TJPRC: International Journal of Earthquake Engineering and Geological Science (TJPRC: IJEEGS)
Vol. 1, Issue 2, Dec 2017, 19-36

MODELLING OF BURIED FAULTS USING APPLIED ELEMENT METHOD

MOHAMMAD AHMED HUSSAIN[1] & RAMANCHARLA PRADEEP KUMAR[2]

[1]*PhD Scholar, Earthquake Engineering Research Centre, IIIT Hyderabad, Gachibowli, Hyderabad, India*

[2]*Associate Professor, Earthquake Engineering Research Centre, IIT Hyderabad, Hyderabad, Gachibowli, Hyderabad, India*

ABSTRACT

Recent ground-motion observations suggest that there is a considerable difference in surface-rupturing earthquakes and earthquakes due to buried faults. Near fault records for buried as well as surface fault earthquakes, in the distance range of less than 100 m from the faults are not available except for few cases. Therefore numerical simulation of ground motions for such near-fault situations for buried and surface fault earthquakes is necessary. In this paper the difference in ground motion due to buried faults and surface faults has been studied using 3D Applied Element Method. For the surface fault when the fault intersects the surface, a rem

arkable concentration of large ground acceleration in a very narrow region around the fault trace has been seen. The presence of the low velocity layer tends to reduce the particle velocity and rupture speed leading to the reduction in ground motion. The ground motion due to buried fault contains low frequency content there by giving greater response to long period structures. It has been seen that there is increase in peak ground acceleration value on the surface with the increase in the stiffness of the bedrock layer where the rupture takes place and increase in the strong ground motion with the decrease in the rise time of the slip applied at the base of the fault plane. This study explains some of the features of the buried fault earthquakes.

KEYWORDS: Applied Element Method, Buried Faults, Surface Faults, Fault Motion

Received: Jul 08, 2017; **Accepted:** Jul 28, 2017; **Published:** Aug 05, 2017; **Paper Id.:** TJPRC: IJEEGSDEC20173

Original Article