

Under Construction: Building Careers

EDUCATOR'S GUIDE



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CAREERS SCIENCE LITERACY ENGINEERING MATH TECHNOLOGY



ESSENTIAL QUESTIONS

The *Under Construction: Building Careers* exhibit is designed to answer four essential questions. These questions may be a useful tool for you to gain background knowledge or to enhance your students in pre- and post-visit activities and discussions.

What are construction jobs?

There are many different jobs on a construction site. Many people need to work together to ensure that a structure is safe and working properly. For example, in order to have running water in a building, a plumber is needed. Electricians put in the wires needed for electricity, and the tile setters lay tiles for floors and counters. How many of us are aware of the variety of specialized careers in the construction field available?



For example, an HVAC Technician installs, maintains, and repairs heating, ventilation and air conditioning systems; A Wind Turbine Maintenance Technician is responsible for performing the complicated repairs and inspections on existing turbines.



Construction jobs are not only very much in demand, but they provide a dependable mid-level income without accruing the large student debt loads associated with many colleges. Did you know that...?

- There will be 1 million new jobs in the construction industry by the year 2016
- Construction is the 2nd largest industry after healthcare.
- Construction Careers are highly technical and involve the latest training.
- 18 of the 20 fastest growing occupations over the next decade will require technical training

Careers in construction are closely allied with careers in engineering and architecture and can be approached from multiple pathways. Find out more about these professions at <http://www.rmsc.org/ForTeachers/Museum/Exhibits/SelfGuided/UnderConstructionMSHS/> and from other sources listed in the resources section of this guide.

How can we be safe on a construction site?

Safety is the number one priority on a construction site. Working in the construction industry can be dangerous. Everyone on a construction site must be educated about these dangers and work together to prevent injuries.



In order to be safe on a construction site, everyone who works at or walks onto the construction site has to follow the rules in order to prevent injury to themselves or others. One example is that everyone must wear a hardhat to prevent injury from falling objects. Another example is that everyone working with sharp tools must wear thick gloves to prevent cuts and scrapes.

How is math used in construction?

Math is very important in many construction jobs. Geometry and patterning is important to the tile setter. Geometry, expressions and equations are important to electricians so that they know, for example, how current is related to power, voltage, and ohms (resistance) when wiring a building. Geometry, ratios, and proportional relationships are used by bricklayers in order, for example, to determine how many bricks are needed for a certain wall height. Measurement and estimation skills are important in all positions.



What is sustainability and how is it important to construction?

Sustainability is the quality of not being harmful to the environment or depleting natural resources, which is important when building large-scale buildings because they use a lot of resources. By making a building (and a construction site) sustainable, there is less impact on the environment and helps to make the building more efficient by using less resources (electricity, heat, air conditioning, etc.) Learn more about sustainability and the cutting-edge technology used in the construction of the Golisano Institute for Sustainability (<http://www.rit.edu/gis/>) building at the Rochester Institute of Technology (RIT) and view the video at: <http://www.rit.edu/showcase/index.php?id=203>.



The Golisano Institute for Sustainability building.

MAKING THE MOST OF YOUR VISIT

Using This Guide

Before your field trip to the *Under Construction: Building Careers* exhibition, we suggest that you review the Essential Questions to see how the exhibition's educational themes connect with your curriculum. Identify what you would like your students to learn from the exhibit and how they could continue learning back in the classroom. You are also welcome to preview the exhibition for free. (Just show your ID.)

Due to the limits on space in *Under Construction: Building Careers*, the RMSC offers two modes of field trip experience in the exhibit: in-person at the museum and a "virtual" online field trip using our website. We suggest:

- In-person: pre-K-2, Grades 3-5 or 6
- In person / virtual on-line field trip: Grades 6-12

This Educator Guide includes Activity Guides, by grade level ranges, for Before Your Visit, During Your Visit, and Back in the Classroom. Decide which of these materials you would like to use.

- pre-K-2, 3-5 Activity Guides: Available on-line to print
- Grades 6-12 Activity Guide: Available on-line with interactive components of the exhibition.

Construction Journals: The pre-K-2 and 3-5 Activity Guides contain Construction Journals for your use to focus your student's learning during their field trip. Feel free to copy and bring the pages as they are or adapt them to fit your needs.

Math: The exhibition features math skills used in construction jobs. You may choose to have your students do some math during their visit and/or have them do some of the post-visit math problems when they return to the classroom. (See the activity guides.)

