

Modern Craft and Trade: An Investigative Internship

by

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Abstract

This thesis attempts to convey my experience in two internships, as I try to find a career which will be fulfilling for me. I interned with two businesses, Williams Furniture Repair, a family owned furniture restoration shop, and American Restomods, a small custom auto restoration shop. These internships, along with supplemental research into each career, provided insight into the lives of people in these careers.

After completing my internships and research, I compiled my thoughts and reflected on my experiences. I concluded that these careers will not be challenging enough for me in the long-term. I plan on getting a degree in engineering once I finish my current major. I would encourage any other students to do a similar project to find what they want to do.

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I. Introduction

I am an audio production student at MTSU with a minor in film studies, and I have been working and taking classes in the audio field for nearly five years. In the past few years I have become increasingly aware that audio production is not where my passion lies. Though I will be finishing my degree, I do not plan to pursue audio production as a career. I talked to my parents and some friends and my parents have always supported my brother and me. They assured me that I should find something I enjoy doing regardless of money or any other outside factor.

I wish to find a career that will be more fulfilling and enjoyable for me for a long time. I have always been good with my hands and have gotten great enjoyment out of building and creating things throughout my life, so I want to find a career as a craftsman or tradesman. I believe this is what I will be the happiest doing and can be successful in. I do not, however, know exactly what trade interests me the most. I planned to use this thesis to find a trade, or field of trades, which I enjoy and am interested in enough to pursue once I graduate.

To accomplish this, I intended to spend time shadowing several different craftsmen and attempting to learn about their fields. I planned to learn about the general job requirements for each field, the specific roles and responsibilities of the people whom I shadowed, and the background and status of the industries as a whole. In this investigative internship, I intended to shadow three craftsmen, an auto fabricator who works in a custom car restoration and modification shop, a custom furniture repairman, and a set designer and builder for stage and film.

The auto fabricator works at a restoration shop called American Restomods in Buford Georgia. He is one of five employees at the shop, and the others are two mechanics, a bodywork and paint expert, and a manager. They specialize in restoring and modifying cars from the 1920's through the 1980's, but they also work with newer cars as well. As the name implies, the shop works with mostly American manufactured cars, but they also work with Asian and European manufacturers. The shop operates by creating cars for customers, not by buying and building cars to sell. This means they work with the customer to design and build a car that meets the customer's needs and fits within their budget. Because of the incredibly custom nature of each project, the fabrication involved is vastly different for every car and requires a lot of creativity and problem solving to complete.

The furniture maker works at a family-owned shop called Williams Furniture Repair. They specialize in restoration of antique furniture to its original state. They work on anything from slightly used or new damaged furniture to full restoration of antiques. This includes repairing, refinishing, and making custom replacement parts for furniture of all ages and kinds. Many different styles and construction types have been used to make furniture over the years, making each restoration a new and challenging task. The work must be precise enough that the repairs and restorations do not stand out as something other than an original piece.

The set designer I had planned to work with had recently left a large company to start his own business. Because of this, he was not working during the time I had available, and I could not shadow his career.

Thesis Statement

Working with several different craftsmen on different projects to learn about the intricacies of their jobs will help me learn about careers that I can pursue after I complete my degree. Research will help direct my decision about my future career path.

Methodology

I shadowed two different craftsmen over the summer of 2017. I chose to find three craftsmen because if one was unable to work with me for some unforeseen reason, I will still be able to compare the two remaining crafts and analyze the differences and my opinions on each. To learn as much as possible about the field of each person I shadowed, I learned about the experience and responsibilities of the person I shadowed specifically, the general requirements and responsibilities of people in the field, and the overall economic status of the field. I then analyzed the different aspects of each job and compare them to attempt to find a career for myself.

I spent two weeks at Williams Furniture Repair and one week at American Restomods. During my time with each of them I observed their daily routine and responsibilities, as well as talked to them about their careers. I asked them about their education in their field, responsibilities and challenges of their job, current and past jobs, plans for the future of their career, their favorite and least favorite things about the job, advice for anyone wishing to enter the field, and anything else relevant to their job or that they wish to share.

To keep an accurate record of my time at each job, I kept a journal at the end of each day. This allowed me to record my experiences of each day immediately after they

happened and eliminate some risk of forgetting details. I took pictures of the work I observed or helped with throughout my time with each craftsman. These things combined provided a record of my time at each job and allowed me to remember more accurately each experience as I attempted to analyze and compare them.

I also looked at the general requirements for entrance in to each field. I talked to each craftsman about this to some degree, but I also did some outside research to find the level of education or training usually required to enter each field. I also researched the typical responsibilities of each profession, the projected future of the industries, and any other relevant information related to the career. This includes the economic aspects of the career. Though money is certainly not the most important issue in my search for a future career, it is wise to know the general situation into which one is entering. I researched the salaries, job availabilities, and any other available economic information. I also attempted to break this down by region and country and hopefully learn more specific data through this.

Once I completed all my research and shadowed both jobs, I wrote a summary of both careers and comparisons between them. My analysis and personal experience in addition to the information I have gathered about each career will lead me, I hope, to a path for my future career. This process and information could possibly be used as a model for other students seeking non-traditional careers.

Previous Experience

Before I began this thesis, I had some experience in working with my hands. This experience is what led me to look at trade jobs for my internships. For example, during the spring in which I was writing my thesis proposal, I built flower boxes with my father. My parents are doing a large amount of work on their house and yard, and they asked me if I would help with this part of the project. My Dad and I bought wood, cut it to the proper lengths, and screwed together the boxes. The final products were three wooden structures each with three sides which could be partially buried in the hill behind my parent's house to provide a place to plant flowers and various plants.

Before I helped to build flower boxes, I was in a class that talked about making instruments. Inspired by the class, I decided to create a cigar box guitar. I bought all the materials, along with the tools that I would need. Unfortunately for my roommate at the time, we lived in a dorm, which I turned in to a makeshift workshop for a weekend. I cut the necessary holes and slots to join the neck to the body, and cut the neck so that it could be used as a neck and hold the strings. Then I attached the two pieces and found a way to attach strings. I ordered strings and tuning pegs from an instrument supplier, but other than that every part of the guitar was created from parts found at hardware stores. It is not the best playing instrument, but it is a decent slide guitar, and I plan to make another and learn from my mistakes to make it better than the first.

Even farther back, over spring break my freshman year of college, I refinished a rifle stock for one of my rifles. I ordered a new stock for my rifle, but I did not like the black finish that was sprayed over the wood, so I sanded it off completely. I then sanded

the rifle stock smooth and applied stain and finish to it. It turned out fine, but I'm sure I will refinish it again after learning about woodworking during my internship.

The reason I ended up in an Audio Production major is probably my tendency for working with my hands. When I was in high school, I had a good friend who was in a band. I used to do lots of "roadie" work for the band. This included loading and unloading the gear, setting up drums and microphones, and fixing instruments that broke. I used to put the drummer's kick drum pedal back together at least once a day and spent a good amount of time soldering connections inside of guitars and basses back together. These are just a few examples of my interest in creating things with my hands over the years. The trend continues back to me taking apart and modifying my toys in elementary school.

II. Williams Furniture Repair

Summary

My first internship was at Williams Furniture Repair. The shop is in Tucker Georgia, on Lawrenceville Highway. I spent two weeks there learning the skills needed to begin in furniture repair. There is no sign for this shop, it is located behind three houses, which are all owned by the family who owns the shop. Bill and Thelma Williams started the shop in 1964. When the founding couple retired, they passed the business on to their children, Nathan, Valerie, and Niles. They now run the shop, and Nathan and Niles live in two of the houses on the property with their families. In addition to the three children of the founders, two employees and Valerie's son all work at the shop.

I began my internship at Williams Furniture repair on Monday June 12th. I had talked to Nathan previously, and he had told me that I would be going on calls with him the first day. When I arrived, Nathan was busy getting ready for the day. He gathered all the paperwork we would need for the day. Every time someone sets up an appointment, either to have something repaired on site or to get an estimate for a larger job, their name, address, phone number, and a description of the job are recorded on a form. In addition to these forms for new jobs, we also loaded several finished pieces of furniture in to the back of the van to be delivered. (C.2 & C.3)

The first aspect of the business I experienced was an on-site repair. The customer was a woman who had a china cabinet damaged by a moving company. The movers had dropped the cabinet on its corner and broken off a piece of the wood. Nathan talked with the customer about the piece for a while, and then set about repairing it. I helped him

move the cabinet so that the corner that needed repair was not near anything else valuable. We then covered everything nearby with cloth to keep it clean.

Nathan started the repair by gluing the piece which had broken off back in to place. He used an industrial strength superglue. Once the glue was dry, Nathan used a putty to fill in around the repaired area. The piece did not fit exactly back in to place because the wood had broken unevenly and uncleanly. The two-part putty was mixed together and pressed in to the areas around the broken piece to fill in gaps and add extra material. After the putty was dry, Nathan used rough grit sandpaper to get the area back to the correct shape. This left a correctly shaped area which was a mix of the original finish, the bare wood from sanding, and the color of the putty. The putty Nathan used for this repair was close to the original finish color, as close as possible, but since there are only about six choices, it obviously was not exact.

After the repair was in the correct shape, Nathan began to adjust the color. He began by mixing up stain to get the base color close to the original. The stains are stored as powders and Nathan had close to 50 different colors to use and combine. He mixed these powders with liquid finish, adjusting until he got the color he wanted. He then applied the stain to the area with a cloth and his fingers, blending it in to the existing stain to cover up the edges of the repair. Once the stain was dry, Nathan started the final step, which was applying the finish. The finish was in spray cans and, like the powder finish, came in multiple colors. Nathan used several colors in several coats, allowing time to dry in between, to finish matching the color to the original. When he was finished it was very difficult to tell that there had been a repair done to the piece. I watched on-site repairs on

two tables, a piano, two desks, a bed, and a drawer during my time with Williams furniture repair, and they all had the same process.

The rest of my first day was spent delivering the items we had loaded in to the van that morning and picking up furniture that would be worked on in the shop. During the pickups Nathan would talk with the customer about the history of the furniture. He asked them what they knew about it, though often he knew more than they simply by looking at the design and construction of the piece. His knowledge of antique furniture was nearly encyclopedic, and he knew exactly what needed to be done to each piece to bring it to the condition the customers wanted.

I spent my second day working in the shop. The shop consists of five areas. There is an office where the owners can do paperwork and financial work as well as talk to customers. There is a main shop area which is full of furniture in various states, in addition to workstations and cabinets full of supplies and tools. This is where I worked, at one of the tables set up for sanding (C.4). There is also a stripping station outside where a part time employee strips the finish off furniture to prepare it for work. Between the stripping station and the main shop is the repair shop, where two full-time employees, including Niles, one of the owners, work repairing damaged furniture. On the other side of the main shop is the finishing area. This area has two rooms, a spraying room and a drying room, and is where the furniture gets finished and polished.

There are many different reasons that a piece of furniture may come to the shop, and each piece is a unique process. A piece of furniture that comes to the shop for complete restoration, for example, first goes to the stripping station. There the finish is removed with chemicals and steel wool to get back to the wood underneath. After being

stripped and drying, the piece of furniture is sent inside to the main shop. If it needs to be repaired, it is given to the repair shop, where workers can do anything from taking apart and regluing furniture that has become loose and wobbly to completely remaking parts of the furniture to look exactly like the original. After repair the piece is taken back to the main shop to be sanded and prepped for finishing. It is sanded first with rougher sandpaper to smooth out and dents or dings and to remove any remaining finish missed by the stripping station. Then it is sanded with medium grit sandpaper to smooth out the surface of the wood and prepare it to take the finish. Specialty pieces may have any number of other unique steps depending upon the individual piece and the customer's requests.

I spent my time in the main shop sanding. On the morning of the second day, I was assigned a group of chairs to sand. They were mahogany and quite intricately carved on many parts of the chair (C.14 – C.16). They had been stripped already but, due to the amount of treatment the wood had undergone before, the wood was stained and in rough shape and needed to be sanded down quite a bit. The chairs had originally been stained a reddish color (C.11, C.14, C.17). Then at some point they had been bleached, and restained on top of that. This meant that as I sanded, the wood changed colors three times before the natural wood was exposed. These chairs were very hard to work on. I spent an entire day to sand one or two completely. Everyone who worked there assured me that not all the work is that tedious and time consuming, but almost all of what I sanded was equally as difficult.

One thing that was not difficult to sand was a cedar chest. In contrast to the intricately carved chair pieces, the chest was mostly large flat sides (C.20 & C.21). When

it arrived, someone who did not know what they were doing had tried to refinish the chest themselves. They had scratched it deeply on all sides while trying to sand through the finish. By the time I got the chest it had been stripped, but there were deep scratches in the thin veneer that covered three sides of the chest (C.24 & C.25). I used a power sander to sand out the scratches and chips without going through the veneer. It was amazing to watch the transformation of this chest. By the time I was done sanding, it was no longer scratched and the wood grain was much more visible (C.26). Before I left, the chest was finished and it looked amazing compared to where it had started (C.27).

