PINE RIDGE RAILROADERS, INC.
32 Wilson Rd. N., Oshawa, Ont. L1G 6C8

DURHAM BELT LINE (D.B.L.) MODULAR GROUP

STANDARDS MANUAL

Originally Created and Written by Stephen C. Feek
Edited, Revised, and Updated by Donald A. E. Parkes

Co-ordinator: Richard Kelly
Assistant Co-ordinator: Donald Parkes

October, 2015

D.B.L. STANDARDS MANUAL

Table of Contents

D.B.L. STANDARDS MANUAL

Introduction to “Modular Model Railroading”

The modular format of Model Railroading has grown in popularity over the past several years as it allows more model railroaders to share their artistry with the public and like-minded train enthusiasts. An individual from anywhere on the globe can build a module to an accepted standard and connect it to other modules using the same standard to create a large layout empire, and thereby share their interests with their fellow model railroaders.

Many modular format standards have been developed over the years by various organizations with varying thoughts on the subject. For example, the National Model Railroad Association (NMRA) has their own list of recommended standards for each of the major scales.
(http://www.nmra.com/standards/modules/ms_intro.html)

History of the "Durham Belt Line Modular Group" (DBLMG)

The founding members of the Durham Belt Line started with the NMRA standard and began to develop it to satisfy their own requirements. One of the first changes was relocating the mainline tracks to 8- and 10-inches from the front of the module and increasing the module’s width to 30-inches allowing more space for scenery and structures.

In January, 2002, a draft of the standards was documented. The concept was introduced to members of the Pine Ridge Railroaders club (P.R.R., our parent group) of Oshawa, Ontario, Canada. The Pine Ridge club owned two portable layouts (“HO” and “N”). These show-purpose layouts were always changing in small ways, but there was very little new construction in progress. Some of the PRR members had the itch to build, and the Belt Line was just what they were looking for. Most of the founding Belt Line members did not have home layouts and the concept of the proposed modular Belt Line provided them with the opportunity to build parts of a co-operative layout where they can see their equipment run.

Some “DBLiners” with guests at a seniors’ residence show in 2007.

D.B.L. STANDARDS MANUAL

Rules of D.B.L. Membership

* He/She must be a member in good standing with the Pine Ridge Railroaders, Inc. of Oshawa, Ontario.
* There are no dues. However, from time to time, when the D.B.L. layout requires a rental venue, each member will be requested to make a donation towards defraying such rental expenses.
* To be an accepted member of the D.B.L., that member voluntarily agrees to all standards as outlined in this current *DURHAM BELT LINE STANDARDS MANUAL*. Without "standards". there can be no unified group working together.
* Each member is responsible for his/her module(s) and equipment. However, all members are expected to attempt to safeguard and care for all D.B.L. modules and equipment as if they were their own.
* Neither the Durham Belt Line Modular Group nor the Pine Ridge Railroaders Inc is responsible for damage to, or loss of, said modules and equipment, regardless of how it was incurred.

Meetings (Get-Togethers)

The Durham Belt Line Modular Group meets informally whenever a suitable venue becomes available and a few of the members can attend. Modules are set up at a specified time and location and trains are operated for inter-modular testing purposes. Much of the business portion of the meeting is done after the operating session and before tear-down. This is very flexible as time permits.

A Few Words About Get-Together Operations

These get-together/meetings provide D.B.L. members the opportunity to ensure that their modules are compatible with each other in various configurations. No major construction should be considered during these meetings. If a module requires such reconstruction, it should be immediately removed from the layout configuration to make way for the prime purpose of the meeting: to find interlocking faults between the modules, before show-times. We cannot do this while a major construction is underway with a problem module.

D.B.L. STANDARDS MANUAL

Module-Planning

Planning the module carefully is the most important step a potential Belt Liner will face. Obviously there are standards that need to be followed and these are laid out throughout this manual. The individual Belt Liner needs to remember that the group layout is only as good as its individual modules. Planning a module and discussing it with other Belt Liners will help make your module the best it can be.

Plans for new modules will be presented to an informal acceptance committee. These plans will include to-scale drawings of track-work and will show proposed theme features of the said module(s).

Each module needs to be built to the D.B.L. standards as laid out in this manual and be ready to "plug & play" at one of the D.B.L. informal get-together meetings before appearing at any public showing.

Type of Module

There are a number of different styles of modules, such as straight through, corner, branch, etc. Discussions with fellow Belt Liners will suggest what is needed by the group. However all modules are either "Scenery" or "Switching" Modules. Each has its advantages and each is needed in a Belt Line setup.

Scenery Modules

Often 'scenery' modules are used to provide distance between other modules. Generally there is no shunting done on a 'scenery' module, however a crossover between the mainline tracks could be an advantage, indeed, encouraged, to assist shunting on neighbouring modules.

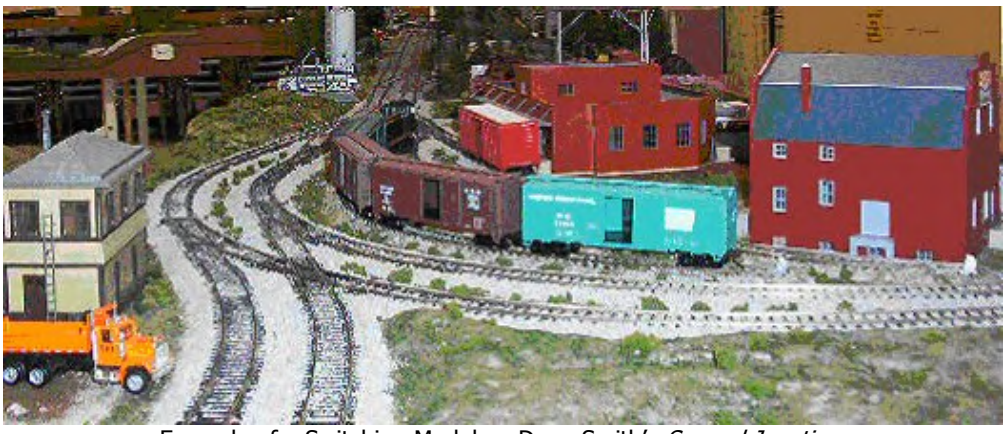
The track-work is generally simpler on this type of module, but it is obviously in the details of the scenic aspects that the module-builder needs to pay close prototypic attention. Using details in true scale invariably underscores the authenticity of the scene. This is a delightful opportunity for the modeller to make a dramatic life-like statement.

