

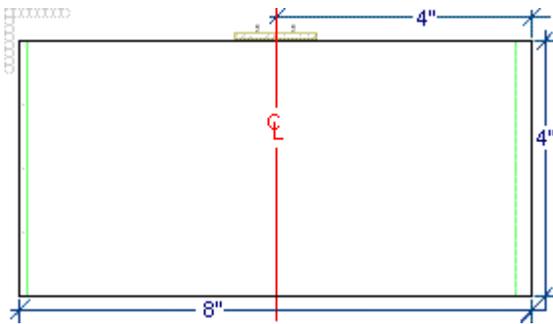
These standards follow **Free-mo** and **FREMO** with adaptations for *On30*. Modules may include mainline grades and solid engineering practices are a must...

## Document Conventions:

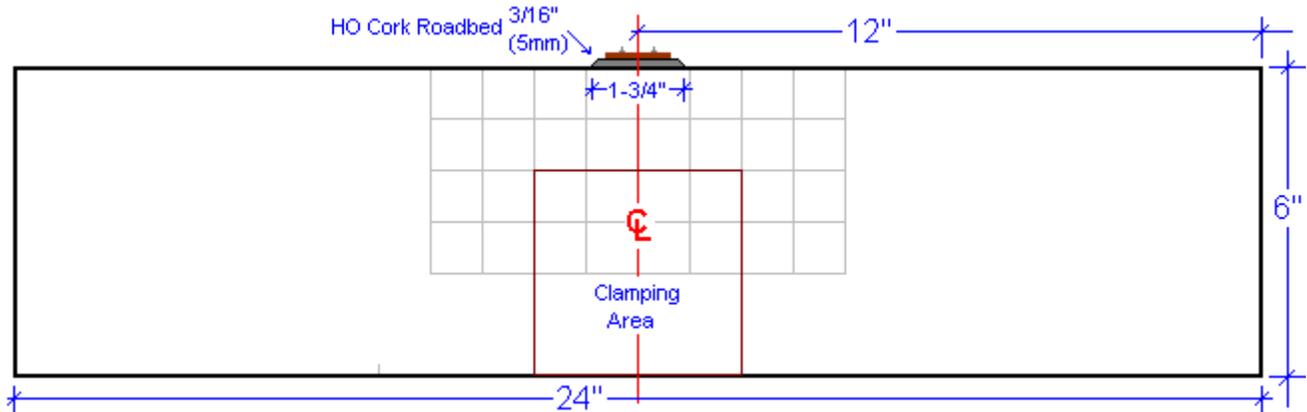
- **Purpose:** Construction of a modular, O scale Narrow Gauge Layout (On30).
- **Theme/Era/Scope:** To suite **local group** members.
- **Style:** inspired by **Free-mo** (see <http://www.free-mo.org>).
- **Goal:** uniformity with respect to trackwork, benchwork, and overall scenic treatment.
- A “**Moduleer**” is a person who enjoys constructing and operating Model Railroad Modules and the camaraderie that ensues.
- The term “**module**” refers to any unit with one or more compliant Interface Plates.
- A module may consist of more than one section; inter-section joints do not require compliant interface plates.
- Module Length is left up to the discretion of the builder.
- Module Width between end plates is left to the discretion of the modeler.
  - ★ *Only the end plates between interchangeable modules with other modelers should meet with the **local standard**.*
- You are encouraged to build modules to what-ever size or shape you like, following these standards.
- Suitable easements to transition in and out of all main line curves and grades in order to ensure reliable operations are to be employed.
- For reliable operations, make every effort to lay reliable track-work in order to avoid kinks, reverse curves and other track bug-a-boos ....
- This document is not intended as a tutorial or how-to.

