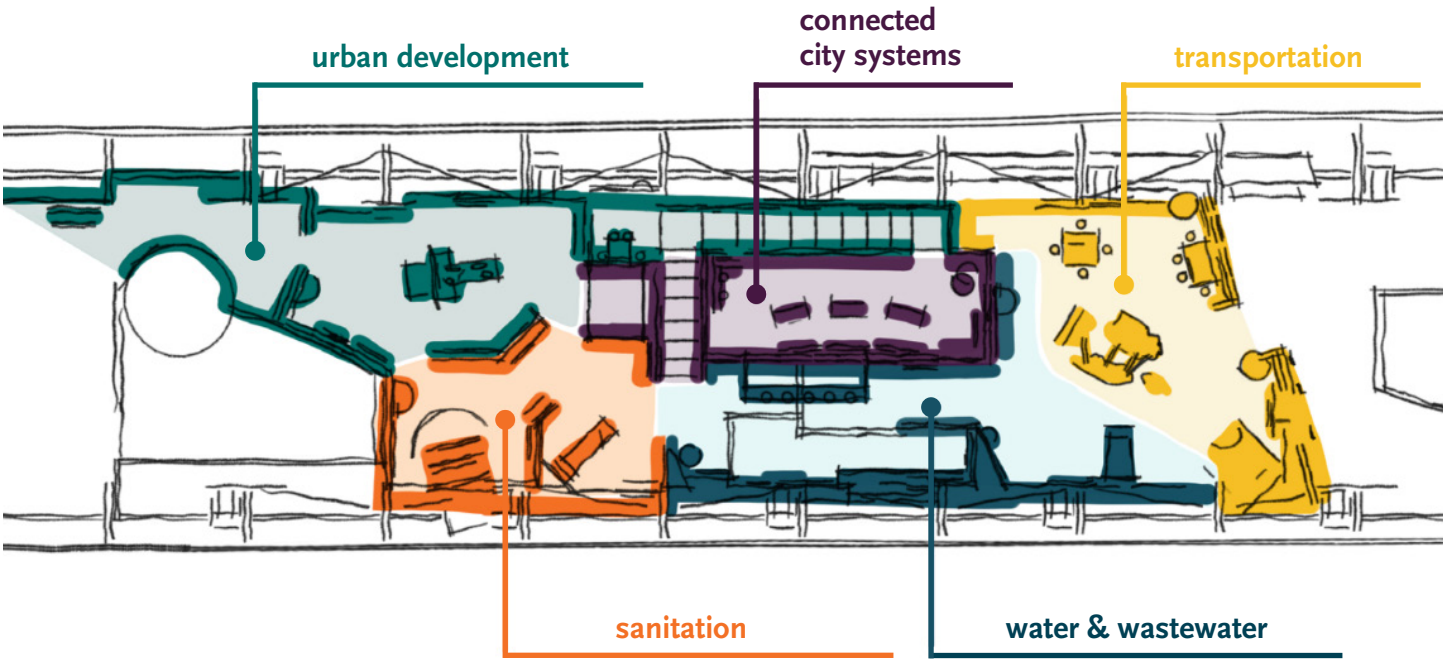
CityWorks Educator Guide Grade 3 – 5
Deep Dive Exploration – 60 minutes

Welcome to the CityWorks exhibition at the New York Hall of Science!

CityWorks is an immersive exhibit that invites students to explore four major infrastructure systems that keep New York City running. Through hands-on activities, interactive displays, and real-world examples, students learn how each system functions, how they connect to one another, and how they affect daily life in the city. The four main sections include:

- **Transportation:** Explore how engineering, management, and design shape the way subways, buses, sidewalks, and roads work.
- **Water & Wastewater:** Discover how clean water reaches our homes and where it goes after we use it, including filtration, treatment, and sewer systems.
- **Sanitation:** Learn about NYC's waste system, from collection to recycling, and explore the many tools, vehicles, and workers involved in managing our city's trash.
- **Urban Development:** Explore how New York City's buildings and neighborhoods are designed and built. Learn about the materials, engineering, and construction processes that create the city.
- **Connected City Systems:** Explore how natural and human-made systems work together and against each other in a city.



Cityworks Exhibit Worksheet for Grade 3 – 5

For school groups interested in a more structured experience, NYSCI has developed grade appropriate exhibit worksheets that guide students through *CityWorks*.

Using This Worksheet Provides

- **Focused Exploration**
  Each section focuses on one key exhibit in each of the major city infrastructure systems: Transportation, Water & Wastewater, Sanitation, and Urban Development. It offers students prompts and activities to deepen their understanding of that system.
- **Independent Discovery**
  The worksheet invites students to explore the exhibition from beginning to end. While it offers a suggested pathway, teachers can also encourage students to visit other exhibits in *CityWorks* as they work through the activities or after completing the worksheet.
- **Student Reflection**
  The worksheet contains reflection questions at the end that invite students to connect what they observe in *CityWorks* to their own thoughts or questions about their own communities and the systems that shape their daily lives.

TIPS FOR USE

Pre-visit

Review key vocabulary terms found throughout the exhibit before your visit:

- **Wastewater** — water that goes down sinks, toilets, and drains after being used.
- **Infrastructure** — the physical parts of a city needed that help people live and work, such as roads, pipes, bridges, and buildings.
- **System** — a group of connected parts that work together to perform a function, such as pipes and pumps moving water.
- **Sanitation** — the process of keeping places clean and healthy, such as safely removing trash and wastewater.

Print and prepare copies of the worksheet. Since worksheets contain color-coded exhibit sections as visual references, it is best to print worksheets in color if possible.

Collect and bring clipboards and pencils to ease writing on the worksheets while in the exhibit.

During visit

- Encourage students to use the worksheet to navigate their experience exploring the exhibit and explain how to use the map on their worksheet to find each of the four exhibits highlighted in the worksheet.
- Support students' interaction with exhibits by structuring exhibit exploration time to include time for students to explore exhibits of their choice.

Post-visit

- Use student responses on the worksheet as a springboard for further discussion or projects about how cities work and how students can help improve them.

We hope *CityWorks* inspires your students to imagine, design, and problem-solve as future city planners and engineers, ready to make their communities better places to live.

Curriculum Connections

The following table outlines how *CityWorks* exhibits align with the New York State Science Learning Standards (NYSSLS), Science and Engineering Practices, Disciplinary Core Ideas, Crosscutting Concepts, and corresponding Amplify curriculum units.

CityWorks Exhibit	Design a Street	Gravity Flow	Wastestream Journey Scanner	Build a Skyscraper
NYSSLS Standards (Performance Expectations)	3-5-ETS1-3: Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.	3-PS2-1: Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object.	5-ESS3-1: Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.	3-5-ETS1-2: Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.
Science & Engineering Practices	Constructing explanations and designing solutions	Planning and carrying out investigations	Analyzing and interpreting data	Developing and using models
Disciplinary Core Ideas	ETS1.C: Optimizing the Design Solution	PS2.A: Forces and Motion	ESS3.C: Human Impacts on Earth Systems	ETS1.B: Developing Possible Solutions
Cross Cutting Concepts	Cause and effect	Energy and matter	Systems and system models	Structure and function
Amplify Unit Connections	Amplify 3-5: Engineering Design	Amplify 3-5: Energy Conversions	Amplify 3-5: The Earth's Changing Climate	Amplify 3-5: Modeling Matter