

Happy Victoria Day

SALE

HO
SCALEMay 15 - May 24th
Up to 30% Off
Selected ItemsN
SCALEWe are closed for the Victoria Day Holiday
from May 20th through to May 23rd
Our website is open 24/7
www.pwrs.ca**Pacific Western Rail Systems**70ton 53'6" Flat Car BC Rail (BCOL) ex-PGE-Vancouver
Iron & Engineering**BCRAIL**TMRoad Numbers: BCOL 1511, BCOL 1527, BCOL 1530,
BCOL 1546, BCOL 1549, BCOL 1560N
SCALEOrder today on your PORTERS account
https://www.pwrs.ca/client_services/index.phpOrder Today!
866-840-7777

Order Now!

PACIFIC WESTERN RAIL SYSTEMS
SPECIAL RUN CAR **Pacific Western Rail Systems**

WHEELS OF TITIE

Quebec Iron and Titanium Railway



Model Railroad Hobbyist | May 2022

1. MP15DC 69 heads north with the morning passenger train while the ore train waits in the background. Havre St. Pierre is a very scenic town that would be a great focal point for the layout.



MARC SIMPSON PRESENTS A UNIQUE TOMA LAYOUT OPPORTUNITY ...

SINCE 1954, the Quebec Iron and Titanium (QIT) railway has shipped raw ore 26 miles from a large mine on the north shore of the St. Lawrence River to the port of Havre St. Pierre, Quebec. From Havre St. Pierre, the ore continues by ship to the QIT processing plant in Sorel, a suburb of Montreal, where it is processed into iron and titanium products for world markets.

The QIT provides the only access the mining facilities, and workers commute by coach on mixed trains that also carry

 REGISTER
(free)[INDEX](#)[TABLE OF CONTENTS](#)MRHMAG.COM[INDEX](#)[TABLE OF CONTENTS](#)

equipment and supplies. QIT is now a subsidiary of Rio Tinto, but many decades of mineable reserves ensure a long life for the railway.

All of this makes for excellent operating potential for a model railroad layout that fits the TOMA concept perfectly.

PROTOTYPE HISTORY

The north shore of the St. Lawrence is rugged and remote country accessible only by boat prior to the 1950s. Few ventured far inland from the coastal communities. Post-WWII strides in mineral exploration techniques and geophysical methods, largely based on technology developed as part of the war effort, opened these remote regions for exploration.

Airborne geophysical surveys generated numerous world-class mineral discoveries, including the iron and titanium deposits at Lac Allard that QIT now mines. The Lac Allard discovery coincided with advances in metallurgical technology to economically extract titanium from the ore.

The large amount of electricity this technology required meant the processing plant had to be located accordingly. Because the Havre St. Pierre region lacked the infrastructure, the processing facility was built in Sorel. Ore shipments along the St. Lawrence River from the mine to the refinery continue to the present.

After the discovery was explored and defined, construction of the port and mine facilities and railway commenced using Montreal Locomotive Works (MLW) S-4 locomotives for the mine and railway construction and later ore haulage [2].

The QIT is one of the most isolated railway operations in North America, with the only outside rail connection via ship or car ferry. There was no highway access to the region until the 1990s, with the only way in or out being by ship or aircraft.