**Find an On30 Module Group in your neighbourhood!**

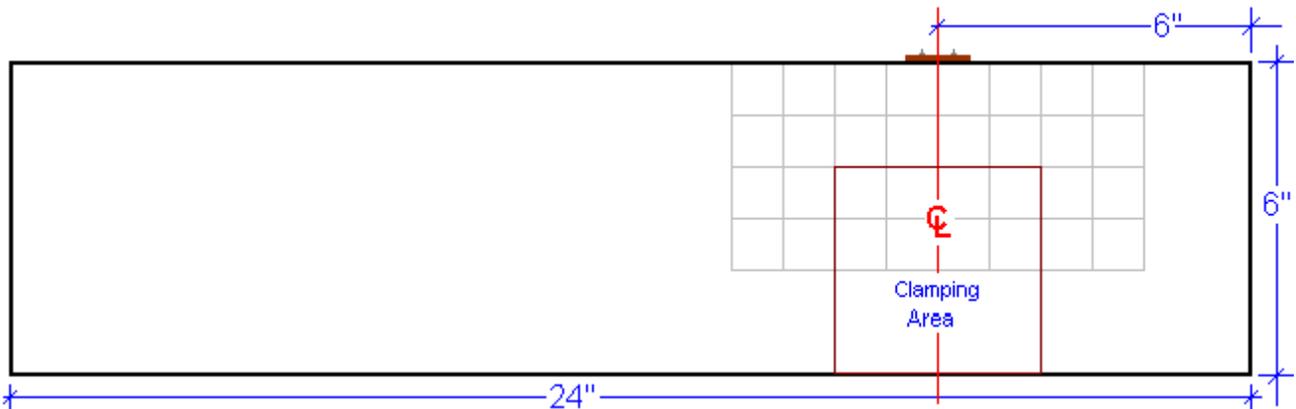
## Interface Plates:



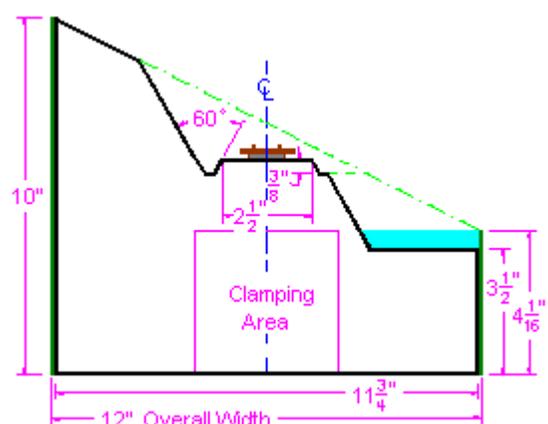
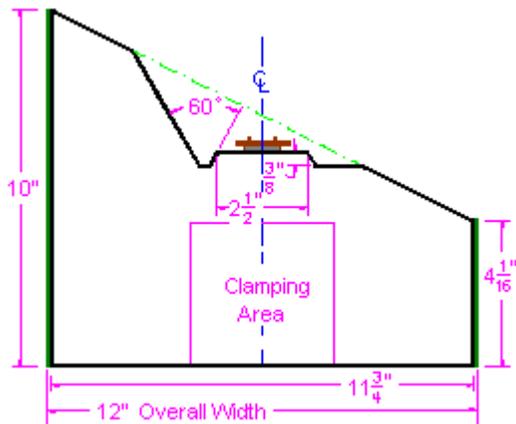
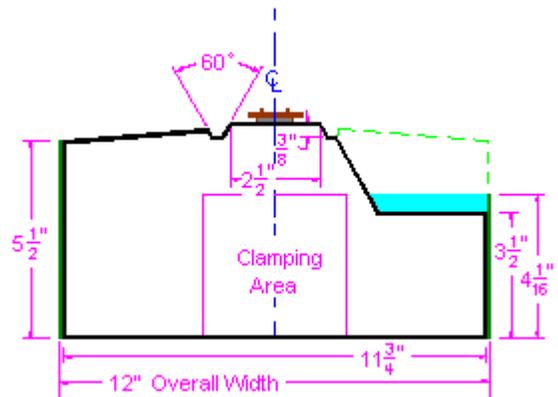
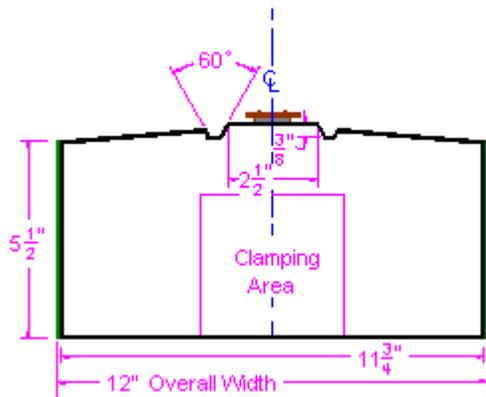
- Absolute Minimum dimensions for the Interface plates are 8-inches wide by 4-inches high, made from ½-inch or thicker plywood for stability.
- It is recommended that when connecting different width modules to use some sort of “cosmetic fillers” to make up the difference in fascia offset or scenic profile.



