RGB

LED LAYOUT LIGHTING

Eddie Gallier

Museum Dioramas

Controlled environment
Neutral Surrounds
Realistically lit
One looks into a little world with no distractions

To quote the Australian War Memorial Museum website, “Visitors are drawn to them as if by magic and memories of them last a lifetime.” Dioramas influenced the design of my exhibition layout.

Victoria Mountain

Originally built for future Day Night Day lighting

Designed to be an exhibition layout and part of a home layout

4 x 2 metres, 13.12 x 6.56 feet

Fluorescent Tube lighting 6 x 48” and 2 x 24” fixtures

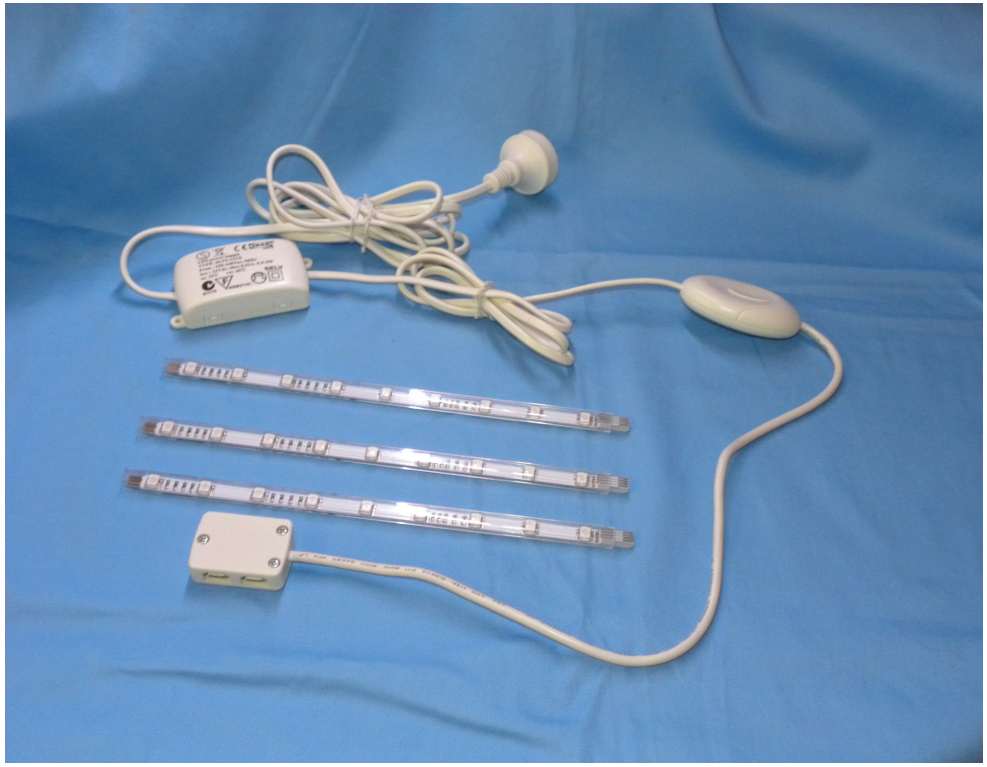
After a number of outings I was told RGB LEDs existed. Knowing

RGB displays can render over 16 million colours, they had to work.....

Ikea Dioder RGB Lighting Strip $69 Aus

Controller allowed shifting between 7 colours automatically or select 1 at a time.

Playing with these I discovered the wiring consists of four wires, one for red, one for green, one for blue and a common.



RGB LED light dimer $22.00 Aus

Smooth transitions between millions of colours. This proved RGB LEDs could be used for DND lighting.

