



TRIANGLE SCALE MODELS

P.O. Box 8483

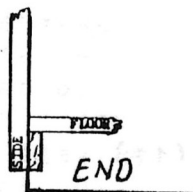
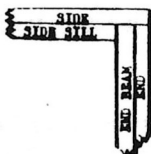
7103 Monlaco Road • Long Beach, California 90808 • Telephone (213) 425-7996

THE TSM-108 C&S/RGS REFRIGERATOR CAR

OUR REEFER KIT IS OF THE CARS CONSTRUCTED BY THE C&S RAILROAD ON BETTENDORF FRAMES AND TRUCKS. THE ARTICLE BY HARRY BRUNK IN THE GAZETTE WILL TELL YOU MORE OF THE HISTORY OF THE CARS. THERE ARE ALSO SEVERAL BOOKS WITH PLANS AND PHOTOS OF THE CARS. THE MODEL CONSTRUCTION IS OF PRECUT STYRENE WITH WHITE METAL AND INJECTION MOLDED STYRENE DETAIL PARTS.

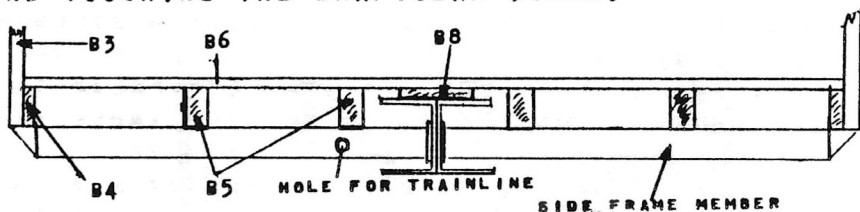
BODY CONSTRUCTION

- (1) LOCATE THE ENDS B1 AND THE TWO PIECE END BEAMS B2. CEMENT THE END BEAMS FLUSH WITH THE BOTTOM OF THE ENDS AND FLUSH WITH THE OUTSIDE EDGE OF THE CAR END, AS IN THE SKETCH BELOW.



- (2) PICK UP THE SIDES B3 AND THE BOTTOM SILLS B4, CEMENT THE SILL TO THE BOTTOM EDGE OF THE SIDE CENTERED SO THAT THE SIDES WILL OVERLAP THE END BUT NOT THE END SILLS PER THE ABOVE SKETCH.
- (3) TRIAL FIT THE SIDES AND ENDS AND TRIM AS NEEDED NOTING THAT THE ENDS ARE LOWER THAN THE SIDES. THE CAR FLOOR SITS ON TOP OF THE END AND THE OUTSIDE SILLS.
- (4) CEMENT ONE END TO A SIDE, THEN THE SECOND END. PICK UP THE FLOOR B6 AND DRAW A LINE 1'1" AND 2'6" FROM EACH SIDE. CEMENT THE FLOOR ON TOP OF THE SILLS (THIS WILL SQUARE THE CAR). CEMENT THE SECOND SIDE IN PLACE AND SET ASIDE TO DRY.

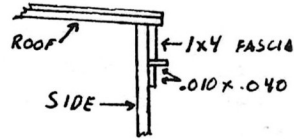
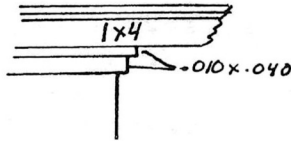
- (5) AT THIS TIME ADD WEIGHT TO THE INSIDE OF THE CAR IF YOU WISH. THE FINISHED CAR WILL WEIGH 3 OUNCES WITHOUT ADDITIONAL WEIGHT, SO WE RECOMMEND THAT YOU ADD 1 TO 1 1/2 OUNCES TO THE CAR AT THIS TIME.
- (6) LOCATE THE FOUR CENTER SILLS B5 AND CEMENT TWO ALONG THE OUTER LINES. THE CENTER PAIR WILL GO IN PLACE AFTER THE DRAFT GEAR AND BRASS CENTER BEAMS GO IN PLACE BUT BEFORE THE BOLSTERS AND SIDE FRAME MEMBERS ARE IN PLACE.
- (7) CEMENT THE ROOF RIDGE SUPPORT B7 AT THE PEAK OF THE ROOF.
- (8) CUT THE B8 .020x.208 TO FIT BETWEEN THE ENDS AND CEMENT TO THE CENTER OF THE CAR. THIS WILL SUPPORT THE DRAFTGEAR AND CENTER SILL.
- (9) CEMENT THE TWO BRASS CENTER SILLS BACK TO BACK.
- (10) CEMENT THE DRAFTGEAR CENTER PIECES FLUSH WITH THE OUTSIDE OF THE CAR END. ASSEMBLE ONE DRAFT GEAR SIDE TO EACH END (SAME SIDE) AND CEMENT THE BRASS CENTER BEAM TO THEM. CEMENT THE OTHER TWO DRAFTGEAR SIDES IN PLACE.
- (11) CEMENT THE OTHER TWO B5 SILLS IN PLACE NEXT TO AND TOUCHING THE DRAFTGEAR SIDES.



