NEVADA STATE BOARD OF PROFESSIONAL ENGINEERS AND LAND SURVEYORS

Regular Board Meeting
July 18, 2024
Tonopah, NV
1. Meeting Call to Order
2. Pledge of Allegiance
3. Public Comment
4. Introductions
5. NRS 625
Waiver Requests

[none at time board packet was published]
6. Non-Appearance Applications for Initial Licensure
<table>
<thead>
<tr>
<th>DEGREE</th>
<th>YEARS CREDIT (MAX)</th>
<th>YEARS ACCEPTABLE EXPERIENCE REQUIRED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Undergraduate (BS): ABET/EAC accredited</td>
<td>4</td>
<td>4</td>
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<tr>
<td>Undergraduate (BS): ABET/ETAC accredited</td>
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<tr>
<td>Undergraduate (BS Engineering): Washington Accord</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Undergraduate (BS Engineering): Non-ABET/non-Washington Accord</td>
<td>4</td>
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<tr>
<td>(must meet NCEES education standard, any deficiencies to be considered by board)</td>
<td></td>
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<tr>
<td>Undergraduate (BS Construction Management): ABET accredited</td>
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<td>4</td>
</tr>
<tr>
<td>Undergraduate (BS Construction Management): Not ABET accredited but institution has ABET accredited engineering programs</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Engineering Masters: US Masters with non-US BS</td>
<td>6</td>
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<tr>
<td>and/or non-Washington Accord in Engineering</td>
<td></td>
<td></td>
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<tr>
<td>Engineering Doctorate: US Doctorate with non-ABET/non-Washington Accord/foreign BS+MS in Engineering</td>
<td>6</td>
<td>2</td>
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</tbody>
</table>
Chemical
GENERAL
- Applying To: Nevada
- Application Type: Initial - PE
- Application Date: 06/21/2024
- Citizenship: United States

SUMMARY
- Engineering Experience after EAC degree: 3 years, 6 months
- Total Engineering Experience: 3 years, 6 months
- Experience under licensed engineer: 2 years, 1 month
- Disciplinary Action: None reported

EDUCATION
- Bachelors in Chemical Engineering (EAC)
  Drexel University
  September 2015–June 2020
- Masters in Materials Science and Engineering
  Drexel University
  January 2020–June 2020

EXAMS
- Fundamentals of Engineering (FE)
  Nevada
  April 2024
- Principles and Practice of Engineering (PE)
  Chemical
  Nevada
  June 2024

LICENSES
- Additional Licenses: None
CASSANDRA LEES (24-237-36)
All work experience reviewed by two licensed professionals

WORK EXPERIENCE

Redwood Materials
Nevada (United States)
Chemical Engineer
August 2020—March 2021

- I created designs of experiments and performed the test work to measure time, temperature, viscosity, and pH parameters for acid leach, cooling crystallization, and precipitation.
- I ordered equipment for a precipitation pilot and oversaw installation of a tank, pump, agitator, heating coils, and continuous propane water heater.
- I operated a pilot crystallizer, boiler, and centrifuge, and created a mass balance tool (Excel) for metallurgical accounting of both those units and of an upstream acid leach and filtration unit.

Experience Summary
Full-Time
Engineering: 7 months
Post EAC degree: 7 months
Experience under licensed engineer: None

TASKS

REPRESENTATIVE PROJECTS

Process Development for Hydrometallurgical Nickel, Cobalt, and Lithium recovery: July 2020—March 2021 (Lab/Pilot Scale)
- I designed the flowsheet to recover lithium from a mixed lithium sulfate and sodium sulfate stream. I planned and ran experiments on a lab scale, bought and assembled the piloting equipment, and operated the pilot.
- I ran experiments to optimize nickel sulfate cooling crystallization on a lab scale, and operated a pilot of a 100kg/h evaporative crystallizer and boiler, a cooling crystallizer, and a decanting centrifuge.
- I made a metallurgical accounting tool in Excel to track the mass balance of the system.
WORK EXPERIENCE

Redwood Materials
Nevada (United States)
Chemical Engineer
April 2021—February 2022

Tasks

- I wrote standard operating procedures for operators for chemical safety, feed preparation, furnace operations, product sampling, and analytical assay preparation.
- I built a tool for metallurgical accounting (Excel) and key process indicators (PowerBI) to back-calculate what was in the heterogeneous feeds fed to a pyrometallurgy process, so that the feed types could be better understood and controlled in future production.
- I troubleshooted day-to-day production issues in various top-blown rotary furnaces and their exhaust systems containing acid scrubbing and dust collection.

Representative Projects

Production Engineering for Pyrometallurgical Nickel, Cobalt, and Copper recovery: April 2021—June 2022 (6kMT/y)
- I made a metallurgical accounting model of a furnace with many types of heterogeneous feeds for a battery recycling process.
- I built a sampling plan for operators and an assaying plan for analytical lab technicians, then fed that assay data to back into the aforementioned model to back-calculate the elemental compositions of the heterogeneous feeds. I then used those compositions and inventory data to make recipes for the operators to run. I set up statistical process control charts to automatically track product quality based on the assay data.
- I troubleshooted day-to-day operations on the batch furnace and exhaust scrubber system, and authored instruction manuals for the operators.

Verified by
Paul Benjamin Voigt
paul@redwoodmaterials.com

Experience Summary
Full-Time
Engineering: 10 months
Post EAC degree: 10 months
Experience under licensed engineer: None
CASSANDRA LEES (24-237-36)

Redwood Materials
Nevada (United States)
Senior Chemical Engineer
July 2020—April 2024

**Experience Summary**

**Full-Time**

**Engineering:** (0%)

**Experience under licensed engineer:** None

**Tasks**

**Operations**

- I created DOEs and performed the test work to measure time, temperature, viscosity, and pH parameters for acid leach, cooling crystallization, and precipitation.
- I wrote standard operating procedures operators for chemical safety, feed preparation, furnace operations, and sampling product.
- I built a tool for metallurgical accounting (Excel) and key process indicators (PowerBI) to back-calculate what was in the heterogeneous feeds fed to a pyrometallurgy process, so that the feed types could be better understood and controlled in future production.
- I troubleshot day-to-day production issues in various top-blown rotary furnaces and their exhaust systems containing acid scrubbing and dust collection.

**Front-End Loading**

- I estimated electrical and utility loads for compressed air, heating/cooling water, and process water for Class 4 feasibility studies.
- I created and maintained a process model (Outotec HSC Sim) with all equipment to model mass & energy balance for plant processes and utilities.
- I sized and created technical specification sheets for vendors to quote multiple types of equipment; Dryers (Fluidized bed and batch paddle vacuum), Filter Pres (Vertical and horizontal chamber), Tanks, Agitators, Mixers (Ribbon and ploughshare), Crystallizers (Evaporative, Cooling), Reverse Osmosis packages, Centrifuges (Decanting and basket), and pumps (centrifugal, air operated double diaphragm, and positive displacement).
- I drew PFDs and P&IDs for areas of the plant that I was responsible for.

**Detailed Design**

- I built a bill of materials with consumption rates, sources, and costs for all feeds, reagents, and consumables to feed OPEX model.
- I created and maintained instrument, automated valve, manual valve, and specialty item lists.
- I wrote controls narratives for entire plant, including critical life-safety interlocks and backup power.
- I led and completed a HAZID and HAZOP for the entire plant.

**Representative Projects**

**Process Development for Hydrometallurgical Nickel, Cobalt, and Lithium recovery: July 2020-March 2021 (Lab/Pilot Scale)**

- I designed the flowsheet to recover lithium from a mixed lithium sulfate and sodium sulfate stream. I planned and ran experiments on a lab scale, bought and assembled the piloting equipment, and operated the pilot.
- I ran experiments to optimize nickel sulfate cooling crystallization on a lab scale, and operated a pilot of a 100kg/h evaporative crystallizer and boiler, a cooling crystallizer, and a decanting centrifuge.
- I made a metallurgical accounting tool in Excel to track the mass balance of the system.

**Production Engineering for Pyrometallurgical Nickel, Cobalt, and Copper recovery: April 2021-June 2022 (6kMT/y)**

- I made a metallurgical accounting model of a furnace with many types of heterogeneous feeds for a battery recycling process. I built a sampling plan for operators and an assaying plan for analytical lab technicians, then fed that assay data to back into my model to back-calculate the elemental compositions of the heterogeneous feeds. I then used those compositions and inventory data to make recipes for the operators to run. I set up statistical process control charts to automatically track product quality based on the assay data.
- I troubleshot day-to-day operations on the batch furnace and exhaust scrubber system, and authored instruction manuals for the
Li-ion battery cathode active material (CAM) and CAM precursor (pCAM) pilot design: June 2022-September 2022, October 2022-May 2023 (180MT/y)
- I reviewed partially-complete P&IDs and added necessary instrumentation and material handling equipment.
- I created a controls narrative, outlining backup power and critical safety interlocks
- I led a HAZOP where a team identified critical gaps in operability and safety of the system, and I documented that the other engineering disciplines followed through on the design changes that came from HAZOP.
- I created a line list with all relevant fluid parameters, sized all process lines, and chose pipe specifications for those lines.
- I did heat transfer calculations to determine cooling and heating needed on tanks and condensers, and provided utility load estimates to the facilities team.
- I estimated OPEX and created a bill of materials

pCAM Plant Feasibility Study: September 2022-October 2022 (9kMT/y)
- I created and maintained the process model, which provided reagent, water, and power estimates to a feasibility study.
- I sized equipment and submitted requests for quotes to vendors for a filter press, crystallizer, rotary kiln, tanks, and agitators.

Hydrometallurgy Plant Operations: May 2023-November 2023 (6kMT/y)
- I troubleshooted day-to-day operations and making both safety and availability improvements on a precipitation and filtration unit.
- I reviewed a design project that would increase availability, updated the P&ID when I found errors in the hydraulics of pumping slurries and missing pressure relief devices, and took over detailed design and executed HAZOP, line/instrument/valve lists, and assembling work packages for the installation contractors.

CAM Plant Front-End Loading Design: November 2023-present (20kMT/y)
- I size equipment such as tanks, agitators, and pumps, filter presses, mixers, vacuum dryers, and reverse osmosis skids.
- I estimate utility consumption for motor power, cooling water, and inert gas blanketing.
- I create PFDs, P&IDs, and layout for areas of the plant containing aforementioned pieces of equipment, including utility loads, layout, instrumentation, controls narratives and critical interlocks,
- I created and maintain the process model (Outotec HSC) for the entire plant, which outputs steady-state flows. For my responsible sections of the plant, I take those steady state flows and apply batch factors to determine actual flows and size lines.
- I select piping material for all areas of the plant in liquid and compressed gas lines, and choose valve body & connection types for both on/off valves and throttling valves
- I design the flowsheet for handling the plant’s wastewater. I create experiment plans for lab technicians to execute to characterize the wastewater streams, and I model those streams into downstream plants’ flowsheets. I ensure my plant’s design integrates any changes that need to be made to the waste water stream in order for those downstream plants to be able to accept my plant’s waste water.
WORK EXPERIENCE

Redwood Materials
Nevada (United States)
Senior Chemical Engineer
March 2022—April 2024

TASKS

Front-End Loading

- I estimated electrical and utility loads for compressed air, heating/cooling water, and process water for Class 4 feasibility studies.
- I created and maintained a process model (Outotec HSC Sim) with all equipment to model mass & energy balance for plant processes and utilities
- I sized and created technical specification sheets for vendors to quote multiple types of equipment; Dryers (Fluidized bed and batch paddle vacuum), Filter Pres (Vertical and horizontal chamber), Tanks, Agitators, Mixers (Ribbon and ploughshare), Crystallizers (Evaporative, Cooling), Reverse Osmosis packages, Centrifuges (Decanting and basket), and pumps (centrifugal, air operated double diaphragm, and positive displacement)
- I drew PFDs and P&IDs for areas of the plant that I was responsible for

Detailed Design

- I built a bill of materials with consumption rates, sources, and costs for all feeds, reagents, and consumables to feed OPEX model
- I created and maintained instrument, automated valve, manual valve, and specialty item lists
- I wrote controls narratives for entire plant, including critical life-safety interlocks and backup power.
- I led and completed a HAZID and HAZOP for the entire plant

REPRESENTATIVE PROJECTS

Li-ion battery cathode active material (CAM) and CAM precursor (pCAM) pilot design: June 2022-September 2022, October 2022-May 2023 (180MT/y)
- I reviewed partially-complete P&IDs and added necessary instrumentation and material handling equipment.
- I created a controls narrative, outlining backup power and critical safety interlocks
- I led a HAZOP where a team identified critical gaps in operability and safety of the system, and I documented that the other engineering disciplines followed through on the design changes that came from HAZOP.
- I created a line list with all relevant fluid parameters, sized all process lines, and chose pipe specifications for those lines.
- I did heat transfer calculations to determine cooling and heating needed on tanks and condensers, and provided utility load estimates to the facilities team.
- I estimated OPEX and created a bill of materials

pCAM Plant Feasibility Study: September 2022-October 2022 (9kMT/y)
- I created and maintained the process model, which provided reagent, water, and power estimates to a feasibility study.
- I sized equipment and submitted requests for quotes to vendors for a filter press, crystallizer, rotary kiln, tanks, and agitators.

Hydrometallurgy Plant Operations: May 2023-November 2023 (6kMT/y)
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- I reviewed a design project that would increase availability, updated the P&ID when I found errors in the hydraulics of pumping slurries and missing pressure relief devices, and took over detailed design and executed HAZOP, line/instrument/valve lists, and assembling work packages for the installation contractors.

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- I size equipment such as tanks, agitators, and pumps, filter presses, mixers, vacuum dryers, and reverse osmosis skids.
- I estimate utility consumption for motor power, cooling water, and inert gas blanketing.
- I create PFDs, P&IDs, and layout for areas of the plant containing aforementioned pieces of equipment, including utility loads, layout, instrumentation, controls narratives and critical interlocks,
- I created and maintain the process model (Outotec HSC) for the entire plant, which outputs steady-state flows. For my responsible sections of the plant, I take those steady state flows and apply batch factors to determine actual flows and size lines. 
- I select piping material for all areas of the plant in liquid and compressed gas lines, and choose valve body & connection types for both on/off valves and throttling valves 
- I design the flowsheet for handling the plant’s wastewater. I create experiment plans for lab technicians to execute to characterize the wastewater streams, and I model those streams into downstream plants’ flowsheets. I ensure my plant’s design integrates any changes that need to be made to the waste water stream in order for those downstream plants to be able to accept my plant’s waste water.
Civil
TAYLOR ADAMS (20-584-86)

All work experience reviewed by two licensed professionals

GENERAL

Applying To
Nevada

Application Type
Initial - PE

Application Date
03/13/2024

Citizenship
United States

SUMMARY

Engineering Experience
after EAC degree
4 years, 1 month

Total Engineering Experience
5 years, 9 months

Experience under licensed engineer
5 years

Other Experience
1 year, 8 months

Disciplinary Action
None reported

EDUCATION

Associates in Associate of Science
Western Nevada College
August 2014–May 2017

Bachelors in Environmental Engineering (EAC)
University of Nevada, Reno
August 2017–May 2020

EXAMS

Fundamentals of Engineering (FE)
Nevada
October 2019

Principles and Practice of Engineering (PE)
Civil
Nevada
October 2021

LICENSES

Additional Licenses
None
# Work Experience

<table>
<thead>
<tr>
<th>Company</th>
<th>Job Title</th>
<th>Location</th>
<th>Dates</th>
<th>Tasks</th>
<th>Representative Projects</th>
<th>Experience Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chrysalis</td>
<td>Direct Support Staff</td>
<td>Nevada (United States)</td>
<td>December 2012—August 2014</td>
<td>Assisted special needs clients with daily tasks. (0% engineering)</td>
<td>Assisted special needs clients with day to day living.</td>
<td>Full-Time</td>
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<td>Verified by: Krystal Ayers, <a href="mailto:krystal.ayers@gochrysalis.com">krystal.ayers@gochrysalis.com</a></td>
<td></td>
<td>Other: 1 year, 8 months Experience under licensed surveyor: None</td>
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</table>
## Work Experience

**Nevada Department of Environmental Protection**  
Nevada (United States)  
*Engineering Intern*  
December 2017—June 2019

<table>
<thead>
<tr>
<th>Tasks</th>
<th>Representative Projects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inspected permitted facilities for water discharge and stormwater compliance; Reviewed and sent approvals for subdivision plans with regard to sanitary sewer connections; reviewed technical plans for approval such as lift stations and reclaimed water management plans; developed ArcGIS tools for analyzing permit databases; checked calculations with regard to septic system sizing and pollutant loading.</td>
<td>Wolf Run Golf Course Reclaimed Water Management Plan. Worked with the client to obtain all necessary engineering calculations and documentation for State approval.</td>
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<tr>
<td>Helped develop a plan for OSDS permit tracking using ArcGIS.</td>
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<tr>
<td>Inspected and reported on multiple Water Reclamation Facilities, such as: Carson City Water Reclamation Facility; Fallon Water Reclamation Facility; Dayton (Rolling A) Water Treatment Facility.</td>
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**Experience Summary**  
Part-Time  
Engineering: 9 months (50%)  
Experience under licensed engineer: None

**Verified by**  
Andrew Dixon  
Andrew.dixon@ndep.nv.gov
CARDNO
Nevada (United States)
Staff Engineer
June 2019—February 2021

Tasks

Hired in 2019 as an Engineering Technician, primary tasks and duties included: engineering plan set development, Civil 3D modeling and analysis, hydrologic and hydraulic analysis using HEC-RAS and other water modeling software, conceptual design for recreation projects including campgrounds, bike trails, boat ramps, project quantities and cost estimates, etc.

Transitioned to a Staff Engineer about one year later in June 2020. Tasks and duties included leading CAD efforts in plan set development, more advanced 1-D and 2-D modeling, hydrologic and hydraulic analysis, site grading plans, stream and habitat restoration analysis, erosion control plans, and all of the above listed tasks and duties.

Representative Projects

Staff Engineer, various campground rehabilitation and recreation improvement projects - these projects typically required developing and revising construction plan sets with oversight from the supervising engineer. I performed grading in Civil 3D, developed existing and proposed pipe networks, designed roadways and walkways, and modeled small gravity and pressurized water systems.

Staff Engineer, various land development projects - I designed and evaluated water systems, including pipe networks, drainage ditches, culverts, and stormwater collection systems. Pipe and culvert sizing was done using programs such as Civil 3D, HEC-RAS, EPANET, XPSWMM, CulvertMaster, etc. Writing and developing hydrology and drainage reports were also included in my duties on these projects.

Staff Engineer, UNR Farms - This project included calculating a flood mitigation volume required in order for the client to develop in a floodplain. I created existing topographic information using survey points, creating site grading plans and determined the amount of earthwork required to satisfy county requirements. The client wished for the earthwork to be taken from within the existing site, so a conceptual drainage channel modification was proposed to borrow the required fill for the site that will be developed. I lead all of the Civil 3D modeling and drafting tasks, as well as figure development for technical reports and meetings. Preliminary hydrologic and hydraulic analysis was completed using HEC-RAS to ensure the resulting channel would have sufficient capacity.

Staff Engineer, Tahoe Valley Stormwater Improvement - This project included stormwater infrastructure improvements along a 3-mile stretch for South Lake Tahoe Public Utility District. I performed conceptual and final stormwater pipe network design, detention basin design, Civil 3D grading and modeling, hydraulic and hydrologic modeling of existing and proposed conditions in XPSWMM, and incorporating stormwater pollution prevention into the design.
WORK EXPERIENCE

Lumos & Associates, Inc.
Nevada (United States)
Senior Project Designer
February 2021—June 2024

Verdicted by
Alex Greenblat
agreenblat@lumosinc.com

Experience Summary
Full-Time
Engineering: 3 years, 4 months
Post EAC degree: 3 years, 4 months
Experience under licensed engineer: 3 years, 4 months

TASKS

The major branch of engineering is general civil engineering. Specialties include roadway, open channel, and underground utility design.

Project Designer (Feb. 2021 - January 2023). Tasks and duties include: performing technical analysis, designing, and 2D/3D modeling using CAD/Civil 3D, Sanitary and Storm Analysis, InfoSWMM, HEC-RAS, CulvertMaster, HY-8, etc.; preparing conceptual grading and site layouts; preparing due diligence/site analysis reports, including water and sewer reports, conceptual drainage reports, engineer's opinion of probable costs, utility capacity computations, detention/retention computations, and civil 3D grading and pipe network design; production of civil design drawings, preparing permit applications, coordinating with utility companies and municipalities to gather information necessary for design; and participating in field visits and construction meetings.

Senior Project Designer (January 2023 - Current). Tasks and duties include: performing technical analysis, designing, and 2D/3D modeling using CAD/Civil 3D, ArcGIS Pro, Sanitary and Storm Analysis, InfoSWMM, HEC-RAS, HEC-HMS, CulvertMaster, HY-8, etc.; Preparing conceptual grading and site layouts, and finalizing grading and site plans; preparing due diligence/site analysis reports, including water and sewer reports, final drainage reports, engineer's opinion of probable costs, utility capacity computations; hydrologic computations, including time of concentration, runoff, and detention/retention requirements; Civil 3D grading and pipe network design; production of final civil design drawings; preparing and submitting permit applications, and developing technical specifications; coordinating with utility companies and municipalities to gather information necessary for design; participating in field visits and construction meetings and using computer modeling software to appropriately plan and design water, wastewater, and stormwater infrastructure.

REPRESENTATIVE PROJECTS

Humboldt Street Neighborhood Sewer and Street Rehabilitation Project
This project was the reconstruction of roadways, alleys, storm drain, and sanitary sewer within a neighborhood in Reno, Nevada. The project included the replacement of existing sanitary sewer, redesign of grading of existing roadways and alleys, and upgrades to water and storm drain utilities.
Experience date: July 2021 – August 2022
I worked on a design team for a sewer and street rehabilitation project. The project consisted of two neighborhood areas. Both areas were constructed in the summer of 2022. I led the design of the utility improvements. This included the design and rehabilitation of the storm drain system, including new catch basins, curb and gutter conveyance, and storm drain laterals and main lines. I also designed the new sanitary sewer system, replacing the old and outdated system and upsizing certain main lines that have reached capacity due to recent development.

Eureka Townsite Roadway and Utility Improvement Project
This project was the reconstruction of roadways, alleys, the sanitary sewer collection system, stormwater collection system, and potable water utilities. Additionally, a water system model and report were completed and submitted to NDEP for permitting.
Experience Date: August 2022 - September 2023
I worked on a design team for a roadway and utility improvement project. The project consisted of the entire townsite of Eureka, Nevada, and included the rehabilitation of over 8,000 feet of outdated utilities. The whole townsite was reconstructed in the summer of 2023. I led the design on the utility improvements, which included the modeling and design of the potable water system, including fire hydrants, water service meters, fittings, valves, and connections to existing water mains. I completed a permit application for the upgrade of the potable water system to NDEP - Bureau of Safe Drinking Water which included water demand calculations, capacity, pressure, fire flow, and health code guidelines for the water system. I also designed the sewer system and storm drain system upgrades, which included sanitary sewer manholes, cleanouts, storm drain manholes, catch
basins, laterals, and main lines.

2024 Street Rehabilitation Project - Yori Avenue (North and South)
This project was the reconstruction of roadways, alleys, and sanitary sewer within a neighborhood in Reno, Nevada. The project included the replacement of existing sanitary sewer, redesign of grading of existing roadways and alleys, and upgrades to water and storm drain utilities.
Experience date: September 2023 - February 2024
I worked on a design team for a sewer and street rehabilitation project. The project consisted of two portions of Yori Avenue (North and South). I led the design of the utility improvements. This included the design and rehabilitation of storm drain facilities including new catch basins, curb and gutter conveyance, and storm drain laterals and main lines. I also designed the new sanitary sewer system, replacing outdated and damaged facilities. Additionally I had to verify crossing utility depths in order to avoid conflicts with gas, electrical, communication, and water utilities.
### ADDITIONAL INFORMATION

#### TIME GAPS

<table>
<thead>
<tr>
<th>Start Date</th>
<th>End Date</th>
<th>Explanation</th>
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</thead>
<tbody>
<tr>
<td>June 2012</td>
<td>November 2012</td>
<td>Post-High School graduation, I was unemployed for some time searching for what my strengths and interests were.</td>
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</tbody>
</table>
Applying To
Nevada
Application Type
Initial - PE
Application Date
06/14/2024
Citizenship
United States

Engineering Experience
after EAC degree
Total Engineering
Experience
6 years, 11 months
Experience under licensed
engineer
4 years, 2 months
Other Experience
8 years, 3 months
Disciplinary Action
None reported

Bachelors in Civil Engineering
University of Baghdad
September 1989–July 1993

Fundamentals of Engineering (FE)
New York
November 2015
Principles and Practice of Engineering (PE)
Civil
Nevada
June 2023

NOTE: Applicant did not meet the NCEES education standards due to missing 2 out of the 32 required Math/Science hours, however the applicant has exceeded the 48 hours requirement for engineering by 23 hours.

Additional Licenses
None
### WORK EXPERIENCE

<table>
<thead>
<tr>
<th>Company</th>
<th>Position</th>
<th>Duration</th>
<th>Verified by</th>
<th>Experience Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Al-Dor Company</td>
<td>Baghdād (Iraq)</td>
<td>Civil Engineer</td>
<td>Basim Altemimi (Self)</td>
<td>Full-Time</td>
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<tr>
<td></td>
<td></td>
<td>September 1996—June 1998</td>
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<td>Experience: 0%</td>
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<td></td>
<td>Experience under licensed engineer: None</td>
</tr>
</tbody>
</table>

#### TASKS

1. I designed reinforced concrete reservoir under supervision of licensed civil engineer in Iraq.
2. I designed lateral force resisting system (LFRS) for steel truss storage buildings (150'x300') under supervision of licensed civil engineer in Iraq.
3. I designed concrete slab on grade for steel truss storage buildings under supervision of licensed civil engineer in Iraq.
4. I calculated concrete volume and supervised concrete cast in place for slab on grade, foundations and reservoirs.

#### REPRESENTATIVE PROJECTS

1. **Project name:** Two Concrete Reservoirs for Sprinkler Irrigation of Corn Fields.  
   **Scope:** Design and construction of reinforced concrete reservoir.  
   **Dates:** June 1997 to June 1998  
   **Location:** Al-Daur, Salah Al-Din, Iraq  
   I designed reinforced concrete reservoir under supervision of licensed civil engineer in Iraq and I managed contract with local contractor for the project for my company.

2. **Project name:** Two Grain Storage Steel Truss Buildings (150'x300' and 100'x200') .  
   **Scope:** Design and construction lateral force resisting system (LFRS) for steel truss, CMU perimeter walls and slab on grade  
   **Dates:** September 1996 to June 1997  
   **Location:** Al-Daur, Salah Al-Din, Iraq  
   I designed missing lateral force resisting system (LFRS) in steel truss structure of the grain storage and supervised construction under licensed civil engineer in Iraq.  
   I designed concrete slab on grade for steel truss buildings for storage with expansion joints and I performed field lay out survey work. I designed and supervised construction of CMU walls for the storage.  
   I designed concrete footing and tie beams for the grain storage steel columns. I supervised construction process under licensed civil engineer in Iraq.
WORK EXPERIENCE

Abou Taam Engineering & Construction
- S.A.R.L
Beirut (Beyrouth) (Lebanon)
Field Engineer/ Superintendent
January 1999—May 2002

Tasks
I managed layout of reinforced concrete foundations, columns and slabs. I managed construction QA/QC of four 14-story residential (commercial) building in Beirut;
I calculated quantities and measurements for marble flooring and granite exterior walls finishing, excavating, laying the foundation, reinforcing the concrete columns and slabs, installing the electrical wiring and the plumbing system, and finishing and flooring
• Supervised team of 25 construction labors and 7 subcontractors.

Representative Projects
Four 14-story residential (commercial) building in Beirut

Experience Summary
Full-Time
Engineering: (0%)
Experience under licensed engineer:
None
# Work Experience

<table>
<thead>
<tr>
<th>Company</th>
<th>Verified by</th>
<th>Experience Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Al Boraq Engineering Consultancy Company</td>
<td>Basim Altemimi (Self)</td>
<td>Engineering: (0%)</td>
</tr>
<tr>
<td>Baghdad (Iraq)</td>
<td></td>
<td>Experience under licensed engineer: None</td>
</tr>
<tr>
<td>Civil Engineer</td>
<td></td>
<td></td>
</tr>
<tr>
<td>June 2002—March 2003</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## Tasks

- I did layout work for reinforced concrete foundations and brick walls. I managed design submittals and construction of 8 buildings for Baghdad City Local Councils administration; reinforced concrete structures and masonry walls.
- I applied QA/QC for construction, I supervised work of technicians and construction workers, including 20 workers and 4 foremen.
- I decoded construction plans by translated them into different layouts; anticipated possible structural challenges.

## Representative Projects

8 buildings for Baghdad City Local Councils administration in Baghdad/ Sabaa Al Bour
<table>
<thead>
<tr>
<th>WORK EXPERIENCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Various foreign media outlets</td>
</tr>
<tr>
<td>Baghdād (Iraq)</td>
</tr>
<tr>
<td>Freelance Translator</td>
</tr>
<tr>
<td>April 2003—August 2009</td>
</tr>
</tbody>
</table>

**Verified by**

**Experience Summary**

Full-Time

Other: 6 years, 4 months

Experience under licensed surveyor: None
WORK EXPERIENCE

Northern Gulf Partners (NGP)
New York (United States)
Analyst & Translator
May 2010—January 2012

Experience Summary
Verified by
Full-Time
Other: 1 year, 8 months
Experience under licensed surveyor: None
<table>
<thead>
<tr>
<th>WORK EXPERIENCE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Athenica Environmental Services</strong></td>
</tr>
<tr>
<td><strong>New York (United States)</strong></td>
</tr>
<tr>
<td><strong>AutoCAD Drafter</strong></td>
</tr>
<tr>
<td><strong>January 2012—January 2013</strong></td>
</tr>
</tbody>
</table>

**Experience Summary**

- **Part-Time**
- **Other:** 3 months (25%)
- **Experience under licensed surveyor:** None
## WORK EXPERIENCE

**Iraq Alhur Company**  
*Baghdād (Iraq)*  
*Civil Engineer*  
January 2013—May 2014

**Tasks**
- Reviewed structural design submittals (calculations, drawings and specifications) and followed design approval process between DORs and Ministry of Municipalities and Public Works (Iraq) for three projects included design and construction of sewage networks and treatment plants. Provided structural design support and drawings in AutoCAD to projects in accordance with IBC, ACI 318, ASCE 7, BS 8110, UBC, BS 5950 and specifications of the Ministry.
- Reviewed reinforced concrete tanks design per BS 8110 and design of facilities buildings concrete structures per ACI 318-11.
- Participated actively in meetings to resolve design issues between owner-contractor-designer.

**Representative Projects**

1. **Project name:** Mosul Wastewater Treatment Plant Design and Construction  
   **Scope:** Project of design and construction for wastewater treatment plant with capacity of 100,000 m³ / day (26,000,000 gal/day). Project included many civil works including CIP reinforced concrete works of more than 67,000 cubic meters (87,000 cubic yards) for settling tanks, aeration tanks, sludge tanks and many other WTP facilities. The project completed by 2021. Cost $70 million  
   **Dates:** June 2013 to May 2014  
   **Location:** Baghdad, Iraq

   I reviewed submittals from Designer of Record (77insaat) and followed up design approval process (calculations, drawings and specifications) of submittals with the Ministry of Municipalities and Public Works (Iraq). Provided concrete structures design for walls and columns for residential facilities in the project per ACI 318-11.

2. **Project name:** Al-Ramadi Sewage Project, Waste Water Treatment Plant and Network Design and Construction  
   **Scope:** Project of design and construction for wastewater treatment plant and network with capacity of 100,000 m³ / day (26,000,000 gal/day). The project completed by 2023. Cost $100 million  
   **Dates:** January 2013 to May 2014  
   **Location:** Baghdad, Iraq

   I reviewed design submittals (calculations, drawings and specifications) and followed up submittals with owner the Ministry of Municipalities and Public Works (Iraq). Helped contractors and subcontractors in understanding the design intent to comply with the Ministry codes and specifications in Iraq. Attended review and approval meetings between DOR and owner the Ministry.
WORK EXPERIENCE

S&N Builders, Inc.
New York (United States)
Field Engineer/ Superintendent
June 2014 — April 2015

Tasks

- I answered RFIs and design submittals for S&N Builders with Department of Design and Construction (DDC) in New York.
- I planned schedule of work onsite (two weeks schedule) for site leveling and soil compaction team, HVAC, Concrete forms, Concrete rebars, structural concrete foundation, electricians, glass fiber–reinforced concrete (GFRC).
- I calculated concrete quantity for footings and foundations.
- I fixed quality for special inspection team in various construction items like steel reinforcement, concrete forms and concrete cast-in-place.

Representative Projects

Project Name: Kew Gardens Hills Library Renovation and Expansion Project (KGHL) about $8m cost.
Project Scope: Renovation, demolition, excavation, H-piles shoring, soil compaction and reinforced concrete foundations and footings, underground plumbing and slab on ground for Department of Design and Construction (DDC) in New York City.
Date: 6/2014 – 4/2015
Location: 72-33 Vleigh Pl, Flushing, NY 11367

I performed field measurements for new foundations layout and I discovered discrepancy of 6” between property line and architectural and structural drawings. A professional surveyor (Alphonse Pesce Jr Co. Inc.) confirmed later my preliminary finding and drawings sets were revised accordingly by DOR (LERA Consulting Structural Engineers).
I calculated foundation concrete volume for cast in place foundations.
I reviewed shop drawings for steel reinforcement, temporary shoring of foundations and forms with ULMA Form Works, Inc. for structural concrete. Also, I coordinated design submittals approval with Department of Design and Construction (DDC NYC).
I recommended materials for architectural concrete in coordination with expert from ULMA Form Works, Inc.
WORK EXPERIENCE

SOS International LLC/ Construction Department
Baghdad (Iraq)
Construction Manager
April 2016—November 2016

Full-Time
Engineering: 7 months
Experience under licensed engineer: None

Veriﬁed by
Mehmet Sinan Turkhan
sinanturkhan@hotmail.com

TASKS

- I designed steel structure and supervised construction of Containerized Housing Units (CHUs) project. I designed reinforced concrete foundation per ACI 318 and supervised concrete work. I designed structural steel frames (used Autodesk ROBOT software) in accordance with AISC.

- I prepared SOW for roofs maintenance work including preparation and review of engineering specifications and construction oversight of the engineering work for about 25,000 square meters (270,000 square foot) of polyurethane foam and water proofing for roof work.

- I researched codes and prepared SOW for civil works and renovation of various CMU buildings and asphalt pavement roads. I prepared AutoCAD as-built drawings.

- I performed field survey and calculated fill-cut quantities for (3 miles) and various road pavement works.

REPRESENTATIVE PROJECTS

1- Project name: Containerized Housing Units (CHUs) project
Scope: design of steel structures containerized housing units
Dates: June 2016 to November 2016
Location: Baghdad, Iraq

I designed under supervision of professional engineer (in Turkey) of reinforced concrete foundations and prepared calculations for excavation and concrete work of about 100 m³ (130 cubic yard) foundations.

I designed reinforced concrete pads 30’×18’×10” for water tanks each 37 metric tons (81 Kips)

2- Project name: Storages roof renovation in Camp Taji
Scope: Provide insulation for storage buildings
Dates: April 2016 to November 2016
Location: Baghdad, Iraq

I preparation and review of engineering specifications and construction oversight of total area 25,000 square meters (29,000 square yard) of roof insulation work included applying polyurethanes rigid spray foam system and UV protection paint. The work included design of repair work for steel truss roof system prior to insulation work.
I performed QA/QC reviewing of calculations, drawings and specifications for more than 40 projects. I prepared structural calculations for seismic evaluation and retrofit per ASCE 41-13 for projects under supervision of professional engineers. I performed analysis and prepare structural design and specifications for reinforced concrete foundations per ACI 318-14. I revised technical reports, designs, and project deliverables to ensure compliance with customer and RFP requirements for NAVFAC Southwest projects.

I researched codes like IBC, IEBC, AISC, ACI 318, ASCE 7, ASCE 41 and governing UFCs, guidance, policies, procedures, processes and criteria and provided sound technical recommendations and reports to insure compliance of contractor’s submittals with NAVFAC standards.

I performed field investigations, including the review of as-built drawings, to determined existing conditions, document findings, and provided reports. Assessed structural condition of facilities to develop recommendations for necessary repairs and modifications.

I prepared RFP’s, SOW’s, responses to RFIs and other project documentation. In addition, I performed steel structures inspections and provided recommendations for maintenance per codes.

1- Project name: Repair Aviation Supply Building 7209
Scope: Seismic evaluation and retrofit for building 7209 in accordance with the United Facilities Criteria (UFC) with guidance from ASCE 41-13 (Cost $26 million)
Dates: May 2021 to March 2023
Location: MCAS MIRAMAR, CA

The building is single-story structure, with three (3) mezzanines. Area is approximately 180,000 square feet with concrete roof framing and concrete and CMU wall construction for perimeter and interior walls. Concrete columns are at the interior and around the perimeter to support the concrete beams. The roof framing system consists of a precast roof panel system spanning between cast-in-place (CIP) concrete beams, which are supported on CIP concrete columns. I did re-write in-house RFP (dust-off), handle RFIs and review design submittals.

I made first site visit on June 2021 to review as-built drawings and inspect general structure condition and I gathered information and documents for revised RFP. Then I did re-write RFP structural sections for rebidding. Project was awarded on June 2022. I discussed with SMR during PAK meeting suggested alternative retrofit plan. The original retrofit plan was to strengthening precast concrete panels diaphragm with Fiber Reinforced Polymer (FRP), while suggested alternative plan was adding lightweight concrete topping slab to fix main seismic deficiency.

I reviewed Tier 1 and 2 seismic evaluation per ASCE 41-13 provided by SMR, I corrected main two mistakes in structural analysis:

a. I corrected for SMR that Expected Strength of the concrete (4,500 psi) for Tier 2 ASCE 41 analysis. I instructed SMR to replace it with the mean value of the core tests result according to ASCE 41-13 section 7.5.1.4 (3,500 psi) and this was approved by engineers involved with the ASCE 41 committee. The compressive strength (4,500 psi) was based on as-built drawings (the lower bound value and multiplied by a factor (1.5x3, 000) for the expected strength according to ASCE 41-13 section 10.2.2.1.2

b. Also I corrected topping slab thickness from 2.5 inches into 3 inches and 6 inches in accordance with UFC 3-301-01 modifications where the slab containing collector or boundary reinforcement.

2- Project name: Vertical Lift Module (VLM) foundations
Scope: Design concrete foundations for VLM
I designed reinforced concrete foundation system for equipment Vertical Lift Module (VLM) under supervision of professional engineer and the design structural calculations were per ASCE 7 and ACI 318 governed by UFC 3-301-01. In addition, I prepared AutoCAD drawings and cost estimate.

3- Project name: Ambulatory Care Center building  
Scope: QA structural design of two stories building 100,000 SF (Cost $76 million)  
Dates: February 2020 to June 2021  
Location: MCRD San Diego, CA

I reviewed design of conventional shallow spread and continuous RC foundations. I reviewed structural design of Lateral Load Resisting System of Intermediate Moment Frames (steel beams and columns) and rigid diaphragms (concrete fill on composite steel deck).  
The moment frames are welded beam to column flange connections with reduced beam sections adjacent to the columns.

4- Project name: Aerial Port Squadron Materiel Warehouse  
Scope: Write RFP and review A-E Design and Construction submittals, Cost $17 million  
Dates: February 2020 to January 2020 to January 2023  
Location: Travis AFB, CA

The project provided pre-engineered enclosure addition with automated pallet storage and retrieval system. The system included new Mechanized Material Handling System (MMHS).  
I prepared RFP structural sections and reviewed RFIs. Then I reviewed design submittals (calculations, drawings and specifications) for pallet storage racks consists of HSS framing with braced frames and the associated Pallet Storage Enclosure (PSE) consists of steel moment frame in the transverse direction and partially braced frame in the longitudinal direction.

5- Project name: Aircraft Refueling Facility  
Scope: Write RFP and review A-E Design and Construction submittals, Cost $7 million  
Dates: August 2022 to January 2024  
Location: Bridgeport CA

I prepared RFP and reviewed design submittals (calculations, drawings and specifications) by A-E for design and construction of operations building, fuel canopy and tanks. The site is unique because it has a very high snow load, coupled with a very high seismic load. Operations building required Special Reinforced Masonry Shear Walls. I instructed A-E DOR to consider frost heave in design of foundations per UFCs.
<table>
<thead>
<tr>
<th>Start Date</th>
<th>End Date</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>August 1993</td>
<td>August 1996</td>
<td>Military service was compulsory for all men at the age of 18 years, I had to join army after graduation from college of engineering for about two years.</td>
</tr>
<tr>
<td>July 1998</td>
<td>December 1998</td>
<td>It was time of international sanctions against Iraq. Unemployment due to travel to another country looking for a job.</td>
</tr>
<tr>
<td>September 2009</td>
<td>April 2010</td>
<td>I had to traveled to Iraq for a family issue. Unemployment till I applied for travel document then I returned to USA.</td>
</tr>
<tr>
<td>May 2015</td>
<td>March 2016</td>
<td>Unemployment because of travel back to Iraq because of a family issues.</td>
</tr>
<tr>
<td>December 2016</td>
<td>October 2019</td>
<td>Unemployment due to family issue that I had to stay home as in-home senior caregiver for a family member went through brain stroke.</td>
</tr>
</tbody>
</table>
**Institution/Degree**
- University of Baghdad / Bachelors in Civil Engineering
  - 09/01/1989 — 07/01/1993
  - Country: Iraq
  - Language: English
  - Courses: 32

**Comparability Summary**

<table>
<thead>
<tr>
<th>Area</th>
<th>Hours</th>
<th>Deficiency</th>
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</thead>
<tbody>
<tr>
<td>Math/Science</td>
<td>34 / 32</td>
<td>Missing 2 of 3 (Biology, Chemistry, Physics)</td>
</tr>
<tr>
<td>Engineering</td>
<td>71 / 48</td>
<td>None</td>
</tr>
<tr>
<td>General Education</td>
<td>12 / 12</td>
<td>None</td>
</tr>
<tr>
<td>Elective/Other</td>
<td>32 / N/A</td>
<td>None</td>
</tr>
</tbody>
</table>

**Outcome:** Not Equivalent

The NCEES Engineering Education Standard requires at least two courses in specific basic sciences. These courses must be in general chemistry, general calculus-based physics, or general biological sciences. The two courses may not be in the same area.
Specified Criteria Hours: 32

<table>
<thead>
<tr>
<th>Course</th>
<th>Institution/Degree</th>
<th>U.S. Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calculus I</td>
<td>University of Baghdad / Bachelors in Civil Engineering</td>
<td>6</td>
</tr>
<tr>
<td>Calculus II</td>
<td>University of Baghdad / Bachelors in Civil Engineering</td>
<td>6</td>
</tr>
<tr>
<td>Engineering Analysis</td>
<td>University of Baghdad / Bachelors in Civil Engineering</td>
<td>4</td>
</tr>
<tr>
<td>Engineering Geology</td>
<td>University of Baghdad / Bachelors in Civil Engineering</td>
<td>2</td>
</tr>
<tr>
<td>Engineering Mechanics</td>
<td>University of Baghdad / Bachelors in Civil Engineering</td>
<td>6</td>
</tr>
<tr>
<td>Engineering Statistics</td>
<td>University of Baghdad / Bachelors in Civil Engineering</td>
<td>2</td>
</tr>
<tr>
<td>Fluid Mechanics</td>
<td>University of Baghdad / Bachelors in Civil Engineering</td>
<td>6</td>
</tr>
<tr>
<td>Numerical Methods</td>
<td>University of Baghdad / Bachelors in Civil Engineering</td>
<td>2</td>
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</tbody>
</table>

Total semester credit hours earned: 34.00
Specified Criteria Hours: 48

<table>
<thead>
<tr>
<th>Course</th>
<th>Institution/Degree</th>
<th>U.S. Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Building Construction</td>
<td>University of Baghdad / Bachelors in Civil Engineering</td>
<td>3</td>
</tr>
<tr>
<td>Environmental &amp; Sanitary Engineering</td>
<td>University of Baghdad / Bachelors in Civil Engineering</td>
<td>6</td>
</tr>
<tr>
<td>Foundation Engineering</td>
<td>University of Baghdad / Bachelors in Civil Engineering</td>
<td>6</td>
</tr>
<tr>
<td>Hydrology</td>
<td>University of Baghdad / Bachelors in Civil Engineering</td>
<td>3</td>
</tr>
<tr>
<td>Irrigation &amp; Drainage Networks</td>
<td>University of Baghdad / Bachelors in Civil Engineering</td>
<td>3</td>
</tr>
<tr>
<td>Materials Science</td>
<td>University of Baghdad / Bachelors in Civil Engineering</td>
<td>6</td>
</tr>
<tr>
<td>Mechanical &amp; Electrical Engineering</td>
<td>University of Baghdad / Bachelors in Civil Engineering</td>
<td>6</td>
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<tr>
<td>Mechanics of Materials</td>
<td>University of Baghdad / Bachelors in Civil Engineering</td>
<td>6</td>
</tr>
<tr>
<td>Project</td>
<td>University of Baghdad / Bachelors in Civil Engineering</td>
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<tr>
<td>Reinforced Concrete</td>
<td>University of Baghdad / Bachelors in Civil Engineering</td>
<td>6</td>
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<tr>
<td>Soil Mechanics</td>
<td>University of Baghdad / Bachelors in Civil Engineering</td>
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<tr>
<td>Structural Design</td>
<td>University of Baghdad / Bachelors in Civil Engineering</td>
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</tr>
<tr>
<td>Theory of Structures</td>
<td>University of Baghdad / Bachelors in Civil Engineering</td>
<td>6</td>
</tr>
<tr>
<td>Transportation Engineering</td>
<td>University of Baghdad / Bachelors in Civil Engineering</td>
<td>6</td>
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</tbody>
</table>

**Total semester credit hours earned:** 71.00
### Specified Criteria Hours: 12

<table>
<thead>
<tr>
<th>Course</th>
<th>Institution/Degree</th>
<th>U.S. Credits</th>
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</thead>
<tbody>
<tr>
<td>English</td>
<td>University of Baghdad / Bachelors in Civil Engineering</td>
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</tr>
<tr>
<td>National Studies</td>
<td>University of Baghdad / Bachelors in Civil Engineering</td>
<td>4</td>
</tr>
<tr>
<td>Social Issues</td>
<td>University of Baghdad / Bachelors in Civil Engineering</td>
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</tr>
</tbody>
</table>

Total semester credit hours earned: 12.00
ELECTIVE/OTHER

Specified Criteria Hours: N/A

<table>
<thead>
<tr>
<th>Course</th>
<th>Institution/Degree</th>
<th>U.S. Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Building Materials</td>
<td>University of Baghdad / Bachelors in Civil Engineering</td>
<td>1</td>
</tr>
<tr>
<td>Computer Programming</td>
<td>University of Baghdad / Bachelors in Civil Engineering</td>
<td>11</td>
</tr>
<tr>
<td>Construction Methods</td>
<td>University of Baghdad / Bachelors in Civil Engineering</td>
<td>3</td>
</tr>
<tr>
<td>Engineering Drawing</td>
<td>University of Baghdad / Bachelors in Civil Engineering</td>
<td>4</td>
</tr>
<tr>
<td>Engineering Management</td>
<td>University of Baghdad / Bachelors in Civil Engineering</td>
<td>2</td>
</tr>
<tr>
<td>Quantity Surveying &amp; Estimation</td>
<td>University of Baghdad / Bachelors in Civil Engineering</td>
<td>3</td>
</tr>
<tr>
<td>Surveying</td>
<td>University of Baghdad / Bachelors in Civil Engineering</td>
<td>8</td>
</tr>
</tbody>
</table>

Total semester credit hours earned: 32.00

Total Semester Credit Hours Earned: 149

PROCESS DESCRIPTION

All education is compared to the NCEES Engineering Education Standard.

The evaluation of your academic studies has been prepared to provide engineering and surveying licensing boards with the required assessment of foreign qualifications to facilitate them in determining if you qualify for licensure examination. This is an advisory report prepared based on records received and verified by the institutions issuing the degrees or qualifications. Eligibility to take the examination is determined by the licensing boards.

This report does not include the assessment of written and oral communication skills, computer skills, the quality of laboratory or field work, and the scope of design experience, which require an onsite review. Academic records (such as transcripts and catalogs) do not document qualitative factors and practical constraints to desirable outcomes.

NCEES houses a library of reference materials from around the world. These references are used for the completion of evaluations in conjunction with the NCEES Engineering Education Standard.
HILTON ATHERTON (20-562-97)
All work experience reviewed by two licensed professionals

GENERAL
Applying To
Nevada
Application Type
Initial - PE
Application Date
06/20/2024
Citizenship
United States

SUMMARY
Engineering Experience after EAC degree
4 years
Total Engineering Experience
4 years
Experience under licensed engineer
4 years
Disciplinary Action
None reported

EDUCATION
Bachelors in Civil Engineering (EAC)
University of Nevada, Reno
June 2016–May 2020

EXAMS
Fundamentals of Engineering (FE)
Nevada
January 2020
Principles and Practice of Engineering (PE)
Civil
Nevada
October 2020

LICENSES
Additional Licenses
None

NCEES ID: 20-562-97
06/21/2024
Page 1 of 3
**WORK EXPERIENCE**

<table>
<thead>
<tr>
<th>Company</th>
<th>Role</th>
<th>Duration</th>
<th>Verified by</th>
<th>Experience Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monte Vista Consulting, Ltd.</td>
<td>Engineer in Training</td>
<td>May 2020—May 2024</td>
<td>Michael Vicks</td>
<td>Full-Time</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><a href="mailto:mike@montevistaconsulting.com">mike@montevistaconsulting.com</a></td>
<td>Engineering: 4 years</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Post EAC degree: 4 years</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Experience under licensed engineer: 4 years</td>
</tr>
</tbody>
</table>

**TASKS**

I design the majority of a project with instruction on specific objectives and receive guidance for complex issues. I create site design options for client review and ensure the site design meets local jurisdiction requirements. I also create the grading, drainage, water, gravity sanitary sewer and storm drain design. I create plan sheets for submittal and accompanying necessary reports including hydrology reports, storm water pollution prevention plans, and special use applications. I reach out to municipalities to confirm and ask questions about certain aspects of the municipality’s development code. I reach out to clients and other professionals to coordinate project information. All of my work is reviewed by my boss and he provides feedback on what needs to be updated, fixed, or changed. I am also the first point of contact for our office intern in answering basic questions regarding engineering software and engineering basics. I routinely make grading design decisions to ensure that the grading design meets ADA requirements, proper drainage requirements, and that the grading design satisfies the client, all while taking into account site restrictions. I make utility design decisions to ensure that the utility design meets the design criteria while maintaining required pipe crossing clearances and pipe coverage.

**REPRESENTATIVE PROJECTS**

Sierra Flats Multi-Family: A multi-phase affordable housing and senior living complex located in Carson City, NV. From direction from my boss and client, I completed the grading, drainage, storm drain, sanitary sewer, and water designs. I completed the civil plan sheets and hydrology report required for submittal.

Western Road Industrial: A multi-tenant industrial building located in Reno, NV. From direction from my boss and client, I completed the site, grading, drainage, storm drain, sanitary sewer, and water designs. I completed the civil plan sheets and hydrology report required for submittal.

Slim Chickens Los Altos: A drive through fast food restaurant located in Sparks, NV. From direction from my boss and client, I completed the site, grading, drainage, storm drain, sanitary sewer, and water designs. I completed the civil plan sheets and hydrology report required for submittal.

Emerson Cottages: A residential subdivision located in Carson City, NV. From direction from my boss and client, I completed the site, grading, drainage, storm drain, sanitary sewer, and water designs. I completed the civil plan sheets and hydrology report required for submittal.

Newman 174 Lake House: A custom home located in Truckee, CA. From direction from my boss and client, I completed the grading and drainage designs. I completed the civil plan sheets for submittal.

More completed projects available upon request.
## General

### Applying To
- Nevada

### Application Type
- Initial - PE

### Application Date
- 05/24/2024

### Citizenship
- United States

## Summary

### Engineering Experience
- after EAC degree
- 4 years

### Total Engineering Experience
- 4 years

### Experience under licensed engineer
- 3 years, 1 month

### Disciplinary Action
- None reported

## Education

- **Non-degree**
  - Lake Tahoe Community College
  - January 2013–June 2017
  - Bachelors in Civil Engineering (EAC)

- **Bachelor's**
  - University of California, Davis
  - September 2017–June 2020

## Exams

- **Fundamentals of Engineering (FE)**
  - Washington
  - October 2022

- **Principles and Practice of Engineering (PE)**
  - Civil
  - California
  - May 2024

## Licenses

- **Additional Licenses**
  - None
WORK EXPERIENCE

Shimmick Construction  
California (United States)  
Field Engineer  
June 2020—September 2022

**Tasks**

- Worked directly with licensed civil engineers.
- Designed and prepared rigging plans for the erection of permanent and temporary structural steel under the supervision of licensed civil engineers.
- Designed temporary access systems and prepared plans under the supervision of licensed civil engineers.
- Designed fall protection systems/plans per OSHA requirements.
- Performed preliminary calculations for temporary scaffolding, fall protection, and rigging.
- Reviewed project engineering specification for preparation and design of work plans, shop drawings, and submittals.
- Prepared engineering QC reports.

**Representative Projects**

Project: Golden Gate Bridge Suicide Deterrent System & Wind Retrofit, Scope: Temporary Access Design, & Construction Engineering  
Dates of Project: June of 2020 to September of 2022

Progressive experience: At the start of my time on the project, my role consisted mostly of preparing engineering QC reports for the engineer in charge to review. As I gained more experience, my responsibilities expanded to designing scaffolds, rigging, and steel erection plans.

Project Design: The Golden Gate Bridge Suicide Deterrent System & Wind Retrofit is a structural steel erection project, and installation of stainless steel netting on the entirety of the bridge. My role on the project included the design and preparation of work plans and submittals for approval and acceptance by the Golden Gate Bridge District. Some examples of designs include:

EX 1) Designed an alternative suspended scaffold beam to allow workers access to an otherwise inaccessible area. This required working with Civil engineers to size the beam, designing the components for the beam to scaffold connections, and designing the rigging plan for installing the beam and eventually removing the beam.

EX 2) Designed a raised scaffold to provide access to workers for installing the net. This required working with civil engineers to design the scaffold components for supporting workers, and provide the required anchorage per OSHA to supports worker fall protection.

Implementation: Prepared plans for the work and presented potential hazards to workers and team to make sure operations were carried out per OSHA and project specific requirements. If applicable, design solutions to remove hazards to workers.

Operation: Prepared QC engineering reports for the steel erection to confirm work met the project specifications. Reports were required to be reviewed and stamped by civil engineer prior to submittal.
Inspect construction per ASTM guidelines, and provide engineering inspection reports for operations such as the following:
- Soil inspection and soil classification
- Soil compaction testing
- Concrete placement inspection (obtained ACI certification)
- Post installed anchor inspection
Prepared geotechnical investigation reports, and geotechnical field investigations for Civil engineer review.
Review project specifications and ASTM guidelines to determine the required inspections and or Geotechnical reports needed.

Representative Project Examples:
Silverdale Subdivision Geotechnical Investigation (September 2022):
Observed potholing and percolation testing in compliance with local city & county requirements for the preparation of Geotechnical report and development of drainage recommendations.
Bangor Military Base Force Main (October 2022 to January 2023)
Reviewed project specifications and requirements for the placement of force main pipe and backfilling with structural fill. Made recommendations for the correction of fill not meeting compaction requirements based on the observations made in the field.
WORK EXPERIENCE

The Walsh Group
Washington (United States)
Project Engineer
January 2023—December 2023

Tasks

I had the following duties and responsibilities:

- Value engineering analysis.
- Modeling installation procedures.
- Review of shop drawings.
- Estimating and budgeting construction costs.
- Review and processing of change orders.
- Specification review and interpretation.
- Coordination among professional disciplines.
- Preparation of O&M Engineering manuals.
- Review and evaluation of subcontractor submittals.
- Construction feasibility analysis.
- Review of operations for conformance with specifications.

Representative Projects

Seattle Union Street Pedestrian Bridge
Jan 2023 to June 2023
Role in the project included coordinating with city engineers to prepare required engineering reports. I recommended construction operation for various remaining out of conformance operations and recommended methods of correction. I Coordinated with engineers to prepare required submittals. I made recommendations for change orders and reviewed project specifications with engineers to determine validity.

King County RapidRide H-Line
June 2023 to Dec 2023
Along with the same roles and responsibilities held for the Union Street Pedestrian Bridge, I used excel to analyze project performance and map project operations to determine contractor compliance with specifications, recommended possible mitigations and construction operations for contract compliance.
NICHOLAS BALLACHEY (20-934-79)
All work experience reviewed by two licensed professionals

WORK EXPERIENCE

Lumos & Associates
California (United States)
Project Designer
January 2024—July 2024

Verified by
Cami Lynn Jackson
cjackson@lumosinc.com

Experience Summary
Full-Time
Engineering: 6 months
Post EAC degree: 6 months
Experience under licensed engineer: 6 months

TASKS
- Worked directly with licensed civil engineers.
- Design civil site plans.
- Design site grading plans.
- Perform calculations for drainage improvements.
- Prepare Capital Improvement planning reports.
- Design ADA compliant ramps, access paths, & parking.

REPRESENTATIVE PROJECTS

Golden Nugget Lake Tahoe Resort & Casino
January 2024 to Present
I designed the civil site improvements for the south side of the hotel. This required designing ADA parking, ADA ramps, and the grading of the south driveway per NDOT standards. In addition, I calculated the runoff from the proposed improvements and designed the drainage improvements for the project.

Rancho Murieta Community Services District (RMCSD) CIP
January 2024 to Present
Used GIS to inventory all water and sewer assets in the systems. Exported data to excel to analyze and calculate the remaining estimated useful life of system per EPA and AWWA reports. Prepare draft engineering reports for RMCSD CIP.
ERIC BERG (20-990-25)

All work experience reviewed by two licensed professionals

DISCIPLINE: CIVIL

GENERAL

Applying To: Nevada
Application Type: Initial - PE
Application Date: 07/03/2024
Citizenship: United States

SUMMARY

Engineering Experience after EAC degree
4 years, 1 month

Total Engineering Experience
4 years, 1 month

Experience under licensed engineer
4 years, 1 month

Disciplinary Action
None reported

EDUCATION

Bachelors in Civil Engineering (EAC)
University of Colorado, Boulder Partnership with Colorado Mesa University
August 2017–May 2020

EXAMS

Fundamentals of Engineering (FE)
Colorado
August 2020

Principles and Practice of Engineering (PE)
Civil
Nevada
April 2021

LICENSES

Additional Licenses
None
WORK EXPERIENCE

Atkins Realis Engineering
Nevada (United States)
Engineer I
May 2020—June 2024

Tasks
For the first 3 years of my engineering career, my primary roles include calculations, research of pertinent regulations, as well as plan set edits in AutoCAD. Last year, I had the opportunity to be the line manager of two incredible, hard-working interns, which has shifted my workload to be more project management. My main focus right now is to teach my interns as much as possible. I host weekly early career engineering meeting in which I present on CAD skills, calculations, or more in general in regard to the engineering systems we design. Another new skill for me is to review all of their work products. Reviewing has taught me to be clearer and more concise when giving direction. This makes it more likely that what they do will be more similar to what I had originally envisioned. I now also am responsible with finding work for myself as well as my interns and the coordination to ensure that my team remains engaged and billable. I also have had the opportunity to work with project budgets and ensure that the work is getting completed within scope and within cost. I also host monthly water reservoir storage meeting in which engineers from different offices meet to discuss recent changes on our projects and client preferences. On some of the smaller projects I work on, I know am the main point of contact with our clients. Recently, I have volunteered to be a part of a review committee within my company where we review standard practices and see if there are any ways in which we can improve. Moving forward, I am excited to continue learning and see how my career can grow.

Representative Projects
Stephanie Street Reclaimed Waterline Rehabilitation | Henderson, NV
Duration: 05/2020 – 05/2022
Project Description:
In my opinion the Stephanie Reclaimed Waterline Project was a huge learning moment for me due to the uniqueness of the project. This project was a retrofit of an existing 24" reclaimed water main. Leakage due to inadequate cathodic protection prompted the City of Henderson to request Atkins to provide analysis on cost effective solution. It was determined that if the pipeline only operated in the "downhill mode" a pressure reducing and sustaining valve could be installed and then the pipeline downstream of this point would function similar to a gravity sewer, therefore reducing pressure and leakage. Much of the research I did was to understand the implications of transitioning a pipeline from operation under pressurized flow to gravity flow. From this I learned about cathodic protection, air valves, blow off valves, and cavitation.
Role on Project:
Design Engineer heavily involved during entire project duration. I analyzed alternative in-situ pipeline replacement methods including cured-in-place pipe liners and structural epoxy spray liners. I wrote the basis of design report. I reviewed the project Sewer CAD model. I reviewed as-built utility infrastructure and drafted the project record utility map, plan and profile, yard piping and valve detailing.

Air Force Base Water Tank | Air Force Base, Qatar
Duration: 01/2021 – 05/2022
Project Description:
This project was to design a water storage reservoir to be used for domestic needs as well as for providing water for fire suppression at aircraft hangars. One interesting part to this project is that we had to specify a pump to fill the tank as the distribution system did not provide enough pressure to fill the reservoir on its own.
Role on Project:
In the AUAB PDPF project I reviewed requirements in Qatar for water storage reservoirs as well as researched and determine any difference between these requirements and US requirements. I determined the tank size based on water demands. I outlined all the structures that are required for storage tanks including chlorine analyzers, mixers, chlorine dosing systems and much more.

4125 South Reservoir | Las Vegas, NV
Duration: 05/2023 – Present
Project Description:
The 4125 South Reservoir is a 10 MG underground concrete drinking water storage reservoir. This reservoir occupies a 9.8-acre parcel and also includes a disinfection and controls building as well as an area for a pump station to be designed after the reservoir is constructed.

Role on Project:
I drafted design alternatives and coordinated with reviewing agency to get a disinfection building plan that everyone could agree upon. I completed calculations for the chlorination pumping system, overflow weirs, blowers and venting, and many more. I presented design ideas at project meetings.
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<th>End Date</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
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<td>July 2017</td>
<td>I was in college for this time frame and the experience I gained during this time period is not valid for my PE application.</td>
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</table>
KALYANI BHUTADA (21-664-20)
All work experience reviewed by two licensed professionals

GENERAL
- Applying To Nevada
- Application Type Initial - PE
- Application Date 06/20/2024
- Citizenship India

SUMMARY
- Engineering Experience after EAC degree
- Total Engineering Experience 5 years, 2 months
- Experience under licensed engineer 5 years, 2 months
- Other Experience 4 months
- Disciplinary Action None reported

EDUCATION
- Bachelors in Civil Engineering
  University of Pune - Savitribai Phule Pune University
  August 2010–May 2014
- Masters in Urban and Regional Planning
  University of Florida
  June 2016–August 2018

EXAMS
- Fundamentals of Engineering (FE)
  Florida PE
  April 2023
- Principles and Practice of Engineering (PE)
  Civil
  Nevada
  March 2024

LICENSES
- Additional Licenses
  None

NOTE: Applicant did not meet the NCEES education standards due to missing 2 out of the 32 required Math/Science hours as well as 6 out of the 12 required General Education hours, however the applicant has exceeded the 48 hours requirement for engineering by 18 hours.
WORK EXPERIENCE

BALAJI BUILDCON
Maharashtra (India)
ENGINEER
January 2014—May 2016

Verified by
Kalyani Bhutada (Self)

Experience Summary
Part-Time
Engineering: (0%)
Experience under licensed engineer: None

TASKS

• Prepare estimation data and weekly reports for active projects
• Plan interpretation and coordination with superiors and staff
• Meeting with local agencies for development permit
• Site visit and supervise daily improvements

REPRESENTATIVE PROJECTS

• Prepare estimation data and weekly reports for active projects
• Plan interpretation and coordination with superiors and staff
• Meeting with local agencies for development permit
• Site visit and supervise daily improvements
WORK EXPERIENCE

LEE COUNTY
Florida (United States)
PLANNER
November 2018—March 2019

Verified by

Experience Summary
Full-Time
Other: 4 months
Experience under licensed surveyor: None

DESCRIPTION
## Work Experience

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<tr>
<th>Company</th>
<th>Position</th>
<th>Years</th>
<th>Contact</th>
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<tbody>
<tr>
<td>Weiler Engineering Corp</td>
<td>Planner/Engineer</td>
<td>March 2019—October 2020</td>
<td><a href="mailto:michael@weilerengineering.org">michael@weilerengineering.org</a></td>
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<tr>
<td>In-house consultant at Fort Myers Beach (2019-2020)</td>
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<td>Sarasota Repetitive Loss Area Analysis (2019-2020)</td>
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<tr>
<td>Long range transportation plan and Bisset Park (2020)</td>
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</table>

### Tasks

I managed multiple planning and zoning projects, permits and other development applications. I analyzed a project site, local regulations to prepare development. I assessing Traffic Impact Statement for new development using ITE manuals. I interpreted and applied Comprehensive Plan and Zoning policies including MUTCD MPO transportation regional plans, etc. I created project specific maps/exhibits for zoning, and future land use maps using ArcGIS. I reviewed drainage plans per the local code and provided comments to Engineers.

### Representative Projects

In-house consultant at Fort Myers Beach (2019-2020)
I managed planning/zoning studies, development applications and permits. I developed project budgets, administered bidding process, verified contract expenditures and compliance. I interpreted current standards, including Municode, Metropolitan Planning Organization Transportation Plan, and other standard drawings and specifications in designing phase of projects. I provided a professional planning assistance to community members on varied projects and I served as liaison to planning and zoning boards and commissions, and elected officials. I did field inspections to gather data relevant to the development reviews and/or to verify that development projects comply with approved plans. I reviewed drainage plans for the developments and provided comments to the engineers.

Sarasota Repetitive Loss Area Analysis (2019-2020)
I analyzed Repetitive Loss Areas for FEMA’s Community Rating System(CRS) using ArcGIS and online resource. I did ArcGIS analysis to indicate topography, drainage, and existing grades at base of structures and I create maps to analyze the storm water system infrastructure for the project. Based on the analysis I recommended mitigation alternative for the flooding events, mitigation recommendation and funding opportunities within the area.

Long range transportation plan and Bisset Park (2020)
I did data mining using government agency’s online resources, I analyzed the data using ArcGIS and documented socio-cultural effects & environmental mitigation. I created exhibits using ArcGIS to present the geographic data. I evaluated the impact of future infrastructure developments on natural resources as well as impact of flood zones on future expansion of highway routes/evacuation routes.
KALYANI BHUTADA (21-664-20)

All work experience reviewed by two licensed professionals

WORK EXPERIENCE

HDR Inc
Florida (United States)
TRANSPORTATION ENGINEER
October 2020—July 2022

Verified by
William Donald Baldwin
WD.Baldwin@hdrinc.com

Experience Summary
Full-Time
Engineering: 1 year, 9 months
Experience under licensed engineer: 1 year, 9 months

TASKS

I was an in-house consultant for FDOT’s connected and autonomous vehicle (CAV) program. I identified and developed grant applications for discretionary funding opportunities. I developed communication outreach plan for CAV. I budgeted FDOT’s CAV work program. I developed and reviewed RFIs/RFPs. I evaluated problem areas using ArcGIS analysis. I interpreted and applied current standards, including AASHTO Green Book, FDOT Standard Drawings and Specification and MUTCD under guidance of licensed Engineer.

REPRESENTATIVE PROJECTS

In house consultant at FDOT - Florida’s connected and automated vehicle’s (CAV), Tallahassee, FL (2020-2022)
I was an in-house consultant for FDOT’s connected and automated vehicle (CAV) program. This project required everyday cross team coordination with the technical experts and FDOT’s representatives. I developed and reviewed RFPs/RFI’s for CAV projects for freeways, expressways, and arterials. I drove conversations with the industry experts in installing new technologies in innovative ways. I identified education and outreach program objectives with a goal connected and automated vehicle (CAV) deployments and develop the CAV workforce in Florida. I analyzed roadways for traffic impacts and crash intensities using ArcGIS and evaluated crash statistics for roadway segments to identify statewide areas of concern.

CAV Work Program, Tallahassee, FL (2020-2022)
I evaluated FDOT’s CAV work program every year to plan and budget for current and future FY projects. This project involved tallying total funding for CAV program and managing each FY budget as approved by FDOT authorities. I identified funding opportunities for implementation, operations, and maintenance of CAV/ITS technologies. I developed grant applications for discretionary funding opportunities.

Near miss identification system, Tallahassee, FL (2020-2022)
I developed and reviewed technical requirements and specifications to create a framework for CAV infrastructure preparedness including software and hardware upgrades and new installations for this project. This project was aimed at developing a new technology that would prevent crashes at any intersection using vehicle-to-vehicle (V2V) or vehicle-to-infrastructure (V2I) communication.

Signal phase and time trapezium project, Tallahassee, FL (2020-2022)
I developed and reviewed technical requirements and specifications to create a framework for CAV infrastructure preparedness including hardware upgrades and new installations for SPaT projects. This project was aimed at installing CAV technology that would pre-empt the emergency vehicles through any intersection without causing delays using vehicle-to-infrastructure (V2I) communication.

