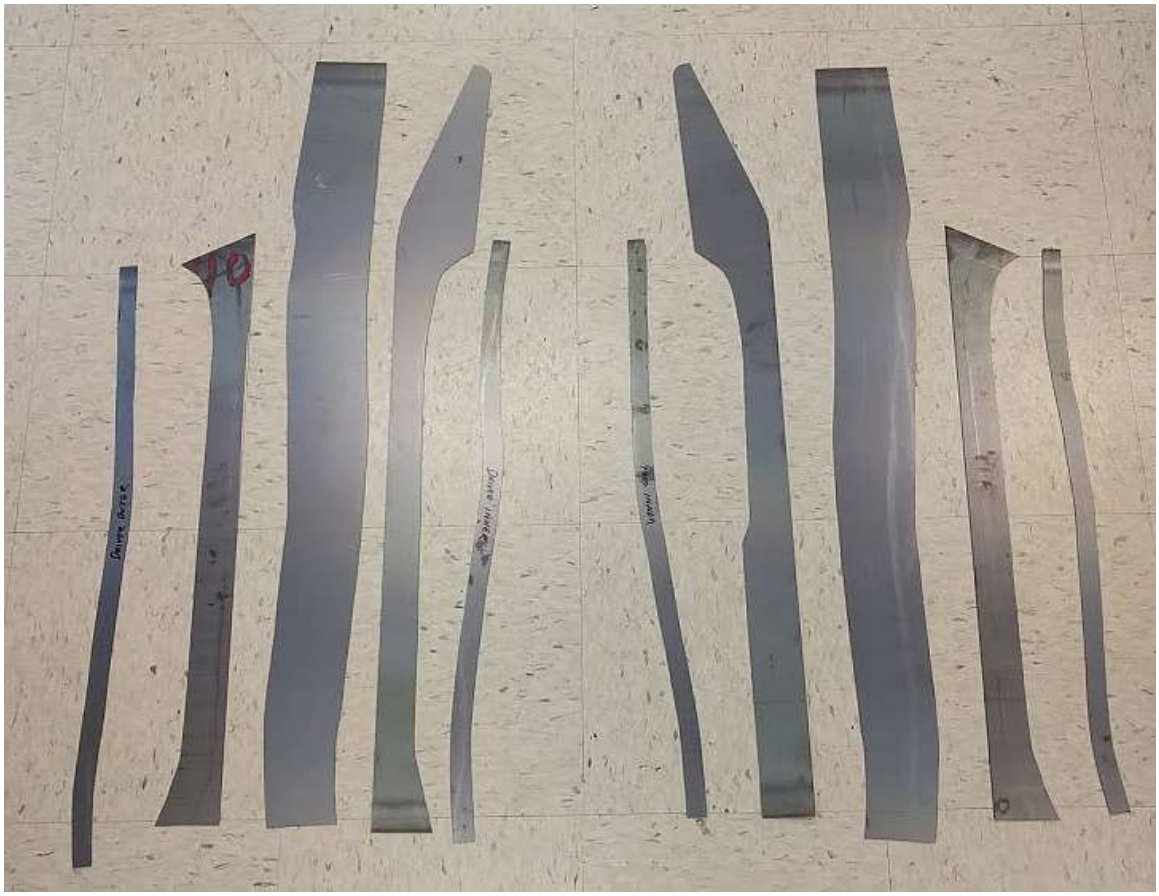
# 1984-89 Nissan 300ZX (Z31) Front 2/3 Framerail template.

Template was made from the undamaged framerails on my 1984 300ZX for use on my 1988. The final revision of the template was made from foamcore and hot-melt glue then transferred to posterboard.



The 1984 framerails had all the seam seal and factory undercoating intact so the resulting templates may be 1-2mm larger in some places, than the actual metal, however this should provide some relaxed tolerances for cutting/grinding and welding.


Material that I used was 16ga sheet steel sourced from ACE hardware (SKU 57110126). There is enough material in the 24X36 sheet for 2 sets of framerail templates. A jigsaw with a fine-tooth blade was used for cutting the steel. The steel has a protective coating on it that needs to be ground away in the areas that are to be welded. This is important for providing a good penetrating weld and reducing splatter.

