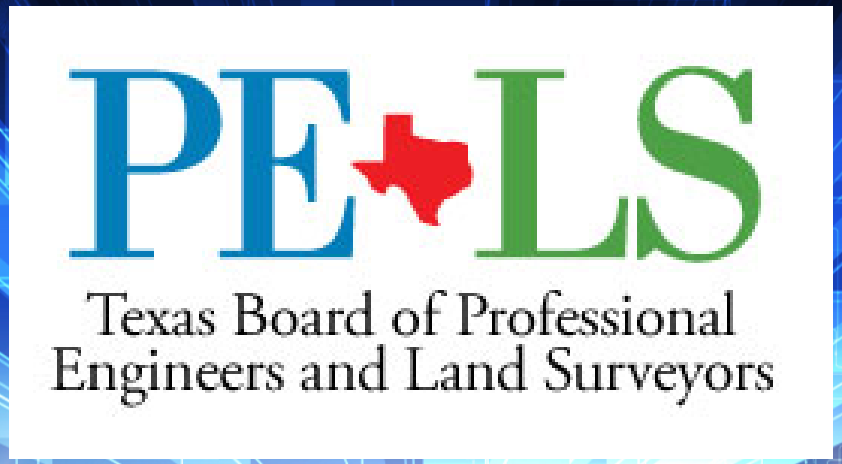


Texas Board of Professional Engineers And Land Surveyors

Licensure and the FE Exam
Or
What is a P.E.?
How do you become one and why?

2022

AGENDA

- Overview of Engineering Practice Act
- Benefits of Licensure
- Exams / CBT
- Application Process

Website and Social Media

- **http://pels.texas.gov**

- Facebook: Texas Board of Professional Engineers and Land Surveyors
- Twitter: TBPELS_Exec
- LinkedIn: Texas Board of Professional Engineers and Land Surveyors
- YouTube: https://www.youtube.com/channel/UCm0YTnjR3StveBxWhCT4MiA

Texas Engineering Practice Act

- Regulates practice of engineering in Texas
- Law made by legislature
- Board members appointed by Governor
- State Agency created by Act
  - Licensing
  - Enforcement
- Professional Engineers (P.E.) License
- Similar Boards in other states

LICENSING

- Protection of the Public
- Ethical
- Competent
  - Initial Qualifications
  - Staying Current
- Professionalism

Benefits of Licensure

- Serves as a protection of public health, safety, and welfare.
- It shows you have accomplished a recognized standard.
- Makes you equal with other professionals. Many other professions require that you are licensed to practice.

Benefits of Licensure

- Sets you apart from others in your profession. (Marketability)
- “Portable” credential you can keep throughout your career.
- Law - Only Licensed Engineers Can Offer Services to the General Public
- Required for Some Positions

Benefits of Licensure

- Much More than Just Passing an Exam!
- Increased Responsibility and Authority.
- You Will be in Responsible Charge of Your Engineering Projects.
- You Will be Held Accountable for Your Actions as an Engineer.

TBPE

Celebrating

80 Years of Engineering a Better Texas

1937 - 2017

History of TBPE

- Created by Texas Legislature (45R) in 1937
- New London School Explosion
  - 300 students and teachers killed
  - Result of improperly designed mechanical and electrical devices
- Established a Board to regulate the practice of engineering through licensing and rules of practice

1937

TBPE History

867 individuals registered on 1st roster published 02/12/1938

Over 143,000 Texas licenses granted since then

BOARD PRIMARY FUNCTIONS

Since 1937 -

- **License** Qualified Engineers
- **Enforce** Engineering Practice Act

Since 2005 -

- Requiring Continuing Education

Now

- **Educate** – PEs, Officials, Potential PEs, Public

Texas Board of Professional Engineers and Land Surveyors

Nine Members - Appointed by Governor

- 5 Licensed Professional Engineers
- 1 Registered Professional Land Surveyor
- 3 Public Members
- 1 Ex-Officio Representative from GLO
- Standard term is 6 years

