Under the Hood August 2021

In the March column I had reported that IMSA had lost several of the Corvette C8R competitors and that GM had decided to park the Corvette GT Le Mans race cars for the 2021 season, except for the four races longer than 6 hours. It appears that the two C8Rs will compete against a single Porsche. IMSA could see the limited interest in continuing the GT Le Mans (GTLM) class, and now has announced that for the 2022 season GTLM will be replaced by GTD PRO. There already was a GT Daytona (GTD) class for more street-based race cars that met the FIA GT3 classification. I don't have all the details, but I am assuming that IMSA will still have the normal GTD class, and the GTD PRO class will just be a bit more extreme, but perhaps less extreme than the former GTLM class. The hope is that with this change, the GTD PRO cars can also compete in Europe without major modifications, and this will bring back some of the competitors that had left GTLM, as they felt that GTLM had gotten too expensive. Changes in IMSA classes is nothing new. However, the competition has only gotten fiercer in recent years, and it seems that each year the cars get more competitive, which obviously costs more money, which then creates the current problem with teams dropping out of the class because of cost. As an example, back in 1972 Phil Currin of Florida won the IMSA GTO class with his faithful 63 fuelie split window coupe. Wow, a 9-year-old Corvette still winning a national title in a very competitive series. After the '72 season, IMSA told Phil that his 63 fuelie was no longer welcome. Phil then teamed up with John Morton to race a 69 Corvette coupe originally built by John Greenwood. I suspect some of you recognize these names. That 69-coupe raced in IMSA for several years, ultimately being modified with huge fenders to enclose those very wide wheels which were part of the IMSA image in the 80's.

Since we all travel with our cars, I have included comments in several columns about changes in our paving technology, some successful and some not so successful. I have just learned about another technology recently gaining ground in the US. The Philadelphia airport just completed a project using 90,000 cubic yards (that is a big number) of foamed glass aggregate. This ultra-lightweight aggregate (about 20% the weight of natural aggregate) is made from recycled glass bottles. The recycling center sends glass of any color to the aggregate plant where the glass is ground to a fine powder and then mixed with a foaming agent. When the material dries it resembles crushed natural rock in shape, which also means it "locks" together well. It was calculated that this project diverted the equivalent of 83 million glass bottles from the landfills. Locally, we know that although many of us carefully clean and recycle our glass containers, most of those ultimately end up in landfills as there is not enough demand for the recycled glass. Not only did this project utilize all that recycled glass but compared to shipping much heavier natural aggregate for the airport fill, the ultra-lightweight foamed glass aggregate reduced truck traffic to the airport project by over 6,000 trips. Another benefit on the airport project was the claimed 6-month reduction in construction schedule using the foamed glass aggregate. I expect we will see more of this material being used in urban highway ramps where we do not have the space to have the wide dirt slopes. For instance, the ramps near the Seattle sports stadiums are built with vertical walls to reduce the space requirements. In between the vertical walls, the ramp was built up with geofoam, basically a series of Styrofoam blocks with a concrete roadbed cast on top of the foam. You might question the idea of Styrofoam being able to support truck traffic, but the math is really pretty simple. The reinforced concrete roadbed spreads out the point loads of the truck tires over a much larger area and the resulting load/square foot is well below the compressive strength of the Styrofoam.

A new Maserati turbo 3.0-liter V6 engine incorporates an older technology with some added boost and computing power to develop huge horsepower. How does 621 horsepower and 538 ft-lb of torque from

3.0 liters sound? Way back in the 70's Honda introduced their CVCC (Compound Vortex Controlled Combustion) engine to meet emission standards without having to use a catalytic converter or unleaded fuel. Basically, the CVCC engine has a small prechamber in each cylinder where small amounts of fuel and air are ignited by a second spark plug. As the fire expands from this small chamber it helps ignite the much larger fuel/air mixture in the regular combustion chamber resulting in an improved combustion process, which extracts more useable power from the fuel. Maserati has used a similar approach to the Honda engine, with the addition of twin turbos and of course much improved computer controls. The Maserati engine is developing the rated horsepower at 7,500 RPM, which means that this pre-ignition and complete combustion process is occurring 62 times per second in every cylinder. The combustion process much cleaner burn allows the use of an 11:1 compression ratio, even with a turbo boost pressure of 29 psi. Remember that every 1-point increase in compression ratio can equal an additional 4% horsepower. The computing power is a key to the changes from the early Honda CVCC engine, as it allows this high compression and boost pressure while still controlling engine knock and the resulting engine damage. The Corvette fraternity still idolizes the C2 generation with 435 horsepower from a 7-liter V8. Engine development has come a long way from the C2 times.