

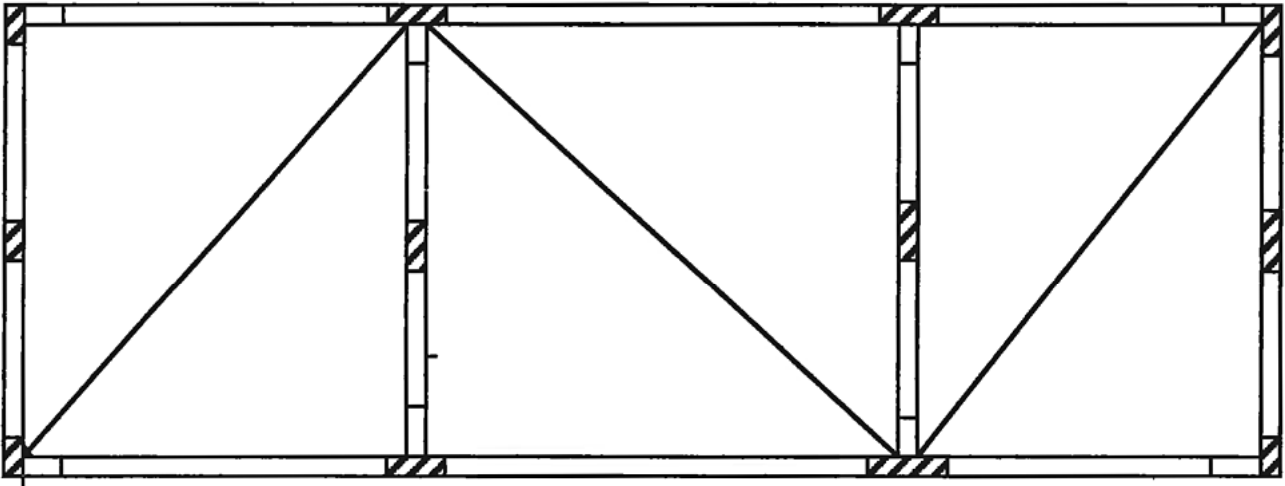


Division 1 (Queensland, Northern NSW)
Australasian Region
National Model Railroad Association

Module SIG

Module Specifications and Details

Module Frame showing layout of girders

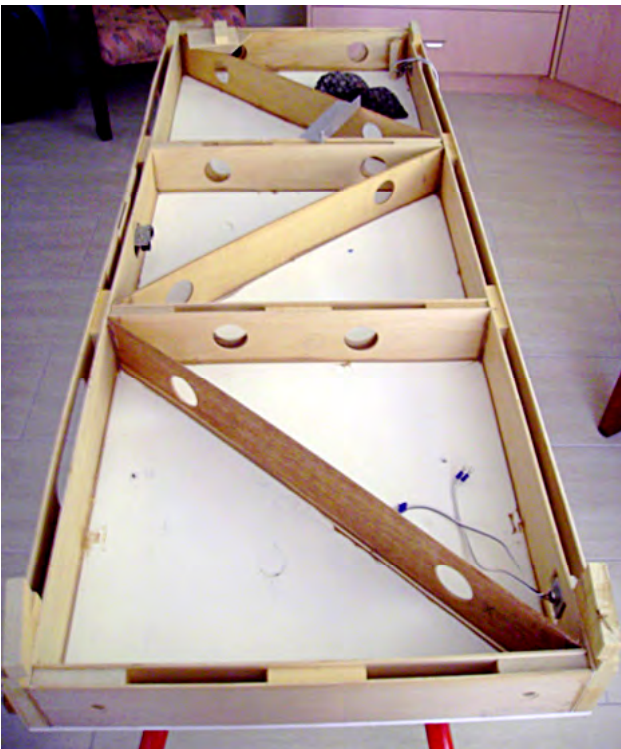


Side Grain



End Grain

General



compatible with modules constructed by other members. This will give members:

- A set of appearance specifications so that an assembled layout will have a pleasing appearance to the viewing public.
- The ability of all members to operate, without derailments or electrical problems, their HO scale locomotives and rolling stock.
- The assurance that all member owned modules will conform to the safety regulations that have been reasonably imposed by the NMRA insurer, and can be expected to meet local codes or exhibit venue regulations.

Although it is expected that each member will be responsible for setting up his or her module and connecting it to the adjoining modules, it can be expected that any member who is familiar with this standard will be able to physically and electrically connect any module to any other module or to determine by inspection that the modules are properly connected.

It must be recognized that a module that technically conforms to these standards but does not operate reliably will be deemed to be noncompliant.

