

# MERIT BADGE SERIES



# RAILROADING



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STEM-Based

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*"Enhancing our youths' competitive edge through merit badges"*



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## Railroading

1. Do THREE of the following:
  - (a) Name three types of modern freight trains. Explain why unit trains are more efficient than mixed freight trains.
  - (b) Name one Class I or regional railroad. Explain what major cities it serves, the locations of major terminals, service facilities and crew change points, and the major commodities it carries.
  - (c) Using models or pictures, identify 10 types of railroad freight or passenger cars. Explain the purpose of each type of car.
  - (d) Explain how a modern diesel or electric locomotive develops power. Explain the terms dynamic braking and radial steering trucks.

2. Do the following:
  - (a) Explain the purpose and formation of Amtrak. Explain, by the use of a timetable, a plan for making a trip by rail between two cities at least 500 miles apart. List the times of departure and arrival at your destination, the train number and name, and the type of service you want.
  - (b) List and explain the various forms of public/mass transit using rail.
3. Do ONE of the following:
  - (a) Name four departments of a railroad company. Describe what each department does.
  - (b) Tell about the opportunities in railroading that interest you most and why.
  - (c) Name four rail support industries. Describe the function of each one.
  - (d) With your parent's and counselor's approval, interview someone employed in the rail industry. Learn what that person does and how this person became interested in railroading. Find out what type of schooling and training are required for this position.
4. Explain the purpose of Operation Lifesaver and its mission.
5. Do THREE of the following:
  - (a) List five safety precautions that help make trains safer for workers and passengers.
  - (b) Explain to your merit badge counselor why safety around rights-of-way is important.
  - (c) List 10 safety tips to remember when you are near a railroad track (either on the ground or on a station platform) or aboard a train.
  - (d) Tell your counselor about the guidelines for conduct that should be followed when you are near or on railroad property. Explain the dangers of trespassing on railroad property.
  - (e) Tell what an automobile driver can do to safely operate a car at grade crossings, and list three things an automobile driver should never do at a grade crossing.
  - (f) Tell how to report a malfunction of grade crossing warning devices.
  - (g) List safety precautions a pedestrian should follow at a public crossing.
6. Explain the appearance and meaning of the following warning signs and devices: advance warning sign, pavement markings, crossbucks, flashing red lights, crossing gates.
7. Do EACH of the following:
  - (a) Explain how railroad signals operate and show two basic signal types using color or configuration.
  - (b) Explain the meaning of three horn signals.
  - (c) Describe a way to signal a train for an emergency stop.
  - (d) Explain the use and function of the EOTD (end-of-train device), or FRED (flashing rear end device), used on the last car of most freight trains.

8. Select ONE of the following special-interest areas and complete the requirements.

(a) **Model Railroading**

With your parent's and counselor's approval, do TWO of the following:

- (1) Draw a layout of your own model railroad or one that could be built in your home. Design a point-to-point track or loop with different routings. Include one of the following: turnaround or terminal or yard or siding.
- (2) Build one model railroad car kit or one locomotive kit.
- (3) Name the scale of four popular model railroad gauges. Identify the scale of four model cars or locomotives.
- (4) Locate the website of four model railroad-related manufacturers or magazine publishers. Print information on their products and services and discuss the information with your counselor.
- (5) Build one railroad structure (from scratch or using a kit), paint and weather the structure, mount it on your layout or diorama, and make the surrounding area on the diorama scenic.
- (6) Alone or with others, build a model railroad or modular layout including ballast and scenery. Make electrical connections and operate a train. Describe what you enjoyed most.
- (7) Participate in a switching contest on a timesaver layout and record your time.
- (8) Explain the difference between powering and controlling a model railroad by using direct current, and powering and controlling a model railroad using digital command control.

(b) **Railfanning**

With your parent's and counselor's approval, do TWO of the following:

- (1) Visit a railroad museum, historical display, or a prototype railroad-sponsored public event. With permission, photograph, videotape, or sketch items of interest. Explain what you saw and describe your photos, sketches, or videotape.
- (2) Purchase tickets and ride a scenic or historic railroad. Under supervision, photograph the equipment and discuss with your counselor the historic significance of the operation.
- (3) Locate the website of four rail historical groups, then find information on the history of the rail preservation operations and purpose of each group. Talk with a member of one of the groups and find out how you might help.
- (4) Plan a trip by rail between two points. Obtain a schedule and explain when the train should arrive at two intermediate points. Purchase the tickets and make the trip. Explain to your counselor what you saw.

