

*City of San Diego*  
***SEISMIC SAFETY STUDY***  
*Geologic Hazards and Faults*

Updated 2008



**Development Services Department**

**Disclaimer**

The information presented on these maps is primarily intended for planning purposes and should not be construed as definitive data for a specific site. The information presented is a collection of the most readily available data at the time of compilation. As much of the information was transferred from maps of differing scales, the accuracy is limited.

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# SAN DIEGO SEISMIC SAFETY STUDY

## Introduction

The first edition of the San Diego Seismic Safety Study (SDSSS) was completed and adopted by City Council (Resolution 211594) on September 19, 1974 to comply with California regulations requiring cities to adopt a Seismic Safety Element within their General Plan.

The original maps, issued in 1974 and updated in 1983, have been revised and upgraded to reflect the latest interpretation of the geologic features and to streamline the site review process. The new maps are produced at a larger scale (1 inch = 800 ft.) and in full color, incorporating the most advanced GIS computer mapping capabilities. The GIS computer-based system provides easy public access to the latest version of the maps, quick evaluation for permit processing, and timely maintenance and upgrading of data.

The SDSSS can be used to determine what geologic conditions are likely to underlie your site. The study consists of a series of maps showing locations of faults and other geologic hazards which are suspected or known to exist within the city of San Diego. This information is necessary for determining which level of geotechnical review will be required by the city when applying for planning, development or building permits.

The new edition contains several important changes that will shorten the review process. Geologic Hazard Categories and Fault Zones are now shown on a single sheet instead of two separate sheets, and the Geotechnical Land-Use Capability sheet has been eliminated. A revision and expansion of the Geologic Hazard Categories, a larger map format and scale, and the precision of GIS computer software has allowed the elimination of two-thirds of the old maps. This edition simplifies and consolidates the review process for all city departments by utilizing the same criteria (Geologic Hazard Categories) for site evaluation.

## How To Use the SDSSS

The procedure for determining which level of geotechnical study is required by the various city departments for planning, development or building permits differs slightly, based upon the type of permit sought. For permits dealing with land-planning and land-development (i.e., grading, public improvements), refer to the procedure described in "PLANNING AND DEVELOPMENT PERMITS" on sheet 2. For building permits, refer to the procedure described in "BUILDING PERMITS" on sheet 3.

## Disclaimer

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## Legend

### FAULT ZONES

-  11 Active, Alquist-Priolo Earthquake Fault Zone
-  12 Potentially Active, Inactive, Presumed Inactive, or Activity Unknown
-  13 Downtown special fault zone

### FAULTS

-  Fault
-  Inferred Fault
-  Concealed Fault
-  Shear Zone
-  Relative vertical fault movement

Fault Zones represent possible limits within which faults could be located. Area concept required due to possible plotting error from different scale of source maps and accuracy of plots and overlay.

