

**Documentation Package
For
HO-Scale Car MP-1112**



**Submitted as part of the NMRA AP
Car Certificate Requirements**

By

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NMRA 101103

Time Frame – March – July 1947

Background

The NMRA Achievement Program (AP) permits a Drovers Caboose to qualify as the required passenger car. I opted to scratch build a Drovers Caboose out of fear of having to build / install windows uniformly in a regular passenger car or other allowed variants of a "passenger car". I came across a fairly closeup photo of Missouri Pacific (MP) M1113 Drovers Caboose as shown in Photo 1.



Photo 1 – Prototype Missouri Pacific Drovers Caboose

Unfortunately, the above photo is not a good square-on photograph of the type I desired to have so that I could make a series of detailed measurements from which I could establish construction plans for my scratch building efforts.

A member of the Railroad Line Forums - NMRA AP Cars Certificate "Support" Thread (See Reference 1) pointed me to the American Model Builders (AMB) web which had a kit for the MP 1112. The detailed text associated with the kit indicated that the MP 1112 was one of a numbered series, 1101 – 1119, of Drovers Caboose built for the MP by the St. Louis Car Company. The AMB web site also indicated that the MP 1112 was a member of a small subset of Drovers Caboose that the MP converted onto LCL Caboose post WW II time frame when the need for Drovers Caboose was diminishing. These LCL caboose were mainly used on MP branch lines. Immediately below the listing and detailed text for the MP 1112 kit on the AMB web site was the same type of data for an MP 1113 kit which was an unmodified Drovers Caboose.

Detail information on the AMB web site for these cabooses included the length (42-feet) over the pulling faces of the couplers¹. I allocated 2-feet for each coupler and housing, and using measurements taken from some of my un-built caboose kits I determined that the platforms on either end of the caboose were about 2.5-feet wide. Using my mental abacus, I then was able to determine that the length of the body was 33-feet. I found an almost square-on photograph of an MP 1112 caboose, see Photo 2. Working with some photo editing software I increased the resolution of the MP 1112 LCL Caboose in Photo 2, and expanded the image to fill a normal size piece of paper.



Photo 2 – A former Drovers Caboose MP 1112

The 33-ft length data allowed me to determine a scale factor for the measurements I made with a dial-caliper from the above-mentioned MP 1112 photograph. The Excel spread sheet on page 1 of the Appendix of this ~~tom~~ tome identifies the 30+ measurements I took and their HO-scale equivalents.

I created Cadrail © drawings of the MP 1112 LCL Caboose using the detailed 3-decimal place measurements I had taken. See Appendix pages 2 – 12 for the set of drawings. With about 5-minutes of Cadrail work I was able to remove the slatted door of the MP 1112 caboose and replicate the windows two more times. I decided that what I would scratch build was the MP 1112 as it was being converted to an LCL Caboose. The MP Engineering team picked the MP 1112 Drovers Caboose for conversion for several reason, but principally because it showed sever weather effects from the winters and rain that was prevalent in the area. Several of the window frames and window sashes are askew and some of the vertical siding boards show considerable weather damage. At present the conversion / renovation team has emptied both the Drovers' suite and the conductor's office. There is nothing inside my scratch-built Drovers Caboose except for a step ladder, some recently delivered 2x4-s, and an early arriving renovation crew member.

¹ My 1952 OPER book lists the Missouri Pacific Drovers Cabooses as AAR code-NM, but the adjacent 16 columns, where normally there is dimensional and weight information, are all completely blank.

Conformity

Cadrail allows for dimensional data to be expressed in 3 or 6 decimal places, or fractions (inches/feet) format down to 1/32-nd of an inch. After creating the drawings, I mentioned above using the 3-decimal place option, I then re-expressed the measurements in fraction format since this would allow me to use my normal measurement tools to scratch build the caboose. As such it can be averred that my plans are accurate to within 1/32" of my measurement data.

The AMB web site (See Appendix page 13) suggested the use of Tahoe Model Works #105 or #205 Bettendorf Swing Motion caboose trucks for their Drovers Caboose kits. However, data on the Tahoe Model Works web site states that the MP used the #104 Bettendorf Swing Motion caboose trucks which is what I purchased for this caboose. See Appendix pages 14, 15 for a list of railroads that used the #104 trucks.

NMRA Data Sheet D5d Rolling Stock / Safety Appliances Figures 15a and 15b (See Appendix page 16) was used to establish the following:

1. Hand rail standoff distance
2. Roof walk width
3. Side hand rail diameter, distance from the bottom and side edges of the caboose
4. Derived length of the vertical part of the platform lower hand rail

Era-consistent tar paper roof installed on the cupola and caboose body roofs

End panels on both the caboose body and the cupola overlap the side pieces

Tru-color paint TCP-188 1940-1960's Freight Car Brown, consistent with the paint mentioned in Reference 2, was used as the base paint on my Drovers Caboose.

Brake staffs and brake wheels were installed on both ends of the caboose.

Details

This is a short list of the many many details incorporated in my MP 1112 Drovers Caboose, it is not meant to be a scavenger's hunt for the AP judges.

1. Complete home-style interior wall 2x4 framing on all four caboose sides and interior wall including horizontal fire-blocks between the vertical king studs. Similar 2x4 framing, excluding the fire blocks. was used in the framing of the cupola.
2. Sixteen scratch-built window frames and fourteen double-hung window casings on the body of the Drovers caboose. Two window frames did not have double-hung windows
3. Eight scratch-built window frames for the windows on the cupola.
4. Curtain in doorway between the drovers' suite and the conductor's office. The curtain will be replaced with a solid door during the renovation of this caboose to an LCL caboose.
5. 1"x3" trim around all interior windows and doors.
6. Two scratch-built exterior door frames with door jams, and doors with windows.
7. 2" diameter ball door knobs

8. Raised panels on vestibule doors to allow the drovers to enter the correct door when returning from a night on the town.
9. Vertical exterior siding on the caboose body aligned with a Zona square during installation.
10. 1"x3" trim around all exterior windows and doors.
11. Window sills on all windows on the caboose body.
12. Scratch-built alignment tool used to install all floor boards in order to keep them square to the caboose sides.
13. Clear styrene, from another kit, used as window glass on all twenty-six windows.
14. Finishing corner boards added to all four corners of the caboose body and the cupola. All end finishing boards properly overlap the side finishing boards.
15. Tahoe Model Works TMW-004 Benttendorf Swing Motion Caboose trucks used on this caboose
16. Walls are all free standing with no block of wood used to support any wall.
17. Gunk / dirt etc. on both faces of all eight wheels
18. Full AB Brake System installed including the dust collector on the main brake line in front of the AB Valve and an additional line to the second brakestaff.
19. Underside and body of the caboose weathered with Bragdon Dust Bowl Brown, Dark Rust, Grimmy Black and Soot weathering powders.
20. Elbow connectors on main brake line.
21. Custom built brake levers.
22. Grandt Line nut and bolt castings used to secure the brake levers to the brake lever mounting blocks.
23. Signs located on the brake system reservoir denoting the date and the railroad name where the last brake system maintenance was performed.
24. Cupola window frames flush with the exterior siding of the cupola.
25. Imported Alaskan Mahogany wood used on the underside of the roof over the end platforms.
26. Tar paper roof on both the caboose body and the cupola.
27. Hole drilled all the way through the exhaust stack for exhaust air flow.
28. Marker flag mounting posts on corners of Drovers Caboose
29. Safety collar around base of exhaust stack
30. Painted door knobs
31. 16 GA metal flashing around the base of the cupola (gotta hide that gap somehow)
32. Hand rails along the side of the caboose body, on the end platforms, at the ends of the short roof walks, and on the top of the cupola roof.
33. Step ladder, 2x4-s, and renovation crew member in cleaned out Drovers suite. See Photo-18 at the end of the Construction Possess Referenced Photos section.

Construction

1. Built framing for the caboose sides using 2x4-s for studs and 2x6-s for door and window headers. Framing printout from Cadrail design used as the template of this construction, see Photo-3. The completed side framing is shown in Photo-4.

2. Installed horizontal paneling on the inside of the caboose walls. See Photo-5
3. Sanded the horizontal interior paneling.
4. Installed old fashion trim around the interior windows and doors.
5. Cut openings for windows in interior wall paneling
6. Built framing for the caboose ends using 2x4-s for studs and 2x6-s for door and window headers. Framing printout from Cadrail design was used as the template of this construction. See completed caboose ends in Photo-6
7. Installed horizontal paneling on the inside of the caboose doors.
8. Cut openings for doors in interior paneling
9. Painted all interior paneling with Coffee Latte color acrylic paint (these Drovers were very fussy about the color.)
10. Created window frames for all windows in caboose body. Installed double hung windows in the 14 window frames for the Drovers suite. The conductor's office windows were all crank-out style windows. See Photo-7 (I hope)
11. Created door frames and doors. See Photo-8
12. Installed exterior siding to caboose body. This siding was installed vertically which with the horizontal interior paneling added to the stiffness of the free-standing caboose body.
13. Sanded exterior siding
14. Painted window frames and windows with Tru-color paint TCP-188 1940-1960's Freight Car Brown
15. Cut two end platforms off of an unmade Athern caboose kit I won as a seat prize sometime in the past.
16. Sanded all exterior siding
17. Cut openings for windows and doors in exterior wall paneling
18. Installed windows and doors into caboose sides, some slight shimming required
19. Glued clear acrylic, i.e. "glass", to inside of windows
20. Made 10 roof trusses and installed exterior siding on two of them. See Photo-9.
21. Made two truck bolsters per Cadrail design. See Photo-10 for the completed bolsters, and Lessons Learned at the end of this tome.
22. Stained roof trusses.
23. Installed 1"x3" trim around all exterior windows and doors
24. Installed window sills under all windows.
25. Glued sides and ends together to form the caboose body.
26. Stained 41 2"x8"-s and 3 2"x6"-s to be used as the caboose flooring and installed these 44 boards as the caboose floor. See Photo-11.
27. Formed the caboose underframe center beams and stringers. Painted these pieces and the bolsters, and then installed them on the underside of the caboose floor. See Photo-12. The end sections of the center beams and stringers were installed later.
28. Observed that I was frequently referring to my "Development Notes" from the first car I built, and decided to establish a set of "Standard Steps" for those tasks that I would be doing on at least the other Merit Award cars I would be building. The Standard Steps addressed
 - a. Truck Painting / Weathering.

