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SPEC'ING FOR DUMPIES

What you need to know before choosing the best mechanized pack mules for your operation

By Lou Smyrlis

The typical Canadian dump truck remains in service for 12 years or more and is expected to perform some of the toughest tasks under some of the harshest environments Canadian industry can dish out.

A truck that can take the pounding of unfinished roads, sharp-edged loads and grit-filled work sites to deliver rock solid performance, day in, day out, can be the difference between a successful construction operation and one unable to gain any traction towards profitability.

Want to know how to get the best of these mechanized pack mules into your operation? There's no magic involved, just a willingness to roll up your sleeves from the start when it comes to understanding your operation today and being realistic about how you expect it to evolve over the next decade. The right spec'ing decisions at the start will make all the difference in ensuring a long, productive life for your dump trucks. Or, to put it a little less gently, any mistakes you make now will haunt you for years to come. Common mistakes such as attempting to save a few bucks by trying to run a heavy construction business with a landscaping chassis, missing out on fuel economy and adding weight by spec'ing more power than you need, and having to take steep grades only half loaded because you spec'ed less power than you need, add aggravation, costly repairs, downtime, and missed opportunities to your operation.

For smaller operators and relative newcomers to the in-

dustry, the learning curve for effective construction truck spec'ing can be a steep learning curve. Even experienced operators and large construction fleets with spec'ing practices refined by years spent in the industry may find it challenging to keep up with changing regulatory demands and new technological advances. To help you out, and make your operating success a greater certainty, we've talked with some of the industry's leading experts — Alan Fennimore, vocational marketing manager for Kenworth Truck Company; John Rosinski, sales representative, Performance Equipment; Ron Eagle, Lounsbury Heavy Duty Truck Ltd; and Francois Beauchamp, field engineering manager, Michelin North America (Canada). They shared with us how to put together the most productive construction truck possible. We trust their insights will help make your next selection a more informed one.

NAIL DOWN YOUR APPLICATION

This is the starting point. Consider all the aspects of your operation today and how realistically they may change up to 10 years down the road. When you take the time to think it through you may find this consideration is more complex than it may at first seem. Take no short cuts. It's important to get it right because it will drive every decision you make.

So before you start trying to wrap your head around first gear reduction ratios and startability calculations, do yourself a favor. Make sure you've spent the time to have a firm grasp of the following aspects of your operation:

What type of road terrain do you expect your dump truck to handle? Road terrain can affect everything from tire size to transmission and gear ratios. For example, a dirt hauler who regularly has to run into applications where deep hole excavation and thick mud are constant challenges will need to be more concerned with having enough power and torque under the hood to climb steep grades than about fuel economy. He would also be better off spec'ing a heavier duty suspension that can handle the pounding and provide better articulation than worrying about weight-saving specs. On the other hand, those weight-saving specs may be of prime importance for a gravel hauler paid by the ton and whose only off-road challenges involve gravel pits with well-maintained gravel road access.

How much weight do you expect to carry? When your pay is linked to payload, you'll want to ensure a design that maximizes the weights you can carry. If you expect the weight that you will carry to vary, list several target weights and the amount of time you expect to spend at each vehicle weight.

What type of loads do you expect to haul? You will need a different chassis spec when hauling bulk loads such as asphalt, sand or gravel than you would if you hauled mostly demolition debris. You may also need a beefed up suspension to handle the pounding it will take from the large pieces going in the dump body.

What are the length and weight regulations in your province and other areas of operation? Take maximum advantage of the weight laws to maximize payload. Bridge laws (in some regions, and particularly south of the border) may also have an influence on how the axles are set up and spaced. Some provinces, as in the case of Ontario, require compliance with the Safe, Productive, Infrastructure-Friendly (SPIF) regulations; others don't. This will have a big influence on how the axles are set up and spaced. SPIF trucks tend to be longer to spread the weight and you may need to have tag and pusher axles that steer.

What makes this exercise more complex is the fact you need to nail down not only how you will be using your dump truck today but consider how that may change over the next 12 years or more and be realistic about the compromises made in the process. Do it right and you will have a vehicle that can grow with your operation. For example, a truck spec'd with an aluminum dump body to maximize payload for an operation that runs mainly highway and regional roads can have a good second life hauling dirt. But it won't be able to cut it if your operation evolves to hauling large boulders or concrete with chunks of bar sticking out. Such rough loads would punch a hole in the aluminum body.

One of the worst mistakes you can make is spec'ing a truck that suffers from too many compromises in an attempt to handle the widest variety of applications. Such a truck may be used on many different jobs but it won't be capable of capably handling any of them.