I spent some time later in the week talking with Niles, who works in the repair shop with another full-time employee. He showed me the process he uses for repairing furniture. If there is only one small piece that is broken, he can simply recreate that piece out of new wood and carve it to match the existing pieces of the furniture. While I was there he repaired a foot on a dresser which had broken off. He cut the broken piece off at a place where he could hide the seam. Then he used the broken piece and the whole one on the opposite side of the dresser to make a matching piece that looked like the original before it had broken. After he secured the new foot in place with glue and screws he gave it to the finishing shop to match the color and finish to the rest of the piece.

Much of what the repair shop does is disassembly and regluing of chairs. For these, Niles first hammers them apart with a mallet. He must hammer carefully so that he does not break the furniture pieces. Once they are apart, he scrapes off the glue that is in the joints. He then test-fits the pieces to check for gaps in the joints. If there are any broken pieces they are recreated or fixed, and any gaps in the joints are reinforced or shimmed to make the joints hold tightly. Once he is certain the chair will be sturdy when

it is reassembled, he puts glue into the joints, reassembles the chair, and clamps it so that it will dry securely in place. This means that he must glue and assemble in steps, starting with the back and front of the chair and, once they are dry, joining them together.

Though I did not get to try any repair, that is the part of the business that seems most interesting to me. Each piece is different and needs something special to bring it back to its former state. I did get the chance to try my hand at on-site repair at the end of the two weeks. One of the last jobs I went on with Nathan was to repair a bed and a desk which had been damaged. There was a large ding in the footboard of the bed, and scarring from a chair being pushed in to the legs of the desk. While Nathan worked on the bed, he told me to apply putty and sand the desk's legs. I enjoyed the challenge of trying to apply and sand the putty to match the rest of the desk and the original shape. I did not apply the finish, but I think I would have enjoyed that as well.

One of my favorite pieces from my time with Williams Furniture Repair was another cedar chest. It belonged to a couple in their nineties, and Nathan and I delivered it, finished, to them. The chest had belonged to the man's mother. She had bought it in 1919 or 1920. When they refinished the chest, they left the mother's handwriting on the inside along with the original label. The writing was dated 1944 and 1945. It was my favorite piece because of the story and history behind it, and because of the excitement from the couple at its refinished condition.

On one of my last days of this internship, I talked to Nathan about the business. He told me that twenty years ago they had lots of competition, but now their shop is one of the only ones around. I saw during my time there that they have more business than they can handle. With storerooms full of furniture, they are turning away work or putting

people on long wait lists. Everyone in the shop said over the two weeks that most of what they do is fixing other people's mistakes, which I saw with the cedar chest. Nathan said that was why they didn't have much competition. He explained that though they were typically more expensive than other shops, they did the work correctly.

I also asked Nathan about the roles of the different parts of the shop. He said that most people are better at either finishing or repair, so they choose to specialize in one. This means that the shop works better together because everyone has a single job that they are good at and spend most of their time practicing and doing. He also outlined that on-site repairs are the most profitable thing that they do. The jobs are small and usually fairly quick, so they have a higher profit margin. Repairs are the second most profitable because they take a little more time and material. Refinishing, partial or full, is the least profitable thing that the shop does. This is because it takes so much time, effort, and material to completely refinish a piece of furniture. A simple repair may take a few hours for one person, a full refinishing job can take weeks and every member of the shop, in addition to many more materials.

Lastly, Nathan gave me some general advice for this industry. He told me that there are many opportunities. The shop I worked in is one of very few in the Atlanta area, and they service a large portion of the city and suburbs. He told me that it takes a lot of people to run a shop, as evidenced by the size of their shop. He also told me that learning enough to start your own business and hire people to work in a shop takes years. To start a shop, you have to learn every aspect of the business, even if you are hiring people to do the work.

Overall, I enjoyed working at Williams Furniture Repair. It was a valuable experience in my search for a future career. The most appealing aspect was the repair shop, which is also one of the more profitable areas of the business.

Woodworking as a Career

The woodworking industry is very large and diverse. There are many varied careers within woodworking, with different salaries, hours, and education requirements, among other things. Because of the large number of individual careers, there is not much information on each specific job. In general, the jobs which require more training and skill, and the fields which have less people, will pay better and have higher job security.

According to the Bureau of Labor Statistics, the median woodworker salary was around \$30,000 in 2016, and the median carpenter salary was around \$43,000 the same year. The United States Department of Labor defines carpentry as building structures or cabinets, and woodworking as building furniture or cabinets in addition to other things, like veneer work. Because of this distinction, Williams Furniture Repair classifies as a woodworking business. Williams Furniture Repair, however, is different from most furniture builders. They often deal with high-end antiques, and charge accordingly. The level of restoration and care that they take with their products places them in a separate specialty category. Unfortunately, there are no statistics for such a category.

Both fields require only a high school diploma, according to the Department of Labor. Carpentry, according to their database, should begin with an apprenticeship. Williams Furniture Repair does not require any form of higher education or training before hiring new employees. They prefer to teach their employees how to do the work

correctly themselves. Nearly every member of the staff told me, during my time there, that they had been through several employees in the past year who were incapable of handling the job, including a few who had come with woodworking experience. So, though it may not be a formal apprenticeship, a similar approach is taken by Williams Furniture Repair to training new employees.

The carpentry industry is projected to grow by about 6% in the coming years, and the woodworking industry is projected to have little or no change. In Georgia, where my internship took place, there is a fairly low number of woodworkers. This could contribute to the slightly higher median wage than other states, such as Texas or Tennessee, which have larger numbers of woodworking professionals. This also matches up with what Nathan told me about their competition. He said that thirty years ago Williams Furniture Repair had quite a few competitors in their area. Today, as I saw during my internship, they service most of the Atlanta area and surrounding suburbs with only a few other shops to compete.

Williams Furniture Repair is unique in many other ways. For one, there is a lack of physical advertising. There is no advertising for the shop anywhere in public. They have no billboards, signs, or banners. The van that we used to deliver furniture has the name and phone number for the shop on the side, so people may see that while driving to job sites. There is also a website that can be easily found with a quick internet search. Nathan asked nearly every customer we visited how they heard of the shop, and the answers were overwhelmingly word-of-mouth. And with this system of letting their customers advertise for them by showing off their beautiful new furniture, they keep more business coming to their shop than they can handle. There used to be a sign out

front of the shop, but Nathan took it down because they did not have the time or space to take walk-in estimates or work.

The company is also owned and operated primarily by the Williams Family. This means that, though everyone makes an hourly wage and records their in-shop hours, the family keeps any profit that the business makes, either for their personal use or to reinvest in the business. Because they own and work in the shop, they have the potential to make far more than the median salary for their field, if they can do enough business fast enough.

Overall, woodworking can be a sustainable career. It is not a particularly high paying field, but there are job opportunities if you can do the work well. There is also potential for small businesses to make money, if it can handle the volume and produce quality work for which people are willing to pay high prices.

III. American Restomods

Summary

My second internship was at American Restomods in Buford, Georgia. It is a classic car restoration shop capable of complete restoration of almost any car made from 1920 until the 1980s. The shop is owned by a businessman who does not interfere much in the day to day operation of the shop. I spent four days there observing the business and talking to the employees about their jobs.

When I arrived at American Restomods, I was awestruck. As soon as I walked in the door I was surrounded by classic cars in various states of repair. There are several distinct areas of the shop. When you first walk in the front door, there are offices to the right, and a large open space to the left. Usually this space would be like a showroom for cars that are finished and awaiting pickup or the shop's cars, but while I was there a new ceiling was being installed so the area was being used as storage for unfinished cars and parts as well as some tools and equipment (D.13 – D.14). Behind the offices and the showroom is most of the shop. There is one section with two lifts to work on the cars, a lot of storage for parts and tools, and open areas to work on cars on the ground. This area has a large door for bringing in and removing cars (D.12). Next to this is the paint booth. The booth is large enough for a car and all its parts to be painted at once. It has its own temperature and airflow system to ensure the best quality paint possible (D.15 & D.16). On the other side of the paint booth, and divided from the rest of the shop by a wall, is the body shop. This too has a door for bringing in cars, and is an open space where a few cars can be worked on at once without the mess spreading to the rest of the shop (D.34 & D.35).

After the tour, I was introduced to the fabrication specialist for the shop, Joe. Joe was working on the center console for a 1968 Camaro. The car had already been repaired and painted, and even had the engine set up temporarily so that it could be started for the customer. The customer wanted a clean looking dash in the car, so all the controls for the air conditioning and windows, in addition to the vents and cupholders, had to go in to the center console. Where a storage compartment would normally be, this car would have a hidden radio, again contributing to the clean look.

The customer had bought a fiberglass center console made specifically for that model of car on the internet (D.19). Unfortunately, it was less than perfect so, in addition to making spaces for all the necessary parts, Joe had to make it fit securely and centered in the car. We began by cutting the lid off the main body to be made into a door to hide the radio (D.20). Next, he measured and found center points for all of the appropriate hardware and cut those holes (D.21 – D.24). After testing each piece to make sure that it fit correctly, we put the seats into the car. Once they were mounted, we inserted the console between them and lined it up in the center of the car (D.25 & D.26). Joe then marked placements for mounts to secure the console in place. After pulling the console out of the car, he created brackets out of steel and bent them to fit. We then put the console back in and Joe screwed the mounts in to check that it securely held the console in the proper place. He then unscrewed it from the car, removed it, and ground off the protruding screws that held the mounts in place (D.27 & D.28).

At this point the console was given to Nick, the paint and bodywork expert in the shop. He showed me how to fix the holes that had been made in the console when grinding off screws. He used an epoxy and a sheet of glass fiber to fill in the holes (D.29

– D.32), and then sanded the surface smooth with the rest of the console (D.33). The visual aspects of the console were not important because it was getting wrapped with leather later, so as long as the shape was correct it would look good. Nick also used fiberglass to secure the mounts to the console, providing extra security over the screws alone.

Other than the console, work on the Camaro progressed slowly over the time that I was in the shop. The bumpers were installed one day, which was the only exterior change. There was a lot of electrical work done behind the dash to make sure that all necessary systems would fit in the car. This wiring process is slow and tedious and involves running wires from the car's computer, located behind the passenger side dashboard, to all sensors and electronically controlled systems in the car. This means that the engine, fuel sensors, oxygen sensors, throttle wire, all the pedals, the windows and controls, the air conditioner, the blinkers, and more, all have to have the correct wires run to them, cut to the correct length, and then secured and hidden so that they will not be visible in the finished car. This is all done before the interior, dash, and many other things are finished, to make wiring and troubleshooting the electronics easier.

My second day I spent in the body shop. Nick and his assistant were working on the body of a 1971 Impala (D.34 & D.35). The car is massive, as were many cars in that time period, and thus had a large surface area that needed to be smoothed out. The first step to this is repairing any issues in the metal body. If there are dents they can be pulled out by welding a piece of metal to the dent and pulling on it (D.39 & D.40). Rusted out areas are cut out and replaced with new metal and then the welds are ground down so that

the repair is invisible. Small issues in the metal are hammered or ground close to what they should be.

After the metal is formed as close to the final shape as possible, the panels of the car have to be smoothed out. To start this process the car is coated with primer. A guide coat is then applied, which is a light dusting of black paint over the primer (D.38). They use straight sanding blocks to block sand the entire car, one panel at a time. Because the blocks are rigid and flat, any uneven spots are not sanded evenly and the guide coat lets them see these spots. Once the problem areas are identified, Bondo, a strong body filler putty, is wiped into any low spots (D.42 & D.43). Once it dries the Bondo is sanded flush, another guide coat is applied, and the process is repeated (D.44).

Nick explained to me that most car restorations would not get this treatment. If someone was restoring a car on their own they would probably not take this level of care to ensure that everything was perfectly straight and smooth. The difference is not one you would notice while the car is on the road, and a car restored to drive, even by many shops, would not need this level of time and detail. American Restomods, however, makes show quality cars. Their cars are built to be as perfect as possible even when scrutinized up close. This level of care takes a lot of time, which is one of the biggest factors in the cost of a restoration.

After the second day I moved around a lot to wherever something interesting was happening. On projects as large and time consuming as these restorations, progress is slow, and it is even slower with so many projects at once. There was the '68 Chevy Camaro (D.2), the '71 Chevy Impala (D.34 & D.35), a '65 Lincoln Continental (D.9), a Mercury Comet (D.7), and a '72 Chevy Chevelle (D.3) which were all being restored. In

addition to these, there were several cars in the showroom area including a 1930's Packard (D.5) and a Pontiac GTO (D.6), which were finished when I arrived, and a C2 Corvette, a Jeep CJ, an El Camino, and a '50s Cadillac, which had been torn down some but not worked on much.