2. QIT S-4 on display at Havre St. Pierre.

TOMA

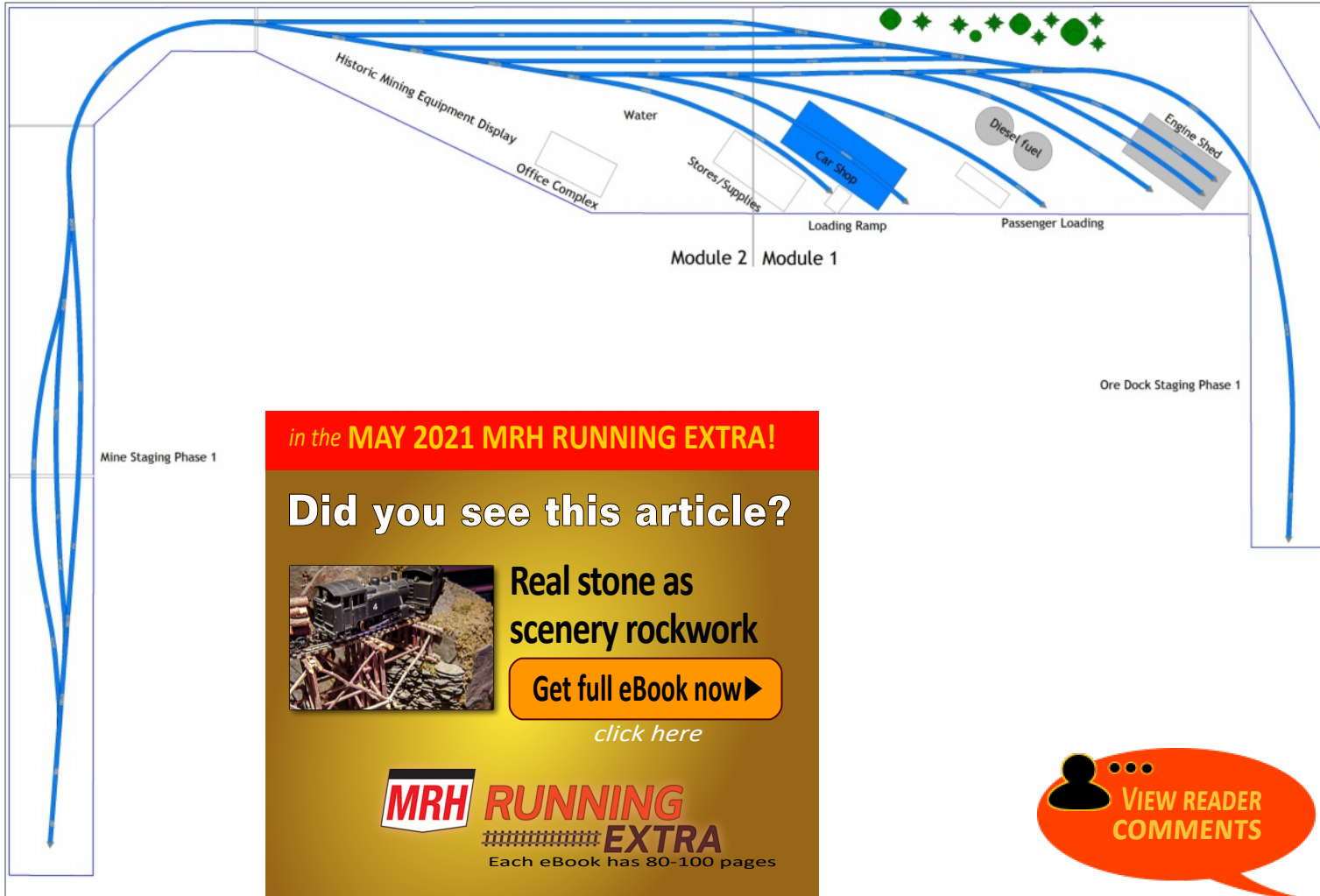
When the latest TOMA contest was announced, I thought the QIT would be a perfect match. As a small point-to-point operation, the prototype would translate to an ideal small-to-medium-sized model railroad subject.

I thought about which part of the QIT would fit the requirements of the contest as a starting point for a larger layout. The obvious starting points would either be the mine or the port, shop complex, and passenger station. Starting at the mine would permit staging only at one end, and the switching potential would be limited there.

Modeling the car shops, engine shed, and yard facilities on two modules, you could fulfill the TOMA contest requirement for

staging on either end of the modules. The switching and operating potential at this location would allow the initial TOMA modules to function as a fully functional, stand-alone switching layout.

A temporary staging yard on the port end will represent the ore dock. Temporary staging on the other end would represent the mine and other points north. You could add the ore dock



and ship loading, and additional trackage to the mine as the layout progresses, with the mine ultimately being the “end of track” for the layout.