- (12) DRILL #60 THRU THE BODY BOLSTERS AND SIDE FRAME MEMBERS FOR THE TRAINLINE. TEST FIT THE BOLSTERS AND BOLSTER PLATES, FILE TO FIT, AND EPOXY IN PLACE. THE EPOXY WILL BE STRONG ENOUGH WHEN DRILLING FOR AND TIGHTENING THE TRUCK MOUNTING SCREWS.
- (13) BEND THE TRAINLINE FROM .025 WIRE AND SLIP ON THE SIDE MEMBERS. CEMENT IN PLACE WITH THE TRAINLINE IN TWO PIECES.

ROOF CONSTRUCTION

- (1) CEMENT THE SIDE FASCIA R1 ON FLUSH WITH THE TOP OF THE SIDE.
- (2) SCRIBE THE SIDE DOOR OUTLINE AND CENTER LINE TO INDICATE THE OPENING. ADD THE R4 DRIP STICK AND TOP PIECE TO THE DOOR PER THE SKETCH AND PLAN.

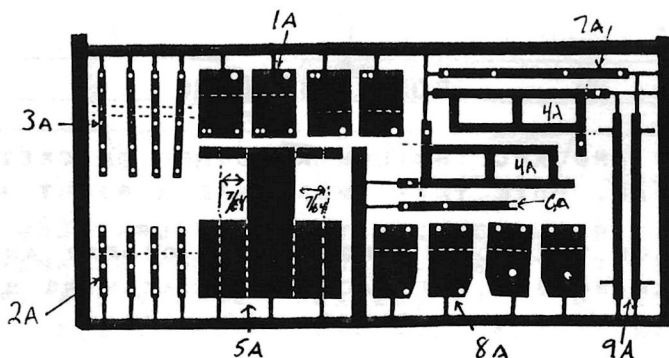


- (3) CUT THE FASCIA BOARDS R2 TO LENGTH SO THAT IT WILL FIT BETWEEN THE SIDE FASCIA BOARDS. TRIM THE SIDE FASCIA FLUSH WITH THE END AND THE END FASCIA TO THE OUTLINE OF THE ROOF.
- (4) THE CAR ROOF IS DOUBLE SHEATHED (TWO LAYERS) WOOD SO WE USE TWO LAYERS OF R3 ROOF CEMENTED TO THE CAR. THE BOARDS SHOULD BE STAGGERED AND SCRIBED ON THE END FOR THE BEST EFFECT.
- (5) CEMENT THE SIMPSON RIFWALK SUPPORTS TO THE CENTER OF THE ROOF PER THE SPACING ON THE PLAN.
- (6) CEMENT THE THREE R6 ROOFWALK BOARDS IN PLACE. THE TWO OUTER BOARDS ARE EVEN WITH THE OUTSIDE OF THE SUPPORTS AND THE MIDDLE ONE CENTERED BETWEEN THEM. CUT THE BOARDS IF THEY ARE TOO LONG.

BODY DETAILING

- (1) BEND AND ACC THE LOWER CORNER BRACKETS TO THE CAR. NOTE THAT THERE ARE A RIGHT AND LEFT.
- (2) ATTACH THE DOOR HINGES WITH CEMENT AND THE LATCHING BAR WITH ACC. THE LATCHING BAR GOES ENTIRELY ON THE RIGHT HAND DOOR.
- (3) CEMENT THE ROOFWALK BRACES TO THE ROOF, AND ADD THE ROOFWALK.
- (4) ADD THE L SHAPED GRAB IRONS TO THE RIGHT SIDE OF THE ROOF WITH AN EYEBOLT IN THE MIDDLE AND A NUT AND BOLT ON EACH END.