ELA: In support of the Common Core, pre-visit close reading assignments (grades 3-12), and post-visit writing/oral presentation suggestions have been provided.

Correlation to Standards

Career Development and Occupational Studies (CDOS)

Standard 1: Career Development:

Students will be knowledgeable about the world of work, explore career options, and relate personal skills, aptitudes, and abilities to future career decisions.

Standard 2: Integrated Learning:

Students will demonstrate how academic knowledge and skills are applied in the workplace and other settings.

Standard 3a: Universal Foundation Skills:

Students will demonstrate mastery of the foundation skills and competencies essential for success in the workplace

Science and Engineering: NY State Science and Technology Standards (MST)

Standard 1: Students will use mathematical analysis, scientific inquiry, and engineering design, as appropriate, to pose questions, seek answers, and develop solutions.

Standard 4: Science

Physical Setting (PS)

Key Idea 3: Matter is made up of particles whose properties determine the observable characteristics of matter and its reactivity.

- Elementary: observe and describe properties of materials using appropriate tools
- Intermediate : observe and describe properties of materials, such as density, conductivity, and solubility

Key Idea 4: Energy exists in many forms, and when these forms change energy is conserved.

- Elementary: describe a variety of forms of energy (e.g., heat, chemical, light) and the changes that occur in objects when they interact with those forms of energy; observe the way one form of energy can be transformed into another form of energy present in common situations (e.g., mechanical to heat energy, mechanical to electrical energy, chemical to heat energy)
- Intermediate: describe the sources and identify the transformations of energy observed in everyday life; observe and describe the properties of sound, light, magnetism, and electricity
- Commencement: observe and describe transmission of various forms of energy

Key Idea 5: Energy and matter interact through forces that result in changes in motion.

- Elementary: describe the effects of common forces (pushes and pulls) on objects, such as those caused by gravity, magnetism, and mechanical forces
- Intermediate: describe different patterns of motion of objects

Living Environment (LE) (Sustainability)

Key Idea 7: Human decisions and activities have had a profound impact on the physical and living environment.

- Elementary: identify ways in which humans have changed their environment and the effects of those changes
- Intermediate: describe how living things, including humans, depend upon the living and nonliving environment for their survival; describe the effects of environmental changes on humans and other populations
- Commencement: describe the range of interrelationships of humans with the living and nonliving environment, explain the impact of technological development and growth in the human population on the living and nonliving environment; explain how individual choices and societal actions can contribute to improving the environment

Standard 7—Interdisciplinary Problem Solving

Key Idea 1: Connections.

- Elementary, Intermediate, Commencement: The knowledge and skills of mathematics, science, and technology are used together to make informed decisions and solve problems, especially those relating to issues of science/technology/society, consumer decision making, design, and inquiry into phenomena.

Key Idea 2: Strategies.

- Elementary, Intermediate, Commencement: Solving interdisciplinary problems involves a variety of skills and strategies, including effective work habits; gathering and processing information; generating and analyzing ideas; realizing ideas; making connections among the common themes of mathematics, science, and technology; and presenting results.

Next Generation Science Standards **Scientific and Engineering Practices**

Asking Questions and Defining Problems

Planning and Carrying Out Investigations

Constructing Explanations and Designing Solutions

Engaging in Argument from Evidence

Using Mathematics and Computational Thinking

Obtaining, Evaluating, and Communicating Information

Disciplinary Core Ideas (DCIs)

K-2:

PS1.A: Structure and Properties of Matter

PS2.A: Forces and Motion

PS3.C: Relationship between Energy and Forces

ESS3.C: Human Impacts on Earth Systems

ETS1.A: Defining and Delimiting Engineering Problems

ETS1.B: Developing Possible Solutions

ETS1.C: Optimizing the Design Solution

Grades 3-5:

PS2.A: Forces and Motion

PS2.B: Types of Interactions

PS3.A: Definitions of Energy

PS3.B: Conservation of Energy and Energy Transfer

PS3.C: Relationship between Energy and Forces

LS2.B: Cycles of Matter and Energy Transfer in Ecosystems

ESS3.C: Human Impacts on Earth Systems

ETS1.A: Defining and Delimiting Engineering Problems

ETS1.B: Developing Possible Solutions

ETS1.C: Optimizing the Design Solution

Middle School, Commencement:

PS1: Matter and its Interactions

PS2: Motion and Stability: Forces and Interactions

PS3: Energy

ESS3: Earth and Human Activity

ETS1.A: Defining and Delimiting Engineering Problems

ETS1.B: Developing Possible Solutions

ETS1.C: Optimizing the Design Solution

Crosscutting Concepts

1. Patterns
2. Cause and effect: Mechanism and explanation
3. Scale, proportion, and quantity.
4. Systems and system models
5. Energy and matter
6. Structure and function
7. Stability and change

Common Core State Standards for English Language Arts and Literacy in Science and Technical Subjects

(R,CRR,7) Reading:

#7 Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words

(IR,pre-K-5,7) Reading Standards for Informational Text:

Integration of Knowledge and Ideas

(W,CRR,2) Writing:

#2 Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content.

(SL,CCR,1,2,3) Speaking and Listening: Comprehension and Collaboration:

#1 Prepare for and participate effectively in a range of conversations and collaborations with diverse partners, building on others' ideas and expressing their own clearly and persuasively.

#2 Integrate and evaluate information presented in diverse media and formats, including visually, quantitatively, and orally.

#3 Evaluate a speaker's point of view, reasoning, and use of evidence and rhetoric

(SL,CCR,4,6) Speaking and Listening: Presentation of Knowledge and Ideas:

#4 Present information, findings, and supporting evidence such that listeners can follow the line of reasoning and the organization, development, and style are appropriate to task, purpose, and audience.

#6 Adapt speech to a variety of contexts and communicative tasks, demonstrating command of formal English when indicated or appropriate.

(L,CCR,1) Language Conventions for Standard English

#1 Demonstrate command of the conventions of standard English grammar and usage when writing and speaking.

(L,CCR,4) Vocabulary Acquisition and Use

#4 Determine or clarify the meaning of unknown and multiple-meaning words and phrases by using context clues, analyzing meaningful word parts, and consulting general and specialized reference materials, as appropriate.

Common Core State Standards for Mathematics

Standards for Mathematical Practice

#1 Make sense of problems and persevere in solving them.

#2 Reason abstractly and quantitatively.

#3 Construct viable arguments and critique the reasoning of others.

#4 Model with Mathematics.

#5 Use appropriate tools strategically.

Domains:

(Including the use of the pre- and post-visit activities)

pre-K-Grade 2:

	pre-K	K	1	2
Counting and Cardinality	P.CC	K.CC		
Operations and Algebraic Thinking	P.OA	K.OA	1.OA	2.OA
Number and Operations in Base Ten		K.NBT	1.NBT	2.NBT
Measurement and Data	P.MD	K.MD	1.MD	2.MD
Geometry	P.G	K.G	1.G	2.G

Grades 3-5:

	3	4	5
Operations and Algebraic Thinking	3.OA	4.OA	5.OA
Number and Operations in Base Ten	3.NBT	4.NBT	5.NBT
Number and Operations-Fractions			5.NF
Measurement and Data	3.MD	4.MD	5.MD
Geometry	3.G	4.G	5.G

Grades 6-8:

	6	7	8
Ratios and Proportional Relationships	6.RP	7.RP	
Geometry			8.G
Expressions and Equations	6.EE	7.EE	8.EE

Teaching in *Under Construction: Building Careers*

This exhibit uses videos, text, and hands-on interactives to teach students about construction safety, careers in construction, how construction careers use math and science, and sustainable architecture. Below is a guide to the various interactives with suggestions for leading your class through the *Under Construction: Building Careers* exhibition.

This exhibit is relevant to students from pre-K through high school. Different ages will use the exhibit in different ways.

pre-K-Grades 5 or 6

- pre-K -K: The RMSC encourages guided exploration for our youngest visitors. The Construction Journals could be modified for use with this age group.
- Grades 1-5: Teachers may choose to divide their students into groups of 3 to 5 students with one chaperone per group and have the groups cycle through the stations, recording their observations in their Construction Journals.

Grades 6-12

- The RMSC suggests that middle and high school students could supplement their visit to the Museum with information provide in our “virtual field trip” on the RMSC website.

Exhibition Walk-Through:

Below is an overview of the components of the exhibit with recommendations by grade level:

Safety:

Exhibit Component Suggested for pre-K – Grade 3

Topic of Safety Suggested for All Ages

This exhibit component contains safety information important to construction workers. Students in pre-K through Grades 3 will enjoy putting on the safety equipment that is stored in the lockers, such as hardhats, vests, and gloves, to transform themselves into RMSC construction workers. The backside of the lockers has information and signs related to construction site safety.