TBPELS Board

Dr. Sina Nejad, PE, PEng	**Beaumont – Chairman**
Catherine Norwood, PE	Midland – Vice Chair
Ademola Adejokun, PE	Arlington – Secretary
Kiran Shah (public member)	Richmond - Treasurer
Albert Cheng (public member)	Houston
Rolando Rubiano, PE	Harlingen
Coleen Johnson, RPLS	Leander
Dr. Marguerite “Margo” McClinton Stoglin (public member)	Grand Prairie
Karen Friese, PE	Austin
Mark Neugebauer, RPLS, LSLS	Austin

TBPELS STAFF

36 Staff members, Austin

Lance Kinney, PhD, PE - Executive Director

Michael Sims, PE - Compliance & Enforcement

Rick Strong, PE - Licensing & Registration

Janet Sobieski - Operations

TBPELS Mission

Public Safety & Welfare

Our mission is to protect the health, safety and welfare of the people of Texas through the licensure and registration of qualified individuals as professional engineers and land surveyors, compliance with applicable laws and rules, and education about engineering and land surveying.


Protection of Public Health, Safety, Welfare
Professional Practice and Responsibility
Professional Licensure
Ethics
Education
Experience
Exams

The Three E's of Licensure

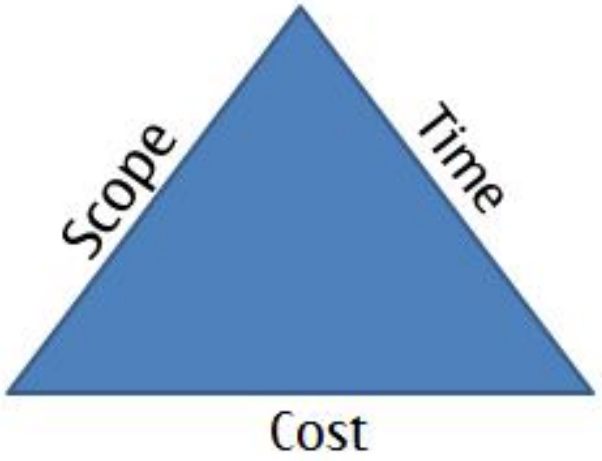
- Education
- Experience
- Examinations

The Fourth E - Ethics

- Ethical behavior / Professionalism
  - Not just what PEs do, but how they are expected to treat clients/employers/public/other engineers
    - Contracts, communication, etc.
  - Most TBPE enforcement is related to ethics rather than technical incompetence
- Doing the right thing, at the right time, for the right reasons

Ethical Challenges

- Triple Constraints



- External Pressures – (Employment, Political, etc.)

Ethical Decision Making

- Conflicts with Ethics
  - #1 Concern: Health, Safety, Welfare
  - Gather & Analyze the Facts
  - Compare the Issues
  - Compare to Codes / Laws / Rules
  - Ask Questions

Professionalism

More than just Codes and Rules

"Meticulous adherence to undeviating **courtesy**, **honesty**, and **responsibility** in one's dealings with customers and associates, plus a **level of excellence** that goes **over and above** the commercial considerations and legal requirements."

http://www.businessdictionary.com

Engineering Competence

- Protection of Public Health, Safety, Welfare
- Competence is an expectation of the public
- Texas does not license by discipline, but Professional Engineers must not practice outside of their competence.
  - §137.59(a) Engineers shall practice only in their areas of competence.
- Competence gained by Education and Experience; Measured by FE and PE examinations

Enforcement

- Ethical Behavior
  - 70,000 licensed PEs
  - 2,800 registered RPLSs
  - ~600 Cases opened last year
    - About 65% resolved with Voluntary Compliance
    - Less than 10% Dismissed
    - Board action includes range of action up to revocation

Engagement –
Professional and Technical Organizations

- ***Rule 137.63(a) – [Engineers] should attempt to enhance society's awareness of engineers' responsibilities to the public and encourage the communication of these principles of ethical conduct among engineers.***
- Training and Continuing Education
- Engineering Policy
- Latest Technical Information
- Engineering Networking / Mentoring / References