- b. Coupler Face Painting / Weathering
 - c. Under Frame Painting and Weathering
 - d. Brake System Installation and Painting
 - e. Wheel Painting
 - f. Decal Installation
29. Painted trucks and wheels
 30. Installed corner finishing boards on caboose body sides and ends
 31. Glued 5/32" angle on back side of platform to create a means to mount the platform to the caboose body.
 32. Painted all four caboose sides with Tru-color paint TCP-188 1940-1960's Freight Car Brown, and sprayed Dullcoat on caboose sides
 33. Cut glad hand off of coupler
 34. Painted end platforms with Grimmy Black paint
 35. Glued end platforms to caboose body
 36. Installed center beams and stringers between bolsters and ends of caboose.
 37. Weathered centered beams, underside of flooring, and stringers
 38. Made new brake levers since the ones which came with the Cal-Scale kit were a) too short for this installation and b) because there was a need for an additional brake lever due to the brakestaffs being on both ends of the caboose.
 39. Painted and installed all brake system lines (gruesome job). No good photo taken of this completed installation, so sorry!
 40. Installed couplers on underside of each end platform
 41. Installed air hose on each end of the caboose. Painted air hoses Grimmy Black and painted the tip of each air hose Pewter Gray
 42. Built 2"x4" framing for all 4 sides of the cupola
 43. Installed exterior vertical siding on the cupola
 44. Built cupola window frames. See Photo-13
 45. Installed cupola windows and joined all four cupola sides together. See photo-14.
 46. Painted the cupola with Tru-color paint TCP-188 1940-1960's Freight Car Brown, and sprayed Dullcoat on cupola sides
 47. Repainted all four caboose sides with Tru-color paint TCP-188 1940-1960's Freight Car Brown, and sprayed Dullcoat on caboose sides
 48. Cut two side roof panels for the caboose body and one cupola roof panel from 0.020" sheet styrene.
 49. Glued trusses to the underside of the painted caboose roof panels. See Photo-15
 50. Installed corner finishing boards on the corners of the cupola
 51. Installed decals on the caboose body
 52. Weathered caboose body and sprayed all four-caboose body sides and the underside with Dullcoat.
 53. Installed tar paper roofing on cupola and caboose body. See Photo-16.
 54. Installed Imported Alaskan Mahogany paneling on the underside of the roof over the Drivers' end platform
 55. Weathered cupola sides and sprayed Dullcoat on them

56. Formed and installed all hand rails on caboose body. All hand rails made from 0.012" brass wire which is equivalent to 1.04" in the prototype world
57. Glued cupola roof onto the body of the cupola
58. Formed cupola hand rail and cut pieces of 0.030" rod to serve as standoffs
59. Glued (with much angst) the cupola hand rail to the cupola roof.
60. Glued caboose body roof to the caboose sides
61. Installed Imported Alaskan Mahogany paneling on the underside of the roof over the Conductor's end platform
62. Installed mark flag mounts on corners of the caboose, and painted them
63. Cut Northeastern Scale Lumber to form the main roof walkway and the five short walkways. Mounted these walkway segments on of 4"x6" scale lumber
64. Glued cupola in place on caboose body
65. Installed flashing around the base of the cupola
66. Glued roof walkways onto caboose body roof.
67. Installed hand rails from the top corners of the cupola down to the end of the four short walkways
68. Installed ladders on both ends of the caboose
69. At 5:10 pm May 23, 2020 ended the construction odyssey of my MP 1112. WOW! !
70. Scheduled a celebratory Manhattan Cocktail for later that evening.

Photo -17 shows some of the drilling templates, spacer, aligners, etc. that I built to help me in the construction of my MP 1112 caboose.

Construction Process Referenced Photos

The photos in this section are a very small subset of the 300+ photos I took during the construction of my Drovers Caboose and are presented here to augment the construction steps listed above.