Freight Platooning System, Tallahassee, FL (2020-2022)
I reviewed freight system in Florida and developed a questionnaire/outreach agenda that sent out to the freight companies/drivers. I evaluated the survey results to understand freight concerns while driving on freeways or local roads. Per results, I developed RFPs to create a framework for CAV freight infrastructure preparedness including hardware upgrades and new installations. This project was aimed at installing CAV technology that would pre-empt/extend signal cycle if freight is detected on the local roads without stopping at each intersections using V2I communication as well as installing in-vehicle technology for freight platooning on the freeways/highways using V2V communication.

Statewide arterial management program and managed lanes support, Tallahassee, FL (2020-2022)
I interpreted the current standards, including AASHTO Green Book, FDOT Standard Drawings and Specification and MUTCD under the guidance of licensed Engineer.
CAV Outreach program as well as Story map/dashboard for Florida's CAV program, Tallahassee, FL (2020-2022)
I provided requirements for graphical representation and reviewed online interface of a platform for CAV implementation readiness in terms of technology implementation, infrastructure improvements and gaps identification. I developed industry outreach plan to implement SME outcome-based CAV technologies through active partnerships with industry, universities, and stakeholders.

University Research Program, Tallahassee, FL (2020-2022)
I developed and reviewed the scope for research projects and developed schedule for the project task and final report. This project heavily involved coordination with the university professor and actively providing comments for completed tasks. I reviewed each task for compliance and evaluate the outcomes.
**KALYANI BHUTADA (21-664-20)**

**All work experience reviewed by two licensed professionals**

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**WORK EXPERIENCE**

**CA GROUP INC**

Nevada (United States)

**TRANSPORTATION PROJECT ENGINEER**

**July 2022—May 2024**

**Tasks**

I design projects under the direction of a licensed Engineer for transportation projects including freeways, expressway and arterials. I review and apply current standards, including AASHTO Green Book, RTC of Southern Nevada Standard Drawings and Specifications, NDOT Standard Drawings and Specification and MUTCD. I use design software including Civil3D and Microstation/Inroads for roadway design, SignCAD for sign design and Synchro for macrosimulation and HCS for microsimulation. I prepare project schedule, plans and estimates and budgets.

**Representative Projects**

**Maryland Parkway BRT, Las Vegas, NV. (2022-2024)**

Four miles of complete street improvements and transit corridor in Downtown Las Vegas and the Medical District. I am a design Engineer on this project and under the direction of a licensed Engineer I design the roadway using Civil 3D grading. I performed quantity estimates, etc.

**Lemmon Valley Drive Improvements and Resiliency project, Lemmon Valley, Washoe County, NV (2023)**

NEPA Study conducted from Ramsey way to Fleetwood Drive. I was a traffic analyst and under the direction of a licensed Engineer I forecasted interim and design year traffic and I microstimulated the existing and future traffic using Synchro to evaluate the impacts on the roadway and provided recommendation for feasible improvements in a report format. I developed a signal warrant analysis per MUTCD guidelines.

**US-95 at SR-164/Cottonwood Cove Road Intersection Control Evaluation (ICE), Searchlight, NV (2023-2024)**

I am a traffic engineer and under the direction of a licensed Engineer I forecasted traffic for interim and design year. I simulated the traffic for two way stop condition and signalized condition for current and design years using Synchro to evaluate the impacts on traffic. I performed operational level analysis using HCS for the interchange to evaluate impact on the level of service.

**US 395 Sierra corridor study, Carson City, NV (2023)**

I was a traffic analyst on this project and under the direction of a licensed Engineer I forecasted traffic for interim and design year. I simulated the traffic for two way stop condition and signalized condition for current and design years using Synchro to evaluate the impacts on traffic. I performed operational level analysis using HCS for the interchange to evaluate impact on the level of service.

**Tropicana Avenue, Durango Drive Valley View Boulevard, Clark County, NV. (2023)**

Project includes preliminary and final design effort for the rehabilitation and restoration of Tropicana Avenue from Durango Drive to Valley View Boulevard in Clark County and Las Vegas, Nevada. I was a traffic engineer on this project and under the direction of a licensed Engineer I designed the traffic plans, associated calculations.

**US-50 at SR-28 Intersection Control Evaluation (ICE), Douglas County, NV (2023-2024)**

I am a traffic engineer on this project and under the direction of a licensed Engineer I forecasted traffic for interim and design year. I simulated the traffic for two way stop condition, signalized condition, and trumpet interchange for current and design years using Synchro to evaluate the impacts on traffic. I performed operational level analysis using HCS for the trumpet interchange to evaluate impact on the level of service and speed.

**I-11 Feasibility Study (2023)**

I am a traffic engineer on this project and under the direction of a licensed Engineer I analyzed existing condition, interim and design year traffic conditions using Synchro to evaluate the impacts and I provided recommendation for improvements in a report format.
I am a traffic engineer on this project and I am analyzing the existing signs and requirement of new signs for the proposed design per MUTCD. I am designing new signs in SignCAD. I am designing the signs plan using MicroStation.
DEGREES EVALUATED

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<th>Institution/Degree</th>
<th>Country</th>
<th>Language</th>
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<tbody>
<tr>
<td>University of Pune - Savitribai Phule Pune University / Bachelors in Civil Engineering 08/01/2010 — 05/01/2014</td>
<td>India</td>
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<tr>
<td>University of Florida / Masters in Urban and Regional Planning 06/01/2016 — 08/01/2018</td>
<td>United States</td>
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COMPARABILITY SUMMARY

Outcome: Not Equivalent

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<th>Area</th>
<th>Hours</th>
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<td>Math/Science</td>
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<tr>
<td>Engineering</td>
<td>66 / 48</td>
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<tr>
<td>General Education</td>
<td>6 / 12</td>
<td>Missing 6 hours</td>
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<tr>
<td>Elective/Other</td>
<td>40 / N/A</td>
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SPECIAL NOTE

The NCEES Engineering Education Standard requirement is 32 semester credits in higher mathematics/basic sciences.

The NCEES Engineering Education Standard requires 12 college semester credit hours in general education that complement the technical content of the curriculum. Courses that instill cultural values are acceptable, while routine exercises of personal craft are not.
Specified Criteria Hours: 32

<table>
<thead>
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<th>Institution/Degree</th>
<th>U.S. Credits</th>
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<tbody>
<tr>
<td>Calculus I</td>
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<td>Calculus II</td>
<td>University of Pune - Savitribai Phule Pune University / Bachelors in Civil Engineering</td>
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<tr>
<td>Chemistry</td>
<td>University of Pune - Savitribai Phule Pune University / Bachelors in Civil Engineering</td>
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<td>Differential Equations</td>
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<td>Engineering Geology</td>
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<td>Fluid Mechanics I</td>
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<td>Physics</td>
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<tr>
<td>Strength of Materials</td>
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Total semester credit hours earned: 30.00
Specified Criteria Hours: 48

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<td>Civil Engineering</td>
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<td>Dam Engineering</td>
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<td>Earthquake Engineering</td>
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<td>Electronic Engineering</td>
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<td>Environmental Engineering II</td>
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<td>Project</td>
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<td>Transportation Engineering</td>
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Total semester credit hours earned: 66.00
### General Education

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<tr>
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<tr>
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Total semester credit hours earned: 6.00
Total Semester Credit Hours Earned: 142

**Specified Criteria Hours: N/A**

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**Total semester credit hours earned: 40.00**

**Process Description**

All education is compared to the NCEES Engineering Education Standard

The evaluation of your academic studies has been prepared to provide engineering and surveying licensing boards with the required assessment of foreign qualifications to facilitate them in determining if you qualify for licensure examination. This is an advisory report prepared based on records received and verified by the institutions issuing the degrees or qualifications. Eligibility to take the examination is determined by the licensing boards.

This report does not include the assessment of written and oral communication skills, computer skills, the quality of laboratory or
field work, and the scope of design experience, which require an onsite review. Academic records (such as transcripts and catalogs) do not document qualitative factors and practical constraints to desirable outcomes.

NCEES houses a library of reference materials from around the world. These references are used for the completion of evaluations in conjunction with the NCEES Engineering Education Standard.
ALISSON LUIZ BOEING (19-471-56)
All work experience reviewed by two licensed professionals

GENERAL

Applying To Nevada
Application Type Initial - PE
Application Date 07/05/2024
Citizenship Brazil

SUMMARY

Engineering Experience after EAC degree
Total Engineering Experience 5 years, 9 months
Experience under licensed engineer 5 years, 9 months
Other Experience 1 year, 2 months
Disciplinary Action None reported

EDUCATION

Meets NCEES Engineering Education Standard

Bachelors in Environmental Engineering
Federal University of Technology Parana
February 2008–August 2014

Masters in Civil and Environmental Engineering
University of Nevada, Las Vegas
January 2016–May 2018

EXAMS

Fundamentals of Engineering (FE)
Nevada November 2018

Principles and Practice of Engineering (PE)
Civil Nevada May 2024

LICENSES

Additional Licenses None
As a Graduate Research Assistant, my tasks and duties included performing research with reclaimed water and groundwater for solar photovoltaic applications, conducting general water quality testing (pH, conductivity, COD, solids, and anions), developing a new equation to examine the efficiency of solar panels at a local site, determining solar panel dust composition with scanning electron microscopy (SEM) and energy dispersive spectrometer (EDS) identifying how these types of materials can affect the photovoltaic systems, and preparing reports on research methodology and conclusions. This research was part of my master’s degree program. I was pursuing my master’s degree in civil and environmental engineering during this time. After developing a new solar efficiency equation, I was able to provide recommendations when wastewater and groundwater impacted the performance of the system (power output). Besides that, my research was able to prove that inadequate or inefficient cleaning methods, such as the use of groundwater to clean PV panels, can end up consuming more time and increasing costs.

This study (“The impact of lower quality water on soiling removal from photovoltaic panels”) was published at the Renewable and Sustainable Energy Reviews journal.
As a water/wastewater EIT, my standard tasks and duties included developing water quality management/studies and identification of stormwater pollutants, writing technical reports related to water and wastewater, providing technical support with clients implementing and complying with permits, leading the construction phase of projects providing technical direction and interacting with professionals from other areas of practice, and reviewing plans and designs related to water or wastewater treatment systems. These tasks have a high level of responsibility not only for representing the final company work quality but also for the environmental permit requirements. For example, leading the construction phase of a wastewater treatment plant and working with client, contractor, and subcontractors, require clear communication, organization, conflict resolution, and decision-making skills. Providing hydraulic testing information, specification guidance to keep the construction project moving without daily delays, and design review updates for the aerated grit removal area and the chemical trench drain redesign are some examples of engineering decisions that I made. Being the task manager for the Las Vegas Valley NPDES Municipal Stormwater Discharge Permit – Annual Report, made me responsible to deliver annually to the Permittees, NDEP, and EPA, a 15-chapter report (around 260 pages) complying with the existing MS4 permit. The decisions I have made in this project include the sampling events when enough runoff is observed in the Las Vegas Valley, detention basins with water quality features and detention basins candidates for retrofit in the future, and how construction development and impervious based on land use are related to the water quality for Las Vegas Valley.

2018 – 2020 Flamingo Water Resource Center Expansion Master Plan and Pre-Design (Las Vegas, NV). Master plan and pre-design services for expansion of the Flamingo Water Resource Center from 130 mgd to 150 mgd. As part of the Master Plan and Pre-Design for this project, I helped in the preparation of technical memorandums (TMs) such as the project future conditions, preliminary treatment, project delivery methods, and opinion of probable construction cost (OPCC). I developed service area scenario maps and land use categories and contribution analysis for the wastewater contribution rates from these sources. This evaluation included demographic and development trends, land use based on population growth model, and wastewater flow projections related to the current treatment capacity. After evaluating the proposed alternatives, I provided recommendations for the expansion proposed in order to avoid exceeding the wastewater treatment plant capacity and equipment/infrastructure sizing. I assisted the OPCCs for the two construction phases of the project based on Class 4 under the American Association of Cost Engineers (AACE) classification system. Based on the proposed improvements for each of the unit processes, I was responsible for part of the construction costs and annual operation and maintenance (O&M) costs estimation.

2020 – 2024 Clark County Water Reclamation District (CCWRD) Flamingo Water Resource Center (FWRC) Preliminary and Primary Treatment Improvements (Las Vegas, NV). Design of preliminary and primary treatment improvements for additional hydraulic and treatment capacity at the Clark County Water Reclamation District’s Flamingo Water Resource Center. In this project, I worked on multiple tasks in which I provided/reviewed design recommendations for the preliminary and primary treatment improvements. I assisted reviewing and writing part of the Specifications for this project. During the design phase, I lead the development of a standard details book that included details for four design disciplines (Architectural, Civil, Electrical, and Structural). In this design book task, I was responsible to keep it updated accordingly to the design phase and review the formatting and reference number on drawings. As key staff for this project, I am leading the construction phase of the project and being responsible to coordinate the submittals and Request for Information (RFI). This coordination process gave me the opportunity to interact with professionals of different areas of practice. I was also responsible for the review of some the RFIs and submittals. I was coordinating the as-built mark-ups and revisions of all disciplines (831+ drawings) with the client and Contractor. I participated in design discussions with the client, Contractor, and Subcontractors and provided suggestions for change orders or design review updates. A change order and a design review update that I was directly involved were the replacement of slides gates in the aerated grit removal area and the chemical trench drain redesign, respectively.

2018 – 2024 Clark County Regional Flood Control District (CCWRD) - Las Vegas Valley Municipal Separate Storm Sewer System (MS4) (Las Vegas, NV). The Nevada Division of Environmental Protection (NDEP) granted the Clark County Regional Flood Control District, Clark County, and Cities of Henderson, Las Vegas and North Las Vegas (permit holders) a national pollutant...
discharge elimination system (NPDES) storm water quality permit for discharge to the municipal separate storm sewer system. As one of the tasks I performed for this project, I developed TMs such as the Stormwater Quality Management in Las Vegas Valley Detention Basins and the Updates for the Post Construction Program. These TMs were prepared to evaluate the existing and proposed detention basins for water quality management in 10 watersheds within the MS4 permit boundary and represent how development and impervious based on land use have occurred in Las Vegas Valley since 2013. I was also responsible for the wet weather sampling and data analysis that were reported to the Permittees and NDEP. As the task manager for the Las Vegas Valley NPDES Municipal Stormwater Discharge Permit – Annual Report, I was responsible to deliver annually a 15-chapter report (around 260 pages) that includes water quality standards, stormwater monitoring program, public outreach and education program, illicit discharge detection, and construction site programs to the Permittees. This report was later submitted to NDEP and EPA to show implementation and compliance with the existing permit requirements.
## Time Gaps

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<th>End Date</th>
<th>Explanation</th>
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<td>January 2008</td>
<td>During this period of time, I was studying to get accept in a good university in Brazil (2 years). I got accepted in college and I studied biology for almost 2.5 years before starting my environmental engineering major.</td>
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<tr>
<td>September 2014</td>
<td>December 2015</td>
<td>During this time, I was studying for the GRE test (Masters programme) and got my Master of Administration in Environmental Management and Sustainable Development - UNICESUMAR, Brazil</td>
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GENERAL

- Applying To: Nevada
- Application Type: Initial - PE
- Application Date: 06/06/2024
- Citizenship: United States

SUMMARY

- Engineering Experience after EAC degree
  - 7 years, 5 months
- Total Engineering Experience
  - 7 years, 5 months
- Experience under licensed engineer
  - 7 years
- Disciplinary Action
  - None reported

EDUCATION

- Bachelors in Civil Engineering (EAC)
  - University of Toledo
  - September 2008–December 2013

- Masters in Civil Engineering
  - University of Toledo
  - January 2014–August 2016

EXAMS

- Fundamentals of Engineering (FE)
  - Ohio
  - October 2023

- Principles and Practice of Engineering (PE)
  - Civil
  - Michigan PE
  - March 2024

LICENSES

- Additional Licenses
  - None
My very first role in A&A Engineering was as an Intern engineer; my goal during this time was to get familiar with common engineering practices and the project tasks. I was assigned the following daily tasks:

- Look up Wind and Snow design criteria using ASCE and building department websites.
- Read, correct, and at often times, draft structural plans.
- Create simple Finite Element Models (FEM) of structural elements and interpret analysis results.

Once promoted to an Assistant Engineer, I performed a wide range of basic structural engineering tasks on smaller scale projects. Below are 3 most common projects I worked on:

1. Light-gauge steel Metal Buildings framing systems.
2. Steel framing and foundation design of several +30ft tall billboard supports
3. Mullion Framing Design

Split between those projects, my tasks included the following:

- Determining Snow load, Wind and Seismic Parameters.
- Determining MWFRS Wind Loads using Directional Procedures
- Determining Solid Freestanding Signs Wind Loads
- Determining Component Cladding Wind Loads
- Determining Seismic Force Resisting System Parameters
- Creating and then analyzing the FEA models. Checking results to ensure correct load application, load-paths and LFRS behavior. Then extracting stresses from FEA for hand-calculations and determining upgrade paths.
- Performing steel design and calculating basic welded & bolted connections capacities.
- Designing Embedded Post foundations (flagpole embedment)
- Designing concrete spread footings.
- Sizing and designing Concrete Strip Footings.
- Calculating post-installed concrete anchorage capacities.

At the end of this period, I had grown from an unexperienced college graduate to a well-rounded structural engineer that was now getting familiar with the basic design principles and building design codes.

** Notable Project 1 : Structural Tubular Framing and Foundation Design of 39ft Tall Billboard Frame.**

Between 4-25-2017 to 6-1-2017, I designed the structural steel framing, connections, and foundation upgrades necessary to support a 6.4 kip 36’ x 11’ LED billboard, attached on top of an as-built 39’ tall steel tubular tower. The structure is located at 1923 W. ALEXIS RD, TOLEDO, OH 43613, and the final plans are sealed by Omar A, Abu-Yasein (OH license number E-58237).
My tasks included checking the structural steel members of the as-built tower, the steel upgrades required, and all steel connections (as-built, and new, welded and bolted) necessary to meet OBC 2011, ASCE 7-05 and, AISC 14th Edition. My task also included designing the upgrades to the foundation at the base of the 39' Tall steel tower (an additional 16' diameter x 9' RC concrete pier) that were required to resist the vertical and lateral forces introduced by the newly added billboard. The design was quite challenging as adding the new billboard introduced torsional stresses from wind forces on to the as-built tubular framing, which needed to be reinforced from the outside with (2) welded C15x40-channels to increase torsional resistance, and various other upgrades (due to deflection limitations) to the steel frame that supported the LED billboard.

** Notable Project 2 : Aluminum Mullion Framing and Anchorage Design for Youngstown Air Reserve Station Indoor Firing Range. **

Between 5-10-2017 to 6-18-2017, I designed and verified the connections and performed strength checks of aluminum mullion framing to resist Blast Load Criteria of 6psi & 41psi-msec peak pressures per OBC 2011, ASCE 7 and ASTM F2248 – as provided by the client. The mullions are part of the glazing for Youngstown Air Reserve Station Indoor Firing Range for the US ARMY Reserve, located at an undisclosed address in Youngstown Ohio. The mullion framing plan and calculations set are sealed by Omar A, Abu-Yasein (OH licenses number E-58237). My tasks included providing calculations for both connection of mullion framing to structural steel design, anchorage to concrete and, ensuring aluminum mullions met structural design checks set forth in the Aluminum Design Manual (ADM) 2010.

** Notable Project 3 : Versa Tube Building Systems (Light Gauge Steel Metal Building Framing, Anchorage and Foundation design).**

Between 2-7-2018 to 3-4-2018, I designed the 36’ x 45’ x 12’ (1620 sq.ft) light gauge portal frame structure, its connections, and its foundation, all located at 4100 Stage Rd., San Gregorio, CA 94074. The final plans and calculations are sealed by Omar A, Abu-Yasein (CA license number C-73389). My tasks included first determining all the basic snow, wind, and seismic parameters per CBC 2016, ASCE 7-10, and then providing a design report that would comply with all the structural design provisions laid out in AISC 360, AISC 341-16 & ACI 318-14.

Being located in the state of California meant seismic design was a priority. Thus, I assigned and designed a knee-brace steel Ordinary Moment Frame as the primary Seismic Force Resisting System (per ASCE Ch 12) to resist lateral forces in the transverse direction. In the longitudinal direction, Ordinary Concentrically Braced Frames (also per ASCE Ch 12) were used (X-bracing). I then modeled the entire 3d structure in a Finite Element Software to accurately portray the lateral design behavior with the combined LFRS systems. Next, I extracted the stresses and deflections from the FEA model for further AISC 341-16 hand checks.

Once I completed the structural framing design, I moved on to the Anchorage and Foundation design. Here I designed the Cast-in place anchorage per ACI 318-14, Ch. 17. I finished the design with the Grade Beam foundation, again utilizing ACI 318-14.
Assistant Engineer  
April 2018 – April 2019

I switched supervisors, and was now tasked with fewer basic task, and more intermediate structural engineering tasks (such as diaphragm & wood design etc.) such as:

- Calculating Wind (MWFRS & C&C) and Snow Loads (drifts, unbalanced, etc.) for various shaped Roof system.
- Creating and then analyzing the FEA models. Checking results to ensure correct load application, load-paths and LFRS behavior, and then determining upgrade paths.
- Designing wood-framed structures using NDS code.
- Designing roof diaphragms (both bare metal steel decks, and plywood sheathing)
- Designing chord and collector elements over various LFRS systems.
- Designing Reinforced Concrete (RC) above grade structural elements per ACI 318.
- Reviewing all shop drawings of all my designed projects.
- Addressing RFIs from Architects, sub-contractors, and customers.

Associate Engineer  
April 2019 – Current

During the next stage of my career at A&A Engineering, I was promoted to Associate Engineer, and was given full design responsibilities on bigger projects. My tasks included:

- Creating, analyzing, and resolving FEA failures of full-scale 1-3 story light-gauge framed, structural steel or wood framed buildings: mainly medical office spaces, medical labs, residential structures, or assisted living centers for senior living.
- Designing OMF, OCBF and EBF systems for both wind, and seismic design.
- Designing steel trusses and their connections (chord plastification checks, etc.) per AISC Ch. K.
- Designing various conventional and non-conventional Cold Formed (CF) light-gage shear-wall and load-bearing systems.
- Designing grade beam type foundations, and eccentrically loaded spread footers.
- Designing retaining wall systems.
- Designing post-installed anchor in narrow concrete sections.
- Developing calculations documents templates for smaller repeat turn-around time projects.

Representative Projects

From 2018 to 2020
I worked on several wood-framed structures, where:
A) I calculated the Wind and Snow Loads for the MWFRS, and C&C.
B) I designed perimeter and interior load-bearing walls, and their foundations.
C) I designed perimeter wood shear-walls, and their hold-downs.
D) I reviewed shop drawings.
E) I addressed RFIs from sub-contractors.
This was a 15,500 sq.ft wood framed medical building, located at 7045 Lighthouse Way, Perrysburg, OH 43551. This was my first wood design project, where I calculated the Wind and Snow Loads for all Roof wood trusses, I designed all interior HSS columns and their foundations, I designed all load-bearing walls, and their foundations, I designed all the perimeter wood shear-walls, and...
their hold-downs.

From 2018 to 2022
I worked on several structural steel framed structures, where:
A) I created full-scale finite element models for structural analysis.
B) I designed LFRS systems, mainly Ordinary Moment Frames (OMF)
C) I designed composite decks.
D) I designed bar joist and metal deck systems.
E) Representative project: Magruder Memorial Hospital O.R. Renovations

This was a 2 story, 8000 sq.ft structural steel framed medical center addition attached to the existing Magruder Memorial Hospital, located at 615 Fulton St, Port Clinton, OH 43452.

This was my first 2-story project that incorporated a composite deck. Here, I created a full-scale finite element model, I designed the 40’ x 30’ grid of OMFs. The OMFs were the main LFRS in both transverse and longitudinal directions. I designed the composite deck and steel framing at the second floor. I provided the camber specifications and shear stud spacing options to contractors. I designed the bar joist and metal deck system at the Roof level.

Additionally, between the new and existing, large 20ft openings had to be made to allow access. Here, I checked the design of the new headers (lintels) supporting the existing wall above the opening, I checked the design of the steel columns that were added at the ends of opening (additional lintel support).

Early 2018 to Late 2018
I worked on a 13,742 sq.ft Reinforced Concrete (R.C.) basement + 3 story + Roof level structure for St Lukes’s Hospitals. The structure was the “EP Lab and Hybrid OR” building which was attached to the existing Heart Center at St. Luke’s Hospital, located at 5901 Monclova Rd., Maumee, Oh 43537. This was my first RC project that incorporated a waffle slab design. Here, I calculated reinforcement required to attach into existing foundations (new structure would be placed right next to as-built RC building). I designed perimeter basement foundation walls as part retaining walls. I designed all RC elements (such as Beams, Columns, Footers, Slabs). I designed the structural steel framed walkway sections, and finally I reviewed shoring plans for concrete slabs.

From 2018 to present
I have worked on and continue to presently work on several repeat cold-form, light-gauge structures, where:
A) I calculate the Wind, Seismic and Snow Loads.
B) I design all structural steel elements (OMF, OCBFs, beams, columns, decks).
C) I design various conventional and non-conventional Cold Formed (CF) light-gage shear-wall and load-bearing systems.
D) I design steel OMF, OCBF (inverted V-bracing, connection design, etc.) and EBF systems for both wind, and seismic design per AISC 341-16.
E) I design various foundation elements.
F) I design post-installed anchors in narrow concrete sections.
G) I develop calculations documents templates for repeat projects.
H) Representative project: Fulton County Senior Center: A 21,789 sq.ft CF light-gauge framed structure, with a massive 30’-6” x 128’ long flat interior platform (with OMFs spaced at 70ft c.c.), located at 695 South Shoop Ave, Wauseon, OH 43567. The flat interior section supported all the heavy RTUs and was rated for 100 PSF live. This section also had very strict deflection criteria due to a movable panel wall system that spanned along the 128’ direction. Here, I designed all structural steel elements (beams, columns, decks). I designed of all LFRS systems based on AISI Cold form code, I designed of massive 70’ long HSS-Girder Truss system (part of the 128’ long interior platform), and I designed of all foundation and anchorage elements.
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Raley's
Nevada (United States)
Checker/Clerk
August 2017—December 2019

Verified by

Experience Summary
Part-Time
Other: 1 year, 9 months (75%)
Experience under licensed surveyor: None
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| Whole Foods Market  
Nevada (United States)  
Produce Clerk  
April 2020—May 2020 |

**Experience Summary**

- Full-Time
- Other: 1 month
- Experience under licensed surveyor: None

**DESCRIPTION**
COLE HERBERT (20-652-86)
All work experience reviewed by two licensed professionals

WORK EXPERIENCE

Eastern Sierra Engineering
Nevada (United States)
Staff Designer
May 2020—July 2022

My tasks and duties when working here included material testing in our lab, sample gathering and testing in the field, Civil 3D drafting and design, and quantity and price estimating. When I started at Eastern Sierra Engineering, I worked in their materials lab and after about four months, I moved into their engineering office to do CAD design. The purpose for hiring me was to hire another engineer, however they wanted to start me in their lab as they needed help at the time. I saw the usefulness in learning more about and practicing lab testing, so we worked out a deal for me to spend the rest of that construction season in the lab and then have me move full-time into the engineering role I had initially applied for. In my two years there, I worked 90% engineering and 10% material testing.

TASKS

Watt Street Neighborhood Area Street Rehabilitation Project; City of Reno; Washoe County, NV (2021 - 2022) Staff Designer.
The City of Reno rehabilitated multiple streets, including sidewalk and curb and gutter around the Virginia Lake area in central Reno. The scope encompassed the rehabilitation of seven streets, including the full depth replacement of the existing pavement section, the addition of new ADA accessible facilities, improvement of existing ADA accessible facilities, and the replacement of underground utilities. With respect to the City of Reno and PROWAG design standards, I calculated new longitudinal and transverse slopes for the roadways, sidewalks, ADA accessible curb ramps, and curb and gutter to ensure proper drainage and seamless tie-ins to existing grade at the project limits. I also reviewed the underground utility design which included calculating and checking pipe slopes, depth of cover, and compliance of applicable separation requirements according to the Truckee Meadows Water Authority, NV Energy, and City of Reno standards. Before going ahead with a design, I analyzed different roadway grading schemes to determine which one fit which road the best. In the end, I designed a mix of center crown grading and superelevation grading in order to fit the existing, adjacent grade the best and either maintain adequate drainage or improve drainage along the roadway in accordance to City of Reno standards.

REPRESENTATIVE PROJECTS

Reno Consolidated 22-01 – Sky Mountain Dr., Sky Valley Dr.; Regional Transportation Commission; Washoe county, NV (2021 - 2022) Staff Designer.
The Regional Transportation Commission of Washoe County wanted to rehabilitate Sky Mountain/Sky Valley Road in northwest Reno. The road consisted of many twists and turns as well as dramatic elevation changes which made ADA compliance a difficult, and sometimes impossible, task. Our scope included the full rehabilitation of the two roads including new sidewalk, ADA curb ramps, curb and gutter, and replacement of underground utilities. I designed five ADA accessible curb ramps as well as a new striping layout. In accordance with City of Reno standards, I calculated longitudinal and transverse slopes of the new ramps so that they tie in seamlessly to the roadway grade and existing sidewalk to remain, as well as follow the guidelines in PROWAG to ensure they remain ADA accessible to the best of our ability. As I stated previously, the longitudinal slope of the existing, and subsequently proposed roadway, was not always able to fall within the maximum allowable slope as outlined in PROWAG, so I had to consult City of Reno guidelines to go forward with the design. The City of Reno allows an ADA accessible ramp wing to reach a maximum length of fifteen feet. If the required grade for ADA accessibility cannot be met within the fifteen feet, then the City of Reno allows the ramp to possess an inadequate ADA slope. I had to make a judgement call in accordance with this guideline on two of the five ramps I designed after trying and failing to get adequate ADA slope on the ramp wings due to the steepness of the roadway. I also created a striping layout for the new road surface which included centerline stripes, crosswalks, directional pavement markings, and curb painting. I designed the layout in accordance with City of Reno and MUTCD standards and included new turn pocket striping that was part of the existing pavement striping.

Residential Sewer/Septic Tank/Leech Line Design; Homeowner; Inyo County, CA (2021 - 2021) Staff Designer.
A landowner in Inyo County was planning to build a home just outside Bishop, California. The scope encompassed the design of a private sewer system including a leech field and septic tank. I designed the entire sewer system from the sewer invert underneath the house to the end of the leech field. I designed the system to be compliant with all applicable Inyo County standards for
residential sewer which included strict guidelines on setbacks and cover depth. I calculated a maximum flow which then helped me calculate the required pipe, septic tank, and leech field sizes. The setback requirements drove a lot of the design as the lot was not very big, so I analyzed several alternative layouts until reaching the only layout which minimized cost and also satisfied the homeowner's and Inyo County's requirements.
I am responsible for producing construction plans mostly without oversight. I am expected to start entering a project engineer role and delegate work given to me from my supervisors and also have an intimate understanding of what all needs to be on the plans in the first place. I primarily do Civil 3D drafting and design (utility design and site grading) and estimation of quantities and price, but I also fulfill construction management roles on certain projects when it's necessary. I'm also expected to produce designs compliant with any and all applicable agency codes and requirements and communicate with said local agencies and clients when necessary.

Reno-Tahoe International Airport Remote Economy Parking Lot; Reno Tahoe Airport Authority; Washoe County, NV (2022 - 2023) Project Designer - Lead.

The Reno Tahoe Airport Authority wanted to convert a dirt lot adjacent to existing airport lots into a usable parking lot for airport employees with shuttle service. We were scoped to provide a grading plan, landscape plan, electrical and telecom plan, underground utility layout, and striping layout. I calculated all of the pavement grades in accordance to the City of Reno and Washoe County standards. I also calculated the total runoff induced by the development of a dirt lot to a paved lot which drastically influenced the pavement grades over the whole site. I had to engineer grade as much as I could, while staying within the aforementioned standards, as the existing site was very flat. As a result, I analyzed several grading alternatives before reaching the design that was constructed. I designed the pavement grades in a way to strategically create sub basins to ensure that proper drainage can be met. Due to the flat nature of the existing site, some areas of the site could not meet minimum grade requirements without large amounts of imported fill. The construction budget given to us by the client did not have any breathing room for extra quantity/cost, so I had to make judgement calls during the design process to balance compliant design and client budget. This led to creative thinking and the research and use of a proprietary, underground storm drain "detention basin" system that I designed an underground and surface storm drain network around. The network consisted of valley gutters, catch basins, and HDPE pipe. The storm drain system ultimately tied into a pipe stub from a previous job, so it was difficult, and impossible in most cases, to get the minimum required slope on the pipes. I also started to run into cover issues as well as capacity issues due to the lack of slope in the pipes, so I increased the size of the pipes as much as possible and called out to concrete encase pipes that could not meet cover requirements. Alongside the grading and storm drain design, I started to analyze the site layout in terms of parking, shuttle stop locations, and landscape area locations. I determined the maximum amount of parking stalls the site could fit based on standard stall and access aisle dimensions from the City of Reno and implemented three different parking stall types to maximize the total number of parking spots the site could fit as that was a major concern for the client. For the layout of all the other pavement markings and signs, I consulted the MUTCD for guidelines.

H Street Water Main Replacement; Truckee Meadows Water Authority; H Street, Washoe County, NV (2023-2024) Project Designer – Lead.

The Truckee Meadows Water Authority (TMWA) wanted to replace the existing water main underneath H Street in Sparks, Nevada to bring the old main up to the current TMWA standards in terms of hydraulics and pipe material. The scope encompassed the full design of a new water main that will also be constructed along a new alignment. Before design, I went to the TMWA headquarters to research existing conditions based on old service cards. I will then compare the card information to the GIS data that I receive from TMWA in AutoCAD in order to paint the most complete picture of the existing conditions as I can. The existing main was to be retired and grout filled, so I helped designed the new main to follow an alignment that would be in compliance with TMWA's, the City of Reno's, and NV Energy's separation requirements. The main challenge to the new alignment was the proximity of a two inch gas pipe. The alignment of H Street is mostly straight, except for a ninety degree bend in the road before it dead ends at G street. The alignment I initially designed involved two forty-five degree elbows, but ultimately, one forty-five and two twenty-two and a half degree elbows were used to create more separation between the main and the gas so there would be room to pour and form the necessary thrust blocks.
# General

- **Applying To:** Nevada
- **Application Type:** Initial - PE
- **Application Date:** 06/24/2024
- **Citizenship:** United States

## Summary

- **Engineering Experience after EAC degree:** 5 years
- **Total Engineering Experience:** 5 years
- **Experience under licensed engineer:** 4 years
- **Disciplinary Action:** None reported

## Education

- **Bachelors in Civil Engineering (EAC):**
  - University of Arizona
  - August 2015–May 2019

## Exams

- **Fundamentals of Engineering (FE):**
  - Nevada
  - September 2019

- **Principles and Practice of Engineering (PE):**
  - Civil
  - Nevada
  - October 2021

## Licenses

- **Additional Licenses:**
  - None
I have worked at Stantec for the last five years. Since becoming an EIT, I have served as a project engineer on a variety of water engineering projects, including drinking water, wastewater, and storm water. The specific tasks and duties I have been responsible for vary between projects, but generally include:

- Performing hydrology and hydraulic engineering calculations for regional, local, and on-site storm water facilities.
- Performing hydraulic engineering assessments of system-wide collection systems to determine capacity needs, as well as hydraulic calculations for the design of gravity sewer facilities.
- Preparing preliminary and final design plans and reports for pipeline and site civil projects.
- Leading civil design for storm drains, sewers, waterlines, and on-site water facilities that adhered to city and state regulations.
- Mentoring and reviewing work of junior staff.
- Coordinating with survey, geotechnical, and subsurface utility engineering subconsultants and reviewing provided information.

**Representative Projects**

**Duck Creek Blue Diamond Wash from Las Vegas Boulevard to Bermuda, Clark County, NV**
Client: Clark County Public Works
This project consists of approximately 6,300 linear feet of 15-foot by 8-foot reinforced concrete box via open trench installation and 330 linear feet of rectangular open channel. I performed hydrology and hydraulic calculations for the 100-year and 10-year design storm flows through three alternative alignments. I evaluated each alignment for cost, maintenance, utility constraints/relocations, and public impacts and recommended an alignment. During detailed design of the selected alignment, I am coordinating with various utility agencies and recommending horizontal and vertical profiles for the box to meet separation requirements of other utilities and optimal hydraulic conditions. I recommend various locations for drop inlets to maintain the county dry lane criteria. I am mentoring a team of junior staff through thorough review of their work. This project is located within a flood zone, and I will prepare the Conditional Letter of Map Revision (CLOMR), Letter of Map Revision (LOMR), and accompanying design documents.

**City of North Las Vegas Wastewater Master Plan Update, City of North Las Vegas, NV**
Client: City of North Las Vegas
This project consists of updating the City of North Las Vegas Wastewater Master Plan by evaluating the City’s collection system through buildout conditions using InfoSewer hydraulic modeling software. I was responsible for calibrating the hydraulic model to flow monitoring data following a 1-month flow monitoring period. The model consists of 127 miles of sewer. I prepared a land use shapefile with existing, near-term, and long-term anticipated land use conditions to estimate flow using land-use based flow estimation. I analyzed the 127 miles of sewer system under the anticipated flow conditions and created a capital improvement plan based on the findings. The capital improvement plan included 31 recommended projects. Project descriptions and length and size of sewer pipe were specified for each project, and Class V cost estimates ranging from $1.2M to $21.7M were determined.

**West Valley Lateral Vault Access Upgrades, Las Vegas, NV**
Client: Southern Nevada Water Authority Maintenance
This project entailed design of a concrete access road to the West Valley Lateral Vault Access located at the Springs Preserve. The project area being developed/disturbed was approximately 0.10-acres. I was responsible for preparation of design plans, specifications, and calculations for the access road and associated drainage. These calculations included hydrology and hydraulics for the site drainage study. Design plans required inter-disciplinary coordination with structural design of a retaining wall along the access road. During construction, I reviewed shop drawings and contractor submittals to verify they met the design specifications.

**Stage II Reliability Upgrades Hacienda Pipeline, Clark County, NV**
Client: Southern Nevada Water Authority
This project includes the design of approximately 10,000 linear feet 66-inch potable water transmission line connecting a new pumping station at the Hacienda reservoir site to the 90-inch Pittman lateral. As a staff engineer, I was tasked with several duties. I performed the steel pipe thickness calculations to meet AWWA M11 requirements under various internal pressures and external loading conditions. I determined the required size of drain lines in new valve vaults to meet drain time requirements for both the 90-inch Pittman lateral and the new 66-inch line. I determined an optimal alignment to reduce utility relocations and maintain minimum spacing requirements. I assessed the transmission line alignment and profile to determine manhole, AVAR, and blow off spacing to meet spacing requirements while addressing field limitations.
CAROLYN JONES (18-945-41)
All work experience reviewed by two licensed professionals

GENERAL
Applying To
Nevada
Application Type
Initial - PE
Application Date
06/07/2024
Citizenship
United States

SUMMARY
Engineering Experience
after EAC degree
4 years, 1 month
Total Engineering
Experience
4 years, 1 month
Experience under licensed
engineer
4 years, 1 month
Disciplinary Action
None reported

EDUCATION
Bachelors in Civil Engineering (EAC)
University of Nevada, Reno
August 2016–May 2020

EXAMS
Fundamentals of Engineering (FE)
Nevada
November 2020

Principles and Practice of Engineering (PE)
Civil
Nevada
March 2023

LICENSES
Additional Licenses
None
Geotechnical engineering intern (EI) working with Construction Material Engineers, Inc. (CME) for four years under the supervision of licensed Professional Engineers.

My initial position title was Field Engineer (1.5 years). As a Field Engineer, my tasks and duties included performing geotechnical field investigations, soil profile logging using the Unified Soil Classification System per ASTM D2488, and documentation of field exploration. Types of field investigations I performed included:

- Vertical exploratory drilling (including auger, mud rotary, rock coring, and sonic drilling)
- Test pit excavations
- Cone Penetrometer Testing (CPT)
- Dynamic Cone Penetrometer Testing (DCP)
- Geophysical testing including refraction, refraction microtremor (ReMi), and electrical resistivity
- Percolation and infiltration testing which included correction calculations for wetted perimeter, hole volume, gravel void space, and conversion of percolation rates to infiltration using the Porchet Method.

My current position title is Project Engineer (2.5 years). As a Project Engineer, my tasks and duties include performing geotechnical analyses and modeling and preparation of geotechnical recommendations for design and earthwork. Geotechnical analyses I performed included:

- Static and pseudo-static lateral earth pressure analysis for retaining wall and foundation stem wall design
- Bearing capacity and allowable bearing pressure analysis for shallow foundations
- Flexible pavement structural section design
- Rippability assessment using geophysical data
- Expansive soil analysis and mitigation
- Slope stability analyses for slopes and embankments utilizing Slide
- Settlement analyses utilizing Settle3D
- Liquefaction triggering and consequence analyses from SPT and CPT data
- Drilled shaft analyses utilizing Shaft

**Representative Projects**

**Project 1: RTC Sparks Boulevard Capacity Improvement Project**

Scope: Rehabilitation and widening of an approximately 2.7-mile segment of Sparks Blvd from the intersection of Greg Street to Baring Boulevard in Sparks, Nevada. Included construction of retaining walls, sound walls, and reinforced concrete box culverts throughout the proposed alignment.

Project Dates: June 2020 to September 2023

Role: For this project, I worked as a project engineer. I performed a liquefaction hazard analyses for the culverts, sound walls, and retaining walls using SPT data, groundwater elevation, and soil index test results. I performed engineering analysis using the LRFD to calculate the limit state factored bearing resistances for shallow spread footings for the culverts and retaining walls. I performed engineering calculations to determine both static and pseudo-static lateral earth pressure values for level backfill and 4:1 backfill slope. I provided recommendations for construction of the project structures.

**Project 2: 5 Ridges Master Planned Community**
Scope: Construction of approximately 400-acres of residential development subdivided into 10 villages in Sparks, Nevada. The development will consist of approximately 1,250 single-family/multi-family lots, main parkway roads, and utility feeds.

Project Dates: March 2021 to September 2023

Role: The geology at the project site was complex with both bedrock and compressible quarry aggregate wash pond sediments (> 30-feet thick) with cuts and fills up to 70 feet. I performed subsurface exploration at the site which included exploratory drilling and test pit excavations. As part of the engineering analysis, I developed global slope stability analysis models for the proposed cut and fill slopes throughout the project for both static and pseudo-static conditions. I modeled the settlement analysis using Settle3D for existing highly compressible aggregate wash pond sediment which included phased settlement analysis for predevelopment surcharge loading to induce preconstruction settlement and assisted the Project Manager to determine appropriate surcharge thicknesses. I developed recommendations for settlement monitoring during surcharge loading and for construction of the project.

Project 3: Indian Creek Substation


Project Dates: June 2023 to January 2024.

Role: For this project, I performed a field investigation at the site which included exploratory drilling and electric resistivity testing. I provided the client with the Moment Foundation Analysis and Design (MFAD) input parameters for each boring location. MFAD input parameters are used by the client to perform drill shaft lateral resistance analyses. I calculated the allowable axial compressional resistance for 2-foot to 4-foot diameter drilled shafts. I performed engineering analysis which included calculations for allowable bearing pressure for equipment pads, calculations for axial capacity of drilled shafts, and geotechnical recommendations for construction.
## GENERAL

- Applying To: Nevada
- Application Type: Initial - PE
- Application Date: 07/03/2024
- Citizenship: United States

## SUMMARY

- Engineering Experience after EAC degree: 4 years
- Total Engineering Experience: 4 years
- Experience under licensed engineer: 4 years
- Disciplinary Action: None reported

## EDUCATION

- Bachelors in Environmental Engineering (EAC)
  - University of Nevada, Reno
  - August 2016–May 2020

## EXAMS

- Fundamentals of Engineering (FE)
  - Nevada
  - January 2020
- Principles and Practice of Engineering (PE)
  - Civil
  - Nevada
  - April 2021

## LICENSES

- Additional Licenses: None
**WORK EXPERIENCE**

**ATKINSREALIS**  
Nevada (United States)  
Engineer II  
July 2020—July 2024

**Tasks**

Water Infrastructure Engineer I (July 2020- May 2022) My tasks and duties included technical design for plans, specifications, and calculations, 2D/3D modeling using Civil3D/AutoCAD, and performing hydraulic analysis with WaterCAD/SewerCAD. My main responsibilities included site, piping, and valve vault layouts, creating and maintaining the water network analysis for the Summerlin, NV pressure zones, Civil3D pipe network design, and preparing engineer’s opinion of probable costs.

Water Infrastructure Engineer 2 (May 2022 – Current) I am the lead technical professional on reservoir design projects and water transmission/distribution pipelines projects. My responsibilities include creating design plans and specifications, performing technical calculations, multidisciplinary subconsultant coordination, performing hydraulic analysis and water network reports, and maintaining project budgets and schedules. My current role is client facing and responsible for being the main point of contact for subconsultants and other internal disciplines. I am responsible for performing quality assurance/quality check reviews for projects within my discipline.

(December 2021- Current) I have been the manager of an intern, now Engineer 1, and have trained and mentored her, continually working on her growth and development of technical skills. This has also developed my time management and project management skills.

Additionally, I went on a 4-month secondment to Bangalore, India to provide training of CAD/C3D and US project standards to our India resource team. During this time, I held CAD trainings, built international relationships, and enhanced the digital framework of projects. I was the first person of my company to ever do this secondment, as well as I was given this responsibility as a solo assignment.

**Representative Projects**

Paradise Road Pipeline Replacement (2020-2022) Las Vegas, NV. I was responsible for reviewing as-builts for the layout of existing utilities in CAD. Performed pipeline calculations such as air valve assembly sizing.

3895-4125 Pressure Zones Water Network (2020-2022) Summerlin/Las Vegas, NV. I created a Water Analysis Network Model for the 3895-4125 Upper Pressure Zones of the Summerlin area. I modeled the parcel demands and created reports to adequately size the piping for domestic service and required fire flows. This model was continually updated and revised for client preference, as they are developing the new Summerlin area and parcel sizes/demand types frequently change.

Longmont Water and Sewer Utilities Design, (6/2021-10/2021) Longont, CO. I was responsible for the sewer sizing and design concept of this preferred transit-oriented development expansion including 275 dwelling units, a 20,000 SF commercial space and a 500-space community parking garage.

Cadence Galleria Drive PZ-1780 Pipeline (10/2021-2022) Henderson, NV. I reviewed as-builts for existing utilities and designed the 2D/3D design of pipe alignment and profile for approximately 3,900 LF of 20” DIP.

Stephanie Reclaim Waterline (2/2021-5/2022) City of Henderson, NV. I created a sewer network analysis on SewerCAD to run scenarios to create HGL profile and locate areas of the pipeline that surged. I reviewed as-builts to lay out the alignment and inverts of this pipe rehabilitation project in Civil3D.

Cadence Lift Station (2021-2022) Henderson, NV. This project was a 3 MGD peak-flow lift station which includes a wet/dry well, emergency storage, odor-control, gravity and force-main, onsite generator and fiber optic telemetry. I designed the site and wet well layout for pumps and piped and reviewed submittals and RFIs during the construction of this project.
4125 Zone North Reservoir (2020-2022) Summerlin/Las Vegas, NV. I designed a 2 basin 5 MG concrete reservoir by designing site layout, piping layout, valve vault design, and CMU wall design. I calculated reservoir sizing, pump sizing, pipe thickness and pipe hydraulics. I reviewed shop drawing submittals and RFIs during the construction of this project.

Cadence Vista PZ-1877 Pipeline (7/2021-2022) Henderson, NV. I designed a 3,800 LF horizontal pipe alignment and vertical profile design for the Pressure Zone 1780 Pipeline. I designed a Pressure Reducing Valve detail for the connecting pressure zone pipes and performed air valve sizing calculations. I was responsible for all Civil3D design to create these plans.

4125 Zone South Pipeline Phase 2 (2022-Current) Summerlin/Las Vegas, NV. I designed a 24"/36" MLTCP transmission waterline and a parallel 16" DIP distribution pipeline. Responsible for the horizontal and vertical design of the waterlines, service laterals, and fire hydrant laterals. I calculated air valve sizing, pipe thickness, and pipe hydraulics. My responsibilities for this project also included creating and revising specifications, drafting easement exhibits, and creating an engineer’s opinion of probable cost.

4125 Zone South Reservoir (2022-Current) Summerlin/Las Vegas, NV. I am currently the lead technical professional for this 2 bay 10 MG concrete reservoir design. I designed the site layout, piping layout, valve vault design, and CMU wall design. I calculated reservoir sizing, pipe thickness, and pipe hydraulics. This multidisciplinary project has given me responsibilities for quality reviewing mechanical, structural, electrical sheets, and specifications. Additionally, I have drafted easement exhibits and created survey plans for the survey team. For this project I have had direct client relations in responses to the design of this project and have been able to make design decisions for the piping and site design. In this role I have begun to take on the responsibilities of the budgets and schedules of this project.

4125 Zone South Pipeline Phase 3 (3/2024-Current) Summerlin/Las Vegas, NV. I am designing a 42" MLTCP transmission waterline connecting two previously worked on projects. Similar to the Phase 2 pipeline, I am responsible for the horizontal and vertical design of the waterlines, service laterals, and fire hydrant laterals. I calculated air valve sizing, pipe thickness, and pipe hydraulics. My responsibilities for this project also included creating and revising specifications, drafting easement exhibits, and creating an engineer’s opinion of probable cost. I am the main point of contact for the client for this project and am responsible for most design decisions regarding this entire pipeline project.
PADAM NEUPANE (21-612-43)
All work experience reviewed by two licensed professionals

GENERAL

Applying To Nevada

Application Type Initial - PE

Application Date 06/26/2024

Citizenship Nepal

SUMMARY

Engineering Experience after EAC degree

Total Engineering Experience 2 years, 7 months

Experience under licensed engineer 2 years, 7 months

Other Experience

Disciplinary Action None reported

EDUCATION

Bachelors in Environmental Science
Tribhuvan University
October 2014–August 2018

Masters in Environmental Engineering
Penn State University, Harrisburg - The Capital College
January 2020–August 2021

Non-degree
University of Massachusetts at Lowell
May 2020–July 2020

EXAMS

Fundamentals of Engineering (FE)
California
March 2022

Principles and Practice of Engineering (PE)
Civil
California
April 2024

LICENSES

Additional Licenses None
Insight Engineering Consult
Bāgmatī (Nepal)
Environmentalist
March 2017—December 2019

Verified by
Padam Neupane (Self)

Experience Summary
Full-Time
Other: (0%)
Experience under licensed surveyor: None
Groundwater treatment system design and performance evaluation, LA County:
I evaluated the treatment system's performance and recommended to adjust operational parameters to achieve desired treatment outcomes based on lab and field data.

I oversaw subcontractor work to ensure consistency with project specifications.

I reviewed design and construction drawings against redlines for as-built accuracy.

I calculated the sizing for process units, determined chemical dosing rates, and established desired chemical concentrations for efficient handling.

I prepared and implemented comprehensive sampling plans, including specifying sampling locations, parameters, and frequencies in compliance with LACSD/NPDES/AQMD/DDW requirements.

On-Call Permitting and Process Engineering Support for food and beverage manufacturing facility, LA County:
I developed sampling procedures and conducted field sampling for DAF sludge and effluent wastewater.

I designed and executed bench-scale tests on-site to reduce sludge flammability.

I calculated wastewater surcharge payables to LACSD and developed calibration plans for on-site flowmeters.

I conducted the calibration and prepared the corresponding report for PE seal and stamp.

I evaluated treatment system performance enhancement alternatives and prepared associated cost estimates.

Feasibility Study and Investigation for Municipal Wastewater Treatment Plant:
I prepared feasibility study and initial investigation of potential solutions to meet new stringent effluent limits for a municipal wastewater treatment plant.

I prepared the Engineering Report for the notice of intent to enroll in the general WDR permit and developed cost estimates for the proposed solutions.

Odor Removal from a 2.5 MG Compost Run-off Retention Pond:
I performed a feasibility study and investigation for odor removal from a 2.5 MG compost run-off retention pond.

I designed and executed bench-scale experiments on-site to identify effective odor removal methods and calculated the necessary chemical dosing rates.

I developed budgetary cost estimates, prepared an action plan and implemented the proposed odor removal solutions.

Groundwater treatment system design and performance evaluation, LA County, California – Design/O&M: Groundwater extraction from an EPA superfund site and treatment to potable use (1500 gpm): Involvement: 2021-present; Project size: $1-1.5 MM/yr
I evaluated the treatment system's performance and recommended to adjust operational parameters to achieve desired treatment outcomes.
outcomes based on lab and field data.

I oversaw subcontractor work to ensure consistency with project specifications.

I reviewed design and construction drawings against redlines for as-built accuracy.

I calculated the sizing for process units, determined chemical dosing rates, and established desired chemical concentrations for efficient handling.

I prepared and implemented comprehensive sampling plans, including specifying sampling locations, parameters, and frequencies in compliance with LACSD/NPDES/AQMD/DDW requirements.

On-Call Permitting and Process Engineering Support for a food and beverage manufacturing facility, LA County, California - Design, Operation; Involvement 2021-present; size $20K/month

I developed sampling procedures and conducted field sampling for DAF sludge and effluent wastewater.

I designed and executed bench-scale tests on-site to reduce sludge flammability.

I calculated wastewater surcharge payables to LACSD and developed calibration plans for on-site flowmeters.

I conducted the calibration and prepared the corresponding report for PE seal and stamp.

I evaluated treatment system performance enhancement alternatives and prepared associated cost estimates.

Feasibility study and enrollment into general WDR permit for a POTW client in Central California - Compliance; The POTW held an individual permit with flexible limits which was now being subject to a stringent general WDR permit. Involvement 2022; Size: $150,000:

I prepared feasibility study and initial investigation of potential solutions to meet new stringent effluent limits for a municipal wastewater treatment plant.

I prepared the Engineering Report for the notice of intent to enroll in the general WDR permit and developed cost estimates for the proposed solutions.

Odor removal from a 2.5 MG compost runoff retention basin for dust control usage, Irvine, California – Design and Operation; Involvement: 2022; Size: $40,000:

I performed a feasibility study and investigation for odor removal from a 2.5 MG compost run-off retention pond.

I designed and executed bench-scale experiments on-site to identify effective odor removal methods and calculated the necessary chemical dosing rates.

I developed budgetary cost estimates, prepared an action plan and implemented the proposed odor removal solutions.

Leachate and condensate treatment system upgrade and modification to enhance performance, City of Whittier, California - Design, Implementation and Operation; Involvement: 2024; Size: $45,000.

I performed site visits, reviewed design documents and operating procedures of the leachate and condensate treatment system.

I performed and reviewed field and lab data to prepare sampling plans to evaluate the performance of the treatment system.

Based on the field data, I recommended replacement of faulty process units and prepared work plan to enhance the performance and efficiency of the treatment system.

Industrial wastewater management support for metropolitan transportation authority, California - Design, Operation; On-call permitting, compliance and process engineering support for a metropolitan transportation authority in California. Involvement 2021-present; Size: $1.0 MM/yr

I performed calculations to estimate chemical dosing rate for hydrogen sulfide neutralization.

I performed design and calculations to size pretreatment systems i.e. clarifiers and oil/water separators.

I prepared design and construction specifications for oil water separators.

I reviewed design drawings to evaluate the source of wastewater, volume of wastewater generated and type of permit required for the wastewater discharge, prepared and submitted the permit application packages.

I prepared workplan to evaluate the performance of the existing flowmeters, clarifiers and oil/water separators.

I prepared technical memorandum to evaluate the efficiency of RO unit installed at the facility.

I oversaw the flowmeter calibration at underground sump locations.

I reviewed sewer area study and sewer capacity availability study performed by subcontractors for accuracy and standards put
KILEIGH PHILLIPS (19-037-72)
All work experience reviewed by two licensed professionals

GENERAL

Applying To
Nevada

Application Type
Initial - PE

Application Date
06/07/2024

Citizenship
United States

SUMMARY

Engineering Experience
after EAC degree
4 years

Total Engineering Experience
4 years

Experience under licensed engineer
4 years

Disciplinary Action
None reported

EDUCATION

Bachelors in Environmental Engineering (EAC)
Northern Arizona University
August 2015–May 2020

EXAMS

Fundamentals of Engineering (FE)
California
May 2018

Principles and Practice of Engineering (PE)
Civil
Arizona
April 2023

LICENSES

Additional Licenses
None

DISCIPLINE: CIVIL
**WORK EXPERIENCE**

**Wilson Engineers**  
Arizona (United States)  
Process / Project Engineer  
June 2020—June 2024

**TASKS**

As an engineer at Wilson Engineers I have worked in both the design realm and in the field through the construction process. While working in design, I have done the following: I have performed calculations to appropriately size structures for sludge holding tanks, pump station wet wells, chemical containment facilities, odor control systems; I have performed calculations to size and select pumps (vertical turbine, submersible, diaphragm metering), self-cleaning strainers, positive displacement blowers, air compressors; I have analyzed performance of existing vertical turbine pumps and proposed submersible mixers by analyzing data from field testing and computational fluid dynamics (CFD) modeling, respectively. I write project specifications and design reports, I develop design drawings, and I create cost models. As a field engineer, I develop process startup plans; I review submittals, I issue engineer clarifications to the contractor, I coordinate with the client and contractor directly, I respond to Request for Information (RFI) from the contractor; I review cost proposals and schedules; and I evaluate guaranteed maximum price (GMP) documents.

**REPRESENTATIVE PROJECTS**

Over the past four years, my professional experience has been marked by immersion in a multitude of projects, each demanding attention and knowledge of water and wastewater treatment.

**Water Reclamation Facility (WRF) Improvements Project for the City of Chandler, AZ (June 2020 - April 2021).** This project scope consisted of modifications to upgrade technology, relieve hydraulic constraints, improve reliability of processes and conveyances and add operational flexibility across two water reclamation facilities, Ocotillo WRF and Airport WRF. I conducted field testing of existing treatment equipment, data analysis, and calculations so that I was able to size an additional internal mixed liquor return (IMLR) pump in the Ocotillo WRF Anoxic Basins. I designed two sludge holding tanks and an associated blower building. I developed documents for 30%, 60%, and Agency Review submittals consisting of drawings, technical specifications, and a design report.

**Reclaimed Water Interconnect Facility (RWIF) Project for the City of Chandler, AZ (February 2021 – Present).** The project's scope encompasses the design and implementation of a Raw Water Pump Station (RWPS), Self-Cleaning Strainers Facility, Membrane Filtration System (MFS), disinfection, and ancillary facilities (Blowers, Chemical Facilities) for a treatment capacity of 10 MGD (Average Daily Flow). I designed (i.e. conducting calculations, coordinating with equipment vendors and client, selecting equipment based on coordination, creating design drawings, writing specifications and a design report) all process areas except the MFS. Upon completion and submission of the 90% design documents (drawings, specifications, and design report), I coordinated and completed all required permits for the project. These permits are from the following jurisdictions: City of Chandler, Maricopa County, and Arizona Department of Environmental Quality. After the 100% design submittal and all permits were acquired, I began leading the construction efforts. On-site, I serve as a focal point for client queries and contractor clarifications, I ensure the design specifications and project expectations are satisfied. I review submittals, requests for information, cost proposals, and schedules received from the contractor. I presented my design evolution at the 2023 AZ Water Conference.

**Deer Valley WTP Rehabilitation 2019 Project for the City of Phoenix, AZ (March 2022 – June 2022).** This project scope includes rehabilitation of the solids handling facilities at the 150 MGD drinking water plant, Deer Valley Water Treatment Plant (DVWTP). I analyzed plant historical solids handling data in order to optimize the rehabilitation of the treatment plant’s solids treatment stream.

**Deer Valley WTP Zone 3D & 4A Improvements Program Project for the City of Phoenix, AZ (May 2022 – April 2023).** The design of Package 2 of this program consists of replacing the existing Finished Water Pump Station (FWPS) and relocating the sodium hydroxide facility and the hydrofluosilicic (HFS) acid facility. I designed the sodium hydroxide and HFS acid storage and feed systems from the 60% design submittal to 90% design submittal. I conducted field investigations for utility coordination. I investigated and coordinated with the client on whether sodium hydroxide should be fed using diaphragm metering pumps or...
peristaltic pumps, ultimately proceeding with diaphragm metering pumps in the design.

Florea at Teravalis WRF Phase 1 Project for the City of Buckeye, AZ (November 2023 – March 2024). The Florea at Teravalis WRF is a wastewater treatment facility being designed in phased expansions for a new housing development in Buckeye, AZ. I confirmed and finalized the design of the following process areas: Secondary Clarifier, RAS/WAS Pump Station, Scum Pump Station, Dewatering Facility, Sludge Holding Tank, Sludge Pump Station, Sludge Holding Tank Blowers, and two Biofilter Odor Control Systems. I completed 90% design submittal documentation associated with all of these process areas, including design drawings, specifications, and design report.
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<td>Application Date 06/23/2024</td>
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WORK EXPERIENCE

Montessori of Riverton
Utah (United States)
Pre-K - Second Grade Teacher
August 2012—May 2015

DESCRIPTION

Experience Summary
Full-Time
Other: 2 years, 9 months
Experience under licensed surveyor: None
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## WORK EXPERIENCE

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<tr>
<th>Company</th>
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<tr>
<td>Kiewit Power Constructors</td>
<td>Field Engineer</td>
<td>Michigan (United States)</td>
<td>May 2020—May 2021</td>
<td>Sarah Marie Khan</td>
<td>Full-Time</td>
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<td><a href="mailto:sarah.khan@kiewit.com">sarah.khan@kiewit.com</a></td>
<td>Engineering: 1 year</td>
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<td>Experience under licensed engineer: None</td>
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</tbody>
</table>

### TASKS

- Ensured the construction and installation of components were according to installation manuals, procedures, and project drawings.
- Performed materials take-offs, verified receipt of materials in accordance with the plans.
- Designed rigging and equipment (slings, shackles, spreading bars, etc.) for use on installing the plant’s Air-Cooled Condenser (ACC) components, performed lift calculations, and created lift plans. Reviewed crane stability and capacity curves to create installation arrangements and lifting procedures.

### REPRESENTATIVE PROJECTS

2020-2021 Indec Kiles Energy Center
- I worked as a field engineer on the Air-Cooled Condenser segment of the natural gas-fired combined-cycle power plant. My responsibilities included planning work sequences and creating work packages to be utilized in the field during construction, directing crews on work to be completed, tracking completed work components against the baseline schedule, and resolving issues encountered in the field. I also created lifting plans and designed rigging to lift and set in place components of the ACC during construction to ensure the loads did not exceed crane specifications.
May 2021 – September 2022 Preliminary Engineering Report for Grass Valley Sewer
I created a preliminary engineering report to develop and evaluate alternatives to alleviate groundwater degradation in the project area. I calculated the potential amount of sewer that could be generated by the project area and estimated phases of future development to support a proposed treatment system’s capability of handling additional wastewater volumes. I created a decision matrix to analytically determine the preferred alternative. I created a preliminary design based on the preferred alternative and used that to generate a cost estimate that was used in the application of SRF project funding.

June 2021 – October 2022 South Area Potable Water Tank
I assisted with a tank rehabilitation evaluation to determine if rehabilitation or replacement was the preferred option. I reviewed inspection reports, estimated the life of potential repairs, and compared rehabilitation life and costs with new tank construction life and costs.
I directed a tank supplier to procure an in-kind tank replacement, designed a new concrete foundation, obtained Bureau of Safe Drinking Water (BSDW) permission for construction, and determined a chlorine treatment plan to yield satisfactory water quality results.
I generated a request for proposal to submit to contractors for the new tank and foundation construction, evaluated submitted proposals, recommended award of the contract, and provided density testing and quality assurance during the construction of the new tank and foundation.

January 2022 – June 2024 Carlin Storage Tank Transmission Mains
I designed two potable water transmission mains to replace the existing mains due to age and degradation. I submitted and received two right-of-way permits from NDOT to allow for four locations of jack and boring below a state route and the interstate. I generated a permit from the BSDW for construction of the transmission mains. I created a construction cost estimate used for USDA funding. I created project bid documents and specifications utilizing Engineers Joint Contracts Document Committee (EJCDC) guidance.

July 2022 – September 2023 Lone Tree Potable Water System
I designed a potable water system that included a submersible well pump, chlorination system, vertical inline pumps, pressure tanks, and a water storage tank with a concrete foundation. I prepared a Plan to Operate a Public Water System and design report to provide system operating parameters for submittal to the BSDW.

October 2022 – January 2023 Carlin Sewer Evaluation
I oversaw a closed-circuit television (CCTV) inspection of existing sewer mains and provided coordination between the contractor and client. I reviewed the contractor’s assessment and scoring of the inspected sewer mains and verified the rating determinations based on National Association of Sewer Service Companies (NASSCO) Pipeline Assessment Certification Program (PACP).
analyzed the findings of the survey and created a detailed report to provide recommendations on maintenance and rehabilitation efforts.

March 2023 – June 2024 Hospital Second Source Waterline
I reviewed and approved material submittals for a waterline construction project. I oversaw construction efforts and provided density testing and quality assurance. I reviewed and approved contractor pay requests and invoicing. I oversaw system pressure testing and disinfection and water quality sampling. I submitted the construction completion form and water quality sample results to the BSDW. I prepared as-built record documentation and provided record drawings to the BSDW.

May 2023 – June 2023 Emergency Waterline Repair
I designed a waterline to bypass a section of existing waterline that experienced a break. I designed the tie-ins to the existing waterline and a jack and bore casing below an NDOT state route. I generated a right-of-way permit from NDOT for the work below and adjacent to the state route. I created a project cost estimate and request for proposal to submit to potential contractors for the work.

June 2023 – Ongoing Goldstrike Wastewater Lift Station
I design a wastewater influent lift station to bypass an existing treatment facility at a mine site. I created components of tender. I created a wastewater pumping station specifications, scope of work, and requested proposals from wastewater pumping station suppliers. I created a scope of work, components of bid tender, and requested proposals from potential contractors for the work.
### ADDITIONAL INFORMATION

#### TIME GAPS

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<tr>
<th>Start Date</th>
<th>End Date</th>
<th>Explanation</th>
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<tr>
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<td>I spent the year after high school traveling and visiting family.</td>
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**Application Type**
Initial - PE

**Application Date**
06/12/2024

**Citizenship**
United States

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<td>7 years, 3 months</td>
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**Education**

- Bachelors in Civil Engineering (EAC)  
  University of Nevada, Reno  
  August 2008–May 2012

**Exams**

- Fundamentals of Engineering (FE)  
  Nevada  
  February 2021

- Principles and Practice of Engineering (PE)  
  Civil  
  Nevada  
  April 2024

**Licenses**

- Additional Licenses
  None
**TASKS**

Intern:
- Organized and maintained master project files, electronic and paper copies.
- Maintained project data management process and systems.
- Assisted with the development of project request forms.
- Performed non-technical quality checks of incoming and outgoing engineering, procurement, subcontracts, supplier, and third-party documentation.
- Completed, updated, and distributed project management communications of various types such as safety inspections, purchase orders, material and labor logs, inventory, and meeting minutes.
- Assisted with the overall project management responsibilities which included account management, billing, scheduling, estimating, budgeting and coordination of subcontractors and vendors.
- Assist estimators on various aspects of the bid process. Learned how to gather all the necessary information for a project and compile a bid under the direction of the Chief Estimator.

Engineer I:
- Responsible for providing technical engineering and cost analysis to ensure project delivery complied with all engineering and contract standards.
- Developed job essential data including quantity take-offs, material price lists, labor costs per man hour, and equipment to ensure accurate estimates and bids.
- Assisted with job controls to ensure compliance with contract, budget, schedule, forecasting, and job costing.
- Provided technical support and direction regarding project material controls including delivery dates, construction schedules and design requirements to ensure additional costs were minimized.
- Prepare drawings and sketches to support construction work, change orders, and estimates to meet changing job requirements.

**REPRESENTATIVE PROJECTS**

I was an intern on the $72 million design-build interstate reconstruction contract by the Nevada Department of Transportation (NDOT). The scope of work included reconditioning approximately ten miles of Interstate 80 through Reno, including excavation, drainage improvements, concrete and asphalt paving, concrete barrier wall installation, signage, and landscaping. As an intern, I worked alongside the Project Manager and Field Superintendent to handle responsibilities related to assigned projects to achieve safe, timely and profitable completion of the project. I successfully designed, including hydraulics and AutoCAD, and oversaw the construction of the highway drainage inlets for the open flow system. The design entailed checking inverts when two different-sized pipes connected into a manhole to ensure the invert of the larger pipe was lowered to maintain the same energy gradient and to make sure the crown, top of pipe, matched. If there was not enough depth within the manhole to match crowns, then I matched pipe centerlines. I checked that there was a certain amount of drop across the manhole depending on the configuration. In addition, I created and maintained material accrual logs and was responsible for coordinating Underground Service Alerts (USAs) before construction.

As an Engineer I on the US 395 and US 50 projects below, I oversaw the setup of subcontractors and material suppliers, quantity and cost tracking, and design in AutoCAD. Handled cost of materials estimations, report and document tracking, project documentation, submittals, and on-site project visits, and monitored and observed construction activities daily. In addition, I provided invoice/agreement verification, and forecasting. Coordinated USAs, met and exceeded safety matrix requirements, partnering coordination, Stormwater Pollution Prevention Plan (SWPPP) Manager, and set up and maintained permits.