SPEC THE RIGHT POWER AND TORQUE, AND NO MORE

The amount of horsepower you need is what is just enough to do the job. Generally, 350 to 485 hp is plenty for most applications. Extra horsepower just uses more fuel, puts more strain on the rest of the drivetrain, and adds cost up front. Go with a smaller 13-liter

block, for example, and you save around 350 pounds compared with a 15-liter block. More power transferring through the entire powertrain and tires will also wear out those components faster.

The term "drivetrain" is a collective one that covers the clutch, transmission, drive shaft and rear axle. Focus on the whole rather than the individual parts. Gearing is the process by which all those pieces work together and this is directly affected by the size of the gears built into the transmission and rear axle differential as well as the size of the wheels and tires. A truck with an improperly spec'd drivetrain may show a variety of tendencies that can suck money out of your operation and aggravate your drivers. These include an inability to achieve the desired top speed; over revving at high rpm; an inability to get underway; and poor fuel performance.

There are some terms you should become familiar with so that you can have an in-depth discussion with your truck dealer.

Geared road speed: Refers to the top speed the truck will be able to attain. It requires determining which transmission and axle combination can provide the speed you expect in both low and top gears. If the engine ends up running out of revs while cruising on the highway, it will be burning your profits up the smokestack.

Maximum gear reduction: Represents the highest multiplication of engine torque available. It's calculated by multiplying the transmission's lowest ratio by the rear axle ratio. The more severe your application, the greater maximum gear reduction needed.

Startability: Refers to the drivetrain's ability to get the whole vehicle and its load moving. It's a calculation that measures the feet of rise per 100 ft. So a 10% startability means that a fully loaded truck on a 10% grade will be able to launch itself. For vocational applications, 25% startability is generally required or even 30% in the case of severe duty applications.

Ratio steps: Think of them as the space between rungs on a ladder. If you have a heavy load to haul, the rungs need to be closer together. But if they are too close, truck speed will suffer. In most ratios, after each normal upshift the steps should be close enough to provide at least 90% of the engine's rated horsepower.

The transmission installed with a dump truck engine needs a lot of ratio range. Ultimately, you'll want to ensure a transmission with a gear that's low enough to pull through a traditional job site, and high enough to hit highway speeds when heading back to a quarry.

How many speeds? Similar to the advice given about horsepower, you are best off spec'ing only what you need. The formula has always been that up to 10 speeds is adequate for 80,000 to 100,000 GVW. Over that generally you want to move up to a multi speed 13- or 18-speed. The 8LL transmission, which provides two low gears for startability off road and enough top-end range for the highway, is a common choice.

The greatest part of your dump truck's weight is carried on the rear axle. Axles are gross axle weight rated (GAWR) to indicate the load they can bear. As GAWR increases, so should the axle size. The typical dump truck uses rear axles rated at 46,000 lbs. This covers most trucks with 16 to 21-foot dump bodies with combinations up to 140,000 lbs. This is not the area to try to cut costs. The guy who specs a 40,000 lbs rear axle to save a bit of money and some weight even though he is pulling monster steel coils, will be the guy who finds himself with a trashed rear end and a voided warranty.

DURABILITY IS YOUR FRIEND WHEN SPEC'ING THE CHASSIS

Your dump truck is likely going to take a pounding over the 12 or more years it's going to be with you. Make sure it has the backbone to handle it by opting for a chassis that's built tough. Don't be led astray by US examples of using lighter weight components such as aluminum crossmembers, frames, mounts, spring hangers, etc. In general, US weight laws are more restrictive than Canada's. So unless you are planning to haul similarly low weights, opt for durability with your chassis.

In addition, we place a lot of road salt on our roads during the winter and aluminum and salt don't play together well.

In terms of proper weight distribution, the key dimensions that will need to be considered are cab to axle (CA) or cab to tandem (CT). Both refer to the area behind the cab where the majority of the body's length rests and to the chassis wheelbase (the distance between the front and rear axle or centre of the rear tandem). Of course, the wheelbase requirements for maximum loading can change from province to province and this can have a big influence on how the chassis is configured.

Another key dimension is the hinge to rear or overhang, as it's frequently called. This measures the point at which the rear or body is attached to the frame and on which the body pivots during the dumping. The typical overhang is about 8-12 inches. Trucks backing into asphalt spreaders could require 18-20 inches of overhang so the load can be easily dumped into the spreader.

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SPEC'ING VOCATIONAL TRUCKS...

with a little help from Uncle Sam

What the impending GHG regs mean to construction truckers

By James Menzies

Construction truckers will not escape the next round of government-driven emissions standards, even though the focus is on reducing greenhouse gas (GHG) emissions through improved fuel economy, which isn't always top of mind in vocational applications.

In the US, the Environmental Protection Agency (EPA) and National Highway Traffic Safety Administration (NHTSA), have published a regulation limiting GHG emissions for model year 2014-2018 heavy trucks.