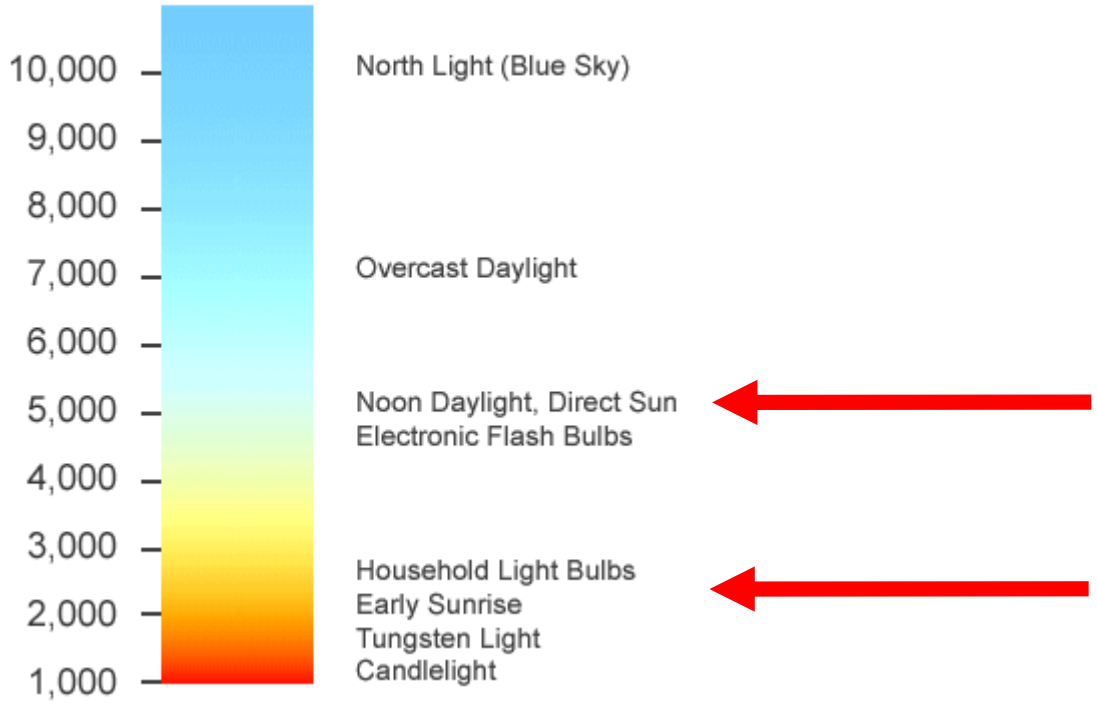
The Challenge

1. Work out Red Green Blue values that resemble day and dusk lighting. Blue, used for film and animation night lighting, would be used for my lighting.

2. Find a supply of RGB LEDs.

3. Find a controller that could be programmed.

Colour Temperatures in the Kelvin Scale



Kelvin to RGB values & Night Lighting

40w Tungsten approximated sunrise and sunset.

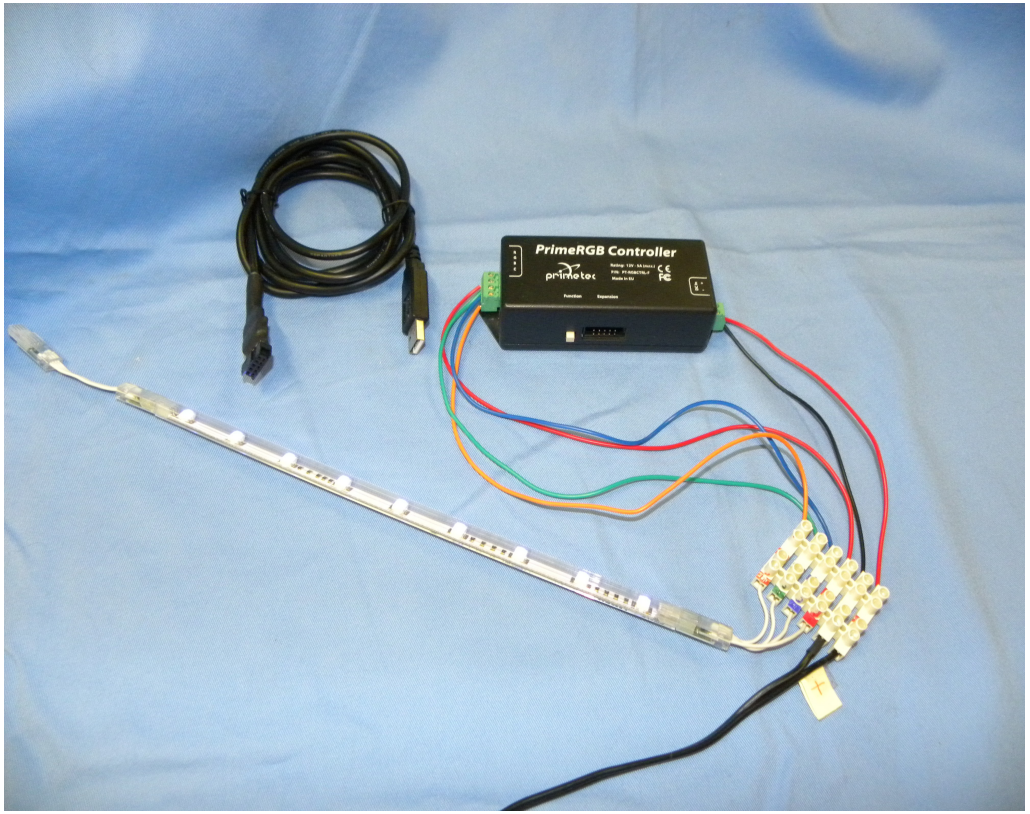
High Noon made sense

Pure Blue was selected for night lighting. It is used in film and television production for Night shots.

Light Source	Kelvin temperature	R G B Values	Color
Candle	1900	255, 147,	
40W Tungsten	2600	255, 197, 143	
100W Tungsten	2850	255, 214, 170	
Halogen	3200	255, 241, 224	
Carbon Arc	5200	255, 250, 244	
High Noon Sun	5400	255, 255, 251	
Direct Sunlight	6000	255, 255, 255	
Overcast Sky	7000	201, 226, 255	
Clear Blue Sky	20000	64, 156, 255	

From the “Reproducing World Light Tutorial”

www.planetpixelemporium.com



Primetec PrimeRGB Controller

Up side - One page manual. Easy to write or edit lighting programs. USB interface. Great for a small to medium size layout. Expandable*

Down side – 5 amps max. Price (at the time). Pricy to *Expand by daisy chaining controllers on proprietary cable.