An Example of a Scenery Module – Don Parkes' *Tallon Creek Trestle*

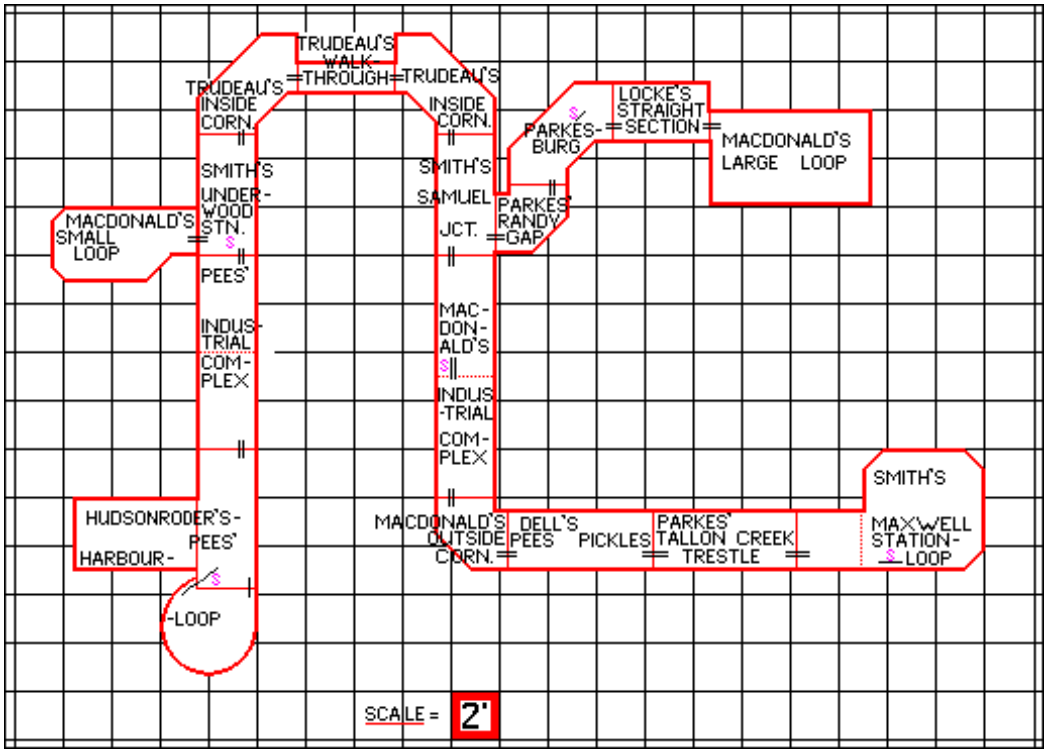
D.B.L. STANDARDS MANUAL

Switching Modules

The core of a Belt Line layout is in the switching manoeuvres. Switching is required for prototypical operation. Therefore it stands to reason that the most common type of module is the switching module. Switching modules should have at least one Digitrax UP5 Panel on each side of the module to allow the operator to operate his train from either side while switching that module. (Further to this on page 15.) Also each industry on the module must be clearly named. There are more guidelines listed under the Operation section of this document (see page 18).



Example of a Switching Module – Doug Smith's *Samuel Junction*



a typical layout plan for an informal get-together or a public show

D.B.L. STANDARDS MANUAL

Basic Module Designing.

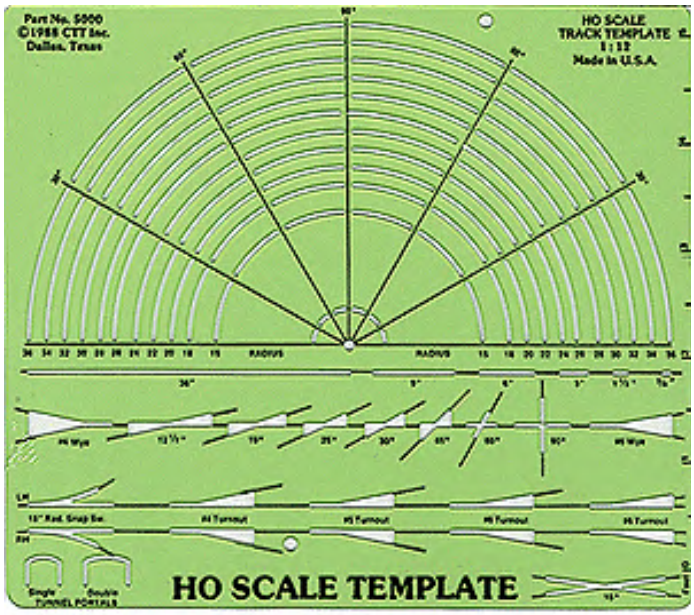
Size Options

Once a type of module has been decided upon, then the size of the module must be determined. All standard modules are 30 inches wide at the abutting edges. Normal modules have a minimum length of 48 inches, although exceptions may be made for special circumstances. For instance, two modules of 36 inches each can be built (as a dedicated pair of a total of 72 inches long) in order to facilitate their transportation. The maximum module size is determined by one's ability to transport the modules from location to location. It is advised that no module should be any longer than 96 inches. One caveat: the shorter the module, the easier to transport it because of its smaller size and lighter weight; BUT it does limit the placement of turnouts on it. It is easier to plan and place turnouts on longer modules, BUT then you need to consider the weight and portability of this larger module. Plan your decision very carefully.