Any one of these cars may spend a year or more in the shop before being completed. Much of what the shop does involves adding modern conveniences to these cars. This means that most of their cars look like the original but have completely modern steering, brakes, engines, and internal amenities. The most common engines used by American Restomods are LS based GM small block engines. These engines are relatively cheap for the amount of power that they provide and they can be purchased complete and ready to install. (D.17 & D.18)

Whenever an engine is put into a car that was never meant to house it, there is a lot of custom fabrication work that has to be done. When I arrived, the Lincoln Continental had already received a completely custom engine bay and the new Ford 5.0 Coyote engine had already been installed. This engine is similar to the Chevy LS engines, but the owner of this car wanted to keep the brand consistent, and Lincoln is owned by Ford. In addition to a custom engine bay to fit the engine, every part that connects the driving components must be custom made to fit this car. This means fuel lines, brake lines, coolant systems, oil systems, and any other components are made by hand to fit in each car. While I was in the shop, Joe was making custom metal lines for these systems and installing them in the Lincoln. This seems tedious and challenging, but also very interesting. It takes a lot of time and care to make everything fit efficiently in the engine bay and look good.

During the last few days of my internship at American Restomods, I learned the process of painting. I learned about the process on some engine covers that needed to be painted to match the car they were going in to. The process for these engine covers was very similar to a car or anything else that needs to be painted. First the pieces were sanded, and then sprayed with primer by Nick. After they dried a guide coat was applied (D.45), and Nick and I each sanded one cover. Using the guide coat we found any uneven spots and sanded them smooth. After sanding the entire thing smooth (D.46), we wet-sanded the covers with very fine sand paper (D.47). The fine sandpaper is required to prepare them for paint, and wet sanding keeps the paper from getting caked with dust and no longer sanding or causing marks in the covers that might show through to the paint.

Once the covers were smooth enough to be ready for paint, we dried them off and took them to the paint booth (D.48). First, the pieces got a light base coat of the paint (D.49). Each batch of paint is mixed by Nick with the appropriate color and one of several hardeners. The different hardeners are used to make the paint dry quickly or slowly in different temperatures. This is helpful for large things like cars, but for these engine covers it did not matter very much. Nick applied three coats of paint to the engine covers, allowing for drying time in between coats. When finished, the covers looked good, with no marks or imperfections in the paint (D.50).

There were several interesting cars in the shop while I was there. The first was a classic Ford Mustang (D.10 & D.11). It was mounted on a rotisserie and completely disassembled. It had also been primed to help keep rust away. This Mustang was interesting because it was a 1965 Mustang GT, which was converted to a 1966 Shelby GT350. It is one of the first 100 GT350s ever made by Shelby. It was interesting to see

the quality of work that went into the conversion, because it was sloppily done. The end product looked perfect from the outside when it left Shelby's shop, but they were notorious for hacking things up to get the job done. For example, the quarter windows on this car were cut out very sloppily. There were jagged pieces of metal that were not cut off or ground down, instead they were simply covered by interior panels. The restoration of such a unique car is very interesting, and I plan to visit the shop to check on it, as well as some other cars.

Another very interesting car was the Mercury Comet (D.7) . This car was being built by a man whose wife had passed away recently. He was the original owner of this car and has owned it since it was new. He and his wife went on their first date in the car, at sixteen years old. They took the car to the prom when they were seniors in high school. The car had a great deal of sentimental value for the family, which was very cool. The crew at American Restomods decided to leave the original windshield in the car because it still had the owners parking stickers from high school on it. Seeing the preservation of such an important car to this family was amazing. I also got the chance to ride in the Comet while it was in the shop. The rear differential had a factory defect so it was incredibly loud, but it was an awesome experience riding in a fully restored classic.

My experience at American Restomods was educational and interesting. I have a passion for cars, and working on them for a living is a tempting idea. This shop does extremely careful and high-quality work, and everything is different and challenging, which appeals to me.

Auto Restoration as a Career

Automobile restoration, and automobile work in general, is fragmented and divided much like woodworking. There are many specific roles within a shop, and shops that provide specific services. There are auto shops for exclusively paint, body, exhaust, or other specialties. There are also shops which specialize in a specific make, model, or era of car. Because of these many specialty aspects of the industry, general statistics may be misleading for some jobs.

The Bureau of Labor Statistics lists the median annual salary of automotive mechanics at around \$38,000. This is not the only aspect of automotive work however, as evidenced by the different specialists at American Restomods. According to the same source, the Occupational Outlook Handbook, auto glass and body repairers are listed at around \$40,000, auto paint workers median is around \$35,000 yearly, and electronics specialists have a median yearly salary of \$55,000. All of these jobs are projected to grow or stay the same in the coming years.

Mechanics and Electronics workers are expected to have some sort of education in their field, but this is usually a certificate of some sort and not a degree. Paint and body work specialists usually receive some type of on the job training. In both cases a college degree is not required. The people who work for American Restomods support the claims of the Department of Labor. There was one full-time mechanic at the shop, Dave. He has been a mechanic for years and received training from several courses over the years, which he explained to me one day. The fabrication specialist in the shop, Joe, started out working in Audio Production, which is what my current major is. He then started welding and learned on the job, and eventually transitioned into auto fabrication. The paint and

body guys had been working in the industry for a long time and had received on the job training for all of their skills.

American Restomods, much like Williams Furniture Repair, is different from most businesses in its industry. The shop serves high end clients, who are willing to pay large amounts of money for their cars to be perfect. The Camaro that I did some work on during my time at the shop, for example, will probably cost its owner around \$200,000 by the time it is finished, according to the guys at the shop. That cost includes some work done by a different shop, and the work American Restomods had to do to fix it, so this particular car is a little more expensive than it needed to be. It is not uncommon for cars coming out of the shop to have cost more than \$100,000 to build, and many exceed that price by quite a bit.

An alternative to working for a shop is to work on ones own. Joe explained to me that there are people in the high-end restoration business who work on their own. They know how to do every aspect of the business, and can completely restore a car with little to no help. He explained that it takes much longer to complete a car working by yourself, but by working 40-hour weeks a single person can complete a restoration in less than a year. If the car is of the same quality as a restoration from this shop and can also fetch a \$150,000+ price tag, then a single person could be making six figures a year to restore a car. This business model does have its own set of challenges, however. Working completely on your own is difficult, and any extra help you need takes from your profit. The individual also must be able to budget their money from one restoration to last through the next one, which can be a long time.

Perhaps the most profitable aspect of this business is owning the restoration shop, if it is managed correctly. My goal if I entered this field would be to own my own business, though what form that business would take or what aspect of the industry the business would service I do not know.

IV. Reflections

Summary and Comparison

My time at both Williams Furniture Repair and American Restomods were enjoyable, educational, and informative. I got to experience the daily lives of people in these two careers, and talk with them about their jobs. This kind of experience is invaluable for me in trying to decide my future career. I am interested in both fields, and I found working in even the most boring aspects of them to be tolerable. I learned so much in the weeks I spent at each of these businesses, I could not even attempt to record it all.

These two jobs are linked primarily by my interest in both fields. They are both fields which involve working using tools and materials to create a finished product. In both cases, the finished product is created from an old, worn, or damaged original piece. This was by coincidence, and my interest in in working with my hands primarily, and not specifically in restoration. Getting to see projects restored that mean a lot to the customers, such as the cedar chest or the Mercury Comet, which have immense sentimental value to the customers, was incredible.

The two businesses are in entirely different industries, but they share a lot of things. First, is their dedication to quality work. Both businesses prided themselves on being among the best at what they do, and both charged heavily for the quality that they produce. This high price associated with both businesses comes mostly from the degree of time and care that is put in to their work. They do not rush, and let their customers know up front that quality costs time and money. Both businesses also told me that they

spend a lot of time fixing mistakes made either by well-meaning amateurs, or by other shops without the same experience and dedication to quality.

Obviously, an automobile restoration has a much larger and more complicated product, and takes much longer to complete. A car may spend well over a year or close to two years in the American Restomods shop, while a piece of furniture is probably not actively worked on for more than a few weeks at Williams Furniture Repair. For me, the increased turn-over at the furniture shop makes up for the simplicity of the pieces, and allows for some variance in the work done over time.

American Restomods was started by a business man and company owner, after he sold his previous company. Because of this, they had the initial investment for the shop, which is much higher than for many other industries. There is a lot of large and expensive specialty equipment involved in auto restoration, and a large amount of space required to do the work. For the employees of these types of shops, however, there is typically less risk and investment involved, as all they need is their own hand tools and they can be hired by a shop to work.

Williams Furniture Repair, in contrast, was started in 1964 by a couple who wanted to own their own business. They rented a shop space until they could afford to have the current shop built on their property, and now their children still use the shop and the houses built near it. The initial investment in a woodworking shop is not as much as an auto shop, and the space required is much smaller.

Both shops have employees who are experts in specific tasks, and who do those things extremely well. This is one of the few things that does not appeal to me about

working in a shop like these. I am too interested in many different things to specialize in one and only do that. The repetitive nature of many of the aspects of these careers are a major negative for me. The two aspects of these shops that seem to have the most variety and creativity are the repair aspect of the furniture shop, and the fabrication aspect of the auto shop. These both have unique challenges on each project and must creatively overcome obstacles.

My Future Directions

The point of this thesis was for me to look for a career to pursue which would be challenging and fulfilling for me. The experience of the internships has helped me to move toward that goal. I learned a lot about these two careers, and about myself and my preferences. Immediately after finishing the internships I was convinced that I should pursue a career in the automobile industry. I have a love for cars and want to be involved with their creation in some way.

The more I thought about my future career, and the daily schedule of the employees of these shops, the more it did not appeal to me. I do not think that either of these careers will be intellectually challenging enough for me long term, despite my interest in both. Because of this, I plan to pursue a degree in Engineering. I do not know what type of engineering or where I will study, but this was my plan before I started in Audio Production, and I feel that this will be the most gratifying path for me.

I plan to continue in the style of this thesis, investigating individual aspects of the engineering field to find what specifically I would enjoy doing most. I hope to be able to shadow at more businesses and see what their jobs are like on a daily basis. I also want to

do more of my own projects at home to learn what I enjoy, and build skills that I can use in my future career.

Advice to Future Students

The best advice I can give to someone who is considering a project like this one to explore potential careers is that experience is invaluable. There is so much that I learned from this experience, not just about the careers which I studied, but about myself. There is no substitute for real-world experience, and going out and doing things is the best way to learn about them. All of my research on these careers was not even close to as valuable to me as the time I spent in the shops working alongside the professionals.

If I could change anything that I did, first I would intern at more businesses. I feel that more experience in more varied careers would only strengthen my knowledge and help me make decisions regarding my future. I would also say take every chance you can to actually do something. I regret not taking offers to help work on something because I was nervous about messing up or busy trying to watch something else. Again, more than anything, just go and experience things. There is no substitute for experience.

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Appendix A: Williams Furniture Repair Daily Journal

I am interning for two weeks at Williams Furniture Repair and Restoration Shop. It is family owned and has been in business since 1964. The shop is located behind three houses on land owned by the family.

Day 1: Monday June 12

I arrived in Tucker at the shop at around 7:30 am. Nathan, the owner of the business, at the shop. He prepared the paperwork for the day and we loaded the truck with two refinished game tables to be delivered. Nathan asked me to wear shorts and a polo shirt because we were delivering and picking up furniture from customers.

The first job we went to was an on-site repair. The customer had a china cabinet which was damaged by a moving company. There was a piece of the corner of the cabinet which had broken off. Nathan glued the piece back in place, filled the cracks with epoxy, sanded it down, and stained the area to match the rest of the piece. The entire process took around two hours.

Next, we picked up a shelf/ toy chest built together by a customer's grandfather. She wanted it restored and made safe for her 14-month-old son to use for his books and toys. After talking with her for quite a while about what she wanted done to it, Nathan wrote her a referral and we loaded it in to the van.

Next, we delivered the two game tables to a clubhouse at the front of a small living community. This was simply unloading and assembling the two tables.

After this delivery, we ate lunch and talked.

In the afternoon, we picked up two more tables to be repaired or refinished in some way.

Throughout the day I talked to Nathan as we drove. We talked about his business some, but mostly we talked about random things. He pointed out that I enjoy cars a great deal. That has me thinking more and more about doing something with cars.

Day 2: Tuesday July 13

Today I spent the day in the shop. There are 5 full time employees. Nathan and his two siblings all work full time.

I spent the day sanding a set of chairs in order to prepare them for staining and finishing. I was sanding them by hand for 9 hours, and only finished three chairs. The chairs are intricate and difficult to sand. I am exhausted and today was frustrating.

Several of the employees make new part or repair parts. This is interesting to me, and I will try to spend time with them at some point

Day 3: Wednesday June 14

Another shop day. I spent the morning sanding chairs, though today I got to use a power sander. I am unsure if this is because I was too slow or if they thought I was trustworthy enough. This was still tedious and boring.

Part way through the day, I was asked to sand a cedar chest. It was covered with a thin wood outer layer on three sides and the lid. Unfortunately, at some point someone very stupid had tried to restore it and had only scratched the hell out of it. I was tasked

with using the sander to get the scratches out of the front and the grime and finish off the bottom and back.

As tedious as the chairs have been (and I've only done 4 out of 7), I expected this to be just as bad. It was much better, however, partially because the surfaces were large and flat, but also because seeing something go from beat up and ugly to smooth and nice is quite rewarding.

I had all but made up my mind about this internship but I may be changing my opinion.

