The Prototype:

In 1962, the C&NW sent the remains of wreck damaged RS3 #1553 back to Alco. The replacement for 1553 rolled out of Alco’s Schenectady, NY plant in August of 1962 in the form of an RS36 numbered 904. The RS36 was Alco’s state of the art, medium horsepower 4-axel locomotive at that time. It was powered with an 1800 horsepower, 4-stroke, 12-cylinder turbocharged engine and featured “transistorized” controls. In 1966, the 904 was renumbered to 405. By the late 1960’s, all of the Alco road switchers, including 405, were assigned to Huron, South Dakota and worked on the famous “Alco Line” between Winona, MN and Huron, SD. In 1981, the 405 was transferred to Green Bay, Wisconsin and worked switching assignments in upper Michigan. In 1982, the 405 was renumbered again to 4259. After 24 years of service, the 4259 was retired in 1986. The 904/405/4259 was the only RS36 on the C&NW’s all-time diesel roster. The C&NW purchased ten former Conrail (PC/NYC) RS32s (road numbers 4240 to 4249) in 1979, which were very similar externally to an RS36.
The HO scale 405 began life as an Atlas RS11 painted in Norfolk and Western dark blue with a high short hood. There was no mass-produced model available that had the long notched low nose and wide windshield required for a low nose RS36. The nose was constructed using information in the article titled “A low nose for an Atlas RS11” in the July 1986 issue of Railroad Model Craftsman. Scale drawings of an RS36 were used from the August 1988 issue of Mainline Modeler. To start the kit bashing process, the model was completely disassembled and the shell was stripped using Chameleon paint stripper.
Low nose:

Prototype photo:
Waseca, MN July 1975

The unique low nose was built first, since it was the most challenging part of the model. The low nose notches have the same angle as the high nose, but are not as deep and lack number boards. The high nose from the Atlas RS11 was first cut into slices. The top slice was moved foreword to make the notches shallower. Moving the top section foreword created a rectangular hole in the front of the top section, which was filled with scrap material. There was also a filler piece added at the rear of the top slice. The photo shows the top slice with the filler pieces added.

After the nose slices were cut, they were sanded smooth and squared-up using a flat sanding block with fine sand paper. The slices were then cemented together, and the assembly was sanded.
Cab:

The front cab wall was made from a piece of scrap Atlas shell material. The frame around the windshield was made from a single stick of styrene .010” x .010” stock. After applying liquid plastic cement, the corners were bent to shape. The number board/headlight housing was scratch built using styrene. To add the roof over the number board housing, a new cab roof was made by laminating a .010” styrene sheet over the existing roof. Notches were routed into the sides of the cab just above the side windows to allow the .010” sheet to blend into the sides.

Long Hood:

The sub-assembly with the most amount of labor was the long hood. The overall dimensions of the RS11 hood were correct, but several large cast-on details existed that were not correct for an RS36. The most significant problem was the short access doors on the sides. Other incorrect features were the large intercoolers, dynamic brake apparatus on the roof and boxes in the upper right corner of the radiator intakes. If I were to remove all of the incorrect features, not much would be left. This is why I made the decision to essentially scratch-build the long hood.

This photo shows the long hood in the early stage of construction. The assembly was made using a pine block jig, which held the pieces in alignment.
The car body filters, exhaust stack, crankcase breather, and radiator section were cut away from the Atlas long hood. The radiator intakes were opened up and rebuilt using styrene strips in an effort to remove the rectangular boxes in the upper right corners, which were incorrect for the 405.

To easily locate the holes for the wire grab-irons, new holes were marked and drilled using the cast-on bolt heads for center marks. After drilling, the cast-on grab irons were removed. The headlight casting was removed and replaced with Detail Associates #1003.

There are no Cannon & Company parts available for Alcos, so scratch building was required for the hood doors and hinges. To keep the doors all the same height, a .005” styrene strip was cut to the vertical dimension of the doors. Then, the doors were cut individually from the strip and kept arranged in the order they were cut. This way, any slight imperfections in the door cutting would cancel, as they were cemented to the hood.

There are 96 hinges on the long hood made from .005” styrene. For each hinge, two rectangular pieces were used, one on the door and one on the hood. The hinge knuckles were made from .010” x .010” square strip. For each set of three hinges in a vertical pattern, one piece of .010” x .010” was cemented in place across all three hinges. When the cement was dry, the .010” x .010” between the hinges was removed with a sharp knife. This kept the three pieces in alignment and eliminated the handling of very tiny pieces. Door handles are made from .012” brass rod.
A Detail Associates #2703 photo-etched fan grille was used. The diameter of the Atlas fan housing had a slightly smaller diameter than the brass grille. To increase the diameter of the fan housing, a strip of .010” styrene was wrapped around the outside.