Drawing the Track Plan

Once the size of the module has been determined, make a scale drawing of the top bare surface of the proposed module, and make several photocopies of this template. On this template you can then draw the two main-line tracks. These are located at 8-inch and 10-inch centre-lines from the front of the module as described on page 11. The remainder of the module's features is then left up to the DBL member. Suggestions and DBL requirements about laying track are dealt with on pages 11 and 12.

It is advised to use a track drawing template like the one pictured below made by CTT Inc. (Walther's part number: 233-5000). This template uses the scale of 1 inch to one foot. A standard 30-inch by 48-inch module would result in a 2.5-inch by 4-inch diagram on your paper plan.



HO Scale track planning template Walther's part *#233-5000* (not shown to actual size)

Recommendation: Plan at least one cross-over (between the main lines) within your module plan to facilitate operational switching.

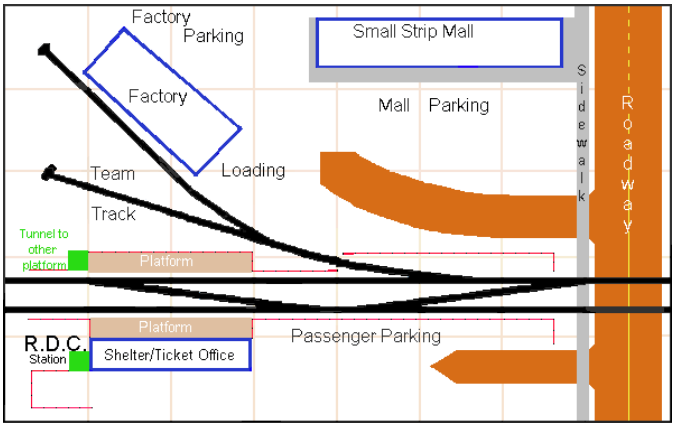
D.B.L. STANDARDS MANUAL

Once you have drawn your plan (or several versions of your plan), show them to others. Get their feedback. No one will tell you that you can't build it; however, other Belt Liner's may have suggestions to improve your module, and, more importantly, how it should fit in with the overall DBL plans. Remember, just because others are making suggestions, there is no compulsion to incorporate those ideas into a new plan. It is your module and you need to be happy with it when it is finished, just as the rest of the membership need to be happy with it too from an overall perspective. Our group must work like a team: each one of us trying to make our ideas fit with the over-all concept. We are not one-man shows.

Take your mind off the module plan for a week or so. When you come back to it, you may see changes you can make that will improve the module. Once you have sifted through all the suggestions, it is time to draw your final plan and then dive into the construction of your module. By the time you begin to build your bench-work, you (and others) will be able to review your track plan once again and you might even see further changes that can be made to improve your ideas.

Typical Module Plan Submission

The following sample plan of a 30-inch by 48-inch module can be downloaded to your image/photo editor, expanded to whatever size you wish for editing, then reduced so that the squares equal ½-inch by ½-inch when printed. (It is important that the squares should ideally be printed on your submitted paper plans as half-inch squares representing actual 6-inch squares on your module, i.e. the scale is half-inch = 6-inches.) All DBLiners are requested to make such scaled diagrams of their modules, and provide a copy of same to the co-ordinator team so that the copy can be used to plan the physical layouts for shows and get-togethers. All the track-work on the plan should be shown as close to the real placement on your module as possible. Please provide a name/title for your module, size of module, and label any industries and any important features (and their placement) on the submitted plan. Any changes made to a module should be re-submitted so that the DBL Module Inventory can be kept current.



Sample of a submitted detailed track-plan for a 30-inch by 48-inch module.

Atypical Modules

Modules which do not fit the norm (like Inside and Outside Corner modules, Transition modules, multi-unit yards, or anything which varies from the basic rectangular module format) are still standard modules (because they do not need special electrical or adaptability considerations). On the other hand, "Specialty Modules", which do require more complex electrical considerations, are dealt with on page 16. All of these atypical modules will need serious discussion-time within the DBL membership before anyone begins any construction on them. Such modules need to be useful to the group's overall intent. It is imperative that their usefulness to the DBL needs be determined before you personally invest too much time and effort on them.

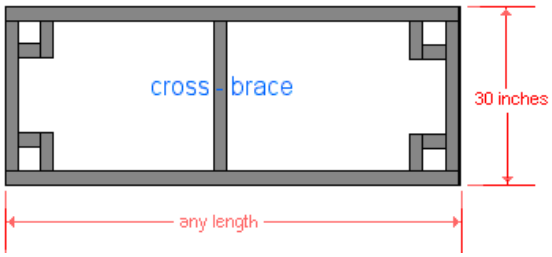
D.B.L. STANDARDS MANUAL

Module-Building

Now you're ready to build the bench-work. If you have decided to build a basic 30-inch by 48-inch module, then your minimal materials list would include **(1.)** a 30-inch X 48-inch panel of ¼-inch plywood G1S (for the table top), **(2.)** two 1"X4"X8' pieces of select pine (to manufacture the pieces required for the framework box on which the plywood would rest), and **(3.)** two 2"x2"X 8' select pine (for leg parts). With this list, a resultant four-foot-long module can be completed within a relatively short period of time by a single individual. Obviously, larger, more specialized modules may require more lumber.

Framing

Below is a basic plan for the framework needed for such a module, using the 1-inch X 4-inch select pine from your materials list. All framework joints should be glued (using non-water-soluble carpenters' glue), clamped, and screwed. Ensure everything is square.



A basic module frame as seen from the underside

The above diagram shows one cross-brace. The greater the length of the module, the more cross-bracing is required. Think "more strength", but also think "less weight". Your decision.

At, or close to, the ends of the module, are leg pockets, but they are not required to be exactly as shown (see 'Legs' below).