Still exhausted, though I am staying with my grandparents now about two minutes from the shop. Deliveries all day tomorrow. Will ask Nathan questions on the road.

Day 4: Thursday June 15

I forgot to write an entry on Thursday night, so I am writing this on Sunday. I did ask Nathan about doing new things next week so hopefully I will do something besides sand tomorrow.

Thursday, I went out with Nathan and picked up furniture. We picked up and dropped off furniture to a lot of different people. Nathan seems to like interacting with the customers more than anything else.

We delivered a cedar chest to a couple in their nineties, which had belonged to the man's mother. She bought it in 1920 and it still had her writing from 1944 & 1945. It was so awesome seeing their reactions to the restored piece.

Day 5: Monday June 19

Today I was in the shop all day. I spent a while sanding, still on the same chair set. There are more employees than I originally thought. Chris, Nathan's nephew, just got back from his honeymoon and has joined me in sanding these chairs. The sanding is miserable, but many other aspects of the job are not.

I spent the last part of the day talking with Niles about his job, the repair work. He showed me how he disassembles furniture with a mallet. After the furniture is apart, he repairs any broken joints or linkages and removes any old glue. He then glues, reassembles, and clamps the furniture. This is the process for all loose and rickety furniture.

This is a large puzzle, and each piece of furniture is different. I think this would provide a good challenge for me and allow me to remain interested long term. I plan to learn more about this side of things this week.

Day 6: Tuesday June 20

I came home sick after a few hours of sanding and miscellaneous tasks. I have been in bed all day. I am going out on calls with Nathan tomorrow so hopefully I will have an easy day to recover.

Day 7: Wednesday June 21

Today I was out with Nathan and we talked extensively about his business and his opinions on it. We also made lots of pickups and deliveries all over Atlanta.

Appendix B: American Restomods Daily Journal

Day 1: Monday July 10

I started interning (shadowing) at American Restomods today. It is a classic car restoration and restomod shop. They specialize in restoring car from before the 1980s.

There are five employees at the shop, which is capable of complete, ground-up restoration of nearly any car.

I spent the day with the fabrication guy, whose name is Joe. We spent the day making a center console for a 68 Camaro. This car is owned by a very wealthy business owner, who was at the shop today to check on the car.

The shop mostly does LS engine swaps in to classics, along with new drive trains and suspensions and brakes. That is also the case for the 68 Camaro.

There are several other cars in the shop, including a Chevelle SS owned by an Atlanta Falcons player.

There is one fabrication guy, Joe, a mechanic, Dave, two body/paint guys, Nick and his intern, and two office/misc guys, Frank and Blake. The owner, Ralph, is rarely at the shop.

Day 2: Tuesday July 11

I spent all day today doing body work on the ugliest 71 Impala to ever exist. It is in pretty rough shape, but the end goal the customer wants is just awful.

I learned a lot about the processes of bodywork, which I will detail in my later writeup. I also photographed almost everything.

Some small miscellaneous things got done on the Camaro and the Chevelle today, but I was not really a part of them.

Day 3: Wednesday July 12

Today I bounced around a lot. Joe worked on assembling the Lincoln, which has a Ford Coyote 5.0 swap. There is a lot of tedious custom work that goes in to the setup and assembly of the engine bay and systems. All coolant, gas, brake, etc systems are custom made on each car.

Dave was doing final adjustments on a Comet that came in. It was a special case, because the owner restored it after his wife passed away, they went on their first date in that car at 16 years old. That was really cool to see.

When a car is done like that someone drives it for a while to find any issues. In this case, among other things, the rear differential tore itself apart due to a manufacturer assembly defect.

I spent a long time with Nick learning to prepare pieces for paint. We sanded, primed, wet sanded, and prepped engine covers for an LS3 in a 55 Belair. They will get painted tomorrow.

I will also talk with Frank tomorrow about the business side of the shop and some other general things. I took a lot more pictures today.

Day 4: Thursday July 13

Today was my last day at the shop. This morning we finished prepping the engine covers for painting and I watched Nick paint them. It was not nearly the same as a car, it showed me the process, which I photographed.

I did a lot of random tasks, helped with small things around the shop, and asked a lot of employees about their backgrounds and careers.

I also got to ride in the Comet today, which was really cool, despite the extremely loud differential. Riding in a car like that only reinforced my love of cars and desire to work in this or a similar field.

Appendix C: Williams Furniture Repair Photo Journal



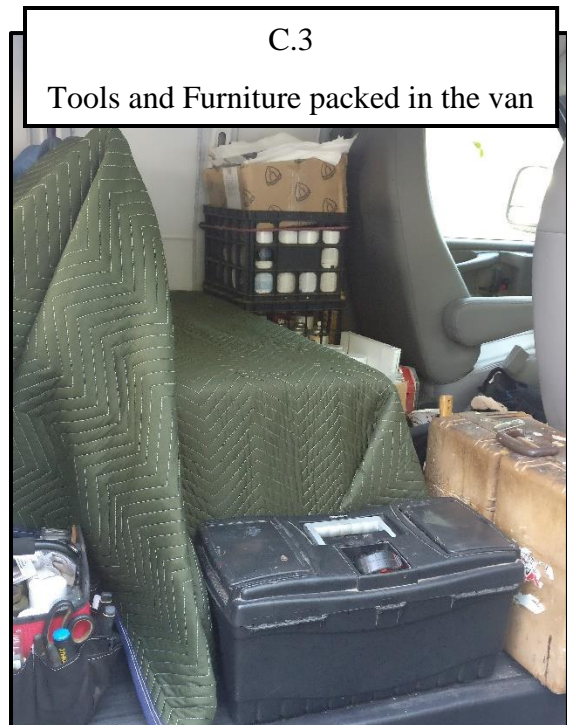
C.1

The Williams Furniture Repair van



C.2

The van packed for deliveries



C.3

Tools and Furniture packed in the van



C.4

My workstation in the main shop



C.5

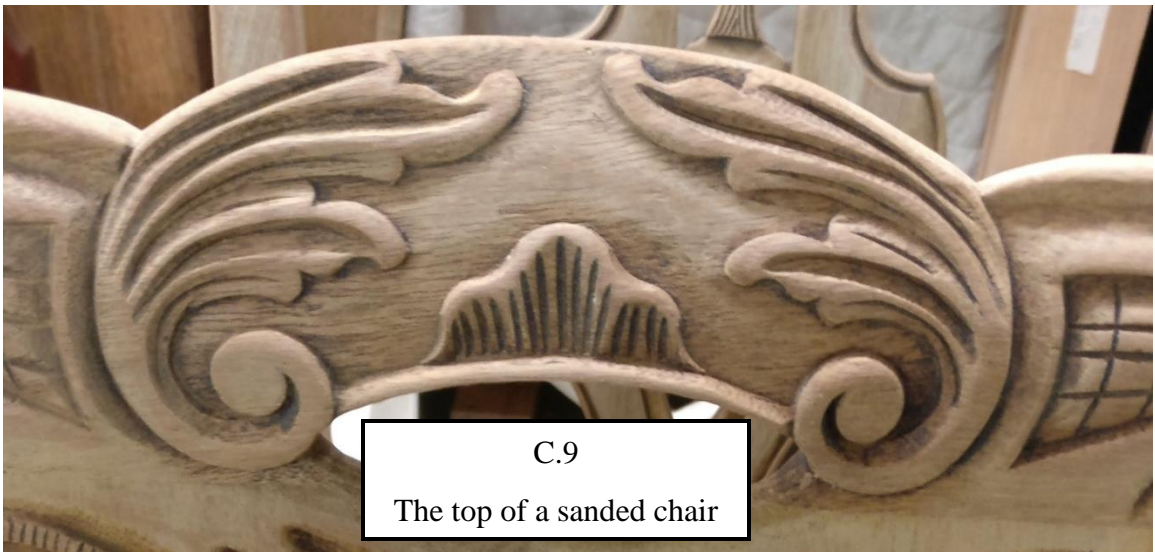
Completed work waiting to be
returned to customers





C.8

The top of an un-sanded chair



C.9

The top of a sanded chair

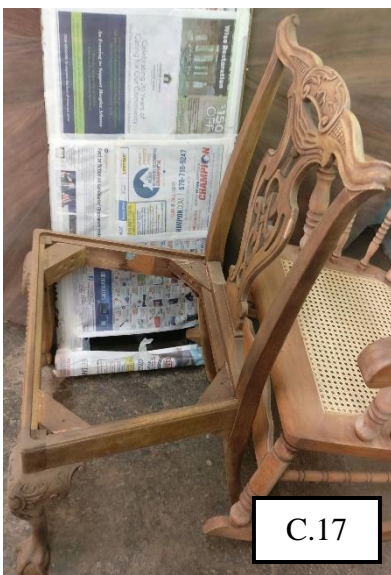
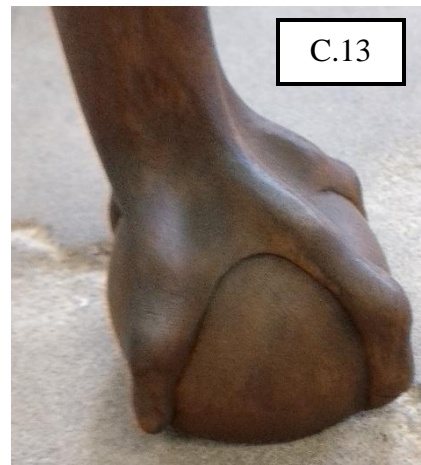


C.10

The top of a sanded and stained,
but not yet finished, chair

C.11 - C.19

Comparison of chairs. Stripped but not sanded (left), Sanded (middle), and Stained but not finished (right)





C.20

C.20 - C.22

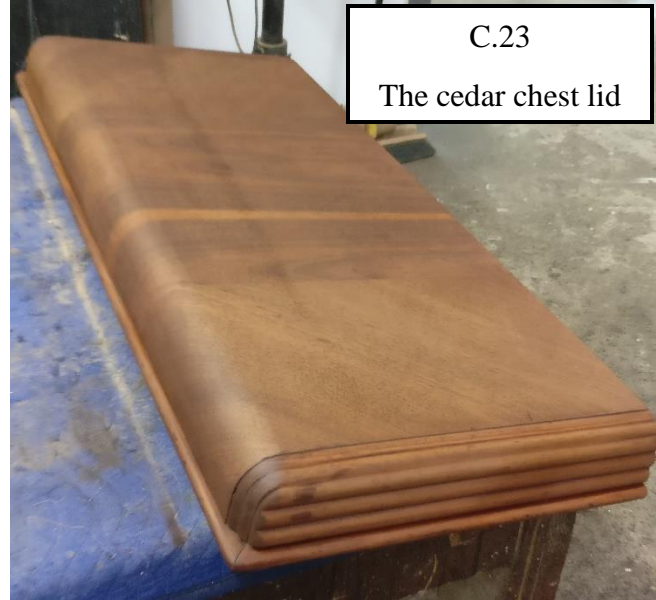
A cedar chest during the sanding process, trying to remove scratches from the veneer



