Silica Branch, Colorado & Southern
A 1928 Interpolation

Background

The Silica Brick Company was incorporated in Colorado in 1904 to manufacture lime-silica bricks. The site included a feldspar quarry for the silica, and a lime kiln for burning quicklime. Limestone and coal for the kiln were imported from nearby, commencing by rail in 1909 when the Colorado & Southern (C&S) built their Silica branch some 4 miles down from the Platte Canyon mainline. The Silica Brick Company failed in 1912 and was re-organised as the Silica Brick and Clay Company — which duly followed its predecessor to the grave in 1916.

The property was bought by Mary Helmer in 1919. The Helmer family reopened the quarry only, mining clay and silica until the 1960’s. The C&S continued to service the quarry until 1941 when the Silica branch was abandoned. While most of the factory buildings were removed over the years, the remains of the lime kiln still stand, and were made a Douglas County Landmark in 2007.
The Modelled Scene

The modelled scene is set in 1928. This provides some difficulty as most photographic and documentary evidence centres either on the brick manufacture period (~1910) or on the C&S branch line abandonment (1941). Decisions requiring interpolation between the two will be presented (with appropriate documentary evidence) with each model and/or scenic vignette.

The modelled scale is HOn3.

NB: due to the interpolated timeframe, this application required considerably more historic research than simply modelling the contents of a single photograph.

NB: due to space constraints, the modelled scene is heavily compressed.

NB: due to layout constraints, the overall composition is mirror-imaged.

Required Models

The scene doesn’t break neatly into individual models. Never-the-less, historical evidence and construction details are given for the following:

- Silica spur*
- Derelict lime kiln*
- Ex-C&S coach/mail car-body station/bunkhouse†
- C&S coal cars†
- C&S speeder*
- Road crossing*
- Feldspar quarry*
- Loading dock*†
- Quarry yard†

* scratch-built
† kit-bashed and/or super detailed
Silica Spur

The prototype had a 10-car siding at Silica, seen here on the 1919 Right of Way & Track Map:
... and here ca. 1910:

... and finally in 1941:
Each end of the spur had a #8-1/2 stub switch with an Elliot rotary switch stand. The near stand (at least) had both round and oblong targets (with vanishingly little paint left on either by 1941):

![Image of train and switch stand]

The model is limited to a 2-car spur with a #6 stub switch, but otherwise matches the track, switch and switch stand details, and the prominent tailing piles. The switch stand targets were given significant rust spots, but are presumed to have had a bit more paint on them in 1928 than in 1941:

![Image of switch stand targets]
All track, including the stub switch, was hand-laid in code-55 rail spiked to wooden ties:

The stub switch headblock is a PC-board tie with most of the copper filed off; the divergent rails and brass outside stops were soldered to the remaining copper pads:
The stub switch includes a throw bar and two bridle bars (the latter of which are rarely modelled). The technique developed by the author includes 0.025” styrene rods and shortened rail joiners for the bars, the latter soldered to thinned PC-board ties. The ties are disguised with ballast; the outer ends of the rail joiners with ballast-coloured paint:

The throw rod and bridle bars in place (note also the bolt heads added to the stop blocks outside the rails):
The basic switch stand was cast by Rick Steele from Harry Brunk moulds. The author modified the stand to be functional with the addition of a cranked 0.025” piano wire target rod and a replacement base-plate (to clear the throw and target rods). Embossed brass targets (with peeling paint via the rubber-cement method) were glued to the rod.

The switch is automated via a Tortoise switch machine modified with a larger, 0.032” actuator rod.

The Tortoise is mounted to the underside of the roadbed with o-rings on either side of the chassis for sound deadening. In addition, the fascia-side of the switch machine is given a layer of Dynamat.