RGB LED strips with 60 LED/metre

From www.theledlight.com.cn

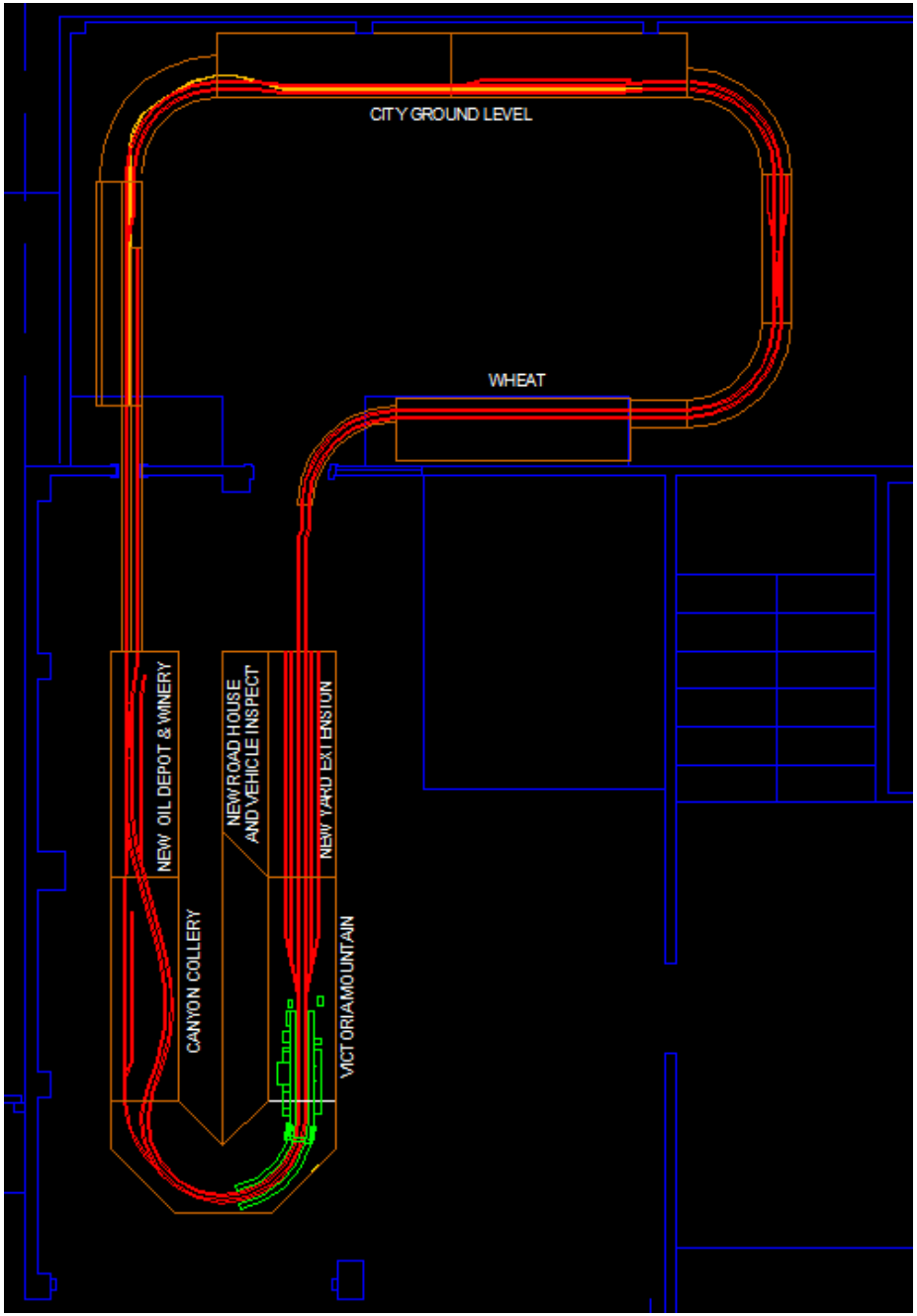
RGB LED Power Consumption

5 metres (16.4') will draw just over 2 amps @ 12 volts.

Low heat.....well yes and no.

LED lighting for Victoria Mountain was going to draw 5 – 6 Amps. This knocked the Prime controller out of consideration.

Joined with the planned home layout Victoria Mountain would draw as much as 15 Amps.



Customisable to cycle, strobe or fade through a palette of over 16 million colours.

Unadvertised, the unit will handle 5 amps built to the instructions, 30 amps if the 3 MOSFETs are heatsinked.

