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Part 1

Modeling of asphalt

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Then, once the proper three-dimensional property invariant relations are formulated, the resulting theory of hypoelasticity is one rank above that of linear elasticity. Indeed, in the same year, 1965, Noll [2] showed that every elastic material for which the stress-strain relation is invertible is also a hypoelastic material. So, hypoelasticity appears to be more general than elasticity, a property which was very important to Truesdell and his school.

Indeed, Truesdell had a classification of the elasticity-hypoelasticity. The most general of these theories, according to Truesdell, was hypoelasticity. Less general was Cauchy elasticity, in which stress was a function of deformation gradient, but a strain energy function did not necessarily exist. At the lowest rank of the hierarchy stood Green elasticity, which was Cauchy elasticity with a strain energy.

To summarize here is the ranking and the nomenclature of the terminology of Truesdell:

- (1) Hypoelasticity - less than elasticity - a rate theory