Within the rules established by these standards, members are free to establish track arrangements

Introduction

The purpose of these Module Standards is to establish a minimum set of specifications that will enable members to construct modules that are

and scenery themes as they wish. Cooperation with other members is encouraged and the group will take this into account when establishing the module arrangement at shows. However, space restrictions and module availability at specific shows makes it impossible to guarantee that modules will always be used or arranged in a specific configuration.

Members are encouraged to consult with each other to determine whether a specific module configuration is reasonable / feasible.

Variations on any of these standards must be approved by the group prior to any module construction.

Rolling Stock

The rolling stock standards members are to follow are:

- All rolling stock to be weighted to NMRA standards, and fitted with Kadee type couplers with metal springs.
- Each module to be included in an exhibition will be accompanied by a switching locomotive and appropriate rolling stock as required by any industries on the module. The Operator of the Fiddle Yard is to provide a road locomotive to pick up or set out rolling stock. The maximum size of the road loco is 430mm, a dimension set by Fiddle Yard trackage restrictions.

Front of Modules

All modules will have a 100mm piece of Velcro (Hook section) attached roughly every 400/500 mm, along the bottom of fascia to attach a black curtain. The black curtain is to be hemmed and 70mm wider than the length of the module to enable it to overlay the module to its left. It must be 820mm high.

Main & Secondary Line Track Work

Each module must have a Main Line and a Secondary Track, powered and controlled by a member owned NCE hand held controller. All other trackage may be designed and constructed according to the personal preferences of the member, remembering that each module is part of a larger switching layout.

The main and secondary tracks on all modules must be level with no grades.

All curves must be not less than 900mm (36 inch) radius. Track clearance on curves must be a minimum of 57mm (2.25 inches)

Clearances. There must be adequate horizontal and vertical clearances on the Main Line and Secondary Track to permit operation of models. Take particular note for clearance at structures and on curves. The NMRA HO Standards Gauge is to be used as a reference.

Power Supplies/Throttles

The Main Line and Secondary Track will be powered by NCE DCC Systems loaned by Group members. Each member is expected to bring his or her own NCE Pro Cab or Power Cab throttle to run their module, however exceptions can be made if the modular layout is the only time a throttle will be used.

240 Volt Supply

The Group has a Four Position Clipsal Power Distribution Box donated by members, and held with the Fiddle Yard. As part of the arrangements for a particular show, members will indicate the 240 volt electrical equipment they are bringing as part of their module kit and confirm that it has the appropriate test tag attached.

All 240V equipment must have a current Test & Tag Date to comply with any show organizers direction, and the NMRA insurance directive.

Materials Required

Note timber – ply to be furniture grade with no knots.

Baseboard surface – 9mm ply sanded one side. The sanded side to be used as the top of baseboard. Paint on all edges and both sides.

Backscene – 4mm ply. Top of backscene to be 300mm above timber baseboard surface. The height should be increased to no more than 309mm if the baseboard surface ply does not extend to the rear of the module. Paint on all edges and both sides.

Girders or beams for module framing – 3.6mm thick cut to a width of 100mm.

- A girder is formed of 2 ply strips with timber blocks between.

A 1600mm module requires 2 ply strips 1600mm (minus the thickness of the two end plates, $3.6\text{mm} \times 4 + 19\text{mm} \times 2 = 52\text{mm}$) = 1648mm and 4 timber blocks per girder (Length of girders of this length giving a spacing of approximately 530mm). The blocks are used to attach the end plates and other girders.

The end plates must be 600mm long with 3 timber blocks between. The end blocks on each end plate should be cut to a length of 125mm and the centre block may be cut to 65mm.

The other girders between the front and back girders must be 600mm less ($3.6\text{mm} \times 4 + 19\text{mm} \times 2 = 52\text{mm}$) = 548mm (Cross girders).

NOTE: All measurements listed in this paragraph should be checked against the actual materials you have. Do not believe that they are the exact measurements that you have purchased.

Reinforcement strips – 3.6mm ply no greater than 100mm wide cut to length to enable reinforcing to be installed between the cross girders so that in plan view you end up with a "W" type arrangement. See photo for details. This removes the ability of the module to twist. These strips should be fixed in a bead of Liquid Nails along the ends and the surface of the bottom of the baseboard. It is advisable to cut some holes for these strips to enable wiring to be fitted. If you are using point motors the location of these strips should also be considered.

Blocks between ply strips – 93mm x 19mm finger jointed pine cut to a length of 95mm for all blocks other than the ones at the four ends of the long beams that can be cut longer to allow for the attachment of the legs and those used in the end plates. The 3 timber blocks used on each end plate should be cut to a length of 125mm and the centre block may be cut to 65mm.