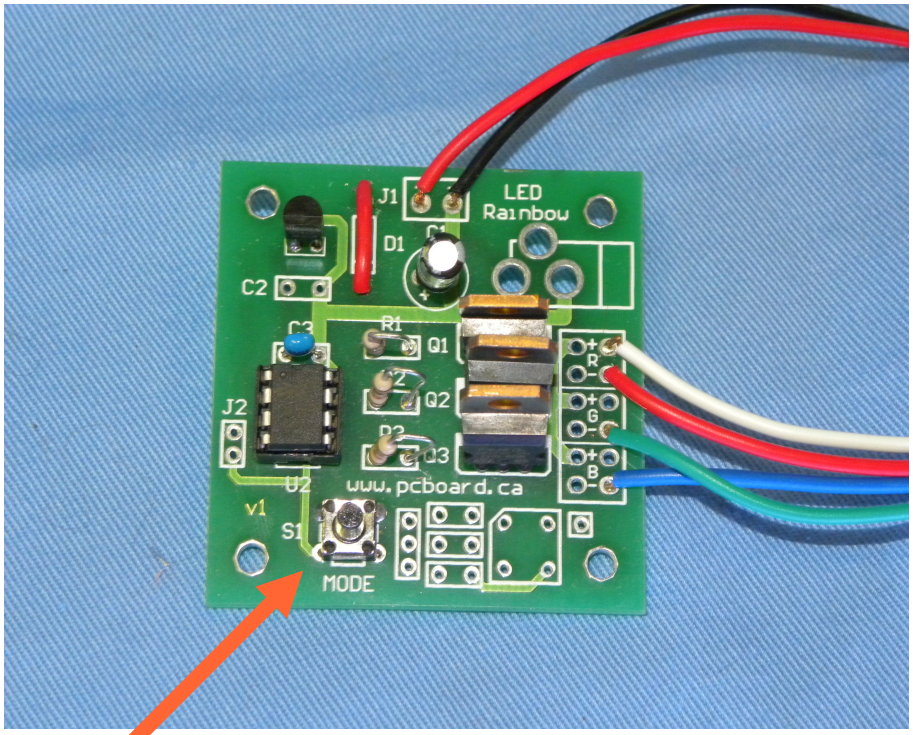
Three programs were put together:

1. DND Lighting

2. Electrical Storm

3. All on for work lights

The push button switch steps through the programs.