- NDOT, US 50, Lyon County, Chavez Road to Roy’s Road. The project involved widening the road from two to four lanes with drainage improvements, a horse crossing, and removal of bituminous surface (cold milling) and placing plant mix bituminous
surface with the open-graded surface. I aided in the design of the horse crossing under US 50 which entailed utilizing value engineering to produce a more cost-effective and time-reducing strategy using Styrofoam blocks to form the box culvert.

NDOT, US 395, Carson City Freeway, from South Carson Street (SR 529) to Fairview Drive. The project consisted of constructing a bridge over US 395 on Snyder Avenue, retaining walls, drainage, and detention basins.
WORK EXPERIENCE

MWH Americas, Inc.
Colorado (United States)
Associate Civil Engineer
May 2013—March 2015

VERIFIED BY
Robert Schaut
rschaut@enganalytics.com

Experience Summary
Full-Time
Engineering: 1 year, 10 months
Post EAC degree: 1 year, 10 months
Experience under licensed engineer: 1 year, 10 months

TASKS

Junior Computer-Aided Design Technician:
• I performed Computer-Aided Design services in support of Environmental, Civil Engineering, and Mining projects for MWH Americas’ Central Region, Rocky Mountain Business Unit. The drafting projects mainly entailed designing uranium tailing facilities dams and evaporation ponds. Other responsibilities included producing drawings and figures within set budget constraints, as well as completing other drafting and engineering support assignments as needed, including fieldwork.

Associate Civil Engineer:
• In this engineering consulting role, I supported planning, design, construction, and project management for environmental, civil engineering, and mining projects. My responsibilities focused on organizing, drafting, and coordinating the production of reports to ensure technical consistency and inclusion of appropriate documentation. I coordinated with clients and subcontractors and performed project administration, including writing reports, gathering information, drafting proposals, drafting correspondence, and completing progress reports to ensure quality.

REPRESENTATIVE PROJECTS

I was an Associate Civil Engineer on the Robinson Mining District Surface Rock and Vegetation Exploration project. I provided sampling and analysis of soil, bedrock outcroppings, and vegetation at the Robinson Mine located near Ruth, Nevada. Field sampling of geological materials and vegetation was followed by testing select samples using Robinson Nevada Mining Company’s (RNMC) X-ray Fluorescence (XRF) analyzer. The sampling and analysis program assisted KGHM, sole owner and operator of the Robinson Mine, in compiling data for the RNMC-patented and unpatented claim areas in support of further exploration activities.
Field Engineer:
• Managed cost coding with Company finance and accounting teams regarding employee time, materials, equipment, and subcontractor needs.
• Reviewed project specifications for quality assurance at the beginning of work, during the project work, and after work was completed.
• Initiated and managed appropriate certificates, inspections, and other documentation regarding construction production on the project site.
• Worked with construction crews and engineering leaders to plan field layout on the project site, ensuring appropriate utility and commercial lines were marked before production began.
• Initiated and managed any permits needed before work could begin.
• Conducted required Job Hazard Analysis (JHAs) to ensure a safe and compliant work environment for all construction personnel.

Project Engineer:
• Meet with engineering and field crews to review the production schedule and confirm all materials, equipment and resources were readily available for production to continue on schedule and within budget.
• Reviewed all shop drawings, design specifications, material requirements and project data throughout the project to ensure quality and contract specification compliance.
• Provided technical input for project work plan and scheduling.
• Evaluated daily production, schedule, and budget projections to accurately track project performance.
• Updated project schedule weekly for owner and management reporting.
• Attended weekly owner meetings and presented project production status as needed.
• Notified engineering and project management of any significant schedule changes and developed solutions to mitigate delays and costs.
• Initiated and managed all Requests for Information (RFIs).
• Remitted accurate project quantities using assigned project cost coding to ensure project financials were accurately reported.
• Assisted in the development of design drawings and provided technical input.
• Coordinated subcontractor work methods, schedule and crews as needed.
• Reconciled job close-out checklist with owner representative and field crews at the end of the project.

Denver International Airport Project No. CE 201419021 (2015 to 2016): Gate Apron Rehabilitation and Drainage Improvement Program Pkg. 1 and 2 - Denver, CO. The project consisted of apron replacement/repair and drainage improvements of gate pavement around Concourses B and C. As a field engineer, I worked daily with the Denver International Airport (DEN) Airport stakeholders, Project Manager, Safety, Planning, Tactical Planning, and Operations to ensure the construction work had minimal impact on the airport operations. I coordinated all shutdown requests for any mechanical, electrical, and plumbing (MEP) systems prior to the work. I coordinated with Airlines to relocate offices and hold rooms to complete the work. I constantly communicated all operational changes from the jet bridges, gate apron airline office relocations, and upgrades to all utility systems within the concourse and on the systems during design and construction to deliver the airlines and needs of the airport prior to the gates being turned over to operations. I developed a work plan for the water main repair and conducted a debrief with all parties involved to explain the details. The details of the work plan included the precise steps and what was entailed to restore service such as confined space training before soldering the section of the broken line, pressure testing the repaired line, disinfection, and flushing water through the repaired line to ensure water quality to protect public health.
o El Jobo Trail Bridge (2017) – El Jobo, Nicaragua. A team of us, including myself, analyzed the design plans and physically built a 36-meter single-span two-tower suspension pedestrian bridge that crosses the Upa River with Bridges to Prosperity.

o TxDOT No. C15-9-179 (2017): Williamson County I-35 @ FM3406/Old Settlers Boulevard – Round Rock, TX. As part of the Mobility35 Program, constructed the FM 3406 bridge over I-35 and built U-turn bridges in each direction. The project included bicycle and pedestrian enhancements, as well. As a project engineer, I coordinated all quality control items including plan preparation, acceptance testing, evaluations of field conditions, design changes, and reports. I developed the project construction schedule to include dates and the sequence of activities, such as craft assignments, crew sizes, project site layout of offices, traffic flow, and material storage, and anticipated project needs with sufficient lead time so as not to disrupt or delay production. I designed the crane critical lift plan for the installation of the precast concrete bridge girders. The plan included the type of lift, crane specifics, rated capacities, boom deflections, crane set-up and configuration, rigging calculations, accessing the condition of the ground bearing, staging location, crane capacity, cribbing, site conditions, and swing radius protection.
I was a staff associate engineer in the Bureau of Water Pollution Control (Division) for the Technical Services, Compliance, and Enforcement Branch for 5 years.

- I inspected permitted discharge facilities throughout the entire state of Nevada, on occasion taking water samples, and providing inspection reports to evaluate compliance with the discharge permit. I wrote inspection reports to record my findings to determine if the facility was operating within the permit terms.

- I interfaced with the Environmental Protection Agency (EPA) to ensure that Nevada was meeting all the delegated standards.

- I reviewed tentative and final subdivision maps, and subdivision improvement plans. The details of design and construction plans I reviewed for new systems, extensions to new areas, or replacement of sanitary sewers entailed checking if the minimum pie size, depth, slope, slope between manholes, alignment, changes in pipe size, materials, and manhole locations met the Ten State Standards. The point of the review was to ensure there was adequate capacity at the wastewater treatment facility to supply sewer service to the proposed subdivision, and that the maps and/or plans adhere to the Division’s design. If denied, I’d provide a comments letter to the engineer stating any issues to be addressed to resubmittal.

- I conducted technical reviews of facilities plans and specifications, design drawings, operation and maintenance manuals, reclaimed water management plans, and their supporting models and calculations using the Division’s design standards and guidance documents for all types of discharge facilities during the life of a permit. I’d either accept or reject and provide a comments letter to the engineer stating any issues that need to be addressed prior to resubmittal.

- I was the spill report coordinator which involved investigation to identify spill details before assigning duties to associated parties to mitigate and/or eliminate the impact.

**Nevada Department of Corrections Facilities — Conditions and Non-Compliance Issues**

- I investigated all the Nevada Department of Corrections (NDOC) facilities in the State of Nevada from 2019 to 2020 because they have continuous non-compliance issues. I conducted inspections of several facilities and ultimately compiled a report to the Nevada Department of Corrections that listed in order of severity level the violation of permit conditions with corresponding conditions and non-compliance issues over four (4) years, beginning in April 2016.

**City of Las Vegas Water Pollution Control Facility**

- In 2021, I performed the compliance sampling inspection and report for the City of Las Vegas Water Pollution Control Facility (WPCF). The WPCF is permitted to discharge up to 91 million gallons per day (MGD) of treated domestic wastewater to the Las Vegas Wash. The permit also covers discharging up to 10 MGD to the Las Vegas Wash from the Durango Hills wastewater treatment plant. I researched previous inspection reports to identify if any issues needed to be addressed or re-evaluated prior to the inspection. In my research, I familiarized myself with the various processes from the previous photos of the facility. I reviewed the layout of the facility and the design and function of each of the treatment processes. I analyzed the 2018 to 2021 Discharge Monitoring Reports to determine if any permit exceedances needed to be addressed during the inspection. The inspection consisted of a walkthrough and visual assessment of the entire facility from start to finish which included headworks, primary sedimentation basins, nitrification-denitrification plant, biological nutrient removal facility, tertiary filtration, chlorine contact basins, solids handling, anaerobic digesters, and the outfall to the Las Vegas Wash. I also took grab samples of the effluent to test for pH, metals, fecal coliform, and priority pollutants to be analyzed by a third party. Once the inspection was conducted, I compiled the report to summarize my findings. Based on the lab results of the effluent grab samples and my overall assessment of the facility, I
determined that the WPCF was in substantial compliance with all of the permit conditions.

Clark County Water Resource Center Sanitary Sewer Audit
• The Clark County Water Resource Center (CCWRD) is responsible for the collection, treatment, and reclamation of wastewater in Southern Nevada and is the largest wastewater agency in the State of Nevada servicing around one (1) million residents. The CCWRD's Flamingo Water Resource Center (Flamingo WRC) is permitted to treat up to 150 million gallons per day (MGD) from the tertiary wastewater treatment facility. The CCWRD collection network includes more than 2,200 miles of pipeline, over 49,000 manholes, 24 pumping stations, 29 odor control facilities, and 17 siphons to deliver wastewater from homes and businesses to one of six treatment facilities. I conducted a Sanitary Sewer Collection System Review inspection to evaluate the compliance with the National Pollutant Discharge Elimination System (NPDES) and applicable Federal regulations covering the wastewater collection system for the CCWRD Collection System Services. I performed the desk and field inspections in person in June 2022. During the desk audit, I reviewed eleven (11) service sections. I physically inspected six (6) service sections during the field audit. No findings or recommendations were noted during either desk or field audits I conducted. CCWRD Collection System program was thorough and continues to prove its effectiveness.

Humboldt-Toiyabe National Forest Pit Toilets
• According to the Safe Drinking Water Act (SDWA), if a pit toilet can be classified as a large-capacity cesspool, then they are illegal and must be properly decommissioned and deconstructed. There are 23 known pit toilets in the Humboldt-Toiyabe National Forest, including 13 of which the status remains unverified by NDEP. I developed an assessment program to determine whether the pit toilets currently owned and operated by the United States Forest Services (USFS) in the Humboldt-Toiyabe National Forest had been fully decommissioned and removed. I conducted the site visits in June 2023 for the Elko County area. Once all the field data was collected and analyzed, I compiled the report for the EPA detailing the status of each of the pit toilets and their locations.
WORK EXPERIENCE

Carson City Public Works
Nevada (United States)
Associate Project Manager
February 2024—June 2024

Assistant Project Manager:

• I design, prepare, and evaluate preliminary and final plans and specifications for a variety of public works projects.

• I perform engineering oversight on various construction projects such as coordinating daily activities, ensuring compliance with plans and specifications, and administering contracts.

• I review and evaluate parcel maps, records of surveys, subdivision and construction plans and other documents submitted by the public.

• I provide engineering design and code information and ensure that designs meet accepted industry and legal standards.

• I conduct research studies and prepare reports and recommendations regarding land use, building and facility design, transportation, housing, redevelopment, and a variety of engineering-related community service needs.

• I use computers and software programs for various technical modeling, calculation, computer-aided drafting and similar engineering projects and studies.

• I prepare a variety of written communications, including analytical reports, and correspondence.

• I conduct field surveys and investigations related to engineering projects or requests.

• I answer questions and provide information and assistance to the public in person, on the telephone and in writing.

REPRESENTATIVE PROJECTS

• Multi-Purpose Athletic Center Facility Crack (MAC) and Slurry Seal Project. The project consists of crack sealing and repair, resurfacing, speed bump installation, demolition and replacement of the existing PCC retaining curb, and stripping of the MAC parking Lot. I designed the site plans, special conditions, technical specifications, and estimate.

• 2022 Sewer Cured-in-Place Lining (CIPP). The project includes lining various sewer pipes in Carson City that have been assessed through the Pipeline Assessment Certification Program (PACP) process and need rehabilitation to prolong the lifespan of the pipe. I calculated the water flow rate of the open channel, which involved Stormwater d/D analysis for the assessment of flow necessary to be pumped and diverted to conduct rehabilitation work.

• Water Resource Recovery Facility (WRRF) Master Plan Update. Carson City requested assistance for the design of improvements for the WRRF expansion and other related treatment improvements to address current needs. The overall purpose is to develop a Master Plan that will provide a road map for the facility for future improvements to ensure current and anticipated future water quality standards are met, and that the treatment capacity is developed in conjunction with future population growth. I held a kickoff meeting with the engineering consulting team, compiled the data request list, and reviewed the draft scope of work.
### Time Gaps

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<th>Start Date</th>
<th>End Date</th>
<th>Explanation</th>
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<td>January 2018</td>
<td>December 2018</td>
<td>I took a planned year off to travel the world before returning back to work.</td>
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Applying To Nevada
Application Type Initial - PE
Application Date 06/20/2024
Citizenship Afghanistan

Engineering Experience after EAC degree
Total Engineering Experience 4 years, 9 months
Experience under licensed engineer 4 years, 9 months
Disciplinary Action None reported

Bachelors in Civil Engineering
Kandahar University
September 2009–June 2013

Masters in Civil Engineering
University of Nebraska, Lincoln
August 2014–May 2016

Fundamentals of Engineering (FE)
California
January 2021

Principles and Practice of Engineering (PE)
Civil
California
October 2023

Additional Licenses None
All work experience reviewed by two licensed professionals

EHSANULLAH YONASI (16-952-08)

WORK EXPERIENCE

Glogreen LLC
California (United States)
Civil/Structural Engineering Assistant
February 2017—March 2019

Tasks

The duties and responsibilities I undertook included the following:

- Conducted structural calculations.
- Collaborated with licensed engineers, performing tasks and duties as per their instructions.
- Requested and evaluated proposals for various studies, including geotechnical evaluation, drainage study, site assessment, seismic classification study, asbestos survey for the demolition of existing structures, and traffic impact study.
- Held meetings with representatives from the Las Vegas Valley Water District, the Department of Public Works (Sanitary Sewer Planning), and local civil engineering companies.
- Analyzed and summarized topographic surveys and parcel maps.

Representative Projects

Project Name And Scope: Decatur Hotel - 6 Stories Hotel Made of Shipping Containers
Location: 824 South Decatur Blvd, Las Vegas, NV
Duration: 2017 to 2019
Description:

I calculated the strength of shipping containers as a building material. I used STAAD Foundation to design footings and pads for the building and a continuous footing for a mockup model. I selected the type of elevator needed based on my design calculations and designed elevator shafts and connections. Additionally, I reviewed the LA Hillside Ordinance for the retaining wall design.
Perform vertical and seismic analysis on wood residential structures up to three stories, including those with basements.

Apply NDS guidelines or related standards to wood structural elements as appropriate.

Design concrete structures, including columns, grade beams, one-way slabs, retaining walls, and footing pads, following local and ACI codes.

Prepare a complete calculation package that complies with the building code and includes the design and analysis of all structural elements, load paths, shear walls, load transfer components, and foundation calculations.

Perform/Review plan check corrections and respond to plan check comments.

I have structurally designed & analyzed numerous residential wood-framed buildings, primarily consisting of three stories or less. These projects encompassed new residential constructions, additions, renovations, & the integration of accessory dwelling units (ADUs). A few examples include:

Project name and scope: Wonder View - 3-story Residential Building Addition and Remodeling
Location: 3478 Wonder View Dr, Los Angeles, CA 90068
Dates of project: 2021
Description:
I performed complete lateral and gravity analysis, specifying the size and material for structural members according to my design calculations to ensure safety and performance. I designed retaining walls for sloping terrain in compliance with the LA Hillside Ordinance. I designed and selected the appropriate foundations (pads, footing, grade beams, and piles) based on soil conditions and local requirements. Additionally, I designed piles and pile reinforcements per the load requirements, as well as slab and pool wall reinforcements.

Project name and scope: Valley Vista Blvd - One-Story New Residential
Location: 14656 Valley Vista Blvd, Sherman Oaks, CA 91403
Dates of project: 2021
Description:
I updated foundation notes, framing lumber specifications, and Glue-Lam beam notes. I performed lateral and gravity analysis, designed roof rafters and joists, calculated roof and floor loads, and specified beam hangers. Additionally, I designed perimeter footings and slab reinforcement and updated reinforcing steel and concrete specifications to ensure code compliance.

Project name and scope: Thayer Avenue - 3-Story New Residential
Location: 1410 Thayer Ave, Los Angeles, CA 90024
Dates of project: 2020
Description:
I updated structural steel specifications and nailing schedules per LABC 2017. I analyzed diaphragms for lateral loads, designed shear walls, and performed wind and seismic analysis. I also designed headers and checked wall studs for gravity loads, specified footing reinforcement for Hardy frames, and drafted critical structural contractor notes. Additionally, I designed basement retaining walls.

Project name and scope: E Palm St - 2-Story New Residential
Location: 1400 E Palm St, Altadena, CA 91001
Dates of project: 2020
Description:
I specified structural member sizes and materials, performed lateral (wind and seismic) and gravity analysis, and designed
guardrails, handrails, and stair stringers. I evaluated the need for Hardy frames and checked Hardy Frame grade beams for lateral load moments. I selected suitable foundations based on soil conditions and designed continuous footings to handle maximum loads.

Project name and scope: GreenLeaf St - 2-Story New Residential
Location: 15246 Greenleaf St, Van Nuys, CA 91403
Dates of project: 2019
Description:
I prepared a complete calculation package. I performed lateral and gravity analysis, designed roof rafters and joists, and calculated roof and floor loads. I specified beam hangers, designed perimeter footings, and slab reinforcement. Additionally, I reviewed and updated reinforcing steel notes and concrete specifications.
## WORK EXPERIENCE

**McElhaney Structural Engineers**  
Nevada (United States)  
Structural Engineer  
**September 2021 — April 2022**

**Experience Summary**  
Full-Time  
Engineering: 7 months  
Experience under licensed engineer: 7 months

### TASKS

- Prepare construction drawings, specifications, & project calculations for various project types, including concrete, structural steel, timber, & masonry.  
- Manage small to medium-sized projects independently & assist senior staff on larger projects.  
- Oversee the use of Revit in drawings & structural report production.  
- Provide project communication throughout the construction phase, maintaining contact with clients, architects, & contractors.  
- Undertake detailed engineering designs for both gravity & lateral systems in building structures.  
- Develop integrated structural designs & perform necessary calculations to support planned work.  
- Travel to sites for design reviews, site visits, & other related activities.

### REPRESENTATIVE PROJECTS

**Washoe County Sheriff's Office - RAVEN Hangar Programming**  
- Project Name: RAVEN Hangar Programming  
- Location: 911 E Parr Blvd, Reno, NV 89512  
- Duration: October 2021 to December 2021  
- Description:  
I conducted structural design analysis for the Preliminary Programming of the aircraft hangar. I designed the Sprung Structure Foundation, Cold-Formed Steel Wall Systems for the mezzanine, and the HSS cantilevered column system for the maintenance area. Additionally, I determined the minimum required structural framing for the fuel canopy and recommended material selections including steel, concrete, steel deck & cold form steel.

**Driveway Temporary Shoring**  
- Project Name: Driveway Temporary Shoring  
- Location: 360 Coleman Dr., San Rafael, CA 94901  
- Duration: October 2021  
- Description:  
I designed and provided temporary shoring for an existing concrete driveway and checked it against moving vehicle point loads.

**Bekowich Residence - New 1-Story Building**  
- Project Name: Bekowich Residence - New 1-Story Building  
- Location: 14215 Eagle Springs Court, NV 89511  
- Duration: November 2021 to March 2022  
- Description:  
I designed structural elements including beams, columns, shear walls, and foundation to meet safety and performance standards. I also reviewed the truss roof design and designed steel shading, diaphragms with discontinuity, and 45-foot long-spanning steel beams acting as gravity members and collectors.

**Comstock Drive Improvements**  
- Project Name: Comstock Drive Improvements  
- Location: Comstock Drive, Reno, NV  
- Duration: February 2022 to March 2022  
- Description:  
I performed calculations for masonry & concrete retaining walls with varying heights, toe, & heels. The concrete Option was chosen per my final design calculations.

**Hohl GM Carwash with Masonry Walls & Roof Truss**
• Project Name: Hohl GM Carwash with Masonry Walls & Roof Truss
• Location: 3700 South Carson Street, Carson City, NV 89703
• Duration: March 2022 to April 2022
• Description:
I designed and performed calculations for roof truss, masonry wall, roof diaphragms, out-of-plane wall anchorage, and continuous footing design.
WORK EXPERIENCE

Peoples Associates Structural Engineers
California (United States)
Assistant Engineer 3
June 2022—May 2024

EXPERIENCE REVIEWED BY TWO LICENSED PROFESSIONALS

Tasks:
• Under general direction, performs professional-level engineering work in connection with a wide variety of engineering projects.
• Create and assemble structural drawings, calculations, and submittal packages.
• Ensure structural drawings are accurate and correct.
• Perform QAQC review on structural drawings and calculations.
• Schedule drafting time for his/her projects.
• Attend meetings with clients as directed by the Project Manager.
• Other duties as assigned by the Project Manager.

Representative Projects:

Project name and scope: Titus - One-Story (1S) and Two-Story (2S) Data Center Building, Template Design
Location: Multiple States
Dates of project: 2024
Description:
I designed composite metal decks for static and moving loads using Steel Deck Institute (SDI) design guidelines and equations.

Project name and scope: AWS - 26000 lbs Electrical Skids
Location: 769 Salem Boulevard, Barwick, PA 18603
Dates of project: 2024
Description:
As the primary engineer, I designed three steel modular structures and supporting skids for seismic and gravity loads. I also structurally analyzed each module for conditions such as transportation, crane lifting, rolling over dollies, jacking, and anchoring to slab on grade.

Project name and scope: EAT 13 - 6 Acres One-Story Pre-Engineered Steel Data Center
Location: 5375 Malaga Alcoa Highway, Malaga, WA 98828
Dates of project: 2023 to 2024
Description:
I designed structural members and welded connections for a steel antenna per AISC section J. I designed a 66-foot tall generator stack support made of wide flanges, HSS, and steel angles for gravity and lateral loads. For designing anchorage and concrete pads in a steel structure (200’x1300’ footprint), I primarily used ASCE for lateral loads and wind loads, ACI 318-14 Chapter 17 for anchorage, and ACI 318-14 for concrete pads.

Project name and scope: TTX DCF - 30000 lbs Modular Skids
Location: 3101 Industrial Boulevard, Temple, TX 76504
Dates of project: 2023
Description:
The project consists of four fully enclosed interior modules constructed from steel shapes that were welded and bolted together, covering a 1400-square-foot area. As the primary engineer, I designed four 30000 lbs steel modular structures with skids for snow, wind, seismic, and gravity loads. I also designed the structures for conditions considering transportation, crane lifting, rolling over dollies, jacking, and anchoring to slab on grade.

Project name and scope: North Housing - 155 Units Distributed Across Three Interconnected Buildings
Location: Mosley Ave & Lakehurst Cir., Alameda, CA 94501
Dates of project: 2022
Description:
I determined the shear wall type and adjusted its length for a three-story wood-framed senior housing project to prevent torsional irregularities with a rigid diaphragm. Additionally, I reviewed structural drawings and calculations for QAQC.

Project name and scope: AE-PHX04 - 85 Feet Tall Three-Story Steel Building.
Location: 2455 S. Price Rd., Chandler, AZ 85286
Dates of project: 2022
Description:
I designed four elevators for this three-story steel building with braced frames as the lateral resisting system. The design included guide rails, a concrete pit, hoist beams, an elevator shaft, structural details, and connections.

Project name and scope: UCO - Data Center Building
Location: Eagle Mountain, UT 84005
Dates of project: 2022
Description:
The project consisted of multiple steel structures: Network Buildings, Admin/Support Spaces Building, and Data Center Buildings. I designed wide flange steel collectors, diaphragm chords, metal roof deck diaphragm with chords and shear studs, shear connections, and spread footings for two data centers and an 85000 square foot admin building with Buckling-Restrained Braced Frames (BRBF) as the lateral system.
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<thead>
<tr>
<th>Start Date</th>
<th>End Date</th>
<th>Explanation</th>
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<tbody>
<tr>
<td>May 2008</td>
<td>August 2009</td>
<td>In southern Afghanistan, there existed a one-year gap between high school graduation and commencing university studies.</td>
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<td>July 2013</td>
<td>July 2014</td>
<td>The minimum waiting period following the acquisition of a bachelor's degree to qualify for a USA master's degree scholarship.</td>
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<tr>
<td>June 2016</td>
<td>January 2017</td>
<td>Unauthorized to work. Required waiting period to obtain work authorization documentation.</td>
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Electrical
CODY MCDONALD (20-389-66)
All work experience reviewed by two licensed professionals

GENERAL
- Applying To: Nevada
- Application Type: Initial - PE
- Application Date: 06/18/2024
- Citizenship: United States

SUMMARY
- Engineering Experience after EAC degree: 4 years
- Total Engineering Experience: 4 years
- Experience under licensed engineer: 4 years
- Other Experience: 4 years, 9 months
- Disciplinary Action: None reported

EDUCATION
- Bachelors in Electrical Engineering (EAC)
  University of Nevada, Las Vegas
  August 2017–May 2020

EXAMS
- Fundamentals of Engineering (FE)
  Nevada
  September 2020
- Principles and Practice of Engineering (PE)
  Electrical & Computer
  Nevada
  December 2022

LICENSES
- Additional Licenses: None
WORK EXPERIENCE

Macy's
Nevada (United States)
Retail Associate
June 2013—December 2013

Verified by

Experience Summary
Part-Time
Other: 5 months (75%)
Experience under licensed surveyor: None

DESCRIPTION
WORK EXPERIENCE

Gymnastics Nevada
Nevada (United States)
Coach
June 2014—May 2015

Experience Summary
Part-Time
Other: 6 months (50%)
Experience under licensed surveyor: None
WORK EXPERIENCE

Harrah's Reno
Nevada (United States)
Table Games Dealer
December 2014—December 2015

Experience Summary
Full-Time
Other: 1 year
Experience under licensed surveyor: None

DESCRIPTION
WORK EXPERIENCE

Bank of England Mortgage
Nevada (United States)
Loan Officer
April 2016—September 2017

Verified by

Experience Summary
Full-Time
Other: 1 year, 5 months
Experience under licensed surveyor: None

DESCRIPTION
### WORK EXPERIENCE

<table>
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<tr>
<th>Company</th>
<th>Verified by</th>
<th>Experience Summary</th>
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<tbody>
<tr>
<td>Mila International</td>
<td>Part-Time</td>
<td>Other: 6 months (75%)</td>
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<tr>
<td>Nevada (United States)</td>
<td></td>
<td>Experience under licensed surveyor: None</td>
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<tr>
<td>Electrical Engineering Intern</td>
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<td>April 2018—December 2018</td>
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</table>
CODY MCDONALD (20-389-66)
All work experience reviewed by two licensed professionals

WORK EXPERIENCE

Geneva Financial LLC
Nevada (United States)
Loan Officer
February 2018—February 2019

Verified by

Experience Summary
Full-Time
Other: 1 year
Experience under licensed surveyor: None
CODY MCDONALD (20-389-66)
All work experience reviewed by two licensed professionals

WORK EXPERIENCE

NV Energy
Nevada (United States)
Engineering Intern
May 2019—April 2020

Verified by

Experience Summary
Part-Time
Other: 9 months (75%)
Experience under licensed surveyor: None

DESCRIPTION
June 15th, 2020 - November 20th, 2022: Junior Engineer

November 20th, 2020 - Present: Associate Engineer II

My present role consists of providing power system consulting to large energy producers. More specifically, our group specializes in excitation and plant controller services. I have provided the following services for a wide variety of clients:

Administering power system field testing for the purposes of determining NERC compliance. NERC Compliance scopes includes: MOD-025/026/027, PRC-019/024/025.

• Providing power controls system models for the purposes of large grid studies.

• Analyzing the coordination of relay and excitation system protections for the purposes of NERC compliance.

• Tuning generator power system stabilizers to ensure proper functionality during power grid events.

• Provided ERCOT Model-Quality-Testing and NODAL testing requirements for NERC studies.

During my time with this company I have lead 120 individual projects with multiple project scopes attached to each one. Each project scope pertains to a specific type of engineering analysis to be conducted. Each of these analysis pertains to power grid reliability and studies.

One individual project that summarizes a typical project for me would involve the AVR commissioning of Higgins Power Station. The AVR's were upgraded to an Emerson OES system. This project required that the generators, exciters, turbine-governor, power system stabilizer, and limiters be modeled according to the MOD-025/026/027 standards. Additionally, I tuned the power system stabilizer per the WECC VAR 501 standard since the unit was in the WECC interconnection. These controls models are simulated in Simulink-like program and quality checked within the PSLF software.

I also provided the relay and excitation protection settings verifications per the PRC-019/024 standards. For this standard, limiter and protection settings are verified to not result in unnecessary tripping of power resources.

Another typical project scope I would be responsible for would be model quality testing of controls models within the ERCOT interconnection. Controls models provided by myself or a third party are verified within the simulation software of choice, PSSE, and I will provide an engineering assessment of the provided models. The models are ran through several standardized grid disturbances and analyzed for model quality issues. I've perform this type of job scope for the Luminant sites: Midlothian, Hays, and Oak Grove as well as other clients in this interconnect.

As I've progressed in this role, I've been given opportunities to complete work outside of our typical scopes. One scope that was an atypical project involved Western Farmers Energy Center. The scope was to investigate the root cause of a generator failure. Through analysis of the various controls settings and physical hardware, I was able to determine the root cause to be high resistance connections on the generator's diode bridge.
Mechanical
GARRETT HELMS (20-497-34)
All work experience reviewed by two licensed professionals

GENERAL
- Applying To: Nevada
- Application Type: Initial - PE
- Application Date: 07/03/2024
- Citizenship: United States

SUMMARY
- Engineering Experience after EAC degree: 5 years, 2 months
- Total Engineering Experience: 5 years, 2 months
- Experience under licensed engineer: 5 years, 2 months
- Disciplinary Action: None reported

EDUCATION
- Bachelors in Engineering (EAC)
  Roger Williams University
  August 2014–December 2018

EXAMS
- Fundamentals of Engineering (FE)
  Nevada
  September 2023
- Principles and Practice of Engineering (PE)
  Mechanical
  Nevada
  May 2024

LICENSES
- Additional Licenses: None
**WORK EXPERIENCE**

<table>
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<th>Bender Engineering</th>
<th>Verified by</th>
<th>Experience Summary</th>
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<tr>
<td>California (United States)</td>
<td>JEFFREY CALDWELL BENDER</td>
<td>Full-Time</td>
</tr>
<tr>
<td>Mechanical Engineer</td>
<td><a href="mailto:jeff@benderengineering.com">jeff@benderengineering.com</a></td>
<td>Engineering: 5 months</td>
</tr>
<tr>
<td>April 2019—September 2019</td>
<td>Post EAC degree: 5 months</td>
<td>Experience under licensed engineer: 5 months</td>
</tr>
</tbody>
</table>

**TASKS**

I worked as a junior engineer to provide mechanical engineering calculations and designs for residential building developments. This included calculations and modeling for building energy consumption and efficiency, design of ductwork systems, selection of mechanical equipment, generation of design drawings, and field investigations.

I performed heat-load calculations, duct static pressure drop calculations, and modeled building energy efficiencies using hourly analysis software approved by the state of California. I selected equipment such as heat pumps and boilers, designed system configurations and utility routing plans, and generated construction drawing plan-sets in CAD software such as AutoCAD and Revit. I conducted field investigations to verify construction progress, and used testing tools such as duct-leakage equipment to ensure all efficiency metrics were met.

**REPRESENTATIVE PROJECTS**

During my time at Bender Engineering I was involved in numerous projects, which were oftentimes concurrent and generally had a one to two month duration. The projects listed below were selected to provide an indication of the general nature of my role and the representative work I would perform on a typical project.

**Project 1:**
*“Fitz Residence” Residential Energy Audit and Underfloor Ventilation Design*
Truckee, California, April 2019 – May 2019

I reviewed architectural drawings sets for a new residential building development, modeled energy efficiency using state approved energy compliance software, provided recommendations for insulation and fenestration heat transfer values to comply with California energy codes, and compiled administrative documentation to demonstrate building energy compliance for the state of California. Additionally, I performed static pressure calculations and designed a mechanically ventilated underfloor exhaust system compliant with California’s Building code. I generated engineering documentation and construction plan-sets using CAD software.

**Project 2:**
*“Barlett Main House” Residential HVAC Design*
Truckee, California, July 2019 – August 2019

I reviewed architectural drawing sets for a residential new construction project, performed heat load calculations, selected mechanical equipment including boilers and heat pumps, performed static pressure calculations, configured ducting systems, and developed CAD design drawings. I performed field investigations to confirm construction site progress and code compliance. Additionally, I modeled building energy efficiency to demonstrate building compliance with energy efficiency codes, and generated administrative documentation such as Title-24 energy efficiency reports.
During this period of time I was employed by the recruiting agency "LINQM", who subcontracted me to Tesla in Nevada. All work was performed on site in Nevada at Tesla’s Gigafactory.

I worked as a middle level designer to design building utilities including HVAC, piping, and plumbing systems for industrial manufacturing facilities. I designed air conditioning systems for manufacturing and office spaces, industrial exhaust systems for hazardous and non-hazardous gasses, chilling and heating water piping systems for manufacturing processes, and plumbing systems for manufacturing waste and sanitary drainage. I performed building heat load and pressure drop calculations, configured routing and sizing for ducting and piping systems, coordinated locations for equipment such as pumps, fans, and air conditioning equipment, and developed and modified engineering construction drawings including floor plans and process and instrumentation diagrams.

During my time sub-contracted to Tesla, I was involved in numerous concurrent projects, with durations ranging from a week to several months. The projects listed below are intended to provide an indication of the general nature of my role and the representative work I would perform on a typical project.

Project 1:
Manufacturing Assembly Line HVAC Upgrade
Sparks, Nevada, November 2019 – December 2019

I developed an engineering design package to add an additional fan coil cooling unit to a manufacturing environment to improve occupancy comfort. The floorspace covered by this new fan coil was approximately 500 square feet. I conducted Building Information Modeling (BIM) coordination and clash detection to identify placement of the equipment, designed the system configuration which included sizing and routing the supply air ducting and chilled water piping. I drafted engineering documentation including floor plans and process and instrumentation diagrams, and coordinated the mechanical designs in meetings with other engineering disciplines.

Project 2:
Manufacturing Assembly HVAC Design
Fremont, California, February 2020 – April 2020

I provided an HVAC system design for a portion of a manufacturing assembly line, my scope covering approximately 1,000 square feet of floorspace. I provided HVAC load calculations, static pressure drop calculations, supply air velocity and distribution calculations, duct routing and configuration, Building Information Modeling (BIM) coordination with other engineering disciplines to establish A/C equipment location, provided clash coordination, drafted engineering floor plan drawings and process and instrumentation diagrams, and documented energy efficiency code compliance.

Project 3:
Manufacturing Assembly Line Exhaust System Design
Sparks, Nevada, January 2021 – March 2021
I designed an exhaust system for a manufacturing line which generated hazardous vapors. The assembly line footprint which I was responsible for totaled approximately 3,000 square feet. I coordinated with manufacturing engineers to understand the manufacturing process and exhaust requirements, calculated exhaust airflow rates, analyzed existing exhaust ducting systems to ensure chemical and material compatibility, analyzed existing exhaust fan specifications to determine sufficient remaining airflow capacity, performed static pressure calculations, designed ducting sizes and configuration, performed clash coordination, and drafted engineering floorplans and process and instrumentation diagrams.
I work as a project engineering lead to design building utilities including HVAC, piping, and plumbing systems for industrial manufacturing facilities. I lead mechanical and process design projects to provide manufacturing and building utilities to internal and external clients. I review manufacturing tools and processes, building codes, and existing utility system capacities in order to recommend and design exhaust, compressed air, heating, cooling, industrial process piping, and waste drainage systems. I perform heat transfer calculations, pressure drop calculations, and size and select mechanical equipment including fans, pumps, and heat exchangers. I perform building heat load calculations, ventilation air calculations, and plumbing fixture unit calculations in compliance with local building, mechanical, plumbing, and fire codes. Additionally, I generate and modify engineering drawings and documents in CAD software, perform BIM coordination with other engineering disciplines and contractors, and conduct field verifications to confirm existing system configurations. I troubleshoot underperforming systems and conduct root-cause analysis investigations to improve system effectiveness and efficiency.

During my time at Tesla, I have been involved in numerous projects, with durations lasting from a few weeks to a year. The projects listed below are selected to provide an indication of the general nature of my role and the representative work I perform on a typical project.

Project 1:
Healthcare Clinic HVAC and Plumbing Design
Sparks, Nevada, September 2022 – June 2023

I served as project lead mechanical engineer to design the HVAC and plumbing systems for a healthcare clinic inside a manufacturing facility. I reviewed architectural drawings and local building, mechanical, and plumbing codes. I performed heat load and outdoor air ventilation calculations, selected and specified equipment including air handling devices and variable volume airflow boxes, sized all ductwork by performing pressure drop calculations, and scheduled zonal minimum and maximum airflow rates to improve efficiency and meet ventilation code requirements. I designed a plumbing system including domestic supply water and vacuum drainage for exam rooms and bathrooms in accordance with local plumbing codes. I performed clash coordination and BIM alignment with existing and new utilities.

Project 2:
Manufacturing Assembly Line Utility Design
Sparks, Nevada, June 2023 - October 2023

As project lead mechanical engineer, I was responsible for all utility design for a new manufacturing line. The manufacturing line footprint totaled approximately 8,000 square feet. I coordinated with stakeholders to understand the utility requirements for the new assembly line. I reviewed appropriate building, mechanical, and fire protection codes. I verified system as built conditions, I developed technical construction drawings to detail the expansion of the factory’s liquid nitrogen piping system, high temperature exhaust system, medium pressure compressed air system, and process cooling water system to serve several new manufacturing tools. I sized and routed new ducting and piping for each system by performing pressure drop calculations, and specified safety protection equipment such as nitrogen gas pressure relief valves, and temperature resistant ductwork insulation. I investigated and corrected existing chilled water system performance issues in order to provide the correct water temperature to avoid internal condensation. I coordinated clash detection with the new and existing building utilities.
I served as project lead mechanical engineer on an effort to relocate a large manufacturing line to a different building which did not have existing HVAC, compressed air, or exhaust systems. The total footprint of the manufacturing line is approximately 75,000 square feet. I coordinated with stakeholders to understand the utility requirements for the manufacturing equipment, as well as improvement opportunities based on lessons learned during historical operation. I coordinated all utility demolition within the existing building, and drafted technical documentation to support the construction effort. At the new location, I selected a new air compressor based on stakeholder requirements, and designed a compressed air distribution piping system. I selected new exhaust fans to serve the curing processes, designed an exhaust ducting system by performing static pressure calculations, and scheduled all the new equipment. I developed construction documentation including system layouts, pipe and duct sizing and routing, as well as process and instrumentation diagrams. I oversaw commissioning of the systems, and measured airflow and temperature in the tool cooling system to identify and correct the source of poor cooling system performance. Additionally, during coordination with the stakeholders, I discovered that some adhesive curing processes were temperature sensitive, which had never previously been considered when the manufacturing line was in a conditioned building. To resolve this, I performed a heat transfer analysis on the tool enclosures, and designed and specified a dedicated cooling air system consisting of evaporative A/C units and electric reheat coils to send tempered air at 68°F directly into the tool enclosures in order to maintain appropriate curing temperatures. In parallel, I specified an overall building cooling system to condition the temperature within the building by reviewing the existing building plan drawings and performing a heat load calculation to size HVAC equipment.
MEGAN NORDIN (19-944-05)
All work experience reviewed by two licensed professionals

GENERAL
Applying To
Nevada
Application Type
Initial - PE
Application Date
07/01/2024
Citizenship
United States

SUMMARY
Engineering Experience
after EAC degree
4 years, 2 months
Total Engineering Experience
4 years, 2 months
Experience under licensed engineer
3 years, 5 months
Disciplinary Action
None reported

EDUCATION
Bachelors in Mechanical Engineering (EAC)
California Polytechnic State University, San Luis Obispo
September 2015–December 2019

EXAMS
Fundamentals of Engineering (FE)
California
April 2019
Principles and Practice of Engineering (PE)
Mechanical
Nevada
March 2024

LICENSES
Additional Licenses
None
As a Applications Engineer at Syserco I designed mechanical control systems. I reviewed engineering specifications and code requirements such as fail-safe devices, hardware, selection of HMI/SCADA, power supply and circuit breakers, and controls cabinets. I performed engineering calculations and analysis for valve sizing, actuator sizing, damper selections, and PLC selections and wiring. I prepared engineering plans and related documents that resulted in a submittal package. I provided construction oversight of my engineering works by performing field walks on my projects and verifying install locations, wiring per design, and that code requirements were met if applicable.

Syserco Design Projects:
- (2020) 201 Haskins Amenities and Café Building
- (2020) UC Berkeley Bakar Lab
- (2020) ChemoCentryx SSF

For all projects completed at Syserco, each project includes designing mechanical control systems. In each above project, I reviewed engineering specifications and code requirements. I performed engineering calculations and analysis. I prepared engineering plans and related documents that resulted in a submittal package. I provided construction oversight of my engineering works. For all projects completed at Syserco, I reviewed engineering specifications and code requirements such as fail-safe devices, hardware, selection of HMI/SCADA, power supply and circuit breakers, and controls cabinets. I performed engineering calculations and analysis for valve sizing, actuator sizing, damper selections, and PLC selections and wiring. I prepared engineering plans and related documents that resulted in a submittal package. I provided construction oversight of my engineering works by performing field walks on my projects and verifying install locations, wiring per design, and that code requirements were met if applicable.
As a current Sr. Mechanical Engineer at Tesla I perform engineering calculations and analysis in regards to mechanical system/equipment optimization and operation at GFNV such as static pressure calculations for a 20K - 150k CFM exhaust systems, 160k CFM dehumidifier system performance with varied inputs using psychrometric charts, and compressor system power efficiency and performance curve testing. I have construction oversight of engineering works on mechanical systems/equipment at GFNV such as the installation of (2) 1200 ton chiller system, the installation of compressors and dryers, installation and construction HVAC equipment, and major battery production mechanical utilities. I review engineering plans and related documents for expansions on mechanical systems/equipment at GFNV such as the installation of (2) 1200 ton chiller system, the installation of compressors and dryers, installation and construction HVAC equipment, and major battery production mechanical utilities.

**Tesla CAPex Projects:**

- (2020-2021) Panasonic Expansion #1: (3) 20k CFM Dehumidifiers, (3) 1200scfm at 165psig Compressors with (2) Dryers
- (2023-Present) Panasonic Expansion #2: (3) 20k CFM Dehumidifiers
- (2022-Present) LTCHW Chiller Plant to Dehumidifiers: 1200 ton Chiller system

For all of the above Capex projects, I reviewed engineering plans and related documents as an engineering approver. I reviewed plans for constructability based on field conditions and system capacity. For both Panasonic expansion projects I provided data to show an exhaust system having capacity per design, did not actually have exhaust capacity due to high ESP measured by myself to show that it was greater than the rating of the exhaust fans, using the system curve to display that the required flowrate cannot be met. For both Panasonic expansion projects I calculated DHU plant performance with additional moisture load, and made a recommendation on how many more units are needed to meet that demand. My recommendation of unit quantity is what was used for the basis of design. For LTCHW Chiller Plant project, I provided DHU unit capacity to meet dry air needs within a specific outside air humidity, and using the psychrometric chart I completed the calculation to provide low temperature chilled water at 40F LAT post coil in order to limit the outside air conditions to never exceed DHU unit capacity. I also used the 20-year extreme enthalpy of Reno, NV and used these conditions to size a 483 MBH latent heat sized cooling coil. I provided construction oversight of engineering works by being the engineering approver of all dry mechanical construction activities in relation to these projects. I reviewed the work scope, performed a field walk to verify submit plans match field configuration, reviewed MOP (method of procedure) for safety, impacts to mechanical system performance, and for proper LOTO (lock out tag out) plan for de-energization. I provided commissioning support by writing all operation manuals of equipment (startup, shutdown, mode swap, etc.) and performed calculations to set system alarms for various conditions (ex: low suction pressure pump interlock using pump cavitation calculation, high discharge pressure pump pressure alarm using pump curve, DHU process pressure high pressure switch trip based on maximum pressure rating of the ductwork, DHU process fan motor overload trip based on FLA of motor).

**Tesla Engineering Projects:**

- (2022-2023) HVAC Economizer and 'Off-Hours' Controls
- (2021-2022) Reactivation Exhaust Booster Fan

For the HVAC Economizer and 'Off-Hours' Controls project, I calculated the power efficiency of general space fan coil units at GFNV. I converted the motor horsepower to watts, and dividing by the voltage equates to power. I then divided the result by the motor efficiency to calculate the cost of the electrical power being sent to the motor. Using NV Energy on-peak, mid-peak, and off-peak electrical cost, as well as room temperature data, I created a PLC program which would sequence HVAC units off for the amount of hours which resulted in the highest energy savings while also resulting in the most minimal room temperature disruptions. I then downloading this controls scheme to the PLCs of 60 fan coil units onsite. This resulted in approximately...
528,534 kWh annually, and Tesla received an incentive one-time payment of $.05/kWh saved for my energy savings efforts.

For Reactivation Exhaust Booster Fan project, I created a pressure drop calculator of struggling exhaust system using the end of line drop to understand where the system bottleneck was. I mapped out each straight leg, 90 degree elbow, and transitional duct. I included the width and height of the section, and the expected CFM through this section. Using this information, I calculated the air velocity and then the static pressure per 100’ of duct. I calculated the velocity pressure and differential pressure to result in the total external static pressure of the exhaust system. I narrowed down the limited sections of the duct work, and I proposed modifications to help relieve pressure in the exhaust system.
As a current Sr. Mechanical Engineer at Tesla I perform engineering calculations and analysis in regards to mechanical system/equipment optimization and operation at GFNV. This includes taking static pressure measurements to compare to design for 20K - 150k CFM exhaust systems, evaluating 160k CFM dehumidifier system performance with varied chilled water temperatures, and compressor system power efficiency and performance curve testing. I have construction oversight of engineering works on mechanical systems/equipment at GFNV such as the installation of (2) 1200 ton chiller system, the installation of compressors and dryers, installation and construction HVAC equipment, and major battery production mechanical utilities. I review engineering plans and related documents for expansions on mechanical systems/equipment at GFNV such as the installation of (2) 1200 ton chiller system, the installation of compressors and dryers, installation and construction HVAC equipment, and major battery production mechanical utilities.

**Tesla CAPex Projects:**

- (2020-2021) Panasonic Expansion #1: (3) 20k CFM Dehumidifiers, (3) 1200scfm at 165psig Compressors with (2) Dryers,
- (2023-Present) Panasonic Expansion #2: (3) 20k CFM Dehumidifiers
- (2022-Present) LTCHW Chiller Plant to Dehumidifiers: 1200 ton Chiller system

For all of the above Capex projects, I reviewed engineering plans and related documents as an facilities engineering approver. I reviewed plans for constructability based on field conditions and system capacity. For both Panasonic expansion projects I provided data to show an exhaust system having capacity per design, did not actually have exhaust capacity due to high ESP measured by myself to show that it was greater than the rating of the exhaust fans, using the system curve to display that the required flowrate cannot be met. For both Panasonic expansion projects I compared actual DHU plant performance with additional moisture load, and made a recommendation on how many more units are needed to meet that demand. For LTCHW Chiller Plant project, I provided DHU unit capacity to meet dry air needs within a specific outside air humidity. I provided construction oversight of engineering works by being the facilities engineering approver of dry mechanical construction activities in relation to these projects. I reviewed the work scope, performed a field walk to verify submit plans match field configuration, reviewed MOP (method of procedure) for safety, impacts to mechanical system performance, and for proper LOTO (lock out tag out) plan for de-energization. I provided commissioning support by writing all operation manuals of equipment (startup, shutdown, mode swap, etc.) and performed calculations to set system alarms for various conditions (ex: DHU process pressure high pressure switch trip based on the total static pressure design of the system or maximum pressure rating of the ductwork, DHU process fan motor overload trip based on allowable % FLA of motor).

**Tesla Engineering Projects:**

- (2022-2023) HVAC Economizer and ‘Off-Hours’ Controls
- (2023-Present) Dehumidification Plant Modulating Return Damper Upgrade
- (2021-2022) Dehumidification Plant Model

For the HVAC Economizer and ‘Off-Hours’ Controls project, I calculated the power efficiency of general space fan coil units at GFNV. I converted the motor horsepower to watts, and dividing by the voltage equates to power. I then divided the result by the motor efficiency to calculate the cost of the electrical power being sent to the motor. Using NV Energy on-peak, mid-peak, and off-peak electrical cost, as well as room temperature data, I created a PLC program which would sequence HVAC units off for the amount of hours which resulted in the highest energy savings while also resulting in the most minimal room temperature disruptions. I then downloading this controls scheme to the PLCs of 60 fan coil units onsite. This resulted in approximately 528,534 kWh annually, and Tesla received an incentive one-time payment of $.05/kWh saved for my energy savings efforts.
For Dehumidification Plant Modulating Return Damper Upgrade project, I proposed upgrading a mixing damper from open/close to modulating to increase dehumidification unit capacity. I troubleshooted low air flow through the mixed air dehumidifier (causing decreased performance) and took pressure measurements to find the return airflow header dropped to -850Pa during high demand. With a 925Pa supply pressure, this amounts to >7” w.c. external static pressure that the supply fans need to overcome based on the distribution ductwork. This high external static pressure decreases the airflow across the unit as measured, and as charted with the fan curve considering the supply fan was designed for 6” w.c. external static pressure. I calculated that the potential benefit to plant (8 DHUs) capacity was ~15% increase in capacity if able to balance return pressure across the plant to get the project funded.

For Dehumidification Plant Model Project, I created a linear regression model of our factory’s dehumidification plant to justify CAPEx improvement project. I took the grains of moisture removed per unit per day, and compared unit and plan capacity for the summer weather 2018 through 2021. I took the capacity data of the plant and plotted this on a normal distribution chart against the (%) of the 20-year min/max summer humidity. This chart yielded a 96.7% uptime of the dehumidification plant based on weather data.
7. Oral Interview
Jacob Woolman
<table>
<thead>
<tr>
<th>Name</th>
<th>Discipline</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jacob Woolman</td>
<td>FPE</td>
</tr>
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</table>

**Comments:** 06/13/2024 Karen Purcell: Appear to evaluate Fire Protection Engineering experience.

**Motion:**

**Second:**

**Action:**
JACOB WOOLMAN (13-985-52)
All work experience reviewed by two licensed professionals

GENERAL

Applying To Nevada
Application Type Initial - PE
Application Date 05/13/2024
Citizenship United States

SUMMARY

Engineering Experience after EAC degree
4 years, 7 months
Total Engineering Experience
4 years, 7 months
Experience under licensed engineer
4 years, 7 months
Other Experience
5 years, 7 months
Disciplinary Action
None reported

EDUCATION

Bachelors in Mechanical Engineering (EAC)
University of Nevada, Las Vegas
August 2007–December 2013

Non-degree
University of Maryland
January 2022–August 2023

EXAMS

Fundamentals of Engineering (FE)
Nevada
October 2012

Principles and Practice of Engineering (PE)
Fire Protection
Nevada
April 2024

LICENSES

Additional Licenses
None
WORK EXPERIENCE

Energy Inspectors
Nevada (United States)
Commercial Energy Analyst
March 2014—July 2018

Experience Summary
Verified by
Full-Time
Other: 4 years, 4 months
Experience under licensed surveyor:
None

DESCRIPTION
WORK EXPERIENCE

Clark County Building Department & Fire Prevention
Nevada (United States)
Residential Plans Examiner
July 2018—October 2019

Experience Summary
Full-Time
Other: 1 year, 3 months
Experience under licensed surveyor: None
WORK EXPERIENCE

Clark County Building Department & Fire Prevention
Nevada (United States)
Associate Engineer
October 2019—May 2024

Verifying by
James Gerren
Jcg@clarkcountynv.gov

Experience Summary
Full-Time
Engineering: 4 years, 7 months
Post EAC degree: 4 years, 7 months
Experience under licensed engineer: 4 years, 7 months

Tasks

Work with licensed fire protection engineers as a technical expert who reviews various plans including new buildings, remodels and tenant improvement projects, ensuring code adherence. The plans reviewed include life safety packages consisting of master egress plans, smoke control plans, fire protection reports, steel fireproofing and alternative materials and methods requests. Alternative materials and methods requests are reviewed with a performance based approach, requiring one to have an understanding of how to interpret the proposed technical designs and ensure they meet or exceed referenced UL listing designs that meet code standards.

Representative Projects

My duties on the MSG Sphere in Las Vegas, NV (2020 - 2022) were to review the life safety plans which included the master egress plans, steel fireproofing plans and smoke control plans per the local and national building codes on a performance level. I reviewed the master egress plans ensuring all occupants were accounted for and exited the building. I reviewed and ensured all doorways, corridors, stairs, and ramps were properly sized to accommodate the occupants exiting and were sized per code. I ensured all the travel distances adhered to code standards. I reviewed the steel fireproofing submittals checking that the proposed fireproofing method and designs matched the thicknesses and desired fire ratings given to adhere to code. I reviewed the smoke control plans, making sure the smoke control matrix accounted for all fire appliances and their functions with each appliance activation (i.e. water flow, smoke detectors, heat detectors).

My duties on the Resorts World Casino in Las Vegas, NV (2021) were to review the life safety plans which included the master egress plans steel fireproofing, smoke control plans and alternative materials and methods requests per the national and local building codes on a performance level. I reviewed the master egress plans ensuring all occupants were accounted for and exited the building. I reviewed and ensured all doorways, corridors, stairs, and ramps were properly sized to accommodate the occupants exiting and were sized per code. I ensured all the travel distances adhered to code standards. I reviewed the steel fireproofing submittals checking that the proposed fireproofing method and designs matched the thicknesses and desired fire ratings given to adhere to code. I reviewed the smoke control plans, making sure the smoke control matrix accounted for all fire appliances and their functions with each appliance activation (i.e. water flow, smoke detectors, heat detectors). I reviewed the alternative materials and methods requests, verifying the proposed methods of fire penetrations and ceiling, floor and wall abutments meet the performance ratings of the referenced UL listed designs and building codes.

My duties on the Durango Station in Las Vegas, NV (2022) were to review the life safety plans which included the master egress plans, steel fireproofing plans and smoke control plans per the local and national building codes on a performance level. I reviewed the master egress plans ensuring all occupants were accounted for and exited the building. I reviewed and ensured all doorways, corridors, stairs, and ramps were properly sized to accommodate the occupants exiting and were sized per code. I ensured all the travel distances adhered to code standards. I reviewed the steel fireproofing submittals checking that the proposed fireproofing method and designs matched the thicknesses and desired fire ratings given to adhere to code. I reviewed the smoke control plans, making sure the smoke control matrix accounted for all fire appliances and their functions with each appliance activation (i.e. water flow, smoke detectors, heat detectors).

My duties on the Southern Hills Hospital tenant improvement (*UMC was a typo*) in Las Vegas, NV (2022 - 2024) consisted of reviewing the fire protection report, ensuring all aspects of the safety systems were properly maintained. These included the smoke management with the smoke control system, the horizontal exits and places of refuge, fire rated construction and exit travel. Updated egress plans were reviewed by me and verified to match what was discussed on the fire protection report. In addition to ensuring the exit paths were maintained and the exit components (doors, ramps, and stairs) were properly sized.

On a daily basis I review fire protection reports, alternative material and methods requests, egress plans and steel fireproofing
submittals for various tenant improvements and new projects located within Clark County, NV. The majority of the tenant improvements and new projects are for malls, casinos, condos and other commercial properties including Caesars Palace, Virgin, Fountainebleau, The Cosmopolitan, Horseshoe, Aria, Las Vegas Convention Center, Wynn, The Palazzo, Treasure Island, The Forum Shops at Caesars, The LINQ, and Bellagio.
8. Oral Interview
Kyle Randall
ORAL INTERVIEW
THURSDAY, July 18, 2024

Name: Kyle Randall
Discipline: FPE


Motion:
Second:
Action:
KYLE RANDALL (19-459-22)
All work experience reviewed by two licensed professionals

GENERAL

Applying To Nevada
Application Type Initial - PE
Application Date 05/13/2024
Citizenship United States

SUMMARY

Engineering Experience after EAC degree 4 years, 4 months
Total Engineering Experience 4 years, 4 months
Experience under licensed engineer None
Other Experience 8 years, 3 months
Disciplinary Action None reported

EDUCATION

Bachelors in Mechanical Engineering (EAC) University of Nevada, Las Vegas August 2007–December 2018

EXAMS

Fundamentals of Engineering (FE) Nevada October 2018
Principles and Practice of Engineering (PE) Fire Protection Nevada October 2022

LICENSES

Additional Licenses None
WORK EXPERIENCE

AM Fire & Electronic Services, Inc.
Nevada (United States)
Fire Alarm Designer
June 2006—June 2010

Verified by
Experience Summary
Part-Time
Other: 2 years (50%)
Experience under licensed surveyor: None

DESCRIPTION
A-1 Mechanical & Electric  
Nevada (United States)  
Fire Alarm Designer  
December 2010—August 2013  

Experience Summary  
Part-Time  
Other: 1 year, 4 months (50%)  
Experience under licensed surveyor: None
## WORK EXPERIENCE

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<thead>
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<th>Company</th>
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<th>Position</th>
<th>Date Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Signal Fire, Inc.</td>
<td>Nevada (United States)</td>
<td>Fire Alarm Designer</td>
<td>August 2013—October 2019</td>
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### DESCRIPTION

- **Verified by**
- **Experience Summary**
  - Part-Time
  - Other: 4 years, 8 months (75%)
  - Experience under licensed surveyor: None
WORK EXPERIENCE

Pyrocom
Nevada (United States)
Fire Alarm Designer
October 2019—January 2020

Experience Summary
Full-Time
Other: 3 months
Experience under licensed surveyor: None
I review construction documents for active fire protection systems including fire alarm, water-based, & foam systems. I review fire protection reports pertaining to freeze protection solutions & design approaches not meeting requirements of prescribed standards. Reviews commonly consist of identifying remote areas of designs by calculating demands & determining hazard and commodity classifications are appropriate for stated commodities and operations. I provide design guidance and code explanation to contractors. I coordinate and host periodic meetings between reviewers to standardize code interpretations and review practices.

**Representative Projects**

**LASFuel**, 5250 Haven St. 10-2020 to 06-2021. I reviewed the design and calculations for a AFFF system serving a 40' diameter fuel tank (Jet-A). While verifying pump sizing, I calculated the foam solution demand at the pump. I coordinated the back-up concentrate provisions with the airport fire station. I advised what an approvable dike protection design would entail to the contractor. I addressed code and operation concerns during the review process.

**Tanager Apartments**, 2375 S Spruce Goose St, 10-2021 to 04-2022. A high-rise "Texas Wrap" apartment building. I reviewed and approved the water tank, fire pump, standpipe, and sprinkler system designs. I calculated pipe sizing between the tank and pump, I identified locations requiring freeze protection, I identified combustible concealed spaces in the building not reconciled in the sprinkler design, I identified incorrect use of calculation methods.

**Armorock**, 14555 Spring Canyon Rd. 12-2022 to 02-2023. An operations update due to a fire incident involving acetone vapor in a pit. I coordinated fire prevention requirements with the department chemical engineer to ensure fire codes related to hazardous materials storage are met including requirements for storage exceeding MAQ's. I reviewed the report proposing material storage provisions and gave suggestions on how to achieve code compliance given site constraints.
9. Approval of May 9, 2024, Board Meeting Minutes
Board members participating were Chairman Angelo Spata, PE; Vice Chair Brent Wright, PE/SE; Thomas Matter, public member; Karen Purcell, PE; Michael Kidd, PLS; Robert Fyda, PE; Greg DeSart, PE; and Jay Dixon, PE; Matthew Gingerich, PLS.

Also participating were Mark Fakler, Executive Director; Patty Mamola, Board Staff; Chris MacKenzie, Board Legal Counsel; Murray Blaney, Board Staff; Jasmine Bailey, Licensing Specialist; Cassie Wilson, Government Affairs Liaison; and Bob Murnane, PE, Guest Board Member.

1. Meeting conducted by Chair Angelo Spata, call to order and roll call of board members to determine presence of quorum—board members Brent Wright, Michael Kidd, Karen Purcell, Thomas Matter, Angelo Spata, Matt Gingerich, Robert Fyda, Greg DeSart, Jay Dixon.

A quorum was determined and Mr Spata called the meeting to order.

2. Pledge of Allegiance.

All attendees rose for the Pledge of Allegiance.

3. Public comment.

There was no public comment.

4. Introductions

All those participating in the meeting introduced themselves.

Mr Spata read the board’s purpose and mission.

The purpose of the board as stated in Nevada Revised Statute 625.005 is to safeguard life, health and property and to promote the public welfare by providing for the licensure of qualified and competent professional engineers and professional land surveyors and our mission is founded on the board’s purpose, the board’s mission is to uphold the value of professional engineering and land surveying licensure by assessing minimum competency for initial entry into the profession and to insure on going standard of professionalism by facilitating compliance with laws regulations and code of practice and to provide understanding and progression in licensure by openly engaging with all stake holders.

5. Consideration of initial licensure applicant requests to waive certain requirements of Nevada
Ms Purcell recommended approval of the requests to waive NRS 625.183 (1)(a) made by Kunal Raithatha applying for control systems engineering licensure and Mohamed Mousa applying for fire protection engineering licensure.

A motion was made by Ms Purcell, seconded by Mr Kidd to approve the waiver requests. The motion passed unanimously.

6. Board approval of non-appearance applications for initial licensure. Refer to Addendum A for list of applicants.

The board reviewed eleven (11) applications in the board packet for initial licensure and recommendations were made.

A motion was made by Mr Fyda, seconded by Mr Gingerich to approve the applications for initial licensure contained in the board packet with recommendations noted. The motion passed unanimously.

The board reviewed five (5) additional applications in the supplement to the board packet for initial licensure and recommendations were made.

A motion was made by Ms Purcell, seconded by Mr Dixon to approve the applications for initial licensure contained in the board packet with recommendations noted. The motion passed unanimously.

7. Discussion and possible action on approval of March 14, 2024, board meeting minutes.

A motion was made by Mr DeSart, seconded by Mr Wright to approve the March 14, 2024, board meeting minutes. The motion passed unanimously.

8. Discussion and possible action on approval of April 11, 2024, interim board meeting minutes.

A motion was made by Ms Purcell, seconded by Mr Fyda to approve the April 11, 2024, board meeting minutes. The motion passed unanimously.

9. Discussion and possible action on financial statements for March 2024.

Ms Blaney reviewed the March 2024, financial statement as presented in the board packet and provided clarifications for the board.
24-33  A motion was made by Ms Purcell, seconded by Mr Wright to approve the March 2024 financial statement. The motion unanimously.

10. Discussion and possible action on compliance reports by Compliance Officer.

a. Board staff report on complaints being investigated.

Mr Blaney reported on the status of the eight (8) open compliance case files. There were no questions from board members.

b. Consideration of probation reports:

Dooley Riva, PE #18231  Buckley Blew, PLS #24520  
Jason Caster, PLS #19338  Lazell Preator, PE #14982  
Robert Mercado, PLS #10352  Armando Monarrez, PE #19652  
Mark Johnson, PE #19830  Andrew Hammond, PE/PLS #21191

Mr Blaney reported on the status of licensees currently on probation. There were no questions from the board.

11. Discussion on Board Counsel Report.

Mr MacKenzie reported that he had just completed a draft stipulated agreement relating to the Preator hearing that was held the last time the board was in Las Vegas. He said staff is reviewing the first draft and it would be revised if needed and then sent to a board liaison for consideration.

Mr Spata asked why a stipulated agreement was being pursued as opposed to a rescheduling of a formal hearing.

Mr MacKenzie said a continuance was granted, but based on the admission of several of those matters that the hearing was going to consider, pursuing a settlement would be his recommended course of action.

Mr Spata asked for clarification on the current status of Mr Preator’s Nevada license.

Ms Mamola said it was under suspension through December 31, 2023, and then moved into expired status on January 1, 2024. Mr Preator does not have a current professional license in Nevada.

12. Discussion and possible action on administrative report by staff.
a. **Approved licensees report.**

Mr Blaney reviewed the approved licensee report as presented in the board packet and answered questions from board members.

b. **Action items related to 2021-2025 Strategic Plan.**

Mr Blaney asked if there were any questions relating to the strategic plan. There were none.

c. **Items related to National Council of Examiners for Engineering & Surveying (NCEES)**

i. **United Kingdom Mutual Recognition Agreement signing ceremony.**

Ms Mamola reviewed the memo to the board in the meeting materials giving background on the UK Mutual Recognition Agreement. She added because of Nevada's involvement in getting the agreement in place, it would be great if board members could be in attendance at the NCEES Annual Meeting signing ceremony. The signing ceremony is Tuesday August 13. Ms Mamola reminded board members when making their travel arrangements, to arrive in time to attend.

Mr Fyda suggested that Ms Mamola be present to represent Nevada at the signing ceremony in recognition of her work in facilitating international comity with the International Engineering Alliance. The board agreed.

Mr MacKenzie said, although the signing is only ceremonial, the board should motion and vote to authorize board chair Mr Spata to sign the agreement of the board’s behalf.

24-34 A motion was made by Mr Wright, seconded by Ms Purcell to empower Mr Spata to sign the agreement on behalf of the Nevada board. The motion passed unanimously.

Ms Mamola said the action items and conference reports would be available for consideration and pre-discussion at the July 18 board meeting. She added she would participate virtually to assist Mr Fakler in presenting the materials. **(ACTION Item)**

13. **Discussion and possible action on board committee reports.**

a. **Administrative Procedures Oversight Committee, Chair Brent Wright.**

i. **Budget for fiscal year July 1, 2024, to June 30, 2025.**

Mr Wright said the APOC committee met on April 22\textsuperscript{nd} with the primary item of discussion was the fiscal year July budget for July 1st, 2024, through June 30th, 2025. That proposed budget is in the
Mr Blaney reviewed the summary as presented in the board packet and asked if there were any questions from the board. There were none.

Mr Wright said the APOC committee recommends the acceptance and approval of the budget.

24-35 A motion was made by Mr Wright, seconded by Mr Kidd to approve the budget for fiscal year July 1, 2024, to June 30, 2025. The motion passed unanimously.

b. Legislative Committee report, Chair Greg DeSart.

i. Consider possible bill draft request for 2025 legislative session.

Mr DeSart said the committee met on April 22 and this item was brought back to the board for concerning to issues highlighted by staff relating to perceived barriers to licensure - time period for waiver consideration - and detail for the justification for the waiver time period.

Mr Wright asked if NCEES Model Law offered any guidance on the FE/FS and waiver considerations.

Ms Mamola said it was not addressed in NCEES Model Law and gave an overview of the NCEES Position Statement – which states the FE/FS is required to obtain Model Law Engineer (MLE) or Model Law (Land) Surveyor (MLS) status.

Mr DeSart said relating to barriers to entry, the reduction from fifteen (15) years to eight (8) years is significant, and for justification, in addition to being an educational assessment tool, the mere act of studying for the FE/FS is an important component of preparing yourself for professional licensure. He added in reducing the waiver timeframe – or barrier – we are incentivizing people to go through this exercise of studying for this exam. Mr DeSart said the fundamentals exams help make a more well-rounded engineer or a more well-rounded surveyor.

Mr Wright said he believed the waiver timeframe needs to be significant enough to be an incentive to take and pass the fundamentals examinations. He added that eight years is a good number.

Mr Murnane said he agreed with Mr DeSart and Mr Wright. The FE/FS exams have value, they are great assessment tools and make you a better professional. The timeframe needs to be significant enough to incentivize graduating engineers to take and pass the exams. He added in his experience in dealing with the younger engineers, eight years is enough experience if they’re terrible test takers and good engineers, which gives them an opportunity to proceed with their career.
Mr DeSart said while there is no data relating to passing the FE/FS and becoming a better professional, anecdotally it does force a candidate to study a broader area outside of their specialist area. Forcing understanding of basic electrical and mechanical engineering to name two. That understanding helps professionals better integrate into a multi-discipline design team.

Mr Spata said he agreed with Mr DeSart and Mr Wright, and that NCEES requires the FE/FS for MLE/MLS status is somewhat of a justification to incentivize applicants to take and pass the exam. He said he also sees the view of minimizing roadblocks; but added we've still got to preserve the integrity of the profession.

Mr Matter said he believes the FE truly helps you become a well-rounded engineer by understanding some basic components. It is important base knowledge when you're collaborating on a project where many engineering disciplines interact with each other.