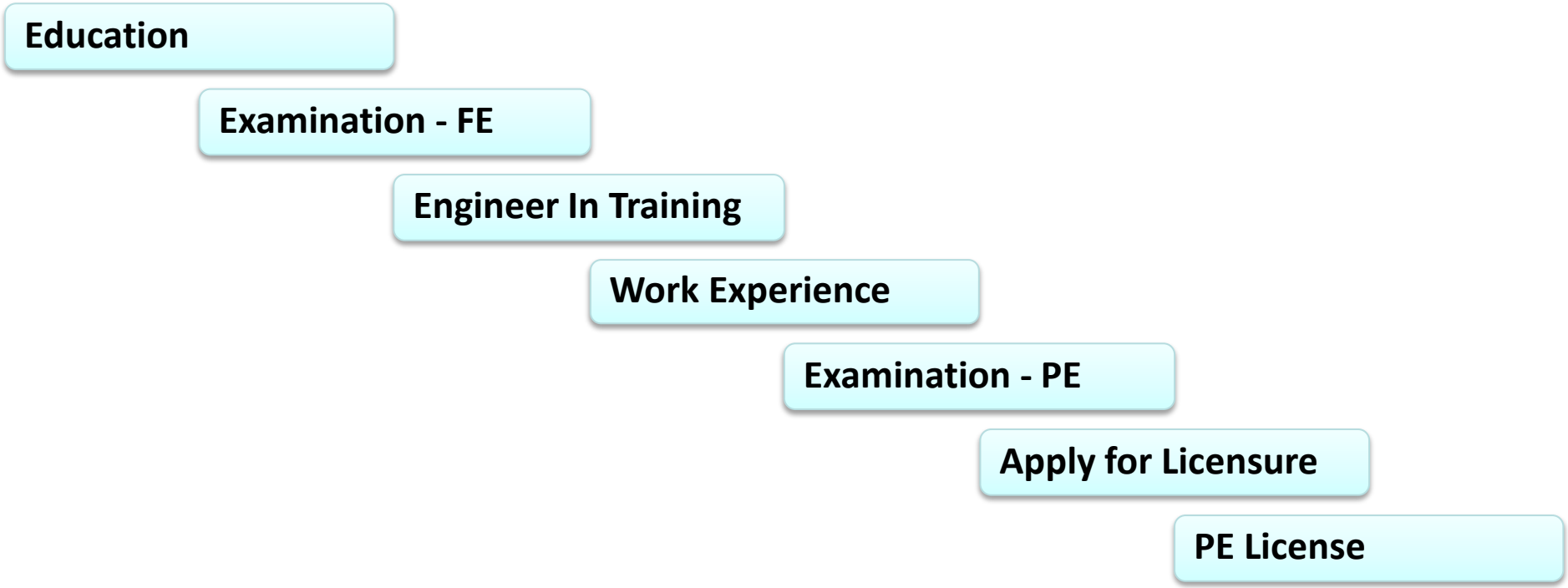
Outreach Publications

Applicants

How to Become a Licensed P.E.

Benefits of Being a Professional Engineer.

Typical Licensure Process Flow



Required Education

- EAC-ABET Accredited Engineering Programs.
- Non-Accredited Programs Including Non-ABET Engineering Degrees and Related Science degrees (Math, Sciences, Engineering Technology).
- Information concerning ABET accreditation available at www.abet.org.

FE Exam

- Why take the FE exam? Why now?
  - Prepared for the material
  - Familiar with taking exams
  - Targeted toward ABET graduates
  - Exam Doesn’t Expire – Once you pass, you pass.
  - You never know when you’ll want (or need) to get licensed
  - Civil vs ‘Exempt’ Engineering

FE Exam

- Fundamentals of Engineering (FE) Exam
- FE Exam – no application. Just sign up. Must be within 2 semesters of graduating.
- FE Exam – may take as many times as necessary.