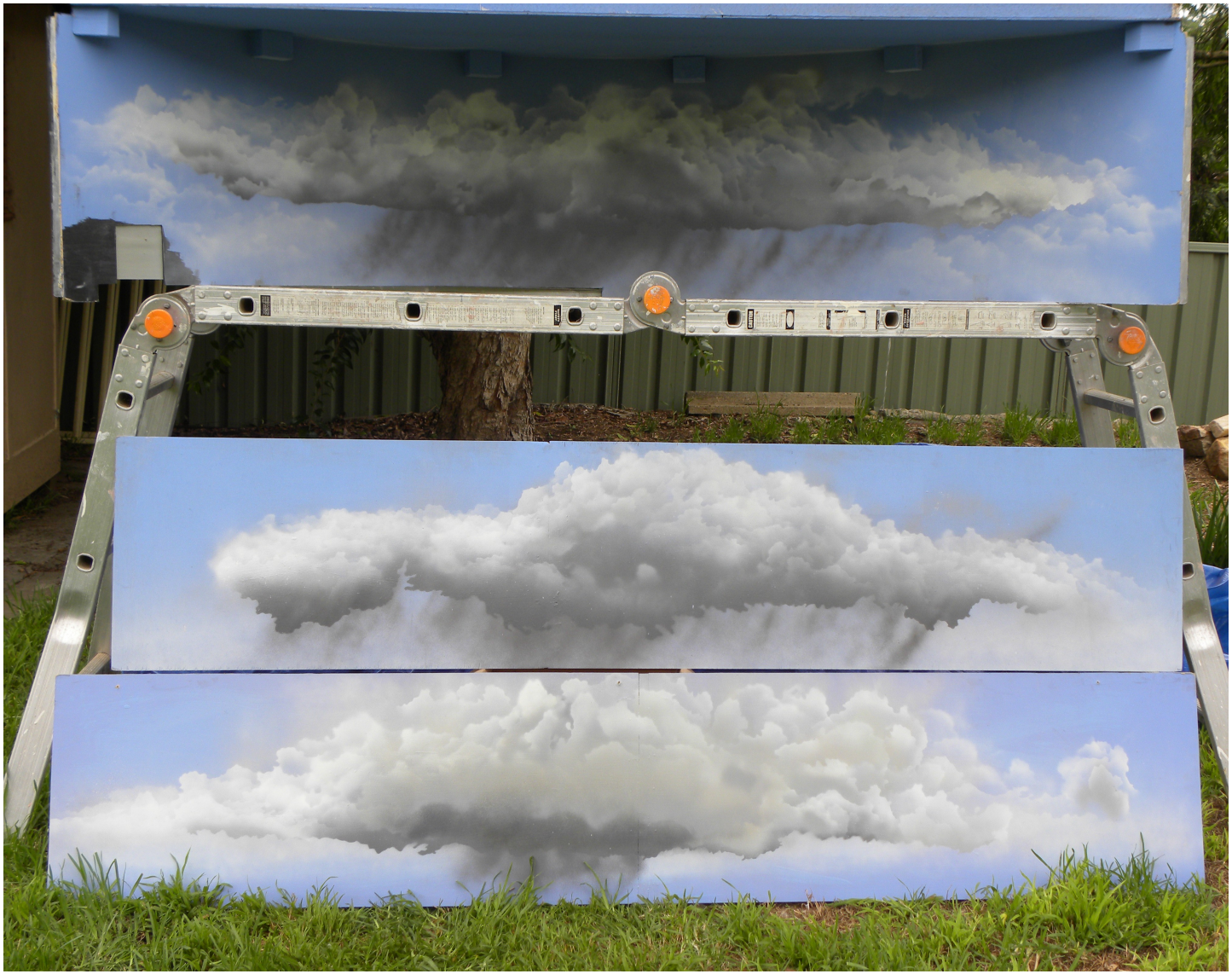


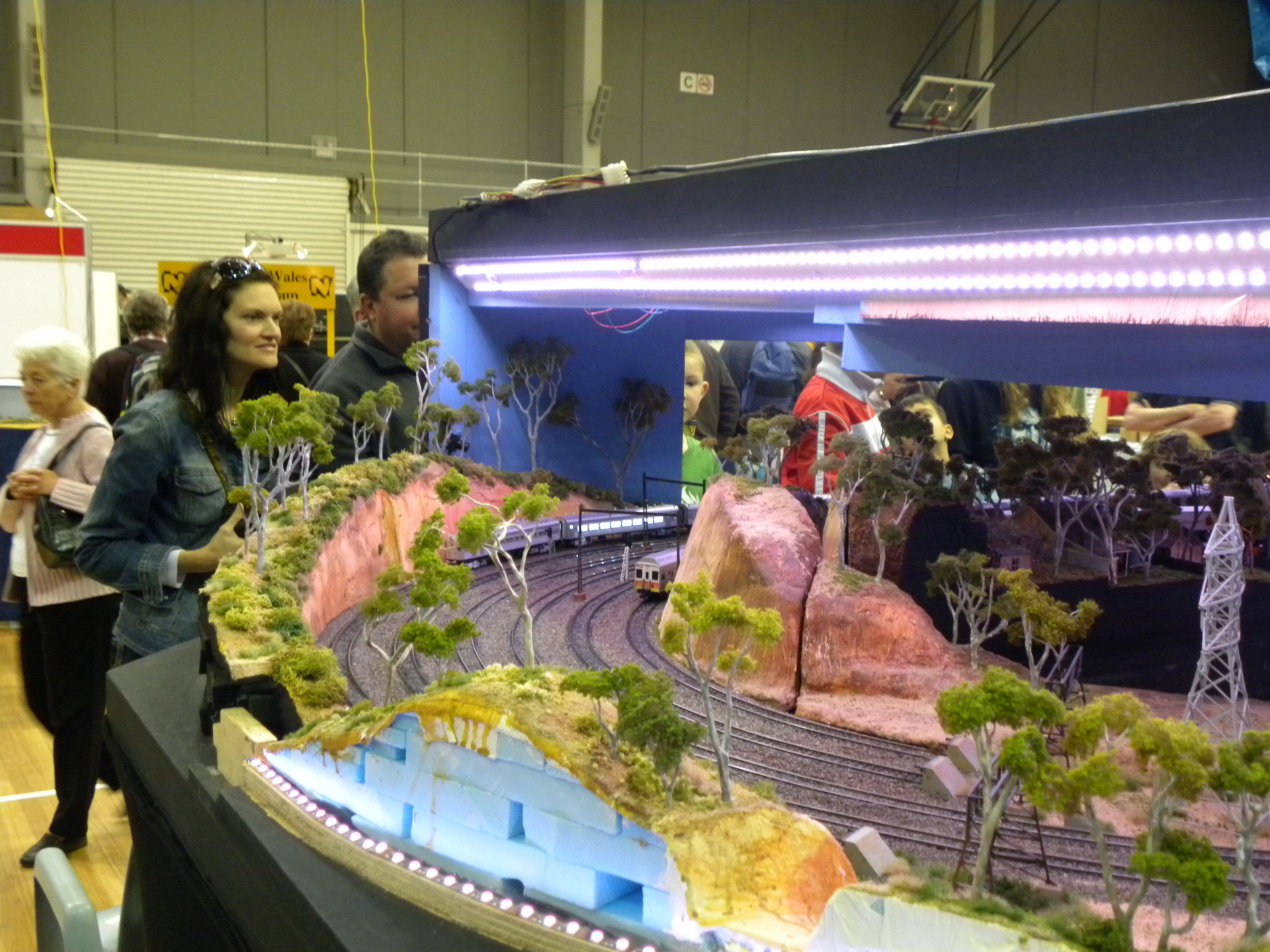
LED RAINBOW from
www.pcboard.com.ca

THEATER

Prototypical day light lighting for HO Scale would have a single light source 1.7 million Km or 1.1 million Miles from the surface of the layout.