Legs – materials to be of builder's choice. Each module must have four legs so that it can be free standing. The bottom of the leg must be 880mm below the top of the 9mm ply surface with 40mm of height adjustment. Normal height of the top of the baseboard surface is 900mm.

Other components

A "T" nut and adjustable foot for each leg to allow the adjustment referred to above.

Module alignment – DCC Concepts Alignment Dowels, 2 male and 2 female dowels are required per module.

www.DCCconcepts.com, email: Sales@DCCconcepts.com

Backscene joiners – Marley Plastic 4.5mm cap moulding about 300mm long.

Backscene supports - Marley Plastic 4.5mm cap mouldings (2 or 3) about 100mm long.

A couple of large bulldog clips to retain the backscene.

Glue – Wood workers yellow glue (waterproof).

Track underlay – Eva (black not blue or grey) high density foam 5mm thick and 40mm wide. Underlay to end at start of joining tracks. Can be purchased from Martin's Foam and Rubber at Macgregor (07 3349 7333) or Clarke Rubber.

Track – Peco code 100.

Points – Peco code 100 electro frog. Each module must contain a crossover that uses a pair of large radius points. All other points on module are to be of medium radius. If you build more than one module to be used as a joined set then only one crossover is required. Point control is left to owner and if they are electrically operated owner has to supply own

transformer and lead tagged to meet electrical safety requirements.

Joining tracks – Peco code 100 set track pieces 168mm long (Part No 200), 2 required. Glue to plasticard laminated to a thickness of 5mm which is used instead of underlay. Each rail of each joining track must be cut through and insulated so that the power does not flow to any adjoining module through the rails.

A G clamp for each module to clamp to the centre of the adjoining modules together.

Uncouplers – Kadee permanent or electromagnetic uncouplers.

One DCC double plug in point on each module (NCE type). If you build more than one module to be used as a joined set then only one is required.

Paint - Facia is Taubmans Olive Moss Flat Acrylic. Backscene and backscene joiners is Accent Alpine Venture Accent Colour Range 2002 Strip 62 Shade 87769 Flat Acrylic available from Mitre 10.

Plugs and Sockets - Two plugs and sockets are required for each module (including those of a joined set). They are used to carry the electrical power for the track feed bus for the front and rear track from module unit to unit. They have 4 terminals. A metal (aluminium) bracket is required for each socket. Jaycar Parts PS2012 SKT LINE MIC/4PIN and PP2010 PLG PNL MIC/4P.

One length of cable with telephone jacks on each end to carry the control signal to the next module. You will require one for each module (including those of a joined set). They must be NCE type. It should be at least 2.5 meters long.

Switches – Two double pole on off switches capable of carrying more than 5amp. These are used to turn off each track bus to find the location of any short circuit. They are to be arranged so the "off" position is up.

Curtain - A black curtain must be provided. It is to be hemmed and 70mm wider than the length of the module to enable it to overlay the module to its left. It must be 820mm high. It must have the velcro loop material attached to the top of the rear so that it can attach to the velcro on the facia.

Construction Details.

The girders

End plates must be full 600mm wide so side girders must be placed inside them. Currently these are being made and provided, without the dowels, by the SIG at a small cost.

Cross girders must be placed so that there is sufficient strength in the completed module to resist vertical deflection. For a 1600mm module you would require two end plates and two cross girders.

This would place them approximately 500mm apart. Consider your method of point control when placing the cross girders. The cross girders are attached to the front and rear girder at the position of the timber blocks.

Diagonal braces are required in each space to be set in a bead of liquid nails on 3 faces. Those braces must be made to form a "W" or part thereof. These braces eliminate torsional twisting of the module. See materials list for measurements.

All cross girders and diagonal braces should have holes cut in the plywood plates before assembly so that wires can be fed through them. If the diagonal braces are less than 100mm wide the holes may not be required.

The rear girder must have a 50mm hole cut in them 120mm (centre) from each end. This is used to mount the plug for the track bus cable to feed power to the next module. This plug must be connected to the block on each end of the ply plate before final assembly of the girder or you will find it difficult to fit it.

The front girder must have a hole cut in it to take the NCE two position access port and to allow appropriate cables to easily plug into the rear.

NOTE: The timber blocks should be fitted so that when two girders are joined you do not try to insert screws into end grain.

Building the top component of the module.