Teachers: Depending on grade level, have your students pick up or put on the safety equipment stored in the lockers and talk about how these things can help make you safe on a construction site.



Be a Plumber:

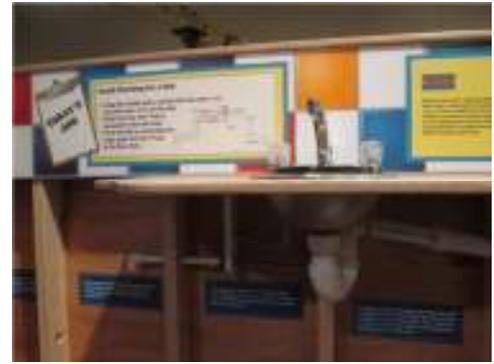
Suggested for pre-K – Grade 6

At the *Be a Plumber* interactive, students will run the plumbing for a sink. As they become a plumber they will learn the basics of running plumbing; the pipes that are used, the forces that move the water in a plumbing system, and the math concepts that guide their work.

Plumbers install, repair, and maintain plumbing systems that are used to distribute water, remove waste, and deliver gas for appliances and heating and cooling systems. Plumbers follow blueprints and CAD (computer-aided design) drawings to determine where to install the piping. They prepare the piping for installation by measuring, bending, cutting and threading the pipes. Often plumbers have to make openings in the walls or ceiling for fixtures or pipes. After all the pipes are positioned correctly, plumbers install fixtures, such as sinks and toilets and install appliances such as water heaters, dishwashers and stoves.

Teachers: Have students in grades pre-K-5 take turns plumbing the sink. Younger students may need help due to the fine motor skills required. Students can talk about what happens to the water, how plumbing might play a part in their own homes, and how plumbers use math on the job.

Note: If the plumbing is already connected by a previous group, disconnect all pipes so that your students are starting over and be sure to disconnect the pipes when done.



Be an Electrician:

Suggested for pre-K – Grade 9

At the *Be an Electrician* interactive students will run the wires for a room. As they become an electrician, they will learn the basics of running wires; the steps, safety, and the math concepts that guide their work. They will learn about the safety hazards electricians face and the safety equipment that they wear. Electricians connect and maintain electrical systems in homes and businesses. Electricians that work in the construction of new buildings install the panel boxes, circuit breakers, and wires that allow electricity to power electrical systems for lighting, appliances and heating and cooling systems.

Teachers: Have students connect the wires from the panel box to the junction box to the various elements that need electricity.

Make sure students utilize the measuring implement near the wire storage hanging in order to figure out the correct length of wire needed.

Note: If the wires have been left already connected by a previous group, disconnect all wires so that your students are starting over and be sure to disassemble after use.



Be a Tile Setter:

Suggested for pre-K – Grade 6

Note: The “tiles” in this exhibition component are actually black and white KEVA Planks.

At the *Be a Tile Setter* interactive students will place a tile pattern. As they become a tile setter they will learn the basics of placing tile, the material used, and the math concepts that guide their work. They will learn about safety hazards tile setters face and the safety equipment that they wear. Tile setters apply tile, stone and wood to walls, floors and other surfaces. They start their job by examining blueprints, and then lay out the pattern that is required by the design. They measure and mark the surfaces to be covered, and then use a trowel to spread cement adhesive or mastic base over the surface. They cut and shape the tile and place it onto the adhesive. After the adhesive dries, they apply grout between the joints of the tile. Finally they use a wet sponge to remove the excess grout.



Teachers: Students can be engaged in differentiated levels with the black and white KEVA blocks, either to make their own patterns, copy existing patterns, and complete unfinished patterns.

Note: If the tiles have been left arranged in patterns by a previous group, place the tiles back in the buckets. Be sure to disassemble the patterns after use.

Be a Crane Operator:

Suggested for pre-K – Grade 3

Crane operators move heavy material around a construction site. They begin their day by inspecting and performing maintenance to the crane. They review the daily delivery schedule and loading instructions for the material to be moved. Once seated in the cab, they inspect and test all controls, instruments and gauges. They lift and move the load using joysticks, levers and pedals. Crane operators constantly inspect their work area for obstacles and communicate with others on the construction site effectively.