**Handrails:**

Prototype photo:
Waseca, MN July 1975

The prototype handrail stanchions are made up of a round vertical rod or tube, with a casting at the top, which joins it to the horizontal railing.

The original Atlas handrails were not used, and the large rectangular holes in the walkway were plugged with styrene and sanded smooth. There are no handrail stanchions available for this era of Alco road switchers, so scratch-building was required to make prototypically correct handrails. Brass rods were first cut to rough lengths and fastened to the walkway. A horizontal rod was then soldered to the outside of the vertical rods. Care was taken to keep everything squared-up when soldering.
After soldering, the vertical rods were snipped-off flush with the top of the horizontal rod. Each solder joint was purposely left extra large and then filed to the shape of the prototype joint. The left joint in the photo has not yet been shaped.

The finished handrail stanchions.
Fuel and Air Tanks:

The air tanks were scratch built from styrene tubes. Sawing and filing was required on the chassis to properly locate the tanks. A styrene filler was added to the bottom of the chassis to allow the fuel tank assembly to fit squarely on the chassis.

The fuel tank was scratch built to fit over the cast metal frame. To help give the finished model a low center of gravity, lead weights were built into all of the available spaces. The fuel tank assembly is fastened to the chassis with two 2-56 flat head machine screws. Details West #166 fuel fillers were used.
Chassis:

The Atlas RS11 used for the base model was one of the early versions produced in the early 1990’s. The chassis on the early Atlas RS11’s had incorrect truck center dimensions. The RS11s made currently by Atlas have the correct dimensions. Using the RS36 drawing from Mainline Modeler, the truck center dimensions were corrected by cutting the bolsters from the chassis with a fine tooth razor saw. The bolsters were then reattached in the correct locations with CA adhesive. A thin styrene spacer was glued to the bottom of each bolster to make up for the saw cut.

Final Assembly:
These photos show the final assembly before painting with all detail parts added. Brass wire was used to fabricate the grab irons and pin lifters. The footboards were made from brass bar stock and scrap photo-etched roof walk material.

**Painting:**

The model was disassembled, and all sub assemblies were painted primer gray. The long hood and nose were painted yellow. The yellow is a 50/50 mixture of Polyscale CNW yellow and EL yellow. The yellow paint was left to dry for one week before the sub assemblies were masked and painted Polyscale CNW green. The frame and trucks were painted black. Polyscale aluminum was used to trim the window frames.
Weathering:

The model was first given a wash of thinned-down black paint with a brush. This fills in all of the cracks around the doors and blackened the carbody filters. The radiator shutters were given a heavy brush coat of grimy black. Next, the model was lightly sprayed with a mixture of grimy black and railroad tie brown to simulate the many years of road dirt that was accumulated on the prototype. The roof of the long hood was airbrushed with engine black, to simulate the exhaust soot on the prototype. After the airbrush weathering, a pencil eraser was used to rub off some the weathering where human contact tends to wipe off accumulated dirt on the prototype. The trucks and under frame were dusted with a beige colored chalk to simulate sand dust. Couplers were airbrushed off the model with a mixture of rust and railroad tie brown. The outsides of the coupler knuckles were polished with a sanding block. The coupler trip pins were painted flat black.
DCC and Lighting:

The 405 is equipped with a Digitrax model DH163 decoder. The front and rear headlights, front classification lights and rotary beacon were lighted with Miniatronics 1.5-volt lamps. The dual beam headlights are connected with the two lamps in a series circuit with a single 8200-ohm current limiting resistor. The Miniatronics lamps have an integral lens, which focuses the light, similar to a prototype headlamp. The tiny lamp lenses are made with a wide tolerance, and some tend to direct the light beam in random directions. When pairing up dual headlamps, I typically use a Miniatronics 20-pack, and hand pick two lamps with similar lens properties. The classification lights are also in a series circuit, but with a 1000-ohm current limiting resistor to give them a more subdued lighting effect.

Materials Used:

Atlas RS11 Norfolk and Western, RTR
Details West #166 Fuel Filler
Details West #265, MU hoses 4-cluster
Details West #126 Western-Cullen Rotary Beacon
Details West #186 Nathan M3 Air Horn
Detail Associates #1003 Dual Pyle headlight
Detail Associates #3703 Alco photo-etched fan grille 57”
Kadee # 58 Scale Couplers
Overland Models #977 Winterization Cab Window 3-pane
Digitrax #DH163 6-function decoder
Miniatronics #18-001 Incandescent lamps, 1.5-volt, 15mA, 1.2mm Dia. (.050”)

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