Free-Mo Layout Participant Guidelines

2011 National Train Show
Sacramento, CA

This layout strives to showcase Free-Mo in the best possible way, by featuring a layout that:

- Is a great example of Free-mo objectives and philosophy
- Is fully sceniced and realistically detailed
- Complies fully with Free-Mo technical standards
- Includes trains that are realistic in appearance and consist for the era they represent
- Includes the Modular Signal System (preferred)

Show Information

- **Venue:** Sacramento Convention Center, Sacramento, CA
- **Show Dates:** July 8-10, 2011 (see below for full schedule)
- **Convention website:** not yet available
- **Free-mo website for the show:** http://www.garymgreen.com/NTS_home.html

Free-Mo Layout Information

- **Layout Sponsor:** This Free-Mo layout is organized and managed by the Northern California Free-Mo group
- **Run Chief:** Gary Green E-mail: ggreen@inreach.com
- **Layout space:** not yet available
- **Schedule:** This schedule must be honored by all module owners to ensure on-time layout setup, operation and tear down. Module owners will be expected to participate in the complete show. Module drop-offs or loans will be avoided unless absolutely necessary.

  - ☐ Wednesday afternoon and Thursday July 6-7: Module move-in and layout setup
  - ☐ Friday-Sunday July 9-10: Layout operations
  - ☐ Sunday evening, July 10: Tear-down and move-out

Free-Mo Layout Planning

Modules will be selected on an invitational basis, based on level of completion, standards compliance and available space. We'll try to fit in as many qualifying modules as possible. The final layout, however, may not be able to utilize every qualifying module that has been nominated due to individual sizes and shapes and the limitations of the assigned layout space. We'll try to keep the owners of all nominated modules appraised as the layout design matures. Please understand, however, that layout plans may continue to change until shortly before the setup date due to unforeseen events.

- **The layout planners require the following module information to accurately plan the layout:**

  - ☐ Length and width, tolerance of 1/16"
  - ☐ Angles of endplates, tolerance of 1/100 degree
  - ☐ Locations of all tracks crossing endplates, tolerance of 1/16"
  - ☐ A scale drawing in .dwg, .dxf, or MS-Visio format

Free-Mo Module Requirements

In preparing your module for possible participation in this layout, please focus particularly on the following. While this is a long list, every one of the items mentioned has been a source of problems at previous setups.

We encourage you to use the following as a checklist as you prepare for NTS 2011.

- **Module body:**

  - ☐ Endplates are smooth, flat, and square to the rail ends in all dimensions
  - ☐ Legs provide stand-alone stability
    - Exception: Signal-mos
  - ☐ Legs actually allow floor-to-railhead height adjustment of 49" to 51"
  - ☐ Fascias are in good repair, painted and clean
  - ☐ Foam-to-fascia and other structural joints are in good repair
  - ☐ Full skirts are installed on both sides of the module
  - ☐ Fireproof skirting available if required

- **Track:**

  - ☐ Track conforms to Free-mo specifications and operates reliably for all equipment types
    - refer to this comprehensive guide: http://www.garymgreen.com/trackwork_handbook.htm
  - ☐ Track doesn't dip or rise up at module ends
  - ☐ Track doesn't twist relative to the end plate at module ends

- ☐ Rail at module ends is firmly secured
- ☐ Adequate room is provided for both metal and insulated rail joiners
- ☐ Ties under bridge rail locations clear bridge rails
    - Bridge rails aren't forced to bend up over ties
- ☐ There are no troublesome track dips or rises within the module
- ☐ All segments of track are powered including turnout switch rails
- ☐ All track passes full inspection with a NMRA Mark IV gauge
    - DA rail bars and CVP switch rails may not pass Mark IV test
- ☐ Rails align perfectly at any butt joints within a module
- ☐ Track head is clean of paint and accumulated dirt

- **Electrical:**

    - ☐ Electrical wiring and electronics conform to Free-mo specifications and are in full working order
        - See separate section for the Modular Signal System
    - ☐ Turnout controls and LocoNet throttle panels are located on both sides of module
    - ☐ Connectors for LocoNet are located at each module end
    - ☐ Drops for track power and accessory buses are located at each module end
    - ☐ All cables have been tested for continuity

- **Scenery:**

    - ☐ Scenery is plausible, believable and realistic
    - ☐ Scenery is complete with ground cover, foliage, and details, with no exposed plywood, foam, plaster, etc.
    - ☐ Scenery and all detail adjacent to and between the rails is below rail height