TRACK PLAN – PHASE 1: MODULE 1 AND MODULE 2 – SHOP COMPLEX AND YARD

The shop complex and yard are the operational hub of the QIT, and include the passenger station, locomotive shed, car shops, loading dock, and freight house. This is a very compact operation with tremendous switching potential that lends itself well to a small-to-medium-sized layout, and makes the best starting point for the first TOMA module [3].

The diesel shop, passenger station, stores building, loading dock, and car shop all come off the small yard at an angle to give visual interest to this area. Though the layout track arrangement is not strictly prototypical, it generally captures the shop and station complex.

3. Phase 1 TOMA modules of the port and yard facilities at Havre St. Pierre.

The small five-track yard offers space for switching cars destined for the ore dock or the mine, and storage space for work service, passenger, and freight cars. The yard on the layout combines the prototype's three-track yard and the two-track runaround serving the ore dock, which are separated on the prototype.

On the model, the two yard tracks for the ore dock are set aside to allow the ore train's locomotives to run around the cars to push them onto the ore dock per prototype practice. You can also use this runaround track for the southbound passenger train from the mine.

The leads for the freight house, loading ramp, locomotive shed, and car shops comes off the outer yard track, which also serves as the runaround track for the ore dock trains. This allows you to switch these tracks without interference from freight cars in the yard tracks. The car shop, loading dock, and freight house each have a single track serving them.

Unlike the prototype, the freight house in the track plan is separated from the loading ramp to give more switching opportunities. Specific car spotting requirements like the water loading spot, specific doors at the freight shed for specific cars, etc. will add operational interest and demand some planning to switch.

The car shop track has capacity for 4-5 ore cars or one passenger car. A spur from the engine house lead holds MOW equipment such as a snowplow, crane, and ballast hoppers, and also has the fuel loading site for mine-bound tank cars. This small yard should have sufficient capacity for the railroad's small freight car fleet.

MODULE CONSTRUCTION

The facilities in Havre St. Pierre are level, so there are no elevation changes on the first two modules, which simplifies

construction. I propose an open-grid frame of 3" wide strips of 3/4" plywood supported on 2x2 legs with cross braces on 18" or 24" spacing for stability. The top of the initial modules could be made with 1/2" or 3/8" plywood.

To fit the modules through a standard doorway, each yard module will be six feet long and 30 inches wide. The module with the engine shed and car shop will be rectangular; the other will be angled to allow easier access to the switch throws [3].

I built my home layout benchwork with a plywood frame and top, and have been very happy with it. Plywood is dimensionally stable and solid to work with. If you do not have a table saw to rip the plywood into 3" strips you can have it cut at a home improvement store at minimal cost.

You can use steel anchor plates to provide extra strength at the corners and on the cross members

ELECTRICAL

Thread the main electrical bus line through 1/2" holes drilled in the cross members to keep the wires neat and tidy, or use plastic wire straps under the layout. Use RCA-style plugs at the module joints to easily connect the modules' wiring together.

Please click on the ads
to help MRH magazine

On my home layout, I have feeders soldered at six-foot maximum intervals, and soldered track connections. Each module should have feeders every 3-4 feet for each track.

Use the DCC system of your choice. As this is a relatively small layout, one booster should be sufficient. Power zones will allow you to isolate any shorts that occur. If operating straight DC, you will need additional wiring to control trains.

TRACK AND ROADBED

There are several good options for roadbed. Cork or foam-type roadbed both work well for the yard. Cork floor underlayment, available in rolls or two-foot squares, is a good option to cover wider yard areas quickly.

I drew up the modules using SCARM (free layout planning software: www.scarm.info/index.php). I planned the track on the layout using Atlas code 83 turnouts and track because it is readily available, and a reliable, good-looking product. SCARM has options for many different manufacturers, so you can adjust the plans if you prefer another brand.

I generally used #6 turnouts because long passenger cars look better going through longer turnouts. I used #4 switches at specific locations where I needed sharper divergence.

