The ‘66 Corvette Challenge

Part 7

“Back together again…”

By Pat Cavanagh NCRS #57907

In Part 6, of “***The ’66 Corvette Challenge”*** series, my C2 frame arrived back at my workshop from *Rogers Frame Restoration* in Ada, Michigan.

The frame was beautifully restored and powder coated in satin black similar to the original. Better yet, is was restored on a frame jig and it is laser straight and dead accurate. You may recall, I had Roger install a removable C3 crossmember so I could take out the transmission and clutch without removing the engine. In addition, the crossmember has the correct E-brackets to make it compatible with my other ’66 Corvette hardware.

Once unwrapped, we put the restored frame on jack stands in my workshop and began the assembly. In this article, - *WE* - means Scott Pheuhler, Kelly Bolton and myself or some combination of the three of us.

Fortunately, as you may recall from earlier articles in this series, many of the major components had been restored or rebuilt in the last several years, these include the engine, transmission, rear end, trailing arms, and brakes. This considerably accelerated the reassembly.

Frame

A new big block fuel line, a new stainless front to back brake line and new stainless steel E-brake cables were installed in the frame. New stainless steel braided brake lines were also installed at each wheel using all the correct clips and hardware.

Rear End

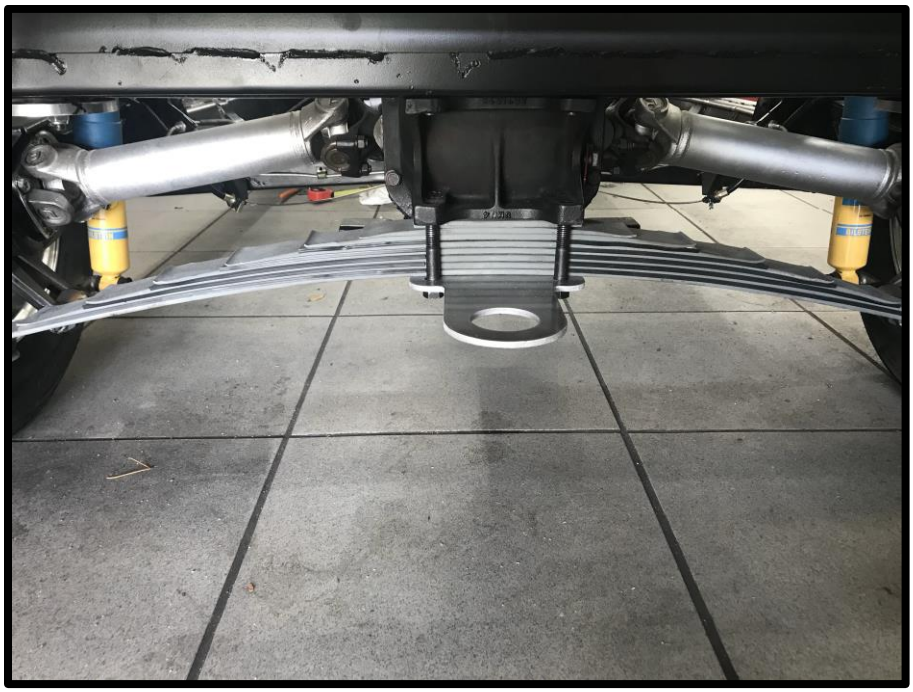
The rear end had been rebuilt several years ago at *Axles, Transmissions and Transfers* in North Tulsa. The rear end has new 3.73:1 gears with positraction. The half shafts have been balance and they have the stronger universal joints without gease zerks. The trailing arm were completely rebuilt by *V-Tech* in Rockford, Illinois, but we installed longer wheel studs in the hubs.

I used my new *Harbor Freight*, Easy Flux 125 welder to relocate the emergency brake brackets to the top of the trailing arms from the side so I would have room for wider wheels and tires.