Ms Purcell the fact that the exam does create more of a well-rounded knowledge base is justification to have the waiver period at level to incentivize perseverance in passing the fundamentals exams.

Mr Gingerich said he was comfortable reducing it from fifteen to eight, but I would be really reluctant to do anything less. In the preparation of taking that exam gives you a much broader appreciation for surveying.

Mr Wright said a justification for requiring the FE is to show that you have a well-balanced view of engineering as a whole and you're not just micro focused engineer but you have a broad understanding. He added the decision is just how important the FE/FS is. Is it an additional four years more important or is it an additional two years? He said he believed four years is the right number. That's a significant enough amount that it's going to encourage people to really think hard before they decide not to take it.

Mr Fyda said if the FE/FS are educational assessments, then the question becomes is how it works with additional schooling – candidates with Masters or PhDs. He said he was initially in the camp of eliminating the timeframe from statute and creating board policy to deal with each unique case. Mr Fyda said he was open to eight years, but still had the question is what does the FE serve in terms of assessment piece? He said he understood the idea that the broad scope of knowledge, but if a they have their engineering degree and received all these different advanced level classes – masters or doctorate - then is FE needed? And with that level of education is even additional experience required.

24-36 A motion was made by Mr Kidd, seconded by Mr Gingerich to the text of NRS 193 and NRS 280 as presented in the board materials – with the waiver period of eight years. The motion passed unanimously.

ii. Discuss Legislative Counsel Bureau language proposed for board regulation changes related
Ms Mamola said this agenda item was included just in case the LCB draft language was received in time for review by the PLS Standards of Practice Sub-committee and LegComm. Unfortunately, it wasn’t, so the item will bump to a future board meeting.

Mr Blaney said the language was actually received yesterday and staff had not yet had a chance to review it but would do so in the next few days. He added staff would contact the chairs of the sub-committee and LegComm to schedule meetings to consider the LCB’s draft language. (ACTION Item)

Ms Mamola said the LCB draft language for R006-24 is ready to be scheduled for and adoption hearing.

Mr Spata suggested a hearing could be held prior to or just after the June 13 Interim meeting.

Mr Blaney said he would work to schedule the regulation adoption hearing immediately following the 8:45am Interim meeting of June 13. (ACTION Item)

c. Professional Association Liaison Committee, Chair Matt Gingerich.

Mr Gingerich said the committee met yesterday with the item of note being qualification-based selection or QBS.

Mr Spata said he attended the meeting and had made a note on QBS. He said it is apparent that some agencies are not fully aware of the governing statute. Mr Spata suggested we look into educating some of the agencies that send the procurements out. He said the APWA fall conference could be an opportunity to reach a larger public works audience. (ACTION Item)

Ms Mamola said in any presentation including case studies/examples of what we have come across in past and how we have addressed it and how they might be proactive within their own organizations would be helpful.

Mr Murnane said there is the additional challenge that a lot of the procurement is handled by purchasing agents. He said the public works people are aware and understand the statute, but when RFPs are handled by purchasing agents there is a disconnect. He suggested some outreach been focused on those agents to increase awareness. Mr Murnane said there is an organization of local purchasing agents, and he would forward that to Mr Fakler. (ACTION Item)

d. Public Outreach Committee, Chair Karen Purcell.

Ms Purcell said the committee had not met since the last board meeting.
e. **PLS Standards of Practice Subcommittee of the Legislative Committee, Chair Matt Gingerich.**

Mr Gingerich said the committee had not met recently, but with LCB language available a meeting would be scheduled shortly.

14. **Election of board chair and vice chair for one-year terms commencing on July 1, 2024, in accordance with Nevada Revised Statute 625.110 and Nevada Administrative Code 625.100.**

24-37 A motion was made by Ms Purcell, seconded by Mr Wright to reappoint Mr Spata as board chair for another term. The motion passed unanimously.

24-38 A motion was made by Mr DeSart, seconded by Mr Spata to reappoint Mr Wright as board vice-chair for another term. The motion passed unanimously.

15. **Discussion and possible action on information provided by government liaison representative from McDonald Carano related to Nevada’s legislative and regulatory matters and any associated board matters.**

Ms Mamola said she’d like to introduce Cassidy Wilson with McDonald Carano. She said Susan Fisher is retiring, no longer going to be available, so Cassidy is going to be taking on Susan’s responsibilities.

Ms Wilson said she is replacing Ms Fisher in the Reno office. She gave an overview of the filings for public office in the lead up to the June 11th primary. Ms Wilson added that following the results of the primary the focus for her office will be to meet with people that are running for office in the general election.

16. **Consider any bill draft requests proposed by the Legislature to amend Nevada Revised Statutes related to regulatory boards and/or changes to Nevada Revised Statutes chapter 625, 329, and 327.**

Ms Mamola said this agenda item is added to an opportunity for Cassidy or the executive director to report on any potential bill draft requests that might have impact to this board or to other boards. She added that now the board has provided the latest information on our bill draft request, we’re going to ask Ms Wilson to help us locate a sponsor for that, while staff finishes up the collateral piece that explains and supports our draft request. (ACTION Item)

Ms Wilson said they will look through different legislators and figure out who’s the best fit and understands the best. She added she would also check with Ms Fisher and get her opinion as well.
17. **Discussion and possible action on status of Board and staff assignments.**

Mr Spata had questions on two longer term items on the list. One, related to the staffing of the Las Vegas office (to be posted on the board's website, and the second relating to examining use of an ALJ in the adjudication.

Staff gave detail on both items and after a brief discussion it was decided to remove both as action items from the assignments list. **(ACTION Item)**

18. **Discussion and possible action on meeting dates.**

Mr Spata reminded the board that he would be unable to attend the Tonopah meeting and that Mr Wright would be chairing the meeting.

Mr Dixon gave an overview of the proposed tour Round Mountain mine on July 17. He said as details were finalized, he would connect with staff and have an itinerary sent out to the board members. **(ACTION Item)**

Ms Purcell asked if the November 14th board meeting could be rescheduled a week earlier to November 7. After a brief discussion it was agreed to move the meeting to November 7. **(ACTION Item)**

19. **Discussion and identification of topics for future meetings including possible proposed amendments to the Nevada Professional Engineers and Land Surveyors Law, Nevada Revised Statutes and Nevada Administrative Code Chapter 625.**

Ms Purcell said she would like to propose the board discuss at a future meeting the impact of AI and engineering and design and land surveying. She said there's been a lot of discussion in the industries, there's been a lot of seminars about the use of AI, and I am curious how we look at that from a board perspective.

Mr Spata agreed that the topic be added to a future meeting and asked if Ms Purcell would be willing to facilitate the discussion. Ms Purcell said she would. **(ACTION Item)**

Ms Wilson added that we will be seeing a lot of legislation around AI next session. There's some trade associations meetings and different key stakeholders that are already talking about the next session in BDR, so I appreciate you bringing that up, and then when I do hear something that impacts this board, I will definitely let you know.

20. **Public comment.**

There was no public comment.
21. **Adjournment.**

Mr Spata said before moving on to this item, with this being Ms Mamola's last formal meeting I want to personally thank you, Patty, for everything you’ve done for the board, the profession. Equally as important what you’ve done for me in my career and being part of the board.

Mr Spata thanked Mr Murnane for taking the time to attend and asked for his feedback on the meeting.

Mr Murnane said he appreciates the job the board does in addressing issues that are important to the profession, and the board is very deliberate in the decisions being made.

Mr Spata thanked the board members for their participation and adjourned the meeting at 10:45am.

Respectfully,  
Mark Fakler  
Executive Director
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<tr>
<td>Prezgay</td>
<td>Jeffrey</td>
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10. Approval of
June 13, 2024,
Interim Board Meeting
Minutes
Board members participating were Chair Angelo Spata, PE; Thomas Matter, Public Member; Michael Kidd, PLS; Robert Fyda, PE; Karen Purcell, PE; Greg DeSart, PE; and Matthew Gingerich, PLS. Board members Brent Wright, PE/SE and Jay Dixon, PE were excused.

Also participating were Mark Fakler, Executive Director; Murray Blaney, Operations/Compliance; Chris MacKenzie, Board Legal Counsel; Steve Hiner, Investigator and Ed McGuire, Professional Standards.

1. Meeting conducted by Chair Angelo Spata, call to order and roll call of board members to determine presence of quorum—board members Brent Wright, Michael Kidd, Thomas Matter, Karen Purcell, Matt Gingerich, Robert Fyda, Greg DeSart, Jay Dixon.

Mr Spata called the meeting to order, and a quorum was determined.

2. Pledge of Allegiance.

3. Public Comment.

There was no public comment in-person, virtually or via email.

4. Consideration of initial licensure applicant requests to waive certain requirements of Nevada Revised Statutes and Nevada Administrative Code Chapter 625.

Ms Purcell recommended approval of the requests to waive NRS 625.183 (1)(a) and NRS 625.193 (1) (a) made by Dipen Tamboli applying for control systems engineering licensure.

24-39 A motion was made by Ms Purcell, seconded by Mr Gingerich to approve the waiver requests. The motion passed unanimously. Mr Wright and Mr Dixon were not present for the vote.

5. Board approval of non-appearance applications for initial licensure. Refer to Addendum A for list of applicants.

The board reviewed twenty-four applications for initial licensure in the board packet.

Mr Spata asked if board members had comments on the applications presented for initial licensure.

Ms Purcell said she would like to pull two of the applications and bring both of the applicants before
the board for oral interviews. The applicants are Kyle Randall for FPE and Jacob Woolman for FPE. Ms Purcell said both applicants show their experience as plan reviewers and she would like to dive deeper into that experience to determine the level of engineering principles that are being applied in that work.

24-40 A motion was made by Ms Purcell, seconded by Mr Matter to approve the applications for initial licensure contained in the board packet, with the exception of Mr Randall and Mr Woolman who will have oral interviews scheduled at a future board meeting. The motion passed unanimously. Mr Wright and Mr Dixon were absent for the vote.

6. Public Comment.

Mr Woolman asked for clarification on the reason for being selected for an oral interview.

Mr Spata said board staff would be in contact with him following the meeting to go over the details.

Mr Blaney said he would contact Mr Woolman and Mr Randall before noon today. (ACTION Item)

8. Adjournment.

Mr Spata thanked the meeting attendees for their participation and adjourned the meeting at 8:58am.

Respectfully, Mark Fakler
Executive Director
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11. Financial Statements
11.a. April 2024
Nevada State Board of Professional Engineers and Land Surveyors
Profit & Loss Budget - YTD Budget
July 2023 - April 2024

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<th>TOTAL</th>
<th>ACTUAL</th>
<th>BUDGET</th>
<th>OVER BUDGET</th>
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<td>771,425.02</td>
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<td>123.39 %</td>
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<td>Total Income</td>
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<td>$771,425.02</td>
<td>$180,450.00</td>
<td>123.39 %</td>
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<tr>
<td>GROSS PROFIT</td>
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<td>$180,450.00</td>
<td>123.39 %</td>
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<td>$342,498.68</td>
<td>5.55 %</td>
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<td>NET INCOME</td>
<td>$ -20,127.94</td>
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<td>$342,498.68</td>
<td>5.55 %</td>
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# Nevada State Board of Professional Engineers and Land Surveyors

## Profit and Loss YTD Comparison

**April 2024**

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<th>APR 2024</th>
<th>JUL 2023 - APR 2024 (YTD)</th>
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<td>5108 Board Salaries</td>
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# Profit and Loss YTD Comparison

**April 2024**

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<th>JUL 2023 - APR 2024 (YTD)</th>
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<td><strong>5110 PAYROLL TAXES</strong></td>
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## Nevada State Board of Professional Engineers and Land Surveyors
### Profit and Loss YTD Comparison
#### April 2024

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# Nevada State Board of Professional Engineers and Land Surveyors

## Profit and Loss YTD Comparison

**April 2024**

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<tr>
<th>TOTAL</th>
<th>APR 2024</th>
<th>JUL 2023 - APR 2024 (YTD)</th>
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<td>6704 State Administrative Fees</td>
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# Balance Sheet

**As of April 30, 2024**

## ASSETS

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<tr>
<th>Description</th>
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<td>Other Current Assets</td>
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<tr>
<td>1305 Prepaid Expense</td>
<td>$15,590.79</td>
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<tr>
<td>1310 Prepaid Lease/Deposit</td>
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<tr>
<td>Total Other Current Assets</td>
<td>$20,595.79</td>
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<tr>
<td>Total Current Assets</td>
<td>$2,610,375.34</td>
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## LIABILITIES AND EQUITY

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
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<tbody>
<tr>
<td>Liabilities</td>
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<tr>
<td>Current Liabilities</td>
<td></td>
</tr>
<tr>
<td>Accounts Payable</td>
<td>$11,389.77</td>
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<td>Total Accounts Payable</td>
<td>$11,389.77</td>
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<tr>
<td>Other Current Liabilities</td>
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<tr>
<td>2001 Payroll Liabilities</td>
<td>$34,177.25</td>
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<tr>
<td>4100 Deferred Revenue</td>
<td>$805,573.69</td>
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<tr>
<td>Total Other Current Liabilities</td>
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<tr>
<td>Total Current Liabilities</td>
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<td>Total Liabilities</td>
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<tr>
<td>Equity</td>
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<tr>
<td>3510 Website Phase 2</td>
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<tr>
<td>3520 Data System Upgrade</td>
<td>$175,000.00</td>
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<tr>
<td>3530 Electronic/Digital Pathway</td>
<td>$175,000.00</td>
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<tr>
<td>3900 Retained Earnings</td>
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<tr>
<td>Net Income</td>
<td>$-20,102.94</td>
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<tr>
<td>Total Equity</td>
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## TOTAL LIABILITIES AND EQUITY

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<td>$2,610,375.34</td>
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# Nevada Board of Professional Engineers  Land Surveyors

## Balance Sheet Detail

**As of April 30, 2024**

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<td>1305 Prepaid Expense</td>
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<tr>
<td>1310 Prepaid Lease/Deposit</td>
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<tr>
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<td>4100 Deferred Revenue</td>
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<td><strong>Total Liabilities</strong></td>
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<tr>
<td><strong>Equity</strong></td>
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<tr>
<td>3510 Website Phase 2</td>
<td>30,000.00</td>
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<tr>
<td>3520 Data System Upgrade</td>
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<tr>
<td>Net Income</td>
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<td>Total Equity</td>
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<td>TOTAL LIABILITIES AND EQUITY</td>
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11.b. May 2024
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<td>11.74 %</td>
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<td>11.74 %</td>
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## Nevada State Board of Professional Engineers and Land Surveyors
### Profit and Loss YTD Comparison
#### May 2024

<table>
<thead>
<tr>
<th>Category</th>
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<td><strong>$1,064,651.44</strong></td>
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| **GROSS PROFIT**               | **$112,751.42**  | **$1,064,651.44**         |

| **Expenses**                   |                  |                           |
| 5100 PAYROLL EXPENSES          |                  |                           |
| 5102 Employee Health Insurance  | 4,926.79         | 53,078.34                 |
| 5103 Employee IRA/SEP          |                 | 30,017.58                 |
| 5105 Payroll Service Fees      | 254.93           | 2,087.44                  |
| 5107 Salaries                  | 73,908.36        | 493,723.76                |
| 5108 Board Salaries            | 6,075.00         | 9,975.00                  |
| **Total 5100 PAYROLL EXPENSES**| **85,165.08**    | **588,882.12**            |
## Profit and Loss YTD Comparison
### May 2024

<table>
<thead>
<tr>
<th>Category</th>
<th>MAY 2024</th>
<th>JUL 2023 - MAY 2024 (YTD)</th>
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<td>5117 SUI</td>
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# Nevada State Board of Professional Engineers and Land Surveyors

## Profit and Loss YTD Comparison

May 2024

<table>
<thead>
<tr>
<th>Category</th>
<th>MAY 2024</th>
<th>JUL 2023 - MAY 2024 (YTD)</th>
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<tbody>
<tr>
<td>6501 Professional Services</td>
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<td>6502 Legal</td>
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### Profit and Loss YTD Comparison

**May 2024**

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<thead>
<tr>
<th>Description</th>
<th>MAY 2024</th>
<th>JUL 2023 - MAY 2024 (YTD)</th>
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<tbody>
<tr>
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<td><strong>6801 Training &amp; Conferences</strong></td>
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<td><strong>NET OTHER INCOME</strong></td>
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<td><strong>$ -12,966.60</strong></td>
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Nevada Board of Professional Engineers  Land Surveyors
Balance Sheet
As of May 31, 2024

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<td>TOTAL ASSETS</td>
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<table>
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</tr>
<tr>
<td>Total Other Current Liabilities</td>
<td>$839,750.94</td>
</tr>
<tr>
<td>Total Current Liabilities</td>
<td>$847,481.96</td>
</tr>
<tr>
<td>Total Liabilities</td>
<td>$847,481.96</td>
</tr>
<tr>
<td>Equity</td>
<td></td>
</tr>
<tr>
<td>3510 Website Phase 2</td>
<td>30,000.00</td>
</tr>
<tr>
<td>3520 Data System Upgrade</td>
<td>175,000.00</td>
</tr>
<tr>
<td>3530 Electronic/Digital Pathway</td>
<td>175,000.00</td>
</tr>
<tr>
<td>3900 Retained Earnings</td>
<td>1,399,337.57</td>
</tr>
<tr>
<td>Net Income</td>
<td>-41,871.45</td>
</tr>
<tr>
<td>Total Equity</td>
<td>$1,737,466.12</td>
</tr>
<tr>
<td>TOTAL LIABILITIES AND EQUITY</td>
<td>$2,584,948.08</td>
</tr>
</tbody>
</table>
Nevada Board of Professional Engineers  Land Surveyors
Balance Sheet Detail
As of May 31, 2024

<table>
<thead>
<tr>
<th>ASSETS</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Current Assets</td>
<td></td>
</tr>
<tr>
<td>Bank Accounts</td>
<td></td>
</tr>
<tr>
<td>1001 ASSETS</td>
<td>0.00</td>
</tr>
<tr>
<td>1051 First Indep. Bank - Operating</td>
<td>103,478.50</td>
</tr>
<tr>
<td>1052 First Indep. Bank - Payroll</td>
<td>66,953.75</td>
</tr>
<tr>
<td>1053 First Indep. Bank - Petty Cash</td>
<td>2,527.94</td>
</tr>
<tr>
<td>1054 First Indep. Bank - MMA</td>
<td>211,520.42</td>
</tr>
<tr>
<td>1055 First Indep. Bank - 24mo CD</td>
<td>567,264.68</td>
</tr>
<tr>
<td>1056 First Indep. Bank - 18mo CD</td>
<td>282,834.61</td>
</tr>
<tr>
<td>1057 First Indep. Bank - 12mo CD</td>
<td>276,848.33</td>
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<tr>
<td>1058 First Indep. Bank - 24mo FlexCD</td>
<td>551,081.09</td>
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<tr>
<td>1059 First Independent Bank - 90 day CD</td>
<td>502,009.59</td>
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<tr>
<td><strong>Total 1001 ASSETS</strong></td>
<td>2,564,518.91</td>
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<tr>
<td><strong>Total Bank Accounts</strong></td>
<td>$2,564,518.91</td>
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<tr>
<td>Other Current Assets</td>
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<tr>
<td>1305 Prepaid Expense</td>
<td>15,424.17</td>
</tr>
<tr>
<td>1310 Prepaid Lease/Deposit</td>
<td>5,005.00</td>
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<tr>
<td><strong>Total Other Current Assets</strong></td>
<td>$20,429.17</td>
</tr>
<tr>
<td><strong>Total Current Assets</strong></td>
<td>$2,584,948.08</td>
</tr>
<tr>
<td><strong>TOTAL ASSETS</strong></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>LIABILITIES AND EQUITY</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Liabilities</td>
<td></td>
</tr>
<tr>
<td>Current Liabilities</td>
<td></td>
</tr>
<tr>
<td>Accounts Payable</td>
<td></td>
</tr>
<tr>
<td>2000 Accounts Payable</td>
<td>5,137.49</td>
</tr>
<tr>
<td><strong>Total Accounts Payable</strong></td>
<td>$5,137.49</td>
</tr>
<tr>
<td>Credit Cards</td>
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</tr>
<tr>
<td>2025 Western Alliance Bank CC</td>
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</tr>
<tr>
<td><strong>Total Credit Cards</strong></td>
<td>$2,593.53</td>
</tr>
<tr>
<td>Other Current Liabilities</td>
<td></td>
</tr>
<tr>
<td>2001 Payroll Liabilities</td>
<td>34,177.25</td>
</tr>
<tr>
<td>2002 Accrued Benefits</td>
<td>0.00</td>
</tr>
<tr>
<td><strong>Total 2001 Payroll Liabilities</strong></td>
<td>34,177.25</td>
</tr>
<tr>
<td>4100 Deferred Revenue</td>
<td>805,573.69</td>
</tr>
<tr>
<td><strong>Total Other Current Liabilities</strong></td>
<td>$839,750.94</td>
</tr>
<tr>
<td><strong>Total Current Liabilities</strong></td>
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</tr>
<tr>
<td><strong>Total Liabilities</strong></td>
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</tr>
</tbody>
</table>
# Balance Sheet Detail

As of May 31, 2024

<table>
<thead>
<tr>
<th>Equity</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>3510 Website Phase 2</td>
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<tr>
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<tr>
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</tr>
<tr>
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<td><strong>$1,737,466.12</strong></td>
</tr>
</tbody>
</table>

**TOTAL LIABILITIES AND EQUITY**

**$2,584,948.08**
12. Compliance Officer Report
12.a. Compliance Report
12. a. Compliance Investigations

Currently there are seven (7) cases to report on:

1. 20230015 – Gross negligence, incompetency, or misconduct in land surveying. Under investigation.

2. 20230016 – Gross negligence, incompetency, or misconduct in land surveying. Investigation complete.

3. 20230018 – Failure to act as faithful agent to client. Under investigation.

4. 20230019 – Failure to comply with an order of the Board. Investigation complete.

5. 20240003 – Failure to act as faithful agent to employer. Investigation complete.

6. 20240005 – Practicing on a suspended license. Investigation complete.

7. 20240006 – Reciprocal action based on felony conviction in another state. Investigation complete.
1. 20230015 – Gross negligence, incompetency, or misconduct in land surveying.

Summary:
Complaint filed against a PE/PLS and a PLS from the same firm. The allegations relate to a boundary line
adjustment performed on two neighboring properties and the resulting impact on a third party’s irrigation
easement.
Status:
Case under board liaison review.

2. 20230016 – Gross negligence, incompetency, or misconduct in land surveying.

Summary:
Relates to a PLS performing an ALTA survey. A trailing surveyor was unable to re-trace the information in the
survey and a complaint was filed with the board.
Status:
Case under board counsel review.

3. 20230018 – Failure to act as faithful agent to client.

Summary:
Complaint filed against a CE providing inspection and testing services on a project in Las Vegas. It is alleged
the engineer failed to provide the final reports in a timely manner after being paid in full for services rendered.
Status:
Case under board counsel review.

4. 20230019 – Failure to comply with an order of the Board.

Summary:
An engineer was subject to an order of the board suspending their license. Post the date of suspension it
appears that the licensee has been practicing on the suspended license.
Status:
Case under board counsel review.

5. 20240003 – Failure to act as faithful agent to employer.

Summary:
A complaint filed by an employer against a mechanical engineer who while working remotely is alleged to
have been providing professional services for another engineering firm.
Status:
Case under board counsel review.
6. 20240005 – Practicing on a suspended license.

Summary:
An engineer whose license was under suspension, offered and took payment for engineering services that were not deliverable.
Status:
Case under board counsel review.

7. 20240006 – Reciprocal action based on felony conviction in another state.

Summary:
Licensee self-reported conviction and disciplinary actions in another state.
Status:
Case under board liaison review.
12.b. Probation Reports
12. b. Probation reports

Probation Summary:

<table>
<thead>
<tr>
<th>Name</th>
<th>Case #</th>
<th>Status/Action</th>
<th>Date Ending</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dooley Riva</td>
<td>20190001</td>
<td>Good Standing</td>
<td>October 10, 2029</td>
</tr>
<tr>
<td>Lazell Preator</td>
<td>20190008 &amp; 20200003</td>
<td>Non-compliant</td>
<td>to be advised</td>
</tr>
<tr>
<td>Robert Mercado</td>
<td>20230005</td>
<td>Under review</td>
<td>June 1, 2025</td>
</tr>
<tr>
<td>Jason Caster</td>
<td>20210004</td>
<td>Good Standing</td>
<td>February 1, 2025</td>
</tr>
<tr>
<td>M Armando Monarrez</td>
<td>20210011</td>
<td>Good Standing</td>
<td>February 1, 2025</td>
</tr>
<tr>
<td>Mark Johnson</td>
<td>20220004</td>
<td>Good Standing</td>
<td>August 15, 2025</td>
</tr>
<tr>
<td>Buckley Blew</td>
<td>20230004</td>
<td>Good Standing</td>
<td>August 15, 2026</td>
</tr>
<tr>
<td>Andrew Hammond</td>
<td>20220009</td>
<td>Under review</td>
<td>February 1, 2026</td>
</tr>
</tbody>
</table>

Payment Summary:

<table>
<thead>
<tr>
<th>Name</th>
<th>Case #</th>
<th>Paid</th>
<th>Remaining</th>
<th>Final Due Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dooley Riva</td>
<td>20190001</td>
<td>$20,800.00</td>
<td>$3,950.00</td>
<td>September 12, 2024</td>
</tr>
<tr>
<td>Lazell Preator</td>
<td>20190008 &amp; 20200003</td>
<td>$6,569.50</td>
<td>$3,200.00</td>
<td>October 15, 2023</td>
</tr>
<tr>
<td>Jason Caster</td>
<td>20210004</td>
<td>$6,627.50</td>
<td>$500.00</td>
<td>July 29, 2024</td>
</tr>
</tbody>
</table>
Robert “Dooley” Riva, PE 018231
Case Number: 20190001
Violation of NRS 625.520, NRS 625.565, NAC 625.510, and NAC 625.610

Mr Riva allowed his license to lapse on December 31, 2009, and continued to practice professional engineering with an expired license until self-reporting to the Board on January 10, 2019.

Mr Riva admitted, during the investigation in this matter, that he stamped, signed, and put false expiration dates for his license on the plans that he had submitted to reviewing agencies, as well as to his clients.

Mr Riva has maintained his California Professional Engineering license throughout this period from December 31, 2009, to the present. Mr Riva’s California license is currently in good standing. A third-party competency review of a sampling of the thirty-seven (37) identified Nevada projects, that Mr Riva stamped while unlicensed has been completed, and his work was found to be competent.

NRS 625.410 states that the Board may take disciplinary action against a licensee for practicing after the license of the professional engineer has expired or has been suspended or revoked. NRS 625.520 also states that it is unlawful for any professional engineer to practice in a discipline of professional engineering in which the Board has not qualified him and for any person to use an expired license. Accordingly, NRS 625.565 makes it unlawful for any person to impress any documents with the stamp of a professional engineer after that person’s license has expired. In addition, NAC 625.610 requires that licensees include the date of expiration of his or her license on the stamp or seal. Moreover, under NAC 625.510, licensees must be honest and impartial, and serve their employers, clients, and the public with devotion. Mr Riva has violated the aforementioned provisions by continuing to practice professional engineering for nine (9) years after the expiration of his license and knowingly falsifying expiration dates when signing and stamping plans for submission to building departments for permits.

NRS 625.410(5) authorizes the State Board to take disciplinary action against a licensee for a violation of any provision of NRS Chapter 625 or NAC Chapter 625. Further, pursuant to NAC 625.640(3)(b)(2) this matter may be resolved without a formal hearing by Stipulated Agreement.
Mr Riva and the State Board hereby stipulate to the following terms for the above-referenced violation(s):

1. Mr Riva's license shall be reinstated and suspended for ten (10) years immediately following entry of this Agreement, but with the suspension stayed and probation imposed for the duration of that time period.

2. The stay of Mr Riva's license suspension may be lifted by the State Board upon notice and the opportunity for Mr Riva to be heard should Mr Riva fail to abide by the terms hereof.

3. Mr Riva's successful completion of probation is expressly conditioned upon his full compliance with the following conditions of probation:

   a. Mr Riva shall pay all of the State Board's legal and investigative costs associated with this matter, in the total amount of Two Thousand Three Hundred Fifty and No/100 Dollars ($2,350.00), which includes One Thousand Three Hundred Fifty and No/100 Dollars ($1,350.00) in legal fees and One Thousand and No/100 Dollars ($1,000.00) for the cost for a third-party competency review of a sampling of the thirty-seven (37) projects stamped by Mr Riva while practicing without a license. This payment is due to the State Board within thirty (30) days of the State Board's acceptance and execution of this First Revised Stipulated Agreement.

   b. Mr Riva shall pay an administrative fine to the State Board in the amount of Fifteen Thousand and No/100 Dollars ($15,000.00), plus Two Hundred and No/100 Dollars ($200.00) for each of the thirty-seven (37) projects lawfully stamped by Mr Riva, for a total of Twenty-Two Thousand Four Hundred and No/100 Dollars ($22,400.00). Two Thousand Six Hundred Fifty and No/100 Dollars ($2,650.00) of this amount is due to the State Board within thirty (30) days of the Board's acceptance and execution of this First Revised Stipulated Agreement. The balance thereof shall be due in five (5) equal annual installments of Three Thousand Nine Hundred Fifty and No/100 Dollars ($3,950.00). The first (1st) due on or before one year of the State Boards acceptance and execution of this First Revised Stipulated Agreement, and the remaining four payment due on or before each subsequent anniversary thereof, through the fifth (5th) anniversary of the State Boards acceptance and execution of this First Revised Stipulated Agreement.

   c. Mr Riva shall undertake and assume all costs associated with reviewing and re-stamping the drawings associated with the aforementioned projects that are on file with the appropriate building departments and provide the Board with sufficient proof thereof.
d. Mr Riva registering in, paying for, and completing an advanced level ethics course with Texas Tech University Murdough Center for Engineering Professionalism, and providing proof of completion thereof to Board staff within one (1) year of the date of full execution of this First Revised Stipulated Agreement.

LAST PROBATION REPORTS DUE October 1, 2029
PROBATION REPORT
(MUST BE TYPED)

PROBATIONER: Robert Dooley Riva  PE/PLS #: 018231

EMPLOYER: Riva Engineering & Consulting

PROBATION REPORT SUMMITTED FOR THE PERIOD OF: 2024-3-16 THROUGH 2024-5-15

CLIENT:

NAME: DAVID TENNEY
ADDRESS: dt@nvbestrvstoragellc.com
CITY: ZEPHYR COVE  STATE: NV  ZIP CODE: 89448

PROJECT:

NAME: TENNEY RESIDENCE
LOCATION OF PROJECT: 1070 SKYLAND DRIVE
CITY: ZEPHYR COVE  STATE: NV  ZIP CODE: 89448
SIZE: 5880 SF  START DATE: 1.19.24  END DATE: NA

STATUS OF PROJECT: Design Development and Construction Documents are 100% complete

FEE PAID BY CLIENT: $21,600

SCOPE OF WORK:

DESIGN DEVELOPMENT & CONSTRUCTION DOCUMENTS

DESCRIBE IN DETAIL YOUR INVOLVEMENT IN THIS PROJECT AND HOW YOU HANDLED THIS PROJECT.

PROVIDE LATERAL AND GRAVITY ANALYSIS, COORDINATION WITH ARCHITECT, PROVIDE FRAMING PLANS AND STRUCTURAL DETAILING, ISSUE FOR COUNTY SUBMITTAL, ADDRESS PLAN CHECK COMMENTS AND REVIEW TRUSS CALCS

DESCRIBE IN DETAIL HOW YOU IMPROVED ON THIS PROJECT IN THE AREAS FOR WHICH YOU ARE ON PROBATION.

MY NV LICENSE IS NOT EXPIRED

SIGNATURE: Robert D. Riva  DATE May 20, 2024

(Please print, sign, date, then scan and email report to board@boe.state.nv.us)
PROBATIONER: Robert Dooley Riva

EMPLOYER: Riva Engineering & Consulting

PROBATION REPORT SUMMITED FOR THE PERIOD OF: 2024-3-16 THROUGH 2024-5-15

CLIENT:

NAME: JOE ZAMPINO
ADDRESS: joezampino@gmail.com
CITY: STATELINE STATE: NV ZIP CODE: 89448

PROJECT:

NAME: ZAMPINO RENOVATION
LOCATION OF PROJECT: 163 IRWIN DRIVE
CITY: STATELINE STATE: NV ZIP CODE: 89448
SIZE: 2700 SF START DATE: 7.20.23 END DATE: NA
STATUS OF PROJECT: CONSTRUCTION DOCUMENTS ARE APPROX. 90% COMPLETE
FEE PAID BY CLIENT: $4,731.25

SCOPE OF WORK:

DESIGN DEVELOPMENT AND CONSTRUCTION DOCUMENTS

DESCRIBE IN DETAIL YOUR INVOLVEMENT IN THIS PROJECT AND HOW YOU HANDLED THIS PROJECT.

COORDINATION WITH DESIGNER, STRUCTURAL ANALYSIS, PLAN REDMARKS, STRUCTURAL DETAILING, AND ISSUE TO DESIGNER FOR PLAN DRAFTING, FINAL COORDINATION AND ANALYSIS, ISSUE FOR COUNTY SUBMITTAL

DESCRIBE IN DETAIL HOW YOU IMPROVED ON THIS PROJECT IN THE AREAS FOR WHICH YOU ARE ON PROBATION.

MY NV LICENSE IS NOT EXPIRED

SIGNATURE: Robert D. Riva DATE May 20, 2024

(Please print, sign, date, then scan and email report to board@boe.state.nv.us)
Lazell Preator, PE 014982
Case Numbers: 20190008 and 20200003
Violations: NRS 625.410(2), NRS 625.540, NRS 625.560, NAC 625.510, NAC 625.530, and NAC 625.540

Previous 2018 Complaint and Stipulated Agreement

Before setting forth the facts for the two complaints at issue, the following summation of a previous Stipulated Agreement is relevant. A Stipulated Agreement was entered by and between the State Board and Mr Preator on November 8, 2018 ("2018 Stipulated Agreement"), regarding previous Complaint number 20180006. In the 2018 Stipulated Agreement, Mr Preator acknowledged violations of NRS Chapter 625 in which his conduct constituted gross negligence, incompetence, or misconduct in the practice of professional engineering and failure to exercise due care and oversight in submitting the plan set to the office of the Deputy Building and Safety Director for the City of Las Vegas.

The facts pertaining to the 2018 Stipulated Agreement involved the filing of a complaint alleging the submission of plans containing the forged signatures of two senior building officials in an attempt to obtain a building permit.

Specifically, on March 7, 2018, the office of the Deputy Building and Safety Director for the City of Las Vegas received a plan set. The plan set included an irregular and misspelled signature of the City Engineer, Allen Pavelka, with his name signed "Alan" as opposed to the proper spelling "Allen." The plan set further included a signature of a retired Director of Building and Safety, Chris Knight. Mr Preator asserted that he relied on a third party, Jorge Guzman, to acquire said signatures, and that said third party, unbeknownst to Mr Preator, obtained or affixed the forged signatures. Although Mr Preator denied forging the signatures at issue, he admitted that he is responsible for documents that he seals and signs and that he is responsible to use due care and oversight to manage originals and copies of all documents he has signed and sealed.

In the 2018 Stipulated Agreement, Mr Preator's Nevada license was placed on probation for twelve (12) months. As part of his probation, Mr Preator was required to pay certain fines, costs, and fees, and require that he write a Whitepaper on Responsible Charge. The probation under the 2018 Stipulated Agreement has since been completed.
Case No. 20190008 - "Forgery Case"

In regard Case No. 20190008, a complaint has been submitted against Mr Preator by the Executive Director for the State Board on behalf of a professional land surveyor, alleging fraudulent stamping and signing of legal descriptions.

Specifically, On December 18, 2017, Mr Preator submitted two legal descriptions for a project on Du Fort Avenue to the City of Henderson. The complainant land surveyor inadvertently discovered the two legal descriptions while reviewing projects on the City of Henderson website in August 2019. The two legal descriptions were produced for Preator Consulting by the land surveyor. However, Preator Consulting had not paid for the work, and thus, the land surveyor had not completed the work, as he had not signed or dated the two legal descriptions. The two legal descriptions were, hand signed, dated and submitted to the city on December 18, 2017.

In an effort to explain how the legal descriptions at issue were fraudulently signed, Mr Preator asserts that he relied on the same third-party blamed in the 2018 Stipulated Agreement, i.e., Jorge Guzman, to obtain the stamp and signature of the land surveyor before submitting the legal descriptions now at issue. Mr Preator again asserts that Jorge Guzman must have forged the surveyor’s signature before submitting the legal descriptions to the City of Henderson. Although Mr Preator denied forging the signatures at issue, he admits that he is responsible for documents that he submits and that he is responsible to use due care and oversight to manage originals and copies of all said documents.

Mr Preator has not been able to provide any information or documentation regarding his working relationship with Mr Guzman, or any evidence that Mr Guzman exists.

NRS 625.410(2) provides authority for the State Board to administer discipline in Nevada for any gross negligence, incompetency, or misconduct in the practice of professional engineering as a professional engineer. NRS 625.410(5) provides authority for the State Board to administer discipline in Nevada for a violation of any provision of NRS Chapter 625. A licensee violates NRS 625.540 by unlawfully practicing land surveying. Specifically, it is unlawful to present or attempt to use, as his or her own, the license or stamp of another person and to impersonate any other licensee of the same or a different name. Additionally, it is a violation of NRS 625.560 to sign a description unless the person holds an unsuspended and unrevoked license as a professional land surveyor.

NRS 625.410(5) provides authority for the State Board to administer discipline in Nevada for a violation of any regulation adopted by the Board. A licensee violates NAC 625.510 by failing to uphold and advance the honor and dignity of the profession by maintaining high standards of
ethical conduct regarding honesty. It is a violation of NAC 625.530 for a licensee to fail to act in professional matters as a faithful agent. A licensee violates NAC 625.540(1) by failing to take care that credit for engineering or land surveying work is given to those to whom credit is properly due and violates NAC 625.540(4) by failing to not maliciously injure the professional reputation, business prospects or practice of another engineer or land surveyor.

Based on the foregoing, Mr Preator stipulates that he violated NRS 625.410(2), in that his conduct constituted gross negligence, incompetence, or misconduct in the practice of professional engineering. Mr Preator stipulates that he violated NRS 625.540 by unlawfully practicing land surveying by presenting the license or stamp of another person and by impersonating another licensee. Likewise, Mr Preator stipulates that he violated NRS 625.560 by signing a description without a license as a professional land surveyor.

Further, Mr Preator stipulates that he violated NAC 625.510 by failing to uphold and advance the honor and dignity of the profession by maintaining high standards of ethical conduct regarding honesty. In addition, Mr Preator stipulates that he violated NAC 625.530 by failing to act in professional matters as a faithful agent. Finally, Mr Preator stipulates that he violated NAC 625.540 by failing to take care that credit for land surveying work was given to those to whom credit was properly due and by failing to not maliciously injure the professional reputation, business prospects or practice of another engineer or land surveyor.

**Case No. 20200003 - "Faithful Agent Case"**

In regard Case No. 20200003, a complaint has been submitted against Mr Preator alleging misconduct and failure to meet terms of a contract.

Specifically, on February 2, 2018, the complainant contracted with Mr Preator to provide civil engineering for an auto body repair shop construction project, and paid Mr Preator a $7,100 retainer. Per the contract, Mr Preator was to begin working on the project within two days of receiving the retainer. Between February 2018 and February 2020, no work product was provided to the client nor to the professionals and contractors working on the client's behalf. There were various interactions and requests for updates on the status of the project. Mr Preator asserts that, during the project, he was unable to speak with the architect on the project, from whom Mr Preator asserts that he received differing site plans. Nevertheless, Mr Preator informed the client that various items were under review by planning authorities, even though they were never actually submitted.

NRS 625.410(2) provides authority for the State Board to administer discipline in Nevada for any gross negligence, incompetency, or misconduct in the practice of professional engineering as a professional engineer. NRS 625.410(5) provides authority for the State Board
to administer discipline in Nevada for a violation of any regulation adopted by the Board. A licensee violates NAC 625.510 by failing to uphold and advance the honor and dignity of the profession by maintaining high standards of ethical conduct regarding honesty. It is a violation of NAC 625.530 when a licensee fails to act in professional matters as a faithful agent.

Based on the foregoing, Mr Preator stipulates that he violated NRS 625.410(2), in that his conduct constituted gross negligence, incompetence, or misconduct in the practice of professional engineering. Further, Mr Preator stipulates that he violated NAC 625.510 by failing to uphold and advance the honor and dignity of the profession by maintaining high standards of ethical conduct regarding honesty. Finally, Mr Preator stipulates that he violated NAC 625.530 by failing to act in a timely and professional matters as a faithful agent.

Pursuant to NAC 625.640, a disciplinary matter may be resolved without a formal hearing by a Stipulated Agreement. To that end, to resolve Complaint Numbers 2019008 and 20200003, Mr Preator and the State Board resolve this matter on the following basis:

(1) Mr Preator's Nevada license shall be suspended for thirty-six (36) months following entry of this Agreement, pursuant to NRS 625.410 (2) and NAC 625.530, but with the suspension stayed and probation imposed for the duration of that time period.

(2) The stay of Mr Preator’s suspension may be lifted by the State Board upon notice and the opportunity to be heard should Mr Preator fail to abide by the terms hereof.

(3) Mr Preator's successful completion of probation is expressly conditioned upon his full compliance with the following conditions of probation:

(a) Mr Preator shall pay a fine of Five Thousand and Noll 00 Dollars ($5,000.00) for the Forgery Case and a fine of Two Thousand and No/I 00 Dollars ($2,000.00) for the Faithful Agent Case, for a total fine of Seven Thousand and No/100 Dollars ($7,000.00), within six (6) months of acceptance and execution of this Agreement by the State Board.

(b) Mr Preator shall pay the professional land surveyor in full under his contract therewith for work on the Du Fort project.

(c) Mr Preator shall pay for cost of hiring a Nevada licensed professional land surveyor to review, re-stamp and sign the Du Fort legal descriptions.
(d) Mr Preator shall immediately notify client and the relevant public entity via letter, with copy to the Board, of the necessity of the Du Fort legal descriptions to be re-submitted with lawful stamping and signature.

(e) Mr Preator shall reimburse in full the deposited amount the complainant paid for the Autobody Repair Shop project.

(f) Mr Preator shall pay the State Board Two Thousand Seven Hundred Sixty-Nine and 50/100 Dollars ($2,769.50) as reimbursement of administrative expenses in this matter.

(g) Mr Preator registering in, paying for and completing an entry level ethics course with Texas Tech University Murdough Center for Engineering Professionalism, and providing proof of completion thereof to Board staff.

(h) Mr Preator shall provide to the State Board staff, within thirty (30) days of execution of this agreement by the State Board, a list of projects that were submitted for governmental review in 2017 and 2018, and provide project names, clients, and to which agencies submissions were made. These submissions will be reviewed by State Board staff to determine and identify any other possible statutory and/or regulatory violations.

(i) Mr Preator shall submit detailed bi-monthly probation reports to the Executive Director of the Nevada Board, which shall report any work completed in Nevada during the previous two (2) month period. A report shall be filed even if no work is performed in Nevada during the previous two (2) month period. The first report shall be due within two (2) months of the effective date of this Stipulated Agreement. Each report shall include client contact information and a copy of the contract executed for any work in Nevada, including the scope of work detail.

(j) Mr Preator shall provide proof of the completion of thirty (30) professional development hours that are required on a biennial basis for license renewal, pursuant to NAC 625.430 and NAC 625.480.

LAST PROBATION REPORTS DUE to be determined.
Lazell Preator, PE 014982
Case Numbers: 20190008 and 20200003
Violations: NRS 625.410(2), NRS 625.540, NRS 625.560, NAC 625.510, NAC 625.530, and NAC 625.540

As of July 3, 2024, the following probation report has not been received:

- Nevada work performed Nov 14, 2022 – Jan 31, 2023. (reports due April 1, 2023)
Case No. 20210001 - "Faithful Agent Case"

On September 10, 2020, Sundance Surveying, Inc was hired to provide surveying and mapping services for a vacant property located in Las Vegas. As part of the contract, Mr Mercado was to file a Record of Survey Map with the Clark County Recorder's Office. Although the contract did not contain an anticipated date of completion, Mr Mercado informed his client that the work would only take a few weeks. Mr Mercado completed the survey on October 11, 2020, and emailed the survey map to his client on October 12, 2020. The survey map was not recorded at that time. On October 16, 2020, Mr Mercado was paid in full for his work.

Thereafter, the client made numerous attempts to contact Mr Mercado regarding the status of the recordation of the survey map, but he was unresponsive. As a result of Mr Mercado’s unresponsiveness, coupled with his failure to have the survey map recorded, a complaint was filed on January 12, 2021. When contacted by the State Board, the complainant stated that she filed the complaint in an effort to prompt Mr Mercado to record the survey map and her only objective in filing the complaint was to ensure the survey map was recorded.

On January 14, 2021, the State Board staff left a voicemail for Mr Mercado regarding the complaint. On January 19, 2021, Mr Mercado responded to staff’s voicemail and informed the State Board that, although the survey map had not yet been recorded, he intended to file it with the Clark County Recorder’s Office on January 22, 2021. Mr Mercado did not file the survey map with the Clark County Recorder’s Office on January 22, 2021, as promised. On two more occasions (January 26, 2021, and February 1, 2021), Mr Mercado assured the State Board staff that the survey map would be recorded, however, in each instance, Mr Mercado failed to make good on his promises. During this time, Mr Mercado provided a number of explanations for the delay in filing the survey map, which have not proven to be credible. As of February 5, 2021, the survey map was still not recorded.

On February 5, 2021, the State Board staff requested that Mr Mercado submit a formal response to the Complaint no later than March 8, 2021. The State Board staff followed up with Mr Mercado on multiple occasions in that regard. On March 8, 2021, Mr Mercado informed the State Board staff that he would be submitting his formal response to the complaint by the end of the day, but he did not.
On March 8, 2021, nearly 150 days after the survey was completed, the survey map was recorded with the Clark County Recorder’s Office. The survey was stamped, signed, and dated by Mr Mercado on March 7, 2021.

On March 9, 2021, Mr Mercado submitted his formal response to the complaint. The State Board staff still determined that Mr Mercado’s actions were in violation of various provisions of NRS Chapter 625 and NAC Chapter 625

It is a violation of NAC 625.425 for a land surveying firm to engage or offer to engage in the practice of professional engineering without first registering with the State Board and paying the annual fee of Fifty and No/100 Dollars ($50.00).1 It is a violation of NAC 625.545 to fail to provide a written contract to each client which sets forth the scope of work, costs, and anticipated date of completion of the work.2 It is a violation of NRS 625.340 to fail to file a survey map with the county recorder in the county in which the survey was made a record of survey relating to land boundaries and property lines within ninety (90) days of the creation of such survey.3 It is a violation of NAC 625.530 for a licensee to fail to act in professional matters as a faithful agent.

Based on the foregoing, Mr Mercado stipulates that he violated NAC 625.425 by failing to register Sundance Surveying, Inc. with the State Board for the past ten (10) years. Further, Mr Mercado stipulates that he violated NAC 625.545 by failing to include the anticipated date of completion in his written contract with his client. Also, Mr Mercado stipulates that he violated NRS 625.340 by failing to file the survey map with the Clark County Recorder within ninety (90) days of the creation of such survey map. Finally, Mr Mercado stipulates that he violated NAC 625.530 by failing to act in professional matters as a faithful agent of his client in connection with his performance of the services therefor.

Pursuant to NAC 625.640, a disciplinary matter may be resolved without a formal hearing by a Stipulated Agreement. To that end, to resolve the complaint, Mr Mercado and the State Board resolve this matter on the following basis:

(1) Mr Mercado shall pay an administrative fine of $1,500.00 for his violations of NAC 625.545, NRS 625.340 and NAC 625.530 within 90 days of the board’s approval of the stipulated agreement.

(2) Mr Mercado shall reimburse the State Board $2,271.00 for administrative expenses in this matter.

(3) Mr Mercado shall prepare and submit a whitepaper within 90 days of the board’s approval of the stipulated agreement on the following topics:
- a) Elements necessary for a valid written contract for providing professional land surveying
services in the State of Nevada (NAC 625.545).

- b) Applicable deadlines and requirements for the timely recordation of records of surveys (NRS 625.340).

(4) Mr Mercado’s Nevada license shall be suspended for twenty (24) months following entry of this agreement, but with the suspension stayed and probation imposed for the duration of that time period.

Case No. 20230005 - "Failure to Comply with Stipulated Agreement Case"

The board initiated a complaint against Mr Mercado for failing to comply with the stipulated agreement for the above referenced complaint executed on July 14, 2021. The terms of the settlement required filing bi-monthly probation reports for work performed in Nevada, submitting a white-paper, reimbursement of board legal fees, and payment of an administrative fine.

Mr Mercado failed to meet the milestone dates for submissions required by the agreement. Board staff offered extended milestone dates and a payment plan for the fees and fine, which were acceptable to Mr Mercado. Mr Mercado continued to not meet the terms of the stipulated agreement despite the accommodations made for extending the milestones and the payment plan.

The board notified Mr Mercado, via written notice, to appear at a hearing on January 20, 2022, to provide Mr Mercado the opportunity to explain his continued failure to meet the terms of the stipulated agreement. Mr Mercado acknowledged receiving the notice to appear but failed to appear or participate virtually. Based on the presentation of facts at the hearing, and a non-showing of Mr Mercado, the board entered a Decision and Order, dated February 8, 2022, lifting the stay of suspension on Mr Mercado’s license.

Due to Mr Mercado’s continued failure to satisfy the terms of the July 14, 2021, Stipulated Agreement, even after the February 8, 2022, Decision and Order by the board to lift the stay on his license suspension, the board filed a second complaint which was heard on May 11, 2023, after due notice was provided to Mr Mercado.

At the May 11, 2023, hearing, Mr Mercado admitted and acknowledged that he had continually failed to abide by the terms of the stipulated agreement by failing to make timely payments of fees and fines, not submitting the white-paper as specified, and not meeting submittal dates for bi-monthly probation reports, and that he also no-showed to the January 20, 2022, hearing.
Mr Mercado paid the over-due fees and fines, submitted the delinquent whitepaper, and provided all required bi-monthly probation reports on May 9, 2023, two days prior to the May 11, 2023, hearing.

Upon hearing the matter and deliberation, the board ordered the following:

(1) Mr Mercado's Nevada Professional Land Surveying license was suspended through July 24, 2025, but the suspension is stayed, and probation imposed for the duration of the stayed suspension.

(2) Mr Mercado is to submit detailed bi-monthly probation reports to board staff for any Nevada work complete during the previous two-month period.

(3) The stay of Mr Mercado’s license suspension may be lifted by the board, upon due notice and the opportunity to be heard, should Mr Mercado fail to abide by the terms above.

LAST PROBATION REPORTS DUE June 1, 2025
Robert Mercado, PLS 010352
Case Numbers: 20230005
Violations: NRS 625.410(8)

As of July 3, 2024, the following probation reports has not been received:

- Nevada work performed Mar 12, 2024 – May 11, 2024. (reports due June 1, 2024)
Jason Caster, PLS 019338
Case Number: 20210004
Violation of NRS 625.410(2), NRS 625.565(2) and NAC 625.545

On or about February 25, 2021, the State Board received a complaint against Mr Caster. The complaint alleged incompetence and failure to provide a written contract. In July 2019, Mr Caster was hired to perform a boundary survey on a property and requested, through email, that Mr Caster locate property corners, stake them, and create an exhibit. Mr Caster completed the boundary survey in August 2019. In September 2019, the client requested Mr Caster to perform a topographic map and encumbrance survey. The survey was completed in October 2019. In June 2020, the project had been through the design and review process and subsequently permitted.

During construction, it was discovered that Mr Caster's survey was "busted" horizontally by approximately 6 feet and vertically by 7 inches. In June 2020, Mr Caster was made aware of the error. Subsequently, the client, through his company, filed a court action for damages against Mr Caster. In February 2021, Mr Caster filed for bankruptcy.

Mr Caster planned to use the boundary survey as the basis and control for the topographic survey, but Mr Caster did not perform the topographic map himself. Rather, Mr Caster had an employee of his company that is not a Professional Land Surveyor do the field work and create the map. Mr Caster failed to notice the errors in the topographic survey, and Mr Caster's failure to maintain responsible charge of the work performed resulted in the errant map being released to the client.

No formal contract was executed between Mr Caster and the client. Mr Wagner and Mr Caster exchanged emails for surveying services, including the scope of the project, cost, and time frame. Mr Caster indicated to client that a contract for the work would be forthcoming, but no contract was ever presented to the client. Additionally, Mr Caster did not disclose to the client that he did not have professional liability insurance until after the damage was done.

Based on the foregoing, Mr Caster stipulates that he violated NRS 625.410(2) and NRS 625.565(2), as Mr Caster is grossly negligent in fulfilling his obligation as demonstrated by not being in responsible charge of his employee's work. Mr Caster further stipulates that he violated NAC 625.545 by failing to provide an appropriate written contract to a client prior to completion of work he performed.
Pursuant to NAC 625.640, a disciplinary matter may be resolved without a formal hearing by a Stipulated Agreement. To that end, to resolve the complaint, Mr Caster and the State Board resolve this matter on the following basis:

1. Mr Caster’s Nevada license shall be suspended for three (3) years following entry of this Agreement, pursuant to NRS 625.410 (2) and NAC 625.530, but with the suspension stayed and probation imposed for the duration of that time period.

2. Mr Caster shall submit detailed bi-monthly probation reports to the Executive Director of the State Board, which shall report any work completed in Nevada during the previous two (2) month period. The first report shall be due within two (2) months of the effective date of this Stipulated Agreement. Further, when stamping any work in Nevada, Mr Caster shall have his work reviewed by another Nevada licensed surveyor, and the cost therefor shall be paid by Mr Caster. When submitting his bi-monthly probation reports to the Executive Director, said reports shall include an attestation of review from the Nevada licensed surveyor for any work listed in the probation report that required a stamp by Mr Caster. A probation report shall be filed even if no work was performed in Nevada during the previous two (2) month period.

3. Mr Caster’s successful completion of probation is expressly conditioned upon his full compliance with the following conditions of probation:

(a) Mr Caster shall pay a fine of Five Thousand and No/100 Dollars ($5,000.00), payable in ten (10) quarterly payments of Five Hundred and No/100 Dollars ($500.00) apiece, the first due three (3) months from the date of acceptance and execution of this Agreement by the State Board, and the final due thirty (30) months from the date of acceptance and execution of this Agreement by the State Board.

(b) Mr Caster shall pay the State Board Two Thousand One Hundred Twenty-Seven and 50/100 Dollars ($2,127.50) as reimbursement of legal and administrative expenses expanded by the State Board in this matter, within six (6) months of acceptance and execution of this Agreement by the State Board.

(c) Mr Caster shall provide to the State Board staff, within thirty (30) days of execution of this agreement by the State Board, an attestation that he has reviewed the current statutes under NRS Chapter 625 and regulations under NAC Chapter 625.

(d) Mr Caster shall prepare a White Paper and submit it to the Executive Director of the State Board within sixty (60) days of the State Board's approval of this Stipulated Agreement, for
State Board review and approval, on the meaning of being in responsible charge of land surveying, as it is defined under Nevada law.

LAST PROBATION REPORTS DUE February 1, 2025
PROBATION REPORT
(MUST BE TYPED)

PROBATIONER: Jason E. Caster

PE/PLS #: 19338

EMPLOYER: Multnomah County

PROBATION REPORT SUMMITTED FOR THE PERIOD OF: Apr 1, 2024 THROUGH: May 31, 2024

CLIENT:

NAME:

ADDRESS:

CITY: STATE: ZIP CODE:

PROJECT:

NAME:

LOCATION OF PROJECT:

CITY: STATE: ZIP CODE:

SIZE: START DATE: END DATE:

STATUS OF PROJECT:

FEE PAID BY CLIENT:

SCOPE OF WORK:

I did not perform any work in the State of Nevada during this time period.

DESCRIBE IN DETAIL YOUR INVOLVEMENT IN THIS PROJECT AND HOW YOU HANDLED THIS PROJECT.

DESCRIBE IN DETAIL HOW YOU IMPROVED ON THIS PROJECT IN THE AREAS FOR WHICH YOU ARE ON PROBATION.

SIGNATURE: Jason E. Caster

Digitally signed by Jason E. Caster
Date: 2024.06.01 10:09:42 -07'00'

DATE: June 1, 2024

(Please print, sign, date, then scan and email report to board@boe.state.nv.us)
In 2017, Mr Monarrez’s current client was contracted with the then President of CVL, to provide civil engineering services for a project in Henderson, Nevada. This project was a master improvement plan that included services such as hydraulic and hydrologic calculations, precise grading and wall plan, sewer plans, and technical drainage study. The contract for this project provided, “[i]f the site plan should change after CVL has commenced work, any revision required will be considered extra to the contract, subject to renegotiation of our fees.”

In 2018, when the engineering work was well underway, the President of CVL passed away. CVL was then purchased by Mr Monarrez.

On or about February 12, 2019, Mr Monarrez sent an email to the client stating that part of the original design for the Hills project would no longer work and that he (Mr Monarrez) had revised the design plan.

On or about February 13, 2019, Mr Monarrez sent an email to the client, informing them that his designs could save a significant amount of money. In addition, this email stated, among other things, that “Typically Value Engineering is rewarded at 50/50 between owner and engineer of all cost savings.”

On or about May 17, 2019, Mr Monarrez sent a letter to the client titled, “The Hills Value Engineering Agreement” (hereinafter “The Change Order”). The Change Order included a term that stated, “CVL will be compensated with 30% of all construction costs savings from Cut, Blasting, Fill, Over-excavation, Import, Export, and Rock wall construction.” The Change Order also included a term that stated, “Growth Construction shall make payments of $50,000 / month until the full compensation (30% of savings) has been paid, or prior to the recordation of the Final Map.” The Change Order stated that compensation would be based on the differences between a contractor’s bid price on the original design and the revised design.

On or about May 18, 2019, the client sent Mr Monarrez an email that rejected Mr Monarrez’s proposed Change Order, stating, “we are NOT in agreement regarding the attached change order.”

In the following months, despite the client’s rejection, CVL sent invoices pursuant to the requested but rejected Change Order.
Violations and Disciplinary Actions

Pursuant to NAC 625.545, it is a violation for a licensee to perform work for a client before the licensee enters into a written contract with the client. Here, no written contract existed between Mr Monarrez and the client with regard to Mr Monarrez receiving a certain percentage of the costs saved, and no written contract existed for CVL to invoice the client $50,000 per month. Even if Mr Monarrez believed a verbal agreement existed between him and the client, NAC 625.545 is clear that a written contract must exist before a licensee performs work for a client. Thus, Mr Monarrez’s actions were in violation of NAC 625.545, as he performed work without a written contract and sent invoices pursuant to his proposed Change Order that was not accepted by the client.

Further, pursuant to NAC 625.530, it is a violation for a professional engineer to fail to act as a faithful agent or trustee for each client in the professional engineer’s relations with his or her clients. As noted previously, the client had rejected Mr Monarrez’s proposal for the Change Order, but Mr Monarrez continued to submit invoices pursuant to the Change Order over several months. Such behavior is not acting as a faithful agent for a client in the professional engineer’s relationship. Accordingly, Mr Monarrez’s actions violated NAC 625.530.

Based on the foregoing, Mr Monarrez stipulates that he violated NAC 625.545 and NAC 625.530(1).

Pursuant to NAC 625.640, a disciplinary matter may be resolved without a formal hearing by a Stipulated Agreement. To that end, to resolve the complaint, Mr Monarrez and the State Board resolve this matter on the following basis:

1. Mr Monarrez’s Nevada license shall be suspended for twenty-four (24) months following entry of this Agreement, but with the suspension stayed and probation imposed for the duration of that time period. The stay of Mr Monarrez’s suspension may be lifted by the State Board, upon notice and the opportunity to be heard, should Mr Monarrez fail to abide by the terms hereof. Mr Monarrez’s successful completion of probation is expressly conditioned upon his full compliance with the following conditions of probation:

   (a) Mr Monarrez shall submit detailed bi-monthly probation reports to the Executive Director of the State Board, which shall report any work completed in Nevada during the previous two (2) month period. A report shall be filed even if no work is performed in Nevada during the previous two (2) month period. The first report shall be due within two (2) months of the effective date of this Stipulated Agreement. Each report shall include client contact information and a copy of the contract executed for any work in Nevada, including the scope of work detail.
(b) Mr Monarrez shall pay an administrative fine of Two Thousand and No/100 Dollars ($2,000.00) within six (6) months of acceptance and execution of this Agreement by the State Board.

(c) Mr Monarrez shall pay the State Board Three Thousand Sixteen and No/100 Dollars ($3,016.00) as reimbursement of legal expenses expended by the State Board in this matter, within six (6) months of acceptance and execution of this Agreement by the State Board.

(d) Mr Monarrez shall, within one (1) year of the effective date of this Stipulated Agreement, successfully complete an intermediate level ethics course with Texas Tech University, Murdough Center for Engineering Professionalism, and submit proof of completion to the Board within sixty (60) days of completion of the course.

(e) Within thirty (30) days of license renewal, Mr Monarrez shall provide proof of completion of thirty (30) professional development hours that are required on a biennial basis for license renewal, pursuant to NAC 625.430, NAC 625.470 and NAC 625.480.

**LAST PROBATION REPORTS DUE February 1, 2025**
Prepare contract documents including plans and specifications for rehabilitation of approximately 300 sewer pipe assets and 200 sewer manholes all over the CCWRD service area. The tasks include project management, pre-design report, dewatering evaluation, CCTV, potholes, survey, drawings, and specifications.

I am the project manager and stamping engineer. I perform all project management tasks, coordinate with subconsultants, submit invoices, review pothole data, review CCTV, coordinate with CCWRD representatives, perform QC on the plans, write the specifications for the project, and responsible for the success of the project in the engineering design phase.

I do not performed tasks that are outside the scope of work without having a written change order/additional service request. I do not invoice for any tasks for which I do not have a written contract or change order for.

Signature: [Signature] Date: 05/27/24
I am the project manager and stamping engineer for the civil engineering tasks. I coordinate the progress with the design team including sub-consultants. I update the client with the progress of the project and review the changes the architect makes to make sure we are staying in compliance. I personally prepared the grading design, utility design, and QC the plans, survey, and drainage study.

I do not performed tasks that are outside the scope of work without having a written change order/additional service request. I do not invoice for any tasks for which I do not have a written contract or change order for.

SIGNATURE: [Signature]  DATE: 05/27/24
PROBATION REPORT
(MUST BE TYPED)

PROBATIONER: M. Armando Monarrez
PE/PLS #: 019652

EMPLOYER: CVL Nevada, Inc.

PROBATION REPORT SUMITTED FOR THE PERIOD OF: 03/20/2024 THROUGH: 05/19/2024

CLIENT

NAME: Leggera Development LLC
ADDRESS: 8475 S. Eastern #105
CITY: Las Vegas STATE: NV ZIP CODE: 89123

PROJECT

NAME: Warm Springs and Arroyo Grande
LOCATION OF PROJECT: 425 N Arroyo Grande Blvd.
CITY: Henderson STATE: NV ZIP CODE: 89014
SIZE: 6.91 acres START DATE: 01/01/23 END DATE: 12/31/24

STATUS OF PROJECT: Submitted IMPs and Final Map for final review. Developer fees pending.
FEE PAID BY CLIENT: $5,095

SCOPE OF WORK:
Perform Engineering Services for up to 55 Townhome unit project in Henderson NV including Drainage Study, Traffic Study, Water Network Analysis, Civil Improvement Plans, and Final Map.

DESCRIBE IN DETAIL YOUR INVOLVEMENT IN THIS PROJECT AND HOW YOU HANDLED THIS PROJECT.
I am the project manager and stamping engineer for the civil engineering tasks. I coordinate the progress with the design team including sub-consultants. I update the client with the progress of the project. I personally prepared the grading design, utility design, and QC the grading plans that was submitted with the drainage study. Preparing civil improvement plans and coordinating with design team.

DESCRIBE IN DETAIL HOW YOU IMPROVED ON THIS PROJECT IN THE AREAS FOR WHICH YOU ARE ON PROBATION.
I do not performed tasks that are outside the scope of work without having a written change order/additional service request. I do not invoice for any tasks for which I do not have a written contract or change order for.

SIGNATURE: [Signature]
DATE: 05/27/24
In July 2018, a client contracted with Mr Johnson’s employer to provide engineering services for a single-family home and work barn located in Gardnerville, NV. These services included the site layout, design of the engineered septic system, mapping of the existing site, submittal to Douglas County, and follow-up. There was an estimated cost for these services, but the actual charges would be based on “time and materials.”

Mr Johnson, as the professional engineer in charge on behalf his employer, requested the client commission and provide a Geotechnical Report for the property. SC received this report in late August 2018. This geotechnical report noted that “local groundwater levels are expected to fluctuate during flood irrigation, changes in precipitation, seasonal variations.”

The septic tank was installed in July 2019. Soon after the installation, the farmland in the immediate area of the client’s home was predictably flood irrigated. Within a week, water was found to have entered into the septic tank as a result of pipes in the system being compromised due to the tank “floating” i.e. vertical displacement, due to the rise in surrounding ground water.

Following discovery of this failure, Mr Johnson recommended a system design change, requiring installation of the tank above-ground (change from gravity flow to pump system). The client agreed to this recommendation.

After installation of the revised septic tank layout, the client learned that the above-ground tanks could have been located anywhere. The client reported that, had she known this, she would have placed the tanks next to the large leach field mound, instead of directly outside her bedroom window, where the revised installation was sited by Mr Johnson. The client questioned whether Mr Johnon’s employer would bear responsibility for the extra expense incurred for the reinstallation of the above-ground septic tank system.

Mr Johnson’s employer agreed to absorb the engineering fees for the above-ground system, but not the additional expense associated with the removal and reinstallation of the septic tank.

During the investigation, Mr Johnson admitted that he did not anticipate that the flood irrigation would have any impact on the groundwater level.
VIOLATIONS and DISCIPLINARY ACTION

Pursuant to NRS 625.410, in relevant part, the State Board may take disciplinary action against a licensee for “[a]ny gross negligence, incompetency or misconduct in the practice of professional engineering as a professional engineer or in the practice of land surveying as a professional land surveyor.” NRS 625.410(2). Here, Mr Johnson had the information that local groundwater levels would fluctuate during flood irrigation, changes in precipitation, and seasonal variation. Mr Johnson, however, failed to factor the known ground water variability into the in-ground septic tank design.

Based on the foregoing, Mr Johnson stipulates that he was grossly negligent in the engineering of the client’s septic system, and thus in violation of NRS 625.410(2).

NRS 625.410(5) provides authority for the State Board to administer discipline in Nevada for a violation of any NRS Chapter 625 statute and/or any regulation adopted by the State Board. Further, pursuant to NAC 625.640, a disciplinary matter may be resolved without a formal hearing by a Stipulated Agreement.

To that end, to resolve Complaint Number 20220004 now pending, Mr Johnson and the State Board resolve this matter on the following basis:

1.) Mr Johnson’s Nevada license shall be suspended for twenty-four (24) months following entry of this Agreement, but with the suspension stayed and probation imposed for the duration of that time period.

2.) Mr Johnson shall submit, to the State Board, a complete list and description of his projects from July 01, 2018 to December 31, 2022 that involved septic design undertaken by Mr Johnson. The State Board will then randomly select three (3) of those projects to be subjected to an independent third-party peer review to evaluate Mr Johnson’s septic competency as a civil engineer. The third-party engineer shall be selected by the State Board, and Mr Johnson shall be responsible to pay for the services thereof upon presentment of the service’s invoice. The third-party engineer shall have no conflict of interest relating to Mr Johnson, his employer, or the client.

3.) Mr Johnson shall pay an administrative fine of Five Thousand and No/100 Dollars ($5,000.00) within ninety (90) days of acceptance and execution of this Agreement by the State Board. A payment plan may be granted by State Board staff if requested by Mr Johnson and deemed warranted by State Board staff.
4.) Mr Johnson shall pay legal and investigative costs to the State Board a total of Two Thousand One Hundred Six and 50/100 Dollars ($2,106.50) within ninety (90) days of acceptance and execution of this Agreement by the State Board.

5.) Mr Johnson shall, within one (1) year of the effective date of this Stipulated Agreement, successfully complete a NAWT Designer Course, and submit proof of completion to the State Board within sixty (60) days of completion of the course.

6.) Mr Johnson shall pay the client restitution in the amount of $15,816.40 pursuant to NRS 625.460(1)(e), within ninety (90) days of acceptance and execution of this Agreement by the State Board.

LAST PROBATION REPORTS DUE August 15, 2025
PROBATION REPORT
(MUST BE TYPED)

PROBATIONER: Mark Johnson, P.E.  PE/PLS #: 019830

EMPLOYER: Stanka Consulting LTD

PROBATION REPORT SUMMITTED FOR THE PERIOD OF: 3/27/2024  THROUGH: May 26, 2024

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<tr>
<th>FEE PAID BY CLIENT</th>
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<td>$1,105.00</td>
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SCOPE OF WORK:
Submit tentative map, prepare construction plans and prepare and submit final subdivision map application.

DESCRIBE IN DETAIL YOUR INVOLVEMENT IN THIS PROJECT AND HOW YOU HANDLED THIS PROJECT.