I use Caboose Industries ground throws for reliable, simple, and inexpensive turnout control. Switch machines would require forethought in the construction process. You can use a Tam Valley Frog Juicers to power the frogs if desired.

The only area where you might consider switch machines or remote manual turnout controls is on the port end of the yard, where the turnouts may be a reach for operators. I attempted to keep everything a reasonable distance from the front of the layout in the track plan.



4. Havre St. Pierre locomotive shops.

SCENERY

The first modules represent an industrial site, so scenery is relatively simple. The shop complex area is flat with large open areas covered by gravel and sand with scruffy grass and bushes.

The northern end of the yard is a forested area on the prototype, so this is represented on the layout. The main features of the Phase 1 modules are the buildings as outlined in the section below.

As this is an industrial scene, security fencing is everywhere. Heavy equipment and parts are stockpiled throughout. Another interesting modeling feature is the display of historical mining equipment next to the QIT offices.

The QIT shops are modern prefab construction, with the exception of the locomotive shop, which looks like it is the original building from the early 1950s. A good starting point would be the Rix Products engine house: rixproducts.com/product/engine-house-1-or-2-door-ho. If you want to be more accurate, you could do a kitbash starting with Pikestuff or Rix Products steel buildings [4].

The car shops and stores buildings are modern steel-construction industrial buildings. These structures are perfect for kitbashing using Rix Products or Pikestuff buildings as a starting point: rixproducts.com/product-category/pikestuff-ho-kitbasher-series. The prototype buildings are large, so you will need to selectively compress them to fit available space [5, 6].



5. QIT car shops Photo.



6. QIT stores building.



7. QIT former Virginia Railway Express passenger cars in new Rio Tinto paint scheme at the "station" in Havre St. Pierre.

There is also a loading dock that is used to load flatcars with vehicles heading to the mine. You can easily scratchbuild a simple earthen ramp with wood cribbing for this purpose.

MLW/Alco S-4s were the first locomotives the QIT used for construction and ore haulage. The display of old mining equipment at the QIT office is a great modeling opportunity to display older trucks and equipment in a modern setting [8].

The BLMA (Atlas) yard office would be reasonable representation for the QIT office: shop.atlasrr.com/p-47857-ho-scale-modern-yard-office-assembled.aspx. It is a different design, but captures the steel construction used throughout the complex.

PHASE 1 – ORE DOCK STAGING

The ore dock at Havre St. Pierre is long enough to accommodate half an ore train at a time, plus the two GP9s pushing it to the end of the dock [10]. Walthers sells their ore



8. QIT S-4 on display at Havre St. Pierre with antique mining equipment. The car shop is in the background. The QIT office is at the far left.



10. GP9s 27 and 38 unload ore cars at Havre St. Pierre.



9. Panoramic view of the ore dock and ship loader in Havre St. Pierre. This will be a signature scene on the completed layout.

jennies in 6- and 12-packs, and a good HO scale train would have 24 cars. If each car is a scale 24' long, the staging track representing the ore dock for this initial stage would have to be 56" long to accommodate half the train plus its two locomotives.

A model ore dock will replace this staging track later. For simplicity and to allow for quick operations, a simple 3/4" piece of plywood with 2x2 legs will suffice for staging. Adding a model of the ore dock, ore loader and a ship at the loader on the permanent module will be phase 3 of module construction.

PHASE 1 – MINE STAGING

A three-track staging yard represents the mine in this initial phase, with one track each for the ore train and the passenger train, and a runaround track for the locomotives. The



11. The QIT mine is one of the largest producers of iron and titanium in the world. The open pit sends several ore trains per day to Havre St. Pierre for processing at Sorel. The mine buildings and facilities are adjacent to the pit at right.

passenger train is not turned at either end of its run, so the electric generator car is always on the north end of the consist.

On both the ore train and passenger train, the locomotives lead the train in both directions. They aren't turned either, so they run long hood forward one way, cab forward the other.

