

# Bad Potholes Better Than Ones GM Builds for Testing

DETROIT - Even with a mild winter in many parts of the country, potholes are a rite of spring. But it is simulated cracks and craters in the pavement developed by General Motors' engineers that help develop the ride quality of vehicles like the global Chevrolet Cruze compact sedan.

The buildup of moisture in the small holes and cracks in the road during the winter months alternates between freezing and thawing as temperatures fall and rise, causing expansion and contraction of the road surface. The result can be significant breaks in the pavement under the weight of normal vehicle traffic.

The potholes at GM's Milford Proving Ground don't look like the ones drivers encounter on daily commutes. These are specially designed,

fabricated in metal and planted into the ground with concrete surface around them. The downslope and the ramp up in these engineered potholes vary to simulate severity of road damage and recreate varied load conditions that occur in a vehicle when it is driven through one.

The designer potholes allow for controlled, repetitive testing, necessary to assess durability and help determine the fine tuning that contributes to a comfortable ride.

The Cruze, which has sold more than 1.13 million units in more than 100 markets around the world since its launch in late 2009, underwent extensive road testing around the world to ensure consistent ride quality and comfort from Korea to Kansas and points between.

"We've got a wide variety of

road surfaces that simulate real-world road conditions around the globe," says Frank Barhorst, who supervises the Product Usage Measurements and Applications group in Milford.

"The range of road surfaces that we test on goes from good to bad, in order to find the most balanced condition for each vehicle we develop."

"For durability, we might want roads with potholes or twist events. For noise, it could be chatter bumps on a dirt road, or concrete that is getting old and bald. Then there are considerations such as loose gravel for handling," said Barhorst.

The Cruze is Chevrolet's best-selling nameplate and helped the brand sell more passenger cars than any automaker in the United States in 2011.



*Chevrolet Cruze drives through the pothole course at the General Motors Proving Ground in Milford, Mich. The potholes are engineered to simulate severity of road damage and recreate varied load conditions that occur in a vehicle when it is driven through one.*

## BRICK & BLOCK

**New or Repair**

- Chimneys
- Porches
- Windows-cut in or fill in
- Tuckpointing
- Basements
- Crawl spaces
- Custom Fireplace

**586-651-2419**

# Malibu Comes with Different Engines

DETROIT - The all-new Ecotec 2.5L debuting on the 2013 Chevrolet Malibu midsize sedan this summer is one of the most powerful naturally aspirated four-cylinder engines in the midsize segment, topping the output from the new Ford Fusion and Toyota Camry, according to GM.

It will be joined this fall by a new Ecotec 2.0L turbo engine, delivering more horsepower than any previous V6 offered in a Malibu.

Malibu's Ecotec 2.5L delivers an SAE-certified 197 horsepower and 191 lb.-ft. of torque - the most torque of any naturally aspirated four-cylinder in the segment.

And when compared with the competition, it delivers 19 more horsepower and 21 more lb.-ft. of torque than the 2012 Toyota Camry LE's 2.5L I4 engine, and 27 more horsepower and 21 more lb.-ft. than the 2013 Ford Fusion's 2.5L four-cylinder, says GM.

The Ecotec 2.0L turbo is SAE-certified at 259 horsepower and 260 lb.-ft. of torque. Its peak torque is sustained from 1,700 to 5,500 rpm - a broad range that provides an immediate feeling of

power in all driving conditions and helps produce 0-60 performance in 6.3 seconds.

The new engines feature direct injection for increased fuel efficiency and higher power, and help drive Malibu's performance around the world. Both will be offered in the United States, Canada, Israel and other markets, while rounding out a diverse North American powertrain lineup that also includes the segment-exclusive, fuel-saving eAssist technology in the Malibu Eco.

It combines start-stop technology with regenerative braking and a lightweight lithium-ion battery to provide an electric boost in certain conditions, delivering a GM-estimated 25 mpg in the city, 37 mpg on the highway. That's better fuel economy than any non-hybrid midsize sedan currently available.

"The 2013 Malibu is the latest entry in Chevrolet's growing global car portfolio, which has seen almost an entirely revamped lineup in the last 15 months," said Chris Perry, global Chevrolet marketing vice president. "We sold 4.76 million Chevrolets worldwide in

2011 - one every 6.5 seconds - and the new Malibu will help us grow the brand globally even more this year, where it will be introduced for the first time in many markets."

The 2013 Malibu is Chevrolet's first global midsize sedan and will eventually be sold in nearly 100 countries on six continents. It is already on sale in South Korea and China, with sales to begin this year in more than 70 additional countries, including Canada, throughout Europe, Scandinavia, the Middle East, Africa and other Asia-Pacific markets.

In the United States, current-generation Malibu sales are up 4.4 percent for the first two months of the year, building on 2011's near-record U.S. sales of nearly 205,000.

