A framework for the construction of a predictive model for the calculation of the edge pedestal structure in tokamak discharges, in the absence of ELM effects, is described. The framework is based entirely on the requirement imposed by particle, momentum and energy balance requirements and on the heat conduction relation. Within this framework, calculation of the edge pedestal structure (density, temperature and pressure profiles) requires as input i) the ion and electron heat conductivities, ii) the toroidal angular momentum radial transfer frequency, iii) the poloidal component of the parallel viscosity coefficient (including ion orbit loss effects), and iv) the radial electric field. These transport coefficients must be calculated from theoretical models and confirmed by comparison with experiment, within the same computation framework. A procedure for determining the experimental value of these transport coefficients by the interpretation of experimental data, within the same computation framework, is described. A confirmatory calculation of the edge density profile, using transport coefficients interpreted from experiment, is presented.