Plywood Top

The tabletop should be a light-weight piece of minimum 1/4-inch plywood G1S, and definitely *NOT* thin door panel board which can easily warp, especially when laying ballast. Ensure that the underlying frame-work is square and level before gluing (non-water-soluble) and nailing the plywood onto that frame-work (using 1-inch to 1.5-inch spiral brads a few inches apart, including the cross-bracing, and especially around the leg-holes where the module's weight will bear most). Use non-water-soluble glue (like Carpenter's glue) and, after securing the plywood down (with the afore-mentioned spiral brads), then clamp and/or weigh (with heavy objects) the plywood down on your framework and leave it for a couple of days for the glue to cure thoroughly.

It is highly recommended that when the framework and tabletop are completed that you paint the underside of this "box" with several coats of white paint to seal all the surfaces and to make it bright enough underneath to easily see when working below your module in the future.

Legs

Legs on a module are left completely up to the builder as there are different ways of adding legs, and each person has their own preferred method. That being said, what is imperative when it comes to legs is their length. The legs need to be of such a length which raises the tabletop of the module up off the floor to 40 inches. Also imperative is to add adjuster feet to the bottom of the legs so that one can adjust the module's height by +/- an inch. Counter-sink the receiving T-Nut sockets of the adjuster feet to the bottoms of the legs, and use strong epoxy and/or #6 round-head ½" screws to firm them into place.

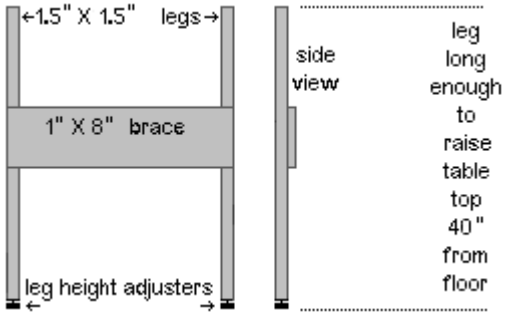
D.B.L. STANDARDS MANUAL

Legs (continued)

- Recommendation for feet: "Shepherd Hardware Products" 1-1/2" X 5/16" Slide-Glide, blister pack # 9468 or "Richelieu" part # BP53941112180 or SuperSlidex by Faultless Nadico (these may be available from Home Depot, Home Building Supplies, Home Outfitters, Lowe's, Walmart, or Zellers).
- Recommendation for 5/16-inch T-Nut sockets: can be obtained from various hardware stores.

Another possibility for a leg-height adjuster can be found at Princess Auto. Their part number is 8162695. They call it a "leveller glide and bracket kit". You would have to experiment with either cutting off or bending straight the upper part of the metal bracket so that it can be screwed to the inside of the leg.

A recommendation to keep setting-up simple: The quicker the legs are added to the module, the quicker the setup of the module. In the framework diagram (on page 9), 1.5-inch by 1.5-inch legs would simply slip into the four pockets shown and then the weight of the module would hold them in place. Leg-pockets eliminate the need to actually affix the legs to the module, although bolts (through the leg and the framework) or some kind of bracing (from leg to framework) and cross-bracing between legs could give the module much more stability. But doing that does increase set-up time. Making the legs paired in an "H" fashion (as shown below) certainly provides more stability by cross-bracing, but great care should be directed towards making the pairs interchangeable end-to-end. Each "H" pair should fit either end of the module. Look at various DBL module leg designs to see what would best suit you and your module.



An example of an "H" pair of legs

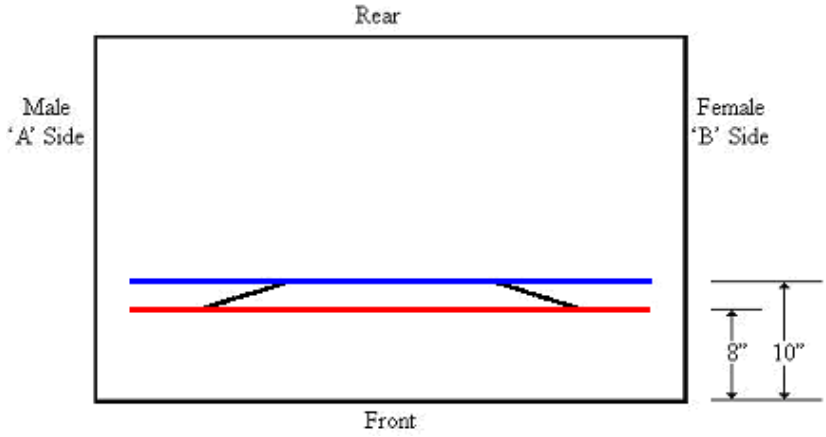
The leg brace in the diagram above (1" X 8" or 1" X 6" stock, your choice) should be glued and screwed to the legs, ensuring that the upper part of the legs fit into the leg pockets easily.

Clamping one module to another (as is always done in the DBL setup procedures) increases the sturdiness of each module dramatically. Arm yourself with a pair of 4-inch C-clamps for each module you plan to build.

D.B.L. STANDARDS MANUAL

Laying the Track

The positioning of the two mainline tracks is the most important aspect of laying the track on your module. Their placement has to be exact in order to match up with the mainlines on abutting modules. The diagram below shows the set-back placement of the tracks and the names used when referring to the face-edges of the module.



Defining the terms of a module

The red line represents the centre of the 'Front' mainline track, the track closest to the front of the module. The blue line represents the centre of the 'Rear' mainline track. The Front line must be centred at eight (8) inches from the front edge of the module. The Rear line is centred at ten (10) inches from the front edge of the module. Use care when measuring the location of these mainline tracks. Double check and even triple check to ensure their location is perfect. These centre-lines, drawn at eight and ten inches, are exactly that, "centre lines". The cork roadbed will be laid on either side of these centre-lines. The cork roadbed should be glued down (using non-water-soluble glue, like Carpenter's Glue) to ensure that it doesn't move at any point (especially during ballasting).

Throughout the entire module the minimum distance between the centre-lines of two parallel tracks is two (2) inches. This makes it easier to reach your fingers between the tracks to pick up rolling stock, or even look at car numbers in a yard.

