

APPENDIX 10A

# Civil Engineering Design Criteria

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## 10A1 Introduction

This appendix summarizes the codes, standards, criteria and practices that will be generally used in the design and construction of civil engineering systems of the Sun Valley Energy Project (SVEP). More specific project information will be developed during execution of the project to support detailed design, engineering, material procurement specification and construction specifications as required by the California Energy Commission.

## 10A2 Codes and Standards

The design of civil engineering systems for the project will be in accordance with the laws and regulations of the federal government, the State of California, Riverside County, and industry standards. The current issue or edition of the documents at the time of filing of this Application for Certification (AFC) will apply, unless otherwise noted. In cases where conflicts between the cited documents exist, requirements of the more conservative document will be used.

### 10A2.1 Civil Engineering Codes and Standards

The following codes and standards have been identified as applicable, in whole or in part, to civil engineering design and construction of power plants.

- American Association of State Highway and Transportation Officials (AASHTO) – Standards and Specifications
- American Concrete Institute (ACI) – Standards and Recommended Practices
- American Institute of Steel Construction (AISC) – Standards and Specifications
- American National Standards Institute (ANSI) – Standards
- American Society of Testing and Materials (ASTM) – Standards, Specifications and Recommended Practices
- American Water Works association (AWWA) – Standards and Specifications
- American Welding Society (AWS) – Codes and Standards
- Asphalt Institute (AI) – Asphalt Handbook
- California Building Code (CBC), 2004 (Based on Uniform Building Code (UBC), 1997)
- California Energy Commission – Recommended Seismic Design Criteria for Non-Nuclear Generating Facilities in California, 1989
- Concrete Reinforcing Steel Institute (CRSI) – Standards

- Factory Mutual (FM) – Standards
- National Fire Protection Association (NFPA) – Standards
- Steel Structures Painting Council (SSPC) – Standards and Specifications

## 10A2.2 Engineering Geology Codes, Standards and Certifications

Engineering geology activities will conform to the applicable federal, state and local laws, regulations, ordinances and industry codes and standards.

### 10A2.2.1 Federal

None are applicable.

### 10A2.2.2 State

The Warren-Alquist Act, PRC, Section 25000 et seq. and the California Energy Commission (CEC) Code of Regulations (CCR), Siting Regulations, Title 20 CCR, Chapter 2, require that Application for Certification (AFC) address the geologic and seismic aspects of the project.

The California Environmental Quality Act (CEQA), PRC 21000 et seq. and the CEQA Guidelines require that potentially significant effects, including geologic hazards, be identified and a determination made as to whether they can be substantially reduced. Geological hazards have been identified in Section 8.4.

### 10A2.2.3 Local

California State Planning Law, Government Code Section 65302, requires each city and county to adopt a general plan, consisting of nine mandatory elements, to guide its physical development. Section 65302(f) requires that a seismic safety element be included in the general plan.

The project development activities will require certification by a Professional Geotechnical Engineer and a Professional Engineering Geologist during and following construction, in accordance with the CBC, Chapter 33 and Appendix Chapter 33. The Professional Geotechnical Engineer and/or the Professional Engineering Geologist will certify the placement of earthen fills and the adequacy of the site for structural improvements, as follows:

- Both the Professional Geotechnical Engineer and the Professional Engineer will address CBC Appendix Chapter 33, Sections 3309 (Grading Permits), 3312 (Cuts), 3313 (Fills), 3315 (Terraces), 3316 (Erosion Control), and 3318 (Final Report).
- The Professional Geotechnical Engineer will also address CBC Appendix Chapter 33, Sections 3314 (Setbacks) and 3315 (Terraces).

Additionally, the Professional Engineering Geologist will present findings and conclusions pursuant to PRC, Section 25523 (a) and (c); and 20 CCR, Section 1752 (b) and (c).

### **10A2.3 Storm Drainage Codes, Standards and Certifications**

Storm drainage design activities will conform to the applicable federal, state and local laws, regulations, ordinances, and industry codes and standards. The design of all storm drainage will be performed by, or under the direct supervision of, a licensed civil engineer.

#### **10A2.2.1 Federal**

All finish floors shall be higher than the 100-year flood plain elevation as established by the Federal Emergency Management Agency.

#### **10A2.2.2 State**

None are applicable.

#### **10A2.2.3 Local**

Riverside County has specific design requirements for storm water management design that will be met by this project.