I am the project engineer for the work. I have submitted the tentative subdivision map and am guiding it through the approval process. Engineering plans for the work, which includes a 235 ft cul-de-sac and associated utility installation and surface work, are ready to be submitted to Douglas County. I will oversee the project through to final map approval. The subdivision will create six lots.

DESCRIBE IN DETAIL HOW YOU IMPROVED ON THIS PROJECT IN THE AREAS FOR WHICH YOU ARE ON PROBATION.

The scope of this project did not include any work for which I am on probation.

SIGNATURE: Mark Johnson  DATE: June 15, 2024

(Please print, sign, date, then scan and email report to board@boe.state.nv.us)
PROBATION REPORT  
(MUST BE TYPED)

PROBATIONER: Mark Johnson, P.E.  PE/PLS #: 019830

EMPLOYER: Stanka Consulting LTD

PROBATION REPORT SUMMITTED FOR THE PERIOD OF: Mar 27, 2024 THROUGH: May 26, 2024

CLIENT:

NAME: Carson Luxury Housing LLC

ADDRESS: 2655 Peavine Creek Rd

CITY: Reno  STATE: NV  ZIP CODE: 89523

PROJECT:

NAME: Stafford Way Apartments

LOCATION OF PROJECT: 515, 535, 545 Stafford Way

CITY: Carson City  STATE: NV  ZIP CODE: 89701

SIZE: 0.626  START DATE: Mar 27, 2024  END DATE: May 26, 2024

STATUS OF PROJECT: Ongoing

FEE PAID BY CLIENT: $195.00

SCOPE OF WORK:
The project involves the construction of three, four-unit apartment buildings and appurtenant utilities, site work, etc. Our office has prepared the civil plans.

DESCRIBE IN DETAIL YOUR INVOLVEMENT IN THIS PROJECT AND HOW YOU HANDLED THIS PROJECT.

I have been the civil project engineer since the original engineer on this project left our office. I have updated the civil plans based on Carson City comments and in coordination with the client. Further coordination with the fire sprinkler design company has led me to finalize the revisions to the civil plans to show the updated fire sprinkler line layout. The finalized revisions have been submitted to Carson City.

DESCRIBE IN DETAIL HOW YOU IMPROVED ON THIS PROJECT IN THE AREAS FOR WHICH YOU ARE ON PROBATION.
The scope of this project did not include any work for which I am on probation.

SIGNATURE: Mark Johnson  DATE: June 15, 2024

(Please print, sign, date, then scan and email report to board@boe.state.nv.us)
**PROBATION REPORT**

**(MUST BE TYPED)**

**PROBATIONER:** Mark Johnson, P.E.  
**PE/PLS #:** 019830

**EMPLOYER:** Stanka Consulting LTD

**PROBATION REPORT SUMMITTED FOR THE PERIOD OF:** 3/27/2024  
**THROUGH:** May 26, 2024

**CLIENT:**

**NAME:** Peter M Beekhof Jr  
**ADDRESS:** 1456 Industrial Way

**CITY:** Gardnerville  
**STATE:** NV  
**ZIP CODE:** 89410

**PROJECT:**

**NAME:** Carson Valley RV Storage  
**LOCATION OF PROJECT:** 1716 Timber Ct

**CITY:** Gardnerville  
**STATE:** NV  
**ZIP CODE:** 89410

**SIZE:** 1.92  
**START DATE:** Mar 27, 2024  
**END DATE:** May 26, 2024

**STATUS OF PROJECT:** Ongoing

**FEE PAID BY CLIENT:** $260.00

**SCOPE OF WORK:**

Construction is ongoing on the project. My scope at this point is answering constructability questions from the client (who is also the contractor) and review of possible changes to design and construction.

**DESCRIBE IN DETAIL YOUR INVOLVEMENT IN THIS PROJECT AND HOW YOU HANDLED THIS PROJECT.**

I have been the civil project engineer for the project since the engineer originally in charge of the project left our office. I have been working closely with Douglas County and the client/contractor to ensure the product is constructed according to standards and delivered in a timely manner.

**DESCRIBE IN DETAIL HOW YOU IMPROVED ON THIS PROJECT IN THE AREAS FOR WHICH YOU ARE ON PROBATION.**

The scope of this project did not include any work for which I am on probation.

**SIGNATURE:** Mark Johnson  
**DATE:** June 15, 2024

(Please print, sign, date, then scan and email report to board@boe.state.nv.us)
PROBATION REPORT
(MUST BE TYPED)

PROBATIONER: Mark Johnson, P.E.  PE/PLS #: 019830
EMPLOYER: Stanka Consulting LTD

PROBATION REPORT SUMITTED FOR THE PERIOD OF: Mar 27, 2024 THROUGH: May 26, 2024

CLIENT:

NAME: H & J Land Company LLC
ADDRESS: PO Box 1141
CITY: Carson City  STATE: NV  ZIP CODE: 89702

PROJECT:

NAME: Gerow Motorcycle Restoration Shop
LOCATION OF PROJECT: 1955 Boeing Way
CITY: Carson City  STATE: NV  ZIP CODE: 89706
SIZE: 1.28  START DATE: Mar 27, 2024  END DATE: May 26, 2024
STATUS OF PROJECT: Ongoing
FEE PAID BY CLIENT: $1,040.00

SCOPE OF WORK:

Our scope is preparation of civil plans for an approximately 18,000 square foot motorcycle restoration shop, a 4,000 square foot mini-warehouse, and associated utility work and surface improvements.

DESCRIBE IN DETAIL YOUR INVOLVEMENT IN THIS PROJECT AND HOW YOU HANDLED THIS PROJECT.

I have been the civil project engineer since the original engineer on this project left our office. I have updated the civil plans based on Carson City comments and in coordination with the client and Senior Engineer. Revised plans have been submitted to Carson City. Updates to the water analysis and sewer capacity reports have also been completed.

DESCRIBE IN DETAIL HOW YOU IMPROVED ON THIS PROJECT IN THE AREAS FOR WHICH YOU ARE ON PROBATION.

The scope of this project did not include any work for which I am on probation.

SIGNATURE: Mark Johnson  DATE: June 15, 2024

(Please print, sign, date, then scan and email report to board@boe.state.nv.us)
PROBATION REPORT  
(MUST BE TYPED)

PROBATIONER: Mark Johnson, P.E.  
PE/PLS #: 019830

EMPLOYER: Stanka Consulting LTD

PROBATION REPORT SUBMITTED FOR THE PERIOD OF: 3/27/2024 THROUGH: May 26, 2024

CLIENT:

NAME: Tommy Dake
ADDRESS: 542 Lander St
CITY: Reno  STATE: NV  ZIP CODE: 89509

PROJECT:

NAME: Ruby's Shake Shack
LOCATION OF PROJECT: 1703 N Virginia St
CITY: Reno  STATE: NV  ZIP CODE: 89503
SIZE: 0.084  START DATE: Mar 27, 2024  END DATE: May 26, 2024
STATUS OF PROJECT: Ongoing
FEE PAID BY CLIENT: $325.00

SCOPE OF WORK:
Prepare civil drawings for new tenant improvement building.

DESCRIBE IN DETAIL YOUR INVOLVEMENT IN THIS PROJECT AND HOW YOU HANDLED THIS PROJECT.
I am the project engineer for the work. Submittal to City of Reno was previously done by an engineer who no longer works for Stanka Consulting. I have completed updates to the drawings due to delays in beginning construction which required new submittals. Construction has now begun and I have answered contractor questions regarding a drainage issue and attended (remotely) a TMWA pre-con.

DESCRIBE IN DETAIL HOW YOU IMPROVED ON THIS PROJECT IN THE AREAS FOR WHICH YOU ARE ON PROBATION.
The scope of this project did not include any work for which I am on probation.

SIGNATURE: Mark Johnson  DATE: June 15, 2024

(Please print, sign, date, then scan and email report to board@boe.state.nv.us)
Buckley Blew, PLS 024520
Case Number: 20230004
Violation of NRS 625.410 (2), 625.340, NRS 625.350(2)(a); and NRS 329.140(1).

Mr Blew self-reported a disciplinary action imposed against his California professional land surveyor license by the California Board of Professional Engineers, Land Surveyors, and Geologists (the “California Board”) in his license renewal application.

CALIFORNIA BOARD DISCIPLINARY ACTION

The California Board action against Mr Blew was based on the following:

A) California Business and Professions Code (“Code”) § 8780(d) and § 8762(b)(4) and (c) for failing to file a record of survey within ninety (90) days of his survey of the following properties:

- 555 and 575 Market Street, San Francisco
- 1281 W. National Drive, Sacramento
- 1520 and 1620 W. National Drive, Sacramento
- 1534 N. Market Blvd. and 4201 Sierra Point Drive, Sacramento
- 1700 W. National Drive, Sacramento
- 3200-3298 Orange Grove Avenue, Sacramento
- 1401 Civic Court, Concord

B) Under Code § 8780(b) for negligence in the practice of land surveying, in that Mr Blew did not meet the standard of care for a licensed land surveying when he failed to file a record of survey for the aforementioned properties. In addition, for the properties located at 1520 and 1620 W. National Drive, Sacramento, at 1534 N. Market Blvd. and 4201 Sierra Point Drive, Sacramento, and at 1700 W. National Drive, Sacramento, Mr Blew was disciplined under Code § 8780(b) for negligence in the practice of land surveying, in that Mr Blew did not meet the standard of care for a licensed land surveying when he failed to set monuments.

C) Under Code § 8780(d) and § 8765(d) for failing to file a corner record for 8845 Washington Blvd., Roseville. In addition, Mr Blew was disciplined under Code § 8780(b) in that he was negligent in his practice of land surveying regarding 8845 Washington Blvd., Roseville.

D) Under Code § 8780(b) in that he was negligent and/or incompetent in the practice of land surveying in that the establishment of boundaries shown on Mr Blew’s ALTA/NSPS maps indicated a practice of using a minimum of unreferenced control points and using “record” information from a single direction to establish boundary lines. This practice is reasonably foreseeable to lead to gaps and overlaps in boundaries.
Based on the above Mr Blew stipulated with the California Board to the following violations: (1) failure to file a timely record of survey; (2) negligence in the practice of land surveying; (3) failure to file a corner report; and (4) incompetence in the practice of land surveying. Pursuant to the California Board Stipulation and Order, Mr Blew’s license was revoked, but the revocation was stayed pending the successful completion of three (3) years probation, reimbursement of investigative costs in the amount of Twelve Thousand Six Hundred Thirteen and 75/100 Dollars ($12,613.75), completion and passage of the California Laws and Board Rules examination, passage of a Board approved ethics course within one (1) year, and completion and passage of two (2) college-level Board approved land surveying courses.

NEVADA BOARD DISCIPLINARY ACTION

NRS 625.410 states that the Nevada State Board may take disciplinary action against a licensee for discipline by another state or territory if at least one of the grounds for discipline is the same or substantially equivalent to any ground under Nevada law.

The State Board does not have statutory authority to take disciplinary action against licensees for mere negligence. Thus, Mr Blew’s cause for discipline due to his negligence does not constitute a violation of NRS 625.410(6).

Mr Blew’s cause for discipline for failure to file a timely record of survey, however, is substantially equivalent to NRS 625.340, in which professional land surveyors shall “within 90 day after the establishment of points or lines, file . . . a record of survey relating to land boundaries and property lines.” In addition, NRS 625.350 states that a record of survey must show, among other things, “[a]ll monuments found, set, reset, or replaced, describing their kind, size and location and giving other data relating thereto.” NRS 625.350(2)(a).

Mr Blew was also disciplined for failing to file a corner record. This cause for discipline is substantially equivalent NRS 329.140, in which a “a surveyor shall complete, sign and record or cause to be recorded . . . a written record of the establishment or restoration or a corner The survey information must be recorded within 90 days after the survey is completed.” NRS 329.140(1).

Finally, Mr Blew was disciplined for negligence and/or incompetence. NRS 625.410 states that the Board may take disciplinary action against a licensee for “[a]ny gross negligence, incompetency or misconduct in the practice of professional engineering as a professional engineer or in the practice of land surveying as a professional land surveyor.” NRS 625.410(2).

Thus, since at least one of the grounds for discipline in California is substantially similar to a ground for discipline in Nevada, the State Board may take disciplinary action against Mr Blew.
NRS 625.410 states that the State Board may take disciplinary action against a licensee for discipline by another state or territory if at least one of the grounds for discipline is the same or substantially equivalent to any ground under Nevada law.

Pursuant to NAC 625.640(3)(b)(2), a disciplinary matter against a licensee may be resolved without a formal hearing by Stipulated Agreement. As such, Mr Blew and the State Board hereby stipulate to the following terms for the above-referenced violation(s):

1. Mr Blew’s license shall be revoked following entry of this Agreement, but with revocation stayed and probation imposed for a term of three (3) years.

2. The licensee shall submit detailed bi-monthly probation reports to the Executive Director of the State Board, which shall report any work completed in Nevada during the previous two (2) month period. A report shall be filed even if no work was performed in Nevada during the previous two (2) month period. The first report shall be due within two (2) months of the effective date of this Stipulated Agreement. Each report shall include a copy of the contract executed for any work in Nevada, including the scope of work detail.

3. Mr Blew shall provide the State Board with proof of fulfilling the California Stipulated Agreement obligations.

LAST PROBATION REPORTS DUE August 15, 2026
PROBATION REPORT
(MUST BE TYPED)

PROBATIONER: Buckley Blew

EMPLOYER: Blew & Associates, P.A.

PROBATION REPORT SUMMITTED FOR THE PERIOD OF: Mar 20, 2024 THROUGH: May 19, 2024

CLIENT:

NAME: NA

ADDRESS: NA

CITY: NA STATE: NA ZIP CODE: NA

PROJECT:

NAME: NA

LOCATION OF PROJECT: NA

CITY: NA STATE: NA ZIP CODE: NA

SIZE: NA START DATE: NA END DATE: NA

STATUS OF PROJECT: NA

FEE PAID BY CLIENT: NA

SCOPE OF WORK:

NA

DESCRIBE IN DETAIL YOUR INVOLVEMENT IN THIS PROJECT AND HOW YOU HANDLED THIS PROJECT.

NA

DESCRIBE IN DETAIL HOW YOU IMPROVED ON THIS PROJECT IN THE AREAS FOR WHICH YOU ARE ON PROBATION.

NA

SIGNATURE: [Signature]

DATE: 5/28/24

(Please print, sign, date, then scan and email report to board@boe.state.nv.us)
Andrew Hammond, PE/PLS 021191
Case Number: 20220009
Violation of NRS 625.410 (2), and 625.530 (1)(5).

In or around January 2019, the complainant (client) reached out to Element Engineering (Mr Hammond’s firm) via Yelp in search of a professional to help adapt and engineer house plans that had been found online. Mr Hammond replied to the inquiry via Yelp and indicated he could complete the house plans in about four (4) to five (5) weeks.

The client engaged Mr Hammond for the project in late 2019. The project included various tasks, such as surveying, site plan, grading plan, septic, structural design and calculations, and electrical plan. At the end of December 2019, the client made a 50% down payment on the house plans for the initial survey and topography. In late 2019, Mr Hammond recommended a lot merger and was retained in or around July 2020 to perform that service. Throughout his engagement with the client, Mr Hammond communicated timelines and completion dates, but failed to meet these communicated deadlines. Mr Hammond did not make the initial submission for permits until August 22, 2021. Washoe County rejected this initial submittal as incomplete with requirements noted. Mr Hammond then had to resubmit the project three (3) more times due to further comments from Washoe County. By the time the client submitted the Complaint, Mr Hammond still had not obtained the permits for his plans. Regarding the lot merger, Mr Hammond erroneously submitted a Boundary Line Adjustment (BLA) to Washoe County in February 2021. Washoe County rejected this BLA and advised Mr Hammond that a Reversion to Acreage (RTA) map was required. In March 2021, Mr Hammond submitted an RTA, but did not make a payment to Washoe County for RTA review. In May 2021, Washoe County emailed Mr Hammond regarding RTA submittal errors and payment for review of the RTA. In June 2021, Washoe County sent an example RTA map for reference and information for Mr Hammond to correct his March 2021 submittal. In July 2021, Mr Hammond submitted payment for RTA application and review. In August 2022, Washoe County approved the RTA map for recording after correcting errors that Mr Hammond made on the RTA map, such as including unneeded signature lines for utility companies that did not serve the client’s property. On or about January 10, 2023, Mr Hammond refunded the Seven Thousand and No/100 Dollars ($7,000.00) that the client paid Mr Hammond for services.

VIOLATIONS and DISCIPLINARY ACTION

Pursuant to NAC 625.530(1), a professional engineer or land surveyor shall “[a]ct in professional matters as a faithful agent or trustee for each employer or client.” Here, Mr Hammond failed to act as a faithful agent. Over thirty (30) months have passed from the start
of work, but no permit had been issued at the time the Complaint was filed. Mr Hammond promised the client completion deadlines, but continually missed them. Mr Hammond had never done an RTA map and admits that the timeline to complete it was unreasonable.

Pursuant to NAC 625.530(5), a professional engineer or land surveyor shall “[u]ndertake only those engineering or land surveying assignments for which he or she is qualified and engage or advise the employer or client to engage specialists and cooperate with them whenever the employer’s or client’s interests are served best by such an arrangement.” Here, Mr Hammond erroneously submitted a boundary line adjustment rather than a reversion to acreage map. The time taken and the assistance required by the Washoe County staff indicates Mr Hammond’s underqualification for the assignment undertaken. Relating to the engineering, his submissions for permitting required extra comments and review from Washoe County. Mr Hammond submitted his plans four (4) times over the course of one (1) year.

Based on the foregoing, Mr Hammond stipulates that he violated NRS 625.410(2) and NAC 625.530(1) by failing to meet deadlines he promised his client and, thus, prolonging the project. In addition, Mr Hammond stipulates that he violated NAC 625.530(5) by undertaking a project for which he was unqualified, and not seeking to engage specialists to assist.

NRS 625.410(5) provides authority for the State Board to administer discipline in Nevada for a violation of any NRS Chapter 625 statute and/or any regulation adopted by the State Board. Further, pursuant to NAC 625.640, a disciplinary matter may be resolved without a formal hearing by a Stipulated Agreement.

To that end, to resolve Complaint Number 20220009 now pending, Mr Hammond and the State Board resolve this matter on the following basis:

1.) Mr Hammond’s Nevada license shall be suspended for twenty-four (24) months following entry of this Agreement, but with the suspension stayed and probation imposed for the duration of that time period.

a.) On a bi-monthly basis, Mr Hammond shall submit, to the State Board, a probation report to include any copies of executed contracts for any project or client that Mr Hammond retains during the period of his probation.

b.) Mr Hammond has reimbursed the complainant a total amount of Seven Thousand and No/100 Dollars ($7,000.00) for design and mapping fees paid to Mr Hammond (One Thousand Nine Hundred Fifty and No/100 ($1,950.00) for mapping and Five Thousand Fifty and No/100 Dollars ($5,050.00) for house design), which is satisfactory in lieu of an administrative fine.
c.) Mr Hammond shall pay legal and investigative costs to the State Board a total of One Thousand Seven Hundred and No/100 Dollars ($1,700.00) within ninety (90) days of acceptance and execution of this Agreement by the State Board.

d.) Within ninety (90) days of acceptance and execution of this Agreement by the State Board, Mr Hammond shall have any land surveying services that he has performed since November 1, 2022, reviewed by a licensed Nevada Professional Land Surveyor selected by the State Board. Further, any additional land surveying services that Mr Hammond performs in Nevada through the end of the term of his probation hereunder, shall be reviewed by a licensed Nevada Professional Land Surveyor selected by the State Board. The selected Professional Land Surveyor shall be independent of, and have no conflict of interest with, Mr Hammond, and will provide the State Board an assessment of competency for every professional land surveyor project done by Mr Hammond during the above-designated time period. Mr Hammond shall bear the cost and expense of the selected Professional Land Surveyor’s services.

LAST PROBATION REPORTS DUE February 1, 2026
Andrew Hammond, PE/PLS 021191
Case Numbers: 20220009
Violations: NRS 625.410 (2) and 625.530 (1)(5).

As of July 3, 2024, the following probation reports has not been received:

- Nevada work performed Mar 25, 2024 – May 24, 2024. (reports due June 15, 2024)
13. Stipulated Agreement for Lazell Preator Lic# 014982

[ not available at time board packet was published]
14. Board Counsel Report
15. Administrative Report by Executive Director
15.a. Approved Licensees Report
average days from receipt of completed application to notification of outcome

- **COMITY JUN 2024**: 3 Days (87 applications)
- **COMITY MAY 2024**: 1 Day (133 applications)
- **COMITY APR 2024**: 1 Day (143 applications)
- **REINSTATEMENT APR - JUN 24**: 1 Day (32 applications)
- **INITIAL APR - JUN 24**: 25 Days (63 applications)
15.b. 2021-2025 Strategic Plan
STRATEGIC PLAN UPDATE

Executive Summary

Approved November 12, 2020
The Nevada Board of Professional Engineers and Land Surveyors developed a comprehensive Strategic Plan in March 2017. The plan was created using a 10-30 year planning horizon based on the board’s core ideology consisting of a core purpose and core values.

Because the Strategic Plan had been developed in 2017, the board felt it was timely to reconsider its contents. The Board met September 11, 2020 to comprehensively review its Strategic Plan and consider any needed updates to that plan.

At the September 11, 2020 Strategic Planning Session, the board reaffirmed that the goals developed in the current Strategic Plan based on a 10-30 year planning horizon were still relevant. The session then focused on review and refresh of strategies. It was agreed that tactics and action items would be driven by the strategies and developed by the board and its committees at future meetings.

This document restates the board’s goals for its updated Strategic Plan and captures the board’s strategies for the next 3-5 year planning horizon.
EXECUTIVE SUMMARY
PURPOSE ~ MISSION ~ CORE VALUES

Purpose

The purpose of the board, as stated in Nevada Revised Statute 625.005, is to safeguard life, health and property and to promote the public welfare by providing for the licensure of qualified and competent professional engineers and professional land surveyors.

Mission

Founded on the board’s purpose, the board’s mission is to uphold the value of professional engineering and land surveying licensure by assessing minimum competency for initial entry into the profession, and to ensure ongoing standard of professionalism by facilitating compliance with laws, regulations, and code of practice; and to provide understanding and progression in licensure by openly engaging with all stakeholders.

Core Values

The board’s core values are:

- Integrity
- Transparency

The core values were identified by board members and staff during the strategic planning sessions as guiding principles in the performance of their duties. A commitment was made to deliver on these values and provide governance that is ethical, honest, and consistent, and to function on a daily basis with accessibility and openness that is without obstruction.
The following thinking represents the organization’s goals for the next 3-5 years. These Goals are outcome-oriented statements that represent what will constitute the Nevada board’s future success. The achievement of each goal will move the organization towards the realization of its Envisioned Future. The Strategies reflect the broad range of direction that will be undertaken to change the existing conditions in order to achieve the goal – they drive Tactics -- the type of work and initiatives that will need to be undertaken to achieve the goal.

Strategies considered at the September 11, 2020 strategic planning session discussion were presented for board consideration November 12, 2020. New or updated strategies are in bold text.

Outcome-Focused Goals

1. Outreach

The general public, prospective licensees and other key stakeholders have a greater understanding that engineering and surveying licensure are essential to safeguarding public health, safety and welfare.

2. Licensure

The demonstrated value of licensure results in continued growth in the number, quality and diversity of licensed engineers and surveyors practicing in Nevada.

3. Regulation

Nevada regulations are compatible with and reflective of the current state of practice in engineering and surveying and are in alignment with Nevada’s economic development strategy.

4. Operational Excellence

The Nevada Board’s efficient and effective use of technology and streamlined systems, processes and procedures result in high levels of satisfaction by all stakeholders.
Goal 1: Outreach

The general public, prospective licensees and other key stakeholders have a greater understanding that engineering and surveying licensure are essential to safeguarding public health, safety and welfare.

Strategies

1. Increase legislators understanding of criticality of services provided by the board and professional engineers/professional land surveyors

2. Evolve technical capability and expand social media presence

3. Increase visibility of the Board

4. Sustain appropriate allocation of resources for effective content development

Goal 2: Licensure

The demonstrated value of licensure results in continued growth in the number, quality and diversity of licensed engineers and surveyors practicing in Nevada.

Strategies

1. Increase/stress the importance of licensure to university level students

2. Increase the public’s knowledge about the value of licensure

3. Increase kids' knowledge of what engineers/land surveyors do

4. Continuously work to improve the process and portability of licenses

5. Provide options to meet land surveyor educational requirements

6. Increase knowledge of the quality of experience required for licensure to potential licensees
7. Maintain relevancy of engineering licensure, specifically as it relates to emerging technologies

Goal 3: Regulation

Nevada regulations are compatible with and reflective of the current state of practice in engineering and surveying and are in alignment with Nevada's economic development strategy.

Strategies

1. Maintain currency and applicability of statutes and regulations

2. Increase relationships with key stakeholders

3. Increase awareness of new/emerging technologies in relation to statutes and regulations

Goal 4: Operational Excellence

The Nevada Board’s efficient and effective use of technology and streamlined systems, processes and procedures result in high levels of satisfaction by all stakeholders.

Strategies

1. Maintain effective staff capacity

2. Maintain business plan for resource allocation to support board goals

3. Maintain effective office and administrative processes

4. Build a data collection strategy to ensure we have data needed for effective decision making

5. Increase transparency and communication with stakeholders of board functions, operations, and initiatives
15.c. NCEES
15.c.i. Annual Meeting
Conference Report and
Action Items
15.c.ii. United Kingdom (UK) Mutual Recognition Agreement (MRA)
Understanding the Mutual Recognition Agreement

Between NCEES and the U.K. Engineering Council

April 2024
In response to increasing interest from government bodies, employers, and professional associations, there has been a concerted effort to explore the feasibility of mutual recognition of professional qualifications between the United Kingdom and the United States. This intention was articulated by the U.K. Prime Minister’s opening remarks in the Atlantic Declaration at the White House on June 8, 2023: “An agreement to work towards mutual recognition of more professional qualifications in areas like engineering...”

Beginning in June 2023, the National Council of Examiners for Engineering and Surveying (NCEES) began working with the Engineering Council (EngC) to develop a mutual recognition agreement (MRA) to facilitate this objective. EngC, established by Royal Charter, governs the engineering profession in the United Kingdom, setting and upholding internationally recognized standards of professional competence and dedication for the public benefit.

The core objective of this agreement is to optimize mobility for Chartered Engineers (CEngs) in the United Kingdom and Professional Engineers (P.E.s) in the United States. By simplifying administrative procedures, eliminating redundant assessments, and seeking cost-efficient approaches, the aim is to facilitate seamless movement for professionals between our jurisdictions. Such an agreement is beneficial to safeguarding the public health, safety, and welfare for both nations by having individuals licensed in the proper jurisdictions. This mutual recognition also fosters increased opportunities for individuals and businesses, promoting trade, knowledge exchange, and collaboration while addressing skills shortages in critical sectors.

The MRA builds on the foundation laid by both organizations as founding members of the International Engineering Alliance (IEA) and the International Professional Engineers Agreement (IPEA). The IPEA has an agreed-upon set of professional competencies that individuals must meet to be on a member country’s section of the International Professional Engineers Register. The means for assessing the competencies may vary from country to country, but in the end, all individuals on a register possess the established professional competencies. For example, the United States uses the Principles and Practice of Engineering (PE) exam to assess, while the United Kingdom uses a structured process involving experience reviews and an oral examination.

In summary, P.E.s on the NCEES international register will qualify for licensure as a CEng in the United Kingdom. CEngs on the EngC international register will qualify for licensure as a P.E. in a U.S. jurisdiction that participates in the MRA. Someone on the U.K. register is substantially equivalent to someone on the U.S. register and vice versa. This reciprocal recognition streamlines the licensure process, bypassing redundant traditional requirements on both sides, though local jurisdictional or discipline-specific criteria may still apply.

Given the decentralized nature of engineering licensure in the United States, each NCEES engineering member board must independently decide on participation in the MRA. NCEES stands ready to assist with information and guidance, facilitating any necessary legislative or regulatory adjustments. Moreover, British Consulates are available to provide support to interested boards throughout the process. Like the old saying “if there is a will, there is a way,” if a member board has the will, we can show the way.
April 2023
- CEO David Cox attends formal signing of an MRA between the National Council of Architectural Registration Boards (NCARB) and the United Kingdom at the invitation of the British Embassy. He is informed by the British Ambassador to the United States that the U.K. Prime Minister will be discussing the desire for a similar agreement with engineers in June during his visit to the United States.
- CEO Cox informs the NCEES board of directors (BOD) and is directed to proceed with preliminary discussions.

June 2023
- The U.K. Prime Minister makes remarks in the Atlantic Declaration at the White House, expressing his desire for an engineering agreement.
- CEO Cox begins initial conversations with EngC in Taiwan at an IEA meeting. An initial framework for an MRA is developed.

August 2023
- NCEES BOD is updated on June work.
- British Consulate representatives address the Council and the Member Board Administrator Forum at the NCEES annual meeting in Boston.

October 2023
- Initial draft is completed and presented to boards of directors for NCEES and EngC. The boards provide feedback.

November 2023
- Second draft is completed and distributed to NCEES BOD, and feedback is received.

December 2023
- Third draft is completed and distributed to NCEES BOD in preparation for London visit.

February 2024
- The British invite a delegation of 11 member boards to London to discuss the draft MRA, meet with government officials, review the U.K. processes with EngC, etc., and provide feedback.
- Final draft is completed and approved by NCEES BOD.

March 28, 2024
- Final draft is approved by EngC BOD.
The draft MRA is attached as Appendix A. The following are highlights:

- P.E.s on the NCEES international register will qualify for licensure in the United Kingdom as a CEng. CEngs on the EngC international register will qualify for licensure as a P.E. in a U.S. jurisdiction that participates in the MRA. Someone on the U.K. register is substantially equivalent to someone on the U.S. register and vice versa.
- An applicant qualifying under the MRA will not have to meet overarching traditional requirements, such as a CEng being required to take the Fundamentals of Engineering (FE) and PE exams, or a P.E. undergoing the stringent experience review/mapping to competencies and the oral exam. However, applicants still may need to meet local jurisdictional or discipline-specific requirements.
- The parties will cooperate with each other regarding disciplinary and enforcement issues related to individuals licensed or applying under the MRA.
- The MRA does not preclude the need to conform to applicable immigration and visa requirements.
- The parties will provide an annual report to each other on the applicants who have applied under the terms of the MRA.
- The parties will review and update the MRA at least every five years based on their experiences.

EngC and NCEES both became founding members of the IEA and the IPEA in 1997. Participation by NCEES was approved by the Council prior to that signing. The IEA has engineering-related accords and agreements. The accords cover education, and the agreements deal with licensure. In the United States, ABET is the member of accords, and NCEES is the member of agreements. In many countries, including the United Kingdom, one entity covers both.

The IEA is a global organization comprised of members from 41 jurisdictions within 29 countries, across seven international agreements. These international agreements govern the recognition of engineering educational qualifications and professional competence. Through the educational accords and competence agreements, members of the IEA establish internationally bench-marked standards for engineering education and expected competence for engineering practice.

A professionally competent person has the attributes necessary to perform the activities within the profession to the standards expected in independent employment or practice. The professional competence profile records the elements of competence necessary for performance that the professional is expected to be able to demonstrate at the stage of attaining licensure. Professional competence can be described using an agreed-upon set of attributes.
Each member maintains an international register of individuals who meet these agreed-upon professional competencies and other requirements of the IPEA, including a minimum of seven years of experience, proof of continuing education, and no disciplinary actions. Each member is audited every six years to ensure compliance with the agreement.

To be placed on the NCEES international register, an individual must have an NCEES Record and be a Model Law Engineer, which requires an engineering degree from a program accredited by the Engineering Accreditation Commission of ABET (EAC/ABET), passage of the FE and PE exams, at least four years of experience, and no disciplinary actions. That individual then goes through further evaluation to ensure seven years of experience and a record of continuing education. The only exception is that those without an EAC/ABET-accredited engineering degree can still be on the international register if they have a degree from a Washington Accord program. Our PE exam is the assessment tool used to determine that an individual has met the agreed-upon competencies. NCEES has mapped each PE exam specification and related materials against the IPEA competencies to make sure there are no gaps.

EngC also has a detailed process for placing a CEng on their register. Again, those individuals must have at least seven years of experience, proof of continuing education, and no disciplinary actions. The educational requirement is basically our equivalent of an engineering master’s degree. They assess meeting of the competencies through evaluating everyone’s experience record to map actual work to each of the competencies and then conducting an oral exam (like a thesis defense). During that interview, the applicant orally connects different parts of the experience record to each competency. On average, an applicant obtains approximately 10 years of experience to meet all the competencies.

Individuals on both registers have been assessed and determined to possess the competencies required under the IPEA. Therefore, individuals on both registers are determined to be substantially equivalent, and the processes in making that determination are substantially equivalent and are subject to audit under the IPEA terms. Both NCEES and EngC are just completing their six-year audit and have received preliminary notice of passage.

Next Steps

NCEES and EngC still must work out logistics, such as U.K. applicants obtaining an NCEES Record so that we can transmit all their information to any member board to which they apply, and the equivalent for U.S. applicants going to the United Kingdom. We will also need to establish fees that we both intend to be reasonable and approximately the same in the United States and United Kingdom. Any individual state or jurisdictional fees will still apply, as with any candidate.

Since engineering licensure decisions are made at the state level in the United States, each individual NCEES engineering member board must decide whether to participate in the MRA. NCEES encourages member boards to participate and can assist with additional information and help in the determination of any law or rules changes that may be necessary. Many boards have flexible language that would allow them to participate without any changes. If you have the will, NCEES and the British Consulates will assist in helping you with the way.
We are planning a ceremonial signing for interested member boards at the British Consulate in Chicago during the NCEES annual meeting in August. All a member board needs to do to take part is express an interest in pursuing participation in the MRA. It is not required that the member board be ready to participate at that time. Some boards may need law or rule changes and other meetings and process changes that will take time to complete. There is no time requirement imposed on member boards’ participation.

**Appendices**

A. Mutual Recognition Agreement  
B. IEA Graduate Attributes and Professional Competencies  
C. Delegation of U.S. Engineering State Board Members  
D. EngC Introduction  
E. U.K. Standard for Professional Engineering Competence and Commitment  
F. EngC Disciplinary Procedure Guidance
MUTUAL RECOGNITION AGREEMENT

BETWEEN THE NATIONAL COUNCIL OF EXAMINERS FOR ENGINEERING AND SURVEYING (USA) AND THE ENGINEERING COUNCIL (UK)
MUTUAL RECOGNITION AGREEMENT

Between

The National Council of Examiners for Engineering and Surveying (NCEES, USA) and

the Engineering Council (UK)

together “the parties”.

To facilitate mobility of engineering professionals through streamlined Professional Registration/Membership processes.

1. PARTIES

NCEES is a not-for-profit organization with a mission to advance licensure for engineers and surveyors in order to safeguard the health, safety, and welfare of the public. NCEES members are the engineering and surveying licensure boards from all 50 U.S. states, the District of Columbia, Guam, Northern Mariana Islands, Puerto Rico and the U.S. Virgin Islands.

The Engineering Council was incorporated by Royal Charter in 1981 to regulate the engineering profession in the UK.

2. DEFINITIONS

Within this document, the following definitions apply:

2.1 “Mutual recognition” means the process of establishing the competence of an individual for independent practice in an engineering occupational role as a requirement of Professional Registration/Licensure.

2.2 “Home Jurisdiction” means the jurisdiction in which an engineer making application under this agreement already holds Professional Registration/Licensure.

2.3 “Host Jurisdiction” means the jurisdiction to which an engineer applies for Professional Registration/Licensure under the terms of this Agreement.

2.4 “Professional Registration/Licensure” means recognition by a Signatory or Participating Authority awarded on the basis of a demonstration of competence for independent practice through a professional review based on the competency framework UK-SPEC or a US Member Board PE License, in combination with the International Professional Engineer title (IntPE).

2.5 “Participating Authority” means a UK Professional Engineering Institution (PEI) licensed by the Engineering Council to award CEng that has ratified this agreement. A list of current Participating Authorities will be maintained by the Engineering Council and provided to NCEES This list is shown in Appendix 3.

2.6 “Participating Member Board” means a US Licensing Authority that has opted into this agreement. Participating states agree to accept an NCEES record from a UK Chartered Engineer that has been gained via this agreement. A current list of Participating Member Boards will be maintained by NCEES and be provided to The Engineering Council. This list is shown in Appendix 4.
2.7 Nothing in this agreement supersedes national or state legislation as applicable in the jurisdiction of the Participating Authority or Participating Member Board.

3. PURPOSE AND SCOPE

3.1 This Agreement provides for a streamlined process by which engineers with Professional Registration/Licensure in their home jurisdiction in this agreement can gain recognition in the host jurisdiction. The agreement is intended to provide

- a streamlined route to the UK Chartered Engineer title for US Professional Engineers with a state license and
- a streamlined route to a US Member Board Professional Engineer license for UK Chartered Engineers.

3.2 This Agreement is intended to streamline the admission pathway in the host jurisdiction for engineers holding a Professional Registration/Registered Professional Title/License in the home jurisdiction. This Agreement aims to:

- minimise duplication of assessment processes
- recognise jurisdictional differences and organizational autonomy
- maintain confidence in the quality of Professional Registration/Licensure decisions in both jurisdictions
- avoid restrictions on the cross-border provision of a service.

3.3 This Agreement covers engineers who have been admitted to any of the following Professional Registrations:

3.3.1 Professional Engineer

- Chartered Engineer (CEng), who also holds the title International Professional Engineer (IntPE), awarded by the Engineering Council, UK
- Professional Engineer (PE), licensed in a participating US Member Board, who also holds the title International Professional Engineer (IntPE), awarded by NCEES. This is also known as an NCEES International Registered Professional Engineer (IRPE)
- The requirements for attaining IntPE/IRPE in each jurisdiction are set in Appendix 1

3.4 Nothing in this Agreement shall apply to individual practice or malpractice disputes.

3.5 Engineers who have gained Professional Registration/Licensure in the home jurisdiction through another mutual recognition pathway, containing exemptions from the usual assessment process, are not eligible for the pathways set out in this agreement.

4. MUTUAL RECOGNITION PROVISIONS

4.1 The parties agree to apply processes and criteria consistent with the mutual recognition pathways set out in Appendix 2 when considering applications for Professional Registration/Licensure from engineers who hold Professional Registration/Licensure in the home jurisdiction.
4.2 The Parties respect jurisdictional autonomy and recognise that there may be additional criteria imposed relevant to:

4.2.1 local jurisdictional practices, or the legislative or regulatory framework.

4.2.2 discipline-specific requirements of a Participating Authority or Participating Member Board.

5. DISCIPLINE AND ENFORCEMENT

5.1 Both Parties and all Participating Authorities and Participating Member Boards will cooperate to the extent possible on disciplinary and enforcement issues.

5.2 An application for Professional Registration/Licensure made under this Agreement must include a question requiring the applicant to disclose any sanctions related to the practice of engineering in other jurisdictions. Information regarding sanctions may be considered in the assessment process.

5.3 An application for Professional Registration/Licensure can only be made under this Agreement if the applicant provides written permission for parties to distribute and exchange assessment information and any information regarding sanctions between all involved jurisdictions.

5.4 Failure to fully disclose or provide any of the required information may be the basis for denial of the application, or for sanctions, including revocation of the Professional Registration/Licensure.

5.5 Each jurisdiction will take appropriate action in accordance with their rules and regulations if an engineer violates the standards of that jurisdiction. Each jurisdiction shall promptly report sanctions to the other jurisdiction in which it knows the engineer is recognised via an appropriate alert mechanism.

5.6 A jurisdiction will take appropriate action, subject to its own rules and regulations and the principle of natural justice, related to a sanction that is reported to them by another jurisdiction.

6. IMMIGRATION AND VISA ISSUES

6.1 Professional Registration/Certification granted under this Agreement in a Host Jurisdiction does not preclude the need to conform to applicable immigration and visa requirements of the Host Jurisdiction.

7. INFORMATION EXCHANGE

7.1 The Parties will notify each other and provide copies of any major changes in policy, criteria, procedures and programmes that might affect this Agreement.

7.2 The Parties will provide an annual report to each other on all applicants who have applied pursuant to the terms of this Agreement.

7.3 The Parties will from time-to-time undertake mutual observation of processes and procedures. This shall be done routinely as part of the renewal of the agreement.
8. DISPUTE RESOLUTION

8.1 The Parties to this Agreement will at all times endeavour to agree on the interpretation and application of this Agreement and will make every attempt through co-operation and consultation to arrive at a mutually satisfactory resolution of any matter that might affect its operation. If a dispute arises that cannot be resolved through informal discussions within sixty (60) days of when the dispute arises, the Parties will attempt to resolve the dispute through non-binding mediation and/or another form of alternative dispute resolution as may be agreed upon by the Parties, prior to any Party resorting to litigation.

8.2 The Parties may request in writing consultation with the other Party regarding any actual or proposed measure or any other matter that it considers might affect the operation or interpretation of this Agreement.

9. TERM OF AGREEMENT

9.1 This Agreement will come into effect when signed by the Parties.

9.2 This Agreement supersedes all other such mutual recognition agreements between NCEES, the Engineering Council and the Participating Authorities.

9.3 The Parties will review and update the Agreement and recommend changes where appropriate at least every five (5) years. This Agreement may be amended, however, only with the written consent of both Parties.

10. TERMINATION

10.1 A Party or any Participating Authority may withdraw from this Agreement six (6) months after it provides written notice of withdrawal to the other Party. If a Participating Authority withdraws, the Agreement will remain in force for the remaining Participating Authorities.

10.2 If at any time all Participating Authorities have withdrawn from the Agreement, the Agreement will automatically terminate.

10.3 Any registrant approved or in the process of being assessed at the time of the Agreement being terminated will be treated as if this Agreement is still in existence.

NCEES Engineering Council

Date Executed:
APPENDIX 1

The requirements for attaining IntPE/IRPE in each jurisdiction.

<table>
<thead>
<tr>
<th>Requirement</th>
<th>NCEES International Registered Professional Engineer (IntPE)</th>
<th>Engineering Council CEng IntPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Registration /Licensure</td>
<td>Be a citizen or permanent resident currently licensed as a professional engineer in a U.S. state or territory</td>
<td>Be currently registered as a Chartered Engineer and member of a UK PEI</td>
</tr>
<tr>
<td>Discipline</td>
<td>Hold a record clean of disciplinary action</td>
<td>Be currently in good standing with your PEI and have no disciplinary action outstanding</td>
</tr>
<tr>
<td>Underpinning Knowledge and Understanding</td>
<td>Have a degree from an EAC ABET-accredited engineering program, or an accredited degree recognised under the Washington Accord</td>
<td>An accredited degree recognised under the Washington Accord, or equivalent academic qualification</td>
</tr>
<tr>
<td>Experience</td>
<td>Have at least seven years of qualifying experience, including two years in responsible charge of significant engineering work</td>
<td>Have at least seven years of qualifying experience, including two years in responsible charge of significant engineering work</td>
</tr>
</tbody>
</table>
| Assessment                                 | Have passing scores on the NCEES FE and PE examinations    | 1) Have demonstrated underpinning engineering knowledge and understanding to UK/European Masters level in their discipline  
2) Have demonstrated that they meet the UK standard of competence and commitment set out in UK-SPEC through:  
a) Professional Review part 1: assessment of discipline-specific documentary evidence  
b) Professional Review part 2: in-depth interview by two trained assessors, including applicant presentation  
3) Approval from registration committee |

Competence | NCEES Model Rules and IPEA professional competences | UK-SPEC Chartered Engineer Competences and IPEA professional competences |

Continuing Professional Development | Have met the applicable continuing professional competency (CPC) requirements of the jurisdiction(s) where you are licensed. If the jurisdiction does not have a CPC requirement, the applicant must comply with the NCEES CPC Standard | Carry out and record the Continuing Professional Development (CPD) necessary to maintain and enhance competence in their own area of practice |

Discipline-specific and jurisdictional requirements (e.g., local laws, ethics exam) | Handled at Member Board level | Handled by PEI |
APPENDIX 2

MUTUAL RECOGNITION PATHWAYS

The Professional Registration/Licensure processes of the Parties are as follows:

a) NCEES requirements to obtain an NCEES Record as the Host Jurisdiction

An NCEES Record is a verified compilation of information an applicant is required to submit to a state licensing board as part of the licensure application process. Each completed Record is a verified compilation of an applicant’s official academic transcripts, full employment history, professional references, and exam results.

The NCEES Record is designed to meet the licensure requirements of most states. Since licensure requirements vary from state to state, there may be times when a Record holder must submit additional information to a state licensing board to satisfy its licensure requirements. This may include information about their education, references, existing licenses, or experience information.

<table>
<thead>
<tr>
<th>Standard application requirements</th>
<th>Required under the Agreement Y/N</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Submission of an application form</td>
<td>Yes</td>
<td>Create online NCEES record</td>
</tr>
<tr>
<td>References</td>
<td>Yes, but can be UK registrants.</td>
<td>Five references who can reflect the character and diversity of your experience and are personally acquainted with your professional reputation. For engineering applicants, references must be engineers who are licensed in the United States.</td>
</tr>
<tr>
<td>Education information</td>
<td>Yes</td>
<td>Details for each college, university, and technical school attended, including transcripts. NCEES accepts the UK PEI assessment of the academic base as meeting NCEES/IntPE requirements.</td>
</tr>
<tr>
<td>Professional Experience</td>
<td>Yes</td>
<td>Chronological listing of work experience beginning with graduation from a university</td>
</tr>
<tr>
<td>Competence assessment</td>
<td>No</td>
<td>Already meets IntPE requirements</td>
</tr>
<tr>
<td>FE and PE exam verification</td>
<td>No</td>
<td>Exempt under the agreement</td>
</tr>
<tr>
<td>CPD review</td>
<td>In line with Member Board requirements</td>
<td>IntPE CPD requirements already met</td>
</tr>
<tr>
<td>Local knowledge and/or discipline specific practice assessment (e.g., local laws and ethics exam)</td>
<td>In line with Member Board requirements</td>
<td></td>
</tr>
<tr>
<td>Approval by NCEES Member Board</td>
<td>Yes</td>
<td></td>
</tr>
</tbody>
</table>
b) Engineering Council requirements for registration as a Chartered Engineer (CEng) as the Host Jurisdiction

The Engineering Council was incorporated by Royal Charter in 1981 to regulate the engineering profession in the UK. The standards of professional competence and commitment are set out in the UK Standard for Professional Engineering Competence (UK-SPEC). This standard requires registrants to make a commitment to recording their CPD activities. Participating Authorities undertake random samples of professionally active registrants’ CPD records on an annual basis.

<table>
<thead>
<tr>
<th>Standard application requirements</th>
<th>Required under the Agreement (Y/N)</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Submission of an application form</td>
<td>Yes</td>
<td>In English</td>
</tr>
<tr>
<td>Academic assessment</td>
<td>No</td>
<td>Applicants are required to provide copies of academic qualifications</td>
</tr>
<tr>
<td>Holistic competence assessment</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Local knowledge and/or discipline specific practice assessment</td>
<td>Yes</td>
<td>Any assessment is normally to be restricted to situations where UK-specific knowledge or discipline-specific requirements are applied as standard to home candidates</td>
</tr>
<tr>
<td>Professional Review Interview</td>
<td>No</td>
<td>Any assessment of Local Knowledge or current competence may involve an interactive interview</td>
</tr>
<tr>
<td>CPD review</td>
<td>In line with UK Participating Authority requirements</td>
<td>Registrants are required to ensure their CPD records are up to date. UK Participating authorities undertake annual random samples of professionally active registrants’ CPD records and provide feedback.</td>
</tr>
<tr>
<td>Registration (Professional Registration/Membership) Committee Approval</td>
<td>Yes</td>
<td></td>
</tr>
</tbody>
</table>

**Assessment Process**

On receipt of an application through this agreement, the Host Jurisdiction/Participating Authority will contact the Home Jurisdiction/Participating Authority to request confirmation of Professional Registration/Certification status, and registration/licensure date and date of being admitted to the international register (IntPPE).

Interactive assessments or professional review interviews will only be used if their purpose is to assess local knowledge and/or discipline specific practice.
Written assignments or formal examinations may also be valid mechanisms for assessing local knowledge or discipline specific practice if they are used for the same purpose for assessing local engineers in the host jurisdiction.
Appendix 3

List of UK Participating Authorities (subject to ratification)

1. BCS, The Chartered Institute for IT
2. British Institute of Non-Destructive Testing (BINDT)
3. Chartered Association of Building Engineers (CABE)
4. Chartered Institution of Building Services Engineers (CIBSE)
5. Chartered Institution of Civil Engineering Surveyors (CICES)
6. Chartered Institution of Highways & Transportation (CIHT)
7. Chartered Institute of Plumbing and Heating Engineering (CIPHE)
8. Chartered Institution of Water and Environmental Management (CIWEM)
9. Energy Institute (EI)
10. Institution of Agricultural Engineers (IAgrE)
11. Institution of Civil Engineers (ICE)
12. Institution of Chemical Engineers (IChemE)
13. Institution of Engineering Designers (IED)
14. Institution of Engineering and Technology (IET)
15. Institute of Explosives Engineers (IExpE)
16. Institution of Fire Engineers (IFE)
17. Institution of Gas Engineers and Managers (IGEM)
18. Institute of Highway Engineers (IHE)
19. Institute of Healthcare Engineering and Estate Management (IHEEM)
20. Institution of Lighting Professionals (ILP)
21. Institute of Marine Engineering, Science & Technology (IMarEST)
22. Institution of Mechanical Engineers (IMechE)
23. Institute of Measurement and Control (InstMC)
24. Institution of Royal Engineers (InstRE)
25. Institute of Acoustics (IOA)
26. Institute of Materials, Minerals and Mining (IOM3)
27. Institute of Physics (IOP)
28. Institute of Physics and Engineering in Medicine (IPEM)
29. Institution of Railway Signal Engineers (IRSE)
30. Institution of Structural Engineers (IStructE)
31. Institute of Water
32. INCOSE UK, the UK Chapter of the International Council on Systems Engineering (INCOSE)
33. Permanent Way Institution (PWI)
34. Nuclear Institute (NI)
35. Royal Aeronautical Society (RAeS)
36. Royal Institution of Naval Architects (RINA)
37. Safety and Reliability Society (SaRS)
38. The Society of Operations Engineers (SOE)
39. The Welding Institute

Links are found here: https://www.engc.org.uk/peis
Appendix 4

List of Participating US Member Boards
PREAMBLE

The International Engineering Alliance is pleased to announce that all Accords and Agreements have approved revisions to its Graduate Attributes and Professional Competencies (GAPC) international benchmark. The review, supported by UNESCO, was undertaken by a joint IEA-WFEO Working Group who engaged extensively with IEA signatories, WFEO members and WFEO partners representing academics, industry and women globally. They reflect requirements for new technologies and engineering disciplines, new pedagogies and values such as sustainable development, diversity and inclusion and ethics. They are well positioned to support the engineering role in building a more sustainable and equitable world.

Our thanks to UNESCO and WFEO for their constant support and endorsement and to the GAPC Working Group members, who commenced this work three years ago and who have worked tirelessly to bring this to fruition.

VERSION: 2021.1
The documents presented in this compendium are current as of 21 June 2021.
Executive Summary

Many accrediting bodies for engineering qualifications have developed outcomes-based criteria for evaluating programs. Similarly, many engineering regulatory bodies have developed or are in the process of developing competence-based standards for registration. Educational and professional accords for mutual recognition of qualifications and registration have developed statements of graduate attributes and professional competence profiles. This document, which is a revised version that takes into account the present-day state of engineering activities, presents the background to these developments, their purpose, and the methodology and limitations of the statements. After defining general range statements that allow the competences of the different categories to be distinguished, the paper presents the graduate attributes and professional competence profiles for three professional tracks: engineer, engineering technologist, and engineering technician.

1 Introduction

Engineering is an activity that is essential to meeting the needs of people, economic development and the provision of services to society. Engineering involves the purposeful application of mathematical and natural sciences and a body of engineering knowledge, technology and techniques. Engineering seeks to produce solutions of which the effects are predicted to the greatest degree possible, in often uncertain contexts. While bringing benefits, engineering activity has potential adverse consequences. Engineering therefore must be carried out responsibly and ethically, use available resources efficiently, be economic, safeguard health and safety, be environmentally sound and sustainable and generally manage risks throughout the entire lifecycle of a system. The United Nations Sustainable Development Goals present targets for 2030. Engineers are vital contributors for making progress towards these goals.

Typical engineering activity requires several roles including those of the engineer, engineering technologist and engineering technician, recognized as professional registration categories in many jurisdictions\(^1\). These roles are defined by their distinctive competences.

\(^1\) The terminology used in this document uses the term *engineering* as an activity in a broad sense and *engineer* as shorthand for the various types of professional and chartered engineer. It is recognized that *engineers*,...
and their level of responsibility to the public. There is a degree of overlap between roles. The distinctive competences, together with their educational underpinnings, are defined in sections 4 to 6 of this document.

The development of an engineering professional in any of the categories is an ongoing process with important identified stages. The first stage is the attainment of an accredited educational qualification, the graduate stage. The fundamental purpose of engineering education is to build a knowledge base and attributes to enable the graduate to continue learning and to proceed to formative development that will develop the competences required for independent practice. The second stage, following a period of formative development, is professional registration. The fundamental purpose of formative development is to build on the educational base to develop the competences required for independent practice in which the graduate works with engineering practitioners and progresses from an assisting role to taking more individual and team responsibility until competence can be demonstrated at the level required for registration. Once registered, the practitioner must maintain and expand competence.

For engineers, engineering technologists, and engineering technicians, a third milestone is to qualify for the international register held by the various jurisdictions. In addition, engineers, technologists and technicians are expected to maintain and enhance competence throughout their working lives.

Several international accords provide for recognition of graduates of accredited programs of each signatory by the remaining signatories. The Washington Accord (WA) provides for mutual recognition of programs accredited for the engineer track. The Sydney Accord (SA) establishes mutual recognition of accredited qualifications for engineering technologist. The Dublin Accord (DA) provides for mutual recognition of accredited qualifications for engineering technicians. These accords are based on the principle of substantial equivalence rather than exact correspondence of content and outcomes. This document records the signatories’ consensus on the attributes of graduates for each accord.

Similarly, the International Professional Engineers Agreement\(^2\) (IPEA), the International Engineering Technologists Agreement\(^3\) (IETA), and the Agreement for International Engineering Technicians (AIET) provide mechanisms to support the recognition of a professional registered in one signatory jurisdiction obtaining recognition in another. The signatories have formulated consensus competence profiles for the registration and these are recorded in this document.

Section 2 gives the background to the graduate attributes presented in section 5. Section 3 provides background to the professional competence profiles presented in section 6. General range statements are presented in section 4. The graduate attributes are presented in section 5 while the professional competence profiles are defined in section 6. Appendix A defines terms used in this document. Appendix B sketches the origin and development history of the graduate attributes and professional competence profiles.

## 2 Graduate Attributes

This section gives background to the graduate attributes presented in section 5.

### Purpose of Graduate Attributes

**Graduate attributes** form a set of individually assessable outcomes that are the components indicative of the graduate's potential to acquire competence to practise at the appropriate
level. The graduate attributes are exemplars of the attributes expected of graduate from an accredited program. Graduate attributes are clear, succinct statements of the expected capability, qualified if necessary, by a range indication appropriate to the type of program.

The graduate attributes are intended to assist Signatories and Provisional Members to develop or review their outcomes-based accreditation criteria for use by their respective jurisdictions. Graduate attributes also guide bodies in developing or revising their accreditation systems with a view to seeking signatory status.

Graduate attributes are defined for educational qualifications in the engineer, engineering technologist and engineering technician tracks. The graduate attributes serve to identify the distinctive characteristics as well as areas of commonality between the expected outcomes of different types of programs.

Limitation of Graduate Attributes
Each signatory defines the standards for the relevant track (engineer, engineering technologist or engineering technician) against which engineering educational programs are accredited. Each educational level accord is based on the principle of *substantial equivalence*; that is, programs are not expected to have identical outcomes and content but rather produce graduates who could enter employment and be fit to undertake a program of training and experiential learning leading to professional competence and registration. The Graduate Attributes provide a point of reference for bodies to describe the outcomes of substantially equivalent qualification. The Graduate Attributes do not, in themselves, constitute an “international standard” for accredited qualifications but provide a widely accepted common reference or benchmark for bodies to describe the outcomes of substantially equivalent qualifications.

Graduate Attributes may be accepted for use within a jurisdiction or adapted to accommodate the context and any specific requirements of the jurisdiction. Where a signatory has adapted or developed their own graduate attributes, it is expected that there is alignment to these Graduate Attributes.

The term graduate does not imply a particular type of qualification but rather the exit level of the qualification, be it a degree or diploma.

Graduate Attributes and the Quality of Programs
The Washington, Sydney and Dublin Accords “recognize the substantial equivalence of … programs satisfying the academic requirements for practice …” for engineers, engineering technologists and engineering technicians respectively. The Graduate Attributes are assessable outcomes, supported by level statements, developed by the signatories that give confidence that the educational objectives of programs are being achieved. The quality of a program depends not only on the stated objectives and attributes to be assessed but also on the program design, resources committed to the program, the teaching and learning process and assessment of students, including confirmation that the graduate attributes are satisfied. The Accords therefore base the judgement of the substantial equivalence of programs accredited by signatories on both the Graduate Attributes and the best practice indicators for evaluating program quality listed in the Accords’ Rules and Procedures².

---
Scope and Organization of Graduate Attributes

The graduate attributes are organized using eleven headings shown in section 5.2. Each heading identifies the differentiating characteristic that allows the distinctive roles of engineers, technologists and technicians to be distinguished by range information.

For each attribute, statements are formulated for engineer, engineering technologist and engineering technician using a common stem, with ranging information appropriate to each educational track defined in sections 4.1 and 5.1. For example, for the Engineering Knowledge attribute:

**Common Stem:** Apply knowledge of mathematics, natural science, computing and engineering fundamentals, and an engineering specialization …

**Engineer Range:** … as specified in the engineer knowledge profile to develop solutions to complex engineering problems.

**Engineering Technologist Range:** … as specified in the engineering technologist knowledge profile to defined and applied engineering procedures, processes, systems or methodologies.

**Engineering Technician Range:** … as specified in the engineering technician knowledge profile to wide practical procedures and practices.

The resulting statements are shown below for this example:

<table>
<thead>
<tr>
<th>Engineer Graduate</th>
<th>Engineering Technologist Graduate</th>
<th>Engineering Technician Graduate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apply knowledge of mathematics, science, computing and engineering fundamentals and an engineering specialization as specified in WK1-WK4 respectively to develop solutions to complex engineering problems.</td>
<td>Apply knowledge of mathematics, science, computing and engineering fundamentals and an engineering specialization as specified in SK1-SK4 respectively to defined and applied engineering procedures, processes, systems or methodologies.</td>
<td>Apply knowledge of mathematics, science, engineering fundamentals and an engineering specialization as specified in DK1-DK4 respectively to wide practical procedures and practices.</td>
</tr>
</tbody>
</table>

The range qualifier in several attribute statements uses the notions of complex engineering problems, broadly-defined engineering problems and well-defined engineering problems. These shorthand level descriptors are defined in section 4.1.

The attributes are chosen to be universally applicable and reflect acceptable minimum standards and be capable of objective measurement. While all attributes are important, individual attributes are not necessarily of equal weight. Attributes are selected that are expected to be valid for extended periods and changed infrequently only after considerable debate. Attributes may depend on information external to this document, for example generally accepted principles of ethical conduct.

The full set of graduate attribute definitions is given in section 5.

**Contextual Interpretation**

The graduate attributes are stated generically and are applicable to all engineering disciplines. In interpreting the statements within a disciplinary context, individual statements
may be amplified and given particular emphasis but they must not be altered in substance or individual elements ignored.

**Best Practice in Application of Graduate Attributes**

The attributes of Accord programs are defined as a *knowledge profile*, which is an indicated volume of learning and the attributes against which graduates must be able to perform. The requirements are stated without reference to the design of programs that would achieve the requirements. Providers therefore are free to design programs with different detailed structures, learning pathways and modes of delivery. Evaluation of individual programs is the concern of national accreditation systems.

**3 Professional Competence Profiles**

**Purpose of Professional Competence Profiles**

A professionally or occupationally *competent person* has the attributes necessary to perform the activities within the profession or occupation to the standards expected in independent employment or practice. The *professional competence profiles* for each professional category record the elements of competence necessary for performance that the professional is expected to be able to demonstrate in a holistic way at the stage of attaining registration.

Professional competence can be described using a set of attributes corresponding largely to the graduate attributes, but with different emphases. For example, at the professional level, the ability to take responsibility in a real-life situation is essential. Unlike the graduate attributes, professional competence is more than a set of attributes that can be demonstrated individually. Rather, competence must be assessed holistically.

**Scope and Organization of Professional Competence Profiles**

The professional competence profiles are written for each of the three categories: engineer, engineering technologist and engineering technician at the point of registration. Each profile consists of thirteen elements. Individual elements are formulated around a differentiating characteristic using a stem and modifier, similar to the method used for the graduate attributes described in section 2.3.

The stems are common to all three categories and the range modifiers allow distinctions and commonalities between categories to be identified. Like their counterparts in the graduate attributes, the range statements use the notions of complex engineering problems, broadly-defined engineering problems and well-defined engineering problems defined in section 4.1. At the professional level, a classification of engineering activities is used to define ranges and to distinguish between categories. Engineering activities are classified as *complex, broadly-defined* or *well-defined*. These shorthand level descriptors are defined in section 4.2.

**Limitations of Professional Competence Profile**

As in the case of the graduate attributes, the professional competence profiles are not prescriptive in detail but rather reflect the essential elements that would be present in competence standards.

The professional competence profiles do not specify performance indicators or how the above items should be interpreted in assessing evidence of competence from different areas of practice or for different types of work. Section 3.4 examines contextual interpretation.

---

3 Requirements for the IEPA, IETA, and AIET International Registers call for enhanced competence and responsibility.
Each jurisdiction may define *performance indicators*; that is, actions on the part of the candidate that demonstrate competence. For example, a design competence may be evidenced by the following performances:

1: Identify and analyse a design/planning requirement and draw up a detailed requirements specification
2: Synthesise a range of potential solutions to problem or approaches to project execution
3: Evaluate potential approaches to meet requirements and their possible impacts
4: Fully develop design of selected option
5: Produce design documentation for implementation

**Contextual Interpretation**

Although competence can be demonstrated in different areas of practice and types of work, competence statements are independent of, and separate to, any specific discipline. Thus the competence statements accommodate different types of work (for example, design, research and development and engineering management) by using the broad phases in the cycle of engineering activity (problem analysis, synthesis, implementation, operation and evaluation) together with the management attributes needed. The competence statements also include the personal attributes needed for competent performance irrespective of specific local requirements: communication, ethical practice, judgement, taking responsibility and the protection of society.

The professional competence profiles are stated generically and are applicable to all engineering disciplines. The application of a competence profile may require amplification in different regulatory, disciplinary, occupational or environmental contexts. In interpreting the statements within a particular context, individual statements may be amplified and given particular emphasis but must not be altered in substance or ignored.

**Mobility between Professional Categories**

The Graduate Attributes and Professional Competence for each of the three categories of engineering practitioner (engineer, engineering technologist and engineering technician) define the benchmark route or vertical progression in each category. This document does not address the movement of individuals between categories, a process that usually requires additional education, training and experience. The Graduate Attributes and Professional Competences, through their definitions of level of demand, knowledge profile and outcomes to be achieved, allow a person planning such an attainment to judge the further learning and experience that will be required. The education and registration requirements of the jurisdiction should be examined for specific requirements.
### 4 Common Range and Contextual Definitions

#### Range of Problem Identification and Solving

References included are to the Knowledge and Attitude Profile in 5.1

In the context of both Graduate Attributes and Professional Competences:

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Complex Engineering Problems have characteristic WP1 and some or all of WP2 to WP7:</th>
<th>Broadly-defined Engineering Problems have characteristic SP1 and some or all of SP2 to SP7:</th>
<th>Well-defined Engineering Problems have characteristic DP1 and some or all of DP2 to DP7:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Depth of Knowledge Required</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WP1: Cannot be resolved without in-depth engineering knowledge at the level of one or more of WK3, WK4, WK5, WK6 or WK8 which allows a fundamentals-based, first principles analytical approach</td>
<td>SP1: Cannot be resolved without engineering knowledge at the level of one or more of SK 4, SK5, and SK6 supported by SK3 with a strong emphasis on the application of developed technology</td>
<td>DP1: Cannot be resolved without extensive practical engineering knowledge as reflected in DK5 and DK6 supported by theoretical knowledge defined in DK3 and DK4</td>
<td></td>
</tr>
<tr>
<td><strong>Range of conflicting requirements</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WP2: Involve wide-ranging and/or conflicting technical, non-technical issues (such as ethical, sustainability, legal, political, economic, societal) and consideration of future requirements</td>
<td>SP2: Involve a variety of conflicting technical and non-technical issues (such as ethical, sustainability, legal, political, economic, societal) and consideration of future requirements</td>
<td>DP2: Involve several technical and non-technical issues (such as ethical, sustainability, legal, political, economic, societal) and consideration of future requirements</td>
<td></td>
</tr>
<tr>
<td><strong>Depth of analysis required</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WP3: Have no obvious solution and require abstract thinking, creativity and originality in analysis to formulate suitable models</td>
<td>SP3: Can be solved by application of well-proven analysis techniques and models</td>
<td>DP3: Can be solved in standardized ways</td>
<td></td>
</tr>
<tr>
<td><strong>Familiarity of issues</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WP4: Involve infrequently encountered issues or novel problems</td>
<td>SP4: Belong to families of familiar problems which are solved in well-accepted ways</td>
<td>DP4: Are frequently encountered and thus familiar to most practitioners in the practice area</td>
<td></td>
</tr>
<tr>
<td><strong>Extent of applicable codes</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WP5: Address problems not encompassed by standards and codes of practice for professional engineering</td>
<td>SP5: Address problems that may be partially outside those encompassed by standards or codes of practice</td>
<td>DP5: Addresses problems that are encompassed by standards and/or documented codes of practice</td>
<td></td>
</tr>
<tr>
<td><strong>Extent of stakeholder involvement and conflicting requirements</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WP6: Involve collaboration across engineering disciplines, other fields, and/or diverse groups of stakeholders with widely varying needs</td>
<td>SP6: Involve different engineering disciplines and other fields with several groups of stakeholders with differing and occasionally conflicting needs</td>
<td>DP6: Involve a limited range of stakeholders with differing needs</td>
<td></td>
</tr>
<tr>
<td><strong>Interdependence</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WP 7: Address high level problems with many components or sub-problems that</td>
<td>SP7: Address components of systems within complex engineering problems</td>
<td>DP7: Address discrete components of engineering systems</td>
<td></td>
</tr>
<tr>
<td>may require a systems approach</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
# Range of Engineering Activities

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Complex Activities</th>
<th>Broadly-defined Activities</th>
<th>Well-defined Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Preamble</strong></td>
<td>Complex activities means (engineering) activities or projects that have some or all of the following characteristics:</td>
<td>Broadly defined activities means (engineering) activities or projects that have some or all of the following characteristics:</td>
<td>Well-defined activities means (engineering) activities or projects that have some or all of the following characteristics:</td>
</tr>
<tr>
<td>Range of resources</td>
<td>EA1: Involve the use of diverse resources including people, data and information, natural, financial and physical resources and appropriate technologies including analytical and/or design software</td>
<td>TA1: Involve a variety of resources including people, data and information, natural, financial and physical resources and appropriate technologies including analytical and/or design software</td>
<td>NA1: Involve a limited range of resources for example people, data and information, natural, financial and physical resources and/or appropriate technologies</td>
</tr>
<tr>
<td>Level of interactions</td>
<td>EA2: Require optimal resolution of interactions between wide-ranging and/or conflicting technical, non-technical, and engineering issues</td>
<td>TA2: Require the best possible resolution of occasional interactions between technical, non-technical, and engineering issues, of which few are conflicting</td>
<td>NA2: Require the best possible resolution of interactions between limited technical, non-technical, and engineering issues</td>
</tr>
<tr>
<td>Innovation</td>
<td>EA3: Involve creative use of engineering principles, innovative solutions for a conscious purpose, and research-based knowledge</td>
<td>TA3: Involve the use of new materials, techniques or processes in non-standard ways</td>
<td>NA3: Involve the use of existing materials techniques, or processes in modified or new ways</td>
</tr>
<tr>
<td>Consequences to society and the environment</td>
<td>EA4: Have significant consequences in a range of contexts, characterized by difficulty of prediction and mitigation</td>
<td>TA4: Have reasonably predictable consequences that are most important locally, but may extend more widely</td>
<td>NA4: Have predictable consequences with relatively limited and localized impact.</td>
</tr>
<tr>
<td>Familiarity</td>
<td>EA5: Can extend beyond previous experiences by applying principles-based approaches</td>
<td>TA5: Require a knowledge of normal operating procedures and processes</td>
<td>NA5: Require a knowledge of practical procedures and practices for widely-applied operations and processes</td>
</tr>
</tbody>
</table>
## Accord program profiles

The following tables provide profiles of graduates of three types of tertiary education engineering programs. See section 4 for definitions of complex engineering problems, broadly-defined engineering problems, and well-defined engineering problems.