FE Exam Content

- 7 free-standing, discipline-specific exams
    - Chemical, Civil, Electrical and Computer, Environmental, Industrial, Mechanical, Other Disciplines
  - No separate morning or breadth module
  - Each exam covers material commonly found in that discipline's curriculum.
  - FE exam uses both the International System of Units (SI) and the US Customary System (USCS).

Computer Based Testing

- All FE exams as of January 1, 2014
- Price $175
- Includes test center seat, examination, and results release
- Quarterly testing windows
- Year-round testing since January 2016
- Pearson VUE testing centers
- NCEES will release results directly to examinees within 4–10 days.

Computer Based Testing

- Continuous Registration (24/7)
- Register online through NCEES.org
- Pay all exam-related fees directly to NCEES via credit card
- On exam day, attest to abide by rules and policies found in the NCEES Examinee Guide

Computer Based Testing

- Exam and references on computer
- Split screen
- 24-inch monitor
- FE references
  - Searchable
  - Available on NCEES website
- Specific Approved Calculators
- Security – No Other Books or References, phones, iPads, etc.

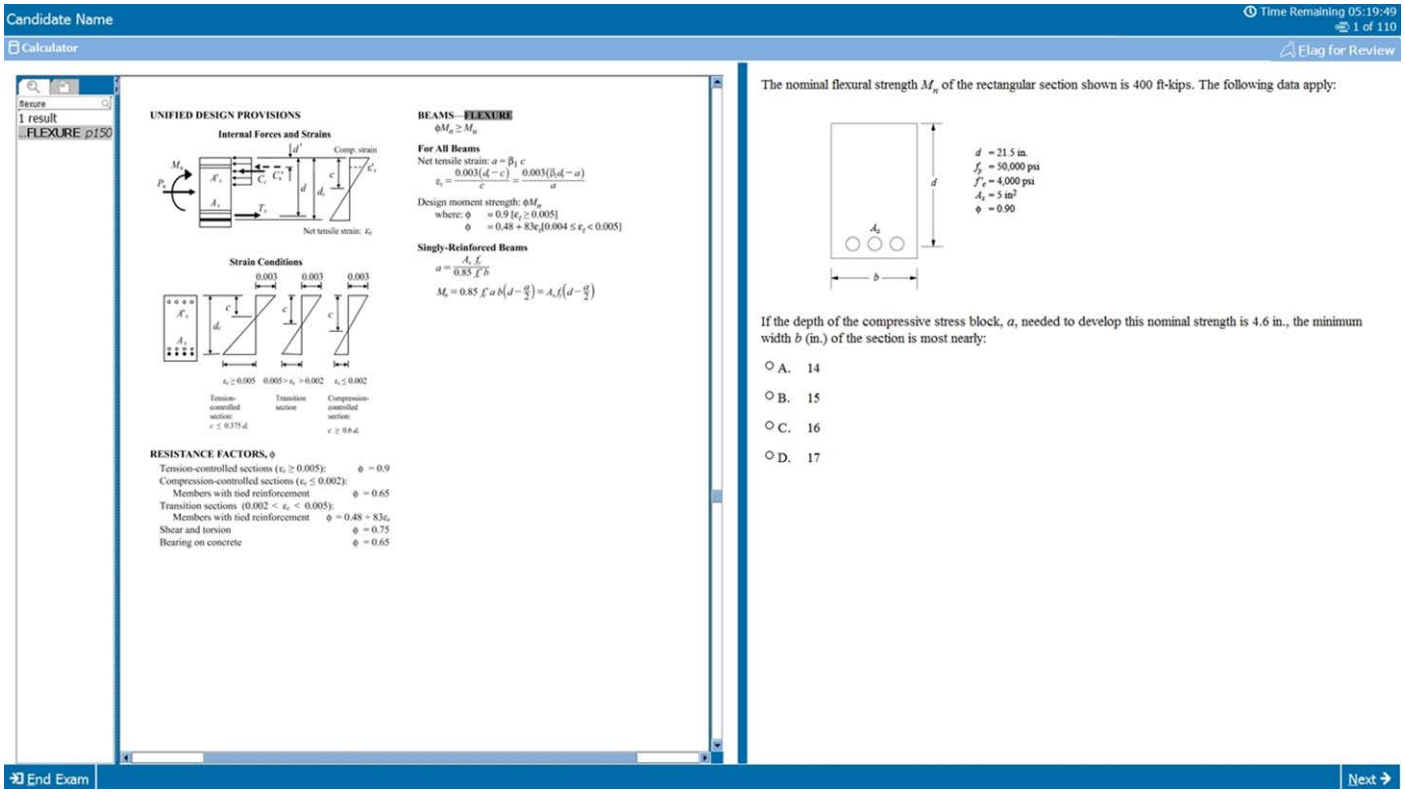
CBT FE Exam - Format

- 110 questions
- 6-hour test center appointment
  - Tutorial–8 minutes
- Maximum Exam time–5 hours, 20 minutes
  - Scheduled break–25 minutes

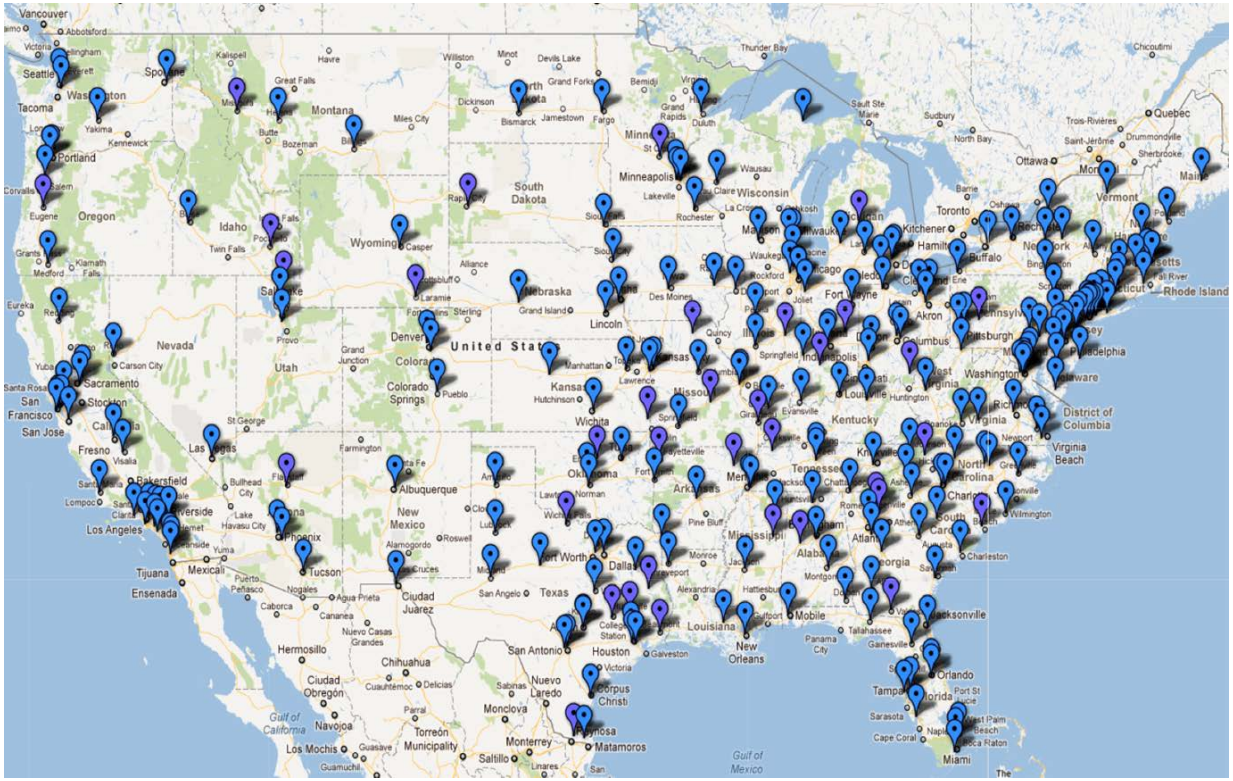
FE Civil Exam Spec

- Mathematics
- Probability and Statistics
- Computational Tools
- Ethics and Professional Practice
- Engineering Economics
- Statics
- Dynamics
- Mechanics of Materials
- Materials
- Fluid Mechanics
- Hydraulics and Hydrologic Systems
- Structural Analysis
- Structural Design
- Geotechnical Engineering
- Transportation Engineering
- Environmental Engineering
- Construction
- Surveying