The welder used was a Lincoln 140 set to #3 on the power knob and around 2-3 on the wire feed. Wire used was .030 inner-shield and a 75/25 C02/Ar mix covergas.

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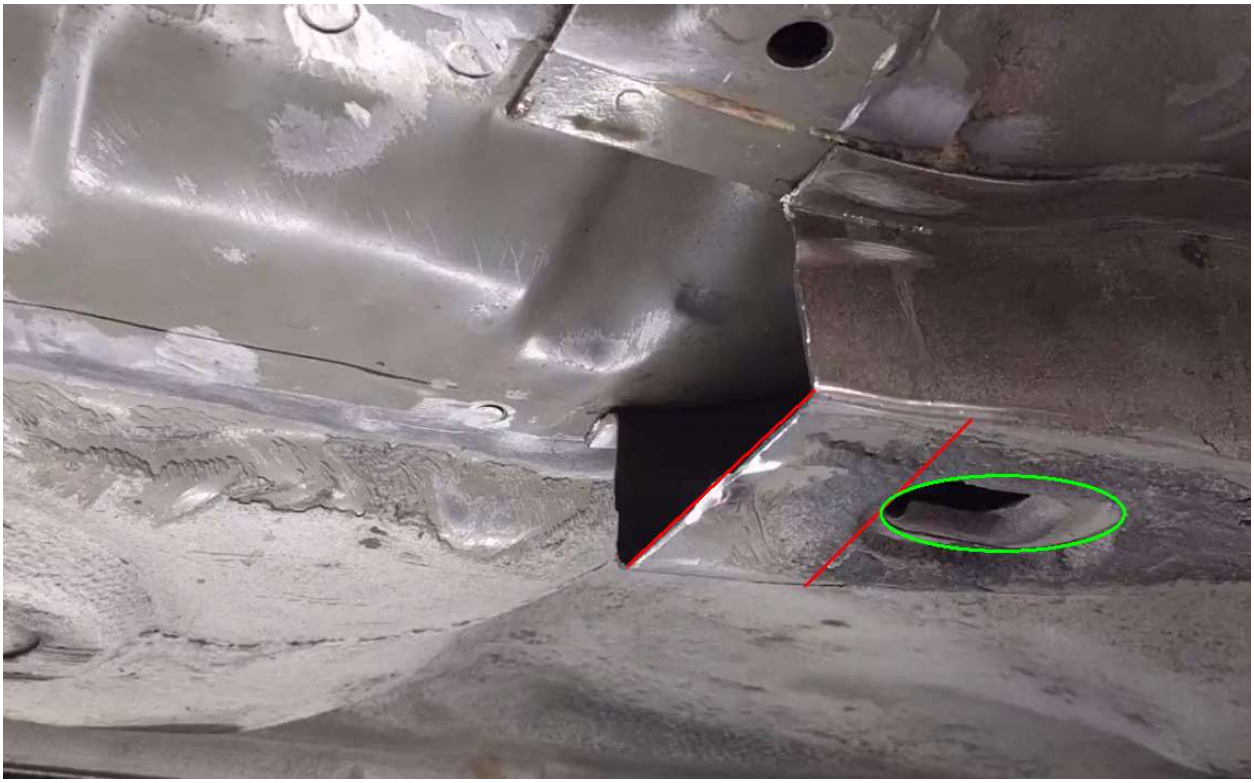
Only the front 2/3 of the framerail was replicated as that was all that was heavily damaged on my 1988. Furthermore the framerails begin to taper and contour more to the uneven floorpan in the last 1/3 section and there are also recessed features for the catalytic converter heat shield that are in that section. These could be recreated, but on my car it wasn't necessary.

The floorpan sheetmetal of the 88 had also been dented upward in the areas where the framerails suffered the most jack related damage. This created fitment issues when it came to installing the new framerail sections.

The old framerail was removed using spot-weld cutting bits from Harbor Freight (PN 63657, 95343) and a cutoff wheel  to section the rail about 30-35mm before this feature (in green) on the framerail:



The bottom panel of the template was then bent 90deg where required (using a bench vise) and preformed to match the contour of the side panels. It was then held in place with magnets to the underside of the car.

Once the bottom panel placement was acceptable, the side panels were tacked onto the bottom panel starting at the front and working back, stopping about 3-4 inches before the area where the template metal overlapped the existing framerail.