GM says that the new Malibu was designed to be the most finely tuned Chevrolet midsize sedan ever and is built on an award-winning global architecture that helps deliver a more confident, responsive and connected driving experience. The body structure is 20 percent stiffer for a greater feeling of solidity, quietness and quality.

**We guarantee the lowest price or it's free!**

WISHING YOUR FAMILY A HAPPY EASTER FROM **buff whelan chevrolet**

**586-274-0396**

**OVER 1,000 New Chevrolets in Stock!**

**2013 MALIBU ECO**  
LEASE FOR **\$274\*** + tax  
39 Mos./10,000 Miles  
Cruise, Power Locks, Power Windows, Keyless Entry, Touch Screen Radio, XM Radio, Bluetooth, Steering Wheel Controls, OnStar and more!

**2012 CRUZE LS**  
LEASE FOR **\$198\*** + tax  
39 Mos./12,000 Miles  
Automatic, Power Locks, Power Windows, Power Mirrors, OnStar, XM Radio and more!

**2012 MALIBU LS**  
LEASE FOR **\$178\*** + tax  
24 Mos./12,000 Miles  
Steering Wheel Controls, Bluetooth, Bodyside Moldings, Power Locks, Power Windows, Power Mirrors, Keyless Entry, OnStar, XM Radio and more!

**2012 EQUINOX FWD LS**  
LEASE FOR **\$246\*** + tax  
39 Mos./10,000 Miles  
Steering Wheel Controls, Bluetooth, XM Radio/OnStar, Power Locks, Power Windows, Cruise and more!

**buff whelan chevrolet**  
WHERE THE DEALS MAKE THE DIFFERENCE, EVERY DAY SINCE 1970!

Van Dyke • South of 18 Mile Sterling Heights  
**Jeff Caul**  
**586-274-0396**  
PEP QUOTES BY PHONE OR EMAIL: JEFF CAUL AT JCAUL@BUFFWHELAN.COM

CONVENIENT HOURS:  
Mon. & Thurs. 8:30 am - 9 pm  
Tues., Wed., Fri. 8:30 am - 6:30 pm

**FREE shuttle service to home, office or shopping.**

**Chevy Runs Deep**

18 MILE RD. VAN DYKE SCHOENHEER METRO PKWY.

**We guarantee the lowest price or it's free!**

# ED RINKE CHEVROLET BUICK GMC

**2013 MALIBU IN-STOCK**

Special 24 Month Leases • 2 Years of Onstar Directions & Connections  
2 Years of SiriusXM Radio • 2 Years of Maintenance

<b>2012 EQUINOX</b>  Stock #520842 Deal #162624 <b>\$0 DOWN</b> at Lessee Signing EVERYONE'S SALE PRICE <b>\$22,331*</b> 39 MO. LEASE <b>\$259*</b>	<b>2012 MALIBU</b>  Stock #420450 Deal #159766 <b>\$0 DOWN</b> at Lessee Signing EVERYONE'S SALE PRICE <b>\$17,219*</b> 24 MO. LEASE <b>\$157*</b>	<b>LACROSSE</b>  2011 Was \$27,745 Order #PMSJHJ 2012 Deal #163225 Stock #420346 <b>\$0 DOWN</b> EVERYONE'S SALE PRICE <b>\$21,156<sup>00*</sup></b> 24 MO. LEASE <b>\$2990*</b> 10K Miles/Yr.	<b>REGAL</b>  2011 Was \$31,975 Stock #B410676 2012 Deal #162316 Order #PWBXWT <b>\$0 DOWN</b> 0% APR UP TO 72 Mos. EVERYONE'S SALE PRICE <b>\$22,390<sup>86*</sup></b> GM EMPLOYEE LEASE <b>\$266<sup>21*</sup></b> 12K Miles/Yr.
<b>2012 CRUZE</b>  Stock #420523 Deal #159761 Stock #420169 10 AIR BAGS <b>\$0 DOWN</b> at Lessee Signing EVERYONE'S SALE PRICE <b>\$15,779<sup>95*</sup></b> 24 MO. LEASE <b>\$174*</b>	<b>2012 SONIC</b>  Stock #420493 EVERYONE'S SALE PRICE <b>\$13,973*</b>	<b>ENCLAVE</b>  2011 Was \$40,700 Stock #B510365 2012 Deal #163221 Order #PWTHPR <b>\$0 DOWN</b> EVERYONE'S SALE PRICE <b>\$29,422<sup>35*</sup></b> 24 MO. LEASE <b>\$3499<sup>1*</sup></b> 10K Miles/Yr.	<b>TERRAIN</b>  2012 Was \$28,040 Stock #G520060 2012 Deal #162579 Stock #G520229 EVERYONE'S SALE PRICE <b>\$24,116<sup>0*</sup></b> 39 MO. LEASE <b>\$213<sup>20*</sup></b> 12K Miles/Yr.
<b>2012 SILVERADO 4WD EXT. CAB</b>  Order #CK10753 Deal #159773 <b>\$2,000 Due</b> at Lessee Signing EVERYONE'S SALE PRICE <b>\$25,880*</b> 24 MO. LEASE <b>\$221*</b>	<b>WOW! 2012 TAHOE Z71</b>  Stock #G511708 Order #CC10706 <b>\$2,000 Due</b> at Lessee Signing GM EMPLOYEE PRICE <b>\$45,286*</b> 39 MO. LEASE <b>\$509*</b>	<b>ACADIA</b>  2011 Was \$32,810 Order #PNVDPD 2012 Deal #162544 Order #PVRVHR <b>\$0 DOWN</b> EVERYONE'S SALE PRICE <b>\$25,724<sup>80*</sup></b> 24 MO. LEASE <b>\$2467<sup>2*</sup></b> 10K Miles/Yr.	<b>WOW! YUKON DENALI</b>  2011 List \$62,964 Stock #G510390 2012 Deal #162601 Stock #G520600 <b>\$0 DOWN</b> GM EMPLOYEE PRICE <b>\$47,964*</b> 39 MO. LEASE <b>\$608<sup>05*</sup></b> 10K Miles/Yr.

