, engineers, and mathematicians.

Engineers represent a large portion of the STEM professionals who work at the MWRD.

These engineers have contributed to the design of massive stormwater management and wastewater treatment projects so that Chicago and Cook County can thrive despite being located on a swamp.



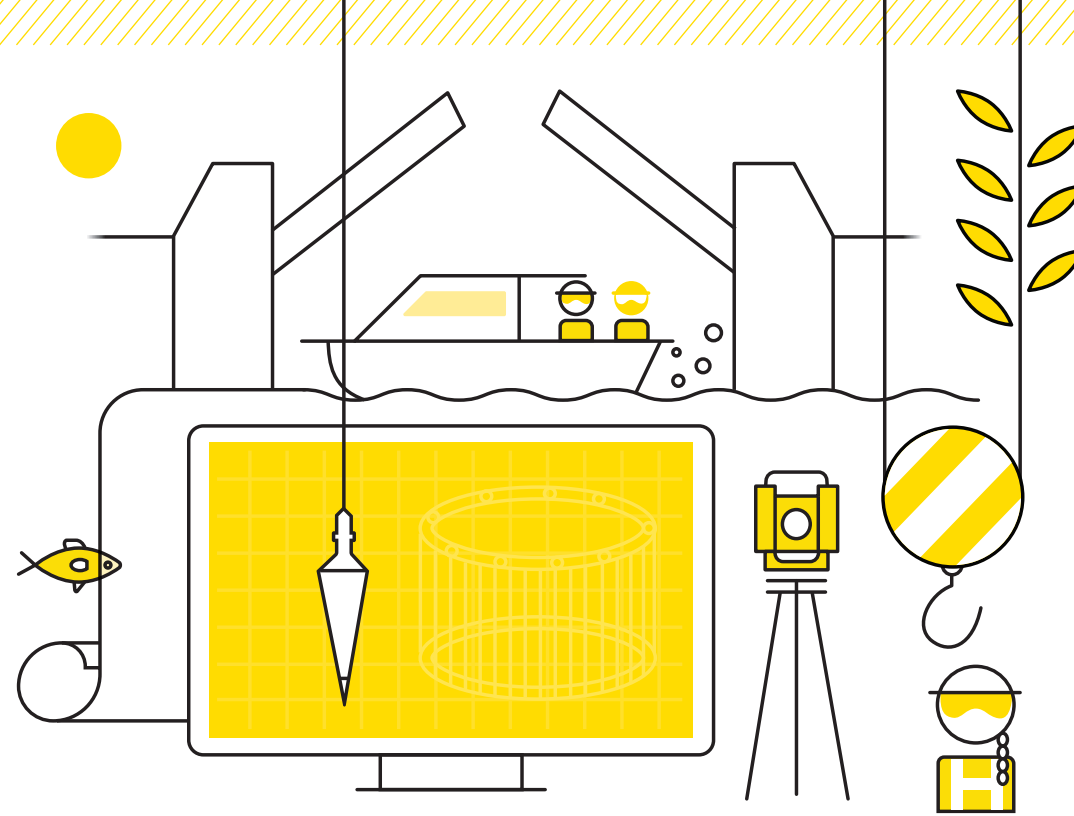
This underground structure stores water during heavy rainstorms.

► A **civil engineer** designs and manages the construction of water supply, sewage and stormwater systems, dams, bridges, tunnels, airports, buildings, reservoirs, environmental protection systems, and roads.

Civil engineers at the MWRD work in the office and in the environment.

Their annual salary begins at **\$77,000**.

They have a bachelor's degree in chemical, civil, environmental, sanitary, or structural engineering.



### Important Skills

Communication / Creativity / Critical Thinking / Leadership  
 Organization / Personal Time Management / Problem Solving  
 Project Management / Research and Data Collection / Technical Abilities

### Put the Engineering Design Process in the correct order.

Design	Identify the Problem	Try it Out
Explore	Create	Make it Better

<b>1</b>	<b>2</b> Explore	<b>3</b>
<b>4</b>	<b>5</b> Try It Out	<b>6</b>

### Helpful subjects to take in high school include:

- Advanced Math
- Advanced Science
- Computer Science
- English



### Helpful electives (if available) to take in high school include:

- Introduction to Engineering
- Computer-Assisted Design (CAD)
- Computer Applications
- Blueprint Reading
- Construction
- Drafting
- Economics
- Environmental Science
- Geographic Information Systems (GIS)



## HOW TO BECOME A CIVIL ENGINEER

**Graduate from college** with a bachelor's degree in civil or environmental engineering.

**Gain work experience** and develop important skills within the engineering industry.

**Find a mentor** and seek leadership opportunities to advance.

**Build relationships** with other professionals through engineering organizations and networking groups.

**Pursue graduate education**, such as a master's degree.\*

**Earn a professional engineering license** after taking an examination.

▼ This is by no means an exhaustive list, but it indicates the type of steps involved in this career path.