Two of the staging tracks are long enough to accommodate a full-length ore train and two locomotives, and the third is long enough for the passenger train. The ore train offers an opportunity to add loads at the mine end and remove loads at the ore dock end.

Simple 3/4" plywood with 2x2 legs will suffice for the temporary mine staging yard to get things operational quickly. Building the permanent mine facilities module is phase 2 of layout construction.

The ore train offers an opportunity to add and remove loads at both the mine and ore dock. At the mine end of the run loads can be added to the ore cars and these loads can be removed at the ore dock end. As this staging would be temporary in nature a simple piece of 3/4" plywood with 2x2 legs would be sufficient to get things operational quickly. Building the permanent mine facilities module will be phase 2.

SWITCHING ON PHASE 1 MODULES

Switching opportunities on these modules include hostling diesels at the shop, switching cars for the car shop and stores building/team track, and frequent passenger operations. Loaded water and diesel tank cars and flat cars need to be added to the passenger train. Empties must be removed and spotted for loading.

Loaded ore trains need to be broken in half, with each half pushed onto the dock for unloading. The empties must be combined into a full train and returned to the mine for loading.

PHASE 2 – MODULE 3 – MINE LOADOUT

The mine complex is the trains' destination from the port. The actual prototype has a small yard, a passenger depot, and an ore loading silo. There is also a short siding for unloading tank cars of water and diesel fuel. Another diesel tank car spotted at the end of the ore loading spur provides fuel for mining equipment [12].

The ore loading and support facilities are modern industrial steel buildings that you can represent with Pikestuff or Rix steel buildings. The open pit mine is adjacent to these buildings. The buildings are enough to get a feel for the scene, though you can model the mine if you want to.

For added operational potential, you can have two sets of ore cars in operation, with one at the mine for loading and the other in transit to and from the port. Switching at the mine site would be predominantly empty and loaded ore trains, but also diesel and water tank cars, flat cars and containers for the loading ramp.

Occasional special movements of large mining equipment such as trucks, drills and shovels would add variety to the freight mix. These would likely be special movements because of their oversize nature.

As additional modules are constructed, the mine module can be moved toward its final location on the layout. The flexibility of the TOMA method allows for expansion of the layout as construction progresses.

PHASE 3 – MODULE 4 ORE DOCK

The ore unloading dock and ship loader would be the next phase of layout construction. This could be one of the signature scenes on the layout as combined rail and marine operations on model railroads is a popular layout theme.



12. An overview of the mine loadout and facilities at the open pit. A loaded ore train and a lone RS-18 give scale.

The ore cars are bottom dumped through the ore dock. Large bulldozers move the ore to a conveyor system, which feeds a ship loader. There is a significant stockpile at the port to stay ahead of the ship loading requirements.

You could kitbash the ore dock using plate girder bridges as a basis. The Walthers iron ore dock is a much larger structure and a different design than that used on the QIT. You could scratchbuild the ship loader based on photos.

A Sylvan Laker ship (www.sylvanscalemodels.com/kits/1050.htm or www.walthers.com/great-lakes-ore-boat-kit-waterline-hull) would make a great centerpiece to the scene. To save space, you could make the ship loading facility parallel to the ore dock instead as perpendicular as on the prototype. If you prefer to model the prototype ore dock, a T shaped module would work.



13. QIT GP9 27 and 40 unload ore cars on the ore dock at Havre St. Pierre. Half the train is unloaded at a time on the dock, with the ore dumped through the bottom.



14. Spruce Glen loads ore at the ore dock in Havre St. Pierre.



15. Dumping ore cars at the Havre St. Pierre ore dock for loading onto a conveyor.

PHASE 4 – MODULE 5 - GRAVEL PITS

Gravel pits approximately three miles north of Havre Saint Pierre supply ballast and construction materials to the railway, mine, and town. Modeling this would generate additional freight traffic. The QIT has a small fleet of side dump hoppers for this material that you can represent with Walthers Difco side dump hopper cars.