# Resources About Railroading

## Scouting Literature

*Engineering and Model Design and Building* merit badge pamphlets

Visit the Boy Scouts of America's official retail website (with your parent's permission) at <http://www.scoutstuff.org> for a complete listing of all merit badge pamphlets and other helpful Scouting materials and supplies.

## Books

- Ambrose, Stephen E. *Nothing Like It in the World: The Men Who Built the Transcontinental Railroad 1863–1869*. Simon & Schuster, 2000.
- Armstrong, John H. *The Railroad: What It Is, What It Does, The Introduction to Railroading*, 5th ed. Simmons-Boardman Books, 2008.
- Blumberg, Rhoda. *Full Steam Ahead: The Race to Build a Transcontinental Railroad*. National Geographic Society, 1996.
- Drury, George H., and Bob Hayden. *Guide to Tourist Railroads and Railroad Museums 2002*, 37th ed. Kalmbach Publishing Company, 2002.
- Frery, Dave. *How to Build Realistic Model Railroad Scenery*, 3rd ed. Kalmbach Publishing Company, 2005.
- Hubbard, Freeman. *Encyclopedia of North American Railroading: 150 Years of Railroading in the United States and Canada*. McGraw-Hill Book Company, 1981.
- Kelly, Jim, and Michael Emmerich. *HO Railroad From Start to Finish (Model Railroad Handbook, No. 36)*. Kalmbach Publishing Company, 1993.
- Miller, Allan W., ed. *Model Railroad Resources: A Where-to-Find-It Guide for the Hobbyist*. Krause Publications, 2000.
- Schleicher, Robert. *The HO Model Railroading Handbook: Build an Exciting HO Layout the Easy, Inexpensive Way*, 3rd ed. Krause Publications, 1998.
- Solomon, Brian. *The Heritage of North American Steam Railroads: From the First Days of Steam Power to the Present*. Reader's Digest, 2001.
- Stover, John F. *The Routledge Historical Atlas of the American Railroads*. Routledge, 1999.
- Vantuono, William C. *All About Railroading*, 2nd ed. Simmons-Boardman Books, 2006.

## Magazines

### *Classic Trains*

Kalmbach Publishing Company  
P.O. Box 1612  
Waukesha, WI 53187-1612  
Toll-free telephone: 800-533-6644  
Website: <http://ctr.trains.com>

### *Model Railroad News*

Telephone: 877-787-2467  
Website:  
<http://www.modelrailroadnews.com>

### *Model Railroader*

Kalmbach Publishing Company  
P.O. Box 1612  
Waukesha, WI 53187-1612  
Toll-free telephone: 800-533-6644  
Website: <http://mrr.trains.com>

### *Passenger Train Journal*

Telephone: 877-787-2467  
Website:  
<http://www.passengertrainjournal.com>

### *Railfan & Railroad*

White River Productions  
Telephone: 862-354-3196  
Website: <http://www.railfan.com>

### *Railroad Model Craftsman*

White River Productions  
Telephone: 877-787-2467  
Website: <http://www.rrmodelcraftsman.com>

### *Railway Age*

345 Hudson St.  
New York, NY 10014  
Website: <http://www.railwayage.com>

### *Trains*

Kalmbach Publishing Company  
P.O. Box 1612  
Waukesha, WI 53187-1612  
Telephone: 262-796-8776  
Website: <http://trn.trains.com>

### *Trains & Railroads of the Past*

Telephone: 877-787-2467  
Website: <http://www.trpmmagazine.com>

## Organizations and Websites

### **Amtrak**

Toll-free telephone: 800-872-7245  
Website: <http://www.amtrak.com>

### **Association of American Railroads**

425 Third Street SW  
Washington, DC 20024  
Telephone: 202-639-2100  
Website: <https://www.aar.org>

### **Federal Railroad Administration**

1120 Vermont Ave. NW  
Washington, DC 20590  
Website: <http://www.fra.dot.gov>

### **National Model Railroad Association**

4121 Cromwell Road  
Chattanooga, TN 37421  
Telephone: 423-892-2846  
Website: <http://www.nmra.org>

### **National Railway Historical Society**

100 North 17th St., Suite 1203  
Philadelphia, PA 19103-2783  
Telephone: 215-557-6606  
Website: <http://www.nrhs.com>

### **Operation Lifesaver**

1420 King St., Suite 401  
Alexandria, VA 22314  
Toll-free telephone: 800-537-6224  
Website: <http://www.oli.org>

## Acknowledgments

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