**1-877-451-7707**  
26125 Van Dyke at 10 1/2 Mile Rd.  
Visit our website: **edrinke.com**  
**SHOWROOM HOURS:**  
Mon. & Thurs. 8:30am-9:00pm; Tues., Wed., & Fri. 8:30am-6:00pm

**Jim Pfeifle**  
jpfeifle@edrinke.com

**Ray Stemple**  
rstemple@edrinke.com

See us for your GM employee purchases.

**1-866-452-1300**  
24231 Van Dyke at 9 1/2 Mile Rd.  
Visit our website: **edrinke.com**  
**SHOWROOM HOURS:**  
Mon. & Thurs. 8:30am-9:00pm; Tues., Wed., & Fri. 8:30am-6:00pm

**Dennis Thacker**  
dthacker@edrinke.com

**Nicole Dodge**  
nmuminski@edrinke.com

See us for your GM employee purchases.

\* All prices & payments include GM rebates. Pictures may not represent actual vehicle. Prices subject to change per GM incentives. Prices and payments are inclusive of GM Employee Discount (unless otherwise stated). Lease terms vary from 24 to 48 months, 10,000 miles per year w/ approved S Tier credit w/ \$2500 due at signing, (unless otherwise noted). Prices & payments are plus tax, title, and plate fees. 0% Financing in lieu of some factory rebates. Malibu LS (leased thru GM financial), Equinox LS, Cruze LS leases require 800 plus credit score. Must qualify for Conquest. Some vehicles may be Courtesy cars. Expires 3-30-12.

\* All prices & payments include GM rebates. Pictures may not represent actual vehicle. Prices subject to change per GM incentives. Prices and payments are inclusive of GM Employee Discount (unless otherwise stated). Lease terms vary from 24 to 48 months, 10,000 miles per year w/ approved S Tier credit w/ \$1995 due at signing, (unless otherwise noted). Purchase prices are based on 72 month financing w/ approved credit and \$1995 down. Prices & payments are plus tax, title, and plate fees. 0% financing in lieu of some factory rebates. Refundable security deposit required on certain vehicles - to be determined by lender. Must qualify for conquest with a 1999 or newer non GM lease. Enclave, Regal, & Terrain, purchase prices are Courtesy cars. Yukon purchase with trade in, 1999 or newer car or light truck \*\*See salesperson for details. Exp. - 3/30/12.

**ED RINKE** • FAST • FRIENDLY • DISCOUNTS

**GM SERVICE CENTER**  
MICHIGAN'S LARGEST  
• SERVICE DEPT. • PARTS • BODY SHOP  
**866-452-1547**  
26125 Van Dyke @ 10 1/2 Mile Center Line, MI 48015  
SERVICE HOURS: Monday & Thursday 6:30am-9:00pm; Tuesday, Wednesday & Friday 6:30am-6:00pm • Shuttle at 6:30am - Pick-up Both Ways • All Day starting at 6:30am.

**Quick Oil Change EXPRESS LANE**

**LUBE OIL FILTER \$23.95** Up to 5 qts.  
Fluid Level, Brake & Alignment Check Included.

We use Genuine GM Oil & Filter  
No additional or hidden charges.  
Out the door pricing.

Open Mondays & Thursdays until 8:30pm  
Excludes synthetic, Diesel & Med. Duty Trucks.  
Most GM cars & trucks. One coupon per customer. Must present coupon with order. Plus tax. Expires 4-30-12.

**BODY SHOP**  
586-754-7000 ext 1231

**INSURANCE WRECK AMENDED**

**WE REPAIR ALL MAKES & MODELS**

TRANSPORTATION AVAILABLE During Scheduled Repairs  
**FREE OIL CHANGE** With Each Major Repair