VICTORIA MOUNTAIN
Southern Rail
Southern Rail
Southern Rail
Southern Rail
10





Toile

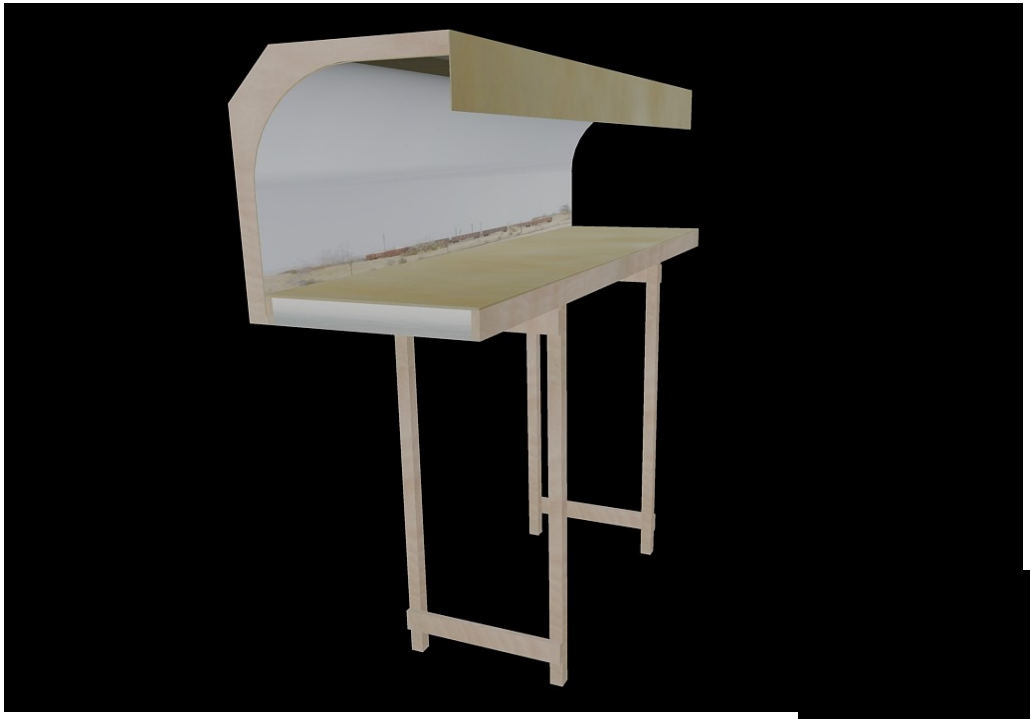
Advantages to LED lighting

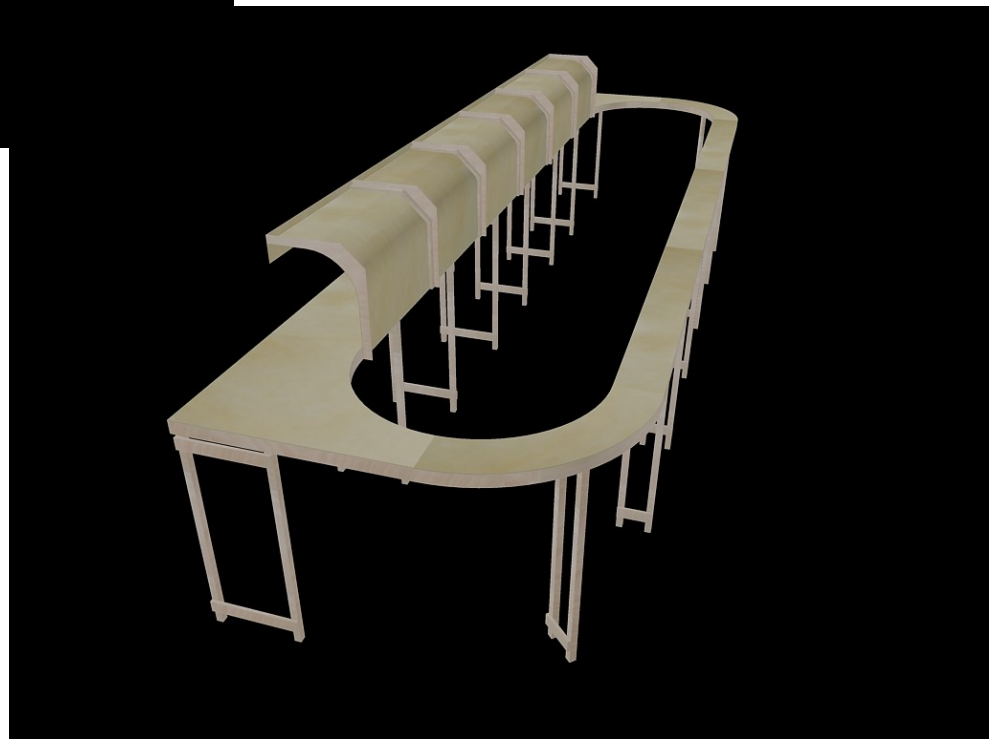
- Program whatever lighting you want with over 16,000,000 colours.
- Much lighter than other light sources means lighter support structure for layout overhead.
- Trim to many lengths in 50mm/2” increments.
- @ $7.50 per metre (3.2' or 39.37”) for strip RGB LED