The frog and the ends of the closure rails are isolated from the surrounding track and electrified via the Tortoise.
Completed model:

TODO:
pictures of finished spur
Derelict Lime Kiln

The lime kiln was originally clad with feldspar retained by metal bands. A feed trestle carried a 28” gauge mine-track allowing the kiln to be top-loaded with alternating layers of coal and limestone. The lime kiln, trestle and factory ca. 1910:

Some reports indicate that the feldspar cladding collapsed, but given the neatness of the clean-up, it was more likely harvested for its feldspar in the early years of quarry-only operation. In any case, the cladding was definitely gone by 1941:
The brick core of the lime kiln remains in a very similar state to this day:
Given the remarkable stability of the brick core between 1941 and the present, the preponderance of evidence suggests a similar look in 1928.

The lime kiln was entirely scratch-built:

- the brick core and its rubble-stone abutments were carved from balsa foam
- the balsa-foam was then hardened with two coats of acrylic gesso
- the abutments were attached with plaster of paris
- the unloading doors and hinges were fabricated from paper, with a code-40 rail header
- the structure was painted with acrylics and weathered with a mixture of acrylics and india ink
- the unloading doors and hinges were dry-brushed in grey to bring out their details
The trestle is a bit more problematic as it is missing entirely from the 1941 views. However, unlike the removal of the cladding (which would have required less labour to harvest than feldspar from the quarry face), the salvage of the trestle would not have been likely to result in a net financial gain. Evidence therefore suggests that it was left to decay following the cessation of operations of the factory in 1916.

Research into abandoned mining trestles revealed that while complete collapses certainly happened, more common was the gradual rotting and falling off of bits and pieces until nothing much remained. The quarry-end is therefore modelled in a collapsed state (due to damage incurred during quarrying operations), as is the kiln-end (which would have been damaged when the cladding was harvested), while the central section is largely standing.

The trestle was entirely scratch-built:

- the bents are distressed and weathered strip wood with Tichy Train Group NBW castings
- the deck stringers are laminated with paper packing plates and Tichy NBW castings
- the deck ties and planking were further distressed with nail holes; wire nails were inserted into the tops of the stringers where the cross ties had rotted off
- code-40 rail was bent, painted, and weathered
Completed model:

TODO:
pictures of finished lime kiln
Car-body Station / Bunkhouse

M.C. Poor described the car-body as a “station” in his seminal *Denver, South Park and Pacific*, while the Douglas County Landmark Application refers to it as a “bunkhouse”. Ken Martin discusses its provenance in the July 2012 issue of *Bogies and the Loop*, but doesn’t take a stand on station vs. bunkhouse. Fortunately, we don’t really need to know which in order to model it.

These photos show the car-body in 1941:

The modelled date is very shortly after the car-body was purchased from the C&S, so it would have been in considerably better condition than seen here.
The station/bunkhouse was built from a heavily-modified LaBelle kit of the D&RGW Alamosa parlour car.

The *Alamosa* has regular fenestration, while the C&S coach/mail car had tightly paired windows. The clerestory windows required the same modification, along with a continuation of the fenestration over the mail section of the car. This diagram shows the additional openings required in the car-body sides (indicated in red), and those that needed to be filled in (in green):

The platform end required minor modification as the *Alamosa* has windows on either side of the door while the C&S coach/mail car does not.

The vestibule end required heavy modification as the C&S coach/mail car had no end doors, and was 8” shorter than the *Alamosa*. A new end was fabricated from scribed sheet and strip wood.
Careful study of the Otto Perry pictures shows:

- the platform end railings have been removed, as well as the brake wheel
- the grab irons going up the side and horizontally across above the belt rail on the platform end wall have been removed
- the stirrup step under the mail door, and the grab irons on either side of it appear to have been removed
- not much can be seen of the mail end, but given the other evidence the assumption must certainly be that all the grab-irons, stirrups, railings, etc. have been removed

The car-body in progress:

- the existing windows in the coach section have been widened (note original width window openings still in mail section)
- the clerestory windows over the coach section have been widened, and new windows cut in over the mail section
- the roof has been shortened 8” and the ends shaped
- the belt-rails have been removed from the mail sections of the walls
- the mail section doors have been kit-bashed by adding a central stile down the middle to produce the correct windows and bottom panelling, and to widen the door to the correct width
- the end wall has been modified to remove the side windows
… and work on the mail end:

- full-height scribed siding has been added between the coach section and the mail door
- the mail door has been cut out (to allow the proper set-back) and the remainder of body removed to save work sanding down the siding to proper thickness
- the backs of the upper body (which is stepped back to give the upper window sashes depth) have been packed out with two layers of paper to give a level surface for door backing
- the trim around the door has been completed on the coach side and below the door

Further notes:

- One can see some discolouration where the stirrup step was attached under the mail door, leading to the conclusion that the paintwork was not touched up following removal of the various ironwork. The model was therefore further distressed/weathered at the various attachment points.
- My first thought on the pole seen in the prototype pictures is that it was a lightning rod on top of the car-body, but Ken Martin mentioned that he had always assumed that it was behind it. I did a quick triangulation of where the pole appears in the two photos, and concluded that it was indeed on top of the car.
- The bathroom vent, the stove pipes, and the heat-protective flashing behind the stove pipes, are modelled.
- The extra roof flashing seen in the photo, on the other hand, is not modelled. In 1928 the car-body was only a few months out of C&S service and so would have been in far better shape — including, no doubt, a water-tight roof.
- The same applies to the paint, which is modelled closer to in-service condition than the poor condition seen 13 years later.

The detailed modifications don’t quite yield an exact copy: the prototype has one more pair of windows. Never-the-less, the author feels the model captures the general rhythm of the windows, the overall proportions of the coach and mail sections, and the great bulk of the prototype’s details.
Completed model:

TODO:
pictures of finished bunkhouse
Coal Cars

Colour pictures of narrow gauge C&S freight cars are fairly rare, making it all the more remarkable that the one good shot of a coal car interior found by the author was taken on the Silica branch near Waterton:

The modelled cars are MicroTrain Line cars assembled and weathered by the author (including a complete re-paint of their interiors). Their couplers were replaced with the more prototypically accurate Sergent Sharons, and their draft gear boxes with modified (shortened and narrowed) Accurail boxes. They then received feldspar loads.

This in-progress picture was taken after weathering, but before installation of feldspar loads or the completion of the surrounding scenery:
Completed models:

TODO:
pictures of finished coal cars
**Speeder**

Pictures taken while switching at the quarry show the speeder pulled off onto the road for the passing train:

![Photo of the speeder pulled off onto the road for the passing train.

(OTTO PERRY | DENVER PUBLIC LIBRARY)](image)

... and then following the train back up to Waterton:

![Photo of the speeder following the train back up to Waterton.

(OTTO PERRY | DENVER PUBLIC LIBRARY)](image)
Since detail is pretty lacking in both those shots, here’s a charming picture of a C&S speeder on the Clear Creek line:

TODO: pictures of speeder construction
Completed model:

TODO:
pictures of finished speeder
Road Crossing

The 1919 Right of Way & Track Map shows fences with cattle guards over open box gutters on either side of the road:

... which survived to at least 1941:
Having insufficient space, the model compresses this to a single fence and cattle guard, with an 18" box gutter between it and the road. The box gutter is a copy of this prototype, partly buried in the grass, found just up the line toward Denver:

An in-progress shot of the cattle guard, fence, and box gutter:
The power pole seen in the 1941 photo is a bit of a quandary. Hard-rock mining operations (mine pumps & blowers, concentrating mills, smelters, etc.) spear-headed electrification around the turn of the century, and it expanded rapidly into other areas in the 10s and 20s.

SUMMIT COUNTY JOURNAL, JUNE 11, 1910

However, more pastoral locations such as Jefferson and Como didn’t receive power until the 40s and 50s.

The closest documentary evidence found was the electrification of neighbouring Castle Rock in 1922:

FAIRPLAY FLUME, DECEMBER 8, 1922

Finally, this photo, ca. 1910, shows a pole line of some sort coming past the factory into the small settlement of Silica to the south-west:
Taken together, the evidence suggests that at least the settlement was electrified as early as 1910; the modelled scene therefore includes the pole line.