The mainline tracks stop precisely three (3) inches from both the A and B ends of the module. (Ensure accuracy using a square.) This allows for space for a standard Atlas six (6) inch joiner piece to be placed between modules. When two modules butt up against each other this creates a six inch gap in the mainline rails which is filled with the above-mentioned 6-inch bridging joiner. The ends of the tracks must be perpendicular (90 degrees) to the A or B sides of the module. The cork must be laid right to the very edge of the module so that the Atlas bridging joiner track has something to rest on over the gap.

When laying curves in track (and cork), ensure the largest radius of curve as possible, with the minimum mainline radius of 20-inches being the imperative. Yard and siding curves can be somewhat less, but keep in mind what kind of motive power might use these curves. Track 'easements' approaching curves are recommended. For 'easement' info, access the NMRA D3 series DATA SHEETS.

In preparation for drawing the lines for track and turnout placement on your tabletop, access http://www.peco-uk.com/Products/turnouts.htm, to download Peco turnout patterns which can be printed at 100% size and cut out to help guide the placement of these turnouts on your tabletop.

D.B.L. STANDARDS MANUAL

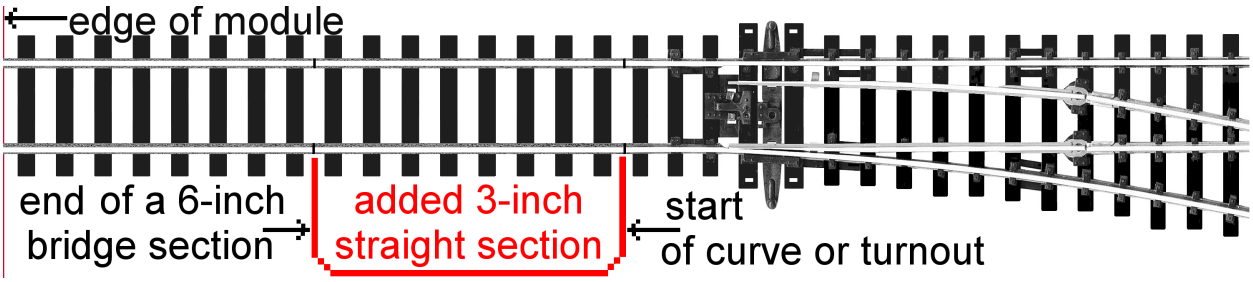
Cork, Track, and Turnouts

Carefully draw the centre lines of your track-plan onto your table-top. Pin the cork along both sides of each line. When satisfied with the placement, remove each piece of cork, proceed to glue it down using the pins (adding weights) to keep it flat and in position until dry. When dry, sand down any unevenness.

Code 100 flex track must be used throughout the module. Of course, Atlas snap track can be used in some areas (as mentioned above for 6-inch bridging sections), but this is generally not the preferred method of laying the track. Rail joiners may be soldered if the builder would like, but it is not required.

Use Peco's "Insulfrog" medium turnouts on the mainline. ("Electrofrog" turnouts are definitely discouraged.) These turnouts are rated as a #5 turnout, but most importantly, when two are placed together the parallel routes are centred two inches apart. This matches the Belt Lines two-inch minimum distance between track centre-lines. Although #4 turnouts are allowed on secondary tracks, it is still recommended that #5's (or larger) be used as the preferred turnout size. It is also recommended that turnouts NOT be powered (i.e. remotely controlled). All turnouts will be hand operated.

It is recommended that the ends of turnouts as well as the beginnings of curves NOT be positioned closer than 6-inches from the abutting edges of modules. In other words, when the 6-inch Atlas bridging track is placed across the gap between two modules, there should be at least 3 more inches (or less) of straight Atlas snap track before touching the end of a turnout or the beginning of a curve to provide some protection to the ends of the said turnout or curve as shown in the following diagram…….



Each module should have at least two 6-inch <u>firm</u> (not flex-track) bridging rail sections (like Atlas 6-inch sections) as part of its entourage. When preparing these 6-inch bridging sections, place duct tape across the entire bottom of the tie area of each bridging section, trimming to fit. Then cut the plastic sprues (spike heads holding the rails) off the last tie or two of one end of the bridging section, just enough to allow some free sliding movement of the two loose rail-joiners at one end; and then solder another two rail joiners to the rails at the other end. Ballast the bridge section so that it can be inserted and extracted conveniently. These bridging sections will be handled roughly at the best of times, so ensure that they will stand up to the stress. The duct tape not only provides a good under-support to the ballast, but provides a space for you to mark ownership, placement, or any other data which you would like to add. Note: After ballasting and installing these bridging sections, ensure rail alignment.

An alternative to using *duct tape* in the above is to glue *<u>very thin</u> styrene strips* underneath the bridging rail sections.

D.B.L. STANDARDS MANUAL

Wiring the Module

Our Belt Line modules are controlled by a Digitrax DCC system. Digital Command Control gives a layout of the potential size of our "DBL empire" a great deal of flexibility with simple wiring. Each track rail on any module should have a feeder wire soldered to it, and the other end of that feeder wire should be connected to either the white or brown wires (of the four-wire trailer-hitch ribbon cable under the module) based on the chart below. Our standard is: for each track, the front rail is the "A" rail, and the back rail is the "B" rail**.**

WIRE COLOUR GUIDE

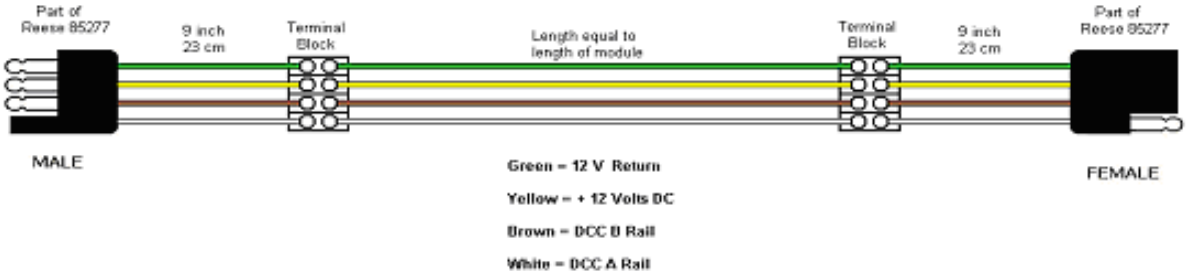
Module Wire	Description	Hitch Colour
White	DCC POWER, Front Rail, "A" Rail	White
Brown	DCC POWER, Rear Rail, "B" Rail	Brown
Yellow	DC POWER (+12 Volts Regulated)	Yellow
Green	DC POWER (Return/Ground)	Green