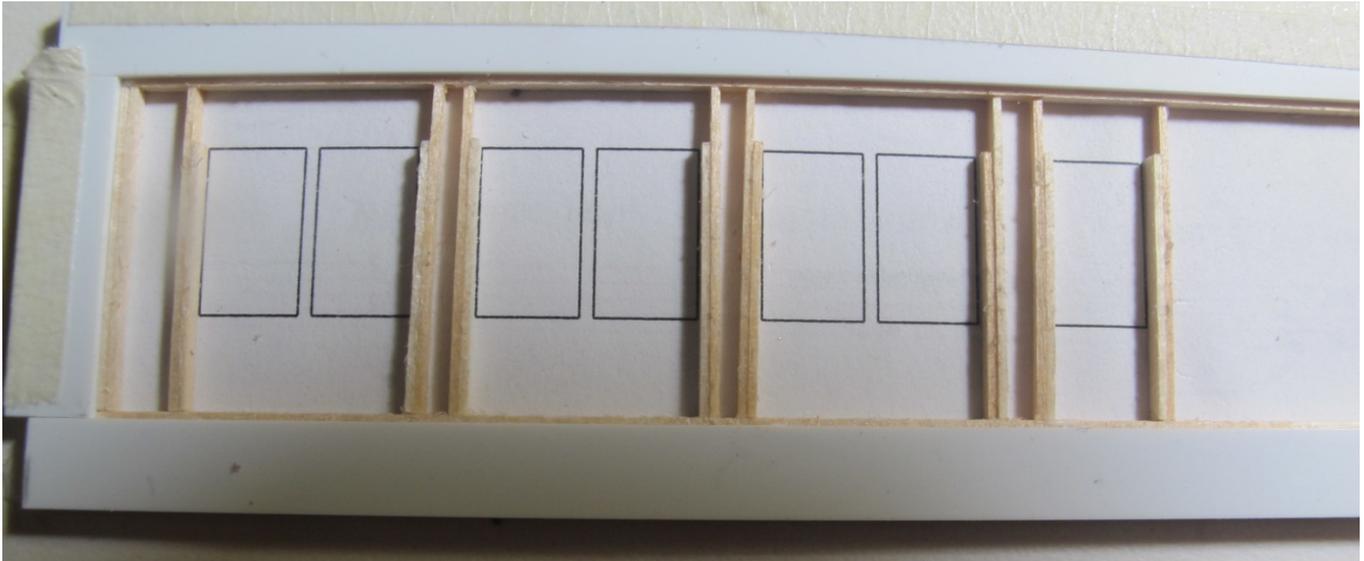


Photo 3 – Caboose side framing on top of framing printout

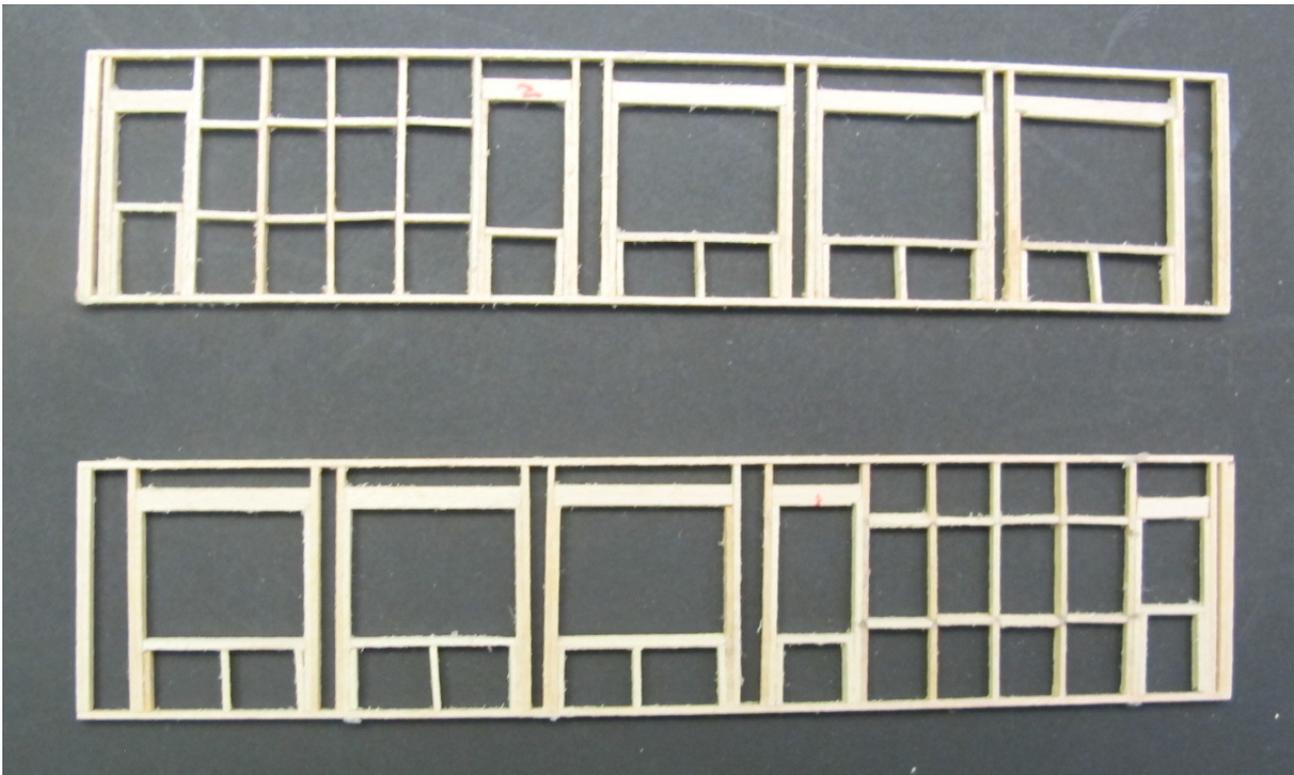


Photo 4 – Completed caboose side framing

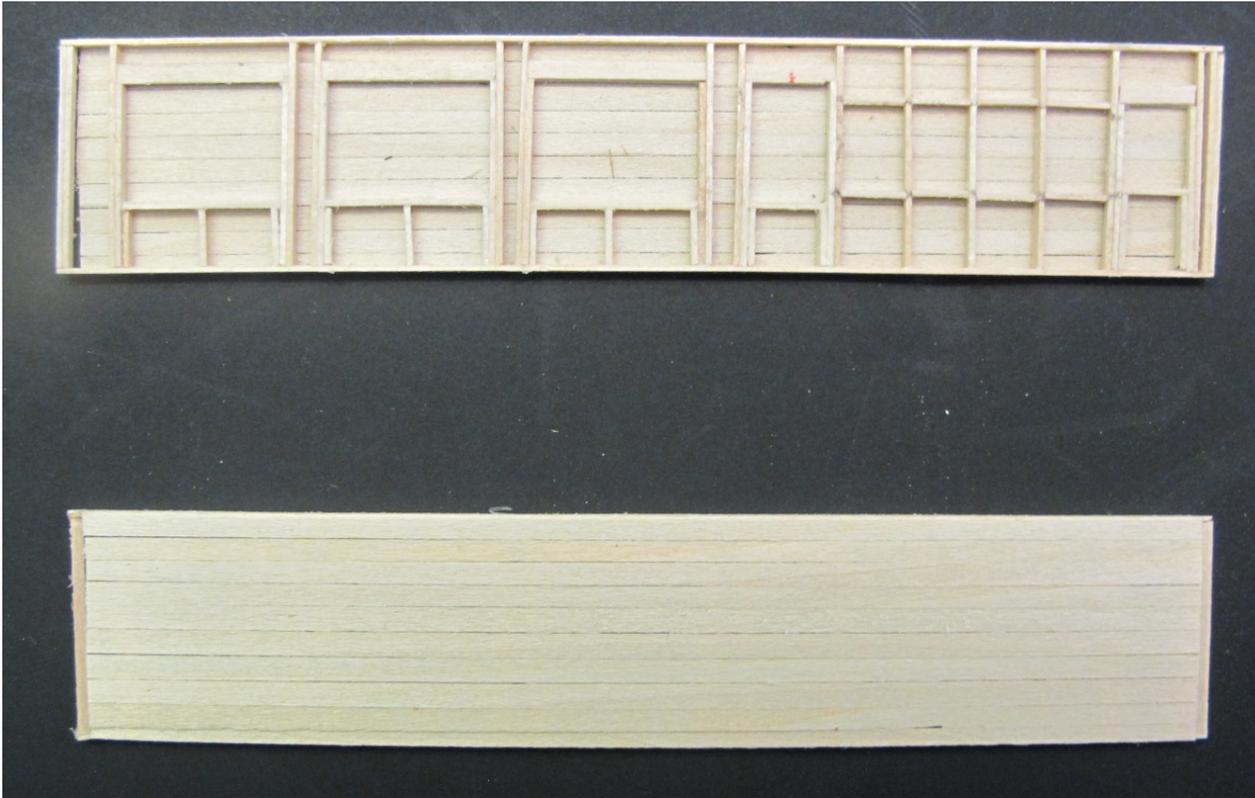


Photo – 5 Caboose sides with interior paneling installed

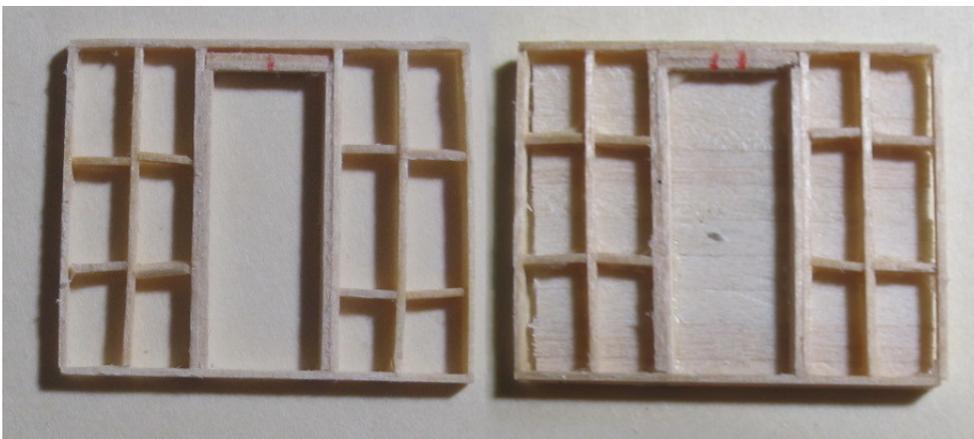


Photo - 6 Caboose ends framing

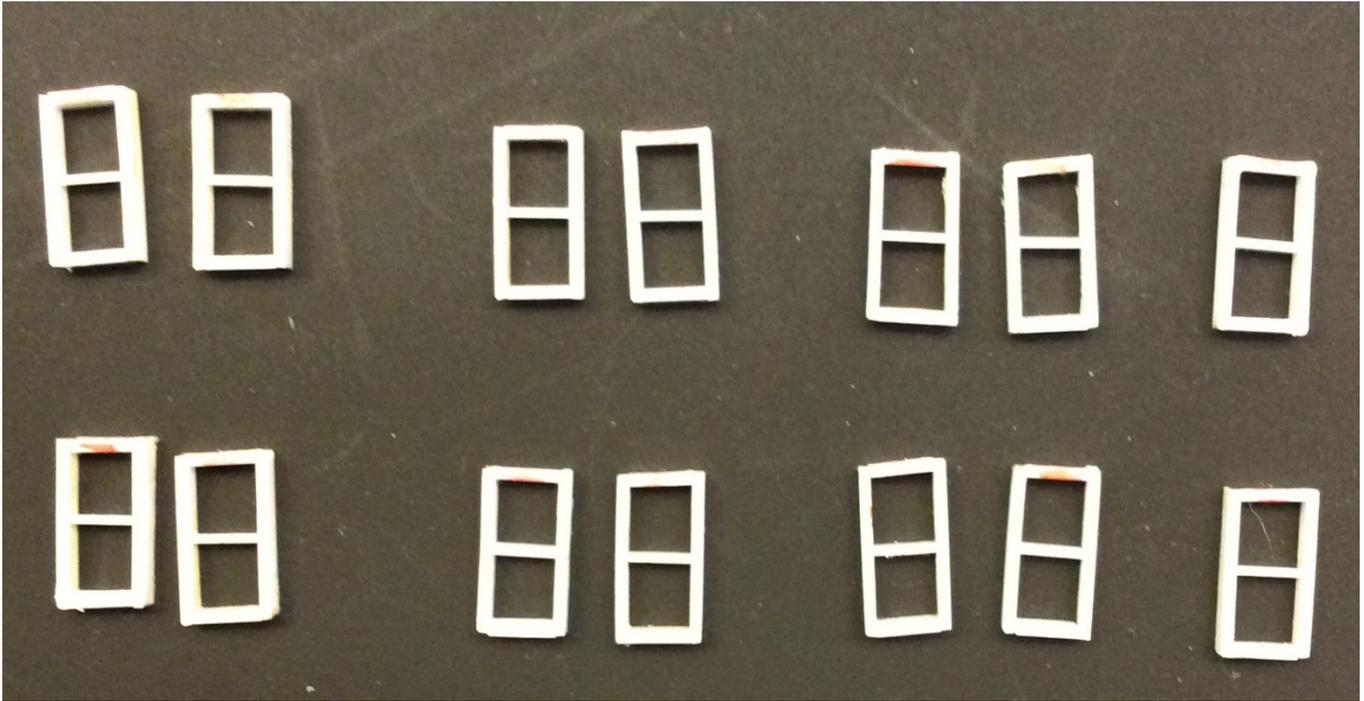


Photo – 7 Window frames and double hung windows

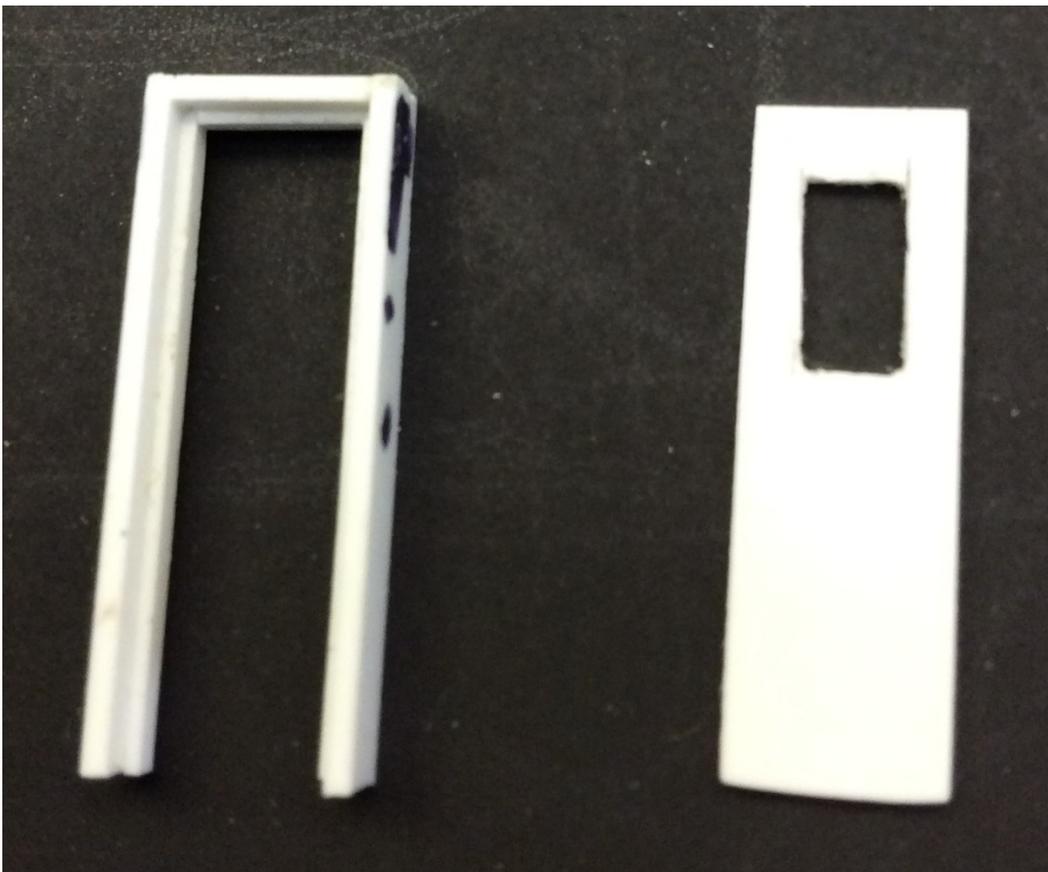


Photo – 8 Conductor's office door frame and door

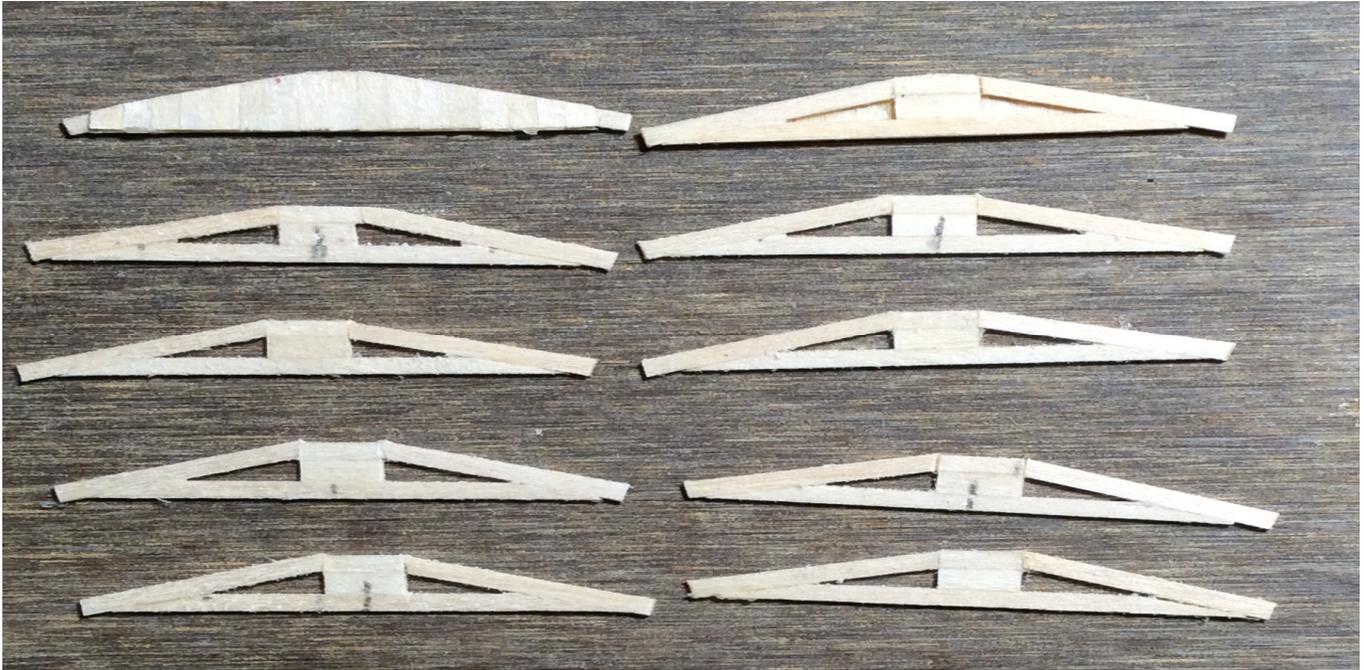


Photo – 9 Roof trusses. Exterior paneling shown on the top two trusses



Photo – 10 Truck bolsters

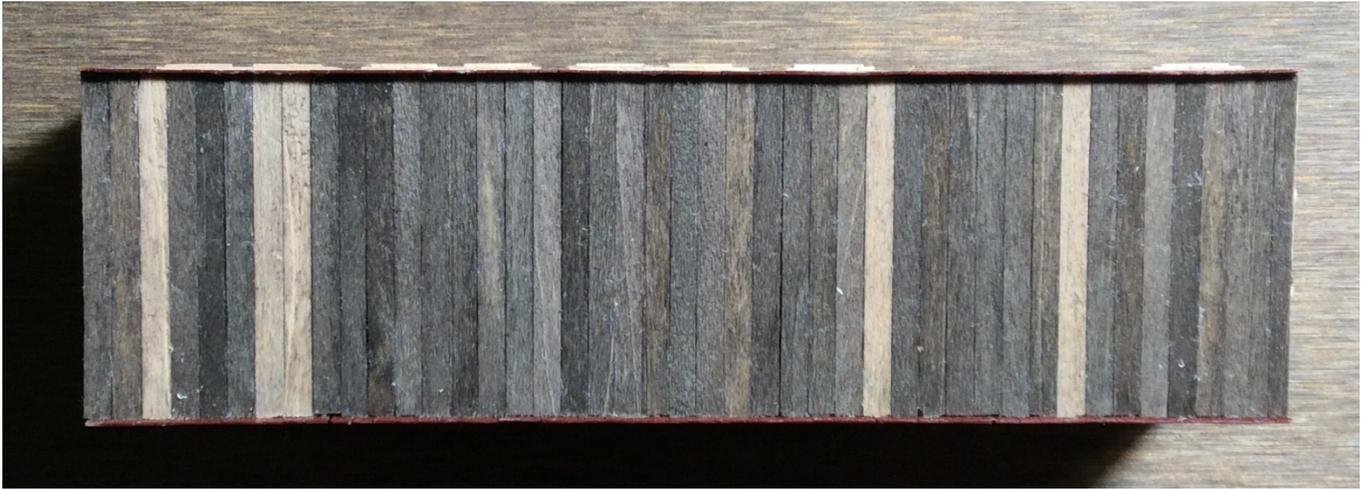


Photo – 11 Completed caboose flooring as seen from the underside



Photo – 12 Bolsters, center beams and stringers in the middle section of the caboose underbody



