This write up demonstrates how to convert your factory 1970-73 tail lights to full LED lighting. While the factory tail light housings and lenses will be used, they will need to be modified for this conversion. Once they've been modified, they will NOT be able to be used in the factory configuration. So think and plan carefully before proceeding.

Materials and parts:

The following is what you'll need for this conversion aside from the housings and tail lenses.

1.) 4" round LED modules. The modules are typically used by various industrial trucks, but they work perfectly for this application. I went with these units from the Big Rig Chrome Shop www.bigrigchromeshop.com. The red lens p/n is UP39440 whch is the one I went with. They have 30 individual LEDs and are extremely bright with the brake light on. Make sure to get one that is Stop/Tail/Turn capable (S/T/T or STT for short).

2.) You'll also need to get the associated pigtails, p/n UP34212

Pigtail - 3 Prong Straight Stop/Turn/Tail

3.) Flexible white "super-bright" LED light strip. These are extremely common and cheap on Ebay which is where I got mine. Get the 48 cm ones.

48cm 48X LED STRIP

4.) Red plexiglass sheet. I got mine from E-Street plastics. www.estreetplastics.com. The transparent red sheet is #2423.   Required thickness is 1/8" for this application. I got a 12" x 24" sheet so I could practice cutting it and have enough for the final pieces.

5.) Rubber edge trim material from McMaster Carr.   P/N 8510K11.
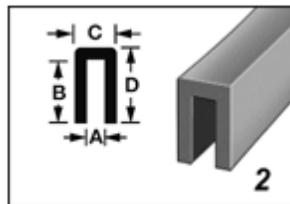
SBR Rubber

1	3/16"	7/16"	5/16"	1/2"	Black	10, 25, 50, 100	8510K19*	0.56	0.43
1	1/4"	5/16"	3/8"	3/8"	Black	10, 25, 50, 100	8510K22*	0.46	0.29
1	3/8"	13/32"	1/2"	1/2"	Black	10, 25, 50, 100	8510K25*	0.84	0.56
1	1/2"	1/2"	5/8"	5/8"	Black	10, 25, 50, 100	8510K29*	1.11	0.83
2	1/32"	5/32"	7/64"	7/32"	Black	10, 25, 50, 100	8510K11*	0.37	0.24
2	1/16"	11/32"	7/32"	7/16"	Black	10, 25, 50, 100	8510K12*	0.65	0.39
2	3/32"	21/64"	3/16"	3/8"	Black	10, 25, 50, 100	8510K14*	0.42	0.36
3	1/8"	1/4"	1/4"	5/16"	Black	10, 25, 50, 100	8510K16*	0.44	0.30

Neoprene Rubber

6.) Lastly, some ½" wide zip ties and some automotive grade double-stick tape

Procedure

1.) The first step is to carefully remove the trim ring from the tail lens. Using a screwdriver gently pry up at the two points where lens is attached. It should pop off pretty easily.

2.) Cut out the center section of the factory tail light lenses. I used a hand-held jigsaw to do this. Go slow and be careful because the plastic is fairly brittle and can crack easily. When you're done you should have this.

3.) The next step is to cut out the new tail lenses. Using the red plexiglass sheet, measure your tail lens inner diameter AT THE FRONT of the lens. Cut the lens

just ever-so-slightly larger than what you measured. The factory tail lens inner diameters are not perfectly round, so ultimately, you'll have to file/grind the lens to fit each factory tail lens. On mine, I used a bench grinder to custom fit each new lens to the factory lens.   Be patient and careful on this step so as not to scratch the plexiglass.

4.) The tail new lens should just fit into the factory tail lens with as minimal clearance as possible while resting on the ledge on the inner diameter.

5.) Remove the plexiglass lens. Take the trim ring you removed and place it back on the factory lens. You'll need to drill four holes in 90 degree increments around the trim ring and lens. You'll be using some #4-40 fasteners and nuts to hold the trim rings down. It's good to get all this fabbing and drilling done before you put the LED module in.