Here are the four procedures for electrical connections on each module:
(1.) Affix a **4-pole terminal block** (Home Hardware part #8634-258 or Princess Auto part # 0700337) to each end, underneath and inside the module framework as close to where the mainline tracks are situated above it. (A 6- or even an 8-pole terminal block can be substituted, but only 4 poles will actually be used.) It is wise to use "high-temperature" (insulated) ring terminals when connecting wires to these terminal blocks, or just 'tin' the wires with solder to prevent any wire 'whiskers' from causing a short circuit. (See the diagrammatic at the end of this section.)

(2.) Connections between modules are made using Canadian Tire's or Princess Auto's **four-wire trailer-hitch flat connectors** (CTC part # 40-8210; PA part # 8198129, both made by Reese, part # 85277) as shown in the diagram below. These male and female connectors have a few inches (usually nine inches) of the colour-coded 4-wire ribbon cable (described in **(3.)** below) already connected to them (to which you may have to add more length to that cable to ensure that the connecting wires are long enough to reach the connectors from the abutting modules). Attach each of the 4 wires of the hitch flat connectors to the terminal blocks, one connector at each end, underneath the module. Ensure that these flat connectors are mounted to the correct ends of the module.....when facing the front of the module, the male connector is affixed to the left side, and the female to the right side (see diagram on page 11 for titling of module sides and ends). (See the diagrammatic at the end of this section.)

(3.) Canadian Tire and Princess Auto also offer the matching **flat ribbon-wire cable** (also called "parallel bonded wire") with the same colour-coding (green/yellow/brown/white), sold by the foot (CTC part # 20-7577; PA part # 4211355). Using this matching ribbon wire cable, connect the ribbon wires to the terminal blocks (ensuring that the wire colour codes match), and run the ribbon wire under the length of the module and through any wood cross-braces under that module. This ribbon wire is the Main Bus Wire, and is permanently attached to your module.

(4.) Each section of track rail should have a **feeder wire** soldered to it at some point. Do not rely on turnouts to control power, nor rail joiners (unless they are soldered). All tracks need feeder wires – even stub tracks. Drop said feeder wires through holes drilled through the cork and tabletop as close to the outside of the rails as possible. All of the Front Rail ("A" Rail) feeder wires need to be attached to the White Wire of the ribbon wire running underneath the module. All of the Rear Rail ("B" Rail) feeder wires need to be attached to the brown wire of that same ribbon wire cable.



The power to the tracks flows from module to module through this bus ribbon wire cable underneath the module rather than through the tracks and track joiners.

D.B.L. STANDARDS MANUAL

Module Lighting

As mentioned on the previous page, there is + 12 Volts Regulated DC available on the yellow wire of the buss harness under the module with the return on the green wire. As it stands now, the Maximum Current that can be drawn is approximately 1 Ampere.

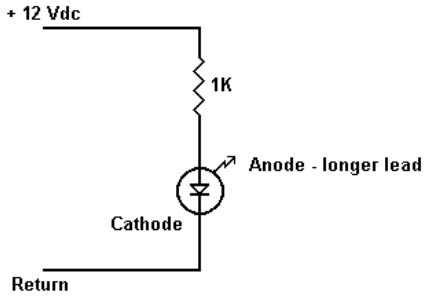
This voltage is presently used to power a UR91 (RF Control Panel) and various lights on ALL modules that are set up for an event. It is suggested that if we wish to add lights to a module or building, we should use LED's as they draw less current than incandescent lamps. A typical LED will draw 17 ma. while an incandescent can draw up to 200 ma. or more. As we can see, 4 or 5 incandescent lamps at this current draw will reach the limit of the supply.

All LED's must have a series resistor to limit the current through the LED. Here is the formula for obtaining the value of the resistor…

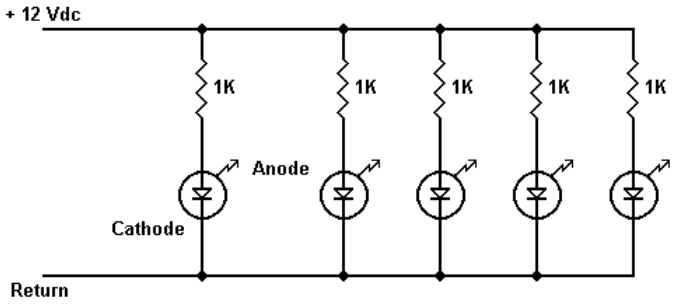
$$\text{LED Resistor} = \frac{\text{supply voltage} - \text{LED voltage}}{\text{LED current}}$$

Most LED's operate between 2 to 4 volts with a current of 20 to 35 ma. As a rule of thumb, if one is using a supply voltage of 12 volts (which we are), the resistor should be about 1K – that sets the current to approx. 17 ma.

Here is a suggested way to hook up the LED. The resistor can go in either leg.



More than 1 LED? Hook each resistor / LED combination in parallel to this above diagram.



D.B.L. STANDARDS MANUAL

DCC Standards

As mentioned on page 13, the Durham Belt Line is controlled by a Digitrax DCC system. This allows a number of engines to operate independently without complicated wiring. It is suggested that everyone read and follow Digitrax wiring instructions as per their online manufacturer's manuals

When modules are set up at an event, the DBL supplies a command control case which includes a Digitrax DCS100 or a DB150 "Command Station" (shown in the centre of the photo below) which is connected to the White and Brown wires of the Bus Wire at a convenient location. This will now send the DCC power along the bus wires from module to module as described on the previous page.