Victoria Mountain Fluorescent lighting $276

Led Lighting $222*

* includes controller and power supply





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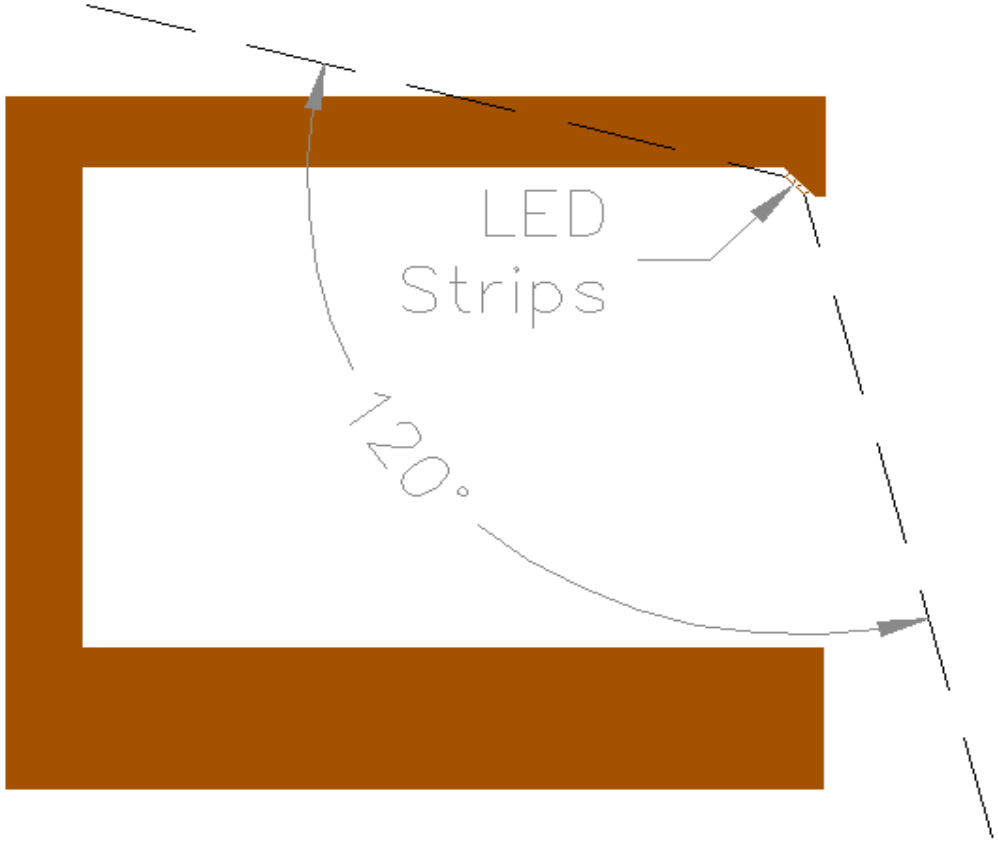
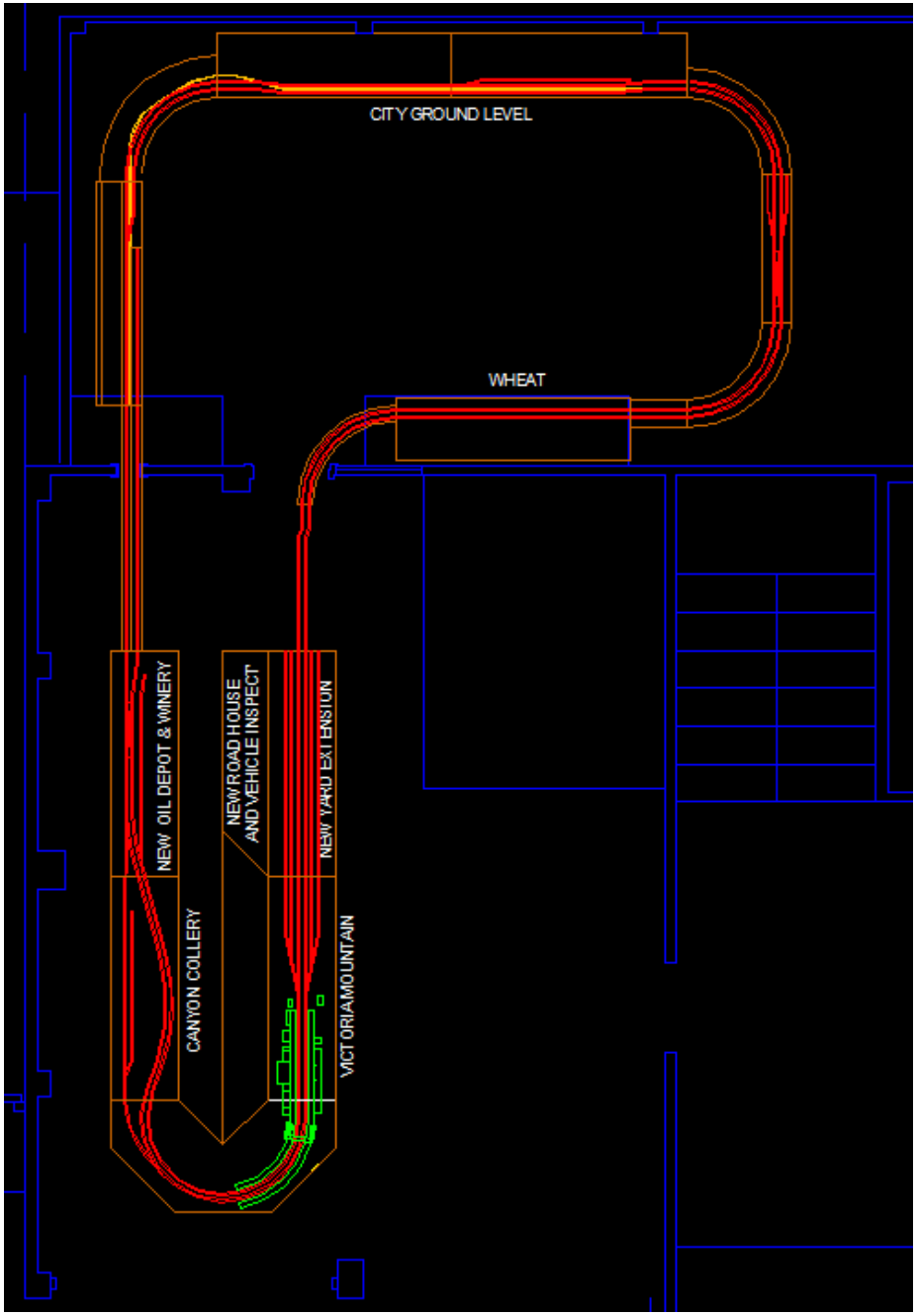