6.) Get the LED module and a flexible light strip. Test fit the light strip around the LED module to see where to cut it. The LED strip will be cut to fit around the module as you'll be using the double stick tape to secure it to the module. The light strip can be easily cut with a razor blade.

7.) Apply a band of double stick tape to the LED module and then stick the LED strip to it.   Take note of which side of the module will be pointing up as sticking the light strip to it accordingly.

8.) Insert the LED module assembly into the tail lens. It should slide all the way to the back of the lens and take on an interference fit. The rear portion of the module should be protruding past the back of the lens by about a ½".   This is where the ½" zip ties come in.

9.) Take two of the zip ties and put one end of each into the locking mechanism of the other, forming a loop. Then draw it closed around the back of the LED module. The two heads of the two zip ties should be diametrically opposed on the module housing. This probably isn't the most elegant way to fasten the module to the lens, but it's easy, cheap, and non-permanent so the module can be removed easily if necessary.   Unfortunately, the white zip tie against the white module housing makes a little difficult to photograph.

10.)   Get the chrome trim ring and the rubber edge trim. Cut a length of trim material sufficient to go around the metal ring. This rubber trim will keep the tail light water proof.


11.)   Remove the rubber trim and apply a bead glue (I used Super Glue) to ONLY the inner diameter of the metal trim ring. It'll become apparent why later.

12.)   Reinstall the rubber trim. The glue I used required a 24 hour cure. When the glue is cured, you'll have to carefully cut away the portion of the trim that is on the outer diameter of the ring. See the pictures below. This is due to the fact that even at 1/32" inch thickness, the rubber trim makes it impossible to insert the chrome ring back into the tail lens. The OD just gets too big. However, make sure to leave the portion of the rubber trim that will get sandwhiched between the metal ring and the new lens you just cut out. This is what forms the water tight seal. Take a razor knife and work your way carefully around the trim ring.

13.)   Install the plexiglass tail lens into the factory tail lens. Then install the trim ring. Line up the holes you drilled earlier and then fasten the trim ring to the tail lens using the #4-40 hardware, progressively working your way around the lens to ensure a uniform pressure exerted on the plexiglass lens. The picture below doesn't actually have the screws in it, it was a mock-up of the lens assy. However, I annotated the picture showing where the screws went. Drill a thru-hole and put a nut on the other side. Don't try to screw into the plastic, it's too brittle.
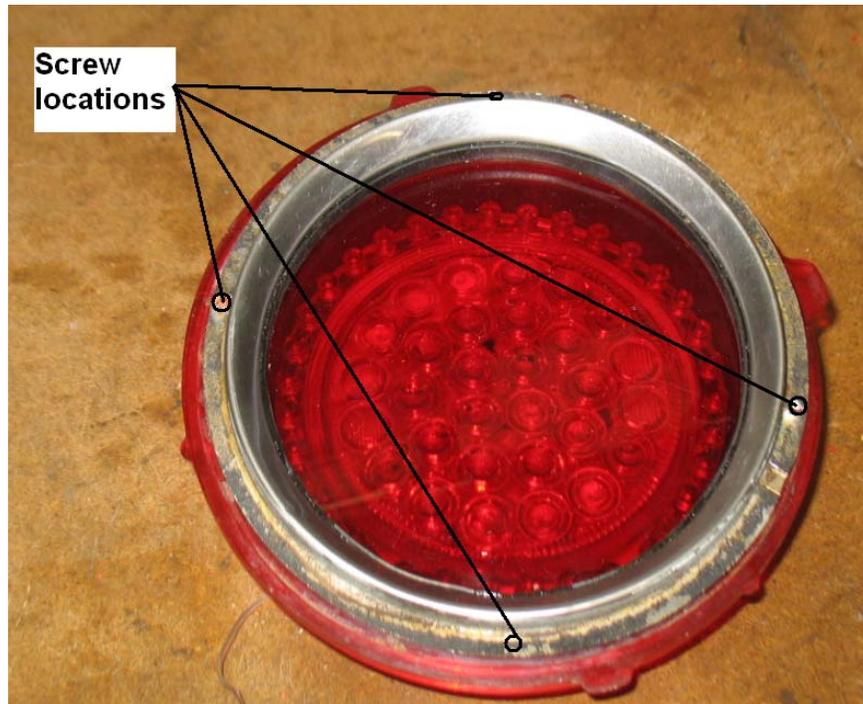
14.)   The first LED module is now complete. At this point, I took the module and ran water slowly over the face of it to see if I got a water tight seal. Better to test it and find leaks now then when on the car. Repeat the steps above for the remaining three.