A UP5 panel (similar to the one shown to the right in the photo below) must be mounted to *each* the front and the back of each module, if possible. These should be placed as centrally to the module length as can be accomplished. The UP5 panel provides access to the LocoNet Data (the communications-link between the Command Station and each throttle). This is where the operator plugs in his/her throttle (be it a DT400 series throttle as shown to the left in the photo above, or a DT300, or a UT4) to allow the operator to control the engine of which (s)he is in charge. As the train works its way down the line, the operator unplugs from one UP5 and moves on to the next one.

The Empire Builder II Set from Digitrax, DT400, DB 150, and the UP5 (from left to right)

The UP5s are "daisy-chained" to each other during an event, using LocoNet cables (TelCo, 6-wire flat cable) – via the plugs on the back of the UP5s. **It is imperative that each person has at least one of these LocoNet cables for each of their modules, of the length of the module plus two (2) feet**. One end of the LocoNet cable is attached to the back of the UP5 (under your module) and then run through to the next module's UP5 and connected in the same way. A permanently-affixed short LocoNet cable should be installed between the two UP5s on your own module. The engine operator controls his/her train via the LocoNet command instructions travelling through this LocoNet cable system. For a UP5 to work, it must be connected to the LocoNet, which in turn is connected to the command station.

Only Digitrax-made components should be used on Belt Line modules because of incompatibilities between different manufacturers of DCC equipment. However, all DCC decoders are made to the NMRA standard, so it does not matter which brand of decoder you install in your engines.

D.B.L. STANDARDS MANUAL

Specialty Modules (Loops, T's, Transitions, and Y's)

Specialty modules are units which do not conform to a "normal" DBL module standard. These can be Loops, T's, Y's, or other modules which may (1.) be wider than the standard width (of 30-inches) to accommodate special track configurations or special scenic aspects difficult (read "impossible") to contain within the 30-inch standard, or (2.) have special electrical/electronic requirements to ensure that they do not conflict with the operation of equipment on any layout in which they are included.

Otherwise the same requirements relate to them as to other modules: UP5 panels affixed on each side, 8-inch and 10-inch mainline track centerlines (when connecting to neighbouring modules), 6-inch bridging sections, etc.

Loops

Loops may be single- or double-tracked, and right- or left-handed. Determine from the co-ordinator which orientation is currently needed for the DBL inventory. The minimum radii of loop curves cannot be less than 20 inches, and would preferably be larger. Each Loop must have its own reversing decoder installed. (Example make: Digitrax PM42 or AR1) At the abutting end, a Loop must be equipped with both male and female trailer plugs for the option of connecting to its neighbouring module in either orientation.

T's

"T" sections can be built with either 90- 45- or 30-degree crossings. This module must be equipped with both male and female trailer plugs at the "branch" connection. The crossing must be isolated and may be "interlocked" by signal or electrically (check with electronics co-ordinator). The D.B.L has two in its inventory.

Transitions

These are short modules which "transition the 8- and 10-inch main line track centres from the front to the back of the module. There are 3 of these in our inventory.

Y's

"Y" modules may be made either (1.) right-angle with a "T"-shaped module (or a pair of modules in that configuration) or (2.) in a true "Y"-shape with two equal branches. Each branch of the "Y" must be able to connect to a standard module. This module must therefore have paired trailer plugs for <u>each</u> of the three ends of the "Y". At present the DBL does not have a "Y" in our inventory.

Skeleton Corners

There are 4 quarter-turn skeleton corners in our inventory. These have no flat surfaces (therefore no scenery) and simply allow corner connection from one module to another.

Corner Offset Fillers

Often it is unavoidable that a module is required to be off-set to its neighbour when connected in a layout. To avoid these sharp-edged offsets, small triangular module inserts could be affixed to reduce the chance of someone accidentally bumping into them. Builders of modules which may need these inserts should be prepared to build them to protect visitors and operators from injuring themselves, as well as to protect their and others equipment. We have two of these in our inventory.

General Thoughts

If you are considering building a different *specialty* module from the norm, ensure that it is thoroughly discussed with D.B.L. veterans before embarking on its construction. You do not wan t to invest time/money/energy on a module which may never be used.

D.B.L. STANDARDS MANUAL

Scenery Standards and Suggestions

Scenery is another item which is left almost completely up to the builder's discretion. Any scene is allowed, any era is permitted, and summer scenery is preferred. There are, however, a small number of requirements.

The fascias of the modules will be painted brown; there is usually a can of brown paint floating around the group, or order this formula from any good paint dealer: 70YR 18/184.

Skirting (of a colour to compliment the above-mentioned fascia paint) will be hung from the fascia to cover the legs and anything else stored under the module, imperative during shows. These skirts should hang to within a couple inches of the floor when the module is raised to its highest level. When measuring horizontal length for these skirts, measure from one end of the exposed surface of the module's fascia to the other and add a couple more inches for overlap on each skirt. (Obviously disregard any surfaces which abuts other module's surfaces since they logically will never be skirted.) Then order the material and manufacture through the skirt co-ordinator; or make your own by ordering material from *Fabricland* (850 Brown Broadcloth – take a sample with you). Ensure that you wash (preshrink) the material before skirt fabrication is begun. You should also supply yourself with enough Velcro strips to affix the skirts to the modules. The cheapest Velcro can be obtained from *Dollarama*.

Clearances: Regardless of which era is being modeled, ensure that modern-sized railroad equipment can clear all bridges, rock cuts, buildings, and tunnels. Double check these clearances particularly on curves.

Mainline ballast should all be of the same colour. Recommendation: *Woodland Scenic's* Fine Grey ballast (large shaker B1375 or small bag B75). Ballast on other tracks can be whatever mix is appropriate for the location.