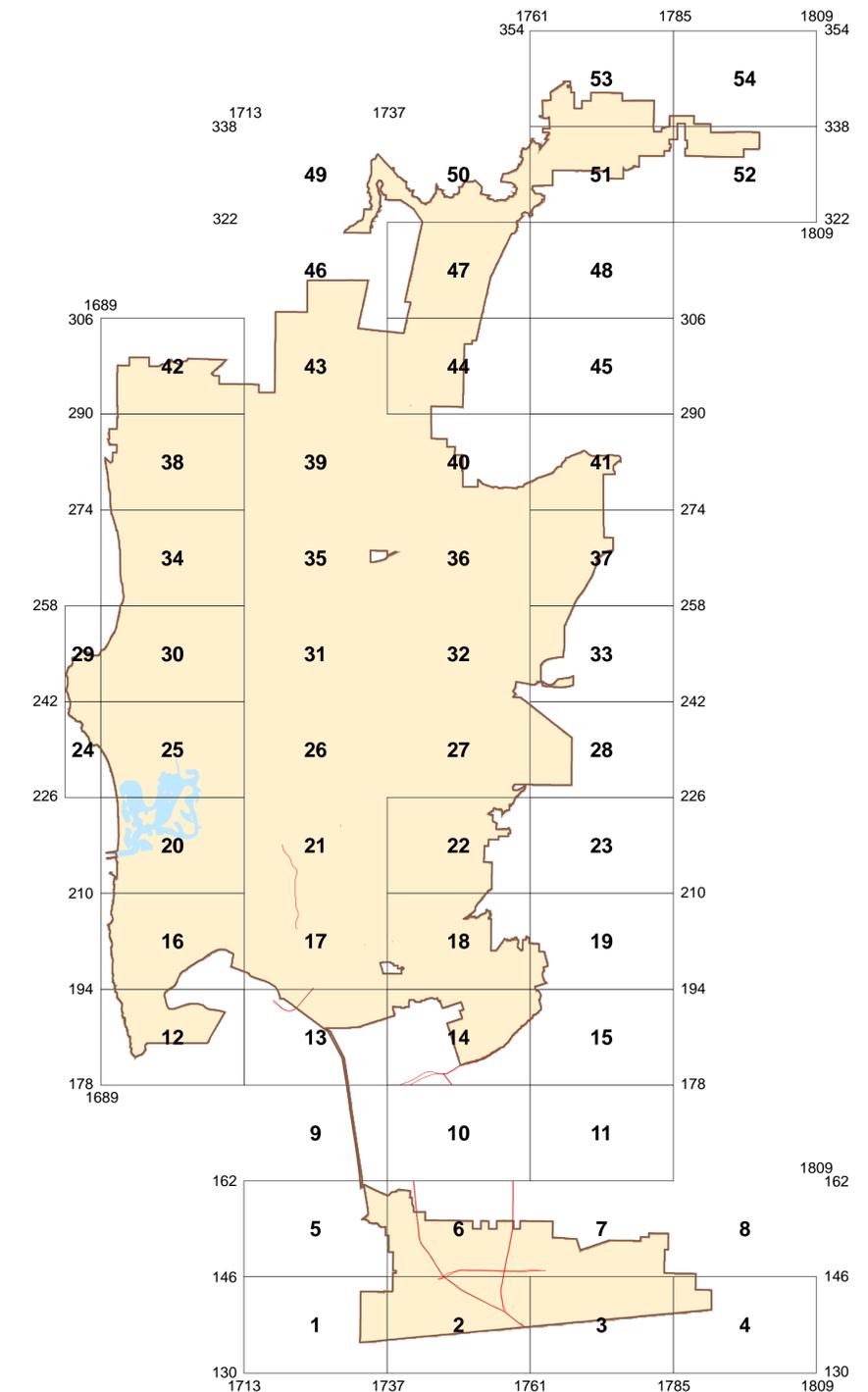
All fault locations are based on the best interpretation of available data at the time of compilation. Often, due to the extreme differences in scale between the data source and this map, interpretation of the fault, inferred fault, and concealed fault was required.

NOTE: There is a high degree of probability that the fault location will lie within the limits shown. Limits are included to indicate suggested area for exploration in order to accurately locate the fault.



  
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## Index Map (NAD 27)



# SAN DIEGO SEISMIC SAFETY STUDY: PLANNING & DEVELOPMENT PERMITS

Table 2-A

Type of Hazard	Geologic Hazard Categories	Relative Risk			
		Nominal	Low	Moderate	High
Ground Rupture	11 Active, Alquist-Priolo Earthquake Fault Zone				●
	12 Potentially Active Inactive, Presumed Inactive, or Activity Unknown		●	●	
	13 Downtown special fault zone			●	●
Potential Slope Instability	21 Confirmed, known, or highly suspected				●
	22 Possible or conjectured			●	
	23 Friars: neutral or favorable geologic structure		●	●	
	24 Friars: unfavorable geologic structure			●	
	25 Ardath: neutral or favorable geologic structure		●	●	
	26 Ardath: unfavorable geologic structure			●	
	27 Otay, Sweetwater, and others		●	●	
Potential Ground Failure	31 High Potential -- shallow groundwater major drainages, hydraulic fills			●	●
	32 Low Potential -- fluctuating groundwater minor drainages		●		
Coastal Bluff Stability	41 Generally unstable; Numerous landslides, high steep bluffs, severe erosion, unfavorable geologic structure				●
	42 Generally unstable Unfavorable bedding plains, high erosion			●	●
	43 Generally unstable Unfavorable jointing, local high erosion			●	
	44 Moderately stable Mostly stable formations, local high erosion		●	●	
	45 Moderately stable Some minor landslides, minor erosion		●		
	46 Moderately stable Some unfavorable geologic structure, minor or no erosion		●		
	47 Generally stable Favorable geologic structure, minor or no erosion, no landslides		●		
	48 Generally stable Broad beach areas, developed harbor	●	●		
All Other Conditions	51 Level mesas -- underlain by terrace deposits and bedrock nominal risk	●			
	52 Other level areas, gently sloping to steep terrain, favorable geologic structure, Low risk		●		
	53 Level or sloping terrain, unfavorable geologic structure, Low to moderate risk		●	●	
	54 Steeply sloping terrain, unfavorable or fault controlled geologic structure, Moderate risk			●	
	55 Modified terrain (graded sites) Nominal risk	●			