Teachers: Have students work together as teams with students doing the “Be a Brick Layer” activity to load and move the bricks from the pile to the brick layers’ site (the white house) with the crane. Additionally, have students talk about how crane operation can be made safe. What should crane operators wear to keep themselves protected? What can construction workers on the ground do to keep themselves safe?



Be a Bricklayer:

Suggested for pre-K – Grade 3

A bricklayer, or mason, builds structures, such as walls and walkways using bricks, concrete blocks or natural stones. Bricklayers follow detailed blueprints and must make precise measurements to create a structure. First the bricklayers place the corners of a structure using a level. Next they run a nylon line between the corners to make sure that the bricks are laid straight as they lay the courses. After the first layer of bricks are laid, they spread a bed of mortar with a trowel and then press the next layer of bricks into place. Bricklayers often have to cut bricks for corners, and for window and door openings.

Teachers: Guide students through laying bricks along the side of the building. Ask how many bricks it takes to go around the entire bottom of the house, introducing the concept of perimeter. Have students count how many large (rectangular-faced) bricks and small (square-faced) bricks are needed to cover one side of the house, introducing the concept of area. Can one side be covered evenly by only using the larger bricks? Have students reproduce the pattern shown on the front of the building.

Note: If the bricks are already on the building when you arrive, remove them to a pile so that students can start fresh. Have students put them back in a pile when done.



Sustainability & Technology:

Suggested for Grades 3 – 12

Students will be able to learn more about the Golisano Institute of Sustainability (GIS) building at RIT and sustainability as they view a 3D model with a green roof. They will discover the cutting edge technology used at GIS by watching a video embedded in the model.

The Sustainability Institute Hall, home of the Golisano Institute for Sustainability (GIS), an 84,000 square foot building, opened at RIT in 2013. The building is designed to be a “Living Lab” where students and researchers learn about sustainability from the cutting edge technology that is housed there. It is one of the greenest buildings in the world, and was designed to exceed the highest standards recognized by Leadership in Energy and Environmental Design (LEED).

Teachers: Watch the video provided with your students and discuss what “sustainability” is and how it has changed construction work. Alternatively this video is also available on-line for use in the classroom.



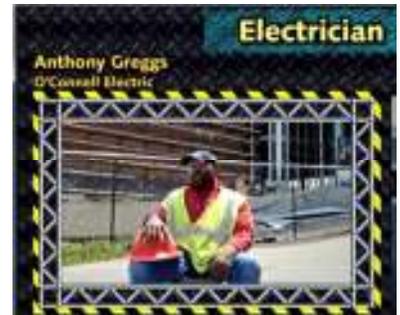
Building Time-Lapse & Construction Worker Stories:

Suggested for Grades 3 – 10

The Construction “trailer” houses a large monitor displaying a time-lapse video of the Sustainability Institute Hall building being constructed from ground breaking to completion. Students will be able to learn about careers in the construction field as they hear segments of interviews from the people who designed and built the building.

There are many people involved in the planning, designing and construction of a building. Architects, bricklayers, carpenters, engineers, heavy equipment operators, ironworkers, and plumbers are just a few of the many careers represented in the field of construction. These people work together to ensure buildings are constructed safely, economically, and on time for their clients. Construction workers take great pride in their work.

Teachers: This exhibit is best seen online to promote discussion with the class as a pre- or post-visit activity.



Construction Careers Kiosk:

Suggested for Grades 6 – 12

The construction industry shapes our lives. Construction workers are responsible for building our roads, schools, industrial buildings, sports complexes and our homes. This exciting field of work is projected to have many opportunities for those interested in pursuing a career. The number of jobs for construction workers will grow 21 percent by 2020 according to U.S. Bureau of Labor Statistics.

There are several paths to becoming a construction worker. Many construction workers show interest in building things at a young age. They play with Legos and other building sets, they enjoy puzzles and like helping on projects around the house with adult supervision. Students who are interested in becoming construction workers should take technology, math and science classes. Trade schools offer courses on the basics of construction work. Most construction specialties require a two to four year to apprenticeship. An apprenticeship is an extensive on the job-training program that allows the student to develop specialized skills in their field of work.

Teachers: This section of the exhibit is also best viewed as an online (virtual) field trip. Discuss the education and training needed for each of these careers with your students.



