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روش مقیاس نمودن شتابنگاشت‌ها

تصيه و تنظيم: مهدی علی‌زایی




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تحليل تاريخچه زمانی

این تحلیل میتواند بصورت خطی یا غیرخطی انجام شود. طبق بند ۳-۴ استاندارد ۲۸۰۰، کلیه پارامترهای مربوط به حرکت زمین نظیر جرم، نسبت شتاب مبنا و غیر در این روشها، همان مقادیر روش تحلیل استاتیکی معادل هستند.

در این روش با اثر دادن شتاب زمین به صورت تابعی از زمان، در تراز پایه و محاسبه پاسخ مدل، ریاضی ساختمان، با فرض رفتار خطی انجام میشود. در این تحلیل نسبت میرایی ۵٪ در نظر گرفته میشود.

در صورتی که از سه زوج شتاب نگاشت استفاده شود، مقادیر حداکثر پاسخ ها و در صورت انتخاب هفت شتابنگاشت، مقادیر متوسط پاسخ ها در نظر گرفته می‌شود.

فصل ۱۶ آیین نامه ASCE7 به این تحلیل ها پرداخته است.

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ASCE7-10

16.1.3.1 Two-Dimensional Analysis

Where two-dimensional analyses are performed, each ground motion shall consist of a horizontal acceleration history, selected from an actual recorded event. Appropriate acceleration histories shall be obtained from records of events having magnitudes, fault distance, and source mechanisms that are consistent with those that control the maximum considered earthquake. Where the required number of appropriate recorded ground motion records are not available, appropriate simulated ground motion records shall be used to make up the total number required. The ground motions shall be scaled such that the average value of the 5 percent damped response spectra for the suite of motions is not less than the design response spectrum for the site for periods ranging from $0.2T$ to $1.5T$ where T is the natural period of the structure in the fundamental mode for the direction of response being analyzed.

ASCE7-10

16.1.3.2 Three-Dimensional Analysis

Where three-dimensional analyses are performed, ground motions shall consist of pairs of appropriate horizontal ground motion acceleration components that shall be selected and scaled from individual recorded events. Appropriate ground motions shall be selected from events having magnitudes, fault distance, and source mechanisms that are consistent with those that control the maximum considered earthquake. Where the required number of recorded ground motion pairs is not available, appropriate simulated ground motion pairs are permitted to be used to make up the total number required. For each pair of horizontal ground motion components, a square root of the sum of the squares (SRSS) spectrum shall be constructed by taking the SRSS of the 5 percent-damped response spectra for the scaled components (where an identical scale factor is applied to both components of a pair). Each pair of motions shall be scaled such that in the period range from $0.2T$ to $1.5T$, the average of the SRSS spectra from all horizontal component pairs does not fall below the corresponding ordinate of the response spectrum used in the design, determined in accordance with Section 11.4.5 or 11.4.7.

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چگونه شتابنگاشت‌ها را دانلود نماییم؟



Google peer strong motion database

About 107,000 results (0.35 seconds)

Scholarly articles for peer strong motion database

NGA project strong-motion database - Chiou - Cited by 327

... CAV) based on the PEER-NGA strong motion database - Campbell - Cited by 15

Strong motion record processing for the PEER center - Darragh - Cited by 15

PEER Strong Motion Database - University of California

ngawest2.berkeley.edu/

Relational database providing information about and access to strong motion recordings. Available in both java and text versions.