This portion of the QIT passes through a relatively tree-free area with open swampy ground predominating. The scenery changes to more rugged heavily treed terrain further north. The sand and gravel pits are in flat, low ground so land forms are quite muted on this module [17].



16. QIT RS18 46 and MP15DC 69 head southbound with the afternoon passenger train of mine workers heading home from the mine. The topography near Havre St. Pierre is flatter and more swampy than farther inland. Fewer trees make it easier to model!



17. The QIT runs through rugged remote country. This scenery would be replicated on a later phase of the layout.

PHASE 5 – MODULE 6 - ROMAINE RIVER BRIDGE

The Romaine River bridge is an extremely model-genic structure crossing the Romaine River over a set of rapids and an island. A combination of Micro Engineering plate girder bridges and some kitbashing will get you an eye-catching model.

The north end of the bridge has a telltale load gauge to ensure no oversize movements coming from the mine damage the structure. This module would need lots of trees, though making it narrow-width would reduce the volume needed. The topography on this module is low, but would need rock work around the bridge to capture the look.





18. The QIT bridge over the Romaine River just northwest of the airport begs to be modeled on one of the later phases of the TOMA layout.



19. A clearance check just north of the bridge ensures that any wide or high loads will be flagged before they get to the bridge. This is another good model to add to the bridge module.

PHASE 6 – PASSING SIDING MODULE

The QIT is a single-track line with a passing siding midway between its terminals, long enough to allow two ore trains to meet. The siding has a small trailer for crews and workers that might also be worth modeling.

PHASE 7 – TUNNEL MODULE

Many model railroaders like tunnels, and the QIT has an approximately 700-foot-long tunnel near the mine. The rock in this area was competent enough that the railroad could simply blast through without having to build concrete or stone portals, so you can showcase your rock modeling skills on the tunnel's simple blasted rock portals. This module will require lots of trees and rocks.