- **Each module must be accompanied by:**

    - ☐ Clamps for mating to adjacent modules
    - ☐ Wrench(s) needed to install and adjust leg length
    - ☐ Fitter rails to bridge all tracks joining to adjacent modules
    - ☐ Metal and insulated jointers for use with the fitter rails
    - ☐ LocoNet jumper cables, 24" long minimum, to link throttle bus to adjacent modules
    - ☐ Any custom items required to make the electrical connections Free-Mo compliant
    - ☐ RJ45 cross-over jumper cables, 24" long minimum, for Modular Signal System (see separate section)
    - ☐ Skirting for all viewable sides

- **Modular Signal System Occupancy Bus (preferred)**
  ****** If you need assistance complying with this requirement, contact the layout planners ******

  - ☐ Occupancy bus RJ45 cabling end-to-end with proper wiring pattern:
    - Cross-over for intermediate (non-signaled) modules
    - Cascade for signal-block-boundary modules (where signals are normally located)
  - ☐ RJ45 straight-through coupler at each endplate
  - ☐ RJ45 cross-over cables, 24" long minimum, to link Occupancy Bus to adjacent modules
  - ☐ Detection installed (active-low open-collector outputs):
    - Current detection on mainline track only, connected to Occupancy Bus
    - Optical detection at signal-block-boundary on mainline track only, connected to Occupancy Bus
    - Mainline turnouts activate local occupancy line in Occupancy Bus when lined against the main
  - ☐ Double mainline modules must provide a method to choose which track is detected
  - ☐ Advance approach indication is optional

DCC System Requirements

NorCalF plans to use their proven Digitrax DCC System configuration on this layout. This system co-locates all boosters with the Command Station in a "booster farm". All boosters are commonly grounded to the Command Station, which is then grounded to the 120VAC safety earth ground. The NorCalF LocoNet Junction Box distributes RailSync to the boosters, and provides regulated 12VDC and LocoNet to the layout's throttle bus. Boosters feed track power to layout districts through heavy-gauge Track Power Cables.

- **Please bring your Digitrax DCS100 or DB150 for possible use in setup, configured as follows:**

  - ☐ Power supply's incoming 120VAC cord has the 3rd-prong safety ground properly tied to the supply's exposed metal case, where applicable.
  - ☐ 7-position NorCalF type front connector wired to an 8-position barrier strip (leaving one position open), with 14AWG minimum wire.
  - ☐ Track power outputs wired to a 2-pin female Cinch-Jones connector with 14AWG minimum wire.

- **Please bring your Digitrax UR91 IR/Radio Receiver, including power supply, for possible use in the setup.**

- **Each Operator must provide their own Digitrax throttle – there will not be any "extra" throttles available.**

  - ☐ Operators must know how to use their throttles without assistance
  - ☐ It's possible that wireless operation will be unreliable or unavailable due to interference and size of the layout

Train Equipment Requirements

Reliable locomotives and rolling stock (together with good trackwork) will minimize derailments, break-aparts, etc. Equipment causing operating problems will be removed from the layout, i.e. "bad ordered". See the procedure in the next section.

- **Any road name is acceptable.**

- **Please inspect and test all equipment prior to the setup for the following:**

  - ☐ Metal wheels only – plastic wheels will not be allowed on the layout
  - ☐ Wheels in gauge
  - ☐ Axles spin freely in trucks
  - ☐ RP-25 wheel profile, 0.110" to 0.088" treads only
    - flanges deeper than RP-25 will not work
    - Proto87 tread-width wheels may not be reliable on many Free-Mo modules
  - ☐ Trucks rotate freely
  - ☐ Trucks rock side-side and front-back to accommodate minor track undulations (e.g. "three-point" mounting)
  - ☐ Metal Kadee couplers strongly preferred – plastic couplers very strongly discouraged
  - ☐ Couplers at proper height
  - ☐ Important since there will inevitably be some irregularity in layout track
  - ☐ Couplers properly centered, and spring back to center
  - ☐ Coupler trip lever at proper height or removed
  - ☐ NMRA weighted except for unit trains
    - Unit trains are made up of cars that are weighted either under or over the NMRA standard and that are operated only with themselves and not intermixed with any other equipment
    - Such trains must operate reliably
  - ☐ Wheels are clean and free of oil or other track treatment

