



In such a big country we've done pretty well to develop a good network of bitumen roads. However, there are still a huge number of unsealed roads around the place, and that means corrugations. Some of these are gravel and are so well maintained that you'd happily choose them over the bitumen alternative. However, others will shake your teeth out. Corrugations are nothing new and in this article, we look at what they are and how you should deal with them. For those of you reading in other parts of the world, corrugations are often referred to as washboarding.



*Corrugations as far as the eye can see.*

## **What are corrugations, and where can you find them?**

Corrugations refer to parallel ridges or bumps and can be likened to the tin material used for roofing many homes in Australia. Corrugated steel has a distinct, symmetrical wave pattern not unlike the corrugations you would find on a well-used unsealed road. Essentially, they are lumps and holes in the road that your wheels roll up and down over as you drive.

Corrugations on a road vary considerably in height and distance, with small ones just giving your vehicle a minor shake, but some of the very big ones can easily hit 20cm tall and make you feel each one very clearly.

You'll find corrugations on just about every gravel road out there. They also exist on some soft sandy tracks and other terrains, especially where inclines are involved.



*Corrugations on sandy tracks.*

## **What causes them?**

Corrugations are caused by vehicles. When a wheel goes over a small, natural undulation it changes the amount of weight on it, before resuming normal distribution. The next wheel follows and does the same thing, each time creating a very small change in the high and low section. Eventually, this forms a pattern of ridges and grooves, which get worse with more traffic and becomes a noticeable corrugation.



*Bone jarring corrugations.*

## **What do corrugations mean for you, and your vehicle?**

Driving on a badly corrugated road is vastly different to the usual bitumen ones that most people are used to. If you are the driver, there are a number of things that you need to be aware of so you can accommodate your driving accordingly.

Cars today do an amazing job with soaking up the bumps and imperfections of roads, but just because you don't feel it inside the vehicle doesn't mean your car won't! Corrugations make your vehicle work extremely hard, and if you aren't careful you will very quickly end up with failures and problems.



*Francois Peron National Park sand can be very corrugated.*



## Reduced traction

The primary issue that you'll face driving on corrugations is a reduction in traction, which can sometimes be significant. Think about each wheel rolling along the corrugations. Initially, at slow speeds, the wheel goes up and down each bump and maintains contact with the ground. Once you start to speed up though, your wheels will begin to skip from top to top of the corrugations. This means that your wheels are not actually touching the ground for a portion of time, and that means you have less traction.

This is super important to consider, as your vehicle will behave very differently when braking, accelerating, cornering and taking evasive action compared to a bitumen road. A lot of accidents happen every year when people react badly on an unsealed road and the vehicle does something differently to what they were expecting.

Fundamentally, you need to be much more careful when driving on a corrugated road. You won't be able to stop, corner or swerve nearly as easily as you would on bitumen, and that can have terrible consequences if you are travelling at the wrong speed.



*No matter the vehicle corrugations can be a pain.*

## Higher stress on your vehicle

A lot of people think that 4WD tracks are the killer of vehicles but actually, it's the corrugations which in the long term take the biggest toll on your 4WD. It's not uncommon to travel hundreds of kilometres along unsealed roads and when there are corrugations every 100mm or so, your vehicle can deal with more than a million corrugations in a day.

Each one of those bumps is absorbed by your vehicle and the repeated shaking can do severe damage if you aren't set up properly or travelling at the right speed.

This is important to note: with the right speed, tyre pressure and consideration, corrugations become a natural part of touring in a 4WD and not something to fear. That being said, it's wise to maintain a healthy respect for them and their ability to negatively affect your 4WD (plus your holiday if it all goes wrong!).



*Corrugations on the way to Steep Point.*

## How are corrugations managed?

Roads that become corrugated are graded back to a good, smooth surface. How long that smooth surface lasts depends upon the volume of traffic passing over it, the tyre pressures on those vehicles as well as the speed at which they are driven. Depending on the level and frequency of maintenance, the unsealed road will either be accepted or undergo works to be bitumised! Unfortunately, corrugations are unavoidable with unsealed roads and plenty of private and commercial vehicles manage these surfaces on a daily basis.