Photo – 13 Cupola window frames

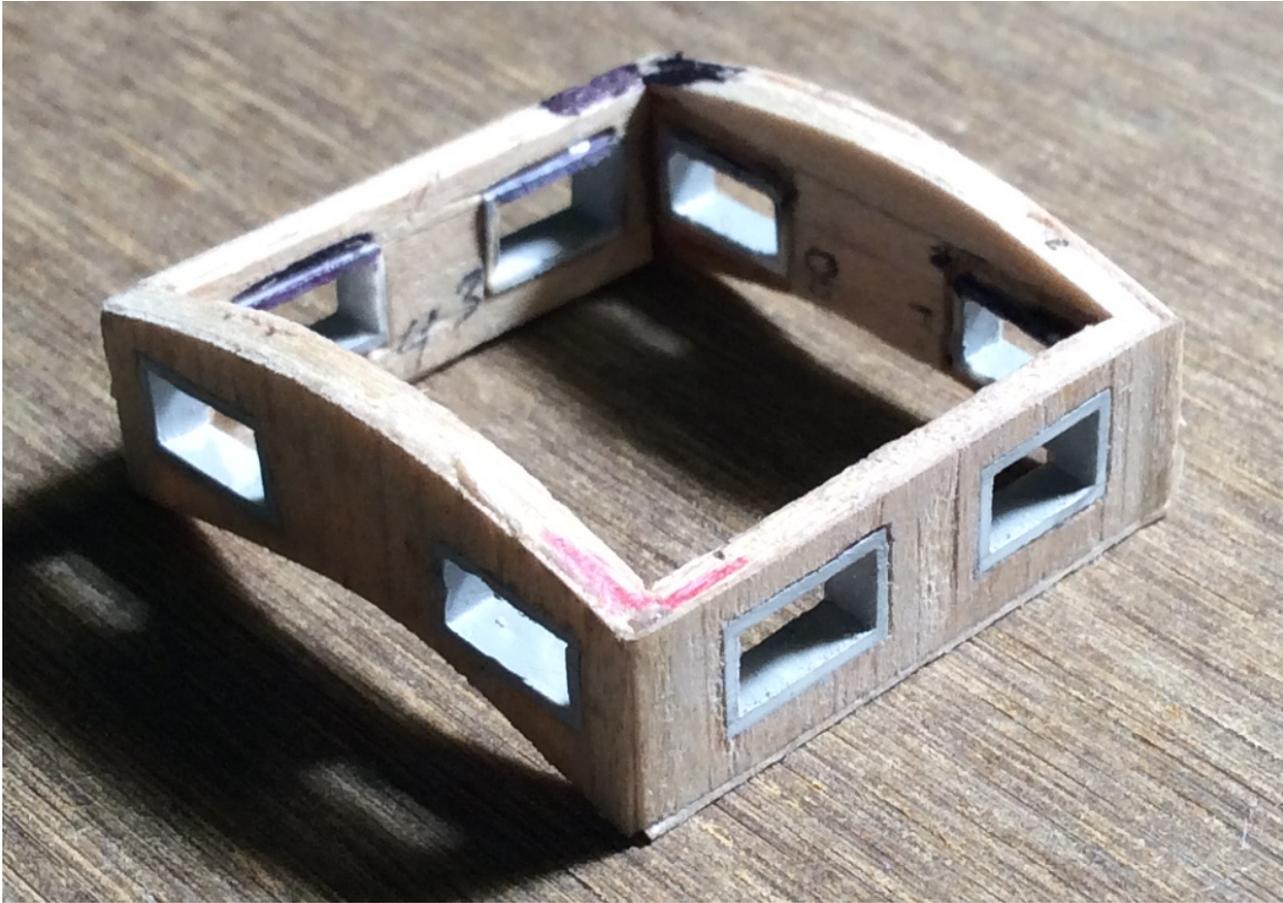


Photo – 14 Completed cupola



Photo-15 Roof trusses attached to roof panels

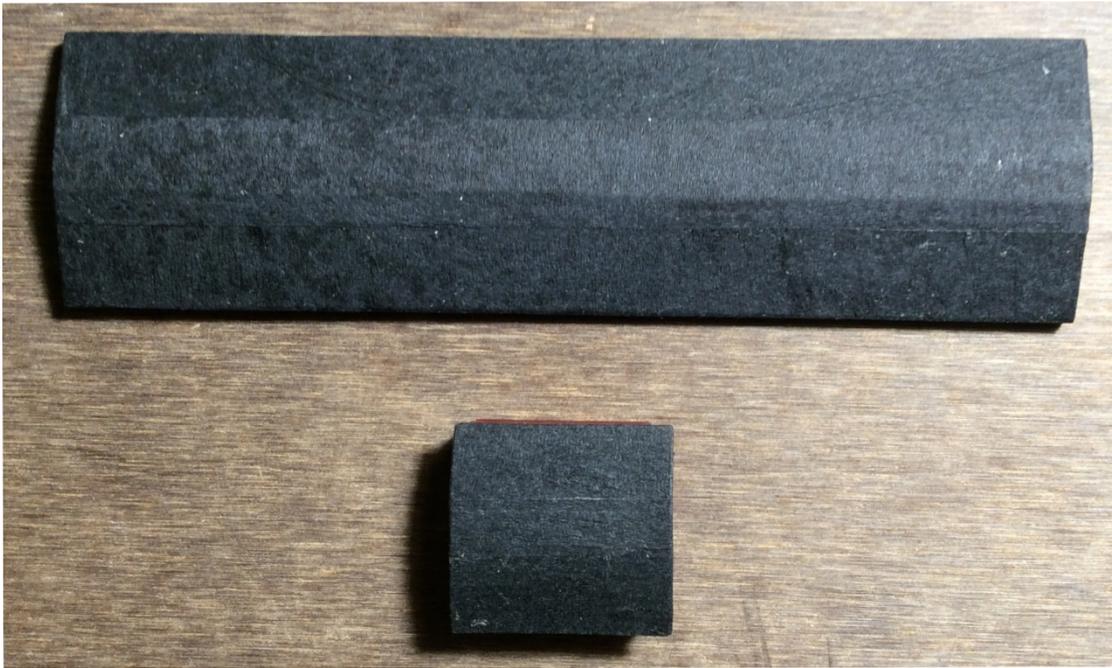


Photo – 16 Completed tar paper roofs on the caboose body and cupola

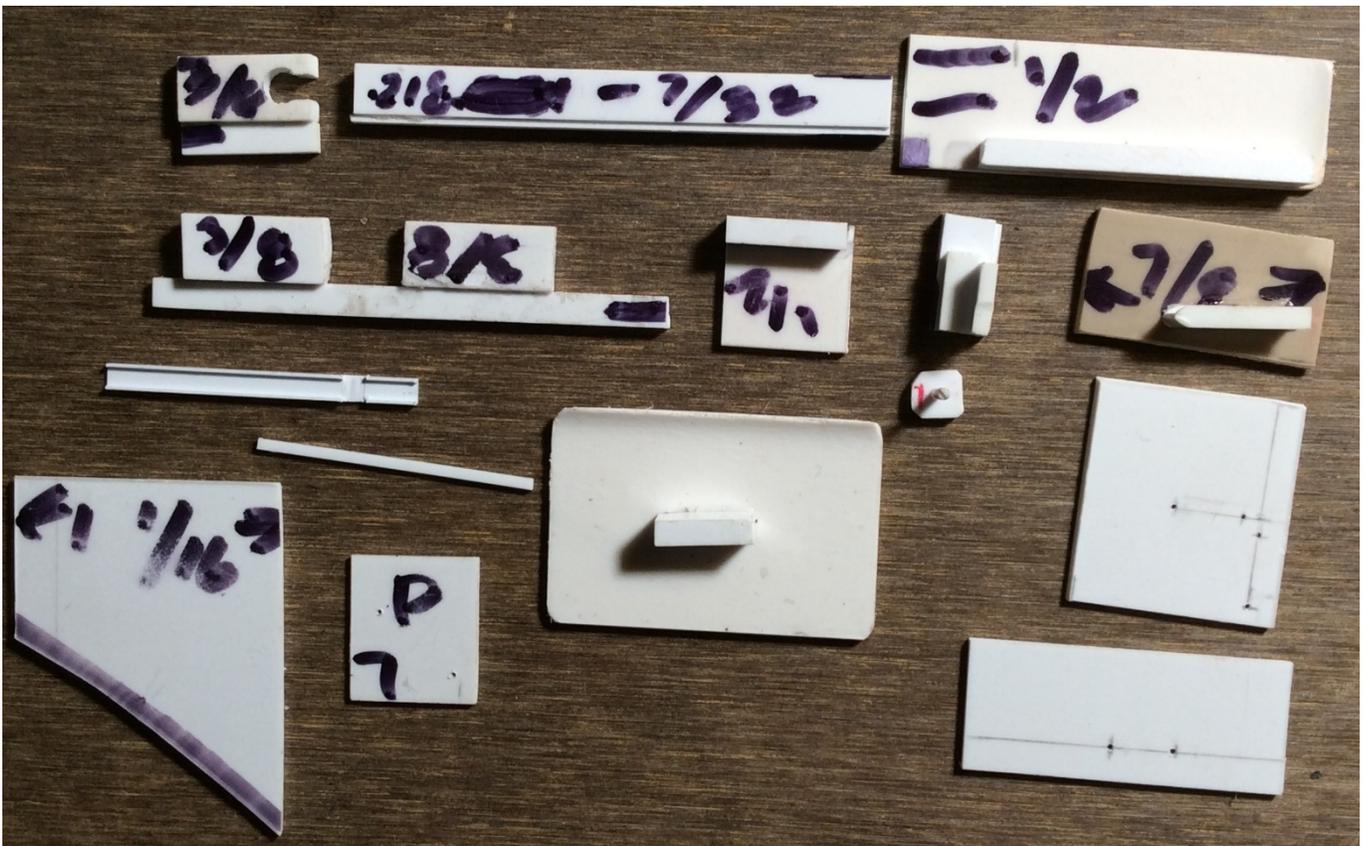


Photo – 17 Collection of templates etc. used to assist in the accurate placement of items on my Drovers Caboose



Photo-18 Construction crew member, ladder and 2'x4" inside empty Drovers' suite

Finish and Lettering

The wheels were painted with Model Flex Shipyard Rust and while the paint was still wet the same paint brush that was used to apply the Shipyard Rust paint was used to dab on Bradgon Soot weathering powder to create the textured appearance of dirt buildup on both sides the wheels.