CBT FE Exam - Format



Pearson VUE


Vancouver
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Portland
Tacoma
Spokane
Montana
Idaho
Wyoming
Oregon
Nevada
Utah
Colorado
United States
Sacramento
San Francisco
San Jose
Fresno
Los Angeles
Las Vegas
Phoenix
Albuquerque
New Mexico
Tucson
Tijuana
Mexicali
Ensenada
Hermosillo
Chihuahua
Ciudad Juárez
Texas
Dallas
Houston
San Antonio
Louisiana
New Orleans
Kansas
Nebraska
Lincoln
Omaha
Minneapolis
South Dakota
Wisconsin
Chicago
Toronto
Ottawa
Quebec
Buffalo
Pittsburgh
Akron
Columbus
Kentucky
Tennessee
Atlanta
Georgia
Florida
Orlando
Tampa
Miami
Jacksonville
Charleston
Virginia
Washington
District of Columbia
Philadelphia
Rhode Island
Vermont
Gulf of California
Gulf of Mexico

Test Locations in Texas

- Dallas area
- Waco
- Tyler
- Texas A&M Univ.
- Abilene
- Austin
- Houston area
- San Antonio
- Lamar University
- Lubbock
- Midland
- Amarillo
- Corpus Christi
- El Paso

- Approx. 30 total

NCEES Resources

- NCEES Examinee Guide
- CBT exam-day experience video release
- Short “how-to” videos
  - How to search the FE Reference Handbook
  - Hotkeys
  - Onscreen calculator
  - Reusable booklet for scratch work
  - How to flag items for review
  - Managing Time on exam day

Engineer in Training Certification

- Some Employers Want EIT Certification. Demonstrate Applicant is on the Path to Licensure
- Optional – Not Required for Professional Engineer License
- Must be a Texas EIT to take the PE exam early.
- Procedure:
  - Application form and $15 fee. www.pels.texas.gov
  - Official Transcripts (degree evaluation, if foreign).
  - Exam Verification if taken outside of Texas.

Required Experience

- 4 Years of creditable engineering work with ABET-EAC Accredited engineering Degree.
- 8 Years with Non-Accredited Degree, or qualifying Related Science degree, ABET-ETAC Engineering Technology degree.
- Experience credit for Advanced Engineering Degrees from ABET-EAC accredited programs.

Experience

- Job - Work for Firm or Agency that does Engineering Work.
- Engineering Experience – Design, Calculation, Analysis, Specifications, Planning for Engineering Works...
- If Possible, Work Under the Supervision of a Licensed Professional Engineer.

Experience

- You Will Need to Document Your Experience.

- Maintain Records – Weekly, Monthly, Yearly:

  – Engineering Projects You Work on.
  – Engineering Tasks You Personally Perform.
  – Who You Work for and With.

Examination

- Principles & Practices of Engineering (PE) Exam
- PE Exam – must apply to board first. Either Texas EIT or apply for Licensure.
- PE Exam – may take 3 times within 4 years.

Decoupling

- Allows Texas EIT to take PE Exam prior to completing qualifying engineering experience.
  - Must Pass FE exam
  - Have a Qualifying Degree
- Does not reduce other requirements for licensure
- Complete application for licensure will be submitted when experience is acquired.

Decoupling

- You do not have to take the PE Exam early.
- Three Exam Tickets – Only Attempts count, not just registration.
- Four Year Window to pass PE exam starting with first PE exam attempt.
- Eight year window to complete process.
- All exam registration and payments are handled through NCEES.