Here, Environment Canada has confirmed it is looking to mirror the US mandate with legislation of its own. While both sets of rules aim to deliver a net benefit to truck owners by setting improved fuel economy benchmarks that truck manufacturers must meet, construction truckers may find themselves having to adopt fuel-efficient technologies that compromise in other areas of equal or greater importance.

The new regs will be phased in between 2014 and 2018 model year vehicles and initially, vocational truck buyers will be able to comply simply by spec'ing low rolling resistance tires, says Alan Fennimore, vocational truck marketing manager with Kenworth.

"In 2014, the only thing you have to pay attention to is your tires - your drives and your steers - and that's about it," Fennimore says.

The problem is, construction truckers often prefer tires that deliver excellent traction and chip- and cut-resistance and are willing to sacrifice some fuel economy for the additional reliability. Fennimore said some of the most popular open shoulder, deep lug vocational tires in the market may no longer be offered because they'll be so heavily penalized under the new rules that they'll no longer be viable.

In some cases, construction truck buyers will still be able to select an open shoulder drive tire with an aggressive tread pattern, provided they spec' a fuel-efficient tire on the steer axle to neutralize the negative credits assigned to the drives. The goal is to gain enough credits on the steer position to offset any negative points generated by the drive tires, Fennimore explained. Better yet, a customer can choose low rolling resistance tires at every position and easily meet the new requirements, which may be viable if the truck is operated mostly on highway.

This complicated scoring formula will ultimately be up to the OEMs to administer.

Most new trucks leaving the assembly plant will have to be in a credit-neutral or credit-positive state. Manufacturers will be permitted to sell some trucks - a small percentage of their overall build - that don't comply with the GHG14 standard, but it's expected they'll price those trucks higher to incentivize truckers to choose GHG14-compliant vehicles.

"It's really on us (to comply)," Fennimore said. "If we don't sell enough GHG-compliant vehicles in a year and we're short 10 vehicles, it's on us to retrofit those vehicles

CO_2 Emission Standards – Vocational Vehicles

Vocational Vehicle Class	CO_2 emission standard for model years 2014-2016	CO_2 emission standard for 2017 and after
Classes 2B, 3, 4 and 5	388	373
Classes 6 and 7	234	225
Class 8	226	222

Proposed vehicle emission standards are measured in grams of CO_2 per ton-mile (g/ton-mile) and categorised by vehicle weight class
The engine emission standards would be measured in g/bhp-hr and vary based on engine size and the type of fuel used.

and to force owners to change their vehicles to become compliant and to put us into a neutral state."

Truckers wanting a W900L long-nose conventional with deep lug, open shoulder tires at every position, for example, can expect to pay a hefty premium for that truck since Kenworth can only sell so many non-compliant trucks in a given year. The same applies to all the other OEMs.

David McKenna, director of powertrain sales with Mack, says the new rules basically make "de facto Sheriffs" of the OEMs.

"Our goal here at Mack is to make it transparent to our customers," McKenna added.

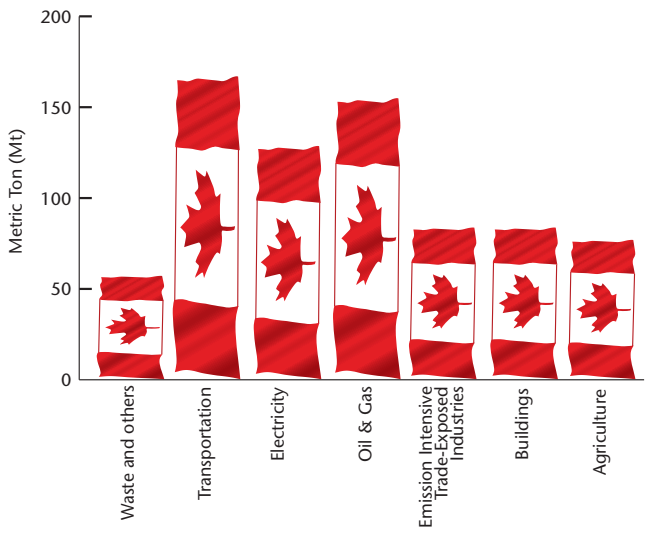
Since the OEMs can't earn or be deducted credits for any trucks sold into Canada or Mexico, manufacturers hoped Canada's GHG regs would adopt an identical scoring formula as the US rules. That appears to be the case.

"In terms of how the OEMs will be treated or scored with regards to their compliance, in the meetings we've attended the goal from Environment Canada has been to harmonize as much as possible where it makes sense," said Stephen Laskowski, senior vice-president of the Canadian Trucking Alliance (CTA).

While that approach is welcomed by the OEMs, Laskowski said the Canadian trucking industry wanted to see additional technologies such as automatic transmissions qualify for credits.