C.21



C.22



C.23

The cedar chest lid



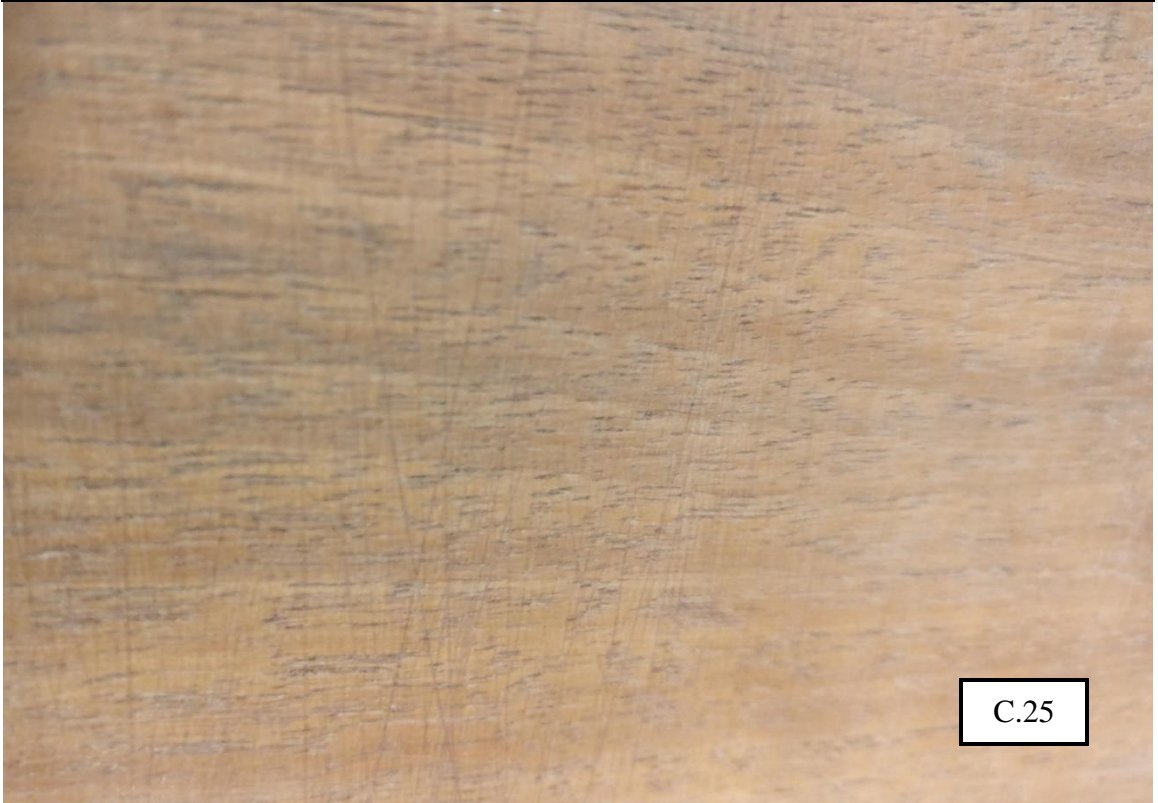
C.24

The finished cedar chest, minus lid



C.24

C.24 & C.25
Close up shots of the scratching on the sides of the cedar chest



C.25



C.26

Repaired veneer on the cedar chest after finishing



C.27

The finished cedar chest waiting to be picked up

Appendix D: American Restomods Photo Journal



D.1

A Cadillac owned by a shop employee



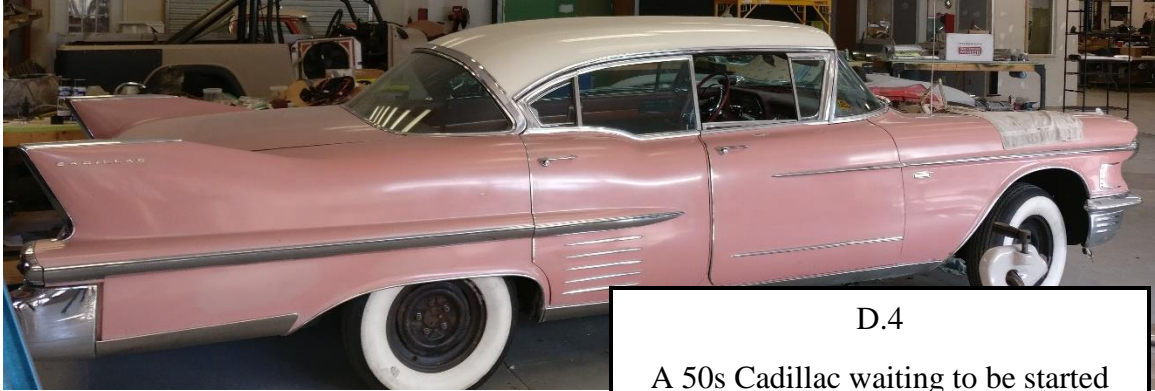
D.2

The 1968 Camaro



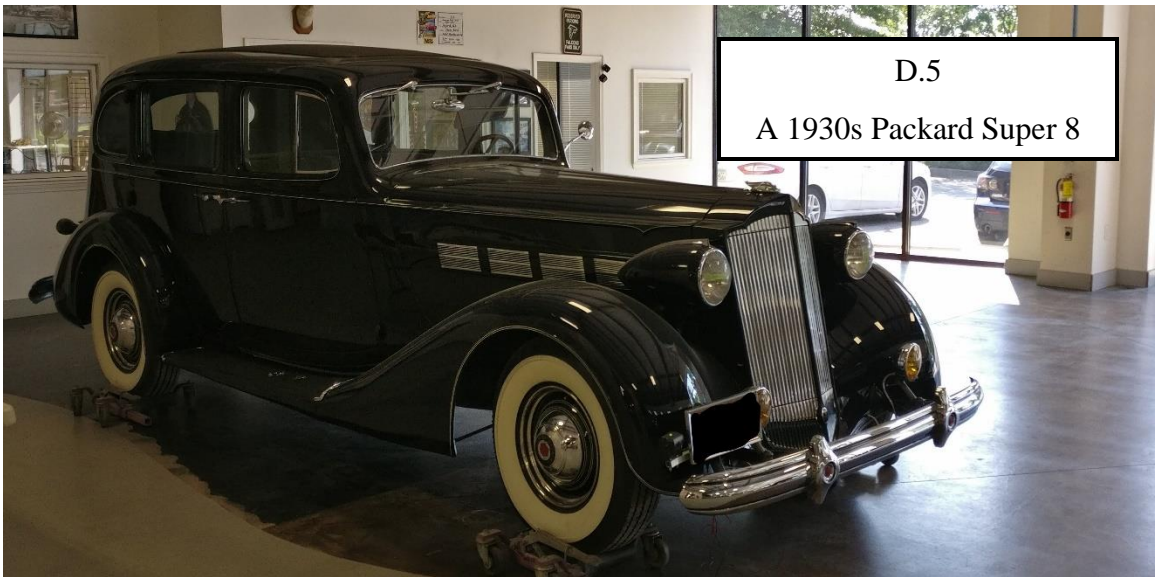
D.3

The Chevelle



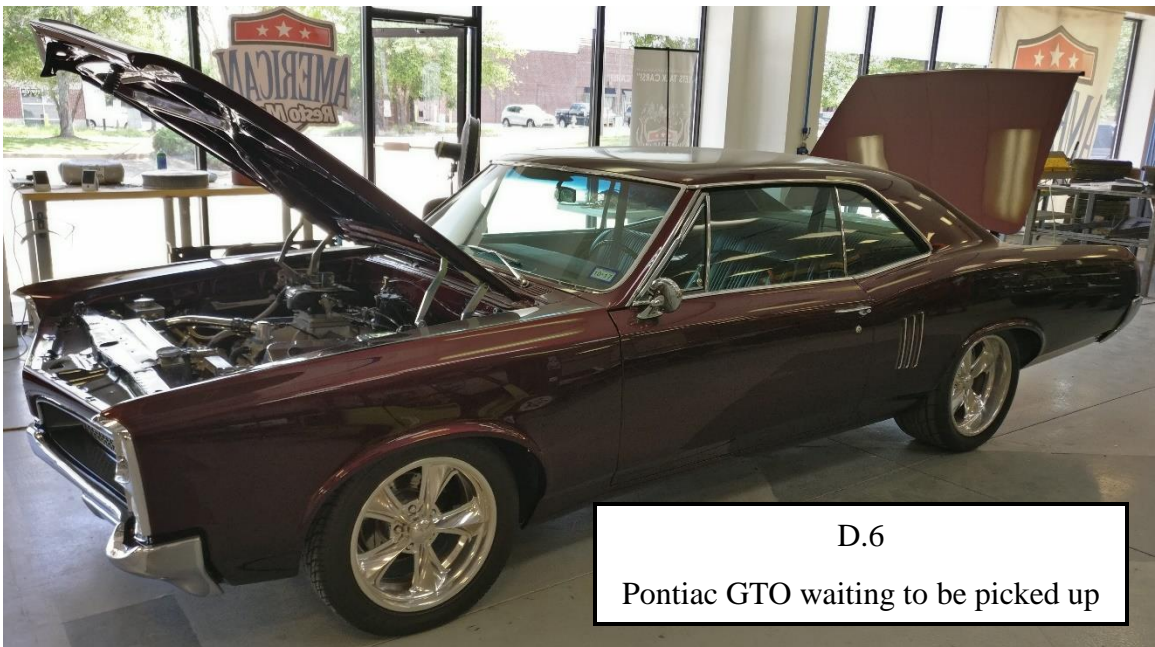
D.4

A 50s Cadillac waiting to be started



D.5

A 1930s Packard Super 8



D.6

Pontiac GTO waiting to be picked up



D.7
A Mercury Comet



D.8
A classic GT350
brought over by a
neighboring shop



D.9

Lincoln Continental
with a Ford 5.0 swap



D.10

E.10 & E.11

One of the first 100 Shelby GT350s ever made, on a rotisserie



D.11



D.12
The main shop full of cars



D.13
The front room being used
as storage



D.14
The front room from
another angle



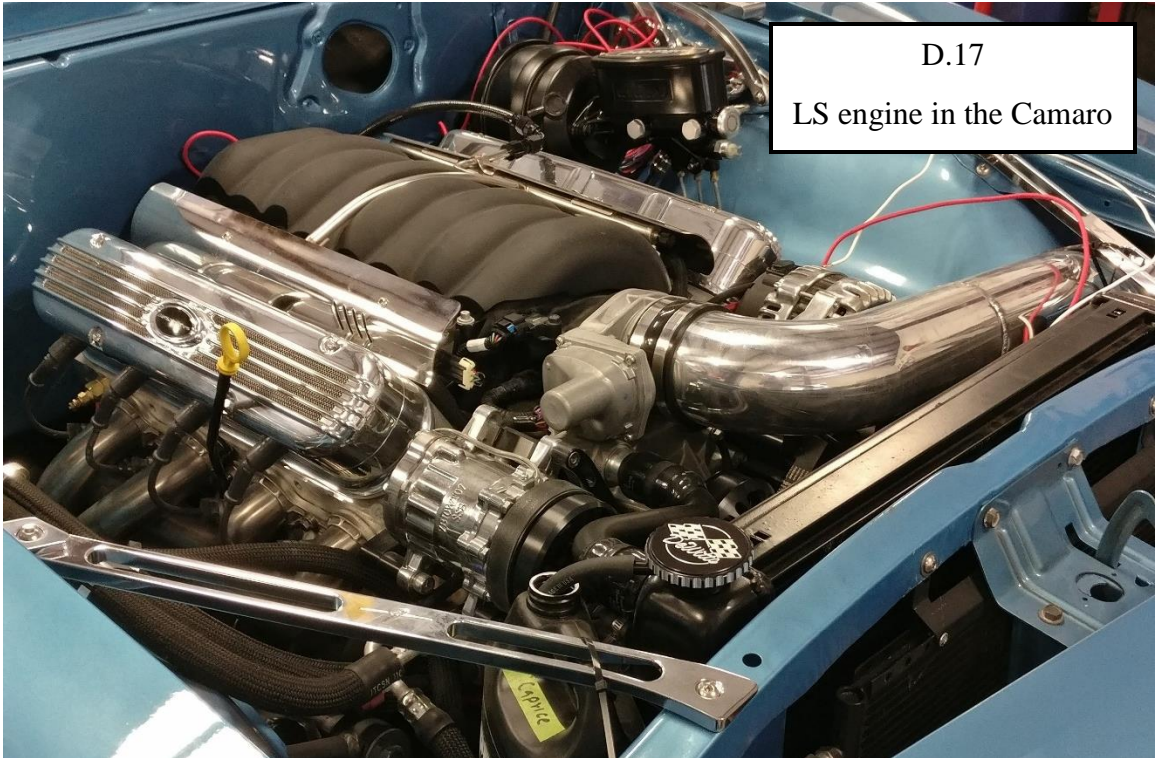
D.15

D.15 & D.16

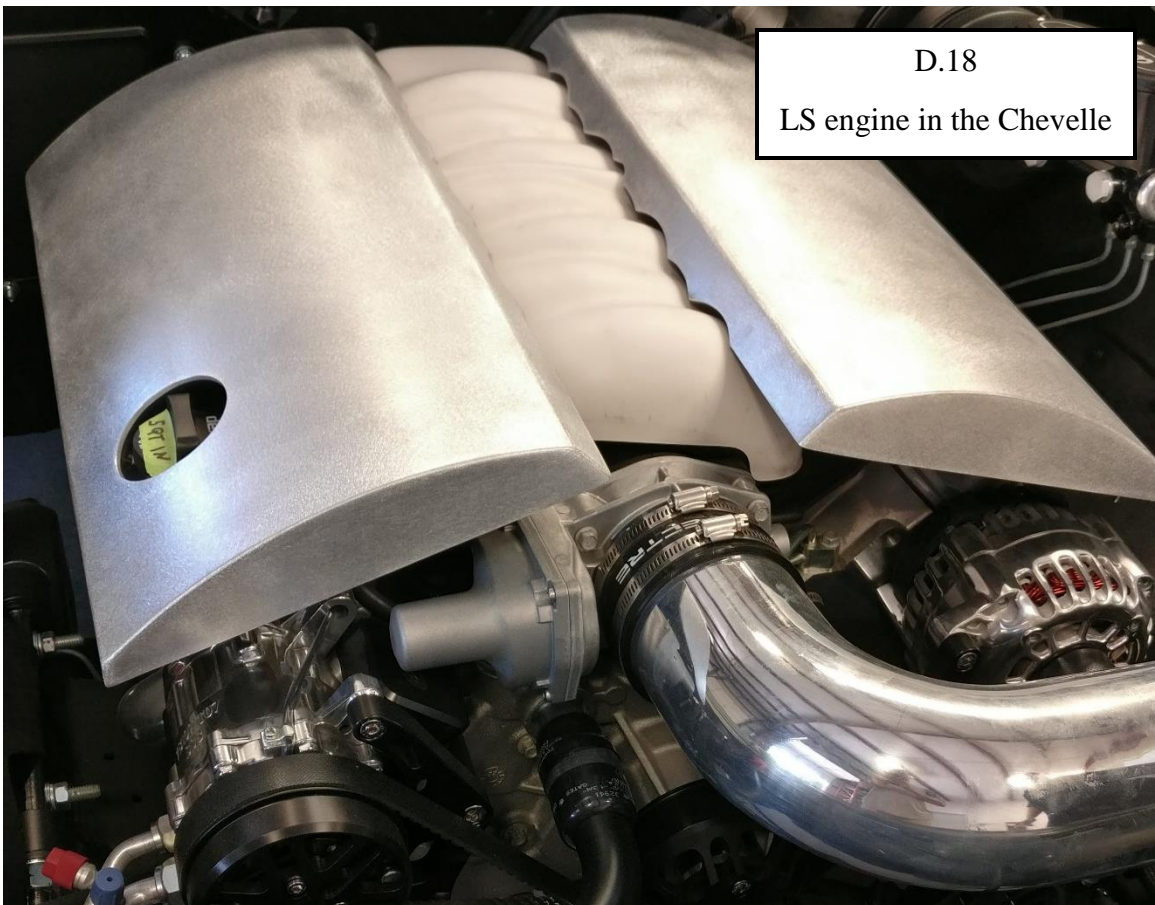
The paint booth from the outside and inside, both looking at the wall of air filters.