Glossary of Construction Terms

<p>Architect: Someone who designs large construction projects, like buildings or bridges, as a career.</p>	<p>Blueprints: A set of technical drawings that shows a building plan for a construction site.</p>
<p>Bricklayer: Someone who lays bricks in construction. A bricklayer, or mason, builds structures, such as walls and walkways using bricks, concrete blocks or natural stones.</p>	<p>Career: A job or profession, especially one that a person would train for. Construction careers often involve an apprenticeship with a master in their chosen field.</p>
<p>Carpenter: Someone who builds or repairs wooden structures, such as houses, scaffolds or shelving.</p>	<p>Electrician: Someone who installs, operates, maintains, or repairs electric devices or electrical wiring.</p>
<p>Energy Efficient: Using less energy (input) to provide the same level of performance for products and services (output). For example, a compact fluorescent bulb uses 80% less energy than an incandescent bulb to produce the same amount of light.</p>	<p>Engineer: An Engineer uses scientific knowledge to invent and make things. Besides machines, they design roads, bridges and buildings.</p>
<p>Foreman: The person in charge of a group of workers. The foreman on a construction site is the boss.</p>	<p>Green Roof: The roof of a building that is partially or completely covered with vegetation and a growing medium, planted over a waterproofing membrane. It may also include additional layers such as a root barrier and drainage and irrigation systems.</p>
<p>Materials: Supplies used in a construction project and incorporated in the final building or structure. Wood, metal, electrical wire, concrete, steel, glass and plumbing pipes are all examples of materials.</p>	<p>Plumber: Someone who installs repairs, and maintains plumbing systems that are used to distribute water, remove waste, and deliver gas for appliances and heating and cooling systems</p>
<p>Safety: Avoiding danger, injury or loss. For example, construction workers wear hardhats, boots, harnesses, goggles, and gloves, depending on the hazards associated with job.</p>	<p>Sustainability: The quality of not being harmful to the environment or depleting natural resources.</p>

Resources

On-Line

Best Practices: Green Architecture Project in 3rd Grade: <https://www.youtube.com/watch?v=43rK2xnhgJM> In this video, 3rd grade students participate in a green architecture project to re-design their school.

Top 10 Free Lesson Plans and Activities: Architecture Categories: <http://architecture.about.com/od/teachersaids/tp/lessonplans.htm> Upper elementary through high school.

Construction Center for Excellence: <http://www.constructioncenterofexcellence.com/educator/pre-school-to-elementary-age/> An excellent resource for fun websites for little builders, ages pre-K through Elementary. pre-K-5

Construction Math Toolbox: <http://www.constructioncenterofexcellence.com/educator/construction-math-toolbox/>. Combines fun, industry-required math lessons with supplemental academic and career guidance information. It was developed by the Construction Center for Excellence with numerous state and local partners for the Transition Math Project. Grades 8– 10.

Web site of the Golisano Institute for Sustainability (GIS): <http://www.rit.edu/gis/>. Information about sustainability and the cutting-edge technology used in the construction of the GIS building. Geared towards middle school and high school teachers and counselors.

RIT: A Leader in Sustainability: <http://www.rit.edu/showcase/index.php?id=203>. Video discussing the Golisano Institute for Sustainability (GIS) building and programs. Geared towards middle school and high school students, teachers and counselors.

Careers in Construction: <https://www.agcnys.org/programs/careers-in-construction>, an excellent site from the Associated General Contractors New York State, LLS, middle school, high school. Geared towards teachers and counselors.

SkillsUSA: <http://skillsusa.org/about/> A partnership of students, teachers and industry members to en-

sure America has a skilled workforce, SkillsUSA helps each student excel. Geared towards middle and high school teachers and counselors.

Build Your Future: <http://byf.org/>, Guiding America's youth toward advanced education and training in construction careers. Geared towards middle school and high school students. Student friendly.

New York State Construction Career Days: <http://www.constructioncareerdays.org/> Geared towards middle school and high school students, teachers and counselors.

Rochester Careers in Construction Inc.: <http://www.uniconrochester.com/do.cfm?section=future&ID=23>, works to promote careers in the construction trades. Geared towards middle school and high school teachers and counselors.

Projected Employment Forecast: <http://www.rcsdk12.org/domain/8696>, for jobs in the construction, from the Robert Brown School of Construction and Design. Geared towards middle school and high school students, teachers and counselors.