"Environment Canada decided not to go down that road because the Americans weren't, and we don't support that type of logic," Laskowski said. "Nobody wants to see more of a burden placed on the Canadian sellers of equipment, but if we can get more credit for our GHG (reduction) contributions, we believe we should get it."

Canada's GHG Emissions



Transportation is one of the largest sources of GHGs in Canada accounting for 22% of total emissions in 2005.

Fortunately, the rules do account for the heavier loads Canadian truckers are generally allowed to haul. Fuel mileage will be tracked by ton-mile to equalize the playing field.

Besides selecting fuel-efficient tires, construction truck operators will barely notice the rules when they first go into effect in 2014.

While it's the OEMs who will be required to administer the GHG programs and ensure their compliance, it's not yet clear how legislators on either side of the border intend to enforce continued compliance once a truck is delivered. For example, what's to stop a construction trucker from spec'ing a GHG-compliant truck and then immediately swapping out the tires for an open shoulder, deep lug design that provides better traction at the expense of fuel mileage? Nobody seems to have the answer to that.

"That is the question of the day," Laskowski admitted. "When you read the US rule, which is far more detailed in terms of enforcement, their general direction is that when a GHG-certified vehicle is delivered from the factory to the retailer and then to the consumer, it was EPA's stated goal that the vehicle's performance stays intact, meaning the equipment stays on-board. But how do you go about enforcing tires? That remains an open question."

Mack's McKenna also questioned the EPA's ability to enforce continued compliance once a truck is delivered.

"For the life of me, I can't see how they're going to audit this," he said. "The trucks we build today, once they go out in the field, customers take fairings off, they lengthen the wheelbase…all that stuff impacts our original GEM (greenhouse gas emissions) models."

This could also pose challenges for dealers, McKenna noted, who may take a GHG-compliant truck as stock and then modify it to a customer's liking, inadvertently taking it out of compliance in the process.

Hopefully, said CTA's Laskowski, the intended benefits of the regulations will be significant enough that truckers won't want to modify their GHG-compliant vehicles in the first place.

"If it is getting better fuel economy, why would the owner of the truck want to mess around with that?" Laskowski reasoned.

Benefits of new GHG regulations

- Lifetime GHG emission reductions of 2014-2018 MY vehicles: 19.0 Mt
- GHG emission reductions in 2020 compared to business as usual: 3Mt (equals 650,000 personal vehicles off the roads)
- Lifetime net benefits of 2014-2018 MY vehicles: $4.2 billion (net present value), mostly through fuel savings
- Increased vehicle purchase prices is expected to be recouped by fuel savings in less than 1 year in most cases
- Manufacturers of new heavy-duty vehicles will be able to build GHG-compliant vehicles by incorporating currently available "off-the-shelf" technologies

CONSTRUCTION TRUCK RUNDOWN

If you're in the market for a new construction truck, the possibilities are nearly endless

By James Menzies

As the construction market picks up, you may finally be able to set your sights on a new truck, built specifically to your liking. Is there any better feeling than browsing through the truck brochures, spec'ing the options that are most important to you and knowing the truck will be built from the ground up just for you?

CAT CT660

Construction truckers have no shortage of models from which to choose, each available with a near limitless smorgasbord of options. But before you get down to the business of specifying your new ride, it's important to choose a model that best suits your needs. That's where the fun begins. Here, you'll find an overview of the trucks available from each of the OEMs that are best suited to the rigors of construction trucking.

Caterpillar

The newest construction truck on the market is the Caterpillar CT660. The first of these trucks are just now being placed into service and by all accounts, drivers like them. The sloped front hood offers great visibility and the truck, with its set-back axle, turns on the proverbial dime.

The CT660 is Caterpillar's first ever truck, and it takes its design cues from other Cat machinery. The front end, for instance, borrows from Cat's 980K wheel loader.

Cat launched the CT660 last year initially with CT11 and CT13 engines (with 11- and 13-litres displacement, respectively) but knowing Canadian customers have an unquenchable thirst for power, Cat came out with a 15-litre offering just this spring. These engines are built on the Navistar design and don't require selective catalytic reduction (SCR) exhaust aftertreatment. The new engine brings power options all the way up to 550 hp with 1,850 lb.-ft. of torque.

The CT660 is available with Cat's own CX31 automatic transmission. It's a fully automatic transmission with torque converter and Caterpillar claims it's 5-8% more fuel-efficient than the popular Allison automatic.

The CT660 is considered a premium offering and will cost a little more than some of the other options out there. The company plans to roll out a new CT680 set-forward axle version of the truck next year.

Freightliner

Freightliner has recently revamped its vocational truck line-up to fill the gaps left with the departure of Sterling from the North American market. Last year it introduced two new severe-duty models: the 108SD and 114SD.