- Most **Free-MOn30** module groups utilize 24-inch wide by 6-inch tall Interface plates.
- Mating plates of adjoining modules shall be held together using C-clamps.



- ➔ With a single track offset at the Interface, some On30 module groups will classify their set-up and operations as “Free-Mo like”.
- ➔ By utilizing appropriate adapters or transitions as needed, they can be made to connect to **Free-MOn30** modules.
- ➔ Further discussion on these topics can be found in the *Interface Plate White Paper* and the *Interface Plate Scenic Profile*.



In keeping with European **Fremo Oe** and **HOM**, the **Upper Canada & Algonquin Ry.** Has been inspired to develop the four scenic profiles above:

- Interface Plates are to be cut to 11-<sup>3</sup>/<sub>4</sub>-inches wide plus two <sup>1</sup>/<sub>8</sub>-inch thick Masonite/hardboard fascias for an overall 12-inch width.
- Use <sup>3</sup>/<sub>4</sub>-inch thick G2S plywood.
- See diagrams for overall measurements including scenic profiles.
- Other scenic profiles may be applied.
- There are advantages to adopting a narrow Interface which are discussed in the **Interface Plate White Paper** and the **Interface Plate Scenic Profile**.

### Sub-roadbed

- shall be <sup>1</sup>/<sub>2</sub>" plywood or equivalent (1-<sup>1</sup>/<sub>2</sub>" to 2" thick extruded foam tops and plywood/homasote combinations are acceptable), braced to prevent sag or flexing.

### Module Frame and Surface

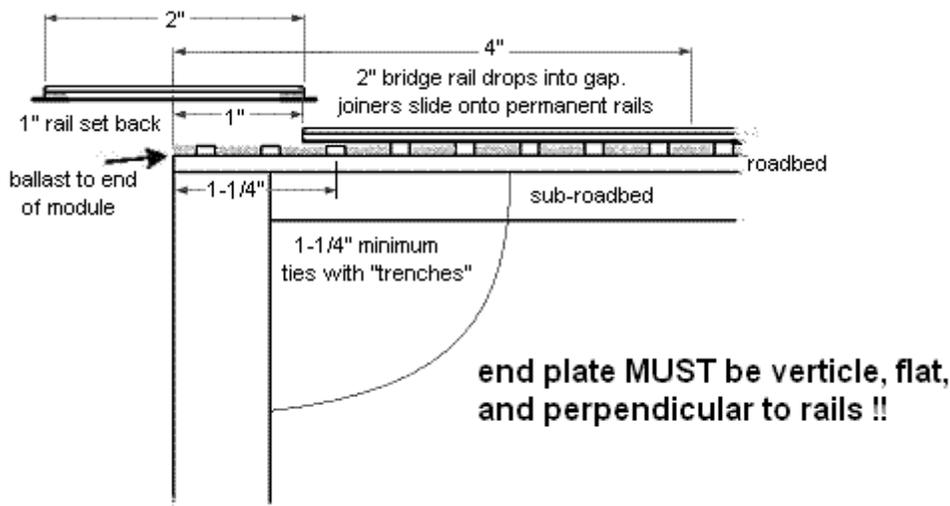
- should be free standing and constructed of dimensionally stable materials.

## Legs/Feet:

- Nominal module height is 50-inches from the floor to the rail-head.
- Legs shall have adjustable feet to allow at least +/- 1" adjustment in height to account for uneven floors.
- Feet should be prevented from damaging floors at events; use Masonite pads or rubber tips to protect the surface.
- Modules do not require integral legs; these may interfere with home layout integration.

## Track Work:

- Rails/Ties (hand laid)
  - ➔ code 100 or code 83 rail for main route, possibly lighter for sidings.
  - ➔ Mt. Albert Narrow Gauge 5" x 7" x 6" sugar pine ties or equivalent.
  - ➔ 24" tie centres for the main route.
  - ➔ Ties stained Walnut Brown.
- Rails/Ties (commercial)
  - ➔ Peco or Micro Engineering On30/Oe/O-16.5 flextrack and turnouts.
- Connection
  - ➔ Module connections shall be made with 2" sections of rail + rail joiners.
  - ➔ Code 100/83 with transition rail joiners as needed.