- **Locomotive specifics:**

  - ☐ DCC only. No analog locos (e.g. address '00') allowed on the layout
  - ☐ Analog-conversion must be disabled (helps prevent run-aways)

- ☐ Four digit addressing only (i.e., no two digit addressing)
- ☐ DCC programming must be completed before the setup
- ☐ Sound volume set at *low* level - can be heard next to loco but not across room
- ☐ Learn how to adjust volume levels and do so before the setup
  - Be prepared if you are asked to reduce volume
- ☐ Wheels are clean and free of oil or other track treatment

- **It is strongly suggested to mark your equipment so you can tell it apart from other's similar equipment.**

Operator Requirements

- **You are considered an Operator if your module is included in the layout**.

- **Each Operator should plan to bring:**

  - ☐ Their own Digitrax throttle(s) – learn how to use your throttles before the convention
  - ☐ FRS type radio – for dispatched operating sessions
  - ☐ Uncoupler tools – preferred over grabbing rolling stock to uncouple (avoids breaking details, etc.)
  - ☐ A clip board and pencil or pen for operating sessions

- **Prototypical train consists are required (any era is acceptable)**

  - ☐ No steam loco pulling double-stacks
  - ☐ No solid blocks of billboard reefers pulled by late model steam or diesel
  - ☐ Match locos, cars and cabooses as appropriate for the era modeled (if you're not sure, do some research with photos, read build and reweigh dates on freight cars, etc.)

Operating Procedures

- **During "free-run" sessions, you may run trains by:**

  - Watching ahead for other trains
  - Operating trains at reasonable speeds
  - Verbally coordinating with other Operators to handle meets with other trains
  - Re-aligning turnouts to the mainline after your train has passed
  - Avoiding stopping to talk with others or take photos when blocking operations

- **During dispatcher-controlled sessions, you may choose to:**

- Run trains following the dispatcher's instructions
- Volunteer for a "job" to assist the dispatched operations, like playing "yard master"
- Assist another operator in running a train under dispatcher control (play "brakeman")
- Take a break and not run trains, to avoid interfering with the dispatched operations

- **General guidelines:**

  - Keep eyes and ears open for inappropriate visitor behavior, and take action as needed to protect modules, trains, and other property.
  - Ask a train owner for permission before running his train equipment or using his throttle.
  - When leaving the layout to take a break, clear your train from the mainline and passing sidings, or remove it from the layout. Also, inform the Run Chief or his delegate when you plan to return.
  - Avoid having too much equipment on the layout at any one time, to allow enough "train space" for all Operators. One train's worth of equipment is typically OK.
  - Clean you module's rails with an abrasive cleaning block and/or isopropyl alcohol at least once per day (no other cleaning methods are allowed!) and when requested during the day. Do not clean track on someone else's module without permission.
  - Clean your loco's wheels and track on your module as often as needed…watch for headlight flickering
  - A wheel cleaning station will be provided (may be NCE)
  - When a car or loco causes operating problems ("bad ordered"), follow this process:
    - First try to locate its owner; inform him of the problem and request the car/loco be removed.
    - If the owner is not present or unknown, carefully remove the car/loco and place it in the designated "bad order" area of the layout. Write a brief description of the problem on a "bad order" tag (to be provided), and affix the tag to a coupler on the car/loco.

- **If you do not have a module in the layout, you are considered a Guest Operator,** and must follow the process defined below – no exceptions. This process ensures module owners have first priority for operational access to the layout. It also promotes a controlled operating atmosphere which protects modules, trains, and owner's sanity.

  - Guests must ask permission of an Operator before placing or operating trains on the layout
  - Operator must introduce the Guest to the Run Chief or his delegate

- The Run Chief (or delegate) must approve the Guest as an Operator, and all train equipment he plans to place on the layout. This decision considers several factors, such as whether the Guest has Digitrax experience, his train equipment meets the layout requirements, current layout activities can accommodate the equipment and additional operators, etc.
- Once the Guest and equipment are approved to operate, the host Operator must accompany the Guest at all times while operating any train on the layout (yes…two operators per train). The Operator is responsible to orient and supervise the Guest Operator on the layout and throttle controls, assist with train meets, execute dispatched instructions, and so forth.
- When the Guest Operator is finished running, he must remove his train equipment from the layout.
- The Guest Operator must repeat this process for subsequent run sessions, so the Run Chief is aware the Guest Operator and his equipment have returned to the layout.