The 108SD is a 108-inch BBC offering with 42-inch set-back axle position. Its bigger brother has a 114-inch BBC model available in either a set-forward or set-back axle configuration. The 108 comes with Cummins ISB or ISC engines with up to 350 hp and 1,000 lb.-ft. of torque while the 114 comes with the Detroit DD13 engine as standard with up to 450 hp and 1,650 lb.-ft. of torque.

The trucks were designed with a clean back of cab, allowing for a wide variety of bodies to be installed with minimal interference. They also come with a stationary grille so front-mounted equipment won't interfere with the opening of the hood. The new models have a lightweight aluminum cab.

If you want a heavier-duty construction truck, Freightliner also offers the Coronado SD with a GVWR of 92,000 lbs and engine offerings of up to 600 hp/2,050 lb.-ft.

On the smaller end, there's the M2 106 medium-duty dump truck with a GVW rating of 56,000 lbs and power ratings of up to 350 hp/1,000 lb.-ft.

International

International has two trucks suited for heavy construction applications: the PayStar and the WorkStar.

The International PayStar is the truck maker's heaviest-duty construction truck, with extra strong 120,000-psi frame rails and a five-piece cross-member system. The PayStar is built for the heaviest severe-duty applications and is available as either a truck or tractor. The PayStar comes with International MaxxForce engines rated at up to 550 hp/1,850 lb.-ft.

The WorkStar is a versatile construction truck available with a full range of MaxxForce power options from the smaller DT rated at up to 300 hp/860 lb.-ft. right up to the MaxxForce 13 rated at up to 475 hp/1,700 lb.-ft.

The PayStar features a lightweight aluminum cab while the WorkStar comes with a rugged steel cab. Besides Caterpillar, International is the only construction truck manufacturer whose engines don't require SCR exhaust aftertreatment. This is advantageous in that it clears up frame rail space and doesn't require the use of diesel exhaust fluid, but on the other hand SCR improves fuel economy to the tune of about 5%. The pros and cons of both emissions strategies should be considered when choosing a construction truck model.

Kenworth

The T800, Kenworth's most popular construction truck, has celebrated an incredible milestone this year with delivery of its 250,000th truck. Fittingly, it was delivered to a Calgary oilfield services company; Canadians have always been fond of the T8.

The T800 celebrated its 25th birthday last year and of the quarter million that have been sold, Kenworth estimates 80% are still on the road. It's the durability and longevity of the T800 that make it a popular construction truck.

Kenworth has other options for construction applications as well, beginning with the Class 7/8 T440 for lighter-duty jobs right up to the classic-styled W900. These trucks can be ordered with Cummins or Paccar engines and a full complement of transmissions including manual, automated and fully-automatics.

The T800 has earned a reputation as being a true workhorse that'll last for 10 or 15 years even in the most demanding applications. Construction truckers like it because of that long life and are generally willing to pay a little more for it as a result. Lightly used T800s are hard to find because their owners tend to hang onto them for a long time and run them hard all the while.

Mack

Is there a brand of truck that's more synonymous with construction than Mack? What makes Mack famous among

Kenworth T800


Freightliner SD


International WorkStar

the construction crowd is its ability to…well, keep on trucking. Go to any work site and you'll see Mack trucks from the '70s and '80s still ably plying their trade.

Today's top dog in the construction segment - as far as Mack is concerned - is its Granite model. The truck is a pure construction offering, available in either a set-forward or set-back axle configuration.

The Granite is usually sold as a dump or mixer truck but is also available as a tractor or with tandem axle.

The most recent addition to the family is the Granite Medium Heavy Duty, introduced last year. The MHD is designed for applications, including municipal, which don't always require the heavy-duty spec's typically found in a heavy-duty Granite construction truck.

Mack's MP-series engines offer a full range of power and torque ratings and Cummins power is also available.

Owners looking for a little more in the way of styling can upgrade to the Granite Rawhide Edition, boasting an interior that's a little more uptown. Some of the features included in the retro-looking Rawhide interior include: a brushed nickel dash, a leather-grip steering wheel and two-tone Ultraleather seats with stitched-in Rawhide logo. The exterior is enhanced as well, with bright-finish stacks featuring seven-inch chrome Bullhorns and a bright-finish grille surround.

MACK Granite Heavy Duty

Peterbilt

The Model 367 is Peterbilt's answer to most construction applications. It features a 123-inch BBC and a long-length hood to house high horsepower engines and a large, robust cooling system with 1,438 sq.-in. radiator.

The 367 comes with either the Cummins ISX15 of Paccar's own MX engine, which next year will include a 500 hp/1,850 lb.-ft. offering able to handle loads grossing up to 140,000 lbs. For now, the ISX is the engine of choice for heavy applications. It's rated up to 600 hp/2,050 lb.-ft.

The 367 comes with an aluminum cab and is available in a set-forward or set-back axle configuration.