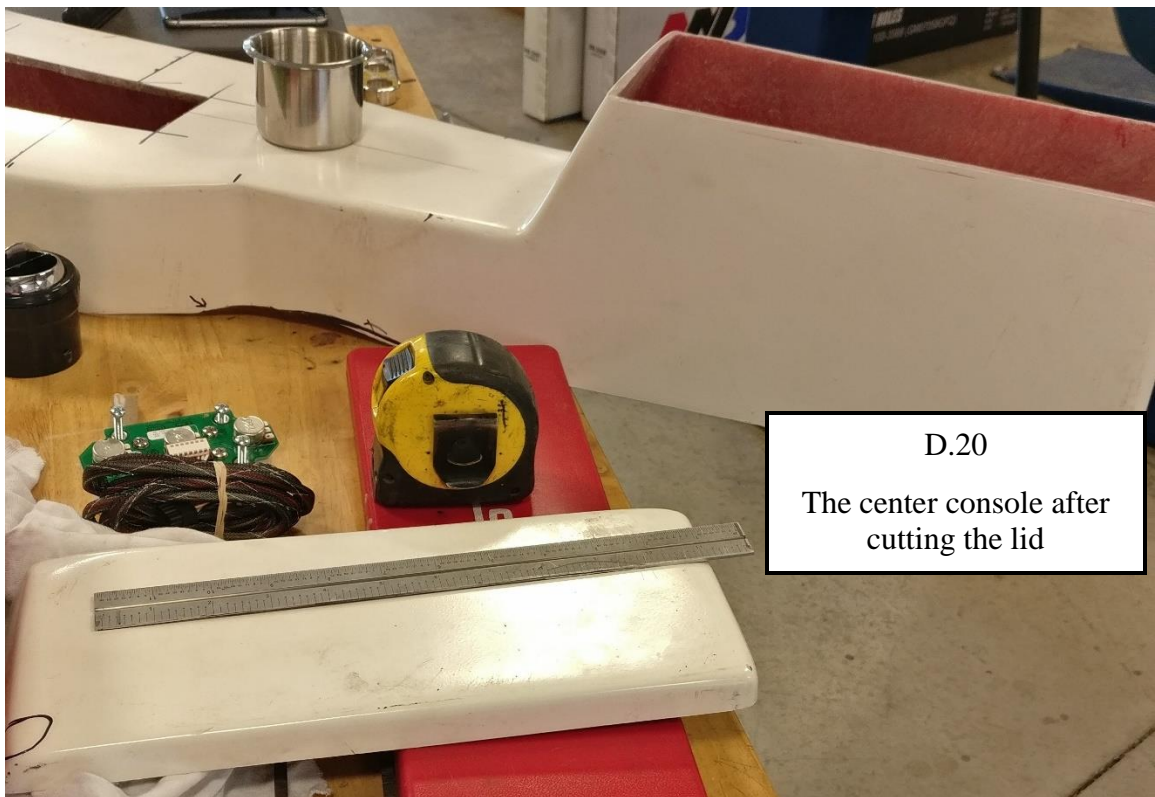
D.16

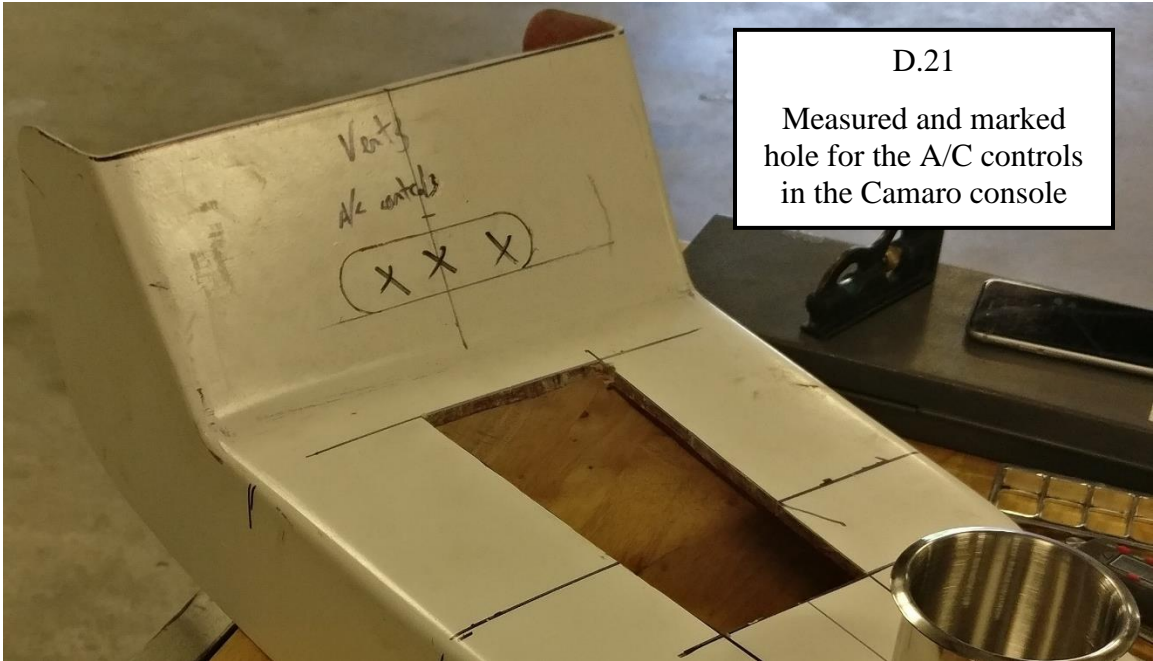


D.17
LS engine in the Camaro



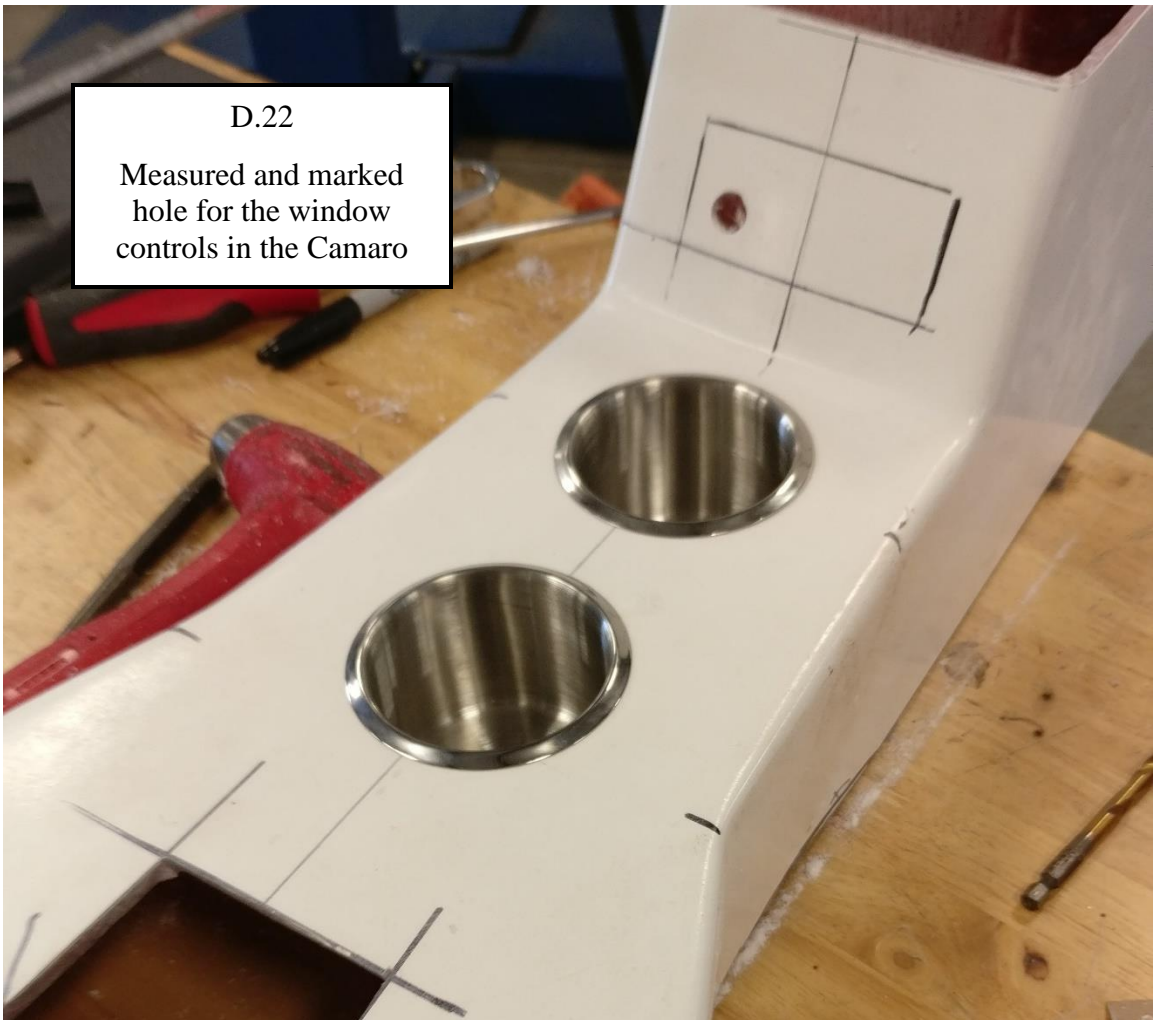
D.18
LS engine in the Chevelle





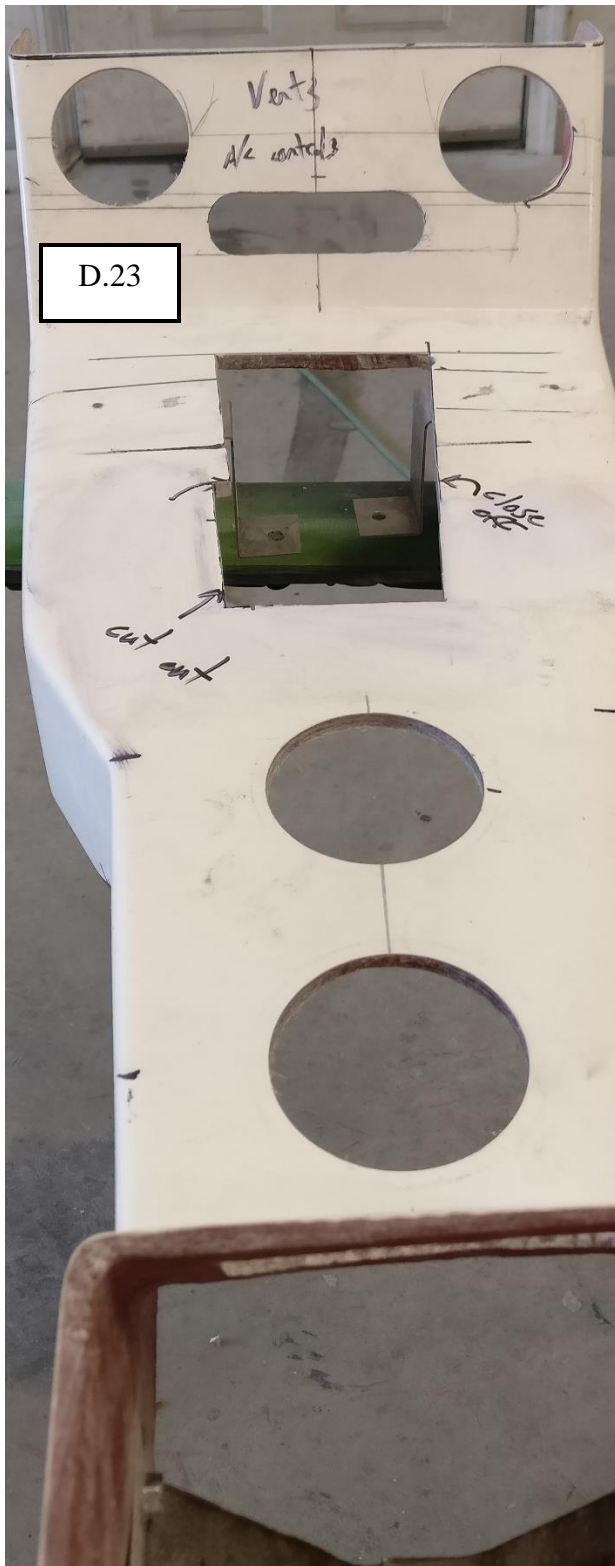
D.21

Measured and marked
hole for the A/C controls
in the Camaro console



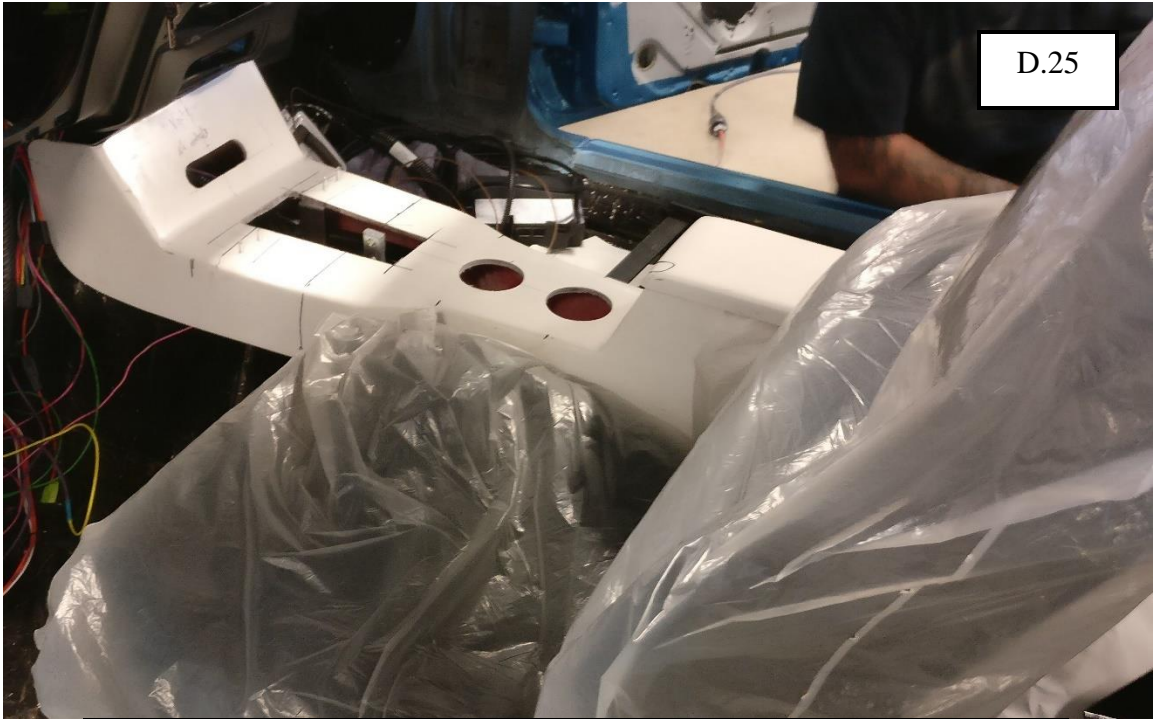
D.22

Measured and marked
hole for the window
controls in the Camaro



D.23 & D.24

The center console with all holes cut and brackets mounted, before fiberglass work