I used special ¼ inch thick mounting tabs with grade 8 bolts from *Duntov Motors* to securely mount the rear end housing to the crossmember. Aluminum 6 inch disks were installed over the rubber donuts on the crossmember to eliminate any movement between the frame and crossmember. Adjustable rear strut rods were installed to facilitate easy camber adjustment. A C3 Corvette camber bracket was used with a ½ inch spacer between the camber bracket and rear housing to improve the rear suspension geometry. A 5/8 inch rear sway bar was installed from *Addco* with factory brackets and polyurethane bushings. This rear bar compliments the 1 1/8 inch front sway bar.

I had Ryan from *Patriot Welding* - *patriotweldingandfabrication.com* fabricate an aluminum rear tow bracket that I designed to replace the factory steel spring retainer.

Finally *Bilstein* Heavy Duty shocks were installed along with a 7 leaf F41 spring with extra long bolts for easy ride height adjustment.



Front End

In the front, all new *Moog* components were used combined with big block springs that were shortened 1 ½ inches. Heavy duty tubular tie rod ends were also installed. *Moog* offset upper A-arm shafts were used but we slotted them ½ inch to increase the available caster with the new *Borgeson* power steering box. To eliminate flex with the Borgeson power steering gear and wider race tires a *RideTech* steering box brace was mounted between the frame and the steering box.

An aftermarket 1 1/8 inch *Addco* front sway bar was installed using polyurethane bushings.

We also extended the wheel studs and added *Bilstein* Heavy Duty shock absorbers to match the rear end. Rebuilt calipers with steel sleeves and O-ring seals were installed in both the front and back.

I decided to add a strut bar to the front of the frame to eliminate any frame flex in hard cornering. I designed support brackets that attach to the upper offset A-arm shafts to mount an aluminum strut bar with heim joints that clears both the fan and water pump. I had Ryan from *Patriot Welding* fabricate these custom brackets using his plasma table and TIG torch. At the same time I had Ryan also make special reinforcements plates for the sway bar. All the parts were powder coated at *Precision Finishing* which is just around the corner off Detroit Ave. in Broken Arrow.

Roll Bar

I had acquired a older used Autopower roll bar. It had part number 7014 along with SCCA=1 stamped into one of the feet. I called Autopower but they were unable to identify it. I was told the roll bar was designed for a C2 Corvette but it needed some work on its passenger side rear support brace. Ryan from *Patriot Welding* repaired the rear support of the roll bar by inserting a steel sleeve and MIG welding everything back together so it was stonger than new and the repair was undetectable….His work is outstanding!

I did not want to weld the roll bar into the car because it would require cutting it out if I decided to remove the roll bar or take the body off again. Kelly Bolton secured four 2 ½ inch by 7 ½ inch 3/8 steel plates to match the feet on the roll bar. I drilled and tapped them for 3/8 inch grade 8 bolts. Before I removed the frame from the body, I marked both the body and frame in the appropriate locations for the roll bar. I used my 12 ton press and

3, ½ inch round pins to the bend the 3/8 inch plates to match the frame. I then matched the roll bar feet to the plates with a little persuasion.

The powder coating was removed from the frame in the appropriate places and I used my new Easy Flux 125 welder and tack welded the 3/8 inch plates to the frame. I then had Ryan from *Patriot Welding* come over to my workshop and MIG welded the plates to the frame.

After ensuring that everything fit I took the roll bar to *Precision Finishing* and had it powder coated to match the frame. After some touch up it looked like my frame was born with a roll bar. Lets just hope it fits with the body when we put it all back together!