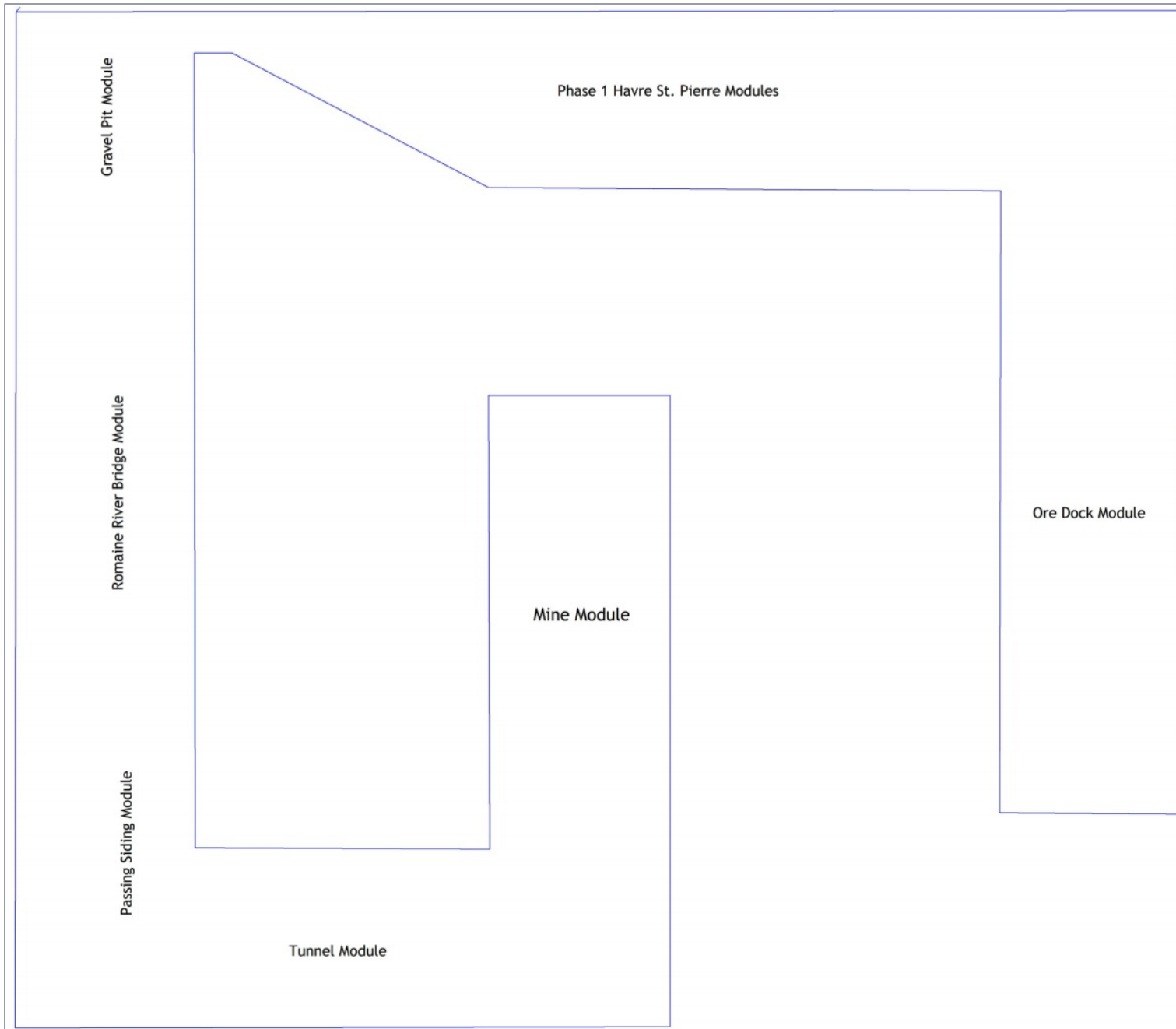
ADJUSTING MODULE WIDTHS

The number of trees and rocks these modules need may seem daunting. Building narrower width modules between the yard and mine modules is one option for reducing the number of trees.

The final layout, with all modules completed, would comfortably fit within the proposed 14' x 20' room in the TOMA contest [20]. The proposed module width for this plan is a standard 30", with 36" minimum aisle widths. Narrowing the modules would allow for wider aisles, and you can adjust module width as layout construction progresses..

FREIGHT EQUIPMENT

Most of the QIT freight cars are ore jennies. The originals were DM&IR-style ore cars, though newer cars have replaced them [21].



20. Final layout after all TOMA modules are finished.



Walters made suitable taconite ore cars in 6- and 12-packs. A fleet of 12-24 would make a good start, though you could expand the total to 48 or even more when the mine module is complete.

QIT also operates dump cars similar to the Walters Difco side dump cars. The railroad uses several 50' and 89' flatcars to haul equipment to and from the mine, and several manufacturers make these.

QIT has a single blue tank car it uses to haul potable water to the mine, and several yellow and silver tank cars haul diesel fuel [22]. The diesel tank cars also serve as fuel storage at the mine site.

All QIT freight cars are in captive service and do not see interchange, so the lettering is minimal. Although there no model manufacturers have produced equipment decorated for the QIT, you can easily use generic decals to decorate your own.



21. Northbound empty ore train at highway 138 crossing.



22. The blue tank car at right carries potable water. It and other cars hauling non-hazardous materials generally move with passenger trains. At left is a HEP generator car for the passenger coaches.



23. MP15 no. 10 leads a southbound QIT passenger train to Havre St. Pierre. Traveling with the coaches are a HEP genset, a flatcar with a truck, and a work service car.



24. QIT uses this self-propelled snowplow to keep its line open. Previously, the railroad used snow-clearing trains with Russel snowplows.

PASSENGER EQUIPMENT

Since the beginning, mine workers commuted via dedicated passenger trains composed of secondhand coaches from various Canadian and American railways. From the 1980s until 2012, they were primarily former CN/VIA Rail Tempo cars [25]. Since then, former Virginia Railway Express commuter cars have replaced them [26].