PE Exam

- Offered in many disciplines: civil, chemical, mechanical, environmental, electrical, control systems, etc.
- Modules.
  - Example: Civil – Construction, Geotechnical, Structural, Transportation, Water Resources and Environmental.
  - Example: Electrical – Computer Engineering, Electrical and Electronics, Power.
- First Computer Based PE exam – chemical in 2018.
- October 2021 was the last paper PE exam

PE Exam – Format
(paper & pencil)

- Multiple Choice
- 80-100 Questions Total
- Breadth Section ~ 40 questions in morning session (same for all examinees in discipline)
- Depth Section ~40 questions in afternoon session (depend on module selected)
- Select Discipline when registering
- OPEN BOOK!

Exam – General

- PE Exams are offered twice per year (April and October)
- Register through NCEES – link on TBPE page
- Registration open ~3 months before exam
- Be aware of registration and application deadlines!

PE Exam – CBT conversion

- PE exams to be converted before 2022
- Some CBT exams are offered all year
- Some are still only offered 1 day per year
- NCEES has accelerated the CBT development
- Structural 16 hour exam will continue as paper and pencil.

Application for Licensure

- Either apply for licensure subject to passing the PE exam, or if you are a Texas EIT and have passed the PE exam, then you apply for Texas License
- Online or Download forms:
  - Online – credit card fee payment.
  - Download and mail with check.

- www.pels.texas.gov

Parts of the Application

- PE Application (Online or Paper Form)
- Application Fee $75 (Not refundable)
- Education - Transcripts
- Supplemental Experience Record
- References
- Documentation of English Proficiency (if needed)
- Ethics Exam on Laws and Rules
- Criminal History Records Check
- Verification of Examinations (if taken in another state)

Application

- Transcripts
  - Originals Directly from Institution.
  - Official Copies of Undergraduate Degrees when with Accredited Degree.
  - Foreign Degree Evaluation.

  Do not need to send again if you have Texas EIT.

Application

- Supplementary Experience Records.
- References:
  - Regular Application 3 PE references.
  - Waiver FE exam Request 5 PE references.
- Ethics Exam: Open Book, Texas Law and Rules.
- Application Fee $75.00 - online.

Application

- Other
  - Documentation of English Proficiency.
  - Criminal History Records Check.
  - Verification of Examinations (if taken in another state).

Supplementary Experience Record (SER)

- Experience can be obtained in Texas, other States, or Overseas.
- Internships, Co-ops may be creditable if More than Three Months in Duration.
- ABET-EAC advanced degree(s) = year(s) of credit.
- No credit for Research or Teaching Assistant work

Supplementary Experience Record (SER)

- Write the SER in first person active voice:
  - I performed engineering calculations for…
  - I developed the engineering design for…
  - I prepared the engineering design plans and specifications for…
- Be specific on conclusions and outcome of project.

Supplementary Experience Record (SER)

- Detailed description of engineering work.
- Distinguish work personally performed from group efforts.
- Project record or diary.
- Form is available on TBPE Website.

PE References

- 3 PE References Required for your Work Experience.
  - 5 for a waiver of the FE
- Minimum 1 PE Reference for each engagement
  - All claimed engineering experience.
- Fill out form / Sign SER pages
  - Must address Personal Character, Readiness for Licensure and vouch for the Engineering Experience.
- Can be licensed in any state / May be inactive.

PE References

- All references are confidential.
- References can be directly sent to the board or collected and sent with the application.
- Keep track of names, contact info for possible PE references.
- It is possible to get a reference in advance (from a job you have left, etc.).
- You can have a PE review prior work if no current PE is available.

Criminal History Record Checks

- Statute changed in 2013 to Require fingerprinting for All Active license 1st renewal and new applicants after January 2014
- FAQ and detailed Instructions on website: http://pels.texas.gov/recordcheck.html
- Runs in parallel with application review, but must be completed and reviewed before approval.

Application Review and Approval

We will process your application, and notify you along the way if information is missing or lacking.

Online Status of Application, Updates.

Thank You

Rick D. Strong, P.E.

1917 S Interstate 35, Austin, TX 78741