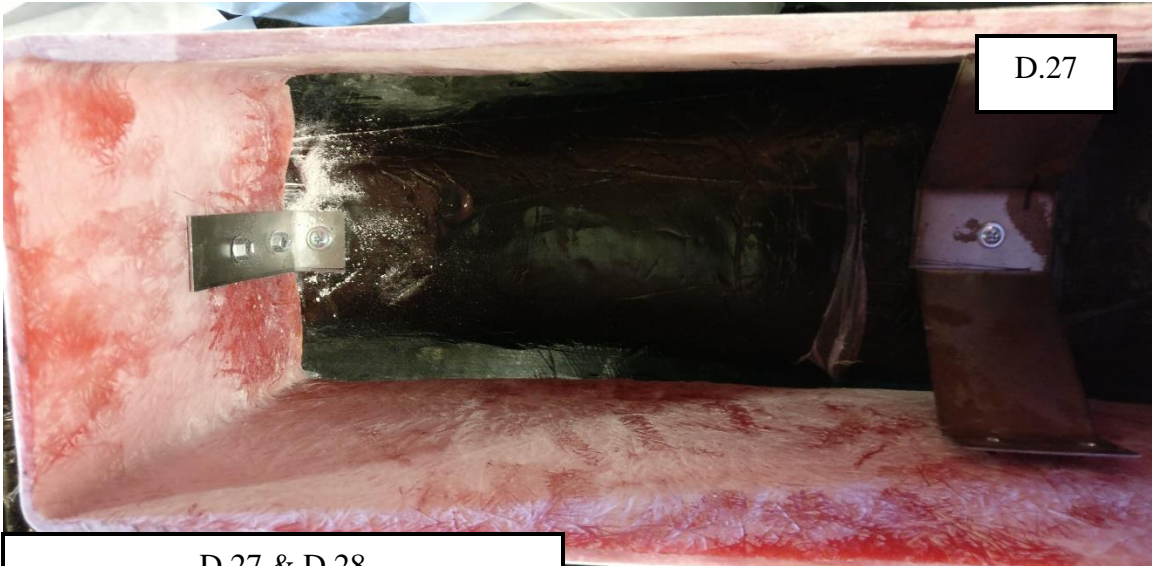
D.25

D.25 & D.26

Mounting and test fitting the center console, creating permanent mounts



D.26



D.27

D.27 & D.28
Console mounts before fiberglass work

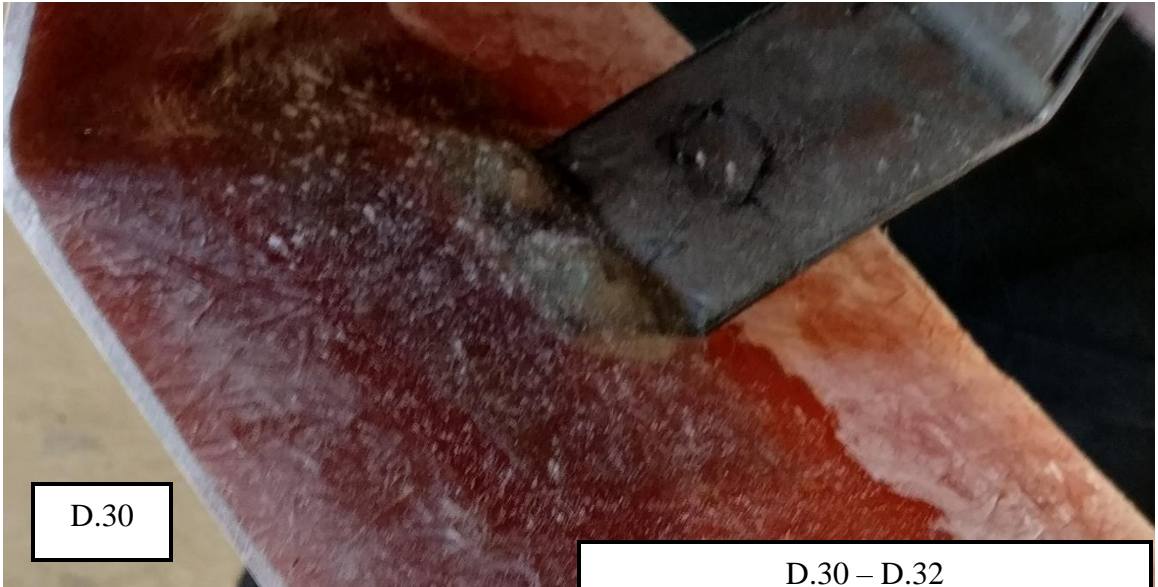


D.28



D.29

Front console mounts fiber
glassed in place



D.30

D.30 – D.32

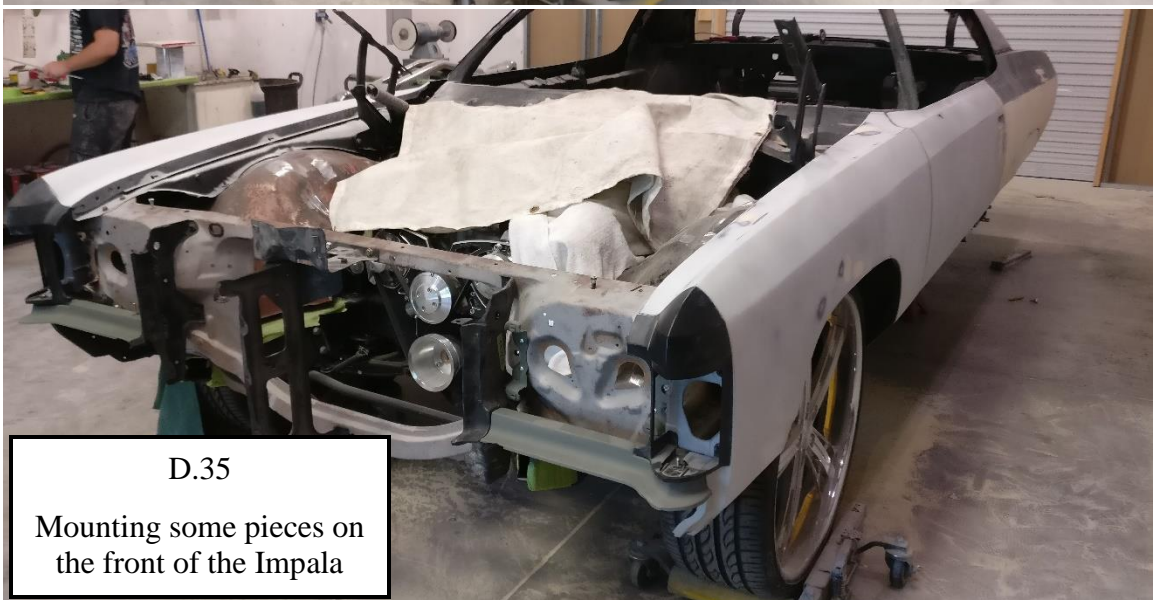
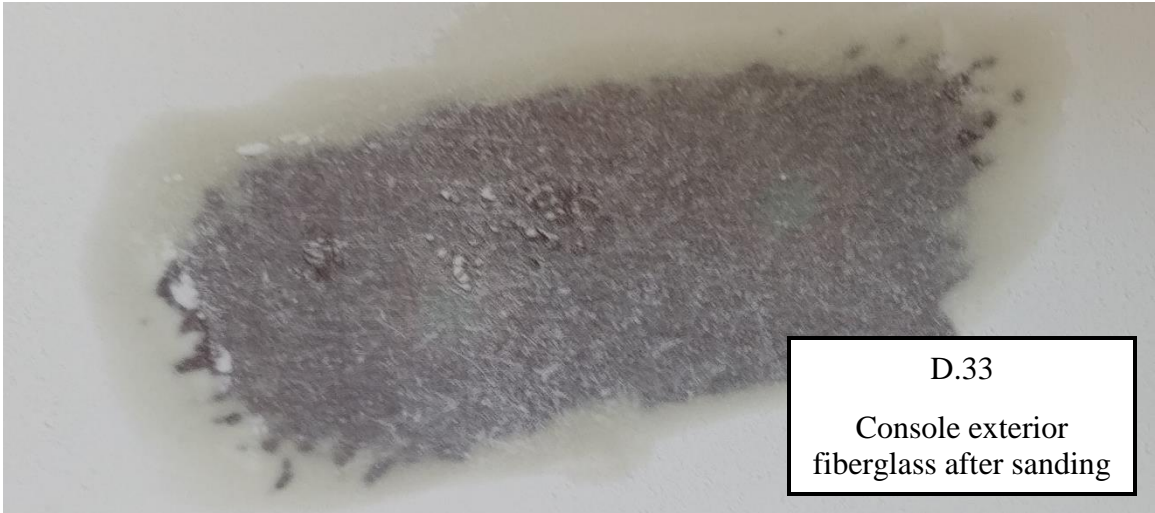
Console mounts and exterior fiberglass