Table 2-B

Building Type/Land Use Group	
Group I	Nuclear Facilities, Large Dams and Regional Electrical Power Generation Plants
II	Hospitals; Fire, Police, Emergency Communication Facilities; Critical Transportation Elements, such as Bridges, Overpasses; Smaller Dams; Important Utility Centers
III	Schools, Churches, Large or Highrise Buildings, or Other Places Normally Attracting Large Concentrations of People, such as Civic Buildings, Large Commercial Structures, Most Roads, Other Utilities, Grading
IV	Residential (Single-Family Residences, Apartments, etc.) Most Commercial and Minor Public Structures
V	Most Industrial, Other Minor Commercial (Warehouses, Wharves, Docks, Marinas)
VI	Agriculture, Parks, Open Space

Follow this procedure to determine which level of geotechnical study is required by the City for Land-Planning and Land-Development permits:

1. Referring to the Index (Sheet 1), find the map sheet number containing your site. Turn to the proper map sheet and locate your site.
2. From the map, determine the Hazard Category for your site. The Hazard Category is identified by a specific number (11 thru 55) and color code. Refer to Table 2-A for a description of the Hazard Category and the relative risk assigned to the suspected type of Hazard.
3. Determine the Building Type/Land Use Group for your project per Table 2-B.
4. Referring to Table 2-C, determine the required geotechnical study for the Building Type/Land Use Group and Hazard Category at your site.

Table 2-C Required Geotechnical Study

RELATIVE RISK	HAZARD CATEGORY	SOIL INVESTIGATION	GEOLOGIC RECONNAISSANCE	GEOLOGIC INVESTIGATION
MODERATE TO HIGH	11, 13, 21, 31, 41	I-V	--	I-VI
LOW TO MODERATE	12, 22-27, 32, 42-48, 53, 54	I-V	VI	I-V
NOMINAL TO LOW	51, 52, 55	I-V	IV	I-III



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# SAN DIEGO SEISMIC SAFETY STUDY: BUILDING PERMITS

## FOOTNOTES TO TABLE 145.1802

1. Hazard Category. The Hazard Category describes the geologic feature or condition suspected at the site. The Hazard Category is determined by reference to the current City of San Diego Seismic Safety Study (SDSSS) maps.

2. Building, structure, and facility classes A, B, C, and D.

A. Class A includes the following:

- 1) Essential Facilities as defined in Section 1604.5 of the California Building Code.
- 2) Any building, structure, or facility where, in the opinion of the Building Official, significant generations or storage of toxic, hazardous, or flammable materials will occur. Quantities of these materials will be assessed in accordance with the risks they present.

B. Class B includes the following developments, occupancy groups, and structures provided they are not included in Class A:

- 1) All developments consisting of four or more structures.
- 2) All new structures requiring deep foundations (piers or pilings).
- 3) All buildings over three stories in height.
- 4) All buildings containing the following occupancies (Refer to 2007 California Building Code, Chapter 3):
  - a. Group A, Divisions 1, 2, 3 and 4.
  - b. Group E.
  - c. Group H, Divisions 1, 2 and 3.
  - d. Group I, Divisions 1, 2 and 3.
- 5) All buildings with an occupant load of more than three hundred (300) persons as determined by Table 10-A of the California Building Code.
- 6) Tanks, bins, hoppers, silos, and other storage structures of more than twenty thousand (20,000) gallons capacity intended to store toxic, hazardous, or flammable contents that are not associated with a building, structure, or facility in Class A.
- 7) Tanks, bins, hoppers, silos, and similar structures over thirty-five (35) feet high.
- 8) Towers over thirty-five (35) feet high.
- 9) Retaining walls (height is measured from the top of the footing to the top of the wall):
  - a. Retaining walls over 12 feet in height.
  - b. Retaining walls over 8 feet in height supporting a surcharge or retaining toxic, hazardous, or flammable contents.
  - c. Retaining walls associated with structures included in footnote 1.B.4.

C. Class C includes the following occupancy groups and structures provided they are not included in Classes A or B:

- 1) All buildings containing the following occupancies (Refer to California Building Code, Chapter 3):
  - a. Group A, Divisions 2, 3 and 5.
  - b. Group B.
  - c. Group E.
  - d. Group F, Divisions 1 and 2.
  - e. Group H, Divisions 4 and 5.
  - f. Group I, Division 1.
  - g. Group M.
  - h. Group R, Divisions 1 and 2.
  - i. Group S, Division 1.
- 2) Retaining walls (height is measured from the top of the footing to the top of the wall):
  - a. Retaining walls over 8 feet in height.
  - b. Retaining walls of any height supporting a surcharge or retaining toxic, hazardous, or flammable contents.
- 3) Tanks, bins, hoppers, silos, and other storage structures intended to store toxic, hazardous, or flammable contents.
- 4) Tanks, bins, hoppers, silos, and similar structures over twenty (20) feet high.
- 5) Towers over 20 feet high.