Sign in - NGA West 2 - NGA-West2 - PEER

<http://ngawest2.berkeley.edu/>

<http://www.consrv.ca.gov/cgs/snip/>

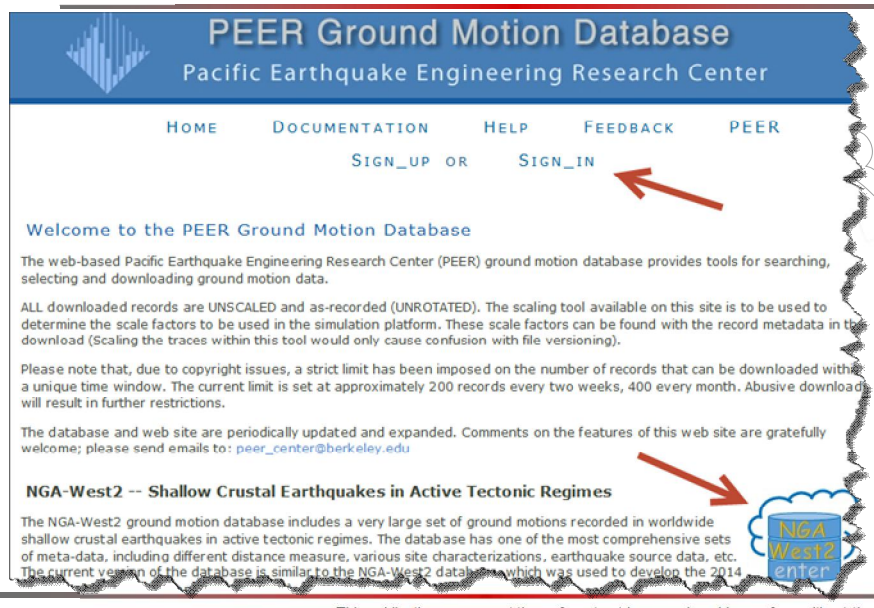
PEER Strong Motion Database



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PEER Ground Motion Database

Pacific Earthquake Engineering Research Center

HOME DOCUMENTATION HELP FEEDBACK PEER

SIGN_UP OR SIGN_IN

Welcome to the PEER Ground Motion Database

The web-based Pacific Earthquake Engineering Research Center (PEER) ground motion database provides tools for searching, selecting and downloading ground motion data.

ALL downloaded records are UNSCALED and as-recorded (UNROTATED). The scaling tool available on this site is to be used to determine the scale factors to be used in the simulation platform. These scale factors can be found with the record metadata in the download (Scaling the traces within this tool would only cause confusion with file versioning).

Please note that, due to copyright issues, a strict limit has been imposed on the number of records that can be downloaded within a unique time window. The current limit is set at approximately 200 records every two weeks, 400 every month. Abusive download will result in further restrictions.

The database and web site are periodically updated and expanded. Comments on the features of this web site are gratefully welcome; please send emails to: peer_center@berkeley.edu

NGA-West2 -- Shallow Crustal Earthquakes in Active Tectonic Regimes

The NGA-West2 ground motion database includes a very large set of ground motions recorded in worldwide shallow crustal earthquakes in active tectonic regimes. The database has one of the most comprehensive sets of meta-data, including different distance measure, various site characterizations, earthquake source data, etc. The current version of the database is similar to the NGA-West2 database which was used to develop the 2014

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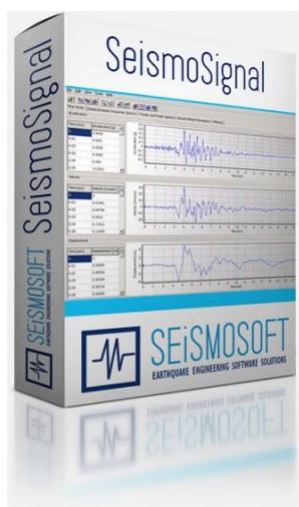


SeismoStruct is an award-winning program developed for the assessment of different classes of structures, such as plants, subjected to earthquake strong motion. It features static and dynamic analysis methods (pushover, incremental) to meet the analytical requirements posed by the modern assessment and design philosophy.

[More Details](#)

<http://www.seismosoft.com>

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SeismoSignal

SeismoSignal constitutes a simple, yet efficient, package for the processing of strong-motion data. Amongst other things, it allows for the derivation of elastic and constant ductility inelastic response spectra, computation of Fourier amplitude spectra, filtering of high and low frequency record content and estimation of other important seismological parameters, such as the Arias Intensity and the significant and effective durations.

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همپایه نمودن شتابنگاشت‌ها:

قبل از اعمال شتابنگاشت‌ها به سازه بایستی آنها را همپایه نمایید. بدین معنی که قدرت آنها تقریباً در سطح طیف ارتجاعی استاندارد قرار گیرد تا مقایسه آنها امکان پذیر باشد. آیین نامه الزام میکند، در محدود $0.2T$ تا $1.5T$ بایستی همپایه سازی انجام شود. لیکن توضیح واضحی در ارتباط با T نمیدهد. مقدار T دوره تناوب اصلی سازه است.

ASCE7-10

در صورتی که دوره تناوب سازه در دو جهت متفاوت باشد چه کنیم؟

16.1.3.2 Three-Dimensional Analysis

"For each pair of horizontal ground motion components a square root of the sum of the squares (SRSS) spectrum shall be constructed by taking the SRSS of the 5-percent damped response spectra for the scaled components (where an identical scale factor is applied to both components of a pair). Each pair of motions shall be scaled such that for each period in the range from $0.2T$ to $1.5T$, the average of the SRSS spectra from all horizontal component pairs does not fall below the corresponding ordinate of the design response spectrum, determined in accordance with Section 11.4.5 or 11.4.7."

مستند ۹

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مثال) برای یک سازه با دوره تناوب 1.5 sec سه شتابنگاشت زیر را همپایه نمایید.

Suite of Ground Motions Used for Response History Analysis

NGA Record Number	Magnitude [Epicenter Distance, km]	Site Class	Year	Component Source Motion	PGA (g)	Record Name (This Example)
68	6.6 [39.5]	D	1971	San Fernando 090 San Fernando 180	0.210 0.174	A00 A90
169	6.5 [33.7]	D	1972	Imperial Valley 262 Imperial Valley 352	0.238 0.351	B00 B90
953	6.7 [13.3]	D	1994	Northridge 009 Northridge 279	0.416 0.516	C00 C90

مستند ۱۰

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