- (5) CUT THE LADDERS TO LENGTH, FILE TO CLEAR THE FABRICIA, AND USE THEM TO MARK THE LOCATIONS OF THE #76 HOLES TO MOUNT THEM IN PLACE. THE DELRIM LADDERS WILL NOT BE SECURE WITHOUT THE PEGS IN THE CAR SIDE. ELONGATE THE HOLES IF NECESSARY TO GET THE LADDERS FLAT ON THE CAR. WHEN YOU ARE SATISFIED, USE ACC TO GLUE THEM ON.
- (6) DRILL #74 FOR THE GRANDT STIRRUP STEPS ON THE LEFT SIDE OF THE CAR AND ACC THE STEPS ON. BEND THE BRASS RIGHT SIDE STEPS TO SHAPE PER THE PLAN AND DRILL TWO #74 HOLES FOR THE MOUNTING LUGS AS CLOSE TO THE OUTSIDE OF THE LADDER AS POSSIBLE AND ACC THE STEPS TO THE LADDER AND THE CAR.
- (7) LOCATE THE LOCATIONS FOR THE NUT AND BOLT CASTINGS ABOVE THE GRAB IRONS, DRILL #77 AND CEMENT THE NUT AND BOLTS IN PLACE. DRILL #80 FOR THE GRAB IRONS AND BEND THE GRABS FROM .012 WIRE, USING THE TSM GRAB IRON JIG FOR BOTH THE HOLE SPACING AND BENDING THE GRABS. FIRST BEND A PIECE OF WIRE WITH PLIERS, INSERT IN THE JIG, AND THEN BEND OVER THE END.
- (8) ACC THE COUPLER POCKET TO THE END OF THE CAR.
- (9) ADD #9 GRANDT NUTS AND BOLTS TO THE REMINING HOLES IN THE CORNER BRACKETS.



BRASS ETCHING
 DOTTED LINES INDICATE THE LOCATION OF BENDS

- | | | | |
|----|---------------------------------|----|---|
| 1A | BOXCAR LOWER CORNER BRACKETS | 6A | SHORT BRAKE LEVER |
| 2A | UPPER CORNER BRACKETS | 7A | LONG BRAKE LEVER |
| 3A | INTERMEDIATE CORNER BRACKETS | 8A | REEFER LOWER CORNER BRACKET |
| 4A | END ROOFWALK SUPPORTS | 9A | REEFER RIGHT SIDE STIRRUP STEPS WITH MOUNTING BRACKET |
| 5A | BRAKE CYLINDER MOUNTING BRACKET | | |

UNDERBODY

- (1) ACC THE WHITE METAL BRAKE CYLINDER MOUNTING PLATE AND THE RESERVOIR MOUNT TO THE SILLS.
- (2) BRAKE CYLINDER ASSEMBLY
 - (A) REMOVE THE CYLINDER FROM THE SPRUE AND CUT THE PIN FROM THE CLEVICE SO IT WILL FIT THE LEVER.
 - (B) PUSH THE CLEVICE OUT WITH A PIECE OF .025 WIRE AND SLIP IT BACK IN TO THE CORRECT LENGHT.
 - (C) CLIP A PIECE OF SPRUE AND USE IT TO ALIGNN THE CYLINDER AND RESERVOIR. CEMENT TOGETHER.
 - (D) FILE THE BOTTOM OF THE RESERVOIR FLAT AND ACC IT TO THE BRAKE CYLINDER SUPPORT.
- (3) ACC THE CHAIN ROLLER TO THE CAR.
- (4) DRILL #77 AND CEMENT THE RETAINER VALVE TO THE END OF THE CAR. BEND AND ASSEMBLE THE .010 PLASTIC ROD RETAINER LINE.
- (4) ACC THE LONG BREAK LEVER TO THE BRAKE CYLINDER.
- (5) PIPING
 - (A) LOCATE THE PIPE WITH THE "T" AND CUT THE BRANCH AS SHOWN IN FIG. 7. CEMENT THE PIPE WITH AN OPEN ELBOW TO THE BRANCH, SEE FIG. 8. WITH A SHARP KNIFE BLADE SPLIT THE BACK OF THE TEE SO THAT IT WILL SLIP OVER THE TRAIN-LINE.
 - (B) TAKE THE SHORTER PIPE WITH THE ELBOW AND CUT PER FIG. 9. LOCATE THE CUTOFF VALVE AND CEMENT IN PLACE PER FIG. 10. REAM THE HOLE IN THE TRIPLE VALVE WITH A # 70 DRILL AND CEMENT THE SHORT BRANCH IN THE MOLE SQUARE WITH THE BRAKE CYLINDER, ASSEMBLE AND CEMENT IN PLACE.
 - (C) SLIP THE TEE ASSEMBLY ONTO THE TRAINLINE, ALIGN WITH THE CUTOFF VALVE AND CEMENT. ACC ACC TO THE TRAINLINE.
- (6) ACC A SHORT PIECE OF 1X4 STYRENE FOR THE SHORT LEVER MOUNT TO THE BRASS CENTER BEAMS, DRILL #77 AND USE A #101 NUT AND BOLT TO SECURE THE SHORT LEVER TO THE MOUNT.