### Knowledge and Attitude Profile

<table>
<thead>
<tr>
<th>A Washington Accord program provides:</th>
<th>A Sydney Accord program provides:</th>
<th>A Dublin Accord program provides:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>WK1:</strong> A systematic, theory-based understanding of the <strong>natural sciences</strong> applicable to the discipline and awareness of relevant <strong>social sciences</strong></td>
<td><strong>SK1:</strong> A systematic, theory-based understanding of the <strong>natural sciences</strong> applicable to the sub-discipline and awareness of relevant <strong>social sciences</strong></td>
<td><strong>DK1:</strong> A descriptive, formula-based understanding of the <strong>natural sciences</strong> applicable in a sub-discipline and awareness of directly relevant <strong>social sciences</strong></td>
</tr>
<tr>
<td><strong>WK2:</strong> Conceptually-based <strong>mathematics,</strong> numerical analysis, data analysis, statistics and formal aspects of computer and information science to support detailed analysis and modelling applicable to the discipline</td>
<td><strong>SK2:</strong> Conceptually-based <strong>mathematics,</strong> numerical analysis, data analysis, statistics and formal aspects of computer and information science to support detailed consideration and use of models applicable to the sub-discipline</td>
<td><strong>DK2:</strong> Procedural <strong>mathematics,</strong> numerical analysis, statistics applicable in a sub-discipline</td>
</tr>
<tr>
<td><strong>WK3:</strong> A systematic, theory-based formulation of <strong>engineering fundamentals</strong> required in the engineering discipline</td>
<td><strong>SK3:</strong> A systematic, theory-based formulation of <strong>engineering fundamentals</strong> required in an accepted sub-discipline</td>
<td><strong>DK3:</strong> A coherent procedural formulation of <strong>engineering fundamentals</strong> required in an accepted sub-discipline</td>
</tr>
<tr>
<td><strong>WK4:</strong> Engineering <strong>specialist knowledge</strong> that provides theoretical frameworks and bodies of knowledge for the accepted practice areas in the engineering discipline; much is at the forefront of the discipline.</td>
<td><strong>SK4:</strong> Engineering <strong>specialist knowledge</strong> that provides theoretical frameworks and bodies of knowledge for an accepted sub-discipline</td>
<td><strong>DK4:</strong> Engineering <strong>specialist knowledge</strong> that provides the body of knowledge for an accepted sub-discipline</td>
</tr>
<tr>
<td><strong>WK5:</strong> Knowledge, including efficient resource use, environmental impacts, whole-life cost, re-use of resources, net zero carbon, and similar concepts, that supports <strong>engineering design and operations</strong> in a practice area</td>
<td><strong>SK5:</strong> Knowledge, including efficient resource use, environmental impacts, whole-life cost, re-use of resources, net zero carbon, and similar concepts, that supports <strong>engineering design and operations</strong> using the technologies of a practice area</td>
<td><strong>DK5:</strong> Knowledge that supports <strong>engineering design and operations</strong> based on the techniques and procedures of a practice area</td>
</tr>
<tr>
<td><strong>WK6:</strong> Knowledge of <strong>engineering practice (technology) in the practice areas in the engineering discipline</strong></td>
<td><strong>SK6:</strong> Knowledge of <strong>engineering technologies</strong> applicable in the sub-discipline</td>
<td><strong>DK6:</strong> Codified practical <strong>engineering knowledge</strong> in recognized practice area.</td>
</tr>
<tr>
<td>WK7: Knowledge of the role of engineering in society and identified issues in engineering practice in the discipline, such as the professional responsibility of an engineer to public safety and sustainable development*</td>
<td>SK7 Knowledge of the role of technology in society and identified issues in applying engineering technology, such as public safety and sustainable development*</td>
<td>DK7: Knowledge of issues and approaches in engineering technician practice, such as public safety and sustainable development*</td>
</tr>
<tr>
<td>---</td>
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</tr>
<tr>
<td>WK8: Engagement with selected knowledge in the current research literature of the discipline, awareness of the power of critical thinking and creative approaches to evaluate emerging issues</td>
<td>SK8 Engagement with the current technological literature of the discipline and awareness of the power of critical thinking</td>
<td>DK8: Engagement with the current technological literature of the practice area</td>
</tr>
<tr>
<td>WK9: Ethics, inclusive behavior and conduct. Knowledge of professional ethics, responsibilities, and norms of engineering practice. Awareness of the need for diversity by reason of ethnicity, gender, age, physical ability etc. with mutual understanding and respect, and of inclusive attitudes</td>
<td>SK9: Ethics, inclusive behavior and conduct. Knowledge of professional ethics, responsibilities, and norms of engineering practice. Awareness of the need for diversity by reason of ethnicity, gender, age, physical ability etc. with mutual understanding and respect, and of inclusive attitudes</td>
<td>DK9: Ethics, inclusive behavior and conduct. Knowledge of professional ethics, responsibilities, and norms of engineering practice. Awareness of the need for diversity by reason of ethnicity, gender, age, physical ability etc. with mutual understanding and respect, and of inclusive attitudes</td>
</tr>
</tbody>
</table>

*Represented by the 17 UN Sustainable Development Goals (UN-SDG)

A program that builds this type of knowledge and attitude and develops the base attributes listed below is typically achieved in 4 to 5 years of study, depending on the level of students at entry.

A program that builds this type of knowledge and attitude and develops the base attributes listed below is typically achieved in 3 to 4 years of study, depending on the level of students at entry.

A program that builds this type of knowledge and attitude and develops the base attributes listed below is typically achieved in 2 to 3 years of study, depending on the level of students at entry.
Graduate Attribute Profiles
References included are to the Knowledge and Attitude Profile in 5.1.

<table>
<thead>
<tr>
<th>Differentiating Characteristic</th>
<th>Engineer Graduate</th>
<th>Engineering Technologist Graduate</th>
<th>Engineering Technician Graduate</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Engineering Knowledge:</strong> Breadth, depth and type of knowledge, both theoretical and practical</td>
<td>WA1: Apply knowledge of mathematics, natural science, computing and engineering fundamentals, and an engineering specialization as specified in WK1 to WK4 respectively to develop solutions to complex engineering problems</td>
<td>SA1: Apply knowledge of mathematics, natural science, computing and engineering fundamentals and an engineering specialization as specified in SK1 to SK4 respectively to defined and applied engineering procedures, processes, systems or methodologies.</td>
<td>DA1: Apply knowledge of mathematics, natural science, engineering fundamentals and an engineering specialization as specified in DK1 to DK4 respectively to wide practical procedures and practices.</td>
</tr>
<tr>
<td><strong>Problem Analysis</strong> Complexity of analysis</td>
<td>WA2: Identify, formulate, research literature and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences with holistic considerations for sustainable development* (WK1 to WK4)</td>
<td>SA2: Identify, formulate, research literature and analyze broadly-defined engineering problems reaching substantiated conclusions using analytical tools appropriate to the discipline or area of specialisation. (SK1 to SK4)</td>
<td>DA2: Identify and analyze well-defined engineering problems reaching substantiated conclusions using codified methods of analysis specific to their field of activity. (DK1 to DK4)</td>
</tr>
<tr>
<td><strong>Design/development of solutions:</strong> Breadth and uniqueness of engineering problems i.e., the extent to which problems are original and to which solutions have not previously been identified or codified</td>
<td>WA3: Design creative solutions for complex engineering problems and design systems, components or processes to meet identified needs with appropriate consideration for public health and safety, whole-life cost, net zero carbon as well as resource, cultural, societal, and environmental considerations as required (WK5)</td>
<td>SA3: Design solutions for broadly-defined engineering technology problems and contribute to the design of systems, components or processes to meet identified needs with appropriate consideration for public health and safety, whole-life cost, net zero carbon as well as resource, cultural, societal, and environmental considerations as required (SK5)</td>
<td>DA3: Design solutions for well-defined technical problems and assist with the design of systems, components or processes to meet specified needs with appropriate consideration for public health and safety as well as cultural, societal, and environmental considerations as required (DK5)</td>
</tr>
<tr>
<td>Differentiating Characteristic</td>
<td>Engineer Graduate</td>
<td>Engineering Technologist Graduate</td>
<td>Engineering Technician Graduate</td>
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</tr>
<tr>
<td><strong>Investigation:</strong> Breadth and depth of investigation and experimentation</td>
<td>WA4: Conduct investigations of complex engineering problems using research methods including research-based knowledge, design of experiments, analysis and interpretation of data, and synthesis of information to provide valid conclusions (WK8)</td>
<td>SA4: Conduct investigations of broadly-defined engineering problems; locate, search and select relevant data from codes, data bases and literature, design and conduct experiments to provide valid conclusions (SK8)</td>
<td>DA4: Conduct investigations of well-defined problems; locate and search relevant codes and catalogues, conduct standard tests and measurements (DK8)</td>
</tr>
<tr>
<td>Tool Usage: Level of understanding of the appropriateness of technologies and tools</td>
<td>WA5: Create, select and apply, and recognize limitations of appropriate techniques, resources, and modern engineering and IT tools, including prediction and modelling, to complex engineering problems (WK2 and WK6)</td>
<td>SA5: Select and apply, and recognize limitations of appropriate techniques, resources, and modern engineering and IT tools, including prediction and modelling, to broadly-defined engineering problems (SK2 and SK6)</td>
<td>DA5: Apply appropriate techniques, resources, and modern computing, engineering, and IT tools to well-defined engineering problems, with an awareness of the limitations. (DK2 and DK6)</td>
</tr>
<tr>
<td>The Engineer and the World: Level of knowledge and responsibility for sustainable development</td>
<td>WA6: When solving complex engineering problems, analyze and evaluate sustainable development impacts* to: society, the economy, sustainability, health and safety, legal frameworks, and the environment (WK1, WK5, and WK7)</td>
<td>SA6: When solving broadly-defined engineering problems, analyze and evaluate sustainable development impacts* to: society, the economy, sustainability, health and safety, legal frameworks, and the environment (SK1, SK5, and SK7)</td>
<td>DA6: When solving well-defined engineering problems, evaluate sustainable development impacts* to: society, the economy, sustainability, health and safety, legal frameworks, and the environment (DK1, DK5, and DK7)</td>
</tr>
<tr>
<td>Ethics: Understanding and level of practice</td>
<td>WA7: Apply ethical principles and commit to professional ethics and norms of engineering practice and adhere to relevant national and international laws. Demonstrate an understanding of the need for diversity and inclusion (WK9)</td>
<td>SA7: Understand and commit to professional ethics and norms of engineering technology practice including compliance with national and international laws. Demonstrate an understanding of the need for diversity and inclusion (SK9)</td>
<td>DA7: Understand and commit to professional ethics and norms of technician practice including compliance with relevant laws. Demonstrate an understanding of the need for diversity and inclusion (DK9)</td>
</tr>
<tr>
<td>Individual and Collaborative Team work: Role in and diversity of team</td>
<td>WA8: Function effectively as an individual, and as a member or leader in diverse and inclusive teams and in multi-disciplinary, face-to-face, remote and distributed settings (WK9)</td>
<td>SA8: Function effectively as an individual, and as a member or leader in diverse and inclusive teams and in multi-disciplinary, face-to-face, remote and distributed settings (SK9)</td>
<td>DA8: Function effectively as an individual, and as a member or leader in diverse and inclusive teams and in multi-disciplinary, face-to-face, remote and distributed settings (DK9)</td>
</tr>
<tr>
<td>Differentiating Characteristic</td>
<td>Engineer Graduate</td>
<td>Engineering Technologist Graduate</td>
<td>Engineering Technician Graduate</td>
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</tr>
<tr>
<td>Communication: Level of communication according to type of activities performed</td>
<td>WA9: Communicate effectively and inclusively on complex engineering activities with the engineering community and with society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations, taking into account cultural, language, and learning differences.</td>
<td>SA9: Communicate effectively and inclusively on broadly-defined engineering activities with the engineering community and with society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations, taking into account cultural, language, and learning differences.</td>
<td>DA9: Communicate effectively and inclusively on well-defined engineering activities with the engineering community and with society at large, by being able to comprehend the work of others, document their own work, and give and receive clear instructions.</td>
</tr>
<tr>
<td>Project Management and Finance: Level of management required for differing types of activity</td>
<td>WA10: Apply knowledge and understanding of engineering management principles and economic decision-making and apply these to one's own work, as a member and leader in a team, and to manage projects and in multidisciplinary environments.</td>
<td>SA10: Apply knowledge and understanding of engineering management principles and apply these to one's own work, as a member or leader in a team and to manage projects in multidisciplinary environments.</td>
<td>DA10: Demonstrate awareness of engineering management principles as a member or leader in a technical team and to manage projects in multidisciplinary environments.</td>
</tr>
<tr>
<td>Lifelong learning: Duration and manner</td>
<td>WA11: Recognize the need for, and have the preparation and ability for i) independent and life-long learning ii) adaptability to new and emerging technologies and iii) critical thinking in the broadest context of technological change (WK8)</td>
<td>SA11: Recognize the need for, and have the ability for i) independent and life-long learning and ii) critical thinking in the face of new specialist technologies (SK8)</td>
<td>DA11: Recognize the need for, and have the ability for independent updating in the face of specialized technical knowledge (DK8)</td>
</tr>
</tbody>
</table>

*Represented by the 17 UN Sustainable Development Goals (UN-SDG)*
6 Professional Competence Profiles

To meet the minimum standard of competence a person must demonstrate that they are able to practice competently, within a practice area, to the standard expected of a reasonable Professional Engineer/Engineering Technologist/Engineering Technician.

The extent to which the person is able to perform each of the following elements in practice area must be taken into account in assessing whether or not the individual meets the overall standard.

<table>
<thead>
<tr>
<th>Differentiating Characteristic</th>
<th>Professional Engineer</th>
<th>Engineering Technologist</th>
<th>Engineering Technician</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comprehend and apply universal knowledge: Breadth and depth of education and type of knowledge</td>
<td>EC1: Comprehend and apply advanced knowledge of the widely-applied principles underpinning good practice</td>
<td>TC1: Comprehend and apply the knowledge embodied in widely accepted and applied procedures, processes, systems or methodologies</td>
<td>NC1: Comprehend and apply knowledge embodied in standardized practices</td>
</tr>
<tr>
<td>Comprehend and apply local knowledge: Type of local knowledge</td>
<td>EC2: Comprehend and apply advanced knowledge of the widely-applied principles underpinning good practice specific to the jurisdiction of practice</td>
<td>TC2: Comprehend and apply the knowledge embodied procedures, processes, systems or methodologies that is specific to the jurisdiction of practice</td>
<td>NC2: Comprehend and apply knowledge embodied in standardized practices specific to the jurisdiction of practice.</td>
</tr>
<tr>
<td>Problem analysis: Complexity of analysis</td>
<td>EC3: Define, investigate and analyze complex problems using data and information technologies where applicable</td>
<td>TC3: Identify, clarify, and analyze broadly-defined problems using the support of computing and information technologies where applicable</td>
<td>NC3: Identify, state and analyze well-defined problems using the support of computing and information technologies where applicable</td>
</tr>
<tr>
<td>Design and development of solutions: Nature of the problem and uniqueness of the solution</td>
<td>EC4: Design or develop solutions to complex problems considering a variety of perspectives and taking account of stakeholder views</td>
<td>TC4: Design or develop solutions to broadly-defined problems considering a variety of perspectives.</td>
<td>NC4: Design or develop solutions to well-defined problems</td>
</tr>
<tr>
<td>Evaluation: Type of activity</td>
<td>EC5: Evaluate the outcomes and impacts of complex activities</td>
<td>TC4: Evaluate the outcomes and impacts of broadly defined activities</td>
<td>NC5: Evaluate the outcomes and impacts of well-defined activities</td>
</tr>
<tr>
<td>Differentiating Characteristic</td>
<td>Professional Engineer</td>
<td>Engineering Technologist</td>
<td>Engineering Technician</td>
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</tr>
<tr>
<td><strong>Protection of society:</strong> Types of activity and responsibility to consider sustainable outcomes</td>
<td>EC6: Recognize the foreseeable economic, social, and environmental effects of complex activities and seek to achieve sustainable outcomes*</td>
<td>TC6: Recognize the foreseeable economic, social, and environmental effects of broadly-defined activities and seek to achieve sustainable outcomes*</td>
<td>NC6: Recognize the foreseeable economic, social, and environmental effects of well-defined activities and seek to achieve sustainable outcomes*</td>
</tr>
<tr>
<td><strong>Legal, regulatory, and cultural:</strong> No differentiation in this characteristic</td>
<td>EC7: Meet all legal, regulatory, and cultural requirements and protect public health and safety in the course of all activities</td>
<td>TC7: Meet all legal, regulatory, and cultural requirements and protect public health and safety in the course of all activities</td>
<td>NC7: Meet all legal, regulatory, and cultural requirements and protect public health and safety in the course of all activities</td>
</tr>
<tr>
<td><strong>Ethics:</strong> No differentiation in this characteristic</td>
<td>EC8: Conduct activities ethically</td>
<td>TC8: Conduct activities ethically</td>
<td>NC8: Conduct activities ethically</td>
</tr>
<tr>
<td><strong>Manage engineering activities:</strong> Types of activity</td>
<td>EC9: Manage part or all of one or more complex activities</td>
<td>TC9: Manage part or all of one or more broadly-defined activities</td>
<td>NC9: Manage part or all of one or more well-defined activities</td>
</tr>
<tr>
<td><strong>Communication and Collaboration:</strong> Requirement for inclusive communications. No differentiation in this characteristic</td>
<td>EC10: Communicate and collaborate using multiple media clearly and inclusively with a broad range of stakeholders in the course of all activities.</td>
<td>TC10: Communicate and collaborate using multiple media clearly and inclusively with a broad range of stakeholders in the course of all activities.</td>
<td>NC10: Communicate and collaborate using multiple media clearly and inclusively with a broad range of stakeholders in the course of all activities.</td>
</tr>
<tr>
<td><strong>Continuing Professional Development (CPD) and Lifelong learning:</strong> Preparation for and depth of continuing learning. No differentiation in this characteristic</td>
<td>EC11: Undertake CPD activities to maintain and extend competences and enhance the ability to adapt to emerging technologies and the ever-changing nature of work.</td>
<td>TC11: Undertake CPD activities to maintain and extend competences and enhance the ability to adapt to emerging technologies and the ever-changing nature of work.</td>
<td>NC11: Undertake CPD activities to maintain and extend competences and enhance the ability to adapt to emerging technologies and the ever-changing nature of work.</td>
</tr>
<tr>
<td><strong>Judgement:</strong> Level of</td>
<td>EC12: Recognize complexity and</td>
<td>TC12: Choose appropriate</td>
<td>NC12: Choose and apply appropriate</td>
</tr>
<tr>
<td>Differentiating Characteristic</td>
<td>Professional Engineer</td>
<td>Engineering Technologist</td>
<td>Engineering Technician</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>------------------------</td>
<td>--------------------------</td>
<td>------------------------</td>
</tr>
<tr>
<td>developed knowledge, and</td>
<td>assess alternatives in</td>
<td>technologies to deal with</td>
<td>technical expertise.</td>
</tr>
<tr>
<td>ability and judgement</td>
<td>light of competing</td>
<td>broadly defined problems.</td>
<td>Exercise sound</td>
</tr>
<tr>
<td>in relation to type of activity</td>
<td>requirements and</td>
<td>judgement in the course of</td>
<td>judgement in the course</td>
</tr>
<tr>
<td></td>
<td>incomplete knowledge.</td>
<td>all broadly-defined</td>
<td>of all well-defined</td>
</tr>
<tr>
<td></td>
<td>Exercise sound</td>
<td>activities</td>
<td>activities</td>
</tr>
<tr>
<td></td>
<td>judgement in the course</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>of all complex activities</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Responsibility for decisions:** Type of activity for which responsibility is taken

| EC13: Be responsible for making decisions on part or all of complex activities | TC13: Be responsible for making decisions on part or all of one or more broadly defined activities | NC13: Be responsible for making decisions on part or all of one or more well-defined activities |

*Represented by the 17 UN Sustainable Development Goals (UN-SDG)
Appendix A: Definitions of terms

Note: These definitions apply to terms used in this document.

Awareness: Recognizing the context and implications while using or applying what has been learned. The demonstration of awareness can be more varied than a demonstration of knowledge. Asking the right questions, including among the assumptions made, complying with or respecting when faced with a situation may be acceptable demonstrations.

Branch of engineering: a generally-recognized, major subdivision of engineering such as the traditional disciplines of Chemical, Civil, or Electrical Engineering, or a cross-disciplinary field of comparable breadth including combinations of engineering fields, for example Mechatronics, and the application of engineering in other fields, for example Bio-Medical Engineering.

Broadly-defined engineering problems: a class of problem with characteristics defined in section 4.1.

Broadly-defined engineering activities: a class of activities with characteristics defined in section 4.2.

Complementary (contextual) knowledge: Disciplines other than engineering, basic and mathematical sciences, that support engineering practice, enable its impacts to be understood and broaden the outlook of the engineering graduate.

Complex engineering problems: a class of problem with characteristics defined in section 4.1.

Complex engineering activities: a class of activities with characteristics defined in section 4.2.

Continuing Professional Development: the systematic, accountable maintenance, improvement and broadening of knowledge and skills, and the development of personal qualities necessary for the execution of professional and technical duties throughout an engineering practitioner’s career.

Engineering sciences: include engineering fundamentals that have roots in the mathematical and physical sciences, and where applicable, in other natural sciences, but extend knowledge and develop models and methods in order to lead to applications and solve problems, providing the knowledge base for engineering specializations.

Engineering design knowledge: Knowledge that supports engineering design in a practice area, including codes, standards, processes, empirical information, and knowledge reused from past designs.

Engineering discipline: synonymous with branch of engineering.

Engineering fundamentals: a systematic formulation of engineering concepts and principles based on mathematical and natural sciences to support applications.

Engineering management: the generic management functions of planning, organising, leading and controlling, applied together with engineering knowledge in contexts including the management of projects, construction, operations, maintenance, quality, risk, change and business.

Engineering problem: is a problem that exists in any domain that can be solved by the application of engineering knowledge and skills and generic competences.

Engineering practice area: a generally accepted or legally defined area of engineering work or engineering technology.
Engineering speciality or specialization: a generally-recognized practice area or major subdivision within an engineering discipline, for example Structural and Geotechnical Engineering within Civil Engineering; the extension of engineering fundamentals to create theoretical frameworks and bodies of knowledge for engineering practice areas.

Engineering technology: is an established body of knowledge, with associated tools, techniques, materials, components, systems or processes that enable a family of practical applications and that relies for its development and effective application on engineering knowledge and competence.

Forefront of the professional discipline/branch\(^4\): defined by advanced practice in the specialisations within the discipline.

Formative development: the process that follows the attainment of an accredited education program that consists of training, experience and expansion of knowledge.

Knowledge: Recognizing and comprehending terminology, facts, methods, trends, classifications, structures, or theories. It involves learning as well as demonstrating what has been learned. The demonstration of a specific knowledge is invariably by means of work done based on that knowledge.

Manage: means planning, organising, leading and controlling in respect of risk, project, change, financial, compliance, quality, ongoing monitoring, control and evaluation.

Mathematical sciences: mathematics, numerical analysis, statistics and aspects of computer science cast in an appropriate mathematical formalism.

Natural sciences: Provide, as applicable in each engineering discipline or practice area, an understanding the physical world including physics, mechanics, chemistry, earth sciences and the biological sciences,

Practice area: in the educational context: synonymous with generally-recognized engineering speciality; at the professional level: a generally recognized or distinctive area of knowledge and expertise developed by an engineering practitioner by virtue of the path of education, training and experience followed.

Solution: means an effective proposal for resolving a problem, taking into account all relevant technical, legal, social, cultural, economic and environmental issues and having regard to the need for sustainability.

Subdiscipline: Synonymous with engineering speciality.

Substantial equivalence: applied to educational programs means that two or more programs, while not meeting a single set of criteria, are both acceptable as preparing their respective graduates to enter formative development toward registration.

Well-defined engineering problems: a class of problem with characteristics defined in section 4.1.

Well-defined engineering activities: a class of activities with characteristics defined in section 4.2.

\(^4\) This should be distinguished from: Forefront of knowledge in an engineering discipline/speciality: defined by current published research in the discipline or speciality.
Appendix B: History of Graduate Attributes and Professional Competence Profiles

The signatories to the Washington Accord recognized the need to describe the attributes of a graduate of a Washington Accord accredited program. Work was initiated at its June 2001 meeting held at Thornybush, South Africa. At the International Engineering Meetings (IEM) held in June 2003 at Rotorua, New Zealand, the signatories to the Sydney Accord and the Dublin Accord recognized similar needs. The need was recognized to distinguish the attributes of graduates of each type of program to ensure fitness for their respective purposes.

The Engineers Mobility Forum (EMF) and Engineering Technologist Mobility Forum (ETMF)5 have created international registers in each jurisdiction with current admission requirements based on registration, experience and responsibility carried. The mobility agreements recognize the future possibility of competence-based assessment for admission to an international register. At the 2003 Rotorua meetings, the mobility fora recognized that many jurisdictions are in the process of developing and adopting competence standards for professional registration. The EMF and the ETMF therefore resolved to define assessable sets of competences for engineer and technologist. While no comparable mobility agreement exists for technicians, the development of a corresponding set of standards for engineering technicians was felt to be important to have a complete description of the competences of the engineering team.

Version 1
A single process was therefore agreed to develop the three sets of graduate attributes and three professional competence profiles. An International Engineering Workshop (IEWS) was held by the three educational accord and the two mobility fora in London in June 2004 to develop statements of Graduate Attributes and International Register Professional Competence Profiles for the Engineer, Engineering Technologist and Engineering Technician categories. The resulting statements were then opened for comment by the signatories. The comments received called for minor changes only.

The Graduate Attributes and Professional Competences were adopted by the signatories of the five agreements in June 2005 at Hong Kong as version 1.1.

Version 2
A number of areas of improvement in the Graduate Attributes and Professional Competences themselves and their potential application were put to the meetings of signatories in Washington DC in June 2007. A working group was set up to address the issues. The IEA workshop held in June 2008 in Singapore considered the proposals of the working group and commissioned the Working Group to make necessary changes with a view to presenting Version 2 of the document for approval by the signatories at their next general meetings. Version 2 was approved at the Kyoto IEA meetings, 15-19 June 2009.

Version 3
Between 2009 and 2012 a number of possible improvements to the graduate attributes were recorded. During 2012 signatories performed an analysis of gaps between their respective standards and the Graduate Attribute exemplars and by June 2013 most signatories reported substantial equivalence of their standards to the Graduate Attributes. This will be further examined in periodic monitoring reviews in 2014 to 2019. In this process a number of improvements to the wording of the Graduate Attributes and supporting definitions were identified. The signatories to the Washington, Sydney and Dublin Accords approved the changes resulting in this Version 3 at their meetings in Seoul 17-21 June 2013. Signatories stated that the objectives of the changes were to clarify aspects of the Graduate Attribute exemplar. There was no intent to raise the standard. The main changes were as follows:

- New Section 2.3 inserted;
- Range of problem solving in section 4.1 linked to the Knowledge Profiles in section 5.1 and duplication removed;


5 Now the IEPA and IETA respectively.
• Graduate Attributes in section 5.2: cross-references to Knowledge Profile elements inserted; improved wording in attributes 6, 7 and 11;
• Appendix A: definitions of engineering management and forefront of discipline added.

Version 4
An agreement was signed at the IEAM 2015 for International Engineering Technicians. The Agreement for International Engineering Technicians (AIET) establishes an international benchmark standard for a practicing qualified engineering technician. An agreement now exists for technicians so that the standards included among Professional Competence Profiles for an engineering technician can be applied.

A UNESCO WFEO IEA Working Group was established in November 2019 following the renewal of the WFEO-IEA MoU and the Declaration on Engineering Education that was made in Melbourne at WEC2019. The Working Group has reviewed the Graduate Attributes and Professional Competences in order to ensure that they reflect contemporary values and employer needs, cover diversity and inclusion and ethics to reflect current and emerging thinking, address the intellectual agility, creativity and innovation required of engineering decision making as well as equip engineering professionals of the future to incorporate the practices that advance the United Nations Sustainable Development Goals (UN SDG). The main changes that resulted from the surveys, research, dissemination and consultation efforts during 2019-2021 were as follows:

• There were changes in all tables on Range of Problem Solving, Range of Engineering Activities, Knowledge and Attitude Profile, Graduate Attributes, and Professional Competence Profiles. These consisted of additions of new attributes as well as enhancements of the already existing ones. Some improvements in the wording and in clarity has also been a concern.
• Knowledge and Attitude Profile, Graduate Attributes, and Professional Competence Profiles Tables now refer to UN SDG. These references are intended to provide context for curriculum designers and for professional engineers seeking registration. They represent an internationally accepted example of how sustainability issues can be concisely understood and presented.
• Two rows on “Consequences, Judgement” at the end of Table 4.1 Range of Problem Solving that refer to Professional Competences are deleted as no differentiation was deemed necessary among the three categories.
• A new row of “Ethics, inclusive behavior and conduct” is introduced in the Knowledge Profile table, the name of which has been changed to the Knowledge and Attitude Profile.
• The breadth required of engineering education has been widened to emphasize digital literacy, data analysis, UN SDG, knowledge of relevant social sciences.
• Two rows of Graduate Attributes on “The Engineer and Society” and “Environment and Sustainability,” which have been based on the same knowledge profile have been combined under the heading “The Engineer and the World,” also supplementing the required knowledge profile.
• Knowledge and awareness of ethics, diversity, and inclusion have been emphasized.
• Critical thinking, innovation, emerging technologies, and lifelong learning requirements have been highlighted.
• The necessitated similar changes to Professional Competences have also been made.

The proposed revisions were introduced and discussed by member organizations through a series of extensive consultations, also through webinars organized by WFEO, in IEAM 2020 by IEA members, and via consultation web pages.
## Document & Version Control

<table>
<thead>
<tr>
<th>Version/Effective From</th>
<th>Summary of Changes</th>
<th>Approved</th>
<th>Minutes</th>
</tr>
</thead>
<tbody>
<tr>
<td>2021.1 / Effective from 21 June 2021</td>
<td>Comprehensive review undertaken by joint working group to revise previous version (2013).</td>
<td>Approved by IEA Members (Signatories and Authorised Members) at IEAM June 2021 Use of WFEO &amp; UNESCO Logos approved via email following meetings.</td>
<td>IEA21- IEA Forum Session</td>
</tr>
</tbody>
</table>
Delegation of
US Engineering State Board Members

05 February – 08 February 2024

US Delegation Programme Book
Contents

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Accommodation and Information – Page 4
His Majesty’s Government Staff in Attendance – Page 5
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Mutual Recognition Agreement – Page 12
UK Engineering Background – Page 14
Site Visits – Page 16
UK Government Meetings – Page 18
Engineering Council Biographies – Page 20
ICE Dinner Biographies – Page 22
Delegate Biographies – Page 25
Notes – Page 34
Dear Delegates,

Welcome to the UK! We are delighted that you have joined us for what we are sure will be an informative and productive mission.

The Prime Minister was pleased to announce the start of mutual recognition negotiations between NCEES and the Engineering Council during his press conference with President Biden at the White House in June 2023. In hosting this delegation, we’re excited to provide an opportunity for you to learn about the UK’s engineering sector and licensure process. Likewise, UK stakeholders will be interested to hear about processes in your respective states, the current challenges and opportunities you face, as well as avenues for closer cooperation. We believe this is an important moment for engineering on both sides of the Atlantic and we’re here to support your conversations with the Engineering Council.

The three-day visit will include meetings with UK Government Ministers, senior executives from several prominent UK engineering companies, and leaders of the Engineering Council. These engagements will:

- Showcase the UK engineering sector across various disciplines.
- Outline the high standards of engineering education and experience across the United Kingdom.
- Provide an opportunity to learn about the Engineering Council, including their professional review process, continuing professional development, and relationship with discipline specific engineering institutes.
- Promote further cooperation between the UK and US engineering sectors.

In this briefing pack, you’ll find logistical information for your itinerary, key contact information, and biographies and briefing notes for your meetings with government and industry. We’ve also included a brief overview with facts and figures on the UK’s engineering sector. Finally, NCEES and the Engineering Council have provided an overview and the latest draft of the proposed mutual recognition agreement for your information.

Thank you again for your attendance on this delegation and willingness to share your perspective on the upcoming mutual recognition agreement.

Sincerely,

**Gregor Catto**
Senior Trade Policy Officer, British Embassy Washington
## Accommodation and Information

| Hotel          | Club Quarters, Trafalgar Square  
|                | 8 Northumberland Ave London, WC2N 5BY  
|                | United States +1 (203) 905-2100  
|                | UK +44 (0) 20 7451 5800  
|                | [https://clubquartershotels.com/london/trafalgar-square](https://clubquartershotels.com/london/trafalgar-square) |
| Hospital       | St. Thomas’s Hospital  
|                | Westminster Bridge Rd  
|                | Lambeth, London SE1 7EH  
|                | +44-20-7188-7188 |
| Police         | London Metropolitan Police  
|                | Victoria Embankment  
|                | Westminster, London SW1A 2JL  
|                | +44-20-7230-1212 |
| Airport        | London Heathrow Airport  
|                | The Compass Centre Nelson Road, Hounslow TW6 2GW  
|                | +44 844 335 1801 |
| US Embassy     | U.S. Embassy London  
|                | 33 Nine Elms Lane, London SW11 7US  
|                | Switchboard +44 (0) 207 499 9000 (24 hours)  
|                | Marine Post 1 +44 (0) 207 891 3484 (24 hours)  
|                | Asst. Regional Security Officer: +44 (0) 207 891 3394 (business hours)  
|                | Duty Officer Cell Phone: +44 (0) 785 079 2472 (24 hours) |
Gregor Catto  Senior Trade Policy Officer, British Embassy Washington

Gregor oversees the UK Government’s state level trade strategy in the US. He also leads work on the mutual recognition of professional qualifications, procurement, and market access. He was previously the agriculture policy advisor and joined the Embassy in 2020. From 2017 to 2020, Gregor served in the Office of US Congressman Robert Aderholt. He led on the several policy areas including appropriations, agriculture, trade, telecommunications and transportation. Before moving to the US, Gregor served as Parliamentary Researcher to John Glen, Member of Parliament for Salisbury. Gregor received his undergraduate degree in Theology from King’s College London and studied abroad at UNC Chapel Hill. He can play the bagpipes but couldn’t fit them in his luggage for the delegation.

+1 (202) 716-2458 | E-mail: Gregor.Catto@fcdo.gov.uk

Grace Lowden  Executive Assistant to US Country Director and Director of Investment, North America, British Embassy Washington

Grace supports the US Country Director and the Director of Investment within the Department for Business and Trade (DBT) and is based at the British Embassy Washington. Prior to joining the Embassy in June of 2022, Grace worked as a Litigation Paralegal at Sullivan & Cromwell where she specialized in Intellectual Property and Financial Institutions. Grace received her undergraduate degree in International Studies at American University and completed the London School of Economics General Course during her Junior year.

+1 (202) 460-4454 | E-mail: Grace.Lowden@fcdo.gov.uk
Simon Gordon  **Team Lead, Department for Business and Trade, North America Bilateral Trade Relations**

Simon Gordon is a team lead in the North America unit of the Bilateral Trade Relations directorate in the UK’s Department for Business and Trade. He works on trade engagement with US states, covering areas including recognition of professional qualifications and government procurement. Simon previously worked in the Home Secretary’s Implementation Unit at the UK’s Home Office.

Before joining the UK Government, Simon served as assistant editor of an online publication in New York City, NY, and subsequently as speechwriter first to an ambassador to the UK and then to a backbench Member of Parliament.

(+44) 7761 876 113 | E-mail: simon.gordon@businessandtrade.gov.uk

Miles Beckwith  **Assistant Director at the Department for Business and Trade**

Miles spent his first years out of university working for Saatchi&Saatchi and Mediacom on a range of clients including Toyota, P&G and Tesco. He then began a career in government through the Civil Service Fast Stream. He became a senior policy advisor in DCMS for advertising. He is policy and engagement lead in the Financial, Professional and Business Services team in the Department for Business and Trade. In this role he has worked various trade issues such as driving uptake of the UK’s memoranda with US states, mutual recognition of professional qualifications and designing and implementing sanctions on Russia.

(+44) 7733 881 248 | E-mail: miles.beckwith@businessandtrade.gov.uk
Sandra Ababio-Danso  *Policy Officer at the Department for Business and Trade*

Sandra is a dedicated professional with a diverse background in project management, policy delivery and stakeholder management. With a strong educational foundation and extensive experience across various sectors, Sandra brings a unique blend of skills and expertise to her professional endeavours. She is currently a HEO policy officer and engagement lead in the Financial, Professional and Business Services team in the Department for Business and Trade.

(+44) 7917 416 300 | E-mail: sandra.ababiodanso@businessandtrade.gov.uk
# Delegation Programme

<table>
<thead>
<tr>
<th>Time</th>
<th>Agenda</th>
<th>Information</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sunday 04 February</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Delegates depart from the United States</td>
<td></td>
</tr>
<tr>
<td><strong>Monday 05 February</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>07:00-10:30</td>
<td>Delegates arrive in London. Transit to <strong>Club Quarters Trafalgar Square Hotel</strong></td>
<td>Club Quarters Hotel Trafalgar Square, 8 Northumberland Ave, London WC2N 5BY</td>
</tr>
<tr>
<td>10:30</td>
<td>Meet Grace in CQ Hotel Lobby for optional walk to <strong>Westminster Abbey</strong></td>
<td></td>
</tr>
<tr>
<td>10:30-12:30</td>
<td>Optional visit to Westminster Abbey for early delegates – lunch at <strong>Cellarium Café</strong></td>
<td>Cellarium Café And Terrace, Westminster Abbey, Deans Yard, The Sanctuary, Westminster SW1P 3PA</td>
</tr>
<tr>
<td>12:45</td>
<td>Delegates Regroup in Hotel Lobby</td>
<td>Club Quarters Hotel Trafalgar Square, 8 Northumberland Ave, London WC2N 5BY</td>
</tr>
<tr>
<td>13:00-14:00</td>
<td>Bus from CQ Hotel to <strong>Old Oak Common</strong></td>
<td>BBVS JV Site Office, GWR Old Oak Common Rail Depot, London NW10 6ED</td>
</tr>
<tr>
<td>Time</td>
<td>Activity</td>
<td>Location</td>
</tr>
<tr>
<td>--------------</td>
<td>---------------------------------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>14:00-15:00</td>
<td>Old Oak Common Super-Hub</td>
<td></td>
</tr>
<tr>
<td>15:00-16:00</td>
<td>Bus back to the hotel</td>
<td>Club Quarters Hotel Trafalgar Square, 8 Northumberland Ave, London WC2N 5BY</td>
</tr>
<tr>
<td>16:00-16:30</td>
<td>Freshen Up for Parliament tour &amp; dinner</td>
<td></td>
</tr>
<tr>
<td>16:30-16:45</td>
<td>Walk/ Taxi to <strong>Palace of Westminster</strong></td>
<td>Cromwell Green Entrance The House Of Commons, London SW1A 0AA</td>
</tr>
<tr>
<td>16:45-17:00</td>
<td>Check In/ Security at Cromwell Green Entrance- <strong>The House of Commons</strong></td>
<td></td>
</tr>
<tr>
<td>17:00-18:00</td>
<td>Tour <strong>Parliament</strong> with Sir Conor Burns’ staff – the Prime Minister’s Trade Envoy to the United States for Regional Trade and Investment</td>
<td></td>
</tr>
<tr>
<td>18:00-20:00</td>
<td>Welcome dinner hosted by Sir Conor Burns. Also attending:</td>
<td>Place of Westminster, Terrace Dining Room B</td>
</tr>
<tr>
<td></td>
<td>• Paul Bailey, Chief Executive Officer, Engineering Council</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Katy Turff, Head of Policy and Standards and Deputy CEO, Engineering Council</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Dr Dave Clark, International Affairs Manager, Engineering Council</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Hugh Simpson, Chief Executive Officer, Architects Registration Board</td>
<td></td>
</tr>
<tr>
<td>Time</td>
<td>Activity</td>
<td>Location</td>
</tr>
<tr>
<td>----------</td>
<td>---------------------------------------------</td>
<td>--------------------------------------------------------------------------</td>
</tr>
<tr>
<td>7:00-8:00</td>
<td>Breakfast in Hotel</td>
<td>8 Northumberland Avenue, London WC2N 5BY</td>
</tr>
<tr>
<td>8:00-8:35</td>
<td>Walk to <strong>Waterloo Train Station</strong></td>
<td>Waterloo Station York Rd, London SE1 7ND</td>
</tr>
<tr>
<td>8:35-8:58</td>
<td>Train to <strong>Woking Station</strong></td>
<td>Woking Station Approach Woking Surrey GU22 7AE</td>
</tr>
<tr>
<td>9:00-9:30</td>
<td>Bus from Woking Station to <strong>McLaren Technology Centre</strong></td>
<td>Mclaren Technology Centre Chertsey Rd, Woking GU21 4YH</td>
</tr>
<tr>
<td>9:30-10:00</td>
<td>McLaren Q&amp;A with Engineers (w/ Refreshments in VIP Area)</td>
<td></td>
</tr>
<tr>
<td>10:00-12:00</td>
<td>Tour of McLaren Technology Centre</td>
<td></td>
</tr>
<tr>
<td>12:00-13:15</td>
<td>Bus to <strong>Battersea Power Station</strong></td>
<td>26 Circus Road West, Nine Elms SW11 8DD</td>
</tr>
<tr>
<td>13:15-14:00</td>
<td>Lunch in <strong>Battersea Arcade Food Hall</strong> with Sam Youdan</td>
<td></td>
</tr>
<tr>
<td>14:00-15:45</td>
<td>Tour Battersea Power Station 15:10 Lift 109 Chimney Tour for 11 15:20 Lift 109 Chimney Tour for 11</td>
<td>Two sets of group tickets booked.</td>
</tr>
<tr>
<td>15:45-16:00</td>
<td>Bus / Walk to <strong>US Embassy</strong></td>
<td>33 Nine Elms Lane, London SW11 7US</td>
</tr>
<tr>
<td>16:00-17:00</td>
<td>Tour of US Embassy</td>
<td></td>
</tr>
<tr>
<td>17:00-17:30</td>
<td>Drinks at <strong>US Embassy Pub</strong></td>
<td></td>
</tr>
</tbody>
</table>
### Delegation of US Engineering State Board Members
#### 05 – 08 February 2024

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>17:30-18:00</td>
<td>Bus to <strong>Club Quarters Hotel</strong></td>
<td>8 Northumberland Avenue, London WC2N 5BY</td>
</tr>
<tr>
<td>18:00-18:15</td>
<td>Freshen Up at Hotel</td>
<td>8 Northumberland Avenue, London WC2N 5BY</td>
</tr>
<tr>
<td>18:15-18:30</td>
<td>Walk/ Taxi to Dinner</td>
<td>Institution of Civil Engineers One Great George Street, London</td>
</tr>
<tr>
<td>18:30-20:00</td>
<td>Dinner with UK engineering industry, hosted at the <strong>Institution of Civil Engineers</strong></td>
<td>One Great George Street, London</td>
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</table>

**Wednesday 07 February**

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>08:30-09:30</td>
<td>Breakfast in Hotel</td>
<td>8 Northumberland Avenue, London WC2N 5BY</td>
</tr>
<tr>
<td>09:30-09:40</td>
<td>Walk to <strong>Department for Business and Trade</strong></td>
<td>Old Admiralty Building Admiralty Place London SW1A 2DY United Kingdom</td>
</tr>
<tr>
<td>10:00-10:25</td>
<td>Meeting with Rt Hon Greg Hands MP, Minister for Trade Policy</td>
<td>Churchill Room, Department for Business and Trade</td>
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<tr>
<td>10:25-11:00</td>
<td>Walk to <strong>Foreign, Commonwealth and Development Office</strong></td>
<td>King Charles Street London SW1A 2AH United Kingdom</td>
</tr>
<tr>
<td>11:00-11:10</td>
<td>Welcome remarks from David Rutley MP, Minister for the Americas, Caribbean and Overseas Territories.</td>
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<tr>
<td>Time</td>
<td>Event</td>
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<tr>
<td>11:10-1300</td>
<td>Roundtable discussions between Engineering Council and National Council of Examiners for Engineering and Surveying</td>
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<tr>
<td>13:00-13:30</td>
<td>Lunch</td>
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<tr>
<td>13:30-14:00</td>
<td>Tour of FCDO</td>
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<tr>
<td>14:00-16:00</td>
<td>Continued Roundtable at FCDO</td>
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<tr>
<td>19:00-20:30</td>
<td>Internal Delegation Dinner at <strong>Browns Covent Garden</strong></td>
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Thursday 08 February

Delegates fly back to the United States
Mutual Recognition Agreement between the National Council of Examiners for Engineering and Surveying (USA) and the Engineering Council (UK).

Background
Over the past few years, there has been increasing interest from the government, employers and professional associations in exploring the possibility of recognition of professional qualifications between the UK and the USA. This intention was announced in the UK Prime Minister’s opening remarks in the Atlantic Declaration at the White House on Thursday 8 June 2023: “An agreement to work towards mutual recognition of more professional qualifications in areas like engineering…”

The Parties
The National Council of Examiners for Engineering and Surveying (NCEES) is a not-for-profit organisation with a mission to advance licensure for engineers and surveyors in order to safeguard the health, safety, and welfare of the public. NCEES members are the engineering and surveying licensure boards from all 50 U.S. states, the District of Columbia, Guam, Northern Mariana Islands, Puerto Rico and the U.S. Virgin Islands.

The Engineering Council (EngC) was incorporated by Royal Charter in 1981 to regulate the engineering profession in the UK and sets and maintains internationally recognised standards of professional competence and commitment for the public benefit. EngC holds the national register of over 228,000 engineers and technicians who have been assessed against these standards and awarded a professional title, for example Chartered Engineer.

Both organisations are founding members of the International Engineering Alliance (IEA) International Professional Engineers Agreement (IPEA).

Objectives and Principles
The intent of the agreement is to enable mobility for Chartered Engineers (UK) and Professional
Engineers (USA), reducing bureaucracy, duplication of assessment and costs where possible. Enabling mutual recognition provides increased opportunities for individuals and businesses for trade, knowledge sharing and co-operation. It will also enable skills shortages in critical areas to be addressed.

A leading global consulting firm with operations in the USA and the UK has stated recently:

‘There are many advantages to breaking down mutual recognition barriers. A key sectoral one we would immediately identify is the benefit of sharing skills and experience as both countries develop their green economies, where experienced engineers are in high demand to lead and work on decarbonisation and renewable energy projects.’

The MRA is designed to ensure that the public, employers and their clients can have confidence and trust that registered/licensed engineers participating in the agreement have met globally recognised professional standards. It also respects discipline-specific and jurisdictional requirements of the US and UK participating organisations.

The Agreement

NCEES and EngC have exchanged information on standards and processes for the licensure and registration of professional engineers in each jurisdiction and developed an agreement to facilitate mutual recognition. Despite differing systems of regulation, due diligence has confirmed that the UK and USA are well-aligned in terms of professional standards for registered/licensed engineers at the Chartered/Professional Engineer level. This is further assured by regular independent peer-review by the IPEA, confirming that the standard of professional competence in each jurisdiction is substantially equivalent to the globally recognised IPEA benchmark.

As a comparable benchmark of professional competence has been established, this allows significant exemptions from standard assessment processes to be considered. To facilitate this, it has been agreed that individual applicants should already have been awarded the IPEA’s International Professional Engineer (IntPE) title in their home jurisdiction, providing further assurance of current professional competence and continuing professional development (CPD).
There is an opt-in mechanism so that the Licensing Boards of US States can participate, based on the model of 2023 agreement between the Architects Registration Board (ARB) and its US counterpart, the National Council of Architects Registration Boards (NCARB). The agreement also includes a regular review mechanism to optimise and safeguard the operation of the MRA across the UK and US States. Licensed Members of the Engineering Council, the UK Professional Engineering Institutions (PEIs), will also be participants in the agreement.

**The Next Steps**

Following final approval by NCEES and EngC governance, it is intended that the two parties will sign the agreement in the spring. This will be followed by a full launch, with opted-in state boards, at the NCEES National Meeting in August 2024.

David Cox
CEO NCEES

Paul Bailey
CEO Engineering Council
UK Engineering Background

- Engineering is a key sector for the UK and makes a significant contribution both socially and economically.

- The UK is a global powerhouse in engineering, boasting a rich history of innovation and a diverse array of engineering professions that contribute significantly to the nation's economic prosperity and technological advancement.

- The UK is renowned for its world-class civil engineering projects, including iconic structures like the Channel Tunnel, Crossrail, and the Thames Barrier. These services are also exported all over the world. For example two UK companies, Arup and Foster and Partners, are combining to design the Merced, Fresno, Kings/Tulare, and Bakersfield stations on the initial 171-mile segment of the California High-Speed Rail.

- The UK is a hub for precision engineering, with expertise in aerospace (Rolls Royce, BAE systems), automotive (Aston Martin, Jaguar Land Rover, MacLaren), and manufacturing industries (INEOS, GlaxoSmithKline).

- The UK is at the forefront of biomedical engineering, with leading research institutions and companies driving innovation in healthcare technologies.

- This is success is underpinned the flow of talent from the UK’s top universities, such as Oxford, Cambridge and Imperial College London, and a large network of apprenticeships, now supported by a £50m government programme specifically for fostering the next generation of engineering talent.

**Fig 1. Key economic metrics**

<table>
<thead>
<tr>
<th>Metric</th>
<th>Value</th>
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<tr>
<td>GVA</td>
<td>£20.4bn</td>
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<tr>
<td>Annual growth 2021-22</td>
<td>9.90%</td>
</tr>
<tr>
<td>Employment</td>
<td>541,000</td>
</tr>
<tr>
<td>Registered businesses</td>
<td>85,500</td>
</tr>
<tr>
<td>Exports</td>
<td>£8.5bn</td>
</tr>
<tr>
<td>Imports</td>
<td>£4.5bn</td>
</tr>
</tbody>
</table>
The subsector is fairly concentrated in large firms (250+ employees) which make up 0.4% of all employers, but provide 30% of employment and 38% of turnover in the subsector. Major firms include Atkins, Aecom, ARUP and Mott MacDonald.

Engineering is growing at a much faster rate (9.9% growth in GVA per year) than the rest of the economy (4.3% growth in GVA per year.) Jobs have also outstripped the UK average, rising 3.9% in 2021-22 compared to the 2.7% UK average, reflecting the dynamism of the sector.

The engineering profession is more regionally diverse than other services professions. (see Fig. 2.) 80% of engineering GVA is generated outside of London, compared to 65% for the rest of the professional and business services economy. This reflects the UK’s considerable investment and expertise in renewable energy, such as solar and wind farms, as well as advanced manufacturing at regional sites.

**Top 5 regions (2021 GVA, % of UK)**

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<thead>
<tr>
<th>Region</th>
<th>2021 GVA</th>
<th>% of UK</th>
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</thead>
<tbody>
<tr>
<td>London</td>
<td>£4.1bn</td>
<td>20%</td>
</tr>
<tr>
<td>South East</td>
<td>£3.7bn</td>
<td>18%</td>
</tr>
<tr>
<td>East of England</td>
<td>£2.8bn</td>
<td>14%</td>
</tr>
<tr>
<td>Scotland</td>
<td>£2.1bn</td>
<td>10%</td>
</tr>
<tr>
<td>North West</td>
<td>£1.9bn</td>
<td>9%</td>
</tr>
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</table>
Site Visits

Old Oak Common

Old Oak Common is a new super-hub set to be the best-connected and largest new railway station ever built in the UK. The station will have fourteen platforms, a mix of six high-speed and eight conventional service platforms, with an 850m-long station box, big enough to fit 6,300 Routemaster buses inside.

Old Oak Common will become one of the country’s most vital transport super-hubs. The station is expected to be one of the busiest railway stations in the country with high-speed rail services across the UK, and access to central London and Heathrow via the Elizabeth line. Passengers will also be able to travel to Wales and the South West. Its construction and operation will also drive the regeneration of the area around it in West London.

McLaren Technology Centre

McLaren is one of the most successful teams in the history of Formula One. Founded in 1963 by Bruce McLaren, the team have won 183 grand prix and 20 World Championships. Their cars have been piloted by the greatest drivers in the sport’s history including James Hunt, Ayrton Senna, Alain Prost, Nikki Lauda, Fernando Alonso, and Lewis Hamilton.

The McLaren group now runs racing teams in Formula One, Indy Car, Formula E, and Extreme E. The McLaren Technology Centre also houses McLaren Automotive, production facility for some the most advanced road cars in the world. McLaren’s mission is to create breathtaking performance road cars that deliver the most thrilling driving experiences imaginable. Utilizing their racing expertise they aim to pioneer new technology which breaks industry norms and asks: ‘how can we do it better?’
Battersea Power Station

Starting operation in the 1930s, Battersea Power Station was a critical power supply for the capital. At its peak, Battersea Power Station was supplying a fifth of London’s electricity, including to landmarks such as the Houses of Parliament and Buckingham Palace. It was closed in 1983 but the iconic structure on the Southbank was Grade II listed by Historic England.

In 2012, the 42-acre site was purchased with plans drawn to restore and renovate the structure. Opened again to the public in October 2022, Battersea Power Station now contains homes, shops, cafes, restaurants, cultural venues and open space for London.
UK Government Meetings

Rt Hon Sir Conor Burns MP - Trade Envoy to the United States for Regional Trade and Investment

The Rt. Hon. Sir Conor Burns MP was appointed the Prime Minister’s Trade Envoy to the United States for Regional Trade and Investment. Previously he was Minister of State for Northern Ireland. He was also Minister of State for Trade Policy between July 2019 and May 2020. Elected to the House of Commons in 2010 he has held a number of Parliamentary Private Secretary positions in the Northern Ireland Office (2010-12), Treasury and BEIS. He served as PPS to the Rt. Hon. Boris Johnson as Foreign Secretary between 2017-18.

Conor was born in Belfast in 1972 and went to Park Lodge Primary School on the Antrim Road before his family moved to Hertfordshire. He read Modern and Politics at the University of Southampton where he later served on the City Council. Prior to his election to Parliament he had a career in Financial Services and Communications.

Rt Hon Greg Hands MP - Minister of State for Trade Policy

Greg Hands was appointed Minister of State for Trade Policy in the Department for Business and Trade on 13 November 2023. He was also appointed Minister for London on 13 November 2023. He was previously Minister without Portfolio at the Cabinet Office, Minister of State at the Department for International Trade and a Minister of State at the Department for Business, Energy & Industrial Strategy. He was elected the Conservative MP for Hammersmith and Fulham in 2005, and for Chelsea and Fulham in 2010.
Greg was educated at a variety of state schools in the UK and the USA, but principally at Dr Challoner’s Grammar School, Amersham, before going on to study Modern History at Cambridge University, with time spent in the modern languages and oriental studies faculties graduating with first class honours. Greg spent 8 years working on trading floors in London and New York trading and marketing fixed income derivatives.

David Rutley MP – Minister for the Americas

David Rutley was appointed as a Parliamentary Under Secretary of State at the Foreign, Commonwealth & Development Office on 27 October 2022. He was previously Parliamentary Under Secretary of State (Minister for Welfare Delivery) at the Department for Work and Pensions. He was a Government Whip from 15 June 2017 to 16 September 2021. He previously served as Parliamentary Under Secretary of State at the Department for the Environment, Food and Rural Affairs from 3 September 2018 to 27 July 2019.

David received a BSc (Econ) from the London School of Economics and a MBA from Harvard Business School. David was first elected to Parliament in the 2010 General Election as the Conservative MP for Macclesfield. He has previously served on the Treasury Select Committee and as Parliamentary Private Secretary to several Secretaries of State.

David spent most of his career in business and worked as a senior executive in major companies, including Asda, PepsiCo International, Halifax General Insurance and Barclays. From 1994 to 1996 he worked as a Special Adviser at the Treasury, the Cabinet Office and the Ministry of Agriculture.
Engineering Council Biographies

John Chudley  
*Engineering Council Chair*

John has held various positions in academia, including Provost of Warsash Maritime Academy, Executive Dean of the Marine and Technology Faculty at Southampton Solent University and Head of the Institute of Marine Studies and Mechanical and Marine Engineering Departments at the University of Plymouth. He remains a Visiting Professor to both Plymouth and Solent, and he honed his skills as a Mechanical Engineer apprentice before progressing to higher education, completing a PhD in Marine Technology.

John has also been employed with the Civil Service, positions include being a Director of the Learning and Skills Council and the National Apprenticeship Service. John has also acted as a Director and Board Member to a number of companies and organisations. At present he is a Council Member of the Royal National Lifeboat Institution and a Board Member and Chair of the Engineering Council.

Paul Bailey  
*Chief Executive Officer*

Paul is Chief Executive Officer at the Engineering Council, the UK regulatory body for the engineering profession. Prior to his appointment as CEO, Paul held the position of Deputy CEO & Operations Director for over eight years and was also previously Deputy CEO at the Royal Aeronautical Society. With a degree in Physics and a background in aerospace and aviation, Paul is a member of both the Institute of Physics and the Royal Aeronautical Society.
Katy Turff  
*Head of Policy & Standards and Deputy CEO*

Katy joined the Engineering Council in 2011 as Head of International, with over twenty years’ experience working for professional engineering institutions. In 2016 she led the newly formed Professional Standards department which brought together the international and standards teams, embedding a focus on international alignment and recognition into core business.

As Head of Policy & Standards and Deputy CEO, Katy continues to have strategic oversight of the Engineering Council’s international recognition and standards work. This includes development of a contextualised version of UK-SPEC for engineers and technicians working on higher-risk buildings. Her brief also covers the strategic themes of engineering & society, and diversity and inclusion in the profession. Katy is Chair of the International Engineering Technologists Agreement and a member of the Governing Group of the International Engineering Alliance.

Dr David Clark  
*International Affairs Manager*

Dave has extensive experience in not-for-profit, professional body and corporate sectors. Since 2016, he has been International Affairs Manager at The Engineering Council, managing the work of securing and maintaining the international comparability of the UK registration standards.

Previously Dave was Head of International Development at the Royal Society of Chemistry, developing and managing partnerships to support UK scientists through international collaborative programmes.

Dave has also worked for 19 years in industry, with the US analytical instrument company PerkinElmer Inc in a variety of scientific and technical roles. He has a PhD in Physical Organic Chemistry from King’s College, London and was elected a Fellow of the Royal Society of Chemistry in 2008.
Séan Harris OBE

Deputy Director General and Director membership, Institution of Civil Engineers (ICE)

Séan was appointed director of membership in August 2015 and has been an engineer for over 30 years. Séan is responsible for overseeing the creation and delivery the membership proposition. This includes programmes to inspire students to study and practice civil engineering, the accreditation of civil engineering degrees, the Initial Professional Development of graduates, Professional Reviews for the technician, incorporated and chartered qualification, and Continuing Professional Development and delivery of lifelong learning.

Stephen Marcos Jones

Group CEO, The Association for Consultancy and Engineering (ACE)

Stephen led significant change across this sector, spearheading a cross-industry response on issues such as environmental regulation and promoting the sector’s opportunity to deliver decarbonisation in pursuit of Net Zero, while helping to articulate a vision for a sustainable future for the sector.

Prior to his appointment, he held a number of senior leadership positions at OGUK, the representative body for the UK offshore energy industry, where he grew commercial revenues for the association through a robust member engagement and events programme. He also led a campaign to drive efficiency into the industry, through the optimisation of procurement practices across the entire supply chain.
Sarah Prichard  
Managing Director UK Buildings, Hong Kong & China,  
Buro Happold

Sarah is one of the practice’s leaders in the field of building vibrations and dynamics, and consults widely in this area, particularly on mixed use, transport stations, sports structures, hospitals and laboratories projects.

During her time at Buro Happold, Sarah has developed a passion for the delivery of multidisciplinary projects across several sectors, ensuring a high quality of delivery and client satisfaction either as the project leader or director.

Sarah spent three years in Qatar leading the supervision of the engineering works on Phase 2 and Phase 3 of the Msheireb Downtown Doha Project, formerly known as the Heart of Doha. This project intends to entirely recreate the centre of Doha in a sustainable and sympathetic way for the 21st century.

Sam Youdan  
Director, Buro Happold

Sam has a Master of Engineering degree from the University of Cambridge and is a Fellow of the Institution of Civil Engineers.

His work focuses on redevelopment projects in central London, for example, Battersea Power Station, Marcol House and the ME Hotel, making him an expert in refurbishment projects. A key member of the Battersea Power Station team, he helped deliver the engineering for the repurposing and refurbishment of this iconic Grade II listed project.

Sam led the heritage and heavy refurbishment design and site works, including the successful dismantling and re-construction of the award-winning chimneys.
| **Mike McNicholas**  
| *MD of Infrastructure UK & Europe, Atkins Realis*  
| Mike was the engineering Project Director for the London 2012 Olympic and Paralympic games.  
| Atkins is one of the world’s most respected design, engineering and project management consultancies, employing over 18,300 people across the UK, North America, Middle East and Africa, Asia Pacific and Europe.  

| **Dr Simon Harrison**  
| *Group Head of Strategy, Mott MacDonald*  
| Dr Simon Harrison is a leading voice in public policy around engineering’s implications in energy transition and decarbonisation. He also holds senior positions in Mott MacDonald, developing its global strategy and developing its scope and expertise in both domestic and international markets.  
| He has made major contributions to UK energy policy and has chaired important national committees and professional groups advising government on this area of great strategic importance, often providing important input to Academy outputs.  
| He has served two terms as Vice President of the Institution of Engineering and Technology, with contributions in strategy, membership, professional development, and knowledge solutions.  

| **David Riches**  
*Deputy Director Financial, Professional and Business Services, Department for Business and Trade*  

David has operated as a senior leader with one of the UK’s leading Trade Associations, as a CEO of a regional trade & investment promotion organisation and a Trustee with a national charity.  

Executive Director, British Chambers of Commerce  
Chief Executive, East of England  
International Director, North America, Think London (now part of London & Partners)  
Director, Strategy & Corporate Development, Cable & Wireless  
Senior Consultant, EY Strategic Advisory Services
# Delegate Biographies

<table>
<thead>
<tr>
<th>Laura Sievers, P.E.</th>
<th>David Cox</th>
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<tbody>
<tr>
<td><strong>President, National Council of Examiners for Engineering and Surveying (NCEES)</strong></td>
<td><strong>CEO, National Council of Examiners for Engineering and Surveying (NCEES)</strong></td>
</tr>
<tr>
<td>A resident of LeMars, Iowa, Sievers has served as a member of the Iowa Engineering and Land Surveying Examining Board since 2016. She served as chair of the NCEES Committee on Examinations for Professional Engineers in 2021–22 and as chair of the Committee on Examination Audits in 2017–19. She served as board liaison to the Committee on Examinations for Professional Engineers and the Special Committee on Bylaws in 2022–23.</td>
<td>Cox previously served as executive director of the Kentucky State Board of Licensure for Professional Engineers and Land Surveyors from 2001 to 2018. During this time, he was also active in the work of NCEES. He served 10 terms on the organization’s Committee on Finances, including two as chair. He also served as a member of the Committee on Member Board Administrators, the Advisory Committee on Council Activities, the Governance Task Force, and the Licensure Qualifications Oversight Group. In 2014, NCEES awarded him the Meritorious Service Award in recognition of his contributions to the organization and the professions of engineering and surveying. Cox holds a Bachelor of Science degree in accounting from the University of Kentucky and is licensed as a certified public accountant in Kentucky.</td>
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Laura Sievers, P.E.  
President, National Council of Examiners for Engineering and Surveying (NCEES)

A resident of LeMars, Iowa, Sievers has served as a member of the Iowa Engineering and Land Surveying Examining Board since 2016. She served as chair of the NCEES Committee on Examinations for Professional Engineers in 2021–22 and as chair of the Committee on Examination Audits in 2017–19. She served as board liaison to the Committee on Examinations for Professional Engineers and the Special Committee on Bylaws in 2022–23.

David Cox  
CEO, National Council of Examiners for Engineering and Surveying (NCEES)

Cox previously served as executive director of the Kentucky State Board of Licensure for Professional Engineers and Land Surveyors from 2001 to 2018. During this time, he was also active in the work of NCEES. He served 10 terms on the organization’s Committee on Finances, including two as chair. He also served as a member of the Committee on Member Board Administrators, the Advisory Committee on Council Activities, the Governance Task Force, and the Licensure Qualifications Oversight Group. In 2014, NCEES awarded him the Meritorious Service Award in recognition of his contributions to the organization and the professions of engineering and surveying.

Cox holds a Bachelor of Science degree in accounting from the University of Kentucky and is licensed as a certified public accountant in Kentucky.
Rossana D'Antonio, P.E.  
*Board Member, California Board of Professional Engineers, Land Surveyors, and Geologists*

Rossana D'Antonio serves as Deputy Director for Los Angeles County Public Works. She provides executive leadership for the development of sustainable communities, resilient housing, private sector commercial marketplaces and jobs, and emergency management.

A 30-year Department veteran, Rossana has extensive background in many disciplines of engineering, management, operations and business processes. She received her Bachelor of Science Degree in Civil Engineering from Fresno State and an MBA with emphasis in leadership and organizational development from Pepperdine University. In 2020, Rossana was appointed by Governor Gavin Newsom to the California Board of Professional Engineers, Land Surveyors, and Geologists where she currently works to ensure protection of the public and the environment with competent and ethical professional services. Currently, she serves on the ASCE Board of Direction and the Government Engineers Council.

David Jackson  
*Executive Director, Maine State Board of Licensure for Professional Engineers*

David Jackson has served as the Executive Director of the Maine State Board of Licensure for Professional Engineers since 2012. He sat on the board as the public member from 2008 to 2010. Jackson is an attorney licensed in Maine and Massachusetts. He previously served as an Assistant District Attorney in Kennebec and Somerset Counties in Maine, and while in private practice focused on criminal defence and litigation. He received his B.A. in English from Brigham Young University and his J.D. from the Massachusetts School of Law.
Jim Kelly, P.E.
*Professional Engineers Board Chair, Virginia Board for Architects, Professional Engineers, Land Surveyors, Certified Interior Designers and Landscape Architects (APELSCIDLA)*

A resident of Williamsburg, Virginia, Kelly has served as a member of the Virginia Board for Architects, Professional Engineers, Land Surveyors, Certified Interior Designers, and Landscape Architects since 2017. He has also served as chair of the Virginia board. Kelly has served as a member of the NCEES Southern Zone Site Selection Committee.

Kelly graduated from the United States Merchant Marine Academy with a bachelor's degree in marine engineering systems and from the Florida Institute of Technology with a master's degree in engineering management. As a licensed professional engineer, he has worked as the manager of crane engineering and quality at Newport News Shipbuilding.

Dr Lance Kinney, P.E.
*Executive Director, Texas Board of Professional Engineers and Land Surveyors (Austin, TX)*

Kinney has served the board in several positions for more than seven years, providing guidance to agency programs and activities, including legislative, rule and policy issues.

Before joining the Board of Professional Engineers, Kinney worked nearly a dozen years in the semiconductor industry. He holds a bachelor's degree from The University of Texas at Austin, a master's from Texas State University and is currently a doctoral student at The University of Texas. He has lectured as an adjunct professor in the Engineering and Technology Department at Texas State and the Electronics and Advanced Technologies Department at Austin Community College.
Patty Mamola, P.E.
Executive Director, Nevada Board of Engineers and Land Surveyors

Patty Mamola served as the first female president of the National Council of Examiners for Engineering and Surveying, also known as NCEES. Mamola has been a member of the Nevada State Board of Engineers and Land Surveyors since 2006. A resident of Reno, Nevada, and licensed as a professional engineer in Nevada since 1993, Mamola has focused her career on transportation, construction management, and analytical problem solving. She is one of the founding principals of the professional engineering firm Bowling Mamola Group.

Mamola is a graduate of South Dakota School of Mines and Technology, where she earned a bachelor’s degree in civil engineering. She is an active member of the American Public Works Association, the National Society of Professional Engineers, and the Women’s Transportation Seminar.

Darren Mickler
Executive Director, Georgia Professional Engineers and Land Surveyors Board

Darren Mickler is the Executive Director of the newly created Georgia Professional Engineers and Land Surveyors Board. Prior to accepting the position with the newly created Board, Mr. Mickler served as Executive Director for the Georgia Board of Registration for Professional Engineers and Land Surveyors and many other professional licensing Boards under the umbrella agency of the Georgia Secretary of State’s Office for 21 years.

Mr. Mickler was a Plant Manager for YKK(USA)INC in the PPD plant producing textured yarn for zipper tape. Prior to that, he was the Technical Engineer for the production of polyethylene terephthalate (PET) for the plastic zipper and zipper tape making processes. This was one of the last batch process polymerization plants in the United States. Mr. Mickler holds an ABA from Middle Georgia College and a BBA in Management from Georgia College and State University.
Judi Miller
*Consumer Member, Maryland PE Board, Registered Architect*

The professional career of Judith A. Miller, AIA, CDT, Principal and founder, encompasses over twenty-five years of experience in Architecture and Engineering for a wide array of residential and light commercial projects. Her extensive experience in the field of multifamily and senior housing, gives her an advantage in finding the most appropriate solution to these types of projects. Prior to founding ABD, Ms. Miller was a Senior Associate at Design Collective Inc. where she managed the residential studio for 10 years. She is currently a registered Architect in Maryland, Delaware, Virginia and the District of Columbia.

