

Effects Of Near Fault Ground Motions On Frame Structures

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Effects Of Near Fault Ground

According to this study, near-fault earthquake ground motions have remarkable effects on the nonlinear dynamic response and accumulated damage of concrete gravity dams due to their severe and impulsive effects on structures. Near-fault ground motions have the potential to cause more severe damage to the dam body than far-fault ground motions, the effects of near-fault ground motions on concrete gravity dams should be taken into account to obtain more realistic results.

Effects of near-fault and far-fault ground motions on ...

Ground motions close to a fault can be significantly influenced by directivity effects. When the rupture and slip direction relative to a site coincide, and a significant portion of the fault ruptures towards the site, the ground motion can exhibit the effects of forward-directivity.

Effects of near-fault ground motions and equivalent pulses ...

Near-fault ground motion includes the characteristics of forward directivity and fling step. In addition to ground motion, the aspect ratio of the pier, as a representative factor of a structural system, influences the seismic behavior of bridges. Thus, this study assessed the seismic response of bridges with various aspect ratios under the near-fault and far-fault ground motion conditions. Nonlinear static analysis was first performed to evaluate the seismic capacity of the pier.

Special Issue "Effects of Near-Fault Ground Motions on ...

The latter is described with idealized pulses and near-fault seismic records strongly influenced by forward-directivity or fling-step effects (from Northridge, Kobe, Kocaeli, Chi-Chi, Aegion). In addition to the well known dependence of the resulting block slippage on variables such as the peak base velocity, the peak base acceleration, and the critical acceleration ratio, our study has consistently and repeatedly revealed a profound sensitivity of both maximum and residual slippage: (1) on ...

Effects of Near-Fault Ground Shaking on Sliding Systems ...

Near-fault ground motions are represented by equivalent pulses, which have a comparable effect on structural response but whose characteristics are defined by a small number of parameters. The inelastic dynamic response to both near-fault records and basic pulses demonstrates that structures with a fundamental period greater than the pulse ...

Effects of Near-Fault Ground Motions on Frame Structures ...

Near-fault ground motions have caused much damage in the vicinity of seismic sources during recent earthquakes (Northridge 1994, Kobe 1995, and Taiwan 1999). There is evidence indicating that ground shaking near a fault rupture may be characterized by a short-duration impulsive motion that exposes structures to high input energy at the

EFFECTS OF NEAR-FAULT GROUND MOTIONS ON FRAME STRUCTURES

step effect is the outcome of the tectonic permanent deformation of the earth in the proximity of the fault. It manifests itself in the record with a static residual displacement, oriented parallel to the fault strike with strike-slip earthquakes and perpendicular to the fault with purely dip-slip normal or thrust earthquakes Abrahamsen 2001 .

Effects of Near-Fault Ground Shaking on Sliding Systems

Conclusions 1) The long-period pulse has a significant effect on the tunnel, which makes the near-fault ground motions more damaging... 2) For a given pulse period, the pulse with larger amplitude brings more energy and leads to higher strains in rock and... 3) The period of the pulse can ...

Effect of near-fault ground motions with long-period ...

Closure to "Effect of Near-Fault Vertical Ground Motions on Seismic Response of Highway Overcrossings" by Sashi K. Kunath, Emrah Erduran, Y. H. Chai, and Mark Yashinsky Discussion of "Effect of Near-Fault Vertical Ground Motions on Seismic Response of Highway Overcrossings" by Sashi K. Kunath, Emrah Erduran, Y. H. Chai, and Mark Yashinsky

Effect of Near-Fault Vertical Ground Motions on Seismic ...

Effects of Faulting: Faulting is essentially a process of rupturing and displacement along the plane of rupture. Its effect may involve: i. Changes in the elevation of the ground, ii. Omission of some strata where they are normally expected, iii. Repetition of some strata in a given direction against the normal order of superposition, and, iv.

Faults: Meaning, Causes and Effects | Rocks | Geology

Effects of Near-fault Strong Ground Motions on Probabilistic Structural Seismic-induced Damages Abstract. Seismic fragility curves measure induced levels of structural damage against strong ground motions of... Keywords. Seismic Fragility Analysis; Near-fault Strong Ground Motions; Incremental ...

Effects of Near-fault Strong Ground Motions on ...

By investigating earthquakes near faults, it was observed that near-fault earthquakes exhibit more displacements than faults that are far from faults. These conditions can make seismic separators critical, so to prevent this conditions FDGM should be used to correct the response of these bridges.

Effects of Near Fault and Far Fault Ground Motions on ...

Characteristics of Near-Fault Ground Motions: • F d Di it Eff Forward Directivity Effect: - Fault rupture propagates toward a site with Vr=β(and slip vector points toward the site). - Appears in the form of two-sided velocity pulse. - Observed in the strike-normal directionfor strike-slip and dip-slip faults.

NEAR-FAULT GROUND MOTIONS:FAULT GROUND MOTIONS ...

Near-fault ground motions exhibiting forward directivity effects are critical for seismic design because they impose very large seismic demands on buildings due to their large-amplitude pulselike waveforms.

Implementation of Near-Fault Forward Directivity Effects ...

of severe, long-period pulses in near-fault ground motions may be a key factor in causing damages. Thus, it is necessary to investigate the effect of the long-period pulse on tunnels in order to interpret the observed damages. At present, there are two approaches to account for near-fault ground motions.

1558. Effect of near-fault ground motions with long-period ...

Faults and fold axes appear to be important in localizing ground failure, although the mechanisms that cause ground failure near fault zones can vary. Some secondary tectonic movement associated with folding above the blind thrust may have occurred locally, but the effects of these failures are minimal.

Ground Effects - USGS

The analyses results revealed that the seismic performance of the CBFs without FVDs is very poor and sensitive to the velocity pulse period and the intensity of the NF ground motion due to brace-buckling effects. Installing FVDs into the CBFs significantly improved their seismic performance by maintaining their elastic behaviour.

Effect of near-fault ground motion and damper ...

Ground motions in near source region of large crustal earthquakes are significantly affected by rupture directivity and tectonic fling. These effects are the strongest at longer periods and they...