- (7) BEND .015 WIRE TO GO THRU THE LEVER HOLES TO FORM THE LEVERS. THE OUTSIDE LINE HAS A CHAIN ATTACHED WHICH GOES THRU THE CHAIN ROLLER AND TO THE BRAKE STAFF.
- (8) DRILL 4 #80 HOLES AND BEND TWO "U" SHAPES OF .012 WIRE FOR THE BRAKE LEVER HANGERS. ACC IN PLACE. ALSO MAKE AN EYE OF .012 WIRE TO SUPPORT THE OUTSIDE LEVER WHERE IT CONNECTS TO THE CHAIN
- (9) ACC THE AIR HOSES TO THE END OF THE CARS, DRILL 4 #80 HOLES, BEND 2 U'S OF WIRE TO SECURE THEM.
- (10) DRILL THE BRAKE WHEEL, UPPER AND LOWER BRAKE STAFF BRACKETS WITH A #75 DRILL. ACC THE BRAKE WHEEL TO THE .020 WIRE AND SLIP THE UPPER STAFF BRACKET ONTO THE WIRE LOOSE. ACC THE LOWER BRAKE STAFF BRACKET TO THE CAR. SLIP THE WIRE THRU THE LOWER BRACKET, POSITION THE UPPER BRACKET AND ACC IT.
- (11) DRILL 2 #80 HOLES FOR THE EYEBOLTS WHICH HANG THE COUPLER LIFT BARS. BEND THE LIFT BARS FROM .015 WIRE, SLIP 2 EYEBOLTS ON AND ASSEMBLE TO THE HOLES AND ACC IN PLACE.
- (12) DRILL #60 FOR THE TRUCK MOUNTING SCREWS.
- (13) LUBRICATE THE TRUCK SIDEFAMES WITH GRAFITE AND ASSEMBLE THE TRUCKS WITH EPOXY.

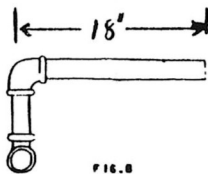


FIG. 6

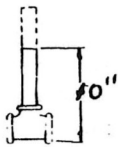


FIG. 7

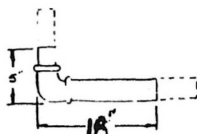


FIG. 9



FIG. 10

PAINTING

THE CARS WERE PAINTED WITH DARK GRAY UNDERBODIES, YELLOW SIDES, AND RED ENDS AND ROOFS. THE C&S RED WAS MUCH REDDER THAN THE D&RGW, TO SIMULATE IT TRY HALF FLOQUIL CABOOSE RED AND HALF BOXCAR RED. THE RIO GRANDE COLOR IS SIMILAR TO BOXCAR RED BUT A LITTLE DARKER (A TOUCH OF TUSCAN?) AND THE UNDERFRAMES WERE BLACK WHEN PAINTED. DECAL THE CAR TO SUIT, WEATHER AS YOU LIKE AND INSTALL THE TRUCKS AND COUPLERS.