Ric Moore, P.L.S.
*Executive Officer, California State Board of Technical Registration*

Moore is a Professional Land Surveyor with more than 30 years of project management and land surveying experience. He has specific expertise in boundary, A.L.T.A. and topographic surveying, utility mapping, right-of-way, public works, commercial, residential, and construction staking projects. He has also been responsible for managing Geographic Information System (GIS) implementations for several public agencies throughout Southern California. Currently serving as the Executive Officer for the Board for Professional Engineers, Land Surveyors, and Geologists (BPELSG), appointed in June 2011, and previously serving as the Senior Land Surveyor Registrar for the Board from 2007-2011.

He served four terms as the Western Zone Secretary for National Council of Examiners for Engineers and Surveyors (NCEES) from 2013-2021 and was a former member of the California Land Surveyors Association (CLSA) from 2002-2012.
Dr Sina Nejad, P.E.
Chair, Texas Board of Professional Engineers & Land Surveyors

Sina Nejad of Beaumont, Texas, is founder and president of Sigma Engineers, Inc. He received both his bachelor and master degrees in Engineering from Lamar University. He is a structural engineer licensed to practice engineering in Texas and Province of Alberta, Canada, and an excepted engineer approved to engage in the practice of architecture in Texas.

Nejad’s community involvement includes serving as the chairman of both Planning and Zoning Commission and the Building Code Board of Adjustment & Appeals for the City of Beaumont, member of the Lamar University Civil Engineering Advisory Council, member of the Lamar University Foundation Board of Directors, and the Christus St. Elizabeth Hospital Advisory Board. He is a member and the past president of the symphony of Southeast Texas, past president and member of the Anayat House, member of the Beaumont Chamber of Commerce, and named Small Businessperson of the Year 2004 by the Beaumont Chamber of Commerce.

Kate Nosbisch
Executive Director, Virginia Board for Architects, Professional Engineers, Land Surveyors, Certified Interior Designers and Landscape Architects (APELSCIDLA)

Nosbisch has been executive director for the Virginia Board of Architects, Professional Engineers, Land Surveyors, Certified Interior Designers and Landscape Architects since 2008. Previously, she was deputy executive director for the Virginia Board of Medicine. She holds a bachelor’s degree in business/communications and a master’s degree in professional leadership from Carlow University.
| **Zana Raybon**  
Executive Director, Florida Board of Professional Engineers |
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<tbody>
<tr>
<td>Zana Raybon has served as the Executive Director of the Florida Board of Professional Engineers for the past 15 years. She has a B.S. in Political Science from Florida State University and a A.S. in Legal Studies from Tallahassee Community College.</td>
</tr>
</tbody>
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| **Andrew Ritter**  
Executive Director, North Carolina Board of Examiners for Engineers and Surveyors |
<table>
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<tr>
<td>Andrew Ritter has been with the North Carolina Board of Examiners since 1993 and has been the Executive Director since 2001. He has also been an investigator for the Board and the Supervisor of Investigations. He is currently serving as the Finance Committee Chair for the National Council for Engineering and Surveying (NCEES). He has served as a guest lecturer on ethics and license promotion at NCSU, Duke, Campbell and UNC – Charlotte and served on engineering program advisory boards for North Carolina A&amp;T and UNC-Wilmington. He was selected to proctor the first exams given in Saudi Arabia and Taiwan and assisted in developing licensure models for several foreign countries including Japan, the United Arab Emirates and the Commonwealth of the Bahamas.</td>
</tr>
</tbody>
</table>
Scott Sayles, P.E.
Board Vice Chairman, Arizona State Board of Technical Registration

Scott Sayles is an experienced Professional Civil Engineer with over 23 years of experience with a passion for design, construction, and problem solving. Hailing from Kingman, Arizona, he later studied at the University of Arizona where he earned a Bachelor of Science in Civil Engineering. Scott has contributed significantly to the field of engineering through his work for WSP and Parsons on complex engineering projects in the United States, as well as internationally.

He is the Vice Chairman of the board on the Arizona Board of Technical Registration where he also serves as the Civil Engineering Board Member. Scott is deeply engaged in volunteer work, driven by a desire to provide others with enhanced engineering opportunities. In his leisure time, he finds joy in disc golf and actively participates in volunteering with his sons' scouting troop. He has been happily married to his high school sweetheart, a chemical engineer, for 23 years. Together, they are proud parents of two sons.

Judith Stapley
Executive Director, Arizona State Board of Technical Registration

Judith Stapley has worked in State Government for the past nine years. She accepted the position of Executive Director at the Arizona State Board of Technical Registration in May of 2021. Her education includes an Undergraduate Degree in Public Administration and a Master's Degree in Public Safety Administration and Emergency Management, specializing in mass fatality incident response. In her current position, she actively participates in administrative rulemaking, administrative law, policy implementation, and navigating the political environment surrounding public organizations, specifically regulatory boards. She is active in several state and national organizations and serves on the Interorganizational Council on Regulation (ICOR).
<table>
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<tr>
<th><strong>Josh Twitty</strong></th>
<th><strong>Jon Wilbeck</strong></th>
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<tr>
<td><em>Advocacy and External Engagement Strategist, National Council of Examiners for Engineering and Surveying (NCEES)</em></td>
<td><em>Executive Director, Nebraska Board of Engineers and Architects</em></td>
</tr>
</tbody>
</table>

Within his role, Twitty addresses threats against licensure by supporting state engineering and land surveying boards in their legislative efforts. He facilitates NCEES’s advocacy agenda by analysing legislation, coordinating ARPL efforts with partner organizations, and guiding internal and external communication efforts to raise public awareness of responsible licensure. Prior to joining NCEES, Josh worked for the Arkansas Bureau of Legislative Research as a Legislative Analyst. In this role, he tracked bills during session, conducted bill presentations for committees, and drafted bills for committee legislative members.

Josh earned his Bachelor of Arts in Criminal Justice and Legal Studies from the University of Arkansas at Little Rock and a Master of Public Affairs from the University of Missouri. Josh is also an Air Force Veteran.

Jon Wilbeck is the Executive Director of the Nebraska Board of Engineers and Architects. He has been with the Board for 14 years, the first two years as the board's Compliance Officer. Prior to joining the Nebraska Board, Jon worked at architectural firms in Lincoln, Nebraska and Seattle, Washington in project administration and business development. A native of Minden, Nebraska, Jon is also an eight-year veteran of the U.S. Navy. Jon has also served on NCEES' Member Board Administrator and Uniform Procedures and Legislative Guidelines committees.
Notes
Engineerign Council
Introduction

Dr Dave Clark – International Affairs Manager, EngC

7 February 2023
About the Engineering Council

• UK regulatory body for the engineering profession, operating under a Royal Charter since 1964
• Self-regulation via a formal agreement with the Government via the Privy Council, for the benefit of society
• Sets and maintains standards of professional competence, and for degree qualifications and apprenticeships demonstrating underpinning knowledge, understanding and skills.
• Holds the UK register of professional engineers (legally protected titles):
  ▪ Chartered Engineers (CEng)
  ▪ Incorporated Engineers (IEng)
  ▪ Engineering Technicians (EngTech)
• Licenses 39 Professional Engineering Institutions
• Associated with 18 Professional Affiliates
• Over 230,000 registrants worldwide
  ▪ 19.6% professionally registered engineers are overseas
Professional Regulation exists to protect consumers and society at large. In the UK it is part of a spectrum of regulatory mechanisms.

- **Government**: Legislates for the public interest.
- **Employers**: Responsible for proper management and supervision of professionals and their work.
- **Professional Bodies**: Set standards of competence and professional conduct, set examinations, award titles, keep registers.
- **National Standards Bodies**: Sets product standards and standards of practice.
- **Individual Professionals**: Take personal responsibility for their own performance, maintaining their competence and high standards of professional conduct.
Reserved areas of work

- Reserved areas of work – by statute, regulation or industry standards to licensed or otherwise approved persons

- Electrical Safety in Buildings (Building Regulations Part P)
- Gas Fitting (Gas Safety (Installation & Use) Regulations 1998, Gas Safe Register)
- Non-destructive Testing (ISO 9712: 2012 Non-destructive testing – Qualification and certification of NDT, Personnel Certification in Non-destructive testing PCN)
- Pressure Vessel Design (The Simple Pressure Vessel (Safety) Regulations 1991)
- Quarry Management (The Quarries Regulations 1999, Health & Safety Executive)
- Railway Signalling (IRSE Licensing Scheme)
- Reservoir Design and Inspection (Reservoirs Act 1975, Environment Agency)
- Ships Officers (The Fishing Vessels (Certification of Deck Officers and Engineer Officers) (Amendment) Regulations 1998, Maritime and Coastguard Agency)
- Vehicle Maintenance (DVSA Authorised Examiner)
- Inspection and Maintenance of Highways Structures (The Highways Agency Design Manual for Roads and Bridges Volume 3 Highway Structures: Inspection and Maintenance)
- Structural Engineers Register Scotland (The Building (Scotland) Act 2003 Structural Engineers Register)
- Care of Cathedrals Measure 2011
- Road Tunnel Safety Regulations 2007
- Energy Efficiency (Private Rented Property) (England and Wales) Regulations 2015
- Higher-Risk Buildings (Building Safety Act 2022)
Our partners at the heart of the engineering profession

- 39 PEIs
  - 500,000 members
  - Promote and advance specific engineering discipline
  - Assess for professional registration
  - Accredit educational programmes
  - Maintain professional standards (CPD)
  - Provide policy advice

- RAEng
  - 1,500 Fellows across all engineering sectors
  - Advances and promotes excellence in engineering
  - Provides analysis and policy support to Government
  - Coordinates a unified policy voice for engineering

- EngineeringUK
  - Promotes engineering and engineering careers
  - Focuses on the learner (and influencers) via The Big Bang and Tomorrow’s Engineers
  - Periodically produces statistically-based reports into the state of engineering in the UK
  - Coordinates a unified voice for engineering to the public

- Engineering Council
  - Regulatory body
  - Sets and maintains internationally recognised standards of professional competence and ethics
  - Holds the national registers of over 229,000 EngTech, IEng, CEng and ICTTech

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UK Professional Engineering Institutions
International accords and agreements

- Founding signatory of the IEA Washington, Sydney and Dublin Accords

- Founding member of the International Professional Engineers Agreement (IPEA), International Engineering Technologists Agreement (IETA) and Agreement for International Engineering Technicians (AIET)

- UK National Member of FEANI (over 16,000 EUR ING)

- Member of ENAEE – awarding EUR-ACE recognition

- Member of ENGINET

- Bilateral Mutual Recognition Agreements – OE (Portugal), Engineers Ireland, Engineering New Zealand, Idaho Board, Kuwait Society of Engineers, AIPE and AQPE (Spain), KIVI (Netherlands)
Governance

The Engineering Council is required to satisfy the objects stated in its Charter, as further defined by its Bye-laws and Regulations. The Board sets a three-five year strategy and maintains the associated vision and mission in order to achieve this.

Our Mission
To maintain internationally recognised standards of competence and commitment for the engineering profession, and to license competent institutions to champion the standards.

Our Vision
That society continues to have confidence and trust in the engineering profession.
Quality assurance

Engineering Council Regulations - “The Board delegates to the QAC its powers appertaining to licensing.”

QAC Terms of Reference
“To admit as Licensees, and award appropriate licences to, engineering institutions which are considered competent to:
• assess applicants for entry to the Register,
• accredit or approve programmes of education or professional development that support admission to the Registers”

“To monitor the performance of engineering institutions in their role as Licensees and in respect of functions for which they may be licensed as defined by the Byelaws and Regulations.”
Quality assurance

Standards

• **UK-SPEC** (UK Standard for Professional Engineering Competence)
• **AHEP** (Accreditation of Higher Education Programmes)
• **AAQA** (Approvals and Accreditation of Qualifications and Apprenticeships)
• **RfR** (Regulations for Registration)

*Policy Statements and Guidance for Institutions*
How does the licensing process work?

• A new licence is awarded for up to two years.

• Existing licences can be renewed for up to 5 years.

• During the licensed period, an annual risk assessment is undertaken for each Licensee to:
  • review licensed activities of the past 12 months
  • identify the key areas of risk
  • determine how those risks are monitored for the following year
How does the licensing process work?

Categories of assessment
To obtain a licence, institutions must provide evidence, a ‘submission’ of documentation, across the categories of assessment:

- Governance
- Management
- Registration
- Accreditation of Academic Programmes
- Accreditation / Approval of Professional Development Schemes
- Accreditation / Approval of Qualifications and Apprenticeships
- Continuing Professional Development (CPD)
- International
- Promotion of Registration
The Accreditation of Higher Education Programmes (AHEP) and Approval of Qualifications and Apprenticeships (AAQA) set out learning outcomes that accredited and approved programmes must deliver.

These learning outcomes are based upon the competence statements in the UK Standard for Professional Engineering Competence (UK-SPEC).

The standards are underpinned by the Regulations for Registration.
The Engineering Council sets and maintains the UK Standard for Professional Engineering Competence and Commitment

- A – Knowledge and understanding
- B – Design and development of processes, systems, services and products
- C – Responsibility, management or leadership
- D – Communication and interpersonal skills
- E – Professional commitment
- 17 sub-competences
Professional registration and PEI membership

A registrant must be a member of a PEI

Membership ➔

Professional engineering institutions

Letters
EngTech
IEng
CEng
ICTTech

Letters:
MInst
Professional registration and PEI membership

Each registration category is equally important

EngTech

More than 23,800 people hold the title IEng

IEng

As your career progresses there is the opportunity to move to another register

There are over 23,600 EngTechs on the register

Level 3 qualification / Advanced Apprenticeship etc..

Accredited Bachelors degree (IEng)

More than 177,300 people are registered as CEng

Accredited Integrated MEng / BEng + MSc
Competence-based Assessment

Dr Dave Clark – International Affairs Manager, EngC

7 February 2023
Assessment stages

- Assessment of knowledge and understanding
  - In-depth for non-recognised qualifications

- Professional Review Part 1
  - Holistic assessment of competence

- Professional Review Part 2
  - Interview, including presentation
  - Recommendation

- Registration Committee
  - Final decision to award registration
Routes to registration

1. Assessment of Knowledge and Understanding

2, 3 Assessment of Competence (Professional Review parts 1 and 2, including interview)

4. After interview, assessors make recommendation to PEI registration committee

Recognised qualifications

Non-recognised qualifications

Initial Professional Development (IPD)

Assessment of Experiential Learning/Technical Report
(1) Underpinning knowledge and understanding

- Initial assessment based on
  - Career history
  - Education and training record
  - Evidence of experiential (work-based) learning

- Underpinning Knowledge and Understanding demonstrated by:
  - Completing a recognised programme of learning
  - Completing other programmes of learning
  - Evidence of experiential learning
  - Submission of a technical report
  - Any combination of the above
  - Must be relevant to practice area
(2) Professional Review Part 1

• Assessment of detailed documentary evidence that competences have been met

• Mapped against the UK-SPEC competences, or competences derived from UK-SPEC by the licensee

• Identification of areas to be probed at interview

• Two trained assessors, one with appropriate and relevant engineering experience

• Conflict of interest must be avoided

• Decision to proceed to interview, whether further information is required, or further advice needed

• Approximately 60% of applicants proceed to interview without needing to provide further information/clarification
(3) Professional Review Part 2

• Interview to ascertain that all competences have been met

• Presentation

• Mapped against the UK-SPEC competences, or competences derived from UK-SPEC by the licensee

• Two trained assessors, one with appropriate and relevant engineering experience

• Conflict of interest must be avoided

• Reports from professional review parts 1 and 2 are submitted to the licensed member’s professional registration committee (approximately 80%)
(4) Licensed member’s registration committee

- Reports from professional review parts 1 and 2 are submitted to the licensed member’s professional registration committee.

- Decision whether to confirm the recommendation.

- The committee’s decisions including recommendations, justifications, feedback and moderation must be documented, transparent and auditable.

- Applicant advised of outcome.

- Appeals process in place.
Continuing Professional Development

- At Professional Review, all applicants for registration shall demonstrate how they intend to maintain and enhance their professional competence.

- Licensed members
  - Must establish and keep under review a CPD policy.
  - Promoted the benefits and importance of CPD to registrants and employers.
  - Offer a system for planning, recording and sharing CPD.
  - Undertake an annual sample of registrants CPD records.

- Failure to respond to or engage with requests to provide a CPD record can result in removal from the register.
Professional Standards

- Registrants also demonstrate commitment to maintain professional standards and behaviour:
  - to abide by the code of professional conduct,
  - to behave ethically,
  - to maintain competence,
  - to work within legal, regulatory, professional and technical codes. Information on professional ethics

- Guidance is available on sustainability, risk, ethical principles, whistleblowing, security

- [https://www.engc.org.uk/guidance](https://www.engc.org.uk/guidance)
International registration

- IntPE and IntET
  - CEng or IEng registration
  - An accredited degree recognised under the Washington or Sydney Accord, or equivalent academic qualification
  - The competence for independent practise as a professional engineer or engineering technologist as exemplified by the IEA competency profiles
  - At least seven years post-graduate experience
  - At least two years responsibility for significant engineering work
  - Maintaining continuing professional development.

- Applications reviewed by the International Registration Committee (IRC), reporting to the International Advisory Panel (IAP)

- Overseas IntPE and IntET seeking registration in the UK have a streamlined application process, where possible
Thank you

EURING@engc.org.uk
The UK Standard for Professional Engineering Competence and Commitment (UK-SPEC)

Fourth edition

Published August 2020
Hierarchy of regulations and standards

The Engineering Council is the UK’s regulatory body for the engineering profession. It operates under a Royal Charter and is governed by a Board that represents UK Licensees as well as individuals from industries and sectors with an interest in the regulation of the profession.

This document is one in a series of closely related publications:

- Regulations for Registration (RfR)
- Regulations for Licensing (RfL)
- The UK Standard for Professional Engineering Competence and Commitment (UK-SPEC)
- Information and Communications Technology Technician Standard (ICTTech Standard)
- Approval and Accreditation of Qualifications and Apprenticeships (AAQA)
- Accreditation of Higher Education Programmes (AHEP)

The Engineering Council publishes these documents on behalf of the UK engineering profession, with whom they were developed and are kept under review. The relationship between these publications is:
The Royal Charter is an instrument of incorporation granted by the UK monarch. It confers independent legal personality on the Engineering Council and defines its objectives, constitution and powers to govern its own affairs.

The Bye-laws are the rules by which the Engineering Council regulates itself.

The regulations (including RfR and RfL) set out the rules Licensees must adhere to when carrying out processes regulated by the Engineering Council.

UK-SPEC and the ICTTech Standard are reference Standards that, with reference to RfR, set out the competence and commitment required for registration as CEng, IEng, EngTech and ICTTech.

AAQA and AHEP are reference Standards that, with reference to RfR, set out the policy, context, rules and procedures for recognising learning and development programmes that help develop the competence and commitment set out in UK-SPEC and ICTTech Standard.

Recognised Standards are derived from UK-SPEC by the Engineering Council, Licensees, or a third party. www.engc.org.uk/recognisedstandards

The Engineering Council also publishes policy statements, guidance for institutions and guidance for individuals. These, along with all the publications listed above, are available on the Engineering Council website: www.engc.org.uk
Engineers and technicians respond to the needs of both society and business, solving complex challenges. Engineers and technicians work in the art and practice of changing our world, enhancing welfare, health and safety while paying due regard to the environment.

Society places great faith in the engineering profession, trusting its members to regulate themselves. By achieving and demonstrating professional competence and commitment for the purpose of registration, engineers and technicians demonstrate that they are worthy of that trust.

This document forms part of the Standard used by the UK engineering profession to assess the competence and commitment of individual engineers and technicians. It was developed collaboratively in consultation with engineers representing the breadth of the profession, from industry, academia and many different disciplines and specialisms.
Welcome

The purpose of UK-SPEC

This document is the UK Standard for Professional Engineering Competence and Commitment (UK-SPEC).

The primary purpose of UK-SPEC is to explain the competence and commitment requirements that people must meet and demonstrate to be registered in each of these registration categories:

- Engineering Technician (EngTech)
- Incorporated Engineer (IEng)
- Chartered Engineer (CEng)

This document also explains:

- Why professional registration is important
- How to achieve professional registration
- What engineers and technicians must do to maintain professional registration, including:
  - the requirement to maintain and enhance competence
  - the obligation to act with integrity and in the public interest
  - membership of a Licensee

Who UK-SPEC is for

Many different users will find this document useful. However, it has been written primarily for these audiences:

- Individuals who are thinking about becoming professionally registered
- Licensees and Professional Affiliates through which engineers and technicians become registered

- Employers of engineers and technicians
- People responsible for engineers’ education or training

Licensee

Throughout this document the term ‘Licensee’ is used to describe the engineering institutions that have been licensed by the Engineering Council board to assess individuals for professional registration. To become Licensees organisations must pass a rigorous process demonstrating, to the satisfaction of the Engineering Council Board, that they are competent to perform this task and to regulate the conduct of their members. Additionally, Licensees can also be licensed to approve or accredit programmes of learning to specific standards. Licensees are sometimes known informally as Professional Engineering Institutions, or PEIs.

Glossary

At the end of UK-SPEC there is a glossary that explains some of terms we use.

Key information

Throughout this document some key information, terms and crucial points will be picked out in boxed text like this to help navigation.
What is professional registration?

Professional registration verifies that an individual can meet the engineering and technological needs of today, while also anticipating the needs of, and impact on, future generations. Both in the UK and overseas, professional registration gives employers, government and society confidence in the engineering industry. In this way, professional registration offers safeguarding assurances.

Registration demonstrates that an engineer or technician has reached a set standard of knowledge, understanding and occupational competence. It also demonstrates an individual’s commitment to professional standards and to developing and enhancing through Continuing Professional Development (CPD).

People who gain further qualifications or experience over the course of their careers can be assessed for another registration title. Many people continue to develop their competence to enable them to move from EngTech to IEng or CEng, or from IEng to CEng.

Why register?

Benefits for individuals: recognition, career development, earning potential

Professional registration sets individual engineers and technicians apart from those who are not registered. Gaining a professional title establishes a person’s proven knowledge, understanding and competence to a set standard and demonstrates their commitment to developing and enhancing competence.

Registration increases a person’s earning potential and establishes credibility with peers across the profession. The professional qualifications of EngTech, IEng and CEng are internationally recognised.

Maintaining registration requires continued membership of a Licensee. Licensees, in turn, can help registrants find development opportunities through exposure to new developments, training or networking opportunities.

In addition, the criteria of the UK-SPEC provide a useful framework for CPD, particularly for engineers and technicians aiming for a professional registration title. Achievement of registration can demonstrate a person’s readiness for promotion or help them secure new roles or contracts.

Further benefits for individuals are available at: www.engc.org.uk/benefits

UK-SPEC covers three professional registration categories which are set out in Table 1 on page 7.
### Table 1: Overview of professional registration titles

<table>
<thead>
<tr>
<th>Title</th>
<th>Engineering Technician (EngTech)</th>
<th>Incorporated Engineer (IEng)</th>
<th>Chartered Engineer (CEng)</th>
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<tr>
<td><strong>Descriptor</strong></td>
<td>Applies proven techniques and procedures to solve practical engineering problems. Applies safe systems of work.</td>
<td>Maintains and manages applications of current and developing technology, and may undertake engineering design, development, manufacture, construction and operation.</td>
<td>Develops solutions to engineering problems using new or existing technologies, through innovation, creativity and change. May be accountable for complex systems with significant levels of risk.</td>
</tr>
</tbody>
</table>
| **Key attributes:**          | 1. Contribution to either the design, development, manufacture, commissioning, decommissioning, operation or maintenance of products, equipment, processes or services  
                                  2. Supervisory or technical responsibility  
                                  3. Effective interpersonal skills in communicating technical matters  
                                  4. Commitment to professional engineering values | 1. The theoretical knowledge to solve problems in developed technologies using well proven analytical techniques  
                                  2. Successful application of their knowledge to deliver engineering projects or services using established technologies and methods  
                                  3. Contribution to project and financial planning and management together with some responsibility for leading and developing other professional staff  
                                  4. Effective interpersonal skills in communicating technical matters  
                                  5. Commitment to professional engineering values | 1. The theoretical knowledge to solve problems in new technologies and develop new analytical techniques  
                                  2. Successful application of the knowledge to deliver innovative products and services and/or take technical responsibility for complex engineering systems  
                                  3. Responsibility for financial and planning aspects of projects, sub-projects or tasks  
                                  4. Leading and developing other professional staff through management, mentoring or coaching  
                                  5. Effective interpersonal skills in communicating technical matters  
                                  6. Commitment to professional engineering values |
Benefits for employers: assurance of quality

Employers of professionally registered engineers and technicians can be assured that registered engineers and technicians have:
- had their competence and credentials independently assessed
- had their credentials verified to an internationally recognised standard, and
- made a commitment to their CPD.

Employing registered professionals can help mitigate against risks and liabilities, as registrants are governed by a Code of Professional Conduct.

Maintaining registration requires continued membership of a Licensee and a commitment to CPD. This means employers can be reassured that registered employees are developing and enhancing their competence and will be exposed to new developments in their profession.

Some employers find the framework of the UK-SPEC a useful basis for their own organisational needs, such as to structure CPD. Others rely on achievement of registration to demonstrate an employee’s readiness for promotion. In some cases, both in the UK and internationally, the awarding of contracts will require evidence that organisations employ professionally registered engineers.

Further benefits for employers are available at: www.engc.org.uk/employers

International context
The Engineering Council is committed to supporting its professionally registered engineers and technicians working in other countries. The professional titles EngTech, IEng and CEng are recognised widely around the world. Professional registration, as defined in UK-SPEC, reflects the requirements of global engineering.

Engineers who have developed their professional engineering competence in countries outside of the United Kingdom are welcome to join the Engineering Council register, subject to meeting the assessment criteria.

For further information see: www.engc.org.uk/international

What is engineering competence?

Competence is defined as a professional’s ability to carry out engineering tasks successfully and safely within their field of practice. This includes having the individual skills, knowledge and understanding, personal behaviour and approach, to be able to work collaboratively with others to achieve the intended outcomes. Competence includes the ability to make professional judgments and an awareness of the limits of one’s own ability and knowledge in order to seek assistance when required.

Each registration title requires demonstrations of competence in five broad areas:
A. Knowledge and understanding
B. Design, development and solving engineering problems
C. Responsibility, management and leadership
D. Communication and interpersonal skills
E. Professional commitment
What is professional commitment?

Registered engineering professionals are required to demonstrate a personal and professional commitment to society, to the environment and to their profession. As part of demonstrating overall competence, it is mandatory to show that they have adopted a set of values and conduct that maintains and enhances the reputation of the profession. This includes:

- Maintaining public and employee safety
- Undertaking work in a way that protects the environment and contributes to sustainable development
- Complying with codes of conduct, codes of practice and the legal and regulatory framework
- Managing, applying and improving safe systems of work
- Carrying out the CPD necessary to maintain and enhance competence in relation to duties and responsibilities
- Exercising responsibilities in an ethical manner
- Recognising inclusivity and diversity
- Adopting a security-minded approach
- Actively participating within the profession

The Engineering Council has published a CPD Code for Registrants, (see page 46), as well as guidance on risk, sustainability, whistleblowing and security (see page 47).

Ethical standards

Together with the Royal Academy of Engineering, the Engineering Council developed The Statement of Ethical Principles. This document outlines how members of the profession should conduct themselves in their working habits and relationships. The values it is based on should apply in every situation in which engineers and technicians exercise their judgment.

The Statement of Ethical Principles is available at: [www.engc.org.uk/ethics](http://www.engc.org.uk/ethics)

Further information on the required Standards is available from a variety of sources. Each Licensee will have its own Code of Professional Conduct, in line with the framework on Professional and Ethical Behaviour on page 47 of this document, and supporting guidance.
How to become professionally registered

Professional registration is open to all engineers and technicians who:

- Can satisfy the requirements for underpinning knowledge and understanding
- Can demonstrate competence and commitment to meet the necessary standard
- Are members of a Licensee relevant to their discipline

What are the requirements for registration?

The Engineering Council sets the Standards which need to be met for EngTech, IEng and CEng. Pages 19–45 show the requirements for all three titles. However, it is the Licensee that will carry out an assessment of an applicant’s competence and commitment. The Licensee will act as the awarding body for professional registration as EngTech, IEng or CEng.

Applicants need to apply for professional registration through a Licensee relevant to their discipline. The Licensee will be able to provide details about registration, including the process and typical timescales.

The list of Licensees licensed by the Engineering Council is available at: www.engc.org.uk/licensees

A Professional Affiliate is an engineering institution which is closely associated with the Engineering Council but is not licensed to assess applicants or award registration. Some Professional Affiliates will have a registration agreement with a Licensee so that the Licensee can assess members of the Professional Affiliate for registration. These Professional Affiliate members may then apply for registration through the Licensee.

The current list of Professional Affiliates, including those which have registration agreements, is available at: www.engc.org.uk/affiliates

How are applicants assessed?

Pages 19–45 list the requirements for all three professional titles. Once a person is confident that they meet all the criteria for a professional title, they should make an application for assessment through their chosen Licensee. The assessment process is known as a Professional Review. The Licensee will provide a detailed description of the requirements and format for this.

Applicants will need to submit formal documented evidence of any relevant qualifications, experience or training and show how this relates to the required competences and commitment set out in pages 19–45 of this document.

For EngTech qualifications, depending on the Licensee, there may be an interview, or it may simply be a one-stage process assessing an applicant’s submitted written evidence.

For CEng and IEng titles the Professional Review process has two stages: an assessment of written evidence and then an interview. In some engineering disciplines Licensees may specify additional methods of assessing competence and commitment.
Meeting the requirements for registration

Knowledge, understanding and skills form an essential part of competence. This provides the necessary foundation of underpinning logic and analytical capabilities. Knowledge, understanding and skills ensure that decisions are based on a full understanding of engineering practices and standards, rather than relying on instructions.

Formal education is one way of demonstrating the necessary underpinning knowledge and understanding (see Recognised Qualifications, pages 13–15), but it is not the only way (see Individual Assessment, page 16).
Recognised qualifications
For applicants who have achieved the required learning outcomes through recognised qualifications. Qualifications which provide the required level of knowledge and understanding are:
- EngTech: Level 3 qualification as part of an approved apprenticeship scheme
- IEng: an accredited Bachelors degree
- CEng: an accredited integrated Masters degree or a combination of accredited Bachelors and Masters degrees

Individual assessment
Applicants who do not have the recognised qualifications will instead have an individual assessment of their qualifications and any other relevant learning such as:
- formal academic programmes
- in-employment training
- experiential learning
- self-directed learning

Applicants may be also asked to write a technical report or attend a technical interview.

The assessment will be carried out by registrants who are also members of the Licensee. The exact process is set out by the Licensee.

Professional Review of competence and commitment
Applicants are assessed against the UK-SPEC standard of competence which sets the minimum requirements. Licensees may add requirements which relate to their particular engineering discipline.

An expert panel, consisting of registered engineers from the Licensee, will review an applicant’s portfolio of evidence against the requirements. This is followed by:

Professional Review Interview (PRI)
All IEng and CEng applicants will be interviewed by a panel of registered engineers who are also members of the Licensee. EngTech applicants may need to attend a Professional Review Interview.

The panel will then make a recommendation on whether the applicant meets the requirements for their chosen registration category.
Professional registration

The recommendation from the Professional Review is reviewed by the Licensee’s relevant committee. The applicant will achieve professional registration if:

- The expert panel recommends that the applicant has met the requirements
- All are satisfied that all stages of the process have been completed, and
- The Licensee’s relevant committee endorses the recommendation.

The applicant then becomes a registrant and is able to use the relevant post-nominal.

As a condition of continued registration, the individual commits to:

- Maintain their competence through CPD and membership of their Licensee, and
- Adhere to their Licensee’s Code of Professional Conduct.

If an applicant has been unsuccessful the Licensee will provide some guidance on what further learning and/or competence development would be beneficial to achieve registration.

When all the above steps are completed to the satisfaction of the Licensee’s relevant committee, the applicant achieves professional registration. They commit to maintain their CPD and membership of their Licensee and to adhere to their Licensee’s Code of Professional Conduct.
Recognised qualifications

The underpinning knowledge and understanding for each registration category can be developed from recognised qualifications that deliver the appropriate learning outcomes. The recognised qualifications for each registration category are set out in Table 2. The learning outcomes are set out in detail in the Engineering Council publications Accreditation of Higher Education Programmes (AHEP) and the Approval and Accreditation of Qualifications and Apprenticeships (AAQA) Standards.
Table 2: Recognised qualifications

<table>
<thead>
<tr>
<th>Engineering Technician (EngTech)</th>
<th>Incorporated Engineer (IEng)</th>
<th>Chartered Engineer (CEng)</th>
</tr>
</thead>
<tbody>
<tr>
<td>One of the following:</td>
<td>One of the following:</td>
<td>One of the following:</td>
</tr>
<tr>
<td>• Successful completion of an apprenticeship or other work-based learning programme approved by a Licensee</td>
<td>• An accredited Bachelors or honours degree in engineering or technology</td>
<td>• An accredited Bachelors degree with honours in engineering or technology, plus either an appropriate Masters degree or engineering doctorate accredited by a Licensee, or appropriate further learning to Masters level*</td>
</tr>
<tr>
<td>• Alongside appropriate working experience, holding a qualification, approved by a Licensee, in engineering or construction set at either:</td>
<td>• An accredited Higher National Certificate (HNC) or Higher National Diploma (HND) in engineering or technology started before September 1999</td>
<td>• An accredited integrated MEng degree</td>
</tr>
<tr>
<td>‣ level 3 (or above) in the Regulated Qualifications Framework or National Qualifications Framework for England and Northern Ireland</td>
<td>• An HNC or HND started after September 1999 (but before September 2010 in the case of the HNC) or a Foundation Degree in engineering or technology, plus appropriate further learning to degree level</td>
<td>• An accredited Bachelors degree with honours in engineering or technology started before September 1999</td>
</tr>
<tr>
<td>‣ level 6 (or above) in the Scottish Credit and Qualifications Framework</td>
<td>• A National Vocational Qualification (NVQ) or Scottish Vocational Qualification (SVQ) at level 4 that has been approved by a Licensee, plus appropriate further learning to degree level*</td>
<td>• Equivalent qualifications or apprenticeships accredited or approved by a Licensee, or at an equivalent level in a relevant national or international qualifications framework†</td>
</tr>
<tr>
<td>‣ level 3 (or above) in the Credit and Qualifications Framework for Wales</td>
<td>• Equivalent qualifications or apprenticeships accredited or approved by a Licensee, or at an equivalent level in a relevant national or international qualifications framework†</td>
<td></td>
</tr>
<tr>
<td>• Alongside appropriate working experience, holding equivalent qualifications or apprenticeships accredited or approved by a Licensee, or at an equivalent level in a relevant national or international qualifications framework†</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* See: [www.engc.org.uk/ukspec4th](http://www.engc.org.uk/ukspec4th) for qualification levels and HE reference points.

† For example, UNESCO’s International Standard Classification of Education (ISCED) framework.

The Engineering Council maintains a publicly accessible recognised course search database, which is available at: [www.engc.org.uk/courses](http://www.engc.org.uk/courses)
Preparing for registration

Pages 19–45 of this document set out the competence and commitment Standards for registration as an EngTech, IEng or CEng.

Engineers seeking registration should review the competence and commitment statements and use the examples to help them identify where they already have an appropriate level of competence, as well as what evidence they can present to demonstrate this. They should also identify areas where they currently lack the appropriate competence, in order to formulate plans to develop to the required level.

Pages 19–39 also include some examples of the kind of evidence which would contribute to demonstrating competence and commitment to the required Standards. However, the list of examples is only for guidance: it is not exhaustive, and the examples are not requirements for achieving professional registration.

For all categories, those seeking registration after completing their early career training should present a detailed record of their professional development, responsibilities and experience. To enable applicants to provide the best evidence for the Professional Review, this record should be verified by supervisors or mentors.

Individual assessment

Many potential registrants have not had formal training to the required level but are able to demonstrate they have acquired the necessary underpinning knowledge through substantial work experience. Applicants who have acquired their underpinning knowledge and understanding through experiential learning or other qualifications can submit the relevant information to their Licensee for an initial assessment.

This process includes assessment of the applicant’s prior learning and underpinning knowledge needed to successfully perform their role. Applicants should submit information covering their education, career history and training record. It may also be helpful for applicants to include evidence of employer recognition of their competences and relevant skills.

If the Licensee considers, after this initial assessment, that it needs additional evidence of knowledge and understanding it will advise the applicant on the nature and extent of this. An applicant can demonstrate knowledge and understanding in a number of ways, such as:

- Successfully completing further qualifications, either in whole or in part,
- Providing a record of having completed work-based or experiential learning,
- Writing a technical report, based on experience, which demonstrates the applicant’s knowledge and understanding of engineering principles, or
- Any combination of these.

Professional Review: assessing competence and commitment

To become professionally registered, applicants must have their competence and commitment assessed through a Professional Review.

This process includes assessment of the applicant’s prior learning and underpinning knowledge needed to successfully perform their role. Applicants should submit information covering their education, career history and training record. It may also be helpful for applicants to include evidence of employer recognition of their competences and relevant skills.

If the Licensee considers, after this initial assessment, that it needs additional evidence of knowledge and understanding it will advise the applicant on the nature and extent of this. An applicant can demonstrate knowledge and understanding in a number of ways, such as:

- Successfully completing further qualifications, either in whole or in part,
- Providing a record of having completed work-based or experiential learning,
- Writing a technical report, based on experience, which demonstrates the applicant’s knowledge and understanding of engineering principles, or
- Any combination of these.

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If the Licensee considers, after this initial assessment, that it needs additional evidence of knowledge and understanding it will advise the applicant on the nature and extent of this. An applicant can demonstrate knowledge and understanding in a number of ways, such as:

- Successfully completing further qualifications, either in whole or in part,
- Providing a record of having completed work-based or experiential learning,
- Writing a technical report, based on experience, which demonstrates the applicant’s knowledge and understanding of engineering principles, or
- Any combination of these.
Review, overseen by the Licensee. This peer review process is carried out by registrants who are competent and trained to carry out this kind of assessment.

Applicants are assessed against the Standards listed in pages 19–45 of this document, which may be adapted by the Licensee to relate specifically to the particular technologies or industries it is concerned with. There is no prescribed time period or minimum age requirement for the development of competence and commitment. The length of time it takes depends on many factors such as a person’s prior qualifications or experience, their job role, as well as personal circumstances such as career breaks or part time working.

**Scrutiny of qualifications**
The first stage of the Professional Review is an assessment of the documented evidence which the applicant has submitted. The applicant’s Licensee will specify the requirements for this submission. The Licensee will examine the examples of evidence and assess how they meet the underpinning knowledge, understanding and competence requirements.

Applicants will need to submit evidence in support of their application such as their:

- Educational record and qualifications
- Professional qualifications awarded by other national, regional or international authorities
- Structured or other professional development
- Areas of responsibility, management and leadership
- Evidence of effective interpersonal skills
- A plan for future professional development

**Professional Review**
After the submitted evidence has been reviewed, the Licensee will decide whether the applicant is ready to proceed to Professional Review. The Licensee will be able to advise applicants how to best present their evidence of training and experience. If there are shortfalls in evidence, Licensees will usually be able to suggest ways in which the applicant can address them. This may involve further learning, training or additional experience.

Once the submitted evidence has been accepted as a basis for the review, the next stage is a Professional Review Interview (PRI). This is mandatory for IEng and CEng applicants. For EngTech applicants there may be an interview, at the discretion of the Licensee, or the Professional Review may be based solely on the submitted documents.

When the Professional Review has been completed, the peer reviewers will make a recommendation to the Licensee’s designated committee. The committee will then make a decision on whether the applicant has demonstrated that they meet the required standards. A positive decision will result in registration of the applicant as an EngTech, IEng or CEng. Where the applicant has been unsuccessful the Licensee will provide feedback to help the applicant overcome any shortfalls in competence.
Retention of the title requires:

- Continued membership of either:
  - a Licensee licensed for that title or
  - a Professional Affiliate which has a registration agreement
    with a Licensee licensed for that title,
  and:
- Payment of an annual fee,
  and:
- Undertaking and recording Continuing Professional Development (CPD).

For more information please see: www.engc.org.uk/cpd
The Engineering Technician (EngTech) Standard

Engineering Technicians apply proven techniques and procedures to the solution of practical engineering problems.

Engineering Technicians shall demonstrate:

- Engineering knowledge and understanding to apply technical and practical skills
- Evidence of their contribution to the design, development, manufacture, commissioning, decommissioning, operation or maintenance of products, equipment, processes or services
- Supervisory or technical responsibility
- Effective interpersonal skills in communicating technical matters
- The ability to operate in accordance with safe systems of work and to demonstrate appropriate understanding of the principles of sustainability
- Commitment to professional engineering values

An Engineering Technician will be able to demonstrate their competence in all of the areas listed, but the depth and extent of their experience and competence will vary with the context, nature and requirements of their role. They will demonstrate a level of competence and commitment in each area, (A1–E5), at a level which is consistent with their specific role. It is to be expected that they will have a higher level of competence in some areas than others and their role may provide limited experience in certain areas. However, they need to demonstrate an understanding of, and familiarity with, the key aspects of competence in those areas of limited experience as a minimum requirement while demonstrating higher levels of competence in those areas which are critical to their role. Overall, they will demonstrate an appropriate balance of competences to perform their role effectively at Engineering Technician level.

The examples of evidence are intended as guidance to help identify activities that might demonstrate the required competence and commitment for Engineering Technician registration. They are intended as examples only as the most appropriate evidence will vary with each individual role. The list is not exhaustive and other types of evidence might be valid. There is no requirement to provide multiple examples of evidence for each area of competence, but examples from two or three projects or tasks would be useful.
<table>
<thead>
<tr>
<th>Competence</th>
<th>Examples of evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A. Knowledge and understanding</strong> Engineering Technicians shall use engineering knowledge and understanding to apply technical and practical skills.</td>
<td>The applicant shall demonstrate that they: 1. Review and select appropriate techniques, procedures and methods to undertake tasks 2. Use appropriate scientific, technical or engineering principles.</td>
</tr>
<tr>
<td><strong>B. Design, development and solving engineering problems</strong> Engineering Technicians shall contribute to the design, development, manufacture, construction, commissioning, decommissioning, operation or maintenance of products, equipment, processes, systems or services.</td>
<td>The applicant shall demonstrate that they: 1. Identify problems and apply appropriate methods to identify causes and achieve satisfactory solutions 2. Identify, organise and use resources effectively to complete tasks, with consideration for cost, quality, safety, security and environmental impact.</td>
</tr>
<tr>
<td>Competence</td>
<td>Examples of evidence</td>
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<td>------------------------------------------------------------------</td>
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</tr>
<tr>
<td><strong>C. Responsibility, management and leadership</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Engineering Technicians shall accept and exercise personal responsibility.</strong></td>
<td>This competence is about the ability to plan and manage the applicant’s own work effectively and efficiently. It is also about the ability to consider and identify improvements to maintain quality in their work.</td>
</tr>
<tr>
<td>The applicant shall demonstrate that they:</td>
<td>• Completing challenging tasks successfully within your area of work&lt;br&gt;• Identifying issues which fall outside of your current knowledge and seeking advice&lt;br&gt;• Identifying standards and codes of practice relevant to a new task</td>
</tr>
<tr>
<td>1. Work reliably and effectively without close supervision, to the appropriate codes of practice</td>
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<tr>
<td>2. Accept responsibility for the work of themselves or others</td>
<td>• Fully understanding drawings, permits to work, instructions or other similar documents after appropriate checking, and identifying issues&lt;br&gt;• Inspecting work carried out by others&lt;br&gt;• Checking the status of equipment, the work environment and facilities and taking appropriate actions before commencing work</td>
</tr>
<tr>
<td>3. Accept, allocate and supervise technical and other tasks.</td>
<td>• Ensuring that the scope of a task is clear before accepting and/or allocating it to others&lt;br&gt;• Querying any aspect of a task which is not clear and/or providing an explanation if a query is raised by others&lt;br&gt;• Learning from your own experience and/or providing constructive feedback when supervising or working with others</td>
</tr>
<tr>
<td>Competence</td>
<td>Examples of evidence</td>
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</tr>
<tr>
<td>D. Communication and interpersonal skills</td>
<td>The applicant shall demonstrate that they:</td>
</tr>
<tr>
<td>Engineering Technicians shall use effective communication and interpersonal skills.</td>
<td>1. Communicate effectively with others, at all levels, in English</td>
</tr>
<tr>
<td></td>
<td>• Contributing to meetings and discussions</td>
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<tr>
<td></td>
<td>• Preparing communications, documents and reports on technical matters</td>
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<td></td>
<td>• Exchanging information and providing advice to technical and non-technical colleagues</td>
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<td></td>
<td>2. Work effectively with colleagues, clients, suppliers or the public</td>
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<tr>
<td></td>
<td>• Contributing constructively as part of a team</td>
</tr>
<tr>
<td></td>
<td>• Successfully resolving issues in discussions with team members, suppliers, clients and/or others</td>
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<tr>
<td></td>
<td>• Persuading others to accept suggestions or recommendations</td>
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<td></td>
<td>• Identifying, agreeing and working towards collective goals</td>
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<td></td>
<td>3. Demonstrate personal and social skills and awareness of diversity and inclusion issues.</td>
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<tr>
<td></td>
<td>• Knowing and managing own emotions, strengths and weaknesses</td>
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<tr>
<td></td>
<td>• Being confident and flexible in dealing with new and changing interpersonal situations</td>
</tr>
<tr>
<td></td>
<td>• Creating, maintaining and enhancing productive working relationships, and resolving conflicts</td>
</tr>
<tr>
<td></td>
<td>• Being supportive of the needs and concerns of others, especially where this relates to diversity and inclusion</td>
</tr>
<tr>
<td>Competence</td>
<td>Examples of evidence</td>
</tr>
<tr>
<td>------------</td>
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</tr>
<tr>
<td>E. Personal and professional commitment</td>
<td><strong>This shall include the ability to:</strong></td>
</tr>
<tr>
<td>Engineering Technicians shall demonstrate commitment to an appropriate code of professional conduct, recognising obligations to society, the profession and the environment.</td>
<td>1. Understand and comply with relevant codes of conduct</td>
</tr>
</tbody>
</table>
| | • Demonstrating compliance with your Licensee’s Code of Professional Conduct  
  • Working within all relevant legislative and regulatory frameworks, including social and employment legislation |
| | 2. Understand the safety implications of their role and apply safe systems of work |
| | • Providing evidence of applying current safety requirements, such as risk assessment and other examples of good practice you adopt in your work  
  • A sound knowledge of health and safety legislation, for example: HASAW 1974, CDM regulations, ISO 45001 and company safety policies |
| | 3. Understand the principles of sustainable development and apply them in their work |
| | • Recognising how sustainability principles, as described in the Guidance on Sustainability on page 48, can be applied in your day-to-day work  
  • Identifying actions that you can and have taken to improve sustainability |
| | 4. Carry out and record the Continuing Professional Development (CPD) necessary to maintain and enhance competence in their own area of practice |
| | • Undertaking reviews of your own development needs  
  • Planning how to meet personal and organisational objectives  
  • Carrying out and recording planned and unplanned CPD activities  
  • Maintaining evidence of competence development  
  • Evaluating CPD outcomes against any plans made  
  • Assisting others with their own CPD |
| | 5. Understand the ethical issues that may arise in their role and carry out their responsibilities in an ethical manner. |
| | • Understanding the ethical issues that you may encounter in your role  
  • Giving an example of where you have applied ethical principles as described in the Statement of Ethical Principles on page 47  
  • Giving an example of where you have applied or upheld ethical principles as defined by your organisation or company |
The Incorporated Engineer (IEng) Standard

Incorporated Engineers maintain and manage applications of current and developing technology, and may undertake engineering design, development, manufacture, construction and operation.

Incorporated Engineers shall demonstrate:

- The theoretical knowledge to solve problems in established technologies using well proven analytical techniques
- Successful application of the knowledge to deliver engineering tasks or services using established technologies and methods
- Contribution to the financial and planning aspects of projects or tasks and contribution to leading and developing other professional staff
- Effective interpersonal skills in communicating technical matters
- The ability to specify and operate to safe systems of work and to demonstrate appropriate consideration of the principles of sustainability
- Commitment to professional engineering values

An Incorporated Engineer will be able to demonstrate their competence in all of the areas listed, but the depth and extent of their experience and competence will vary with the nature and requirements of their role. They will demonstrate a level of competence and commitment in each area (A1–E5) at a level which is consistent with their specific role. It is to be expected that they will have a higher level of competence in some areas than others and their role may provide limited experience in certain areas. However, they need to demonstrate an understanding of, and familiarity with, the key aspects of competence in all areas as a minimum requirement while demonstrating higher levels of competence in those areas which are critical to their role. Overall, they must demonstrate an appropriate balance of competences to perform their role effectively at Incorporated Engineer level.

The examples of evidence are intended as guidance to help identify activities that might demonstrate the required competence and commitment for Incorporated Engineer registration. They are intended as examples only as the most appropriate evidence will vary with each individual role. The list is not exhaustive and other types of evidence might be valid. There is no requirement to provide multiple examples of evidence for each area of competence, but examples from two or three projects or tasks would be useful.
<table>
<thead>
<tr>
<th>Competence</th>
<th>Examples of evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A. Knowledge and understanding</strong></td>
<td>- Identifying the limits of your knowledge and skills</td>
</tr>
<tr>
<td>Incorporated Engineers shall use a combination of general and specialist engineering knowledge and understanding to apply existing and emerging technology.</td>
<td>- Taking steps to develop and extend personal knowledge of appropriate technology, both current and emerging</td>
</tr>
<tr>
<td>This competence is about having knowledge of the technologies, standards and practices relevant to the applicant’s area of practice and having evidence of maintaining and applying this knowledge.</td>
<td>- Applying newly gained knowledge successfully in a task or project</td>
</tr>
<tr>
<td></td>
<td>- Reviewing current procedures and processes and recommended improvements or changes to reflect best practice</td>
</tr>
<tr>
<td></td>
<td>- Developing knowledge needed to work in a new industry area or discipline</td>
</tr>
<tr>
<td><strong>The applicant shall demonstrate that they:</strong></td>
<td></td>
</tr>
<tr>
<td>1. Have maintained and extended a sound theoretical approach to the application of technology in engineering practice</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Applying knowledge and experience to investigate and solve problems arising during engineering tasks and implementing corrective action</td>
</tr>
<tr>
<td>2. Use a sound evidence-based approach to problem-solving and contribute to continuous improvement.</td>
<td>- Identifying opportunities for improvements and how these have been (or could be) implemented</td>
</tr>
<tr>
<td></td>
<td>- Using an established process to analyse issues and establish priorities</td>
</tr>
</tbody>
</table>
### Competence

**B. Design, development and solving engineering problems**

Incorporated Engineers shall apply appropriate theoretical and practical methods to design, develop, manufacture, construct, commission, operate, maintain, decommission and recycle engineering processes, systems, services and products.

This competence is about the ability to identify appropriate methods and approaches to use to undertake a task within their area of practice and to make a significant contribution to the development of a design or process or the maintenance of operations.

<table>
<thead>
<tr>
<th>Examples of evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Establishing the engineering steps needed to carry out a task efficiently</td>
</tr>
<tr>
<td>- Identifying the available products or processes needed to undertake an engineering task and establishing a means of identifying the most suitable solution</td>
</tr>
<tr>
<td>- Preparing technical specifications</td>
</tr>
<tr>
<td>- Reviewing and comparing responses to the technical aspects of tender invitations</td>
</tr>
<tr>
<td>- Establishing user requirements for improvements</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>The applicant shall demonstrate that they:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Identify, review and select techniques, procedures and methods to undertake engineering tasks</td>
</tr>
<tr>
<td>2. Contribute to the design and development of engineering solutions</td>
</tr>
<tr>
<td>3. Implement design solutions for equipment or processes and contribute to their evaluation.</td>
</tr>
</tbody>
</table>

| - Contributing to the identification and specification of design and development requirements for engineering products, processes, systems and services |
| - Identifying operational risks and evaluating possible engineering solutions, taking account of cost, quality, safety, reliability, accessibility, appearance, fitness for purpose, security (including cyber security), intellectual property constraints and opportunities, and environmental impact |
| - Collecting and analysing results |
| - Carrying out necessary tests |
| - Identifying the resources required for implementation |
| - Implementing design solutions, taking account of critical constraints, including due concern for safety and sustainability |
| - Identifying problems during implementation and taking corrective action |
| - Contributing to recommendations for improvement and actively learning from feedback on results |
### Competence

**C. Responsibility, management and leadership**

**Incorporated Engineers shall provide technical and commercial management.**

This competence is about the ability to plan the applicant’s own work and manage or specify the work of others effectively, efficiently, and in a way which provides leadership at an appropriate level, whether technical or commercial. Leadership is not necessarily about having a formal line management role. In matrix management and other types of organisational structure, where Incorporated Engineers are working within complex and varied working relationships, they will provide leadership to achieve objectives. This competence is also about the ability to consider and identify improvements to quality.

#### Examples of evidence

| The applicant shall demonstrate that they: | • Identifying factors affecting the project implementation  
| 1. Plan the work and resources needed to enable effective implementation of engineering tasks and projects | • Carrying out holistic and systematic risk identification, assessment and management  
| 2. Manage (organise, direct and control), programme or schedule, budget and resource elements of engineering tasks or projects | • Preparing and agreeing implementation plans and method statements  
| 3. Manage teams, or the input of others, into own work and assist others to meet changing technical and management needs | • Securing the necessary resources and confirming roles in a project team  
| 4. Take an active role in continuous quality improvement. | • Applying the necessary contractual arrangements with other stakeholders (clients, subcontractors, suppliers, etc)  
| | • Operating appropriate management systems  
| | • Working to the agreed quality standards, programme and budget, within legal and statutory requirements  
| | • Managing work teams, coordinating project activities  
| | • Identifying variations from quality standards, programme and budgets, and taking corrective action  
| | • Evaluating performance and recommending improvements  
| | • Agreeing objectives and work plans with teams and individuals  
| | • Reinforcing team commitment to professional standards  
| | • Leading and supporting team and individual development  
| | • Assessing team and individual performance, and providing feedback  
| | • Seeking input from other teams or specialists where needed and managing the relationship  
| | • Ensuring the application of quality management principles by team members and colleagues  
| | • Managing operations to maintain quality standards eg ISO 9000, EQFM  
| | • Evaluating projects and making recommendations for improvement  
<p>| | • Implementing and sharing the results of lessons learned |</p>
<table>
<thead>
<tr>
<th>Competence</th>
<th>Examples of evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>D. Communication and interpersonal skills</td>
<td></td>
</tr>
<tr>
<td>Incorporated Engineers shall demonstrate effective communication and interpersonal skills.</td>
<td></td>
</tr>
<tr>
<td>This is the ability to work with others constructively, to explain ideas and proposals clearly and to discuss issues objectively and constructively.</td>
<td></td>
</tr>
<tr>
<td>The applicant shall demonstrate that they:</td>
<td></td>
</tr>
</tbody>
</table>
| 1. Communicate effectively with others, at all levels, in English | • Contributing to, chairing and recording meetings and discussions  
• Preparing communications, documents and reports on technical matters  
• Exchanging information and providing advice to technical and non-technical colleagues  
• Engaging or interacting with professional networks |
| 2. Clearly present and discuss proposals, justifications and conclusions | • Preparing and delivering appropriate presentations  
• Managing debates with audiences  
• Feeding the results back to improve the proposals  
• Contributing to the awareness of risk |
| 3. Demonstrate personal and social skills and awareness of diversity and inclusion issues. | • Knowing and managing own emotions, strengths and weaknesses  
• Being confident and flexible in dealing with new and changing interpersonal situations  
• Identifying, agreeing and working towards collective goals  
• Creating, maintaining and enhancing productive working relationships, and resolving conflicts  
• Being supportive of the needs and concerns of others, especially where this relates to diversity and inclusion |
<table>
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<tr>
<th>Competence</th>
<th>Examples of evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>E. Personal and professional commitment</td>
<td>Incorporated Engineers shall demonstrate a personal commitment to professional standards, recognising obligations to society, the profession and the environment.</td>
</tr>
</tbody>
</table>

This competence is about ensuring that the applicant is acting in a professional manner in their work and in their dealings with others. An Incorporated Engineer should set a standard and example to others with regard to professionalism.

The applicant shall demonstrate that they:

1. Understand and comply with relevant codes of conduct

   - Demonstrating compliance with your Licensee’s Code of Professional Conduct
   - Identifying aspects of the Code particularly relevant to your role
   - Managing work within all relevant legislative and regulatory frameworks, including social and employment legislation

2. Understand the safety implications of their role and manage, apply and improve safe systems of work

   - Identifying and taking responsibility for your own obligations for health, safety and welfare issues
   - Managing systems that satisfy health, safety and welfare requirements
   - Developing and implementing appropriate hazard identification and risk management systems and culture
   - Managing, evaluating and improving these systems
   - Applying a sound knowledge of health and safety legislation, for example: HASAW 1974, CDM regulations, ISO 45001 and company safety policies

3. Understand the principles of sustainable development and apply them in their work

   - Operating and acting responsibly, taking account of the need to progress environmental, social and economic outcomes simultaneously
   - Recognising how sustainability principles, as described in the Guidance on Sustainability on page 48 can be applied in your day-to-day work
   - Providing products and services which maintain and enhance the quality of the environment and community, and meet financial objectives
   - Understanding and encouraging stakeholder involvement in sustainable development
   - Using resources efficiently and effectively
   - Taking action to minimise environmental impact in your area of responsibility
### Competence

<table>
<thead>
<tr>
<th>E. Personal and professional commitment (continued)</th>
<th>Examples of evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>The applicant shall demonstrate that they:</strong></td>
<td><strong>•</strong> Undertaking reviews of your own development needs</td>
</tr>
<tr>
<td>4. Carry out and record the Continuing Professional Development (CPD) necessary to maintain and enhance competence in their own area of practice</td>
<td><strong>•</strong> Planning how to meet personal and organisational objectives</td>
</tr>
<tr>
<td><strong>5. Understand the ethical issues that may arise in their role and carry out their responsibilities in an ethical manner.</strong></td>
<td><strong>•</strong> Carrying out and recording planned and unplanned CPD activities</td>
</tr>
<tr>
<td></td>
<td><strong>•</strong> Maintaining evidence of competence development</td>
</tr>
<tr>
<td></td>
<td><strong>•</strong> Evaluating CPD outcomes against any plans made</td>
</tr>
<tr>
<td></td>
<td><strong>•</strong> Assisting others with their own CPD</td>
</tr>
<tr>
<td></td>
<td><strong>•</strong> Understanding the ethical issues that you may encounter in your role</td>
</tr>
<tr>
<td></td>
<td><strong>•</strong> Giving an example of where you have applied ethical principles as described in the Statement of Ethical Principles on page 47</td>
</tr>
<tr>
<td></td>
<td><strong>•</strong> Giving an example of where you have applied or upheld ethical principles as defined by your organisation or company</td>
</tr>
</tbody>
</table>
Chartered Engineers develop solutions to complex engineering problems using new or existing technologies, and through innovation, creativity and technical analysis.

Chartered Engineers shall demonstrate:

- The theoretical knowledge to solve problems in new and established technologies and to develop new analytical techniques
- Successful application of the knowledge to deliver innovative products and services or taking technical responsibility for complex engineering systems
- Responsibility for the financial and planning aspects of projects, sub-projects or tasks
- Leadership and development of other professional staff through management, mentoring or coaching
- Effective interpersonal skills in communicating technical matters
- Understanding of the safety and sustainability implications of their work, seeking to improve aspects where feasible
- Commitment to professional engineering values

A Chartered Engineer will be able to demonstrate their competence in all of the areas listed, but the depth and extent of their experience and competence will vary with the nature and requirements of their role. They will demonstrate a level of competence and commitment in each area, (A1–E5), at a level which is consistent with their specific role. It is to be expected that they will have a higher level of competence in some areas than others and their role may provide limited experience in certain areas. However, they need to demonstrate an understanding of, and familiarity with, the key aspects of competence in all areas as a minimum requirement while demonstrating higher levels of competence in those areas which are critical to their role. Overall, they will demonstrate an appropriate balance of competences to perform their role effectively at Chartered Engineer level.

The examples of evidence are intended as guidance to help identify activities that might demonstrate the required competence and commitment for Chartered Engineer registration. They are intended as examples only as the most appropriate evidence will vary with each individual role. The list is not exhaustive and other types of evidence might be valid. There is no requirement to provide multiple examples of evidence for each area of competence, but examples from two or three projects or tasks would be useful.
<table>
<thead>
<tr>
<th>Competence</th>
<th>Examples of evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A. Knowledge and understanding</strong></td>
<td></td>
</tr>
<tr>
<td>Chartered Engineers shall use a combination of general and specialist engineering knowledge and understanding to optimise the application of advanced and complex systems.</td>
<td>1. Have maintained and extended a sound theoretical approach to enable them to develop their particular role</td>
</tr>
<tr>
<td>This competence is about the ability to understand underpinning technical principles relevant to the applicant’s area of practice and applying them to develop technical solutions. This could involve technical solutions for novel problems or dealing with significant technical complexity. This may involve the integration of a range of technologies and consideration of other factors. This competence requires that an applicant is maintaining and developing their knowledge in their field of practice and not just that required for specific tasks.</td>
<td>2. Are developing technological solutions to unusual or challenging problems, using their knowledge and understanding and/or dealing with complex technical issues or situations with significant levels of risk.</td>
</tr>
<tr>
<td>The applicant shall demonstrate that they:</td>
<td></td>
</tr>
<tr>
<td>1. Have maintained and extended a sound theoretical approach to enable them to develop their particular role</td>
<td>• Formal training related to your role</td>
</tr>
<tr>
<td>• Learning and developing new engineering knowledge in a different industry or role</td>
<td>• Understanding the current and emerging technology and technical best practice in your area of expertise</td>
</tr>
<tr>
<td>• Developing a broader and deeper knowledge base through research and experimentation</td>
<td>• Learning and developing new engineering theories and techniques in the workplace</td>
</tr>
<tr>
<td>• Carrying out technical research and development</td>
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</tr>
<tr>
<td>• Developing new designs, processes or systems based on new or evolving technology</td>
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<tr>
<td>• Carrying out complex and/or non-standard technical analyses</td>
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<tr>
<td>• Developing solutions involving complex or multi-disciplinary technology</td>
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<tr>
<td>• Developing and evaluating continuous improvement systems</td>
<td></td>
</tr>
<tr>
<td>• Developing solutions in safety-critical industries or applications</td>
<td></td>
</tr>
<tr>
<td>Competence</td>
<td>Examples of evidence</td>
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<td>------------</td>
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</tr>
<tr>
<td><strong>B. Design, development and solving engineering problems</strong></td>
<td></td>
</tr>
<tr>
<td>Chartered Engineers shall apply appropriate theoretical and practical methods to the analysis and solution of engineering problems.</td>
<td></td>
</tr>
<tr>
<td>This competence is about the ability to apply engineering knowledge effectively and efficiently to the individual tasks which need to be undertaken in the applicant’s role.</td>
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</tr>
<tr>
<td></td>
<td><strong>The applicant shall demonstrate that they:</strong></td>
</tr>
<tr>
<td></td>
<td>1. Take an active role in the identification and definition of project requirements, problems and opportunities</td>
</tr>
<tr>
<td></td>
<td>2. Can identify the appropriate investigations and research needed to undertake the design, development and analysis required to complete an engineering task and conduct these activities effectively</td>
</tr>
<tr>
<td></td>
<td><strong>Examples of evidence:</strong></td>
</tr>
<tr>
<td></td>
<td>• Identifying projects or technical improvements to products, processes or systems</td>
</tr>
<tr>
<td></td>
<td>• Preparing specifications, taking account of functional and other requirements</td>
</tr>
<tr>
<td></td>
<td>• Establishing user requirements</td>
</tr>
<tr>
<td></td>
<td>• Reviewing specifications and tenders to identify technical issues and potential improvements</td>
</tr>
<tr>
<td></td>
<td>• Carrying out technical risk analysis and identifying mitigation measures</td>
</tr>
<tr>
<td></td>
<td>• Considering and implementing new and emerging technologies</td>
</tr>
<tr>
<td></td>
<td>• Identifying and agreeing appropriate research methodologies</td>
</tr>
<tr>
<td></td>
<td>• Investigating a technical issue, identifying potential solutions and determining the factors needed to compare them</td>
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<tr>
<td></td>
<td>• Identifying and carrying out physical tests or trials and analysing and evaluating the results</td>
</tr>
<tr>
<td></td>
<td>• Carrying out technical simulations or analysis</td>
</tr>
<tr>
<td></td>
<td>• Preparing, presenting and agreeing design recommendations, with appropriate analysis of risk, and taking account of cost, quality, safety, reliability, accessibility, appearance, fitness for purpose, security (including cyber security), intellectual property constraints and opportunities, and environmental impact</td>
</tr>
<tr>
<td>Competence</td>
<td>Examples of evidence</td>
</tr>
<tr>
<td>---------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>B. Design, development and solving engineering problems (continued)</strong></td>
<td>• Ensuring that the application of the design results in the appropriate practical outcome</td>
</tr>
<tr>
<td>The applicant shall demonstrate that they:</td>
<td>• Implementing design solutions, taking account of critical constraints, including due concern for safety, sustainability and disposal or decommissioning</td>
</tr>
<tr>
<td>3. Can implement engineering tasks and evaluate the effectiveness of engineering solutions.</td>
<td>• Identifying and implementing lessons learned</td>
</tr>
<tr>
<td></td>
<td>• Evaluating existing designs or processes and identifying faults or potential improvements including risk, safety and life cycle considerations</td>
</tr>
<tr>
<td></td>
<td>• Actively learning from feedback on results to improve future design solutions and build best practice</td>
</tr>
</tbody>
</table>
### Competence

**C. Responsibility, management and leadership**

Chartered Engineers shall demonstrate technical and commercial leadership.

This competence is about the ability to plan the applicant’s own work and manage or specify the work of others effectively, efficiently, and in a way which provides leadership at an appropriate level, whether technical or commercial. Leadership is not necessarily about having a formal line management role. In matrix management and other types of organisational structure, where Chartered Engineers are working within complex and varied working relationships, they will provide leadership to achieve objectives. This competence is also about the ability to consider and identify improvements to quality.

### Examples of evidence

<table>
<thead>
<tr>
<th>The applicant shall demonstrate that they:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. Plan the work and resources needed to enable effective implementation of a significant engineering task or project</strong></td>
<td><strong>2. Manage (organise, direct and control), programme or schedule, budget and resource elements of a significant engineering task or project</strong></td>
</tr>
<tr>
<td>• Preparing budgets and associated work programmes for projects or tasks</td>
<td>• Operating or defining appropriate management systems including risk registers and contingency systems</td>
</tr>
<tr>
<td>• Systematically reviewing the factors affecting the project implementation including safety, sustainability and disposal or decommissioning considerations</td>
<td>• Managing the balance between quality, cost and time</td>
</tr>
<tr>
<td>• Carrying out a task or project risk assessment and identifying mitigation measures</td>
<td>• Monitoring progress and associated costs and cost forecasts, taking appropriate actions when required</td>
</tr>
<tr>
<td>• Leading on preparing and agreeing implementation plans and method statements</td>
<td>• Establishing and maintaining appropriate quality standards within legal and statutory requirements</td>
</tr>
<tr>
<td>• Negotiating and agreeing arrangements with customers, colleagues, contractors and other stakeholders, including regulatory bodies</td>
<td>• Interfacing effectively with customers, contractors and other stakeholders</td>
</tr>
<tr>
<td>• Ensuring that information flow is appropriate and effective</td>
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<tr>
<td>Competence</td>
<td>Examples of evidence</td>
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<tr>
<td>------------</td>
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</tr>
<tr>
<td><strong>C. Responsibility, management and leadership (continued)</strong></td>
<td></td>
</tr>
</tbody>
</table>
| The applicant shall demonstrate that they: 3. Lead teams or technical specialisms and assist others to meet changing technical and managerial needs | • Agreeing objectives and work plans with teams and individuals  
• Reinforcing team commitment to professional standards  
• Leading and supporting team and individual development  
• Assessing team and individual performance, and providing feedback  
• Seeking input from other teams or specialists where needed and managing the relationship  
• Providing specialist knowledge, guidance and input in your specialism to engineering teams, engineers, customers, management and relevant stakeholders  
• Developing and delivering a teaching module at Masters level, or leading a University research programme |
| 4. Bring about continuous quality improvement and promote best practice. | • Promoting quality throughout the organisation as well as its customer and supplier networks  
• Developing and maintaining operations to meet quality standards eg ISO 9000, EQFM  
• Supporting or directing project evaluation and proposing recommendations for improvement  
• Implementing and sharing the results of lessons learned |
<table>
<thead>
<tr>
<th>Competence</th>
<th>Examples of evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>D. Communication and interpersonal skills</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Chartered Engineers shall demonstrate effective communication and interpersonal skills.</strong></td>
<td></td>
</tr>
<tr>
<td>This is the ability to work with others constructively, to explain ideas and proposals clearly and to discuss issues objectively and constructively.</td>
<td>The applicant shall demonstrate that they:</td>
</tr>
<tr>
<td></td>
<td>1. Communicate effectively with others, at all levels, in English</td>
</tr>
<tr>
<td></td>
<td>• Preparing reports, drawings, specifications and other documentation on complex matters</td>
</tr>
<tr>
<td></td>
<td>• Leading, chairing, contributing to and recording meetings and discussions</td>
</tr>
<tr>
<td></td>
<td>• Exchanging information and providing advice to technical and non-technical colleagues</td>
</tr>
<tr>
<td></td>
<td>• Engaging or interacting with professional networks</td>
</tr>
<tr>
<td></td>
<td>2. Clearly present and discuss proposals, justifications and conclusions</td>
</tr>
<tr>
<td></td>
<td>• Contributing to scientific papers or articles as an author</td>
</tr>
<tr>
<td></td>
<td>• Preparing and delivering presentations on strategic matters</td>
</tr>
<tr>
<td></td>
<td>• Preparing bids, proposals or studies</td>
</tr>
<tr>
<td></td>
<td>• Identifying, agreeing and leading work towards collective goals</td>
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<td></td>
<td>3. Demonstrate personal and social skills and awareness of diversity and inclusion issues.</td>
</tr>
<tr>
<td></td>
<td>• Knowing and managing own emotions, strengths and weaknesses</td>
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<tr>
<td></td>
<td>• Being confident and flexible in dealing with new and changing interpersonal situations</td>
</tr>
<tr>
<td></td>
<td>• Identifying, agreeing and working towards collective goals</td>
</tr>
<tr>
<td></td>
<td>• Creating, maintaining and enhancing productive working relationships, and resolving conflicts</td>
</tr>
<tr>
<td></td>
<td>• Being supportive of the needs and concerns of others, especially where this relates to diversity and inclusion</td>
</tr>
</tbody>
</table>
### Competence

**E. Personal and professional commitment**

Chartered Engineers shall demonstrate a personal commitment to professional standards, recognising obligations to society, the profession and the environment.

