



Many short wheelbase rock crawlers have four-wheel steering to make them more maneuverable, and when your rig is 20 feet and 8 inches long, four-wheel steering is an absolute necessity.



A UNIQUE DIESEL-POWERED ROCK CRAWLER

DIESEL

ON THE ROCKS

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Photography: Matt Emery, The House of Diesel and XXX Traction

THE WORDS DIESEL AND ROCK CRAWLER DON'T SEEM TO GO TOGETHER WELL OR EASILY, BUT THAT IS EXACTLY WHAT THE CREW AT THE HOUSE OF DIESEL HAS DONE—THEY BUILT THIS MASSIVE F-350 ROCK CRAWLER AND DUBBED IT THE SUPER CRAWLER.

Chris Smith acquired this '03 F-350 for only \$4,000 after it was totaled due to an accident that left it mangled almost beyond recognition and decided it would be the perfect way to show off the capabilities of his shop by turning the monstrous rig into a rock crawler, rather than taking the easy route and simply lifting it.

Indifferent to its name, The House of Diesel (THOD) shop specializes in building customized vehicles of both diesel and gasoline-powered varieties for both on- and off-road fun. The owner, Smith, wanted to

build something completely different to show off the capabilities of his shop, as it regularly builds lifted trucks and rock crawlers, and through its sister shop, Smith Motor Company, it specializes in Ford Super Duty performance and suspensions. And it does this with new turn-key trucks, so it was only natural for Smith to combine big Ford diesel performance with rock crawling, and we're glad he did.

When we say big Ford diesel performance, we mean it, as the photos included with this article show that it is a big truck, but it is difficult to tell just how big.

For instance, the truck rolls on Michelin XZL 395/85R20 tires that measure 53 inches tall. By the numbers, Smith's Super Crawler is 8 feet, 10 inches tall, and 8 feet, 8 inches wide, plus it is 20 feet, 8 inches in length. While those numbers are staggering, try the weight—it tips the scales at a whopping 7,600 pounds!

The huge tires are mounted on 20x10-inch TrailReady bead-lock aluminum wheels, which allow Smith to run the big Michelins at low pressure while rock crawling without fear of popping a bead. Custom wheel

adaptors/spacers are also used to provide additional track width and additional tire clearance for the massive body. Huge 14-inch Ford disc brakes are used on each corner, but in spite of their size, they look small next to the massive wheel and tire combination. As with most hardcore rock crawling rigs, this one has four-wheel steering to maneuver in, around, over and through obstacles and rocks on the trails. Since the truck is so large, the rear steering is very helpful. A Howe hydraulic steering rack is used up front to turn the big

Michelin tires with dual Howe hydraulic rams in the rear. Smith actuates the rear steering with a handle mounted in the cockpit next to the driver's seat.

Since Smith built the truck to be a serious rock crawler and not simply a show truck, it was built with a very serious drivetrain. Sticking with the stock 6.0-liter Power Stroke turbo diesel engine wouldn't be enough to make the THOD crew happy, so they removed it from the truck and gave it a serious overhaul. They wanted to make more serious power, so the team built the engine using components from



XXX Traction fabricated the front stinger to help prevent the rig from going over nose first in the hairy stuff; it also holds the Warn M15000 winch that can be used to help the Super Crawler or any other rig stranded on the trails. PIAA floodlights are used to help in the dark.



ABOVE - The front end of the truck features a beefy Dana 60 axle suspended by a custom XXX Traction four-link setup, using King Off-Road remote reservoir coilover racing shocks and hydraulic bump stops. Turning is handled by a Howe hydraulic steering rack. The brakes look small but they are Ford 14-inch rotors!



LEFT - The 53-inch tall Michelin XZL tires are mounted on 20x10-inch TrailReady beadlock wheels, ready for low air pressures and rock crawling action.



When the custom hood is lifted off the truck, the heart of the beast is revealed. In this case, it is a hopped-up 6.0-liter Power Stroke with performance items from Hypermax and Bully Dog to make around 400 hp and 1,000 lb-ft of torque.

Bully Dog and Hypermax, in addition to the OE Ford components they retained. Internally, the engine uses Hypermax Fire Rings, head gaskets and head studs to keep the increased cylinder pressure inside the engine. Fuel is fed to the beast through a set of Hypermax 75hp fuel injectors that provide additional fuel flow compared to the stock Ford units.

To match the added fuel flow, the team installed a Bully Dog air intake system, which also flows more than the OE Ford unit. On the exhaust side, a fully polished 4-inch diameter Bully Dog system with a 4-inch downpipe and 5-inch stack expels spent gasses. On the turbo side, the team installed a Hypermax Tapercore intercooler to work with the factory Ford turbo. The full complement of engine enhancements combines to make more than 400 hp and nearly 1,000 lb-ft of rock-crushing torque.

