We study singular integral operators induced by 3-dimensional Calderón-Zygmund kernels in the Heisenberg group. We show that if such an operator is $L^2$ bounded on vertical planes, with uniform constants, then it is also $L^2$ bounded on all intrinsic graphs of compactly supported $C^{1,\alpha}$ functions over vertical planes. In particular our result applies to the singular integral associated to the horizontal gradient of the fundamental solution of the sub-Laplacian. We show that, as in the Euclidean setting, the $L^2$ boundedness of this operator is connected with the question of removability for Lipschitz harmonic functions. As a corollary of our result, we infer that the intrinsic graphs mentioned above are non-removable, providing the first known examples of non-removable sets with positive and locally finite 3-dimensional measure. Joint work with K. Fassler and T. Orponen. (Received February 17, 2018)