D.31



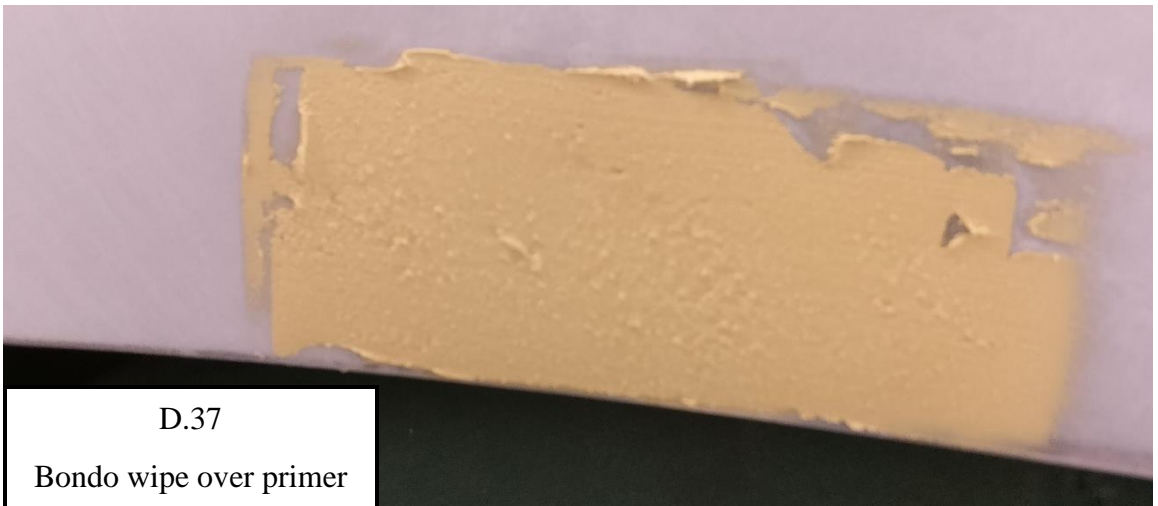
D.32





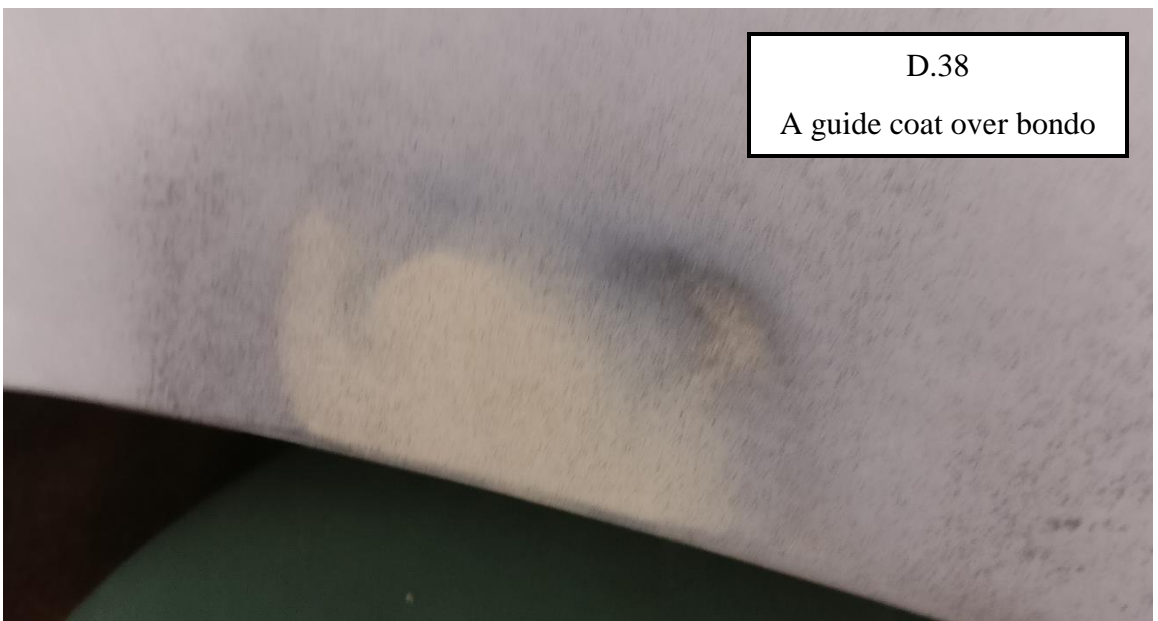
D.36

Impala fender skirt body work



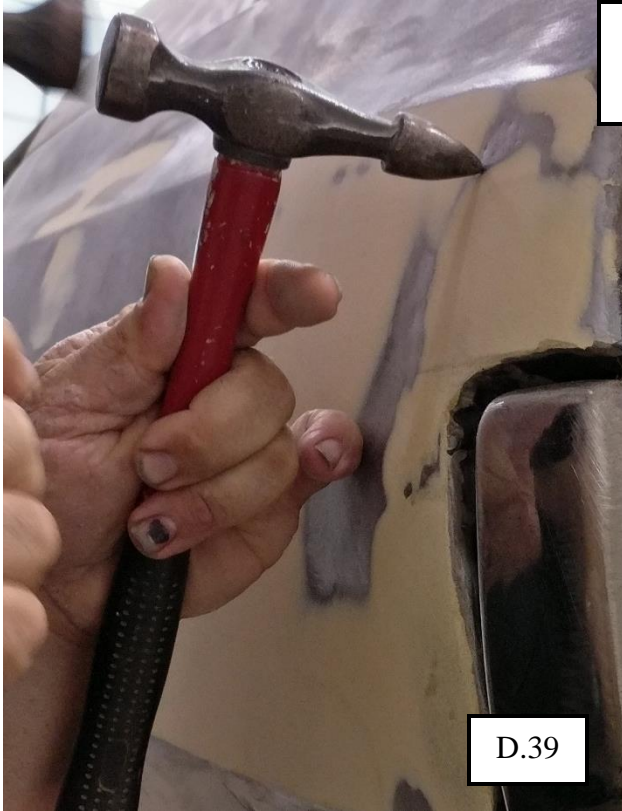
D.37

Bondo wipe over primer



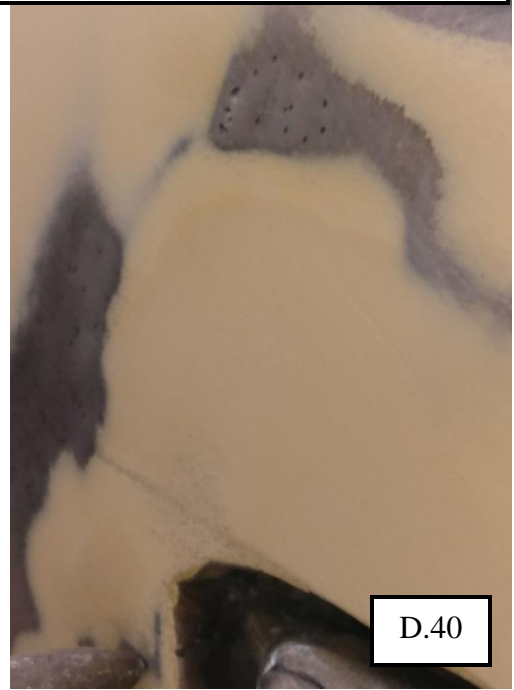
D.38

A guide coat over bondo

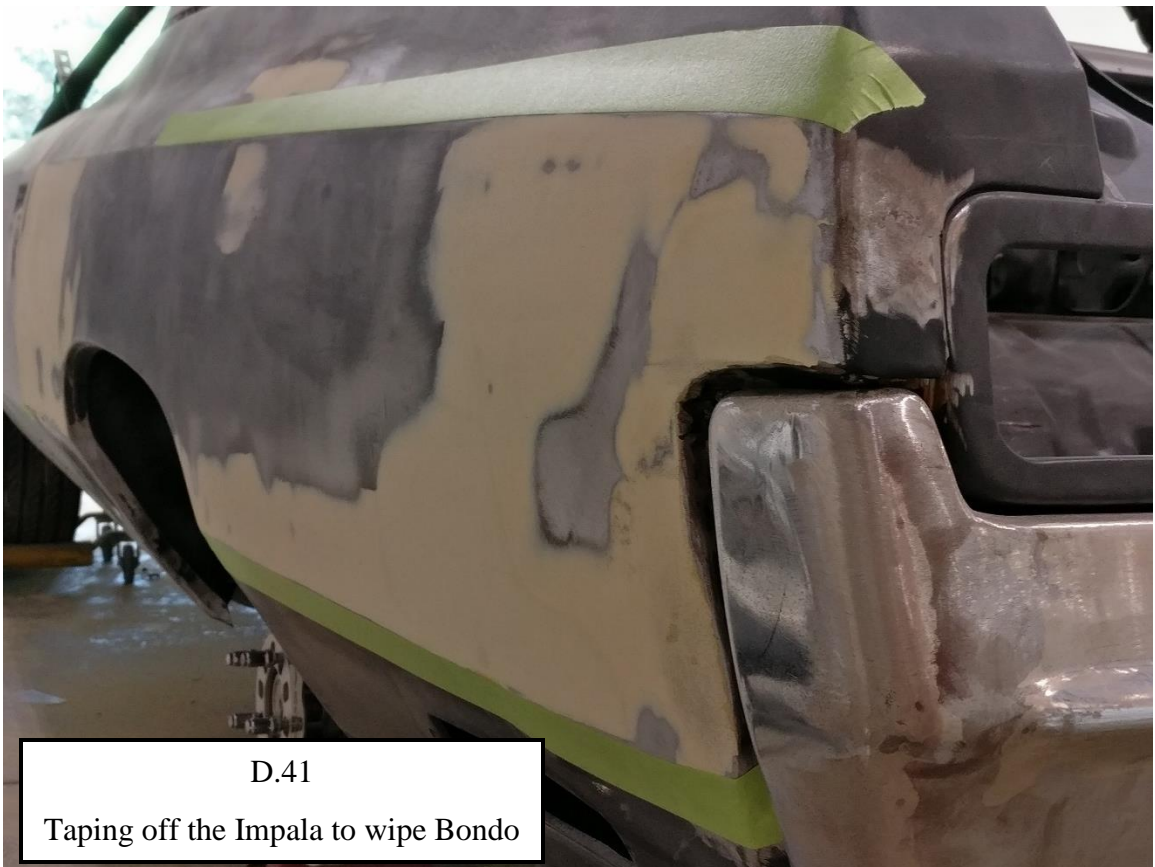


D.39

D.39 & D.40
Hammering a high spot on the Impala



D.40



D.41

Taping off the Impala to wipe Bondo

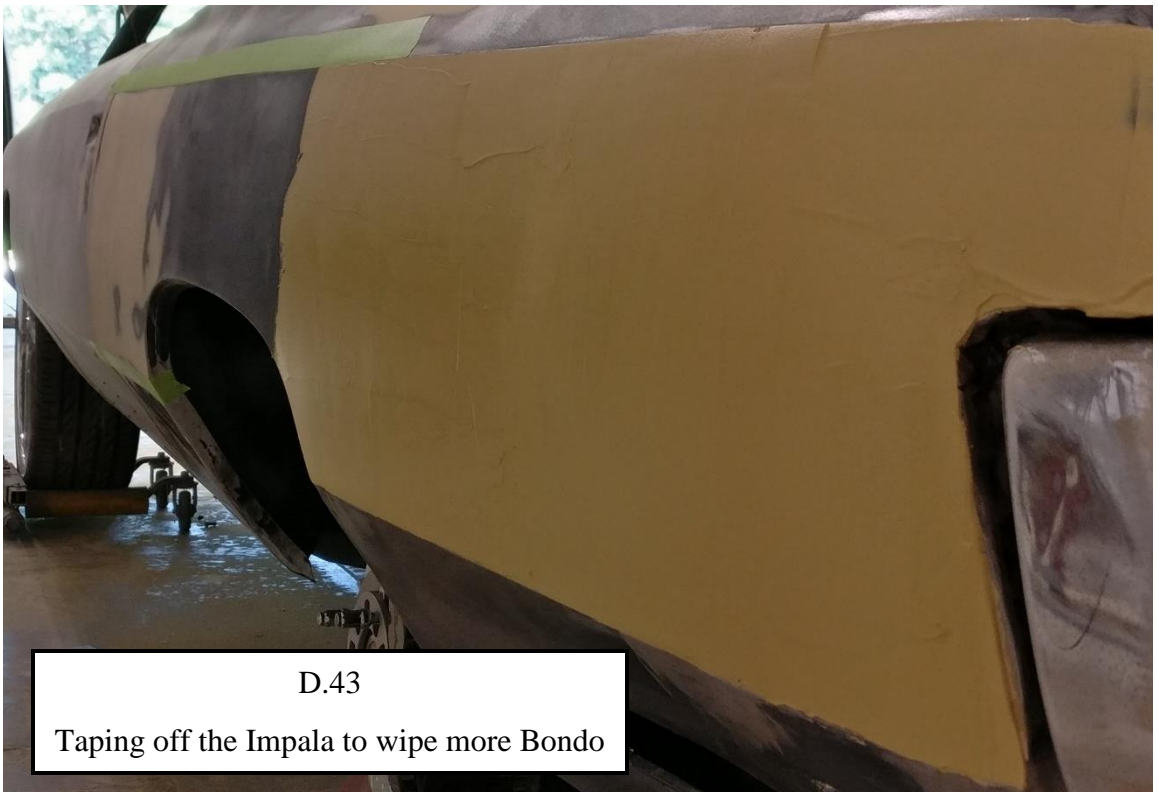
D.42

Bondo wiped on the panel



D.43

Taping off the Impala to wipe more Bondo





D.44

The Bondo on the Impala panel after block sanding