The Drovers Caboose was painted with Tru-color paint TCP-188 1940-1960's Freight Car Brown as mentioned in Reference 2.

The trucks were painted with Americana Raw Umber

The brake system components, brakestaff and brake wheel were painted with Grimmy Black

Bradgon Weathering Powders were used for highlighting and weathering all parts of the MP 1112 Drovers Caboose. The powders used were Soot, Weathered Brown, Grimmy Black, Dust Bowl Brown and Dark Rust.

Testors Dullcoat was used to seal the decals, and after various applications of the paints and/or weathering powder

I could not find decals which contained the numbers 1113, but I did find decals for the MP 1112 caboose which also included the decal for the sawtooth herald of the MP.

Various mixtures of Black and Brown ink mixed with one ounce of alcohol were used as stains in this construction effort.

Scratch built

A detailed EXCEL spreadsheet listing all of the 1382 scratch built and 16 non-scratch-built parts used in the construction of my Drovers Caboose can be found in the Appendix pages 17 -20. By broad category the part counts are as follows:

Category	Scratch built part count	Commercial part count
Northeastern Scale Lumber	921	
Evergreen Strip Styrene	387	
Detail Associates Brass Wire	28	
Evergreen Sheet Styrene	6	
Miscellaneous	40	
Non-excluded		16
Totals	1382	16

The end result shows that my MP 1112 Drovers Caboose contains 98.86001% scratch-built parts, which slightly exceeds the minimum acceptable percentage. It is understood that the following commercial pieces / components are exempt from the scratch-built parts count.

1. Trucks and wheels with axels
2. Couplers
3. Screws to attach the above two items
4. AB Brake System
5. Paint
6. Decals

References

1. http://www.railroad-line.com/forum/topic.asp?TOPIC_ID=24682
2. Article by Charley Duckworth of the Missouri Pacific Historical Society - <http://www.mopac.org/modeling/60-caboose>
3. NMRA Data Sheet D5d Rolling Stock / Safety Appliances

Lessons Learned

1. Never, never build a car with house-style 2x4 framing construction.
2. Microbrushes are very useful particularly for quick paint jobs
3. Need to improve bolster design / construction in order to accommodate more prototypical routing of the main air line and the brake lines to the brake staff(s). Options
 - a. Increase the slant angle on the bolster and thus make the flat part of the bolster that abuts the side of the car larger.

- b. Drill holes for the air line and brake lines before the bolster is secured to the car floor.
- 4. Dullcoat tends to darken whatever it is sprayed on.
- 5. Build window frames within the holes cut in the exterior and interior siding rather than building them outside of the car side

Appendix

Page #	Contents
1	Excel spreadsheet – measurement data
2 – 11	Cadrail diagrams
13	AMB web site page
14 - 15	Tahoe Model Works list of RR-s that used the #104 Bettendorf Swing Motion trucks
16	NMRA Data Sheet D5d, Rolling Stock / Safety Appliances
17-20	Excel spreadsheet – part count

MP 1112 Car measurements

Published length of MP 1112 Drover Caboose – over coupler faces	42
Width of steps from Athern Kit caboose	2.5
Generally accepted length of prototype coupler	2
Length of side of MP 1112 Drover Caboose	33
Length of 33-ft side of MP 1112 Drover Caboose in HO scale (L-HO) =	4.55
Measured length of MP 1112 Drover Caboose from Photo (LM) =	8.53
Scale Factor (SF) = L-HO/LM	0.534

Measurement data taken from photo of prototype MP 1112 LCL Caboose
(all data in inches)

	L	L x SF = HO Scale		
1	Height of side	1.980	1.057	
2	Length of side	8.535	4.554	
L1	Right door frame from end of car	2.935	1.566	
3	Left door frame from end of car	1.700	0.907	
4	Window frame width (includes window trim)	0.550	0.293	See #29
6	Window frame height (includes trim)	0.900	0.480	
5	Door width	1.235	0.659	
7	Door height	1.533	0.818	
8	Bottom of door above bottom of side	0.178	0.095	
9	Separation between left and middle window	0.068	0.036	
10	Separation between middle and right window	0.405	0.216	
11	Rear window frame to end of car	0.237	0.126	
12	Rear window width	0.488	0.260	
13	Rear window height	0.660	0.352	
14	Top of door to top of side	0.262	0.140	
15	Left window left side frame to end of car	3.475	1.854	
16	Top of window frame to top of side	0.330	0.176	
17	Top of rear window frame to top of side	0.442	0.236	
18	Platform step width	0.708	0.378	
19	Top of floor to top of side	1.808	0.965	
20	Bottom of window frame to bottom of side	0.750	0.400	
21	Truck C/L to end of body	1.378	0.735	
22	Top of cupola above side	0.710	0.379	
23	Length of cupola	1.600	0.854	
24	End of cupola to end of car body	1.100	0.587	
25	Width of cupola window	0.495	0.264	
26	Height of cupola window	0.330	0.176	
27	End of cupola to edge of window	0.140	0.075	
28	Gap between cupola windows	0.350	0.187	
29	Window width w/o trim	0.448	0.239	See #4
30	Bottom of cupola window above side of car	0.245	0.131	
31	Top of cupola window to top of roof	0.142	0.076	

Double checking things

#1 = #19 + #8	1.060	-0.003
#1 = #8 + #7 + #14	1.053	0.004
#1 = #16 + #6 + #20	1.056	0.000
#22 = #26 + #31 + #32	0.383	-0.004
#23 = #27 + #25 + #28 + #25 + #27	0.864	-0.011

32 Roof walk width from NMRA Data Sheet D5d	18	0.207
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Drovers Caboose - Design and Construction Based on Missouri 1113 car, Side Dimensions Derived from Prototype Photo of MP 1112 car

Side Wall

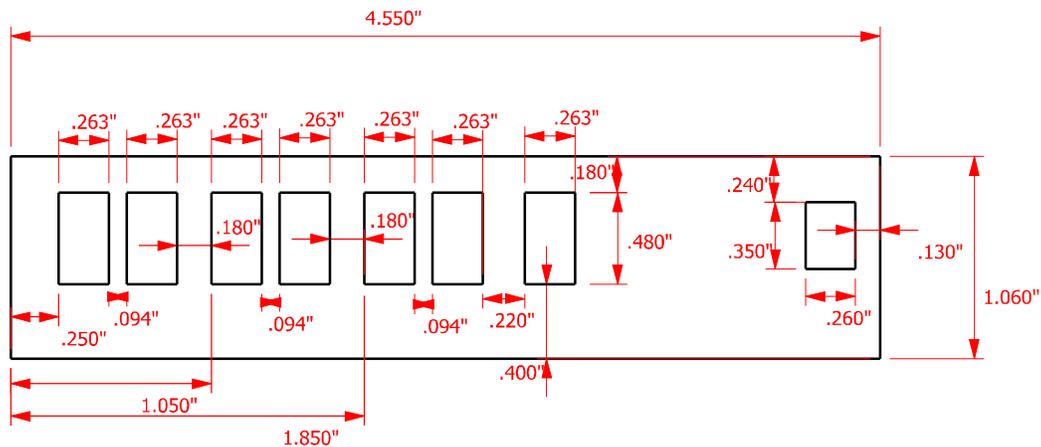


Figure 1a - Drovers Caboose side view - dimensions from dial caliper measurements of MP 1112 car expressed in 3 decimal places

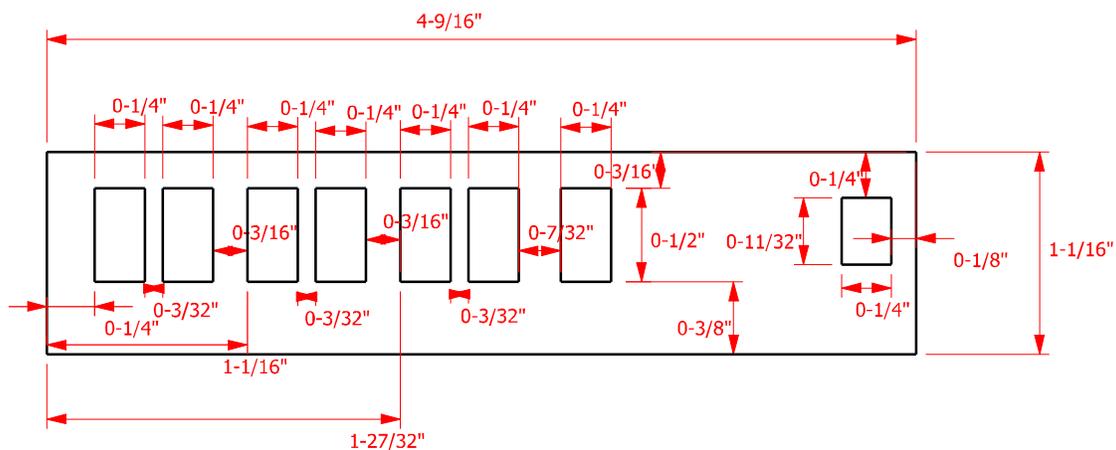


Figure 1b - Drovers Caboose side view - dimensions expressed in feet/inches down to 1/32-nd of an inch

Underframe Dimensions

Total car width including corner finishing boards = 1.33"

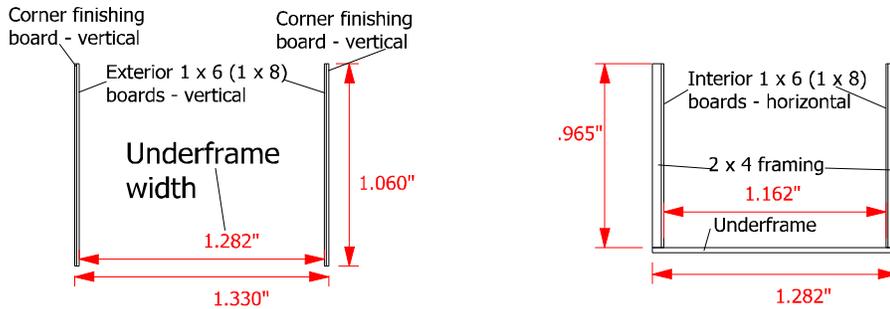


Figure 2a - Drovers Caboose end view - dimensions expressed in 3 decimal places

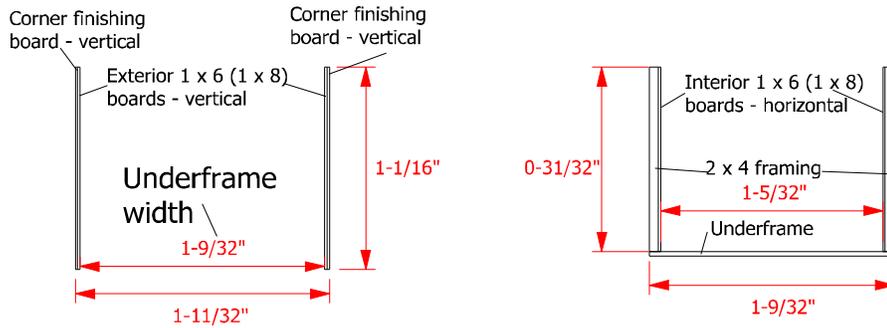
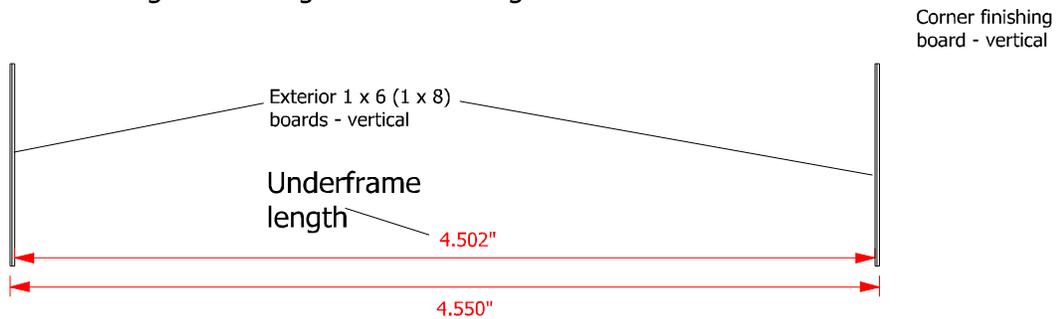


Figure 2b - Drovers Caboose end view - dimensions expressed in feet/inches down to 1/32-nd of an inch

Total car length including corner finishing boards = 4.55"



Underframe Dimensions (Cont.)

