NCEES
advancing licensure for engineers and surveyors

NCEES Principles and Practice of Engineering Examination
CIVIL–STRUCTURAL Exam Specifications
Effective Beginning April 2024

- The exam is computer-based. It is closed book with electronic references. The NCEES *PE Civil Reference Handbook* is included in the exam along with the design standards shown on the last two pages.
- Examinees have 9 hours to complete the exam, which contains 80 questions. The 9-hour time includes a tutorial and an optional scheduled break. Examinees work all questions.
- The exam uses both the International System of units (SI) and the US Customary System (USCS).
- The exam is developed with questions that will require a variety of approaches and methodologies, including design, analysis, and application.
- The examples specified in knowledge areas are not exclusive or exhaustive.

	Number of Questions
1. Analysis of Structures–Loads and Load Applications	**12–18**
A. Dead loads	
B. Live loads	
C. Construction loads	
D. Wind loads	
E. Seismic loads	
F. Moving loads (e.g., vehicular, cranes)	
G. Snow, rain, and ice	
H. Impact loads	
I. Earth pressure and surcharge loads	
J. Tributary areas and load paths (e.g., lateral and vertical)	
K. Load combinations	
2. Analysis of Structures–Forces and Load Effects	**17–26**
A. Diagrams (e.g., shear and moment)	
B. Axial (e.g., tension and compression)	
C. Shear	
D. Flexure	
E. Combined stresses	
F. Deflection	
G. Special topics (e.g., torsion, buckling, fatigue, progressive collapse, thermal deformation, bearing)	

3. Temporary Structures and Other Topics **5–8**

A. Special inspections
B. Submittals
C. Formwork, falsework, scaffolding, shoring and reshoring, bracing, and anchorage
D. Impact of construction on adjacent facilities
E. Safety (e.g., construction, roadside, work zone)

4. Design and Details of Structures–Materials and Material Properties **10–15**

A. Soil classification and soil properties (e.g., strength, permeability, compressibility, phase relationships)
B. Concrete (e.g., unreinforced, reinforced, cast-in-place, precast, pre-tensioned, post-tensioned)
C. Steel (e.g., structural, cold-formed)
D. Timber
E. Masonry (e.g., brick veneer, CMU)
F. Material test methods and specification conformance (e.g., concrete, steel, masonry, timber, other construction materials)

5. Design and Details of Structures–Component Design and Detailing **26–39**

A. Horizontal members (e.g., beams, slabs, diaphragms, struts)
B. Vertical members (e.g., columns, bearing walls, shear walls)
C. Systems (e.g., trusses, braces, frames, composite construction)
D. Connections (e.g., bolted, welded, bearing, embedded, anchored, post-installed anchors)
E. Shallow foundations (e.g., footings, combined footings, slabs, mats)
F. Deep foundations (e.g., piers, piles, caissons, drilled shafts)
G. Retaining walls

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NCEES Principles and Practice of Engineering Examination
CIVIL–STRUCTURAL Design Standards
Effective Beginning with the April 2027 Examination

In addition to the NCEES *PE Civil Reference Handbook*, the following codes and standards will be supplied in the exam as searchable, electronic pdf files with links for easy navigation. This NCEES YouTube video shows how standards will be presented on the exam. Standards will be provided as individual chapters on the exam, and only one chapter at a time can be opened and searched. This ensures the exam software runs large files effectively. The handbook and design standards will be available the entire exam.

Solutions to exam questions that reference a standard of practice are scored based on this list and the revision year shown. Solutions based on other standards will not receive credit.

NCEES does not sell design standards or printed copies of the NCEES handbook. The NCEES handbook is accessible from your MyNCEES account.

ABBREVIATION	DESIGN STANDARD TITLE
AASHTO	*AASHTO LRFD Bridge Design Specifications,* 10th edition, 2024, American Association of State Highway & Transportation Officials, Washington, DC. AASHTO PE Exam Collection.
IBC	*International Building Code,* 2024 edition (without supplements), International Code Council, Falls Church, VA, www.iccsafe.org.
ASCE 7	*Minimum Design Loads for Buildings and Other Structures*, 2022, American Society of Civil Engineers, Reston, VA, www.asce.org.
ACI 318	*Building Code Requirements for Structural Concrete and Commentary*, 2019 (2022), American Concrete Institute, Farmington Hills, MI, www.concrete.org.
AISC	*Steel Construction Manual,* 16th edition, 2023, American Institute of Steel Construction, Inc., Chicago, IL, www.aisc.org.
AWC NDS[1]	Wood Design Package, American Wood Council, Leesburg, VA, www.awc.org. • *National Design Specification for Wood Construction with Commentary, 2024* • *National Design Specification Supplement, Design Values for Wood Construction, 2024* • *Special Design Provisions for Wind and Seismic with Commentary, 2021*

CFR TITLE 29 U.S. Department of Labor, Washington, D.C., 2024.

Part 1910 Occupational Safety and Health Standards

- Subpart I, Personal Fall Protection Systems, 1910.140
- Subpart D, Walking-Working Surfaces, 1910.28–1910.30
- Subpart F, Powered Platforms, Manlifts, and Vehicle-Mounted Work Platforms, 1910.66–1910.68, with Appendix A–Appendix D to 1910.66

Part 1926 Safety and Health Regulations for Construction.

- Subpart E, Personal Protective and Life Saving Equipment, 1926.104
- Subpart L, Scaffolding Specifications, Appendix A
- Subpart M, Fall Protection, 1926.500–1926.503, Appendix B–Appendix D
- Subpart Q, Concrete and Masonry Construction, 1926.703–1926.706, with Appendix A
- Subpart R, Steel Erection, 1926.752 & 1926.754–1926.758

PCI *PCI Design Handbook: Precast and Prestressed Concrete,* 8th edition, 2017, Precast/Prestressed Concrete Institute, Chicago, IL, www.pci.org.

TMS 402/602 *Building Code Requirements and Specification for Masonry Structures* (and companion commentaries), 2022, The Masonry Society, Longmont, CO, www.masonrysociety.org.

Notes

1. Examinees will use only the Allowable Stress Design (ASD) method for wood design.