- Roughly 2' x 2'.
- LED emits light over 120 degrees
- 2 strips of LED adequate
- Quick to assemble and break down


CITY GROUND LEVEL
WHEAT
NEW OIL DEPOT & WINERY
NEW ROAD HOUSE AND VEHICLE INSPECT
NEW YARD EXTENSION
CANYON COLLERY
VICTORIA MOUNTAIN

LED light Control

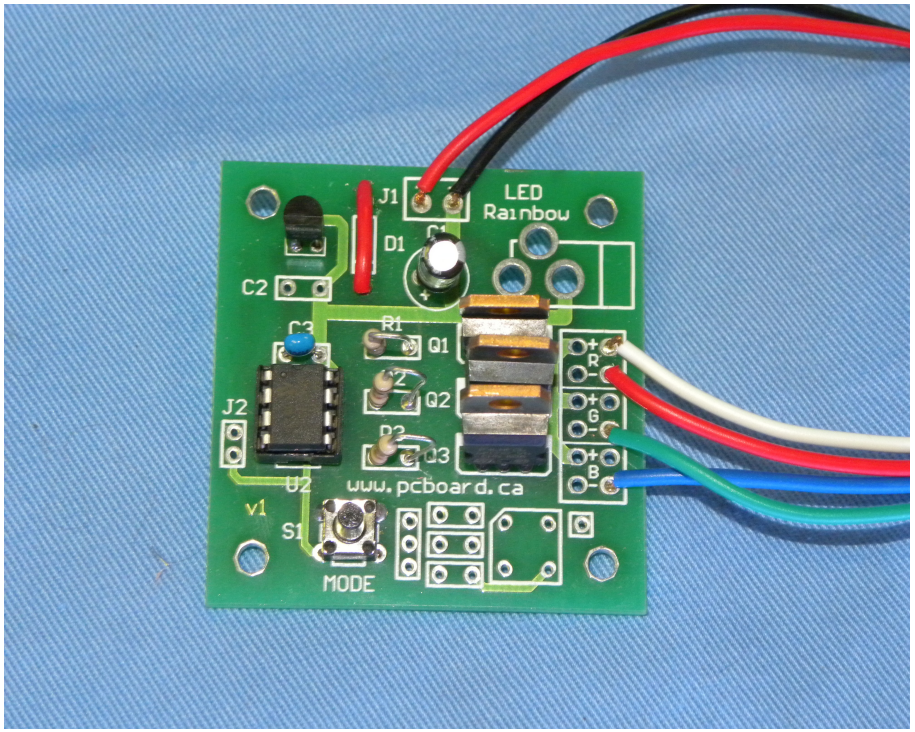
Will have to be able to control the amperage for your layout

LED Purchase

Buy all your LEDs at the same time. Colour could vary from batch to batch

0.1 Second - No Zero Time

Main Line



Thank You

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