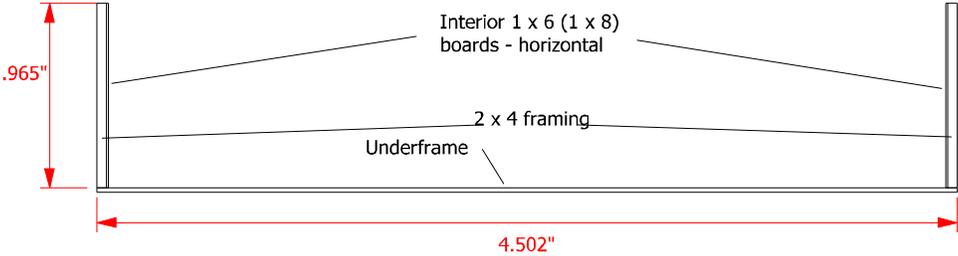


Figure 3a - Drover Caboose side view - dimensions expressed in 3 decimal places

Total length including corner finishing boards = $4.55''$

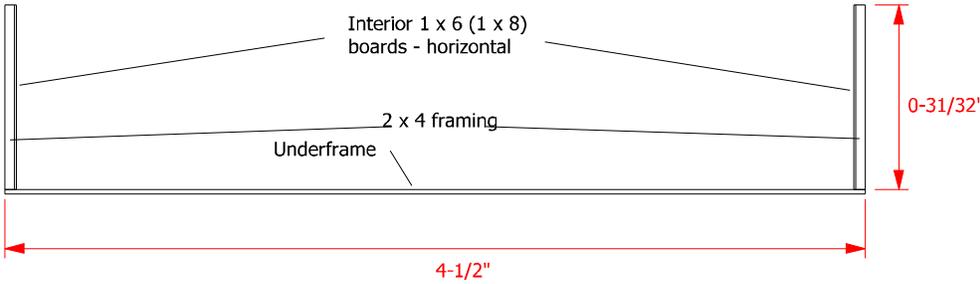
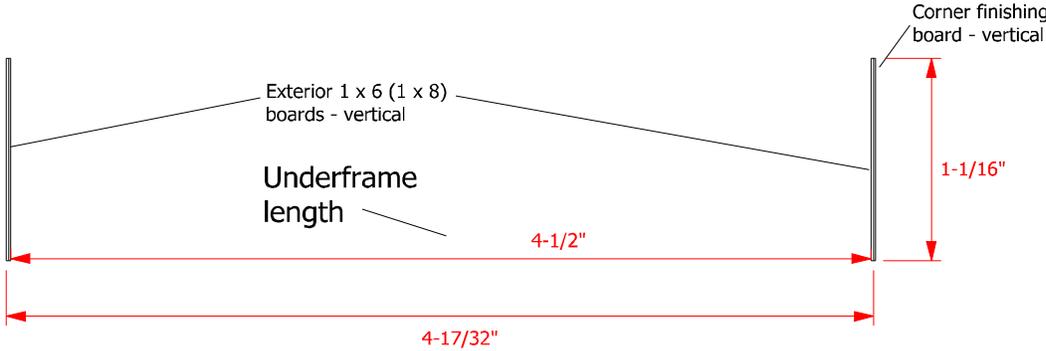


Figure 3b - Drover Caboose side view - dimensions expressed in feet/inches down to 1/32-nd of an inch

End Wall

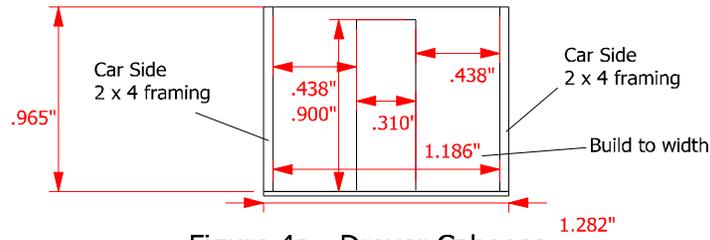


Figure 4a - Drower Caboose end wall - dimensions expressed in 3 decimal places

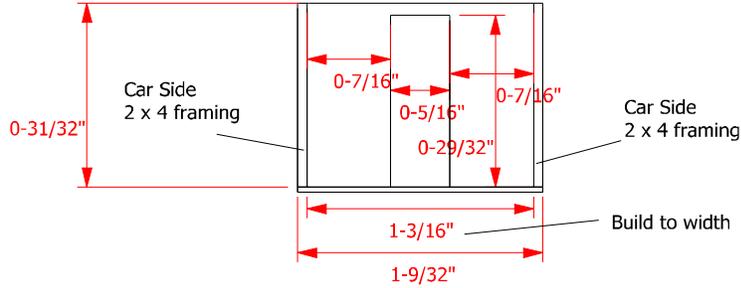


Figure 4b - Drower Caboose end wall - dimensions expressed in feet/inches down to 1/32-nd of an inch

Interior Wall

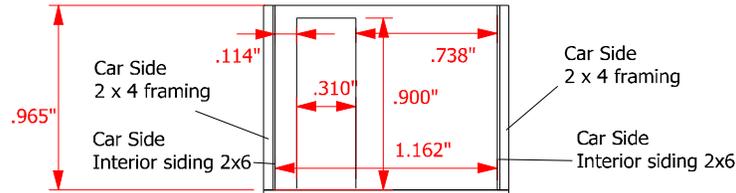


Figure 5a - Drower Caboose interior wall - dimensions expressed in 3 decimal places

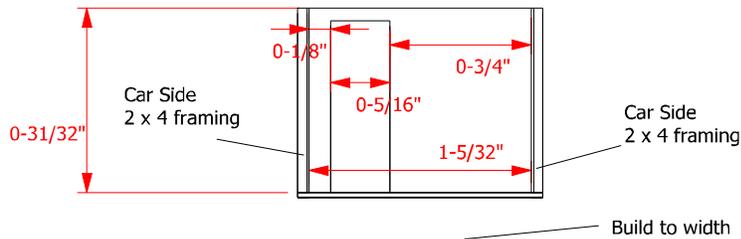


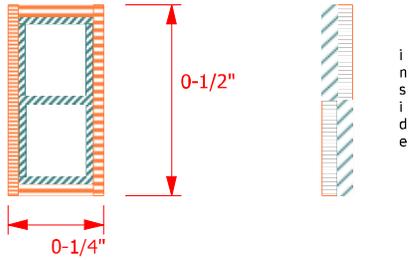
Figure 5b - Drower Caboose interior wall - dimensions expressed in feet/inches down to 1/32-nd of an inch

Miscellaneous Parts

Windows

-  0.030 x 0.080 strip styrene
-  0.020 x 0.040 strip styrene

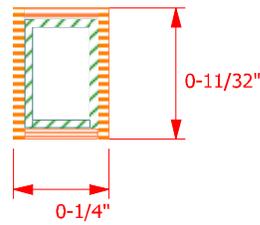
Drovers Compartment
Window (Image 2x) Make 14



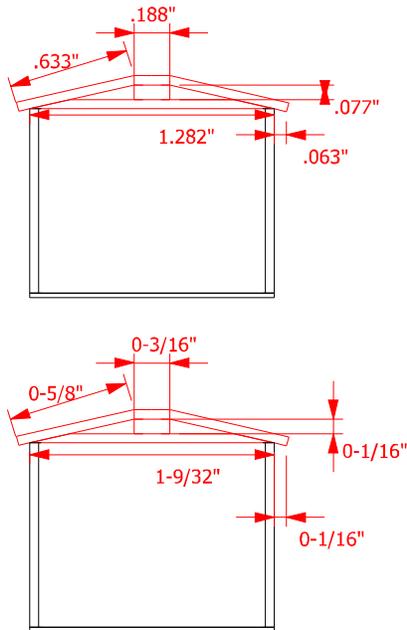
Front View

Side View

Conductors Compartment
Window (Image 2x) Make 2



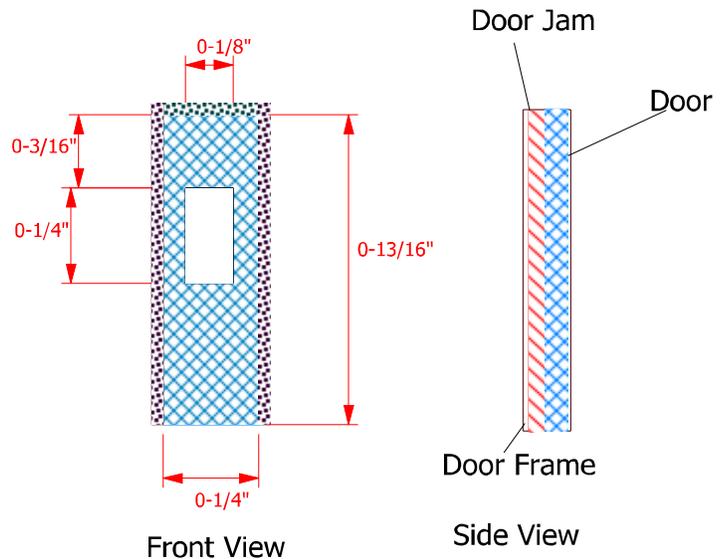
Roof Truss Make 10



Note: Mount pieces of 1x8 to the ends of the trusses to serves as the fascia on the roof

Vestibule Doors (Image 2x) Make 2

-  0.030 x 0.125 strip styrene
-  0.020 x 0.040 strip styrene
- Door - 0.030 sheet styrene