- Location/Details
  - ➔ Track shall be centred on the interface plate.
  - ➔ Nominal 1/4" [5mm ~ 3/16"] cork roadbed.
  - ➔ Rails shall terminate 1" from the end of the module.
  - ➔ Ties shall be laid to the end of the module. First tie centre shall be 1/4" O/C from the edge
  - ➔ Rails at the module end may be soldered to PC-board ties to prevent movement due to variations in temperature/humidity Alignment

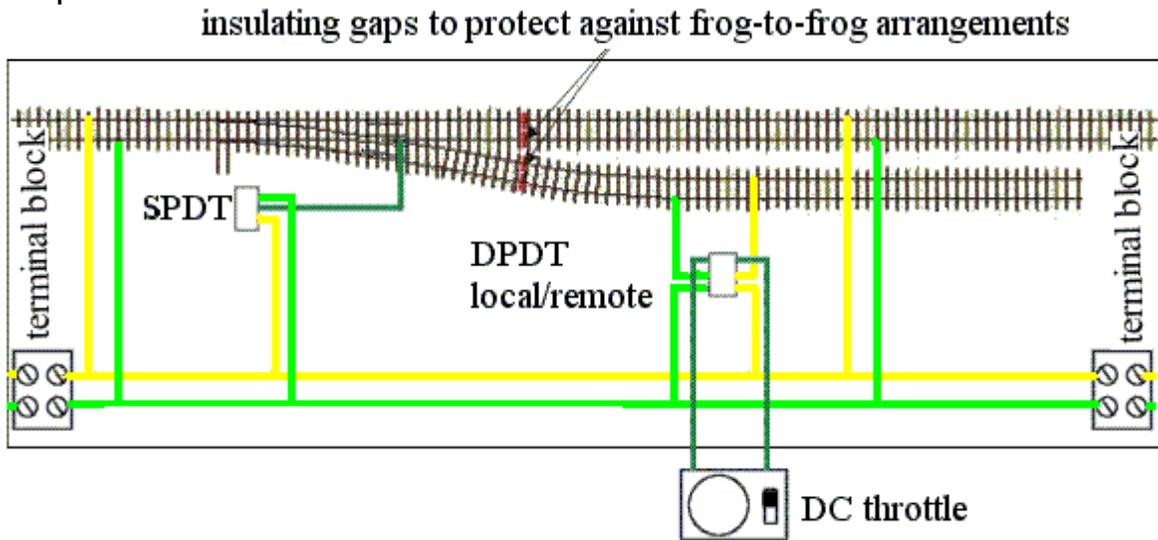
- Straight, level and perpendicular to Interface Plate for minimum 4-inches. [ **6-inches is preferred** ].
- Mainline Track will be placed no closer than 6-inches from the track center-line to the side edge of a module. Yard or industrial spur tracks will be placed no closer than 4-inches from the track center-line to the side edge of a module.

- Minimum radius

- 26-inch radius (Broader curves are preferred), with appropriate easements.
- Minimum 8-inches [ **12-inches is preferred** ] of straight track between reverse curves on mainline.

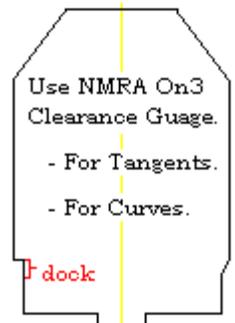
- Turnout frogs

- #5 if the primary route takes the diverging leg – any # if the primary route takes the straight leg.
- Frog is isolated and powered.
- Both stub and/or point turnouts are allowed.
- Positive [sprung] throw. Faulty or malfunctioning turnouts will be spiked to the mainline until repaired or replaced.
- Use Peco or Micro Engineering On30/Oe/O-16.5 turnouts or hand laid.
- Spur tracks shall be isolated from the main.



- Track centres

- Per NMRA On3 practices for parallel track spacing
  - ★ On30 clearance gauge (based on NMRA On3)
  - ★ On30 clearance gauge adjusted for curves (based on NMRA On3)

