The recycled one in cold in situ with emulsion (RFSE) is a technique proved at execution level, as they demonstrate to amount of studies and carried out performances to it by means of this procedure. But the ignorance of the mechanical properties of the recycled bituminous material in service, restrains the expectations of growth in the use of these materials. However, it is necessary to assure the viability these alternatives, as much economic as technically. And it is here where studies as this they acquire greater relevance.

This work was born with the objective to make a pursuit of a highway where a performance of rehabilitation by means of recycled has been made in cold in situ with emulsion. One is the N-536 highway, between the localities of Villamartín, Barco de Valdeorras and Sobradelo. This highway constitutes one of the approaches to Galicia from the leonine region of the Bierzo. Account, in addition, with a great percentage of very heavy vehicles that give service to the intense slate commerce that is generated in this one area, deriving themselves a type from traffic T3. The rehabilitation performance took place in three differentiated periods, 1.998, 1.999 and 2.000 and later, in year 2.002, were extracted specimens and plates of the highway in the different sections to make the pursuit of the properties of the asphalt layers that made. The solution adopted in the three periods of performance was a recycled one in cold in situ with emulsion of reyoungers agents in a thickness of 10 cm. The recycled one affected in almost all the sections the totality of the existing bituminous pavement, and to a small proportion of the granular layer of base. On the recycled one a layer of mixture reinforcement extended D-12 type in 5 cm of thickness. In order to make the pursuit, it is chosen to make three types of tests to the extracted specimens of the highway: dynamic compression (NLT-349/90), indirect tensile (NLT-346/90) and dynamic flexural toughness (NLT-350/90). With the analysis of these three tests, it is tried to carry out an exhaustive x-ray of the two intervening asphalt layers.

Of the made tests, a series of important conclusions is deduced. In the first place, it is necessary to emphasize that in spite of being extracted specimens of a real highway and not of test tubes made in laboratory, the results present an important uniformity in all the tests. In addition, from the study of both types of dynamic modules, one to compression and other to flexural toughness, it is derived that the rigidity of the intervening materials increases with the age, excellent fact for future performances of recycled.

By means of the joint analysis of the laws of fatigue to flexural toughness and of the dynamic modules to flexural toughness the life utility to flexural toughness of the material can be approximated, that is most critical due to the requestings that support the bituminous materials. In this sense, the tread layer is the one that displays better conditions. The four studied plates of the layer of recycled present similar life utilities, conferring an important uniformity in all the tests. In addition, from the study of both types of dynamic modules, one to compression and other to flexural toughness, it is derived that the rigidity of the intervening materials increases with the age, excellent fact for future performances of recycled.

Finally, to indicate that in a practical application of the results of our work by means of program ECOROUTE, after obtaining the life utility of the material and comparing it with the specified one in the norm, it is deduced that our design is prepared to support to traffic T2 type, whereas the traffic of our highway is a T3 type with overloaded heavy vehicles. This demonstrates that the used material is prepared to support the requestings that receive in service period.

In order to conclude, we can affirm that the technical validity of the performance of recycled in cold in situ with emulsion of the N-536 highway has been proven, since in the pursuit carried out on the material after a service period, the sizing of the performance is deduced that as much, that is to say, the chosen thicknesses of the operating asphalt layers, like the characteristics of the used materials, as much in the layer of tread in hot D-12 as in the layer of recycled, they are adapted for the type of traffic that must support in the highway. This study serves to open to a new field of performance and development of knowledge, coverall faced the people in charge of the performances of rehabilitation of our highways. It is important that the administrations are conscious of the serious ecological problem that represent the garbage dumps of construction materials in our country, and that thanks to the development of the technologies, foment performances that tend towards a sustainable development in Civil Engineering, which every time is more difficult by the tendencies and inertias developed in our field of performance.