15.)   The next step is to prepare the tail light housings. Again, some cutting is necessary. Using my trusty jig saw, I carefully cut out the entire flat portion of the housing where the factory tail light bulb socket inserts into. The module interferes with this portion of the housing, and removing it will also make it easier to install the pigtail sockets later. In the picture below, the areas hatched in red need to be removed.
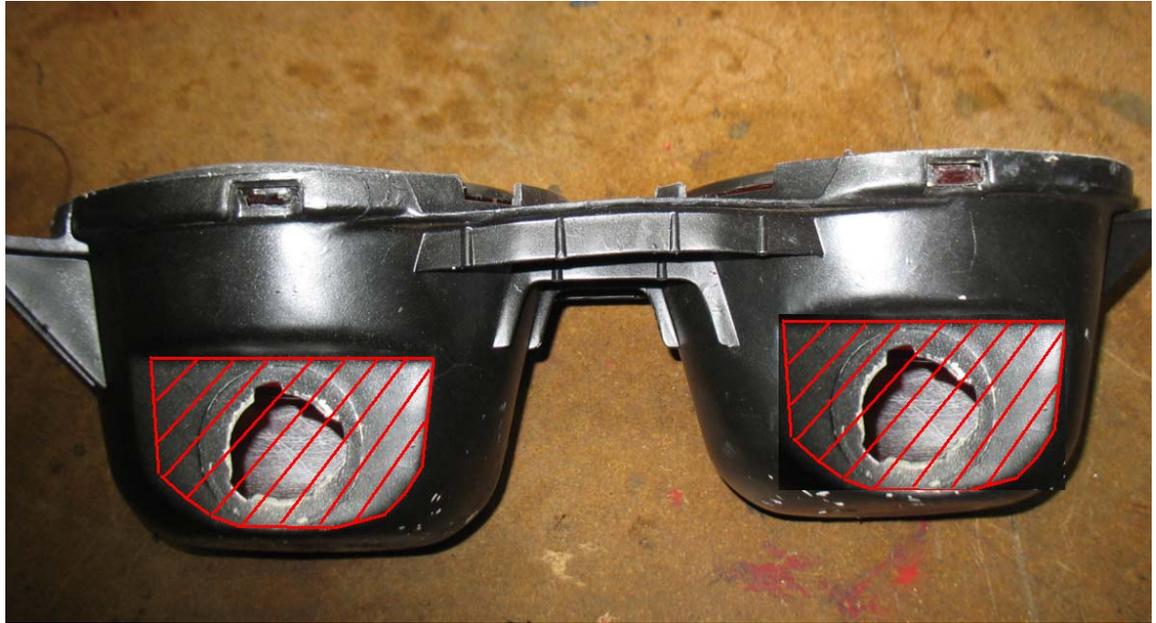
16.) After cutting away the necessary portions of the housings, go ahead and install the pigtails onto the LED light assemblies and install the assemblies into the housings just like you would the factory lenses.

17.) Put the factory tail light gaskets on, and tnstall the two housings into the rear valence panel of the Camaro just like the factory.

18.) From here it's all electrical. Cut off the tail light socket for the turn signal side of the tail light harness. On the driver side, the yellow wire is the brake and turn signal light. Whereas on the passenger side, it's the green wire. The brown wire is tail light on both sides. Black is ground. Connect the positive side of the LED light strips to the brown wire. Connect the brake light wire of the 4" LED module to the yellow or green wire depending on which side you're on. Connect the ground wires of the light strips and the 4" LED module to the black wires

At this point, the installation is now complete.