Attach one end plate to the rough underside of the pre-painted baseboard top. It should be placed so that rear end is flush with the rear of the baseboard and the outer face flush with the end of the baseboard. It should be glued and screwed to the baseboard top. Make sure that the screws into the blocks do not foul the screws used to attach the side plates to the end plates.

Do a dry run with the side plates and the other end plate to make sure that the end plate will be flush with the baseboard end. Do not worry about the 600 mm width of the baseboard. If the outer surface of the end plate protrudes beyond the baseboard top shorten the side plates by the required amount. It is suggested that you clamp them both together and trim one end whilst maintaining the square ends. If the baseboard protrudes beyond the outside surface of the end plate do nothing now.

Next attach the rear side plate by glue and screws to the end plate that you have installed and then so that its rear surface is flush along the rear of the baseboard. Now the other end plate should be installed so that its outer side is flush along the other end of the baseboard. It will be if you have got all your measurements correct. If the baseboard protrudes beyond the surface of the outer face then

draw a line across the baseboard parallel to the baseboard end and lay the outer surface of the baseplate to that line. At the same time attach the front girder. If the baseboard surface protrudes beyond the outside of either an end or the front plate trim it after the glue has properly cured. If there is a gap between the front edge of the baseboard surface and the outer face of the front side girder fill with something like "No More Gaps".

Laying The Track

Each module must have two tracks. The rear track (nearest the backscene) is part of a crossing loop that runs the length of the display and switch lead combined. The front track is the main line and can be ballasted accordingly.

It is suggested that you make yourself a couple of jigs to assist with the track laying. One for the rear rail placement and one for the set back of the track ends from the outer face of the end of the module.

The underlay and rails of the two tracks must be set back 85mm from the outer face of the end of the module. The rear rail of the rear track must be 430mm from the back of the module. The underlay should be positioned so that the ballast shoulders will be approximately equal. The underlay should be glued to the baseboard.

The front track is set to the track centres used by Peco Streamline of 51mm.

The first 100mm of each track must be straight. If it contains a point you will have to be careful when fitting the set track pieces.

Other tracks can be added to the rear or in front of these two tracks.

When ballasting the tracks it is suggested that ballast used for N gauge be used and choose a dark grey/black colour.

The two Peco set track pieces should have the fishplates and the last two sleepers at each end removed and then glued to plasticard that has a combined thickness of 5mm, the same as the underlay. Peco streamline sleepers, with the rail fixing mouldings removed, can be glued to the plasticard to replace those that were removed. The bottom piece of plasticard should be as wide as the underlay. Once the glue attaching the underlay has dried both rails on each piece of set track should be cut through and some insulating material inserted. The plasticard should be painted so that it does not show a white area if the ballast comes loose. The section can then be ballasted off the module. Each track section should have two Peco fishplates that can be slid fully onto the rails so that the sections can be installed after the modules are joined.

Backscene

The backscene should be able to be attached to the rear of the module so that its bottom edge is flush with the bottom edge of the rear side girder. Holes must be cut in it to line up with those in the rear side girder. The top will then be 300mm above the top of the baseboard surface and the backscene joiner will then be able to join it to the next section. The backscene supports should be fitted with the bottom flush with the bottom of the rear girder. The backscene sits in these supports and is held in place with a couple of large bulldog clips.

Legs

Design and method of attachment is up to the individual. Each module section must have four legs. They should be braced so that the sections are free standing. The specifications relating to length are shown in the area detailing the materials required. "T" Nuts and adjustable feet must be included.

Wiring

Wiring should be capable of carrying at least 5amps. Use colour coded wire. Track feed bus wire –

- Pin 1 in plug to Rail 1
- Pin 2 in plug to Rail 2
- Pin 3 in plug to Rail 3
- Pin 4 in plug to Rail 4

The two mandatory tracks have the rails numbered from the front facia of the layout , e.g. Rail 1 is the closest rail of the front track to the front facia and rail 2 is the rear rail of that track.

The double pole on off switches are to be placed so that they take power from the continuous track feed bus. The track feed to track 1 goes through one switch and the track feed to track 2 goes through the other switch. Tracks connected to other tracks take their current from the appropriate track and not the continuous track feed bus. This will ensure that the individual tracks in the module can be independently isolated for short circuit purposes and will enable other module to continue to operate whilst the cause of the short circuit is rectified.

Please note photo and drawing of module (p 1).

Acknowledgements

NMRA Division 1 Modular Group members who formulated these specifications were

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- Graham Emery
- Paul Skehan
- Glenn Stevens
- Ian Venables

If you have any questions in relation to these specifications the Sig Co-ordinator can be contacted by email

paul@gerardskehan.com