

CFM2017 - Answer to reviewers' comments

Paper n° 133712: "Characterization of Debonding at the Interface between Layers of Heterogeneous Materials coming from Roads"

Authors would like to thank reviewers for their comments. Answer to each point is given below.

- A nomenclature could be added for clarity before introduction:

→ *A nomenclature table has been added in the final version of the paper*

- Part 2: Could you please specify the interest of the WST compared to other tests for the evaluation of interfacial fracture energy?

→ *It is an interesting test while sophisticated equipment is not required. It is a simple and stable test and it allows the use of cubical geometry for samples of important size coming from roads. It has been proven the possibility of the determination of fracture properties with the WST.*

- Part 2, Fig. 1 : Please improve the quality of Fig. 1.a

→ *The quality of Fig 1.a has been improved in the final version*

- Part 2 Eq. 1: why do the authors use the letter S for defining an Energy (SA)?

→ *S_A in our case is the "surface" energy or the work obtained from the area under the curves, It is a simple notation to be more comprehensible for us and make the letter G only for the fracture energy G_F . S_F stands for surface area of the final fracture surface of the sample*

- Part 3: Any indications about the bonding methodology and its influence on the fracture energy?

→ *Effectively, one of the objectives of this work is to study the influence of bonding methodology on the fracture energy. For that purpose, two types of bonding techniques were studied: i) The BE specimens are coming from the test section with a shot blasted treatment of the interface; ii) For 1GT specimens, the cement concrete layer was cast directly onto the bituminous slab previously fabricated. The influence of these two techniques is discussed in the tests results in the paper. Paragraph 3, under Fig. 2, have been re-written more clearly in that sense*

- Part 3: Specimens BE are taken from " an old accelerated test section". Could you give more details?

→ *This phrase has been improved in the final paper as: "Four specimens (noted BE) are taken from an existing accelerated test section with shot blasted interface treatment [3] [12]." The important information that authors would like to indicate here that in this case, the bonding method applied between pavement layers was a shot blasted interface treatment. More details are given in the referred papers.*

- Part 4. Fig. 3: Could you indicate each material on Fig. 3. BE and 1GT are located always on the right hand side?

→ *This part has been improved in the final paper*

- Part 4: A total delamination seems to be obtained, meaning exact same fracture surface areas?

→ *Final fracture surface areas are given in Table 2. The dimensions of three groups of specimens have been added in part 3 for clarify this point in the paper.*

- Part 4 Table 2: Could you please give possible reasons for such large discrepancy in fracture energy results?

→ *Firstly, the specimens tested are made with heterogeneous materials. Obviously, It is shown that 4 or 6 specimens are not enough to get the all fracture knowledge per type of each bi-layer specimen. In addition, the direction of compaction is not known for the BE specimen. It adds another possible effect on the discrepancy of the results.*

- Part 4: could you please give more details about the differences obtained between LVDT and DIC measurements in terms of accuracy and control of discrepancies?

→ *Information have been given in the text such as:*

The optical measurement is a CCD AVT PIKE F-145C camera (resolution 1388X 1038 pixels²). The region of interest for the calculation of the displacement fields is (769X819pixels²). The subset size 64x64 pixels is chosen with vertical and horizontal gaps of 1 pixel. The horizontal factor scale is about 0.20 mm/pixel. For the LVDT sensors, having a maximum travel of 10mm, the estimating uncertainty of measurement is about 0.09 mm.