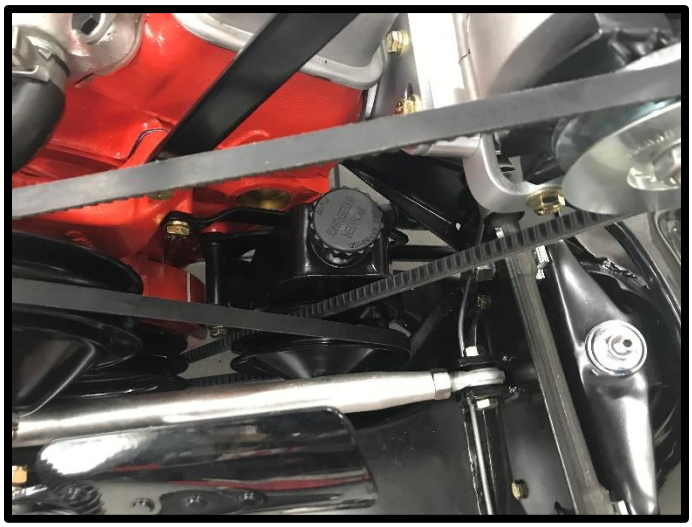
Drivetrain

When we installed the engine, transmission and driveshaft this time, they dropped right in! A better outcome than before…The *Lakewood* steel bellhousing and scattershield fit without issue and the rebuilt clutch cross shaft fit perfectly with the frame mount.

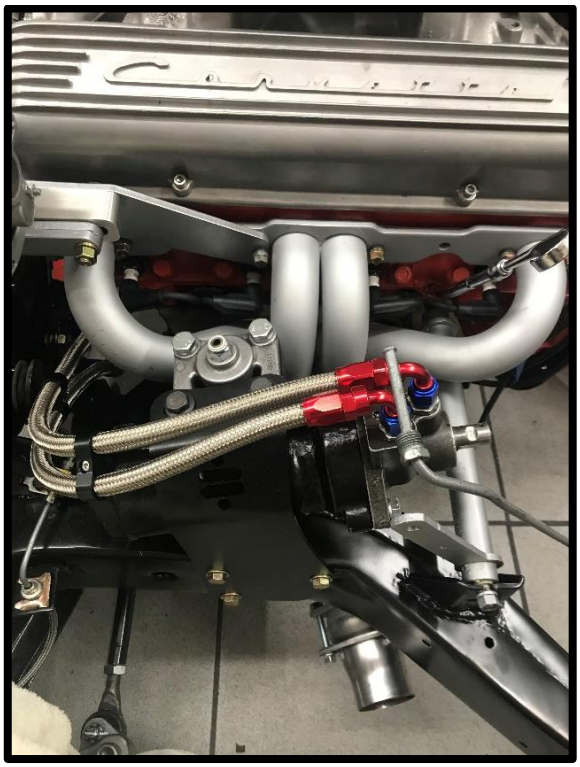
I installed the Hedman side mount headers from *Summit*, which I also had ceramic coated at *Precision Finishing*.

The stock Corvette shifter was installed on the transmission and adjusted along with the backup light switch.

After some reseach I found a way to install a two fan belt system on the engine using my existing double deep V pulleys. I use one belt for the power steering, water pump and crank and one belt for the alternator, water pump and crank. This eliminated the water pump to crank pulley. It took some aftermarket parts and fabrication because of the headers but it is an elegant solution….instead of installing that obnoxious extended crank pulley and a third belt just for power steering.



I installed stainless steel AN lines in the engine compartment from the fuel pump to the carburator and from the power steering gear to the pump. They were easy to fabricate as all the fittings were available on *Amazon*. The only issue was the installation of an AN fitting on the power steering pump return line. I had to remove the power steering pump housing and have Ryan from *Patriot Weliding* TIG weld a 6 AN bung in place of the drain tube. A lot of work, but well engineered solution that I am proud of!



I am adding all the fluids before we install the body on the frame.

This is so much easier now with the body off. I am filling the engine/ *Aviaid* road race oil pan with 7 quarts of *Champion* 10W/30 racing oil and a *WIX* 51061 filter. In the Muncie M20, I am using *Driven* 80W90 GL-4 gear oil and in the rear end I am using *Lucas Oil* 85W-140 GL-5 gear oil with 6 ounces of *Yukon* friction modifier for the posi. It will be ready to run when the body goes back on the frame next week.

Stay tuned for Part 8 where the body goes back on the frame and I figure out what to do about a fuel cell! If you have any questions on the articles in this series, you can email me at pcavanagh2012@gmail.com

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