If you're looking for a smaller work truck, the Model 365 features many of the same options in a smaller package with a 115-inch BBC. Engine options include the Paccar MX and Cummins ISL9.

Still too big? The Model 348 is available for lighter-duty vocational applications with the Paccar PX-6 and PX-8 engines as options. This truck can be spec'd as either a Class 7 or 8 with a GVW rating beginning at 35,000 lbs.

If none of the above meet your power requirements, the traditional models 388 and 389 are available as day cabs with 123-inch and 131-inch BBCs respectively.


Peterbilt 367

Additional reading
Truck News editors have had the chance to climb behind the wheel of many of the trucks included in this report. If you'd like to read more about any of the models we've road tested, check out the following reports, all available on trucknews.com:

Cat CT660
First impressions behind the wheel

Freightliner SD108/SD114
Freightliner expands vocational line to fill Sterling's void

International PayStar
Test driving the International 5600 SBA construction dump

Kenworth T800
Bucking the trend: In an era of slippery trucks, the T800 stays true to its roots

Volvo I-Shift
The I-Shift shines in Sweden: Think your application to too sever for Volvo's automated mechanical transmission? Think again.

Western Star 4700
Western Star shows off new 4700, adds tractor version

Volvo VHD

Western Star 4700

Volvo

Known mostly for its highway tractors, Volvo also produces a rugged VHD construction truck as well as a VHD 430 with sleeper cab for overnight jobs.

The VHD boasts a spacious cab with ample room between the seats to enhance driver productivity and provide plenty of storage. Volvo has focused on soundproofing and insulating the cab, including the doors, which are double-sealed to keep out water.

The VHD was built with dependability, maneuverability and payload capacity in mind. It's designed to handle crowded work sites, extreme weather and rugged terrain. The VHD 430 comes with a 41-inch flat roof sleeper berth for those construction applications that are too remote for a day cab.

Both models are powered by Volvo D11 or D13 engines with 325-500 hp and 1,250-1,750 lb.-ft. or torque. A spec' that's unique to Volvo is its own I-Shift automated manual transmission. The I-Shift shines in on-highway applications but the company says it's equally capable of even the most challenging off-road jobs. In fact, outside North America the transmission is widely used in logging and construction applications.

Western Star

Western Star has always been popular among Canadian construction truckers. It has a full range of offerings for this segment, starting with its newest model the 4700 in the 'Baby 8' segment right up to its extreme duty 6900 for heavy off-road operations.

In between, you'll find the 4800, which is a new name for an existing model. It was formerly the 109-inch BBC version of the 4900 but recently removed from that family and given its own designation.

Western Star construction trucks fall into the premium category and will cost more at the outset with the promise of maximum uptime and long service life. Western Star trucks feature galvanealed steel cabs – no aluminum or rivets – which the company says provides better protection against damage and corrosion. The cab undergoes a 17-stage e-coat process for further protection and a nice paint finish.

Cummins and Detroit engines with a full range of horsepower and torque ratings are available.

SECRETS TO SUCCESS

Getting the most out of your construction trucking fleet

By Harry Rudolfs

What does it take to make a successful construction trucking business? The best companies excel at providing great service, safety, diversity, efficiency and good, versatile drivers.

Service and safety are givens, of course. You won't be successful without maintaining a strong focus on both of these. But diversification is another important element that's widespread throughout the sector. This usually involves a lot more than just installing sanders and plows on trucks during the winter months. Successful companies usually specialize or start out with a core discipline, but the spectrum of their repertoire can vary greatly, anywhere from building houses to hauling dry freight.

Take the Day Group of Sudbury, Ont. (formerly known as William Day Construction), a big company whose primary business is servicing and supplying mine sites with both on and off-road vehicles. But they're also into everything else, from hauling heavy equipment, to recycling and curbside municipal waste pick up, to front end lugger bins, to pin to pin work for a big supermarket chain.

Much of Day Group's growth has been organic as the divisions became established and burgeoned, but a significant part of new growth has come from the pursuit of complementary applications to keep the shops and operations busy 12 months of the year.

M&M Resources of Village Green, PEI, is a good example of a company that's made diversification work through acquisition. Reg Trainor purchased the family-owned business in 2006. At the time, the firm was primarily involved in lime spreading and supplying inland sand for agricultural purposes. The very next year Trainor began expanding into site preparation and road building. In 2009 he purchased a competitor, Belfast Lime and Trucking, and experienced a 60% growth in the lime business.

But Trainor soon realized that growth opportunities were limited in that field and that complementary diversification was necessary. Asphalt was his next target. In 2011 he purchased Cecil Pauley Construction, a local leader in residential and commercial paving. "The synergies between the two companies are phenomenal, and it has kept the M&M construction and trucking assets busy ever since," says Trainor.