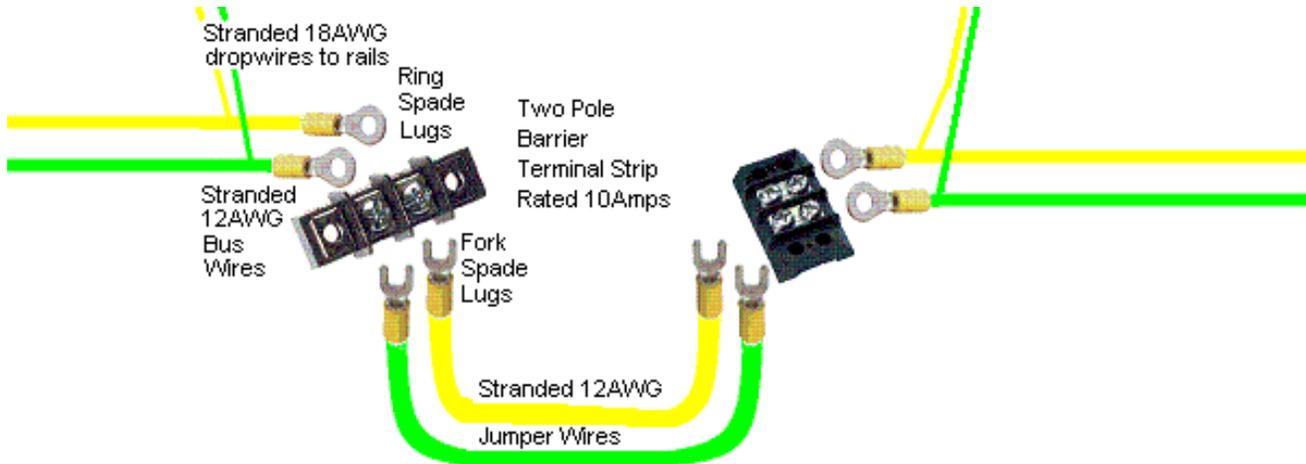


- Local groups may opt for **Mainline Grades:**

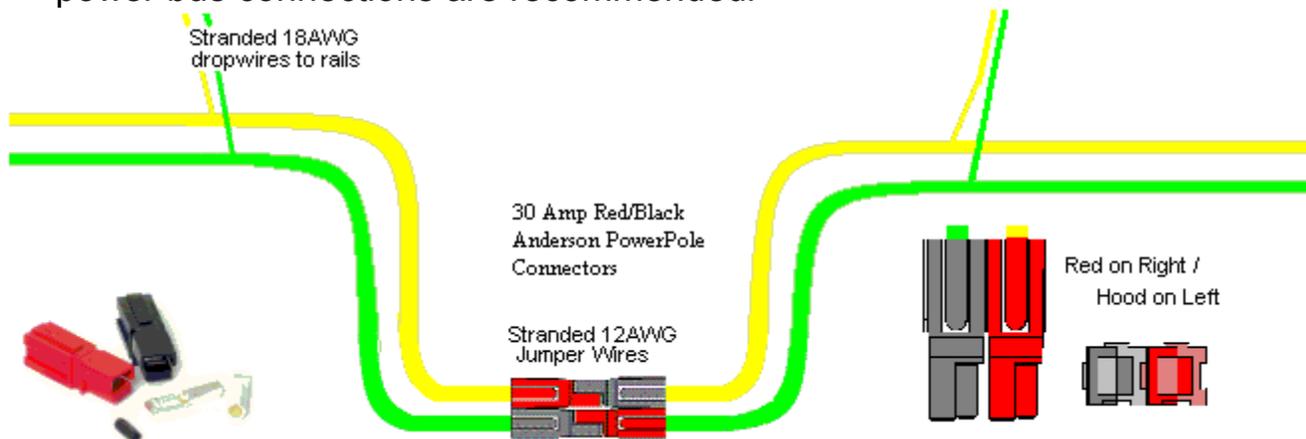
- ★ Maximum mainline grade is 4% (1" in 25").
- ★ To facilitate grade changes throughout the modular layout Module height is fully adjustable between 40-inches and 60-inches from the floor to rail-head at the interface.
- ★ Information on constructing Adjustable Legs for modules is available.

## MAIN LINE ELECTRICAL STANDARDS:

- A 12AWG stranded two conductor wire bus shall extend full module length under mainline.
- Individual rail lengths shall have an 18AWG feeder from the rail bus.
- Barrier style terminal blocks minimum rated 10A shall be installed at each interface.
- Terminal blocks shall accept 12AWG wire with soldered spade tongue lugs.
- Inter-module connector wires shall be 12AWG, 12" long with soldered spade lugs.
- Insulate all electrical connections to prevent shorts.



- *30Amp Red/Black Anderson PowerPole Connectors* for mainline intermodule power bus connections are recommended.



## DCC:

- DCC pass through Throttle bus designed by Geren W. Mortensen, Jr..
- Accessories, except DCC controlled turnouts, shall not derive power from track power.
- A DCC Data Bus Cable, Male-Male, the length of each module plus 18" will accompany each module. At the minimum, one F-F Coupler shall be carried for interconnection with other modules.
- Locate throttle jacks roughly twelve feet apart