Post Office Box 444, Canoga Park, CA 91305

DIRECTIONS: No expense or effort has been spared in order to produce authentic and highly detailed lettering which will apply the final touch of realism to your highly detailed models. While considerable care is required in their application, the results are well worth the effort.

You will need the following tools and materials: A small bowl of water, a sharp modeler's knife or scissors, a sharp pointed instrument such as a pin or needle, toothpicks, absorbant paper towels, a small artist's brush, tweezers and a decal setting solution such as that produced by Champ or Walther's.

1. Using a sharp knife or scissors, trim as close to the desired lettering as possible.
2. Soak the decal in water for a few minutes, or until the film can be moved easily on the backing paper. Place wet decal and backing paper face up on absorbant paper towel and go on to Step 3. **CAUTION:** Do not remove film from backing paper yet.
3. Wet the model on the area where lettering belongs, using the small artist's brush or toothpicks.
4. Pick up decal and backing paper from paper towel and slide decal so that it extends slightly beyond backing paper.
5. Position edge of decal over proper place on model. Hold edge of decal in place with sharp instrument, and slide backing paper from beneath decal. **CAUTION:** Do not attempt to slide decal from paper onto model. The ultra-thin film will wrinkle, distort, and become a hopeless mess.
6. Move decal into final position with toothpicks or sharp instrument. More water may be added with brush if decal sticks prematurely.
7. Lay edge of paper towel near edge of decal and soak up excess water.
8. Blot up all water with paper towel, and press decal firmly against model. **CAUTION:** Blot; do not rub.
9. Apply decal setting solution, and allow to dry without disturbing. Make two or three subsequent applications of decal setting solution, puncturing any air bubbles that appear between applications with sharp instrument. If decal is applied over scribed siding, slice decal film on scribe marks with a sharp knife or razor blade between applications of decal setting solution.
10. If spray equipment is available, lightly fog on a coat or two of dull varnish, such as Walther's DDV.

Allow dulling agent to dry thoroughly before handling model.

TSM-108 PACKING LIST AND PARTS IDENTIFICATION

BAG 1

B1 2 PCS. CAR ENDS, PRECUT FROM SCRIBED STYRENE
 B2 4 PCS. END BEAMS, .060X.150X3'
 B3 2 PCS. CAR SIDES, PRECUT FROM SCRIBED STYRENE
 B4 2 OUTSIDE SILLS, .030X.120X29'
 B5 4 SILLS, .060X.095X29'
 B6 1 FLOOR (SCRIBED 6") .040X7'4"X29'7"
 B7 1 ROOF STIFFENER .125X.188X29'7"
 B8 1 CENTER SILL SUPPORT .020X.208X6"(ACTUAL)
 R1 2 PCS. SIDE FASCIA .015X.060X6"(ACTUAL)
 R2 1 PC. END FASCIA .015X.188X4"(ACTUAL)
 R3 4 PCS. SCRIBED ROOF PANELS .020X4'X30'5"
 R4 1 PC. .010X.040 DOOR TRIM AND DRIP STICK MATERIAL
 R6 3 PCS. ROOFWALK BOARDS .015X.117X31'10"

BAG2

2 SPRUES SIMPSON ROOFWALK SUPPORTS
 1 SPRUE GRANDT #101 NUT AND BOLT CASTINGS
 2 SPRUES GRANDT ROOFWALK END BRACES
 4 TSM WHITE METAL ICE HATCHES
 2 GRANDT STIRRUP STEPS
 1 TSM GRAB IRON BENDING JIG
 6 DETAIL ASS. EYEBOLTS
 1" CHAIN
 1/2 SPRUE GRANDT #9 NUT AND BOLTS
 1 TSM ETCHED BRASS DETAIL PARTS
 4 GRANDT LINE DELRIN LADDERS
 BAG 3 TSM UNDERFRAME, WHITE METAL AND BRASS

BAG 4 TSM BRAKE SET FOR C&S REEFERS

BAG 5 TSM C&S BETTENDORF TRUCKS

LOOSE IN THE BOX	6" .025 WIRE
THINFILM DECALS	4" .020 WIRE
PLANS	6" .015 WIRE
INSTRUCTIONS	12" .012 WIRE
PHOTO PAGE	6" .020 PLASTIC ROD