D. Class D includes the following occupancy groups and structures provided they are not included in Classes A, B, or C:

- 1) All buildings containing the following occupancies (Refer to California Building Code, Chapter 3):
  - a. Group R, Divisions 3 and 4.

3. Faults and Fault Zones -- Hazard Category 11, 12, and 13.

Active and potentially active faults are defined in the most recent edition of "Fault-Rupture Hazard Zones in California," Special Publication 42, California Department of Conservation, Division of Mines and Geology, a copy of which is on file at the office of the City Clerk as Document No. 00-17773-4.

Fault zones define the limits within which faults are suspected. Fault zones include the Alquist-Priolo Earthquake Fault Zones, The Downtown Special Fault Zone, as well as the area 100 feet on both sides of the fault lines indicated on the current San Diego Seismic Safety Study (SDSSS) maps. Refer to SDSSS maps for location of faults and fault zones.

The Downtown Special Fault Zone consists of an area beginning at the intersection of the centerline of Laurel Street and the centerline of Highway 163, thence in a general westerly and southwesterly direction along the centerline of Laurel Street to the intersection of the centerline of Harbor Drive, thence westerly to the intersection of the U S Bulkhead line of San Diego Bay, thence in a general southerly and southeasterly direction along said Bulkhead line to an intersection of the southwesterly prolongation of the centerline of 28th Street, thence northerly along the centerline of 28th Street to the intersection of the centerline of Ocean View Boulevard, thence northwesterly along the centerline of Ocean View Boulevard to the intersection of the centerline of 25th Street to the intersection of the centerline of Russ Boulevard, thence westerly along the prolongation of the centerline of Russ Boulevard to the intersection of the centerline of Highway I-5, thence in a general northerly and westerly direction along the centerline of Highway I-5 to the intersection of the centerline of Highway 163, thence generally northerly along the centerline of Highway 163 to the point of place of beginning.

4. Liquefaction Potential -- Hazard Category 31 and 32.

When an investigation is required, adhere to Section 1802 of the 2007 California Building Code for minimum requirements.

5. Geotechnical Report. A report of the geotechnical condition is required for sites where geologic hazards are suspected, prior to obtaining a Building Permit. The report will either consist of a preliminary study, a geologic reconnaissance, or an in-depth study including field work and analysis, a geologic investigation. The geologic reconnaissance report and the geologic investigation report shall include all pertinent requirements as established by the Building Official. All reports shall be prepared in accordance with the most recent edition of the City of San Diego "Technical Guidelines for Geotechnical Reports," on file with the City Clerk as Document No. 00-17773-5. These minimum requirements shall be augmented by geologic evaluations pertinent to the type of proposed project and anticipated method of construction, which should be described in the report. For buildings located in both a fault zone and a hazard category zone, the most restrictive requirement shall govern.

Regardless of the requirements of Table 145.1802, the Building Official may require a geologic reconnaissance report or a geologic investigation report for any site if the Building Official has reason to believe that a geologic hazard may exist at the site.

*Note: No geologic investigations are required for occupancy Group U or any other structure of a similar minor nature.*

**Follow this procedure to determine which level of geotechnical study is required by the City for building permits:**

1. Referring to the Index (Sheet 1), find the map sheet number containing your site. Turn to the proper map sheet and locate your site.
2. From the map, determine the Hazard Category for your site. The Hazard Category is identified by a specific number (11 thru 55) and is color coded.
3. Referring to Table 145.1802, determine the required geologic study for the Hazard Category and the proposed Building, Structure, or Facility Class (A, B, C, or D). The footnotes to the table are provided to further clarify the procedure.

**Table 145.1802 Required Geotechnical Investigation <sup>5</sup>**

Hazard Category <sup>1</sup>	Building, Structure, and Facility Class <sup>2</sup>
11 <sup>3</sup> , 13 <sup>3</sup> , 21, 31 <sup>4</sup> , 41	A, B, C, D
12 <sup>3</sup> , 22, 42-48, 54	A, B, C, D
23-27, 32 <sup>4</sup>	A, B, C
51, 52, 53, 55	A, B

NOTE: Refer to Municipal Code section 145.1802 for complete foundation investigation requirements.