*The Gibb River Road is often full of corrugations.*



## What do you need to do?

As above, if you do the right things corrugations will just be a regular part of 4WDing. Unfortunately, a lot of people don't do these and consequently, pay for it in one way or another.



*Quality gear to tackle corrugations on our Dmax.*

## Daily checks

If you are doing a lot of corrugations, it is sensible to lay aside 15 minutes at the end of the day or the start of the next, to have a look around your 4WD. This means getting a tarp and laying underneath with a spanner. Look for any shiny components (which suggest something has been rubbing), oil leaks or anything that is out of the ordinary. Run a spanner or socket over the nuts and bolts to ensure nothing is loose, especially your wheel nuts (as these will loosen over time).

Look to see under the engine bay that there's no damaged cables, belts, leaks or noises that sound odd. If you do this, there's a good chance you will pick problems up early and fix them before a much bigger issue comes about (like a wheel coming off at high speeds down a gravel road!) where you may need a tow or mobile mechanical service.



*A proper tyre deflation station.*

## Let your tyres down and engage 4WD

I've mentioned above that vehicles do an amazing job of isolating any bumps and knocks from you as the driver, and those who are passengers. That doesn't mean your vehicle is isolated from it. Your suspension and tyres take a huge amount of punishment on corrugated roads, and you should be reducing your air pressure to aid with this.

The lower the tyre pressure, the more the tyres mould to the bumps and act as secondary suspension. It's important to balance the speed of your vehicle with the tyre pressures, as too low pressures will make the tyres get hot and become damaged, and then they will blow out and put you at severe risk of an accident. Taking about 30% less than your normal highway pressures is a pretty good guide, unless the corrugations are bad (and then you'll need lower pressures and lower speeds).

You should also have 4WD engaged. This means all 4 wheels are driving the vehicle, and you have far better control. It also dramatically reduces the damage done to tracks, which means the people coming behind have a nicer ride!



*Tyre deflation for corrugations is a must.*

## Have some mechanical sympathy

It's quite noisy when driving on corrugated roads, because of how hard your 4WD is working. You might not feel it, but every nut, bolt, clip, screw, cable, connection and piece of steel that



constructs your 4WD does! It's better to bear this in mind and arrive a bit later with everything intact, than to ignore the mechanical sympathy and risk damage.

If you are doing regular corrugations, it's well and truly worth getting some quality aftermarket suspension. The factory suspension on a lot of 4WD's will deteriorate much more rapidly the harder it has to work. For those doing a huge amount of corrugations, remote reservoir shock absorbers are well worth considering as they help to mitigate the increased heat endured by your shock absorbers. Light truck tyres are highly recommended as well and many even regard them as essential.



*Remote reservoir shock absorbers will help with corrugations.*

## Drive at a sensible speed

The correct speed takes into account many variables. There's traction, corrugation size, mechanical sympathy, road width, and the number of other vehicles around. Each of these needs to be assessed and accommodated towards for enhanced personal safety and vehicle protection.

The faster you go the more comfortable the ride however, the resulting loss of traction comes with the increased risk to your welfare. There's no guide here but I will say that it's far more sensible to take it easy than to fly along and increase your chances of an accident.



*Corrugations are easy to drive on with the right setup.*

## Slow down when passing

On a corrugated road, make sure you slow down when both passing someone in the opposite direction or overtaking the vehicle in front. This reduces dust and the chances of a rock shattering either of your windscreens, plus a good rule to adhere is not to overtake without seriously good vision in front or the result can be very nasty. So if it's dusty, best just to sit back and be patient.



*Manning Gorge; to get there you'll enjoy lots of corrugations.*

## Are corrugated roads worth it?

No doubt you'll meet people throughout your travels who refuse to drive along unsealed roads impaired with corrugations. There's nothing wrong with that as being aware of your gear and it's limitations is wise. As is the recognition for the potential repair work involved and how much you are or are not prepared to take on.

That said, some of the worst roads in the country are regularly travelled by those seeking adventure and in our experience, often the most amazing and breathtaking of places lie at the end of terrible roads. These are usually the ones you remember most fondly and the stories of which, are recollected for years to come.

See you out there.



**So, who's up for an amazing adventure at the end of a corrugated road?!**