



# ACHIEVEMENT PROGRAM MODEL RAILROAD ENGINEER ELECTRICAL RECORD AND VALIDATION FORM May 2006

PLEASE ATTACH THIS FORM TO A COMPLETED STATEMENT OF QUALIFICATIONS (SOQ) FORM.

Member's Name: \_\_\_\_\_

NMRA #: \_\_\_\_\_

Date Submitted: \_\_\_\_\_

Region: \_\_\_\_\_

To qualify for this certificate you must:

1. Construct and demonstrate on own or club layout, the satisfactory operation of an electrical control system on a model railroad capable of simultaneous and independent control of two mainline trains in either direction, and containing at least:
  - For conventional DC wiring (non-command-control), five electrical blocks that can be controlled independently. For command control wiring (DCC, TMCC, and others), sufficient gaps and switches to maintain polarity, phase if needed, and troubleshooting.
  - One mainline passing siding
  - One of the following: reversing loop, wye, turntable, or transfer table
  - Facilities for storing of at least two unused motive power units.
  - One yard with a minimum of three tracks and a switching lead independent of the mainline.
  - One power supply with protective devices (short indicator and/or circuit breaker) to ensure safe operation.
  
2. Wire and demonstrate the electrical operation of at least three of the following items:
 

<input type="checkbox"/> Turnout	<input type="checkbox"/> Single slip switch	<input type="checkbox"/> Gauntlet turnout
<input type="checkbox"/> Crossing	<input type="checkbox"/> Gauge separation turnout	<input type="checkbox"/> Spring switch
<input type="checkbox"/> Crossover	<input type="checkbox"/> Double junction turnout	<input type="checkbox"/> Operating switch in overhead wire
<input type="checkbox"/> Double crossover	<input type="checkbox"/> Three way turnout	
  
3. Wire and demonstrate the satisfactory electrical operation of at least three of the following features:
 

<input type="checkbox"/> Electrical turnout position	<input type="checkbox"/> Two-way block signaling	<input type="checkbox"/> Sound system
<input type="checkbox"/> Track occupancy	<input type="checkbox"/> Operating overhead wire	<input type="checkbox"/> Signaling system
<input type="checkbox"/> Cab control	<input type="checkbox"/> Computer control	<input type="checkbox"/> CTC system
<input type="checkbox"/> Engine terminal	<input type="checkbox"/> Animated displays	<input type="checkbox"/> Onboard video system
<input type="checkbox"/> Two turnout junctions	<input type="checkbox"/> Layout lighting displays	<input type="checkbox"/> Computerized block detection
<input type="checkbox"/> High-frequency lighting	<input type="checkbox"/> Command Control Receiver	<input type="checkbox"/> Computerized operation
<input type="checkbox"/> Electronic throttle	<input type="checkbox"/> Command Control Throttle Buss Line	<input type="checkbox"/> Computer to railroad interface
<input type="checkbox"/> Grade crossing		<input type="checkbox"/> Other _____
  
4. Prepare a schematic drawing of the propulsion circuitry of the model railroad in Section 1 showing the gaps, blocks, feeders, speed and direction control, electrical switches and power supplies. Prepare schematic drawings identifying the wiring and components of the six items in Requirements 2 & 3.
  
5. Submit a completed Statement of Qualifications (SOQ) which shall include the following:
  - Attachment showing the track plan required in Requirement 1.
  - Description of the track work features, method of construction and identification of commercial components used in 2 & 3.
  - The signed witness certification form showing that each of the above items are operational and meet all applicable NMRA Standards.

JUDGE'S NAME	SIGNATURE	NMRA #

REGIONAL AP CHAIR: \_\_\_\_\_ REGION: \_\_\_\_\_ DATE: \_\_\_\_\_