Next the top flanges (that get spot welded to the floorpan) were tacked to the side panels, front to back same as the side panels. Depending on the damage to your floorpan, this can require a lot of back and forth with fitment and hammer work.

Once fitment was satisfactory, the rear of the new framerail was cut back enough to be able to butt-weld the new framerail section to the existing framerail. The template is long enough to extend to the feature circled in green in the image above.

Fitment and welding the sections together in place on the car rather than on a bench is highly recommended due to the inconsistencies with the floor pan, the template and my own skill.

Only after the passenger side framerail was mostly welded was the recess fabricated for the speedometer cable clearance. I almost did not create this feature but decided I did not want the speedometer cable bent tighter then necessary or sticking proud of the underside of the framerail.

I closely duplicated the locations of the existing spot welds onto the finished framerail section using a 5/16 drill bit.

In addition to a lot of bar clamping, one thing that absolutely helped with getting the floorpan to snug to the framerails for the plug welding process was the creation of the C-clamp 3000.

This was fabricated from some upcycled extrusion I had at my shop but could also be fabricated from some 12-Gauge Strut Channel, available at Home Depot and a dissected bar clamp. It needs to be stiff with a deep enough throat to clear the door sill.

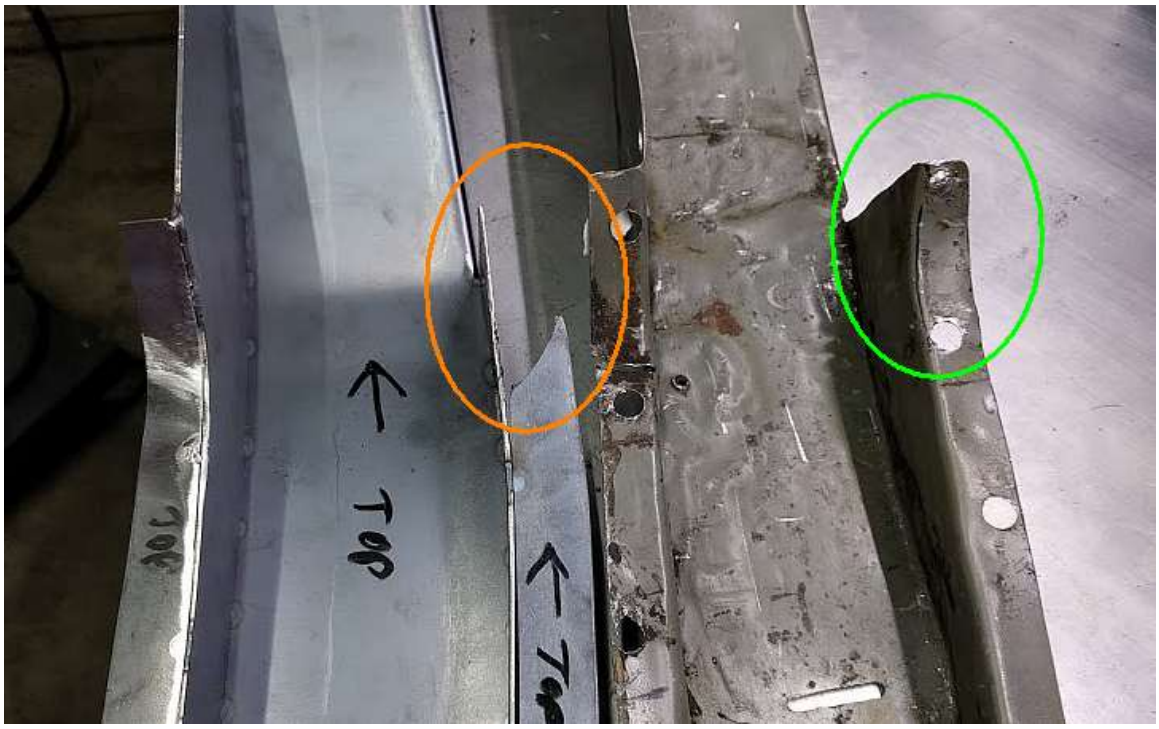
This clamp helped in two ways: It snugged the bent floorpan to the new framerails and it acted like a heatsink backing on the inside of the car to keep the plug welds from burning holes in the thinner floorpan sheetmetal.