Construction truckers are old school in many ways. They believe in going with what works. Hence many of them eschew buying late-model trucks that conform to contemporary EPA regulations. In the year 2000, I interviewed Noel Chesher, owner of Buckhorn Sand and Gravel in Buckhorn, Ont.. He remarked, at that time, on the longevity of his fleet of tandem dump GMC Generals which never seemed to quit.

Guess what? Twelve years later Noel's son Jeff is running the business, but the fleet of rubber block, 1985-87 Generals are still running around doing all the work. Buckhorn Sand and Gravel buys new CAT excavators and loaders every few years, but their vintage Generals seem to keep going from one century to the next. Parts might be harder to find, but they occasionally buy an old tractor and cannibalize it."They've each been rebuilt many times from

the ground up," according to papa Noel. "You can't kill 'em."

Ron Singer, owner of Ron Singer Trucking of Calgary, Alta., shares a similar philosophy. He only buys new equipment for his busy dry bulk division, and when they start to get weary he refurbishes them and shifts them to his construction fleet. "We never buy new equipment for our construction operation," he says. "We rebuild them ourselves so everything gets done, including the transmissions and engine and everything in between the bumpers. It's more like a re-manufacturing."

Jim Riddle, director of maintenance for Day Group, is also a big believer in recycling trucks. "New trucks today are totally unreliable," he says. "We've gotten to a point now where our best service is achieved from pre-2007 trucks."

Riddle just completed a project where he took three 1997-98 T-800 Kenworths that had worked hard hauling belly dump B-trains for ten years, around the clock, and completely rebuilt them replacing virtually every nut and bolt. "When they're done with the heavy hauls, we refinish them and put them into a specific occupation like a water truck or something to that effect," he says. "We determine what to make out of them after examining the condition of the truck. If the cab is still solid it can stay in service."

Of course, big companies like the Day Group need to buy new trucks as well. "We buy new equipment on an annual basis depending on customer demand," says Riddle. But this maintenance director is very wary when putting new Class 8 trucks on the road. "You have to be very diligent when doing a PDI on new equipment. You have to watch them extremely closely the first 90 days to determine the Achilles heel."

The next step, according to Riddle, is to make sure the parts are available to fix that new truck when it breaks down. This involves some guess work trying to predict which parts will fail. "You have to do your own parts warehousing because the dealer distribution network is extremely poor," he says. Riddle cites the case of an $850,000 piece of mine equipment that had to sit idle for a few days because of a $26 sensor part that shut down the motor at 20 degrees below zero. Even on the phone, I can sense he's still fuming about the incident. I wouldn't want to be that dealer rep.

Preventive maintenance is crucial to keeping the fleet rolling and most companies try to do as much work in-house to keep costs down. They rely on A, B, and C maintenance schedules that usually include a weekly grease and inspection, and a monthly oil and filter change. Riddle opts for an inspection and grease every 8,000 kms and a wet service every 24,000 kms. His off-road vehicles are serviced every 100 hours, with a wet service at 300 hours.

Day Group runs about 800 pieces of heavy equipment, and among them about 225 Class 8 trucks. As you can imagine, Riddle has a fairly substantial maintenance staff of 125 mechanics, apprentices, technicians and welders, spread across five shops in northern Ontario that operate 24/7. In addition he has several large full-service mobile truck-shops (including cranes), and he uses a couple of outside dealers and independent vendors to cover off the rest of his service requirements.

"Any time you take a truck out of service for repairs you're going to get under the skin of some dispatcher," says Riddle. But he suggests there are some ways of making this easier. "Some trucks run regular routes and the mileage can be predicted.," he says. "That way, specific days can be set aside for service work." Riddle also uses an "old-fashioned" maintenance board, and every vehicle that gets serviced has a sticker in the upper left hand side of the wind shield that keeps track of maintenance intervals.

Dave Read, president and chief operating officer of the Cruickshank Group of Kingston, Ont., sees an advantage in going with GPS tracking to maximize equipment usage. "We are currently outsourcing the maintenance of our heavy excavation and aggregate loading equipment fleet to Toromont who use a GPS tracking system to monitor equipment utilization. While we currently rely on our daily driver pre-trip inspections and post trip repair reports, we are moving towards utilizing GPS on our truck fleet as well," he says.

Of course the dispatcher is the crucial lynchpin when it comes to getting the most out of the rolling stock. Every company depends on them to get the right units in the right place at the right time.

According to Read, Cruickshank uses three dispatchers to cover off all of the daily equipment coordination. They also communicate with the shop concerning service or maintenance requirements identified by the drivers. "The dispatchers are responsible to the extent that they have control, to plan for the best utilization of the fleet," he says. "They communicate with each other daily to ensure full utilization of our own units.