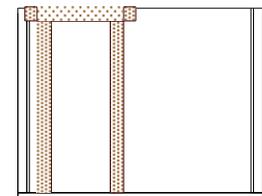
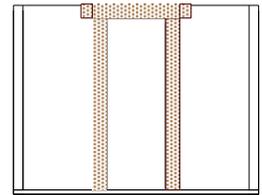
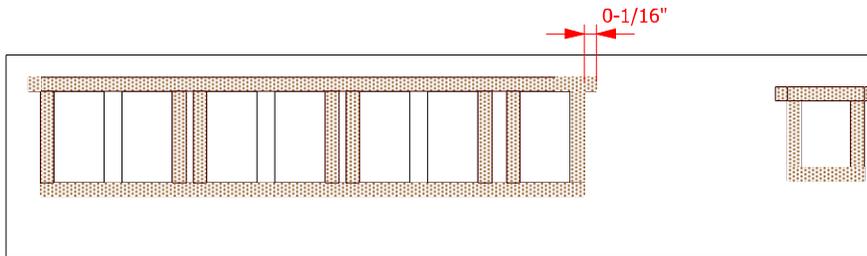


Front View

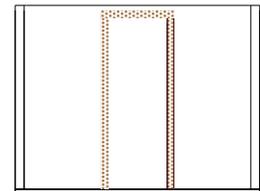
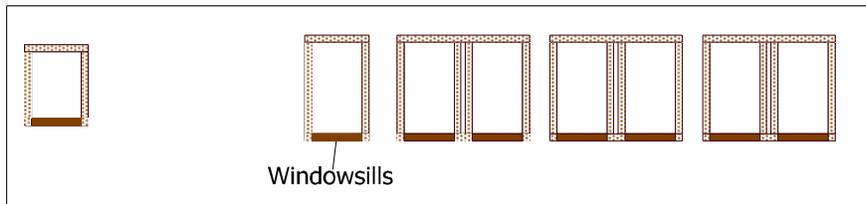
Side View

Window and Door Trim

Interior Trim - Northeastern Scale Lumber 1"x 6"
(per Drivers Request)



Exterior Trim - Northeastern Scale Lumber 1" x 3"



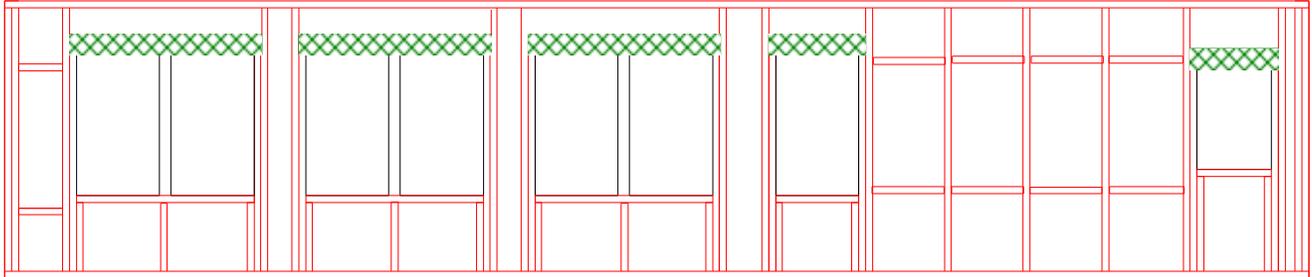
Side Wall Framing (image 1.5x) Make 2



2 x 6



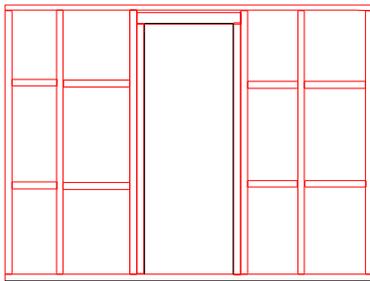
2 x 4



End Wall Framing (image 1.5x) Make 2



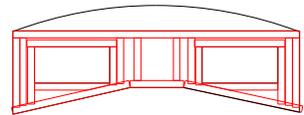
2 x 4



Cupola Front Wall Framing (Image 1.5x) Make 2



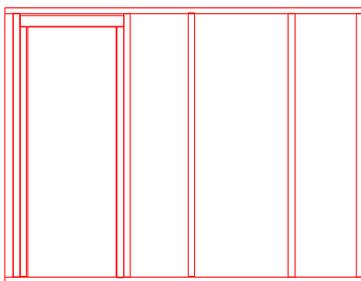
2 x 4



Interior Wall Framing (image 1.5x) Make 1



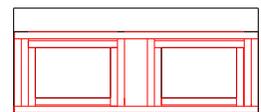
2 x 4



Cupola Side Wall Framing (Image 1.5x) Make 2

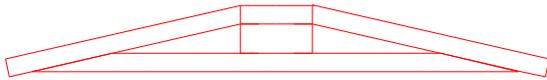
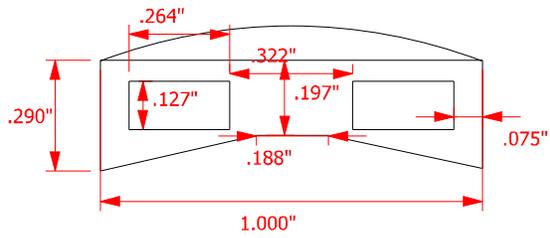


2 x 4

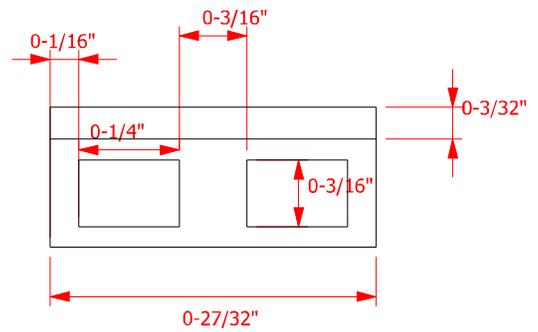
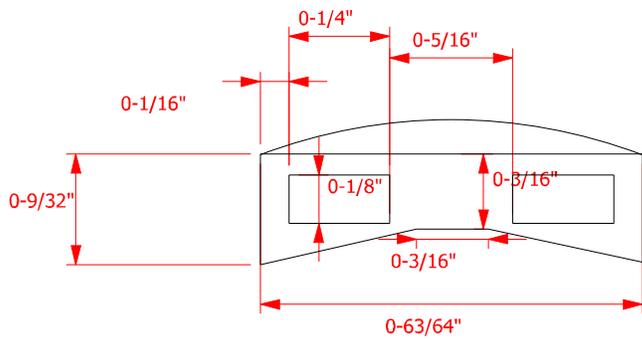
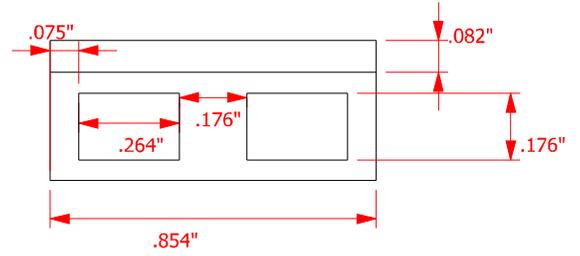


Cupola (Images 2x)

Front Wall



Side Wall



Brass wire things

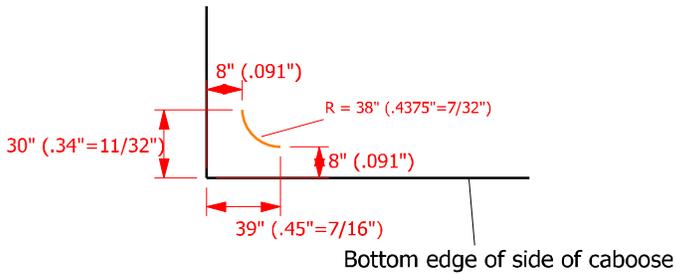
All items to be made from 0.012" brass wire

Hand rails

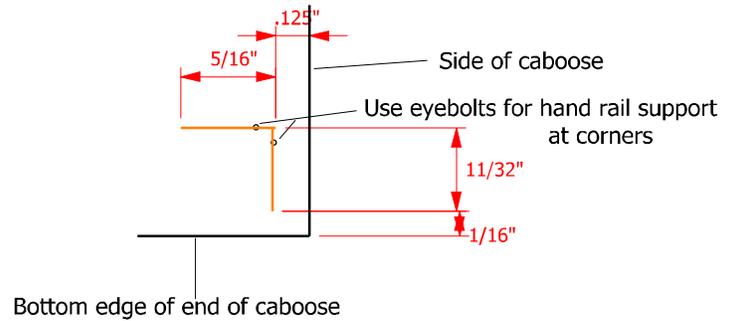
Hand rail mounting legs are not shown in these drawings.
Make the legs 1/4"-3/8" long.

Side Hand Rails, not to scale, make 4

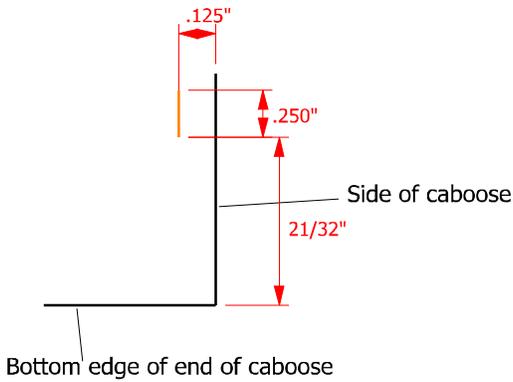
Prototype dimensions from NMRA Data Sheet D5d
presented first then HO-scale dimensions in parentheses



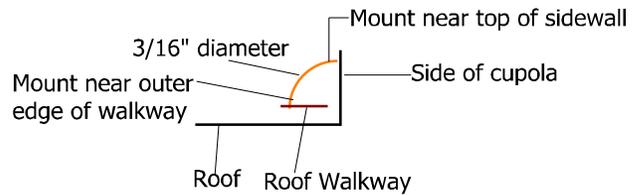
Platform Lower Hand Rails, not to scale, make 4



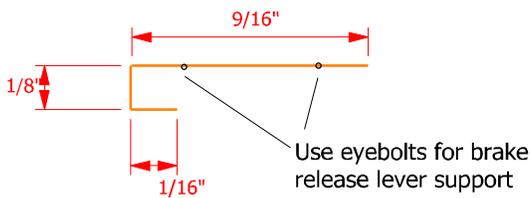
Platform Upper Hand Rails, not to scale, make 4



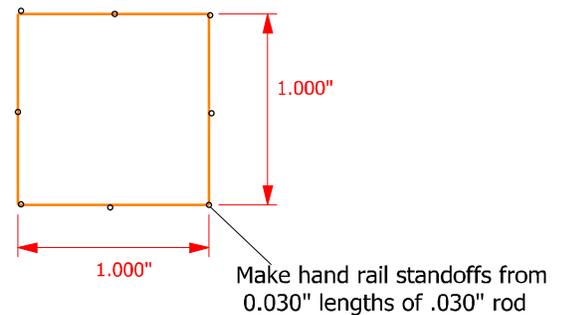
Roof Walkway Hand Rails, not to scale, make 4



Brake Release Lever not to scale, make 2



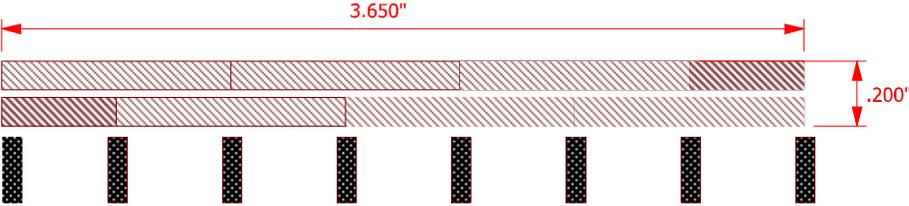
Cupola Roof Hand Rail



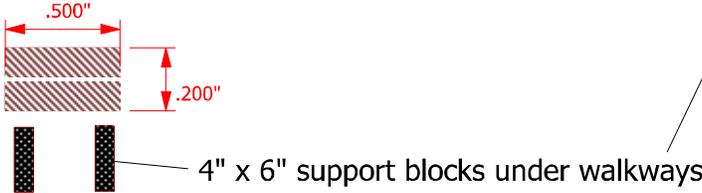
Roof Walkways

All walkway are to be made of 1"x8" Northeastern Scale Lumber
Per NMRA Data Sheet D5d all walkways are to be 18" (0.2" HO-scale) wide