Rapido has produced models of the Tempo cars and Walthers has produced VRE cars, though in either case, you'll need to make some modifications for them to fit the QIT prototype. You can use a Rapido steam generator car to represent the HEP genset cars, though you will need to kitbash it to better represent the prototype. For earlier times, generic lightweight and heavyweight cars will work.



25. Former CN/VIA Tempo passenger coaches and genset used on the daily passenger trains between Havre St. Pierre and the QIT mine site 26 miles north.



26. QIT former Virginia Railway Express passenger cars in new Rio Tinto paint scheme at the "station" in Havre St. Pierre.



27. One of the QIT HEP genset cars wears the new Rio Tinto livery. This scheme has since appeared on some locomotives.

LOCOMOTIVES

The initial QIT fleet consisted of Alco/MLW S-4, RS-3 and EMD/GMD SW-1200 locomotives. The QIT ordered one of the last MLW RS-18 locomotives built in 1968, and two MP15DC locomotives in 1977 and 1980 as their power needs grew.

Atlas makes good models of the S-4 and RS-3 locomotives. Walthers and Rapido have both made SW1200s with correct flexicoil trucks. The SW1200 saw service both at Havre Saint Pierre and the Sorel plant.

No exact model is currently available for the RS-18, though a low nose Atlas RS32/RS36 would be a suitable stand in. A Kaslo Shops RS18 cab kit and carbody modifications could make for an accurate late-model RS18. One other option may be to kitbash the recently released Rapido RS18, although this would require a fair bit of work.



28. QIT purchased GP9 39 from Quebec Cartier Railway in 1987. The Pointe St. Charles shops in Montreal rebuilt it in the early 1990s to the same standards as CN's rebuilt GP9s.



29. MP15DC No. 69 heads north with the morning passenger train (note the blue tank car at far left typically accompanies passenger trains)

The QIT purchased four GP9 units in 1985 and 1987 from two other isolated iron ore railways in the region: the Cartier Railway and the Quebec, North Shore & Labrador (QNS&L). CN/Canac rebuilt the locomotives at their Point St. Charles shops in Montreal in the 1990's to match CN GP9 rebuild specs. The major difference between the QIT and CN units is an extended cab on the QIT units to accommodate bi-directional running.

No accurate chop-nose GP9 model is available yet for the rebuilt units. Kaslo Shops offers a resin kit for the CN chop nose GP9u units that would be a good starting point for the QIT units.

Atlas makes a suitable MP15DC. The QIT uses them mostly in passenger service, but occasionally also on ore trains.

QIT locomotives originally wore a livery of chocolate brown with orange stripes and basic lettering. More recently Rio Tinto has been repainting the power in its standard scheme of silver with red orange stripes. No manufacturers have decorated locomotives in these schemes or created suitable decals, so you'd have to custom-paint the power and order custom decals.

CONCLUSION

The Quebec Iron and Titanium Railway is a lesser-known prototype that offers many attractive features for modeling. Its fascinating scenery, regular freight and passenger operations, and limited fleet size make for an interesting and manageable layout. The One Module Approach allows for staged construction to quickly get the layout up and running while continuing to advance the layout to its ultimate size. ☑



30. QIT RS18 46 and MP15DC 69 head to the mine with the afternoon passenger train workers. The QIT has an eclectic locomotive fleet that cries out to be modeled.

MARC SIMPSON



Marc Simpson, 53, lives in the Greater Vancouver, British Columbia area with his wife and 3 children. Marc works as a geologist in mineral exploration. His work in the Havre St. Pierre region gave him frequent access to helicopters to railfan the QIT, something most railfans don't have access to.

Marc has long had an interest in trains, with some of his earliest childhood memories involving watching passing Canadian National and Canadian Pacific freight trains on family road trips. These were often the highlight of the trip for him. When he and his wife purchased the current family home one of the selling points was a dedicated room for a layout. The Flin Flon Subdivision of the Hudson Bay Railway circa 1983 is well underway in the dedicated 14x20 space. ■