

**Laconia High School**

**Supermileage Car #17**

**Team Members:**  
**Cody Chesney**  
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**Bryant Vandekolk**  
**Nick Moon**

**Instructor:**  
**Greg Hedrich**

This year was a unique challenge for our team. We had two members who had been in it for 2 or 3 years, and then we had two members who were brand new to Supermileage. This presented many days of teaching and working through some disagreements. In the end I feel that we really have learned a lot. We utilized many new tools and made many contacts in the community and in Fond Du Lac that were a huge asset to our team.

For our frame we decided to use 1 inch steel round tubing. We decided to use this because we have a one inch pipe bender and we wanted to learn how to tig weld steel. Our team designed three different frames. We then evaluated our designs until we had one combined design that we liked.

At first we designed a full suspension for one of the frames but we decided it wouldn't work for the frame we have.

Our next task was to design our drive train. We decided to use direct drive from the motor to the tire with a dirt bike motor with a transmission. The idea that I kept in my head was to simplify the drive train. I learned from last year when I started with an idea and made it way too complex. We knew that the right way to design this drivetrain was to keep it simple. We decided to use this because we figured using a transmission would help us achieve better gas mileage than a centrifugal clutch or something else along those lines. It allows us to select the gear we need to climb a hill or if we are just on a flat track. For our engine we found a Lifan 70cc with a manual four speed transmission from Hooper Imports in Redmond Washington. The owner, Larry Hooper, was quite resourceful and answered all the questions we had for him: all of the times we called him. One of our classmates, Justin Rohde, works for Beaver Dam Honda. At the Honda shop he works on dirt bikes and he also races dirt bikes on the side. He helped us set up the motor and gave us pointers what to do to make it better. One tip he gave us was to smooth out the air intake because it makes airflow into the engine more evenly. Originally the intake is a casted piece and it is rough inside, we took a dremel and polished the inside. We had to modify the starter and shifter levers that go from the engine to the driver because the originals aren't long enough.

This year we again spent a lot of time working with Fond Du Lac Cyclery to design our tires and brake systems. For our tires we went with a 100 psi BMX style tire with 14 mm axles. We went with those because we wanted a tire that would hold more weight and the BMX tire fit perfect because it is wider and it is able to take a beating. For our drive wheel we went with a left hand drive so the motor could be more centered, and like I said earlier, it would be simplified. We had to put the sprocket and the disc brake on the same side because we wanted to keep the sprocket and disc on the same side. In order to do this we again asked one of our football coaches, Dan Birschbach, for some help. Coach Birschbach is a machinist at Kelbros Machining in Fond du Lac. We used his expertise to help in the design and machining. He was also the one who came in and worked with our team to teach us to use the mill more efficiently. Coach Birschbach helped us to make an adapter that allowed us to put the 8" disc on the left side with the sprocket. Our first piece we messed up on and didn't allow for the correct size of the inside diameter hole: the nut that holds the wheel in place didn't fit. We brought it back to Coach and we fixed the original piece so it had the correct diameter.

The exterior of our car caused some tension of our group. However as a team we worked through our differences and came up with a final design. We decided to use a

polycarbonate shell to get the look we wanted. For our paint scheme we asked one of our former teammates for help. Seth has been on the team for the previous two years but unfortunately couldn't be on the team this year due to some family issues. We asked Seth if he would be interested and he jumped at the chance to help us. Seth took a few days and came up with some different paint schemes. After he made these designs he showed us and we were amazed. Last year Seth didn't want to do a one color paint scheme, this year he is showing us some of the effects he can do with a multi-color scheme. We worked it out, chose some colors and now he is going to help us with the painting.

This year we learned a lot and I think it will really pay off for all of us.

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