

# Engineering Specifications What A Story

It frustrates us at Polyguard to see how illogical specifications, such as the ones for corrosion coatings which shield cathodic protection currents, can survive for 20 years past the time the problem became widely known.

*"We've always done it that way".* Drives us crazy, but we've all seen it.

What follows is a story about a long lived specification which we believe is true. We got it from an engineer who spent years in the railroad business. He believes it, and before it reached him it had been forwarded by a lot of other engineers. Does that make it true? Not sure, but if anybody has some real proof of its accuracy or inaccuracy, please let us at Polyguard know.

## Anyway, here's the story.

When you see a space shuttle sitting on its launch pad, there are two big booster rockets attached to the sides of the main fuel tank. These are solid rocket boosters, or SRBs. The SRBs were made by Thiokol at their factory in Utah.

The engineers who designed the SRBs would have preferred to make them a bit fatter. But the SRBs had to be shipped by railroad from the factory to the launch site. The railroad line from the factory happens to run through a tunnel in the mountains. The SRBs had to fit through that tunnel. The tunnel is slightly wider than the railroad track.

The US standard railroad track gauge (distance between the rails) is 4 feet, 8.5 inches.

4 feet, 8.5 inches is an exceedingly odd number. Why was that gauge used?

Because that's the way they built them in England, and English expatriates built the first U.S. railroads.

Why did the English build them like that?

Because the first rail lines were built by the same people who built the pre-railroad tramways, and that's the gauge they used.

Why did "they" use that gauge?

Because the people who built the tramways used the same jigs and tools that they had on hand for building wagons, which used that wheel spacing.

OK. Why did the wagons have that particular odd wheel spacing?

Well, if they tried to use any other spacing, the wagon wheels would break on some of the old long distance roads in England, because....that's the spacing of the wheel ruts.

So who built those old rutted roads?

Imperial Rome built the first long distance roads in Europe and England for their legions. The roads have been used ever since. And the ruts in the roads?

Roman war chariots formed the initial ruts, which everyone else had to match for fear of destroying their wagon wheels. Since the chariots were made for Imperial Rome, they were all alike in the matter of wheel spacing.

What led to the Roman standard for wheel spacing on chariots?

Imperial Roman army chariots were made just wide enough to accommodate the back ends of two horses.

So, a major design specification of what is arguably the world's most advanced transportation system was determined over two thousand years ago by two horses behinds.

And we at Polyguard are frustrated because illogical specifications for corrosion coatings which shield cathodic protection currents stay in place for 20 years longer than they should have?



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