Lastly, let's not forget the drivers and operators in all this, whom Riddle calls "the most important technicians we've got—the ones who sign the inspection report every day." Construction truckers are nothing if not adaptable, as Trainor of M&M Resources explains: our employees are hardworking, dedicated, and most of all versatile. If we need to pull a driver off an end dump to deliver a couple of loads of gravel to a customer requiring a belly dump, it's not an issue. If a driver has a few hours between trips and there's a tandem load of topsoil that needs to be delivered to a customer, they're more than happy to do it.

"The majority of our people have been with the company for many years. Trucks and equipment are easy to come by, but the people that operate them are not, and I do not take that for granted. The employee/employer relationship is a two-way street, and we're all in this together."

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THINK INSIDE THE BOX

Three options dominate dump body design: straight vertical sides that provide the highest volume; sloping sides that help force loose cargo downward; or sides curved in a bathtub-like fashion to provide easy dumping for rough cargoes. If you are hauling particularly sticky material, the side slanted design is worth a look, especially when you consider that heavy material stuck inside the box while dumping can cause the truck to tip over.

Exterior braces are used to reinforce the sides and extra bracing should be spec'd if the service application is severe.

The tailgate can be single or double acting. Single acting tailgates swing from top to bottom on one set of hinges. Double acting tailgates swing from either top or bottom hinges.

When it comes to the hoist, the key spec to consider is its capacity. To calculate the force necessary to lift the box, the body builder multiplies the hydraulic cylinder's lifting force in pounds by its length in inches.

Unlike the chassis where aluminum may not be the best option for Canadian applications, aluminum could be a good spec for the dump box for certain applications specializing in less severe applications such as gravel hauling. The aluminum box will cost more but its lower weight can increase carrying capacity enough to make it worthwhile. If you do need the strength of steel, work with your dealer to spec a box that is steel with a heavy floor but still light enough to make money by the ton/mile equation.

LOSE THE WEIGHT BUT ONLY IF YOU HAVE TO

If the truck will be hauling a number of loads per day, cutting vehicle weight can be profitable. You can reduce the weight of your dump truck by spec'ing components such as wheels, air tanks and clutch housings in aluminum rather than steel. In addition, use the smallest fuel tank you can get away with. Some operators can get away with a 56-gallon tank, but most will need at least 75 to 90 gallons to get through a day.

You can also save valuable pounds by choosing the right suspension. The difference can be several hundred pounds.

To avoid hauling around extra steel in the vehicle frame, have your dealer work with the truck maker's engineers to make sure you get enough frame only where you need it. You will typically need an extra strong crossmember at the back of the cab to strengthen the hoist mounting area. If you are planning to add lift axles later, make sure the dealer adds that information to the order so that the frame can be prepared for them.

But remember that many of these weight savers will cost more up front. You will need to balance that against the gains you expect to make hauling more payload.

GET ROLLING WITH THE RIGHT TIRE SELECTION

Tire manufacturers have tires to accommodate a variety of construction applications. How you plan to use the truck, the amount of time you will spend on and off road and the load range you expect to handle are all key factors in determining the right tire for your operation.

Employ the 80/20 rule: If your dump truck is on the highway 80% of the time, opt for the tire design that runs cooler and best maximizes your miles after providing the protection you need for the environment in which you operate. If most of the time your dump truck is off road, look for a tire with rubber compounds providing good cut resistance and protection for the sidewall. Off-road applications usually include a lot of muddy situations, in which case a deep tread design with an open shoulder and good traction is required.

Your load requirements determine the tire load range and ply rating of the tire. Don't overspec. An aggressive tread design meant for an 80/20 off-road application does not make sense for a 50/50 application; you would be stuck with too much tire for your needs. Similarly, if you don't need load range H, stick with G. The higher the load range, the higher the sticker price.

Unless you've got money to burn, retreading is a smart strategy. But if you are going to retread, you have to consider the durability of the tires. You want a casing capable of giving you multiple retreads so protection against penetration, buttressed shoulders and sidewall protection are critical. You can also help by pulling the casings for retreading at 6/32nds. If you are in an application where you operate in a lot mud, you may want to pull your tires at 8/32nds.

WHEN THE GOING GETS TOUGH, THE MICHELIN® X WORKS XDY® TIRE KEEPS GOING

It's tough out there. That's why the MICHELIN® X WORKS XDY® tire is your on/off road solution.

It is built to the highest standards of reliability and durability. With better wear and exceptional traction, it offers more mileage and operational savings for your fleet.* The MICHELIN® X WORKS XDY® tire also features built-in Co-Ex Technology™, a double layer compound for added anti-cut, anti-chip protection and better performance in a variety of on/off road applications. From highway to construction site, the MICHELIN® X WORKS XDY® delivers performance to your bottom line.

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*When compared to the MICHELIN® XDY®3 tire.