All the power from the 363ci 6.0-liter Power Stroke turbo diesel engine is channeled to a beefy ATS 5R110 TorqShift automatic transmission built to with-

stand the mighty Power Stroke engine. An ATS torque converter is also used in the Super Crawler, as is an OE Ford transmission cooler. The THOD crew opted to use the stock transfer case to split the power between the front and rear Dana 60 axles. Power is channeled to the Dana 60s through custom driveshafts built by Drive Line Service of Redding in Redding, California. Each of the Dana 60s is stuffed with 35-spline chromoly axles, ARB lockers and Ford 5.13 gears. To up the strength in the axles, the build team cryogenically treated the ring-and-pinion gears and spindles.

The Super Crawler uses a XXX Traction chassis that was custom-built by Toby Lavender and his team of fabricators at XXX Traction in Seaside, California. The amazing chassis build took 2 years to design and complete. The chassis uses a four-link design that allows for major articulation front and rear. Lavender only used two small sections of the frame while fabricating the chassis so that some of the original truck would remain. He also offset the

engine 3.5 inches toward the passenger side to help the front driveshaft clear the engine's big oil pan while allowing the truck to have rock crawler-worthy articulation in each direction.

Smith chose King Off-Road Racing Shocks to tame his Super Crawler with huge remote reservoir coilover shocks on each corner along with

hydraulic bump stops. Each of the King coilover shocks actually has three different coil springs to give the suspension a progressive feel as the axles twist through the massive sweep of articulation.

To allow the tires to clear the body, Smith had the team of Billy Brown and Chris Werner at Longhair Collision & Paint

Works in Redding, California, perform some major metal surgery—note these mods are metal, not fiberglass. Starting with the hood, you can see that it was narrowed at the nose but what is not quite as obvious is that the fab team also extended the hood and dropped it an inch.

The front fenders went

under the knife as well. The wheel wells were opened up, and the fenders pinched in towards the centerline of the truck to allow the Michelin tires to move up on each side without wiping out the fenders. In the rear, the bedsides were reworked to taper towards the center, and then they square back out, allowing the factory

Ford taillights to be used and properly viewed. The rear wheel wells were also opened, and the bedsides were made to be completely removable for easy access to the fuel cell and three YellowTop Optima batteries. Smith often removes the bedsides while wheeling the truck to prevent inadvertently damaging the one-off panels. The team at Longhair Collision & Paint Works also had to smooth the seams where the top of the cab was cut off the truck to build the interior portion of the rollcage at XXX Traction.

Once all of the custom bodywork was complete, Brown and Werner painted the truck flat white. To light the way in front of the truck, a pair of PIAA lights is installed in the resized grille shell. An A1+ Accessories light rack with low-profile PIAA lights and the stock Ford taillights are used to illuminate the rear.

Inside Smith's F-350, you will find a trio of Ford Lariat seats with custom gray leather upholstery and blue stitching installed by the crew at THOD. The seats are arranged with standard

placement for the driver and front passenger with the rear passenger seated in the center of the rear seat area between and behind the front seats. Since it was built to get dirty, the truck does not have carpet in the interior, which makes cleaning it easier. The truck does retain the factory dash, albeit with a few new holes to allow the rollcage to pass through. To make the interior more livable, Robert Maul installed a new head unit and Arc Audio Chip Foose signature amplifiers that power Arc Audio mids and highs in the stock locations and 10-inch subs installed in custom enclosures along the rear wall of the cab.

While Smith's Super Crawler probably doesn't handle the difficult rock crawling terrain of competition as well as the small purpose-built rock crawling rigs and moon buggies, it's not for lack of power. This big diesel rock crawler has power to spare and the physical size—specifically the length and width—is likely to be the only thing to hold back this monster. **DB**



The interior of Smith's rig has a full rollcage fabricated by the crew at XXX Traction, three Ford Lariat bucket seats and a big stereo system complete with custom sub enclosures against the rear of the cab and amplifiers mounted overhead on the rollcage.

THE BUILDUP

01. To install the rollcage, the team at XXX Traction cut the roof off the truck and installed the cage.

02. The tube frame chassis is completely tied together front-to-rear, making the 7,600-pound beast as strong as it is heavy.

03. The crew at XXX Traction shifted the engine mounts 3.5 inches to the passenger side to allow the driveline to clear the big Power Stroke oil pan.

04. Once the cage was completed, the roof was welded back on the truck.

05. The engine mounting plates with the slotted holes are the only remaining pieces of the factory frame.

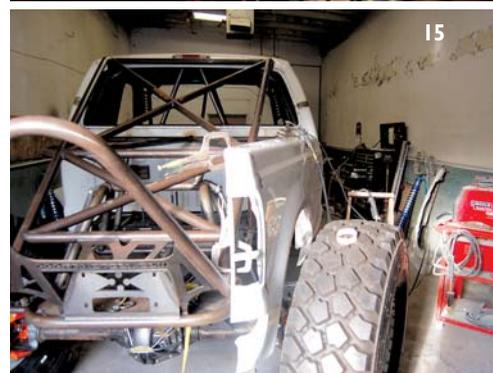
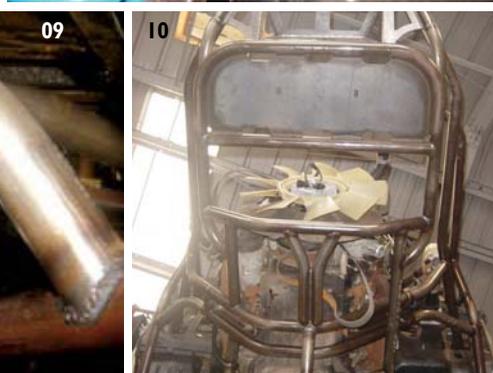
06. XXX Traction made billet aluminum linkage to actuate the rear steering off the Howe hydraulic rams.