Groundcover can be whatever mix is required for the scene. The obvious preference is the green grass of summer. Mix other shades as required. The type and variety of trees and bushes are left to the builder's discretion.

Populate your modules. People, animals, automobiles and other static scenes will bring a lot of attention to small, non-rail corners of your module. Buildings and figures obviously should be proportionate to the scale of HO, and should not be too miniature or grotesquely large as to divert attention from the reality of the scene. Since modules will be transported, it is recommended that structures be secured to "flats" easily removed during transport.

NOTE: Before its appearance at any public event, any module must adhere to these rules.....
(1.) Electrical testing of a new module MUST have been done in a trial session with other Belt Line modules using a DBL informal Get-Together held when required, preferably before starting any scenery. This allows for electrical or track alterations (if required) to be made to the module without having to tear up any scenic materials.
(2.) Scenery should be completed at least to a basic level before showing the module in public. "Plywood Plains" is not acceptable to our show standards.
(3.) Skirts MUST be attached at shows so that no module support apparatus and no under-module storage areas are visible. Indeed, since the informal get-togethers are actual "dress rehearsals", the skirts should be applied at these events as well, if available.

D.B.L. STANDARDS MANUAL

Operating the Layout

All powered equipment should be run at a reasonable speed, as close to prototypic as can be achieved. These are not slot-cars! If a specific loco cannot be operated in such a manner, then that loco should be removed from the layout and processed so that it can.

An operator should confine him/herself to operating only one train at a time (for safety sake), and must accompany this train around the layout, paying close attention to the train's progress. It is imperative that the operator be vigilant concerning (1.) turnout settings before and after passing through said turnouts, (2.) the proximity of leading and trailing trains, (3.) the speed adjustments of the train to maintain equidistant spacing of trains, (4.) the number and length of trains, in order to not monopolise the layout.

Uncoupling magnets should not be installed on any mainline trackage. The placement of uncoupling magnets on other trackage should be approved by a committee of veteran D.B.L. members. An operator must take great care in the process of gently coupling to, and the handling of, rolling stock.

If a piece of rolling equipment does not work well, it should be removed from the layout, and a report made to the owner of said equipment, with reasons provided for removal. Owners of rolling stock normally identify their equipment on the underside of said equipment in some specific way, usually by a small label.

Since the Belt Line as a group doesn't own any rolling equipment, it is up to the individual DBL members to supply such equipment needed to operate. Since the group never knows which modules will be present or which rolling stock would be available, operation is generic at a public show. On the other hand, prototypic switching operation can be attempted and should be encouraged at informal, non-public get-togethers. At these events, some effort should be directed towards mimicking prototypic freight operations, such as car-forwarding, etc.

Show Operations

During any public showing, the most important thing is that the trains never stop rolling. The show audiences want to watch trains proceeding along the tracks. Therefore keeping the trains on the move should be our highest priority and our utmost efforts should be made to achieve that goal. Passenger stations can be spaced as equally-apart as possible to enable minimal passenger service (best handled through the flexibility of an RDC or Budd Car) including the vocal trappings which accompany such activity. Long and short freight trains should be constantly on the move. Trains can be assembled in some kind of yard area, and then sent out on the mainline, while trains which have been running for a while could enter this same area for disassembling and sorting into other trains of various lengths. One or more persons at a time can be assigned this yard work, while other operators follow their trains around the layout.

During shows, some effort might be made to periodically run a tourist train (with vocal running commentary) around the layout using the audience as passengers while the train progresses from module to module, identifying the owner of each module and each module's highlights. It would give the audience a chance to get to know the DBL members and point up the features of their modules. Using the flexibility of operation of an RDC would make this procedure more comfortable. Possibly two club members could co-operate in achieving this: one to run the train, and the other to concentrate on the commentary.

D.B.L. STANDARDS MANUAL

Model Railroading IS fun!

But it needs to be enjoyable for everyone, including all the participants and the public. This "fun" requires discipline, i.e. adhering strongly to the understood standards agreed upon by the D.B.L. group (as outlined in this manual) so that our efforts appear and perform in a polished manner. If it looks good and runs well, with everyone doing their best to make the (public or private) show successful, then everyone goes home happy and satisfied.

Quick-Peek List of Data Discussed in this Standards Manual:

(Basic Module Specs are high-lighted in red) page

D.B.L. STANDARDS MANUAL

Quick-Peek Data List (continued):

D.B.L. STANDARDS MANUAL – Appendix A

Revision Schedule (of the "D.B.L. Standards Manual")

Revision Number	Description	Revised By	Date (Y-M-D)
T.B.A.	- Discussion & changes made to pages 13 ("Wiring the Module") & 14 ("DCC Standards") during a G-T	D.B.L. membership	2010-01-23
T.B.A.	- Discussion & changes made to pages 1 through 6 during a special "Standards Manual" membership business meeting - Introduction of a "Revision Schedule" section	D.B.L. membership	2010-02-21
T.B.A.	- Discussion & changes made to pages 7 through 10 during a special "Standards Manual" membership business meeting - a committee presented a rough draft of a "Special Modules" page (15) - Decision made to start the new "Revision Schedule" from the date upon which the said "Standards Manual" has been fully discussed and accepted by the DBL membership.	D.B.L. membership	2010-03-21
T.B.A.	- Discussion & changes made to pages 11 & 12, and page 16, plus clarifications made to page 15 during a special "Standards Manual" membership business meeting	D.B.L membership	2010-04-25
T.B.A.	- Discussion & changes made to pages 17 through 20 during a special "Standards Manual" membership business meeting	D.B.L. membership	2010-05-16
T.B.A.	- Discussion & addition of new page to the manual relating to the requirements for installing module lighting (new "page 14")	D.B.L.	2011-05-11
T.B.A	- Discussion & change of new information (on page 9) relating to a new agreed-upon (voted and passed) table height of 40 inches	D.B.L. membership	2013-10-21
T.B.A.	- Discussion concerning housekeeping, clarification, and addition of data on most pages	D.B.L. membership	2015-11-9