Main walkway, not to scale, make 1



Side and rear walkways, not to scale, make 5





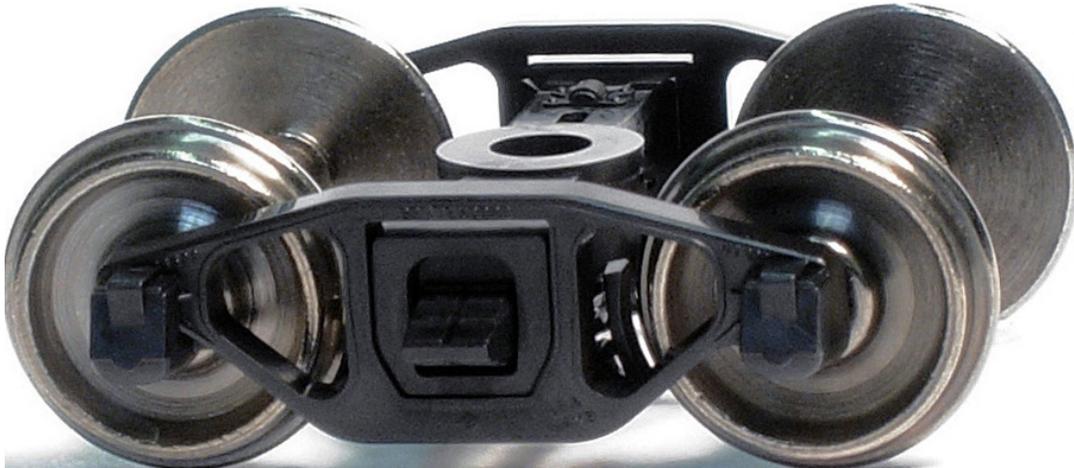
Kit No. #883 Missouri Pacific Drover Caboose

In 1930, the Missouri Pacific Railroad contracted with St. Louis Car Company (order number 1534) for the construction of 20 drover cabooses in the series 1100 – 1119 for use in the movement of livestock. Besides their normal duties as a freight train caboose, these cars provided seating and sleeping space for the men who accompanied cattle shipped on the MP. At 42 feet long over the pulling faces of the couplers, these cars were longer than the standard Mopac caboose. As the need for drover cabooses declined, several of these crummies were modified during World War Two for less-than-carload (LCL) service and hauled small shipments and express on branch and secondary lines. Kit No. 884 represents one of these cars, number 1112. All drover cabooses and LCL cars were off the roster by 1965.

Both drover caboose kits features 100% laser-cut components with custom laser-scribed side and end walls, Tab & Slot and Peel & Stick construction, laser-cut underframe, end platforms, ladders, end railing, roof vents, cupola hand grabs, toolbox, brake stand and brake wheels as appropriate for version, cast resin platform steps, white metal smokejacks, color window shades, fully illustrated instructions that provide information on painting and decaling the assembled model, and several fixtures to aid the modeler in creating all the handholds and ladders appropriate for the prototype. We recommend the purchase of Oddball Decal's set No. 87-284, Tahoe Model Works' No. 105 or 205 Barber-Bettendorf Swing Motion Caboose Trucks, and Kadee No. 5 couplers with draft gear boxes for completing our drover cabooses.

TAHOE MODEL WORKS

HO SCALE



BETTENDORF SWING MOTION CABOOSE TRUCKS

This swing motion truck was manufactured by the Bettendorf Co. from 1924 to the early 1930s. Railroads that had some cabooses with this truck included ATSF, BN, CB&Q, C&O, Erie, EL, MILW, MKT, MP, NKP, N&W, Pere Marquette and Rock Island. These trucks could be seen under wood double sheathed, single sheathed, all steel, transfer, drovers and even extended vision cabooses.

Our trucks feature one-piece black acetal plastic moldings with separate brake shoe detail, and non-magnetic, insulated metal RP-25 contour wheelsets. Trucks are also available with "semi-scale" (.088" wide) wheels.

TMW-104 Bettendorf Swing Motion Caboose Trucks,
with wheelsets

TMW-204 Bettendorf Swing Motion Caboose Trucks,
with "semi-scale" wheelsets

TAHOE MODEL WORKS user sheet for TMW 104/204

Some railroads that used Bettendorf Swing Motion Caboose Trucks

ATSF	1500-2000	AC&F	1927-1931	Steel	501
"	D917, D918	AT&SF	1929	Wood Sheathed Drovers	2
"	D930-D939	AT&SF	1931	Steel Drovers	10
MP	815-909	AC&F	1929, 1930	Wood Sheathed	95
MP	1100-1119	St.Louis	1930	Wood Sheathed Drovers	20
ERIE	04926-04975	Magor	1929, 1930	Wood Sheathed	50
CRI&P	17850-17899		1930	Steel	50
CRI&P	17000-17061	ICC	1958-1964	Wide Vision	some
PM	A800-A824	Magor	1930	Wood Sheathed	25
CB&Q	13500-13524	CB&Q	1930	Steel NE-10	25
MKT	796-820 (re# 31-53)	MKT	1930	Single Sheathed	25
MKT	1-4	Thrall	1959	Steel Transfer	5
MILW	01600-01615	MILW	1929	Steel Drovers	16
NKP	1194-1208 also #100, 1088, 1119, 1178	NKP	1924	Wood Sheathed	15
BN	11445-11469	ex-CB&Q			
C&O	A800-A824	ex-PM			
EL	04926-04975	ex-ERIE			
NYC	20093	ex-Ulster and Delaware			
N&W	559194-5559208	ex-NKP (a few were lettered and numbered for N&W)			

MP-1112

Manufacturer	Part #	Part Name	Scratch built Part Count	Commercial Non-exempt Part Count			
Northeastern Scale Lumber	3012	2 x 4	110		Side 1 and Side 2 interior framing		
			40		End 1 and End 2 interior framing		
			14		Interior wall framing		
			40		Roof trusses		
			7		Horizontal spacers between studs (i.e. fire blocks)		
			32		Cupola side framing		
			40		Cupola end framing		
			2		Awning on cupola side windows		
			4		Glue blocks for attachment of fascia boards		
			16		Step ladder parts		
			3005	1 x 8	18		Side 1 and Side 2 interior wall paneling
					18		Interior wall side 1 and side 2 paneling
					1		Vertical exterior siding for car side
					3		Divider on exterior of window
					4		Corner finishing boards
					4		Cupola side exterior paneling
	2	1x4 cut from 1x8			Cupola corner finishing boards		
	6				Window attachment blocks inside cupola		
	3				Fascia boards		
	18				Roof walk boards		
	3004	1 x 6	2		Interior wall paneling		
			2		Side 1 and Side 2 interior wall paneling		
			6		Interior wall door frame		
			28		Interior wall window trim		
			13		Drover window sash		
			6		Exterior doors trim		
			116		Vertical exterior siding for car sides		
			32		End trusses siding		
			56	1x3 cut from 1x6	Side window trim		
			8	1x3 cut from 1x6	End door trim		
	34		Vertical exterior siding for car ends				
	4		Corner finishing boards				
22		Cupola side exterior paneling					

MP-1112

			8	Cupola interior paneling
			2	Cupola bottom side spacer
	3004	1x3 cut from 1x6	2	Cupola corner finishing boards
			28	Wood paneling on underside of roof over platform
			6	Car end fascia boards
	3013	2 x 6	20	Side 1 and Side 2 window headers
			16	Drover window sash
			2	End 1 and End 2 door headers (SB 1 x 6)
			10	Trusses
			3	Floor boards
	3015	2 x 8	18	End 1 and End 2 interior wall paneling (SB 1x6)
	3040	6 x 6	4	Inside corner reinforcement
			6	End truss interior supports
	3014	2 x 8	41	Floor boards
			2	Ladder anchor blocks on roof
	3030	4 x 4	2	Top of side wall cross support
			18	Glue blocks for attachment of fascia boards
	3016	2x12	4	Arch over cupola front and back windows
	3031	4x6	18	Roof walk standoff blocks
Evergreen Strip Styrene	132	.03 x .04	112	Big window frame (2 pieces MEKed to make .03x.08)
			8	Conductor window frame
	122	.02 x .04	112	Big window sash
			8	Conductor window sash
			2	Raised panels on vestibule door
			6	Door jam
			64	Cupola window frames (2 pieces MEKed to make .02x.08)
	155	.06 x .1	6	Window divide
	134	.03 x .08	4	Conductor's window frame
			2	Brake lever mounting block
	136	.03 x .125	6	Door frame
	177	.100 x .156	4	Bolsters
	142	.04 x .04	8	Stringer end pieces
			4	Stringer middle piece
			4	Cross member
	283	.100 H-column	2	Center beam
			4	Center beam end pieces

MP-1112

	212	.080 rod	1		Support post for brake cylinder
	211	040 rod	2		Main air line to air hose coupling
			2		Elbows on main air line
	126	.02 x ,125	2		Brake levers
	227	7/32" tube	2		Truck center plate extensions
	225	5/32" tube	2		Truck center plate extensions
	210	0.030" rod	4		Marker flag mounts
			8		Cupola hand rail standoffs
	8104	1x4	8		16 GA metal flashing around cupola base
Evergreen Styrene	9030	.03" thick sheet	2		Exterior door
	9002	.02" thick sheet	3		Roof panels
	9010	.01" thick sheet	1		Cupola roof
K&S Brass	250	0.005" brass sheet	1		Exhaust stack safety collar
.033" clear styrene			14		Window glass
Tichy Train Group	8142	Nut and Bolt	4		Door knobs
	3037	Eyebolts	8		Platform lower hand rail standoffs
			4		Coupler release lever supports
Detail associates	2506	0.019" brass wire	1		Main brake air line
			1		Curtain rod
	2504	0.012" brass wire	2		Truck rods
			1		AB control valve to cylinder
			2		AB control valve to reservoir
			2		Main brake line
			2		Brake wheel pull rod
			1		AB control valve line to air retainer valve
			2		Coupler release levers
			4		Car side hand rails
			4		Platform step hand rails
			4		Platform upper hand rails
			1		Cupola hand rail
			1		Branch air line to AB control valve
Scenic Accents	A1911	Worker	1		Worker man
A-Line Chain	29219	40-link per inch	4		Brake wheel pull rod chain
Kadee	276	Air hose	2		End of car air hose
Grandt Line	5099	3" nut x 4.5" washer	2		Brake lever to mounting block attaching nut and bolt
Cocktail napkins			5		Cupola tar paper roof

MP-1112

Stolen from unmade Athern caboose kit	4		Car body tar paper roof
		1	Exhause stack
		2	End platform
		2	Brake staff
		2	Ladder
	-----	-----	
	1382	16	

Percentage 98.86% 1.14%

Northeastern Scale Lumber pieces	921
Evergreen Strip Styrene pieces	387
Detail Associates Brass Wire pieces	28
Evergreen Sheet Styrene pieces	6
Miscellaneous pieces	40
	"-----"
	1382