Pole and insulator detail from 1941 photo:

All features of the road crossing model are scratch-built: the level crossing from strip wood, the box gutter in two sections from strip wood, the cattle guard and fence from strip wood and wire, and the power poles from strip wood, dowels, wire, and glass 18/0 beads.

The wood features are all stained and weathered, while the wire fence is painted to kill its shine.
Completed model:

TODO:
pictures of finished road crossing
Feldspar Quarry

The quarry ca. 1910:

Note the considerably smaller extent in the 1910 photograph.
Unsurprisingly, the quarry required considerable compression, both horizontally and vertically.

The quarry is composed of cast plaster, Sculptamold over cardboard lattice, and real rock talus. The plaster rock faces were dyed with india ink and then dry-brushed with acrylics; the terrain was painted with acrylics and then covered with dirt harvested from Boreas Pass in Colorado. Additional acrylic-coloured gesso was applied in areas to create ruts and dried mud puddles.

The quarry under construction (ignore the poor engineer, who appears to have passed out from the ignominy of seeing a D&RGW locomotive on the Silica branch):

The ladders and other paraphernalia are a mixture of cast metal details and scratch-built. The figures are Sierra Scale Models, painted by the author.
Completed model:

TODO:
pictures of finished quarry
Loading Dock

The prototype loading/unloading facilities are unfortunately obscured in all the photographic evidence uncovered to-date. As such, a hypothetical loading dock was constructed based on pictures of similar facilities at other C&S locations, such as this one at Blackhawk:

The quarry truck is the fruit of three happy coincidences: the 1927 Chevy 1-ton and 1931 Autocar CA are near twins; the Soviet ZiS-5 is a copy of the Autocar CA; and the ZiS-5 is a mainstay of military modellers.

A 1927 Chevrolet 1-ton:
The loading dock is entirely scratch-built from strip wood with Tichy NBW castings applied to the understructure and the perimeter guard rails. Weathering was by oil-based stains, india ink, Bragdon powders, and rock dust.

The 1927 Chevy 1-ton is a modified MiniaturModelle Zis-5 painted in civilian colours with a weathered wood box bed and period-specific (1928) Colorado license plates:

The figure shovelling feldspar is by Preiser; it was lightly weathered and equipped with a scratch-built shovel by the author.

The weathered loading dock, with the truck and coal car still in progress:
Completed model:

TODO:
pictures of finished loading dock
Quarry Yard

The Helmer family’s primary business was ranching. There is evidence that they used the loading/unloading facilities at the end of the Silica branch for ranch activities as well (note the cyclone grain loader next to the boxcar in the below picture). It is therefore reasonable to assume that they might have also used the rail facilities for fuel delivery for both quarry and ranch operations. The fuel stand is part of a Woodland Scenics cast-metal details kit.

The 1941 quarry pictures also show several outbuildings still in use:

The model contains a representative sample (not from a specific prototype) storage shed. The shed is part of a Bar Mills kit, with an added brick foundation carved from balsa foam, and the roof replaced with Wild West shingles.

The 1920 Model T centre-door sedan is a hypothetical representation of one of the Helmer brother’s cars. It is a Jordan kit to which the author added period-specific (1928) Colorado license plates:

Given the lack of crossing furniture at the known road crossing, no crossing furniture was included at the (hypothetical) yard crossing either.
Completed model:

TODO:
pictures of completed quarry yard
Closing

The model was completed over approximately nine months in 2015 and 2016.

The author’s thanks go to the fine folks at the Denver Public Library, the C&Sn3 Discussion Forum, and the Colorado Historic Newspapers Collection, whose publicly-available resources contributed so much to this research, and the volunteers and judges of the NMRA, without which the Achievement Program wouldn’t exist.

Many of the attributed photos have been zoomed and/or cropped to focus on the details in question.

All unattributed photos are the author’s.
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