Weld thru primer I used: UPoll #2 copper weld thru primer.

One item I did not consider was drainage. There are features on the OEM framerails that provide openings for trapped moisture to drain, I did not consider this until they were already installed.

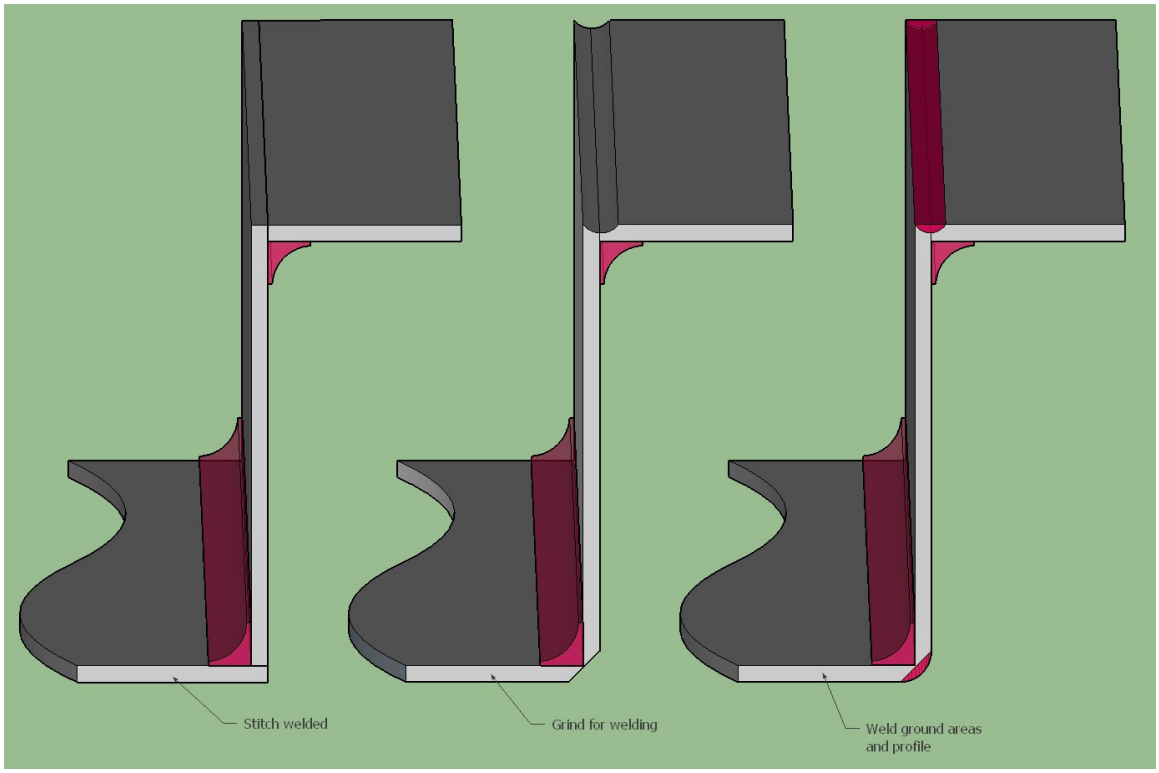
Another was fastener mounts for the oem brake/fuel lines supports. I figured These can be drilled afterward. Also, the passenger framerail has 2 captured nuts for the clutch damper mount, these are commonly removed so I did not include their locations on the template.

One area that could not be replicated as the original is the outboard side of the framerail where it tucks beneath the metal of the front framerail (circled in green).




If this feature was recreated, then the sheetmetal of the front framerail would need to be folded back in order to tuck it beneath, likely weakening it in the process. Since it was such a small area with a single spot weld, I chose to cut the replacement flange back with a matching curve so that it would butt up against the front framerails flange, where it could then be buttwelded. Where the original spot weld was located, I hammered the front framerail flange flat against the floorpan/firewall and plug welded it.

Lastly, the bottom, side and flange panel fit-up is in the orientation shown below:




The panels were first stitched together for fitment **(left)**. The outer bottom joint was ground back to remove the sharp edge and a trough was ground into the top joint **(center)**. Both areas were then filled with weld metal for reinforcement and profiled with a flap disc **(right)**.