STATUS OF STRUCTURAL ENGINEERING

Qualifications, Exams, Licensing, Comity

Gregg E. Brandow, Ph.D., S.E.
STRUCTURAL ENGINEERING EXAMINATION/RECOGNITION TASK FORCE

Gregg Brandow, P.E.
CHARGE

Develop and propose to UPLG a definition for a Model Law Structural Engineer.
A licensed engineer who:

Is a graduate of an engineering program accredited by EAC/ABET

Has passed at least 18 hours of structural analysis and design courses, 9 of which must be structural design courses
A licensed engineer who:

- Has passed the 8-hour FE exam
- Has passed 16 hours of structural exams:
  - NCEES structural exams, 8 hours of which are Structural II (SE II)
  - 16-hour state written structural exams taken before 2004
  - NCEES Structural II plus 8-hour state written examination taken before 2006
Completes 4 years of acceptable structural engineering experience after confirmation of a BS degree. A maximum of 1 year of credit may be given for graduate engineering degrees that include at least 6 semester hours of structural engineering (in addition to the 18-hour education requirement).

Has a record clear of disciplinary action.
NCEES
Structural Exam Task Force

Nancy L. Gavlin, P.E., S.E., Chair
Charge

• Evaluate existing structural exams
• Consider modifications to NCEES SE exams
  – Can be used by all Member Boards who license structural engineers by 16 hours of examination
  – Depth and breadth
  – Psychometrically sound
  – Cost effective
• Make recommendations
Current Structural Engineering Exams

• NCEES Examinations
  – Civil Structural exam—4 hours civil breadth plus 4 hours structural module
  – SE I—8 hours, 80 multiple choice problems
  – SE II—8 hours, 4 essay problems

• State Examinations
  – California SE III—8 hours, multiple choice and essay problems
  – Washington SE III—8 hours, essay problems
Current Structural Engineering Exams

• NCEES Examinations
  – Civil Structural—4 hours
  – SE I—8 hours
  – SE II—8 hours

• State Examinations
  – California SE III—8 hours
  – Washington SE III—8 hours

Examination Requirements

• SE I + SE II, or
• SE II + SE III (8-hour state-written exam), or
• 16-hour state-written exam taken prior to 2004
Structural Engineering Exam Background

• Illinois SE Exam—1915
• California SE Exam—1931
• Washington SE Exam—1963
• NCEES SE I—1985
• Western States Exam—1985
• NCEES SE II—1987
• Washington SE III—1998
• California SE III—2004
Approximate Code Usage Prior to 2001

- **UBC** (Uniform Bldg. Code)
- **BOCA** (Basic Bldg. Code)
- **SBC** (Standard Bldg. Code)
Expected Approximate Basis of Code Usage—2007+

IBC (International Bldg. Code)
Task Force Recommendations

• There can and should be one 16-hour structural engineering exam that can be used by all jurisdictions that license S.E.’s by 16 hours of examination.

• The exam should be a breadth and depth exam with integrated design, analysis and detailing items.

• The Structural Exam should be modernized to bring it into step with the current building and bridge codes.

• The exam should be composed of two 8-hour components that can be passed individually but that are not sufficient individually.
States that accept the SE-I Examination for initial PE Licensing

Arizona
Arkansas
California
Colorado
Connecticut
Delaware
District of Columbia
Florida
Georgia
Guam
Hawaii
Idaho
Indiana
Kansas
Kentucky
Louisiana
Maryland
Massachusetts
Michigan
Minnesota
Mississippi
Missouri
Montana
Nebraska
Nevada
New Hampshire
New Jersey
New York
North Carolina
North Dakota
Ohio
Oklahoma
Pennsylvania
Rhode Island
South Carolina
South Dakota
Tennessee
Texas
Utah
Vermont
Virginia
Washington
West Virginia
Wisconsin
Wyoming

States that do NOT accept the SE-I Examination for initial PE Licensing
Alabama
Alaska
Iowa
Illinois
Maine
Minnesota
New Mexico
Oregon
States that license by Discipline

Alaska  Arizona  California  District of Columbia  Guam  Hawaii  Idaho**  Illinois**  Iowa  Louisiana  Massachusetts  Nebraska  Nevada  New Mexico  Oregon  Rhode Island  Utah  Vermont  Washington**  Wyoming

**Washington, Illinois and Idaho do not register by discipline but are included in this list because they require 16 hours of structural examination to have a structural engineering specialty.
States that license by Discipline

Alaska
Arizona
California
District of Columbia
Guam
Hawaii
Idaho**
Illinois**
Iowa
Louisiana
Massachusetts
Nebraska
Nevada
New Mexico
Oregon
Rhode Island
Utah
Vermont
Washington**
Wyoming

States that require 16 hrs of SE Examination

Start of list

Arizona
California
Guam
Hawaii
Idaho
Illinois
Louisiana
Nebraska
Nevada
Oregon
Utah
Washington

SE-I & SE-II Examinations

Start of list

Arizona
Guam
Hawaii
Idaho
Illinois
Louisiana
Nebraska
Nevada
Utah
Washington

States that require CE / PE License & 16 hrs of SE Examination

Start of list

California
Guam
Idaho
Nevada
Utah
Washington

SE-II & SE-III Examinations

Start of list

Oregon
California
Washington

**Washington, Illinois and Idaho do not register by discipline but are included in this list because they require 16 hours of structural examination to have a structural engineering specialty.**
37% of States that license by Discipline

63%

37%

Alaska
Arizona
California
District of Columbia
Guam
Hawaii
Idaho**
Illinois**
Iowa
Louisiana
Massachusetts
Nebraska
Nevada
New Mexico
Oregon
Rhode Island
Utah
Vermont
Washington**
Wyoming

**Washington, Illinois and Idaho do not register by discipline but are included in this list because they require 16 hours of structural examination to have a structural engineering specialty.
37% of States license by Discipline

63%

37%

16% States Do NOT require
16 hrs of SE Examination

16%

21% of States require
16 hrs of SE

Arizona, California, Guam, Hawaii, Idaho**, Illinois**, Louisiana, Nebraska, Nevada, Oregon, Utah, Washington**

**Washington, Illinois and Idaho do not register by discipline but are included in this list because they require 16 hours of structural examination to have a structural engineering specialty.
63% of States License by Discipline

21% of States Require 16 hrs of SE Examination

5% of the States Require SE-II & SE-III Examinations
- Oregon
- California
- Washington

16% of States Require SE-I & SE-II
- Arizona
- Guam
- Hawaii
- Idaho
- Illinois
- Louisiana
- Nebraska
- Nevada
- Utah
21% of States Require 16 hrs of SE Examination

- CE/PE Required
  - California
  - Guam
  - Idaho
  - Nevada
  - Utah
  - Washington

- 16% of States
  - Arizona
  - Guam
  - Hawaii
  - Idaho
  - Illinois
  - Louisiana
  - Nebraska
  - Nevada
  - Utah

- 5% of the States
  - Oregon
  - California
  - Washington
The National Council of Examiners for Engineering and Surveying

has issued
this Certificate to

Very Good Engineer, P.E.

In fulfillment of the education, experience, and examination requirements of a

Model Law Engineer - Structural Engineering

President

Executive Director
GOALS

One Exam for all SE’s (NCEES Task Force)

Uniformity in Qualifications, Exams, & Experience Requirements (NCEES Model Law SE)

Encourage States for Practice Acts (SE or CE+SE) or Title Acts

Comity between states that recognize Structural Engineers (NCEES Records Program for SE’s)