07. To give the rig maximum articulation, Toby Lavender designed a double triangulated four-link setup in the rear of the truck.

08. Large spherical joints are used to allow the suspension to move freely throughout its long range of suspension travel.

09. The custom driveshaft by Drive Line Service of Redding channels the grunt from the Power Stroke to the Dana 60 axles.

10. Looking at the chassis from below, you can see the shift toward the passenger side that XXX Traction used to keep the driveline compact and allow maximum articulation.



11. The team at XXX Traction installed the engine to weigh the chassis to determine ride height and work out the suspension and driveline angles.

12. Like all the XXX Traction work, the front shock mounts are works of art.

13. The team mounted the Howe hydraulic steering rack centrally on the chassis to actuate the large front wheel/tire combination.

14.-15. While the body fabrication team has already pinched the rear bed sides, there is still more work to do to give the tires and suspension adequate clearance. Notice that the taillights will still mount perpendicular to the chassis of the truck.

16. After extensive trimming and some body filler, the bedside is ready for paint.

17. Looking closely at the front of the chassis and firewall, you can see where the tubing passes through from the cab to the chassis.

18. Determining exactly where to trim the front fender is crucial for both the looks and performance of the rig.

19. Final assembly of the rear axle, suspension and steering took place at THOD.

20. The cab is already in paint and the chassis is ready to go as well, meaning the truck will be rolling soon.

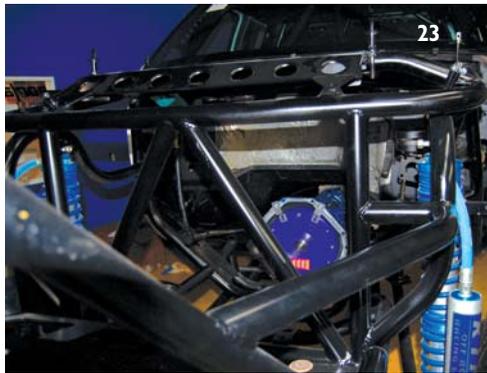
21. The rear suspension and steering are complete.



22. Here, they install the front ARB lockers and get the Dana 60 ready to rock.



23. The new ATS transmission and torque converter are already installed and waiting for the Power Stroke engine to be reworked and dropped in.



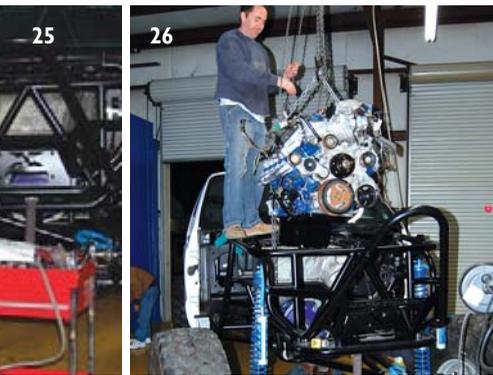
24. The THOD crew tears into the stock Power Stroke 6.0-liter engine.



25. Here, the crew is putting the final touches on the engine before it is dropped into the Super Crawler. Notice that the crew even painted the engine block bright blue. Little details like these add up to make a great machine.



26. An overhead hoist is about the only way you can install the engine in a monster like the Super Crawler.



27. Since the hoist is stationary, the team had to work hard to properly position the truck below the engine before lowering it into place.



28.-29. With the engine in place, the project is getting very close to its completion.



30. Even with the engine successfully in the chassis, there is still a lot of wiring to do to complete the rig.



31. The huge Warn winch is mounted to the XXX Traction stinger, and the Hypermax inter-cooler and custom radiator are installed, making the front of the truck nearly complete.

32. The audio team is working on the interior and electronics while others are completing the suspension and engine mods.

33. The big exhaust stack is routed and secured next to the chassis tubes.

34. Custom steel plates fabricated by XXX Traction secure the Optima batteries and the Fuel Safe fuel cell.

35. Securing the reservoirs for the big King Off-Road coilover shocks is done with billet aluminum clamps.

36.-37. Final plumbing of the steering rams and rear brakes is very clean, making sure that the lines and hoses will not be damaged when the axle twists and moves through its suspension travel.

38. Interior work continues, including mounting an air tank to refill the tires while on the trail.

39. A lot of wiring is used even when the truck has a simple audio system like this one.

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