Parents Worry Schools Overlook Girls Who Aren't College-Bound: <http://www.npr.org/2013/12/11/249975051/parents-worry-schools-overlook-girls-who-arent-college-bound>, video by Claudio Sanchez, NPR News, December 11, 2013. Geared towards middle school and high school students, teachers and counselors.

Books

Jobs in Construction

The Construction Crew by Lynn Meltzer, Carrie Eko-Burgess Fiction, The construction gang is tearing down an old building and laying the foundation for a new home. Workers use all kinds of trucks and tools to get the job done. And just in time for a family to move in. Grades pre-K-2

I Want to Be an Engineer by Maze Productions, 1997. Nonfiction. How to become an engineer and what engineering jobs are like. Grades 4-5

Steel Beams & Iron Men by Mike Cherry, 1980. Nonfiction. An ironworker describes his work. Grades 4-5 (advanced)

Buildings and Architecture

The Art of Construction: Projects and Principles for Beginning Engineers and Architects by Mario Salvadori, 1990. Nonfiction. Explains how certain structures are built and gives ideas for building models at home. Upper grades and adults.

Skywalkers: Mohawk Ironworkers Build the City by David Weitzman, 2010. Nonfiction. Narrative text and photographs examine Native American history and the development of structural engineering and architecture, focusing on Mohawk ironworkers. Upper grades and adults.

Me and Momma and Big John by Mara Rockliff, 2012. Fiction. Little John is proud of his mother's work as a stonemason for a cathedral called "Big John," but struggles to understand the importance of spending so much time on one stone that no one will know Momma cut. K-Grade 2

Iggy Peck, Architect by Andrea Beaty, 2007. Fiction. Ever since he was a baby, Iggy Peck has built towers, bridges, and buildings. This comes in handy when his second grade class is stranded on an island during a picnic. Grades 2-3

Construction Vehicles and Tools

Goodnight, Goodnight, Construction Site by Sherri Duskey Rinker Fiction. The #1 New York Times bestseller. As the sun sets behind the big construction site, all the hardworking trucks get ready to say goodnight. One by one, Crane Truck, Cement Mixer, Dump Truck, Bulldozer, and Excavator finish their work and lie down to rest—so they'll be ready for another day of rough and tough construction play. Grades pre-K and up

B is for Bulldozer by June Sobel, Melissa Iwai Nonfiction. Get ready for a ride through the alphabet at a busy construction site. There's a big yellow Bulldozer, a tall shiny Crane, a rusty red Dump truck--and the construction crew is hard at work. But what are they building? Ages 4 – 8

Big Machines by Karen Wallace, 2000. Nonfiction. A crane, bulldozer, dump truck, and other construction machines work together to build a new park. Also available in Spanish. K-Grade 1

Cool Construction Vehicles by Kelley MacAulay, 2007. Nonfiction. Description of a variety of construction equipment. Also available in Spanish. Grades 2-3

Power Machines by Ken Robbins, 1993. Nonfiction. Illustrates what various power machines do with hand-colored photos. Grades 4-5

B is For Bulldozer by June Sobel, 2003. Fiction. Children see builders construct a rollercoaster over the course of a year using tools and materials that begin with each letter of the alphabet. K

Other Construction-related Books:

Jack's House by Karen Magnuson Beil, 2008. Fiction. Who was really responsible for the house that Jack claims to have built and just how many trucks were involved? K

Those Building Men by Angela Johnson, 2001. Fiction. Recalls the unheralded men whose labors served to build the canals, roads, railroads, bridges and towering buildings of the United States. K

Mike Mulligan and His Steam Shovel by Virginia Lee Burton, 1939. Fiction. When Mike Mulligan and his steam shovel, Mary Ann, lose their jobs to the gasoline, electric and diesel motor shovels, they go to a little country town where they find that one new job leads to another. K-Grade 2

Too Tall Houses by Gianna Marino, 2012. Fiction. Owl and Rabbit are good friends and neighbors atop a hill, but when Rabbit's garden blocks Owl's view of the forest, Owl builds a higher house, which prevents sunlight from reaching Rabbit's plants. K-Grade 2

Dreaming UP: A Celebration of Building by Christy Hale Nonfiction. A clever introduction to architecture. Each spread shows children on one side, playing with toys that mirror photograph of famous buildings on the other side. Grades K-3

The Barn by Avi, 1994. Fiction. In an effort to fulfill their dying father's last request, nine-year-old Ben and his brother and sister construct a barn on their land in the Oregon Territory. Grades 4-5