This competence is about ensuring that the applicant is acting in a professional manner in their work and in their dealings with others. A Chartered Engineer should set a standard and example to others with regard to professionalism.

<table>
<thead>
<tr>
<th>The applicant shall demonstrate that they:</th>
<th>Examples of evidence</th>
</tr>
</thead>
</table>
| 1. Understand and comply with relevant codes of conduct | - Demonstrating compliance with your Licensee’s Code of Professional Conduct  
- Identifying aspects of the Code which are particularly relevant to your role  
- Being aware of the legislative and regulatory frameworks relevant to your role and how they conform to them  
- Leading work within relevant legislation and regulatory frameworks, including social and employment legislation |
| 2. Understand the safety implications of their role and manage, apply and improve safe systems of work | - Identifying and taking responsibility for your own obligations and ensuring that others assume similar responsibility for health, safety and welfare issues  
- Ensuring that systems satisfy health, safety and welfare requirements  
- Developing and implementing appropriate hazard identification and risk management systems and culture  
- Managing, evaluating and improving these systems  
- Applying a sound knowledge of health and safety legislation, for example: HASAW 1974, CDM regulations, ISO 45001 and company safety policies |
<table>
<thead>
<tr>
<th>Competence</th>
<th>Examples of evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>E. Personal and professional commitment (continued)</td>
<td>The applicant shall demonstrate that they:</td>
</tr>
</tbody>
</table>
| 3. Understand the principles of sustainable development and apply them in their work | • Operating and acting responsibly, taking account of the need to progress environmental, social and economic outcomes simultaneously  
• Providing products and services which maintain and enhance the quality of the environment and community, and meet financial objectives  
• Recognising how sustainability principles, as described in the Guidance on Sustainability on page 48, can be applied in your day-to-day work  
• Understanding and securing stakeholder involvement in sustainable development  
• Using resources efficiently and effectively in all activities  
• Taking action to minimise environmental impact in your area of responsibility |
| 4. Carry out and record the Continuing Professional Development (CPD) necessary to maintain and enhance competence in their own area of practice | • Undertaking reviews of your own development needs  
• Planning how to meet personal and organisational objectives  
• Carrying out planned and unplanned CPD activities  
• Maintaining evidence of competence development  
• Evaluating CPD outcomes against any plans made  
• Assisting others with their own CPD |
| 5. Understand the ethical issues that may arise in their role and carry out their responsibilities in an ethical manner. | • Understanding the ethical issues that you may encounter in your role  
• Giving an example of where you have applied ethical principles as described in the Statement of Ethical Principles on page 47  
• Giving an example of where you have applied or upheld ethical principles as defined by your organisation or company |
## Comparison table for EngTech, IEng and CEng Standards

This table can also be downloaded as a PDF, along with a version which includes examples of the types of evidence. Please see: [www.engc.org.uk/ukspec](http://www.engc.org.uk/ukspec)

<table>
<thead>
<tr>
<th>Engineering Technician (EngTech)</th>
<th>Incorporated Engineer (IEng)</th>
<th>Chartered Engineer (CEng)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engineering Technicians apply proven techniques and procedures to the solution of practical engineering problems. Engineering Technicians shall demonstrate:</td>
<td>Incorporated Engineers maintain and manage applications of current and developing technology, and may undertake engineering design, development, manufacture, construction and operation. Incorporated Engineers shall demonstrate:</td>
<td>Chartered Engineers develop solutions to complex engineering problems using new or existing technologies, and through innovation, creativity and technical analysis. Chartered Engineers shall demonstrate:</td>
</tr>
<tr>
<td>• Engineering knowledge and understanding to apply technical and practical skills</td>
<td>• The theoretical knowledge to solve problems in developed technologies using well proven analytical techniques</td>
<td>• The theoretical knowledge to solve problems in new and established technologies and to develop new analytical techniques</td>
</tr>
<tr>
<td>• Evidence of their contribution to either the design, development, manufacture, commissioning, decommissioning, operation or maintenance of products, equipment, processes or services</td>
<td>• Successful application of their knowledge to deliver engineering projects or services using established technologies and methods</td>
<td>• Successful application of the knowledge to deliver innovative products and services and/or taking technical responsibility for complex engineering systems</td>
</tr>
<tr>
<td>• Supervisory or technical responsibility</td>
<td>• Contribution to the financial and planning aspects of projects or tasks and to leading and developing other professional staff</td>
<td>• Responsibility for the financial and planning aspects of projects, sub-projects or tasks</td>
</tr>
<tr>
<td>• Effective interpersonal skills in communicating technical matters</td>
<td>• Effective interpersonal skills in communicating technical matters</td>
<td>• Leadership and development of other professional staff through management, mentoring or coaching</td>
</tr>
<tr>
<td>• The ability to operate in accordance with safe systems of work and to demonstrate appropriate understanding of the principles of sustainability</td>
<td>• The ability to specify and operate to safe systems of work and to demonstrate appropriate consideration of the principles of sustainability</td>
<td>• Effective interpersonal skills in communicating technical matters</td>
</tr>
<tr>
<td>• Commitment to professional engineering values.</td>
<td>• Commitment to professional engineering values.</td>
<td>• Understanding of the safety and sustainability implications of their work, seeking to improve aspects where feasible</td>
</tr>
</tbody>
</table>

- Commitment to professional engineering values.
<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td><strong>The Competence and Commitment Standard for Engineering Technicians</strong></td>
<td><strong>The Competence and Commitment Standard for Incorporated Engineers</strong></td>
<td><strong>The Competence and Commitment Standard for Chartered Engineers</strong></td>
</tr>
<tr>
<td>For guidance and examples of types of evidence that demonstrate the required competence and commitment for registration as an Engineering Technician, see the table on pages 20–23.</td>
<td>For guidance and examples of types of evidence that demonstrate the required competence and commitment for registration as an Incorporated Engineer, see the table on pages 25–30.</td>
<td>For guidance and examples of types of evidence that demonstrate the required competence and commitment for registration as a Chartered Engineer, see the table on pages 32–39.</td>
</tr>
<tr>
<td>Engineering Technicians must be competent throughout their working life, by virtue of their education, training and experience in the following ways:</td>
<td>Incorporated Engineers must be competent throughout their working life, by virtue of their education, training and experience in the following ways:</td>
<td>Chartered Engineers must be competent throughout their working life, by virtue of their education, training and experience in the following ways:</td>
</tr>
<tr>
<td><strong>A. Knowledge and understanding</strong></td>
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<td><strong>A. Knowledge and understanding</strong></td>
</tr>
<tr>
<td>Engineering Technicians shall use engineering knowledge and understanding to apply technical and practical skills.</td>
<td>Incorporated Engineers shall use a combination of general and specialist engineering knowledge and understanding to apply existing and emerging technology.</td>
<td>Chartered Engineers shall use a combination of general and specialist engineering knowledge and understanding to optimise the application of advanced and complex systems.</td>
</tr>
<tr>
<td>The applicant shall demonstrate that they:</td>
<td>The applicant shall demonstrate that they:</td>
<td>The applicant shall demonstrate that they:</td>
</tr>
<tr>
<td>1. Review and select appropriate techniques, procedures and methods to undertake tasks</td>
<td>1. Have maintained and extended a sound theoretical approach to the application of technology in engineering practice</td>
<td>1. Have maintained and extended a sound theoretical approach to enable them to develop their particular role</td>
</tr>
<tr>
<td>2. Use appropriate scientific, technical or engineering principles.</td>
<td>2. Use a sound evidence-based approach to problem-solving and contribute to continuous improvement.</td>
<td>2. Are developing technological solutions to unusual or challenging problems, using their knowledge and understanding and/or dealing with complex technical issues or situations with significant levels of risk.</td>
</tr>
<tr>
<td>Engineering Technician (EngTech)</td>
<td>Incorporated Engineer (IEng)</td>
<td>Chartered Engineer (CEng)</td>
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</tr>
<tr>
<td><strong>B. Design, development and solving engineering problems</strong></td>
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<td><strong>B. Design, development and solving engineering problems</strong></td>
</tr>
<tr>
<td>Engineering Technicians shall contribute to the design, development, manufacture, construction, commissioning, decommissioning, operation or maintenance of products, equipment, processes, systems or services.</td>
<td>Incorporated Engineers shall apply appropriate theoretical and practical methods to design, develop, manufacture, construct, commission, operate, maintain, decommission and recycle engineering processes, systems, services and products.</td>
<td>Chartered Engineers shall apply appropriate theoretical and practical methods to the analysis and solution of engineering problems.</td>
</tr>
<tr>
<td>The applicant shall demonstrate that they: 1. Identify problems and apply appropriate methods to identify causes and achieve satisfactory solutions 2. Identify, organise and use resources effectively to complete tasks, with consideration for cost, quality, safety, security and environmental impact.</td>
<td>The applicant shall demonstrate that they: 1. Identify, review and select techniques, procedures and methods to undertake engineering tasks 2. Contribute to the design and development of engineering solutions 3. Implement design solutions for equipment or processes and contribute to their evaluation.</td>
<td>The applicant shall demonstrate that they: 1. Take an active role in the identification and definition of project requirements, problems and opportunities 2. Can identify the appropriate investigations and research needed to undertake the design, development and analysis required to complete an engineering task and conduct these activities effectively 3. Can implement engineering tasks and evaluate the effectiveness of engineering solutions.</td>
</tr>
<tr>
<td>Engineering Technician (EngTech)</td>
<td>Incorporated Engineer (IEng)</td>
<td>Chartered Engineer (CEng)</td>
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<tr>
<td><strong>C. Responsibility, management and leadership</strong></td>
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<td><strong>C. Responsibility, management and leadership</strong></td>
</tr>
<tr>
<td>Engineering Technicians shall accept and exercise personal responsibility.</td>
<td>incorporated Engineers shall provide technical and commercial management.</td>
<td>Chartered Engineers shall provide technical and commercial leadership.</td>
</tr>
<tr>
<td>The applicant shall demonstrate that they:</td>
<td>The applicant shall demonstrate that they:</td>
<td>The applicant shall demonstrate that they:</td>
</tr>
<tr>
<td>1. Work reliably and effectively without close supervision, to the appropriate codes of practice</td>
<td>1. Plan the work and resources needed to enable effective implementation of engineering tasks and projects</td>
<td>1. Plan the work and resources needed to enable effective implementation of a significant engineering task or project</td>
</tr>
<tr>
<td>2. Accept responsibility for the work of themselves or others</td>
<td>2. Manage (organise, direct and control), programme or schedule, budget and resource elements of engineering tasks or projects</td>
<td>2. Manage (organise, direct and control), programme or schedule, budget and resource elements of a significant engineering task or project</td>
</tr>
<tr>
<td>3. Accept, allocate and supervise technical and other tasks.</td>
<td>3. Manage teams, or the input of others, into own work and assist others to meet changing technical and management needs</td>
<td>3. Lead teams or technical specialisms and assist others to meet changing technical and managerial needs</td>
</tr>
<tr>
<td></td>
<td>4. Take an active role in continuous quality improvement.</td>
<td>4. Bring about continuous quality improvement and promote best practice.</td>
</tr>
<tr>
<td>Engineering Technician (EngTech)</td>
<td>Incorporated Engineer (IEng)</td>
<td>Chartered Engineer (CEng)</td>
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<tr>
<td><strong>D. Communication and interpersonal skills</strong></td>
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<tr>
<td>Engineering Technicians shall use effective communication and interpersonal skills.</td>
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<td></td>
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<tr>
<td>The applicant shall demonstrate that they:</td>
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<td>The applicant shall demonstrate that they:</td>
</tr>
<tr>
<td>1. Communicate effectively with others, at all levels, in English</td>
<td></td>
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</tr>
<tr>
<td>2. Work effectively with colleagues, clients, suppliers or the public</td>
<td></td>
<td>2. Clearly present and discuss proposals, justifications and conclusions</td>
</tr>
<tr>
<td>3. Demonstrate personal and social skills and awareness of diversity and inclusion issues.</td>
<td></td>
<td>3. Demonstrate personal and social skills and awareness of diversity and inclusion issues.</td>
</tr>
<tr>
<td><strong>D. Communication and interpersonal skills</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Incorporated Engineers shall demonstrate effective communication and interpersonal skills.</td>
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<tr>
<td><strong>D. Communication and interpersonal skills</strong></td>
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<tr>
<td>Chartered Engineers shall demonstrate effective communication and interpersonal skills.</td>
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<tr>
<td>The applicant shall demonstrate that they:</td>
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<td>The applicant shall demonstrate that they:</td>
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<tr>
<td>1. Communicate effectively with others, at all levels, in English</td>
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<td>1. Communicate effectively with others, at all levels, in English</td>
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<tr>
<td>2. Clearly present and discuss proposals, justifications and conclusions</td>
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</tr>
<tr>
<td>3. Demonstrate personal and social skills and awareness of diversity and inclusion issues.</td>
<td></td>
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<tr>
<td>Engineering Technician (EngTech)</td>
<td>Incorporated Engineer (IEng)</td>
<td>Chartered Engineer (CEng)</td>
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<tr>
<td><strong>E. Personal and professional commitment</strong></td>
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<tr>
<td>Engineering Technicians shall demonstrate a personal commitment to an appropriate code of professional conduct, recognising obligations to society, the profession and the environment.</td>
<td>Incorporated Engineers shall demonstrate a personal commitment to professional standards, recognising obligations to society, the profession and the environment.</td>
<td>Chartered Engineers shall demonstrate a personal commitment to professional standards, recognising obligations to society, the profession and the environment.</td>
</tr>
<tr>
<td>The applicant shall demonstrate that they: 1. Understand and comply with relevant codes of conduct 2. Understand the safety implications of their role and apply safe systems of work 3. Understand the principles of sustainable development and apply them in their work 4. Carry out and record the Continuing Professional Development (CPD) necessary to maintain and enhance competence in their own area of practice 5. Understand the ethical issues that may arise in their role and carry out their responsibilities in an ethical manner.</td>
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</tr>
</tbody>
</table>
Continuing Professional Development

Continuing professional development (CPD) is essential for maintaining and enhancing the required competence and commitment, as well as for developing new competences. This obligation underpins the value of the professional titles of EngTech, IEng and CEng, and enables society to have confidence in the engineering profession.

CPD has several purposes:
- To assure continuing competence in a current job
- To prepare for a different role
- To follow a longer-term career development plan
- To enhance professionalism in a wider context than a specific job role.

More details on the nature, purpose and value of CPD can be found in the CPD Policy Statement.

For more information please see: [www.engc.org.uk/cpd](http://www.engc.org.uk/cpd)

**CPD Code for Registrants**

Engineering professionals should take all necessary steps to maintain and enhance their competence through CPD. In particular, they should:
- Take ownership of their learning and development needs and develop a plan to indicate how they might meet these, in discussion with their employer, as appropriate
- Carry out a variety of development activities, both in accordance with this plan and in response to other opportunities which might arise
- Record their CPD activities
- Reflect on what they have learned or achieved through their CPD activities and record these reflections
- Evaluate their CPD activities against any objectives they have set and record this evaluation
- Review their learning and development plan regularly, following reflection and assessment of future needs
- Support the learning and development of others through activities such as mentoring and sharing professional expertise and knowledge

At Professional Review, all applicants will need to demonstrate how they meet their CPD obligations and show that they understand that this requires an ongoing commitment.

**Sampling registrants’ CPD records**

The Licensees undertake annual random samples of professionally active registrants’ CPD records and provide appropriate feedback, as described in the Engineering Council’s Regulations for Registration (RfR).

Registrants who are not professionally active (eg retired or on a career break) may request exemption from a sample. The intention behind CPD sampling is not to police registrants, but to encourage a culture in which registrants will naturally engage in CPD and take ownership of their own learning and development.
Recording evidence of CPD undertaken is a requirement of professional registration. Professionally active registrants who persistently do not respond to or engage with requests for CPD records from a Licensee will be removed from the Engineering Council Register.

**Professional and Ethical Behaviour**

**Statement of Ethical Principles**

Engineering professionals work to enhance the wellbeing of society. In doing so they are required to maintain and promote high ethical standards and challenge unethical behaviour.

This Statement of Ethical Principles, published by the Engineering Council and the Royal Academy of Engineering, lists four fundamental principles to guide engineers and technicians in their professional life:

- Honesty and integrity
- Respect for life, law, the environment and public good
- Accuracy and rigour
- Leadership and communication

These express the beliefs and values of the profession and are explained in the Statement of Ethical Principles.

For more information please see: [www.engc.org.uk/ethics](http://www.engc.org.uk/ethics)

**Guidance for Licensee Codes of Professional Conduct**

All registrants are expected to observe the requirements of the Code of Professional Conduct (the Code) of the Licensee they have joined. This Code of Professional Conduct places a personal obligation on its members to act with integrity and in the public interest, in accordance with the Statement of Ethical Principles.

Each Licensee will have appropriate disciplinary processes in place to address breaches of their Code of Professional Conduct.

For more information please see: [www.engc.org.uk/conduct](http://www.engc.org.uk/conduct)

**Guidance on Risk**

This guidance, published by the Engineering Council, lists six principles to guide and motivate professional engineers and technicians in identifying, assessing, managing and communicating about risk.

For more information please see: [www.engc.org.uk/risk](http://www.engc.org.uk/risk)
Guidance on Sustainability
This guidance, published by the Engineering Council, lists six principles to guide and motivate professional engineers and technicians when making decisions for clients, employers and society which affect sustainability.

For more information please see: www.engc.org.uk/sustainability

Guidance on Whistleblowing
This guidance, published by the Engineering Council, explains what whistleblowing is and the processes that engineers and technicians should follow when confronted with a potential whistleblowing situation:

For more information please see: www.engc.org.uk/whistleblowing

Guidance on Security
This guidance, published by the Engineering Council, lists six key principles to guide engineers and technicians in identifying, assessing, managing and communicating issues about security.

For more information please see: www.engc.org.uk/security

The Engineering Council reviews its guidance periodically and welcomes comments about this. Licensees may use this to assist them in developing guidance for their members.

For the latest information please see the Engineering Council website: www.engc.org.uk

International Activity
To ensure that professionally registered engineers’ skills are recognised internationally, the Engineering Council is active within a number of multilateral mutual recognition agreements with other national engineering bodies. These agreements establish internationally benchmarked standards which allow signatory bodies to recognise each other’s academic and professional qualifications, aiding mobility. In particular, the Engineering Council was a founder member of the Washington Accord and has subsequently worked with international partners to develop further agreements. The governance of these sits within the International Engineering Alliance (IEA).

The Engineering Council is a member of:
- The Agreement for International Engineering Technicians (AIET)
- The Dublin Accord (DA)
- The International Engineering Technologists Agreement (IETA)
- The International Professional Engineers Agreement (IPEA)
- The Sydney Accord (SA)
- The Washington Accord (WA)

The Engineering Council is a member of the European Network of Accreditation of Engineering Education (ENAEE), which authorises accreditation and quality assurance agencies to award the EUR-ACE® label to accredited engineering degree programmes. In addition, the Engineering Council works within the European Federation of National Engineering Associations (FEANI) to strengthen the voice of engineers at the European level.

For more information please see: www.engc.org.uk/international
## Glossary

<p>| <strong>AAQA</strong> | Approval and Accreditation of Qualifications and Apprenticeships. One of the Standards which the Engineering Council publishes, along with AHEP, ICTTech Standard, RfR and UK-SPEC. AQAA sets out the standards and learning outcomes which must be met for qualifications and apprenticeships to be approved for registration at all levels, ie EngTech or ICTTech, IEng and CEng. Previously known as AQAH (Approval of Qualifications and Apprenticeships Handbook). See: <a href="http://www.engc.org.uk/aqaa">www.engc.org.uk/aqaa</a> |
| <strong>AHEP</strong> | Accreditation of Higher Education Programmes. One of the Standards which the Engineering Council publishes, along with AAQA, the ICTTech Standard, RfR and UK-SPEC. Working in line with UK-SPEC, AHEP sets out the standards for the accreditation of higher education programmes in engineering. It also outlines the application process for universities that wish to secure or maintain accreditation of their programmes. Accreditation is carried out by Licensees in accordance with these requirements. See: <a href="http://www.engc.org.uk/ahep">www.engc.org.uk/ahep</a> |
| <strong>AIET</strong> | The Agreement for International Engineering Technicians is an agreement which works to ensure that professionally registered Engineering Technicians’ competence is recognised internationally. See International Activity on page 48 or <a href="http://www.ieagreements.org/aiet">www.ieagreements.org/aiet</a> |
| <strong>Approved / Approval</strong> | The process of peer reviewing a programme against published learning outcomes. This involves a review of a qualification or an apprenticeship programme by a number of professionally registered engineers. See also: Accredited / Accreditation |
| <strong>AQAH</strong> | See AAQA. |</p>
<table>
<thead>
<tr>
<th><strong>CDM Regulations</strong></th>
<th>Construction (Design and Management) Regulations 2015, known as CDM Regulations or CDM 2015, are UK regulations governing construction projects of any type and size. CDM Regulations define responsibilities and place legal duties, enforceable by criminal law, on all parties involved in a construction project.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Chartered Engineer (CEng)</strong></td>
<td>One of the professional titles available to individuals who meet the required standards of competence and commitment. See page 31 or <a href="http://www.engc.org.uk/ceng">www.engc.org.uk/ceng</a></td>
</tr>
<tr>
<td><strong>Code of Professional Conduct</strong></td>
<td>Every Licensee and Professional Affiliate which is licensed by the Engineering Council will have its own Code of Professional Conduct. One of the requirements of professional registration is demonstrating compliance with the appropriate organisation’s Code. See page 47.</td>
</tr>
<tr>
<td><strong>Commitment</strong></td>
<td>A set of values, rules of conduct, and obligations that maintain and enhance the reputation of the engineering profession and the individual. Demonstrating both competence and commitment is part of the requirement to become professionally registered with the Engineering Council.</td>
</tr>
<tr>
<td><strong>Competence</strong></td>
<td>The ability to carry out appropriate tasks to an effective standard. Achieving competence requires the right level of underpinning knowledge, understanding and skill, as well as a professional attitude. Demonstrating both competence and commitment is part of the requirement to become professionally registered with the Engineering Council.</td>
</tr>
<tr>
<td><strong>CPD</strong></td>
<td>Continuing Professional Development. The systematic acquisition of knowledge and skills, and the development of personal qualities, to maintain and enhance professional competence for current and future roles. All members of Licensees have an obligation to carry out CPD and to support the learning of others. See: <a href="http://www.engc.org.uk/cpd">www.engc.org.uk/cpd</a></td>
</tr>
<tr>
<td><strong>Credit and Qualifications Framework for Wales</strong></td>
<td>The Credit and Qualifications Framework for Wales covers learning from the very initial stages (Entry 1, 2 and 3) to the most advanced (Level 8). It is managed by a strategic operational partnership comprising the Welsh Government, Higher Education Funding Council for Wales (HEFCW) and Qualifications Wales.</td>
</tr>
<tr>
<td><strong>Documented Evidence</strong></td>
<td>The written and documented evidence of experience and qualifications which is submitted for a Professional Review when applying for professional registration.</td>
</tr>
<tr>
<td><strong>Dublin Accord (DA)</strong></td>
<td>An international agreement among the bodies responsible for recognising programmes and qualifications for Engineering Technicians. It establishes a benchmark for Engineering Technician education across those bodies, and recognises the equivalence of accredited or approved Engineering Technician programmes. See International Activity on page 48 or <a href="http://www.ieagreements.org/dublin">www.ieagreements.org/dublin</a></td>
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<tr>
<td><strong>Engineering Council</strong></td>
<td>The UK regulatory body for the engineering profession. The Engineering Council sets and maintains internationally recognised standards of professional competence and ethics and holds the UK register of professional engineers and technicians.</td>
</tr>
<tr>
<td><strong>Engineering Technician (EngTech)</strong></td>
<td>One of the professional titles available to individuals who meet the required standards of competence and commitment. See page 19 or <a href="http://www.engc.org.uk/engtech">www.engc.org.uk/engtech</a></td>
</tr>
<tr>
<td><strong>EQFM</strong></td>
<td>The European Quality Foundation Model for continuous improvement.</td>
</tr>
<tr>
<td><strong>EUR-ACE®</strong></td>
<td>A European quality label for recognising accredited engineering degree programmes at Bachelors and Masters level. The Engineering Council is authorised to award the EUR-ACE® label. See: <a href="http://www.enaee.eu/eur-ace-system">www.enaee.eu/eur-ace-system</a></td>
</tr>
<tr>
<td><strong>FEANI</strong></td>
<td>The European Federation of National Engineering Associations. The Engineering Council is the UK member of FEANI. See: <a href="http://www.feani.org">www.feani.org</a></td>
</tr>
<tr>
<td><strong>HASAW</strong></td>
<td>Health and Safety at Work. Specifically, the 1974 Health and Safety at Work Act, the primary legislation covering occupational health and safety in the UK.</td>
</tr>
<tr>
<td><strong>HNC</strong></td>
<td>Higher National Certificate.</td>
</tr>
<tr>
<td><strong>HND</strong></td>
<td>Higher National Diploma.</td>
</tr>
<tr>
<td><strong>ICTTech</strong></td>
<td>Information and Communications Technology Technician. One of the professional titles available to individuals who meet the required standards of competence and commitment. See: <a href="http://www.engc.org.uk/icttech">www.engc.org.uk/icttech</a></td>
</tr>
<tr>
<td><strong>IEA</strong></td>
<td>International Engineering Alliance. A partnership of international organisations across seven agreements that aim to facilitate the recognition of engineering educational qualifications and professional competence. See International Activity on page 48 or <a href="http://www.ieagreements.org">www.ieagreements.org</a></td>
</tr>
<tr>
<td><strong>IETA</strong></td>
<td>The International Engineering Technologists Agreement is an agreement which works to ensure that professionally registered engineering technologists’ competence is recognised internationally. See International Activity on page 48 or <a href="http://www.ieagreements.org/ieta">www.ieagreements.org/ieta</a></td>
</tr>
<tr>
<td><strong>Incorporated Engineer (IEng)</strong></td>
<td>One of the professional titles available to individuals who meet the required standards of competence and commitment. See page 24 or <a href="http://www.engc.org.uk/ieng">www.engc.org.uk/ieng</a></td>
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<tr>
<td><strong>Individual Assessment</strong></td>
<td>The route to professional registration for individuals without recognised qualifications. See page 16. The other way to achieve professional registration is through Recognised Qualifications.</td>
</tr>
<tr>
<td><strong>International Professional Engineers Agreement</strong></td>
<td>The International Professional Engineers Agreement is an international agreement for the purposes of recognising substantial equivalence of professional competence in engineering. See International Activity on page 48 or <a href="http://www.ieagreements.org/ipea">www.ieagreements.org/ipea</a></td>
</tr>
<tr>
<td><strong>ISO</strong></td>
<td>The International Organization for Standardization. ISO publishes documents such as ISO 45001 the international standard for occupational health and safety and ISO 9000, the international quality standards on quality management and quality assurance.</td>
</tr>
<tr>
<td><strong>Licensee</strong></td>
<td>An engineering membership organisation which is licensed by the Engineering Council to assess applicants for professional registration. Some Licensees are also licensed to approve or accredit programmes of learning. Licensees are sometimes known informally as Professional Engineering Institutions or PEIs. For a full and current list of Licensees see: <a href="http://www.engc.org.uk/licensees">www.engc.org.uk/licensees</a></td>
</tr>
<tr>
<td><strong>May</strong></td>
<td>In the context of the requirements set out in the Standards, ‘may’ indicates there is permission to do something.</td>
</tr>
<tr>
<td><strong>National Engineering Bodies</strong></td>
<td>National engineering bodies responsible for regulation of the profession, such as the Engineering Council, or the national academy such as the Royal Academy of Engineering.</td>
</tr>
<tr>
<td><strong>NVQ</strong></td>
<td>National Vocational Qualification. NVQs are qualifications developed and accredited according to criteria set out nationally, and that are achieved through assessment and training. In Scotland, they are known as Scottish Vocational Qualification (SVQ). To achieve an NVQ, applicants must prove they have the ability to carry out their job to the required standard. NVQs are based on National Occupational Standards that describe the ‘competencies’ expected in any given job role.</td>
</tr>
<tr>
<td>PEI (Professional Engineering Institution)</td>
<td>See Licensee.</td>
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<tr>
<td><strong>Post-nominal</strong></td>
<td>Letters placed after a person’s name which indicate that the person holds a certain position, academic degree, professional accreditation, office or honour. Examples of engineering post-nominals include ICTTech, EngTech, IEng or CEng.</td>
</tr>
<tr>
<td><strong>Professional Affiliate</strong></td>
<td>An incorporated body or engineering institution which is closely associated with, but not licensed by, the Engineering Council. It may enter into an agreement with a Licensee to process its members for professional registration. For a full and current list of Professional Affiliates see: <a href="http://www.engc.org.uk/affiliates">www.engc.org.uk/affiliates</a></td>
</tr>
<tr>
<td><strong>Professional development</strong></td>
<td>The process by which an individual gains professional competence. It may take place through formal and informal learning, and workplace training and experience.</td>
</tr>
<tr>
<td><strong>Professional registration</strong></td>
<td>The process in which an individual is admitted to the Engineering Council’s Register as an Engineering Technician (EngTech), Incorporated Engineer (IEng), Chartered Engineer (CEng) or an Information and Communications Technology Technician (ICTTech). To achieve professional registration the individual must demonstrate, via a peer review process by a Licensee, that they have met the profession’s Standards of commitment and competence. Individuals who have been awarded a professional registration title may use the relevant post-nominal.</td>
</tr>
<tr>
<td><strong>Professional Review</strong></td>
<td>A peer assessment process to decide whether an individual has met the requirements for registration. Professional Review is a holistic assessment of the applicant’s competence and commitment against the relevant sections of UK-SPEC. See page 16–17.</td>
</tr>
<tr>
<td>Professional Review Interview</td>
<td>A peer assessment process to assess whether an individual has met the requirements for professional registration. It is a holistic assessment of the applicant’s competence and commitment against the relevant sections of UK-SPEC. The Professional Review Interview is conducted by suitably qualified registrants, who make a recommendation whether the applicant has demonstrated the necessary competencies to achieve professional registration. See page 17.</td>
</tr>
<tr>
<td>Recognised Qualifications</td>
<td>Qualifications that are recognised as delivering the appropriate learning outcomes to develop an individual’s underpinning knowledge and understanding for professional registration.</td>
</tr>
<tr>
<td>Registrant</td>
<td>An individual who holds a professional registration title such as ICTTech, EngTech, IEng or CEng.</td>
</tr>
<tr>
<td>Registration</td>
<td>See Professional Registration.</td>
</tr>
<tr>
<td>RfR</td>
<td>Regulations for Registration. One of the Standards which the Engineering Council publishes, along with AAQA, AHEP, ICTTech Standard and UK-SPEC. RfR sets out the rules, for Licensees, on the process of awarding professional registration titles such as ICTTech, EngTech, IEng or CEng.</td>
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</tbody>
</table>

| Royal Academy of Engineering (RAEng) | The UK’s national academy for engineering that works to advance and promote excellence in engineering. RAEng provides analysis and policy support relating to business and education, invests in the UK’s research base to underpin innovation, and works to improve public awareness and understanding of engineering. See: www.raeng.org.uk |

| Royal Charter | A formal document issued by the monarch granting rights and powers to an individual or an organisation. |

| SCQF | The Scottish Credit and Qualifications Framework. For more information see: www.scqf.org.uk |
| Shall | In the context of the requirements set out in the Standards, ‘shall’ indicates there is a requirement to do something (ie it is mandatory). |
| Should | In the context of the requirements set out in the Standards, ‘should’ indicates a recommendation to do something. |

<p>| Statement of Ethical Principles | Published by the Engineering Council and the Royal Academy of Engineering. Engineering professionals should read the Statement of Ethical Principles in conjunction with their relevant Code of Professional Conduct. See page 47 or <a href="http://www.engc.org.uk/ethics">www.engc.org.uk/ethics</a> |</p>
<table>
<thead>
<tr>
<th>SVQ</th>
<th>Scottish Vocational Qualification. See also NVQ.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sydney Accord (SA)</td>
<td>An international agreement among the bodies responsible for accrediting engineering technologist degree (IEng) programmes. It establishes a benchmark for engineering technologist education across those bodies, and recognises the equivalence of accredited engineering technologist programmes. See International Activity on page 48 or <a href="http://www.ieagreements.org/sydney">www.ieagreements.org/sydney</a></td>
</tr>
<tr>
<td>UK-SPEC</td>
<td>UK Standard for Professional Engineering Competence and Commitment. This document, which sets out the competence and commitment requirements for registration as an EngTech, IEng or CEng. UK-SPEC is one of the Standards which the Engineering Council publishes, along with AAQA, AHEP, the ICTTech Standard and RfR.</td>
</tr>
<tr>
<td>Underpinning Knowledge and Understanding</td>
<td>The knowledge and understanding of the principles of science, mathematics and engineering theory that are required to form the basis of engineering competence at a professional level.</td>
</tr>
<tr>
<td>Washington Accord (WA)</td>
<td>An international agreement among the bodies responsible for accrediting engineering degree (CEng) programmes. It establishes and benchmarks the standard for professional engineering education across those bodies, and recognises the equivalence of accredited engineering programmes. See International Activity on page 48 or <a href="http://www.ieagreements.org/washington">www.ieagreements.org/washington</a></td>
</tr>
</tbody>
</table>
Disciplinary Procedure Guidance

“The primary purpose of disciplinary proceedings is not to punish, but to protect the public, to maintain public confidence in the integrity of the profession, and to uphold proper standards of behaviour.”
Lord Collins, R (on the application of Coke-Wallis) v ICAEW, Supreme Court, 2011.

1 Introduction

An essential function of a professional institution is self-regulation: the setting and regulation by members of appropriate standards of professional competence and conduct.

The Engineering Council has a duty through its Charter (Article 4.c.) to “provide guidance on the codes of conduct and disciplinary procedures of Licensed Members and Professional Affiliates”. Requirements to prescribe standards and procedures to the satisfaction of The Engineering Council Board are a condition for the issue of a Licence (Bye-law 15) or approval of Professional Affiliate status (Bye-law 24).

Except in a few specialist disciplines, regulation is voluntary, non-statutory and part of the membership contract between the Institution and the member. Disciplinary procedure is therefore not constrained by legal provisions or precedent related to statutory tribunals except insofar as such provisions may have been imported into the contract.

2 Scope

This document is primarily aimed at the handling of complaints against Engineering Council Registrants received by their licensed institutions but may well be applicable to non-Registrant members. It is also applicable if the Institution becomes aware that a Registrant has been convicted of, or accepted a caution for, a relevant criminal offence.

Guidance for institution Codes of Professional Conduct is published separately.

3 Principles of a disciplinary procedure

☐ Whether conducted in public or in private, the procedure should be clear, open, fair, unbiased and proportionate; essentially, it should accord with the principles of natural justice;

☐ All persons involved should respect the confidentiality of the proceedings;

☐ No person should participate in decision-making in more than one stage of the procedure in any particular case;

☐ While the procedure is the responsibility of the Institution governing body, it should delegate authority in order to comply with the first and third principles above;
Judgement by peers. Staff may provide administrative and secretarial support and procedural advice but should not influence or participate in the decision-making process, even if they are members of the Institution;

No presumption of liability until breach of Code of Professional Conduct admitted or proved. Decisions should be based on the appropriate standard of proof (see 5.5 below).

Proved breaches of the Code of Professional Conduct should attract sanctions commensurate with the seriousness of the breach;

More comprehensive processes may be required where there is a ‘licence to practise’ issue (see 5.3 below), and in particular if the Institution is exercising a statutory regulatory function;

Training should be given to those involved in assessing and adjudicating complaints;

Clear timescales should be established for each stage of the procedure and progress should be actively monitored by a senior staff member;

A written record should be made of each stage of the proceedings. Records should be maintained for a defined minimum period.

4 Authority

The Code of Professional Conduct and Disciplinary Procedure must be authorised by including their key requirements and features in the Institution’s governing document (Bye-laws or Articles of Association). The style and degree of detail will be a matter for each institution and its lawyers, but the minimum recommended content is as follows:

That the governing body (Council or Board) shall publish in Regulations a Code of Professional Conduct and a Disciplinary Procedure for dealing with alleged breaches of the Code;

That in doing so the governing body shall have due regard to the related Guidance published by the Engineering Council or a successor regulatory body;

That members shall uphold the reputation of the Institution and the profession and safeguard the public interest; observe the provisions of the governing document and supporting rules and regulations; comply with the Code of Professional Conduct; and cooperate with the Disciplinary Procedure;

That the governing body shall have the power to expel or impose other sanctions on a member proved to have breached the Code of Professional Conduct;

That a member who resigns, or whose membership lapses through non-payment of fees or subscriptions, after a complaint against him has been lodged with the Institution, shall be deemed to remain in membership until completion of the disciplinary process.

The following requirements could be included either in the governing document or within an introduction to the relevant Regulation:

That the rules governing the Disciplinary Procedure shall cover preliminary investigations, disciplinary hearings, burden of proof, sanctions, appeals and publication of outcomes;

That all stages of the procedure shall be conducted, and decisions reached, in accordance with natural justice;
5 Components of the Procedure

5.1 A Code of Professional Conduct should clearly set out the expectations in respect of professional competence and behaviour in such a way that any legitimate complaint against a member can be framed as an alleged breach of a provision of the code. It should be communicated to and demonstrably accepted by members. They should also be made aware of the disciplinary and appeals procedure. The Code should be reviewed at appropriate intervals and at least biennially.

5.2 Once a complaint has been received a Preliminary Investigation will decide whether or not there is a case to answer. Such investigation, which is an administrative, not judicial, process, can be conducted by a small panel, or even one nominated member or employee of the Institution. The investigation should determine first, whether the alleged misconduct would, if admitted or proved, lie within the ambit, or jurisdiction, of the Disciplinary Panel; and secondly, whether there is, or could be, enough evidence to justify an inquiry. If so, evidence should be assembled to assess the validity of the complaint by the Disciplinary Panel. The subject of the complaint should be informed and kept informed of developments; evidence submitted by the complainant should be disclosed to the subject and vice versa.

A decision of ‘no case to answer’ should result in the dismissal of the complaint. The subject and the complainant should be informed of the reason for the decision (lack of jurisdiction or insufficiency of evidence). Records of the complaint, including the evidence, should not be maintained beyond the time limit for any appeal by the complainant against the decision. A finding that there was a ‘case to answer’ should result in a referral to a Disciplinary Panel. The ‘case to answer’ should be framed in detailed and particular terms, clearly related to the Code of Professional Conduct, such that the subject can understand the allegation against him. A minor case to answer should not be summarily or informally dealt with within this stage of the procedure.

The Preliminary Investigation should determine whether any criminal or civil court proceedings related to the alleged misconduct are likely or under way. If so, then the disciplinary hearing should not proceed until court proceedings, including any appeal, are complete, since the court proceedings might otherwise be prejudiced. Where the subject has been convicted of a criminal offence or found liable in a civil court, the disciplinary hearing must separately determine whether the subject’s conduct (including, but not limited to, that proven in court) amounts to a breach of the code of conduct. An adverse court verdict should not in itself form the basis of a complaint.

5.3 The disciplinary hearing should be conducted by a Disciplinary Panel of not fewer than three senior, experienced and trained members. The Panel should have a Chairman who reports directly to the governing body. The Panel acts as an impartial assessor of the complaint. It also decides sanctions from a list prescribed in Regulations and advises the governing body of its finding.

Panel members should be sufficiently independent of the Institution to avoid any real or perceived bias or conflict of interest, and so should never include current members of its governing body (trustees/directors) or employees. A person who has participated in a Preliminary Investigation should not act as a member of the Panel for the same case. In more serious cases, including where a ‘licence to practise’ or potential loss of livelihood may be involved, or if the subject is an officer or senior member of the Institution, one or more lay members (i.e. persons not from the same discipline or profession as the Institution Panel members) should be included on the Panel. Consideration should be given to inviting a legal adviser to attend to advise the parties on the legal process but not to vote on the decision, particularly for extended disciplinary hearings.
5.4 The disciplinary process involves the collection, examination and clarification of evidence. Prejudicial material that is irrelevant to the ‘case to answer’ should not be presented to the Panel. The complainant and the subject should have timely access to evidence and responses. Where the allegation relates to matter of a specialised nature the Panel should consider engaging an independent expert witness. The Panel may make a decision after examining the written evidence or may decide to hold an extended hearing to which all parties are invited.

The parties to the case are the presenter of the complaint (on behalf of the Institution) and the subject. For relatively straightforward cases the complainant may be permitted to present the complaint in person. For more serious or complex cases the presenter would normally be a person appointed by the Institution for the purpose. However, where the Panel is acting under statutory authority, or where the complaint is of such a nature that the Panel decides that it should be enquired into in the public interest whether or not the complainant wishes to pursue it, the Institution should employ a lawyer to present the complaint. The reason is that there needs to be a clear division between the person presenting and the persons hearing the complaint so that there can be no suggestion of conflict of interest.

Parties involved should be entitled to invite to the hearing either:

- a lawyer, whom they may pay to represent them, including to speak on their behalf; or
- a non-lawyer “McKenzie Friend”\(^1\), who may support, quietly advise and take notes for them but may not speak on their behalf.

Either party should be required to give reasonable advance notice if they intend to be legally represented, so that the other party can arrange legal representation if considered necessary.

A complainant who is not presenting in person should be invited or permitted to attend the proceedings (accompanied if desired by a ‘friend’) and may be called as a witness, but should have no automatic right of audience.

Consideration should be given to adjourning the hearing if the subject is unable to be present or represented as it is in the interests of all parties that they attend wherever possible to present their cases. Even if the subject fails to appear on the day, a brief adjournment should be considered to allow enquiries to be made.

The hearings should be conducted with transparent fairness. They comprise a statement by the presenter of the complaint (or his representative) and evidence to support it (with any cross-examination of witnesses) followed by a rebuttal by the subject (or his representative) with evidence (which is also open to cross-examination). Additionally, evidence may include written statements, at the Panel's discretion. Neither party should be ‘ambushed’ with new evidence which has not been disclosed in advance, and Panel members should take account only of evidence which is presented, or elicited in cross-examination, during the hearing. Unlike in a court, however, hearsay evidence may be admissible.

A member who resigns after a complaint has been made, or whose membership would be terminated for non-payment of subscriptions, should be deemed to remain in membership until the disciplinary process has reached its decision. If this decision is that the person be expelled from membership, his deemed membership will allow that to be effected and shown on the record should he ever seek to re-join the same or another institution. This should be stated in the Bye-laws or Articles of Association to which a member should assent at the time of joining the Institution.

5.5 The burden of proof is normally the civil standard, the ‘balance of probabilities’. Judicial guidance indicates that the standard of proof should be appropriate to the gravity of the matter and

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\(^1\) As defined at [http://courtwithoutalawyer.co.uk/mckenzie-friends.html](http://courtwithoutalawyer.co.uk/mckenzie-friends.html)
the likely consequences if the alleged breach is upheld. Where serious misconduct, rather than lack of competence, is alleged, or where loss of livelihood would result, the criminal standard, ‘beyond reasonable doubt’ is likely to be appropriate. There are no other ‘in between’ standards. The Panel should make clear to the parties which standard is being applied to a particular case. However, the standard of proof applies only to decisions relating to disputed facts. Whether or to what extent the proven facts amount to professional misconduct or fitness to practise is for the Panel to judge.

5.6 If the complaint is admitted or upheld, the Panel determines which section of the Bylaws, Regulations or Code of Professional Conduct has been breached, hears any mitigation and decides the sanction. Sanctions may be: expulsion from membership; withdrawal of the practising certificate; suspension of membership or membership privileges (which might nevertheless permit access to facilities for maintenance of CPD or retraining during suspension); removal of registration without expulsion from membership (again to allow for access to CPD or retraining); reprimand accompanied by advice on future actions or retraining. Fines are not appropriate for professional bodies, since sanctions do not represent punishment. Similarly, terms such as ‘accused’, ‘offence’, ‘guilty’, ‘verdict’ and ‘penalty’ should be avoided. However, an order for costs could in some circumstances (and if provided for in Regulations) be appropriate, for example if the Institution had found it necessary to engage a lawyer because the subject had given notice of his intention to do so.

5.7 An appeal process must exist. It must be available to the complainant following the preliminary stage and to the subject following the disciplinary hearing stage. A reasonable time limit for lodging an appeal should be specified in Regulations. The appeal process consists of two parts: leave (permission) to appeal and, if granted, hearing by an Appeal Panel. The Appeal should be considered by persons who have had no contact with the case beforehand. The Institution might decide to have a legal advisor in attendance for either or both parts of the process.

Leave (Permission) to appeal is not granted automatically and one or more specific grounds should be identified. The normally recognised grounds for appeal are:

☐ Jurisdiction (whether the alleged misconduct would be within the scope of the provisions of the Bylaws or the code of conduct);
☐ Procedure (was not followed);
☐ Perversity (the decision was perverse in the light of the evidence);
☐ New evidence (which could not reasonably have been produced at the original hearing) and additionally for an appeal against a Disciplinary Panel decision:
☐ Proportionality (the sanction was disproportionate to the gravity of the breach)

The argument under each ground must stand on its own. Leave to appeal may be granted on two or even more grounds, but should not be granted in response to an accumulation of individually insufficient arguments under two or more grounds.

An appeal against ‘no case to answer’ should be considered by one person independent of the Institution. In these circumstances only, leave to appeal and the appeal itself may be considered as a single process and be conducted by the same person. If there are valid grounds for appeal he should review the material presented to the Preliminary Investigation, the record of its decision and any additional evidence admitted. If the independent reviewer decides that there is a ‘case to answer’ the Institution should refer the case to a Disciplinary Panel.

Leave to appeal against a Disciplinary Panel decision should be considered by a panel of three members. If leave to appeal is granted the Institution should with minimum delay convene an Appeal Panel comprising at least three senior persons (again, not current members of its govern-
ing body or employees) including one lay person independent of the Institution. It should be as independent of the governing body as is practical bearing in mind the need to understand and weigh specialist subject matter. The appeal hearing should follow the same principles as the disciplinary hearing, modified to suit the accepted grounds for appeal; a full re-hearing is not essential in all circumstances.

If the appeal is upheld the Appeal Panel may reverse the decision of the Disciplinary Panel or uphold its decision but reduce the sanction.

5.8 Appeal to the Engineering Council is only available if a member, in losing his membership as a result of disciplinary action by the Institution, also loses his registration and the Institution’s appeals process has been exhausted. This appeal is carried out under the relevant Engineering Council Regulation. Complaints not amounting to an appeal to the Engineering Council in respect of other matters may result in the Engineering Council discussing the case with the Institution concerned only to confirm that the procedure approved as part of the licensing process had been followed.

5.9 While the governing body should be notified of the progress and outcome of a disciplinary case it should not be invited to ratify the finding and sanction, since it has not heard the evidence. If the governing body chooses to discuss a case, any person who is or has been involved in the process should absent himself.

5.10 The Institution should reserve in Regulations the right to publish details of established breaches of the Code of Professional Conduct, which will in the case of a Registrant include informing the Engineering Council. This might in fairness extend to publishing, at the request of the subject, notification that a complaint has not been upheld. The Institution must inform the Engineering Council of any expulsion, whether or not the individual is registered by the Institution.

Where a complaint is upheld and the appeal process exhausted, the Engineering Council is responsible for informing any other institutions of which the Registrant is known to be a member, so that they may decide what action should be taken. This is particularly important if the person is registered through an institution other than that which has carried out the disciplinary procedure.

5.11 If an individual who is asked to serve on any panel has a conflict of interest in relation to any part of the allegations, or has a connection with the subject or the complainant which creates a real danger of bias, or which could cause others to think it could influence his decision, he should declare it and disqualify himself from participating.

6 Records of Proceedings

An impartial record should be made of every preliminary investigation and of each hearing within the disciplinary and appeals process. The record should comprise:

☐ A copy of all written evidence submitted;
☐ A summary of the oral evidence in support of the alleged breach and in rebuttal or mitigation, including any salient points elicited in cross-examination;
☐ A summary of the Panel’s reasons for its decision.

Summaries should be in a form similar to minutes of a meeting: they would not be verbatim records but should contain sufficient detail for a reviewer to understand the issues and to be able to judge whether the proceedings had been fairly and properly conducted. Summaries of hearings should not be written by a person who has played any other part in any stage of the proceedings, and should be approved by the panel chairman.

The summary of the Panel’s reasons for its decision should be disclosed to both parties with the notification of the decision. Any further disclosure, for example in the event of an appeal, should be made equally (in both timing and content) to both parties.
The Institution should specify minimum periods following completion of a case (or expiry of any period of notice to appeal) for maintenance of written evidence and of summaries. This could be varied depending on the gravity of the matter, but an overall minimum of six [6] years is suggested. Where a member has been expelled from membership and/or registration, the summary should be kept beyond any minimum period specified for re-application. Written (and, if taken, audio) evidence should not normally be kept beyond expiry of any period of notice to appeal.

7  Summary of key elements of the procedure

- A Code of Professional Conduct (which should be reviewed regularly) needs to be communicated to and accepted by members.
- The governing body delegates authority;
- Preliminary investigation;
- Disciplinary hearing (independent panel, consider extended hearings in more serious or complex cases, appropriate burden of proof, sanction);
- Appeal (grounds should be stated, separate panel, Engineering Council role is limited);
- Production and maintenance of records of proceedings;
- Publication of outcome.

8  Natural Justice and the Human Rights Act

The procedure outlined accords with the currently accepted principles of natural justice. It is also considered to be consistent with many of the principles of the “right to a fair trial” contained in Article 6 of the European Convention on Human Rights and given further effect in English law by the Human Rights Act 1998 (HRA). The Engineering Council’s view, supported by specialist legal advice, is that HRA generally does not apply to this procedure because institution membership and Engineering Council registration are voluntary and an institution is not a “public authority” or carrying out the functions of a public nature as defined in HRA. Any institution which is undertaking a statutory regulation role is advised to take specialist legal advice to ensure that its procedures are fully HRA compliant. Since the interpretation of HRA and other legislation is continually developing, institutions may consider it prudent to take legal advice from time to time on their procedures.

References

- Guidelines for Institutions' Codes of Conduct (Engineering Council: [www.engc.org.uk](http://www.engc.org.uk))

Notes

- Where this guidance uses “should”, Institutions will wish to consider where it is appropriate to use “must” or “shall” when drafting Bye-laws or Regulations.
- A flowchart of a model disciplinary procedure is at the Annex, but a flowchart should not be used as a substitute for a written regulation or set of rules.

Revised by Paul Bailey
Approved by PCCP: 3 May 2017
Approved by Board: 15 June 2017
Revision No: 2017/1
Annex – Model Disciplinary Procedure
16. Committee Reports
16.a. Administrative Procedures Oversight Committee
16.b. Legislative Committee
The **Nevada Board of Professional Engineers and Land Surveyors (NVBPELS)** serves the public interest by regulating and providing leadership to the engineering and land surveying professions—individuals and companies that practice engineering and land surveying in Nevada. NVBPELS operates on behalf of the Nevada government through the Professional Engineering Act of March 29, 1919. Professional Land Surveying was added to the act on March 31, 1947. The standards set by NVBPELS for ethical, professional, and technical competency, ensure that Nevadans are protected in their work places and communities.

NVBPELS regulates over 22,000 professionals—engineers and land surveyors. Actively practicing professionals total over 15,000, about 3,400 of which are Nevada residents, with a nearly equal split between northern and southern Nevada. These professional engineers and land surveyors are vital contributors to Nevada in the following areas:

- Design, construction, maintenance, renovation of hospitals, healthcare facilities, schools, and other essential public infrastructure needed for communities, such as roadways and transit, and clean safe drinking water;
- At the forefront of discovering and developing Nevada’s resources and the identification of alternative energy sources, such as wind power, fuel-cell technology, other renewable resources; and
- Developing and growing cutting edge companies and innovating technology that helps drive diversification of Nevada’s economy.

**NVBPELS has put forward initiatives to become the most military-friendly state in the nation, and facilitates diversification of Nevada’s economy by partnering with technology innovators and international organizations as evidenced by:**

- Waiving application fees and priority processing for military members and their spouses $0 fee and licensing in less than 3 days;
- Processing approximately 100 endorsement license applications monthly, and typically licensing professionals in less than 3 days;
- Implementing simpler faster processes for new firms desiring to offer and provide professional services;
- Enabling skills transfer with comity licensing of qualified international applicants; and
- Committing to continuous review of statutes, regulations, and processes for eliminating unnecessary barriers to professional practice in Nevada and improving processes to be customer focused and provide for simpler faster licensing.
Nevada Board of Professional Engineers and Land Surveyors Proposed Statutory Changes

NRS 625.193 proposed statute change removes an unnecessary barrier to licensure for engineers and removes outdated language:

■ Reduces the prescribed 15 years of experience to 8 years of experience for those applicants that meet the education standard but have not passed the fundamentals exam.
■ Removes obsolete language about exam content and administration.
  ○ Engineering exams are developed and administered nationally by the National Council of Examiners for Engineers and Land Surveyors.

NRS 625.270 proposed statute change removes an unnecessary barrier to licensure for land surveyors:

■ Clarifies language related to land surveying degree requirement.
■ Eliminates the requirement for prospective land surveyors to obtain board approval to take the national examination on the principles and practices of land surveying.
  ○ The proposed change de-couples land surveying education from examination.
  ○ The applicant can take the national principles and practices of land surveying exam whenever they are ready, without board approval.
  ○ The applicant would submit a license application after meeting all statutory requirements for a professional land surveyor license—four-year degree, fundamentals exam, professional principles and practice exam, and four years of land surveying experience.

NRS 625.280 proposed statute change removes an unnecessary barrier to licensure for land surveyors and removes outdated language:

■ Reduces the prescribed 15 years of experience to 8 years of experience for those applicants that meet the education standard but have not passed the fundamentals exam.
■ Removes obsolete language about determining years of experience, exam content and administration.
  ○ The applicant can take the national principles and practices of land surveying exam whenever they are ready, without board approval.
  ○ Land surveying exams are developed and administered nationally by the National Council of Examiners for Engineers and Land Surveyors.

For more information, contact
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Executive Director
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T: (775) 688-1231 | F: (775) 688-2991
PROPOSED REGULATION OF THE
STATE BOARD OF PROFESSIONAL ENGINEERS AND
LAND SURVEYORS

LCB File No. R007-24

May 6, 2024

EXPLANATION – Matter in italics is new; matter in brackets [omitted material] is material to be omitted.

AUTHORITY: §§ 1-3 and 5-9, NRS 625.140 and 625.250; § 4, NRS 625.140, 625.250 and 625.350.

A REGULATION relating to professional land surveyors; removing certain duplicative requirements concerning professional land surveyors; revising requirements for positional certainty for components of certain surveys and proposed fixed works; imposing certain requirements on professional land surveyors relating to the conducting of certain surveys; revising provisions governing the preparation of a scaled drawing of a survey; revising the classifications of land boundary surveys; requiring a professional land surveyor to retain certain materials created to support a survey; repealing certain obsolete provisions; and providing other matters properly relating thereto.

Legislative Counsel’s Digest:

Existing law authorizes the State Board of Professional Engineers and Land Surveyors to adopt all regulations, not inconsistent with the constitution and laws of this State, which are necessary for the proper performance of the Board, the regulation of the proceedings before it and the maintenance of a high standard of integrity and dignity in professional engineering and land surveying. (NRS 625.140) Existing law also requires the Board to administer certain provisions and requirements concerning professional land surveyors and requires it to do so by regulation as necessary. (NRS 625.250)

Existing regulations set forth various standards of practice for professional land surveyors. (NAC 625.651-625.795) Section 1 of this regulation removes a duplicative requirement concerning the standards that a professional land surveyor is required to apply when engaging in the practice of land surveying in this State. Section 9 of this regulation repeals a provision which provides that a professional land surveyor is responsible for adherence to the minimum standards of practice of land surveying on works where the professional land surveyor is the person in responsible charge of the work and that any failure to comply with minimum standards of practice may be considered by the Board as evidence of certain violations of the practice of land surveying. (NAC 625.660)

Existing regulations set forth certain requirements for positional certainty for the horizontal and vertical components of land boundary, control, geodetic and topographic surveys.
(NAC 625.666) Existing regulations divide land boundary surveys into the classifications of high urban, low urban, high rural and low rural and set forth requirements for positional certainty for the horizontal component of a land boundary survey specific to each classification. (NAC 625.666, 625.740) **Section 2** of this regulation eliminates the requirements for positional certainty for the horizontal and vertical components of control, geodetic and topographic surveys. **Section 5** of this regulation revises the classifications of land boundary surveys to divide such surveys into the classifications of urban, suburban and rural. **Section 2** revises requirements for positional certainty for the horizontal component of a land boundary survey to set forth requirements for such positional certainty specific to each of the new classifications set forth in **section 5. Section 5** additionally provides that land title surveys must be conducted using the requirements for positional certainty for the urban classification.

**Section 2** additionally: (1) eliminates certain requirements for positional certainty that are measured in meters; (2) makes certain distinctions between decisions concerning monuments used for boundary determination and requirements for positional certainty; and (3) imposes certain requirements on a professional land surveyor relating to the conducting of a control survey and a topographic survey and the retention of certain documentation. **Section 9** repeals a provision imposing certain requirements concerning positional certainty for certain surveys that has been rendered obsolete by the revisions made in **section 2.** (NAC 625.668)

Existing regulations require a professional land surveyor to take certain actions in conducting a land boundary survey, including, without limitation, searching for and identifying monuments and other physical evidence that could affect the location of the boundaries of the surveyed property. (NAC 625.670) **Section 3** of this regulation specifies certain types of physical evidence that must be searched for and identified. **Section 3** additionally requires a professional land surveyor, in conducting a land boundary survey, to: (1) consider certain factors; and (2) include certain information on a survey map after making certain discoveries.

Existing regulations require a professional land surveyor to prepare a scaled drawing of the survey for presentation to the client and sets forth certain requirements for such a drawing. (NAC 625.720) **Section 4** of this regulation revises those provisions to eliminate the requirement that such a drawing be prepared and instead sets forth various requirements for a scaled drawing when such a drawing is prepared for a client.

Existing law requires a record of survey to contain a certificate prepared by the surveyor indicating certain information. (NRS 625.350) Existing regulations set forth the required form of a certificate if a certification by a professional land surveyor is required by a statute or local ordinance. (NAC 625.720) **Section 4** specifies that the form of such a certificate set forth under existing regulations applies to a certificate for a record of survey.

Existing regulations require a professional land surveyor who conducts a construction survey to place stakes or other materials used to mark the location of certain proposed fixed works within certain specified positional certainties. (NAC 625.775) **Section 7** of this regulation: (1) revises the proposed fixed works that are subject to such requirements; and (2) eliminates certain requirements for positional certainty that are measured in meters.

Existing regulations require a professional land surveyor who conducts a construction survey to provide to the owner’s representative certain materials to describe the survey conducted. (NAC 625.780) **Section 8** of this regulation revises that requirement to instead require such a professional land surveyor to retain certain materials created to support the survey conducted.
Section 6 of this regulation makes a technical, nonsubstantive change to ensure the consistency of language used in the Nevada Revised Statutes and Nevada Administrative Code.

Section 1. NAC 625.655 is hereby amended to read as follows:

625.655  When engaging in the practice of land surveying in this State, a professional land surveyor shall apply all applicable statutes and regulations [in addition to the minimum standards of practice for professional land surveyors established in NAC 625.651 to 625.795, inclusive.]

Sec. 2. NAC 625.666 is hereby amended to read as follows:

625.666  1. [The requirements for positional] Positional certainty for the horizontal component of a land boundary [topographic, control and geodetic surveys are as follows:

<table>
<thead>
<tr>
<th>Type of Survey</th>
<th>Positional Certainty</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Meters</td>
</tr>
<tr>
<td>---------------------------------</td>
<td>----------------------</td>
</tr>
<tr>
<td>Land Boundary Surveys</td>
<td></td>
</tr>
<tr>
<td>--High Urban</td>
<td>±0.02 m</td>
</tr>
<tr>
<td>--Low Urban</td>
<td>±0.04 m</td>
</tr>
<tr>
<td>--High Rural</td>
<td>±0.1 m</td>
</tr>
<tr>
<td>--Low Rural</td>
<td>±0.15 m</td>
</tr>
<tr>
<td>Control and Geodetic Surveys</td>
<td></td>
</tr>
<tr>
<td>--Precise Measurement Studies</td>
<td>±0.001 m to ±0.01 m</td>
</tr>
<tr>
<td>Type of Survey</td>
<td>Positional Certainty</td>
</tr>
<tr>
<td>--------------------------------------</td>
<td>----------------------</td>
</tr>
<tr>
<td></td>
<td>Meters</td>
</tr>
<tr>
<td>State Network</td>
<td>±0.02 m</td>
</tr>
<tr>
<td>County Network</td>
<td>±0.04 m</td>
</tr>
<tr>
<td>Local Network</td>
<td>±0.06 m</td>
</tr>
<tr>
<td>Photogrammetric Control</td>
<td>±0.06 m to ±1 m</td>
</tr>
</tbody>
</table>

Topographic Surveys

- Engineering Design Surveys          | ±0.01 m to ±0.1 m    | ±0.03 ft to ±0.3 ft |
- Planning Study Surveys              | ±0.02 m to ±0.05 m   | ±0.05 ft to ±0.15 ft |
- Utilities Mapping                   | ±0.15 m              | ±0.5 ft           |
- Feature Mapping                     | ±0.3 m               | ±1 ft             |
- Resource Mapping                    | ±0.5 m to ±100 m     | ±1.5 ft to ±330 ft |

survey must be:

(a) For a land boundary survey classified as urban pursuant to NAC 625.740, plus or minus 0.05 feet.

(b) For a land boundary survey classified as suburban pursuant to NAC 625.740, plus or minus 0.15 feet.

(c) For a land boundary survey classified as rural pursuant to NAC 625.740, plus or minus 0.5 feet.
2. The requirements for positional certainty for the vertical component of a land boundary control, geodetic and topographic surveys are as follows:

<table>
<thead>
<tr>
<th>Type of Survey</th>
<th>Positional Certainty</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Meters</td>
</tr>
<tr>
<td>Land Boundary Surveys</td>
<td>±0.05 m</td>
</tr>
</tbody>
</table>
| Control and Geodetic Surveys
  Other Than Photogrammetric Control
    Surveys                                | ±0.005 m to ±0.03 m | ±0.02 ft to ±0.1 ft |
| Photogrammetric Control
    Surveys                                | ±0.03 m to ±0.5 m   | ±0.1 ft to ±1.5 ft |
| Topographic Surveys                         | National Map Accuracy Standards |

The acceptance or survey must be plus or minus 0.15 feet.

3. For the purposes of this section, the National Map Accuracy Standards, as they existed on November 14, 1997, are hereby adopted by reference. A copy of the National Map Accuracy Standards may be obtained from the United States Geological Survey, Department of the Interior, 12201 Sunrise Valley Drive, Reston, Virginia 20192, at no cost. The acceptance or
rejection of an existing controlling monument used for boundary determination is separate
and distinct from the requirements of positional certainty set forth in subsections 1 and 2.

4. A professional land surveyor shall:

(a) For a control survey, document the horizontal and vertical data, the coordinate system
and the reference points used to establish the network of control points that provide control for
subsequent boundary, topographic or construction surveys;

(b) For a topographic survey made to determine the configuration of the contour of the
surface of the earth or the position of fixed objects, select the equipment and procedures to
obtain horizontal positional certainty and vertical positional certainty appropriate for the
project; and

(c) Retain all documentation concerning the level of precision and positional certainty of
any map, plat or survey.

Sec. 3. NAC 625.670 is hereby amended to read as follows:

625.670  In conducting a land boundary survey, a professional land surveyor shall:

1. Search pertinent documents, including, but not limited to, maps, deeds, title reports, title
opinions and the records of the U.S. Public Land Survey System.

2. Thoroughly examine the information and data acquired and consider:

(a) Junior and senior property rights;

(b) Retracement of the original survey;

(c) Evidence provided by existing records; and

(d) Proper application of the priority of calls used to determine boundaries when there is a
conflict between elements within a land description.
3. Diligently search for and identify monuments and other physical evidence, including, without limitation, evidence of easements, lines of physical occupation and possible observed encroachments upon the property, which could affect the location of the boundaries of the property being surveyed.

4. Conduct field measurements necessary to relate adequately the position of all apparent evidence pertinent to the boundaries of the property being surveyed.

5. Make computations to verify the correctness of field data acquired and confirm that results of measurements are within acceptable limits of tolerance. Computations must be made to determine the relative positions of all found evidence.

6. When a material discrepancy is discovered between the record information that is reported on a map or record of survey and the measured information that is collected by the professional land surveyor, show the measured information on the survey map in addition to all pertinent record information.

Sec. 4. NAC 625.720 is hereby amended to read as follows:

625.720 1. [A] When a professional land surveyor prepares a scaled drawing of the survey for presentation to a client, the drawing must comply:

(a) Comply with the provisions of NRS 625.340, 625.350 and 625.565;

(b) Be of a scale sufficient to clearly show details; and

(c) Include, without limitation:

(1) A scale, legend and north arrow;

(2) On each sheet of the drawing, an indication of the number of the sheet, the total number of sheets within the drawing and its relation to each adjoining sheet;
(3) All recorded, measured and mathematical information and data necessary to locate all monuments and to locate and retrace all interior and exterior boundary lines appearing thereon, including the bearings and distances of straight lines, central angle, radii and arc length for all curves and such information as may be necessary to determine the location of the centers of curves; and

(4) A written narrative on boundary analysis when necessary to explain any material discrepancies or support unclear portions of the drawing.

2. In cases where a certification is required by statute or local ordinance, the professional land surveyor shall certify only those matters personally known to be true.

3. The certificate for a record of survey must be in the following form:

SURVEYOR’S CERTIFICATE

I, ……………………. (name of professional land surveyor), a Professional Land Surveyor registered in the State of Nevada, certify that:

1. This plat represents the results of a survey conducted under my supervision at the instance of ……………………. (owner, trustee, etc.).

2. The land surveyed lies within ……………………… (section, township, range, meridian, county and city, if incorporated), and the survey was completed on ……………………. (date).

3. This plat complies with applicable statutes of this State and any local ordinances in effect on the date that the survey was completed, and the survey was conducted in accordance with chapter 625 of the Nevada Administrative Code.
4. The monuments depicted on the plat are of the character shown, occupy the positions indicated and are of sufficient durability.

5. (Any other information that the professional land surveyor personally knows to be true concerning the land surveyed.)

(Validated seal of the professional land surveyor);

(Name and license number of the professional land surveyor printed below the seal).

Sec. 5. NAC 625.740 is hereby amended to read as follows:

625.740 1. Boundary Land boundary surveys are divided into the following four urban, suburban and rural classifications: The:

(a) High Urban Surveys of classification consists of surveys performed on land lying within or adjoining a city or town, including surveys of commercial and industrial properties, condominiums, townhouses, apartments and other multiunit developments, regardless of geographic location.

(b) Low Urban Surveys of Suburban classification consists of surveys performed on land lying outside high urban areas and used almost exclusively developed for single family residential use, or residential subdivisions.

(c) High Rural Surveys of classification consists of surveys performed on land such as , including farms and undeveloped land, lying outside the low urban and suburban areas, which may have potential for future development.
(d) Low Rural. Surveys of land normally lying in remote areas with difficult or barren terrain and which usually have limited potential for development.

2. Except as otherwise provided in subsection 3, a professional land surveyor shall use the classifications described in subsection 1 and the requirements for positional certainty for those classifications prescribed in subsection 1 of NAC 625.666 to establish the locations of monuments in a land boundary survey.

3. A professional land surveyor shall, when conducting a land title survey, use the requirements for positional certainty for the urban classification prescribed in paragraph (a) of subsection 1 of NAC 625.666 to establish the locations of monuments in the survey.

Sec. 6. NAC 625.760 is hereby amended to read as follows:

625.760 Before beginning a construction survey, a professional land surveyor must obtain from the owner’s representative a complete set of the contract drawings and specifications approved by the appropriate federal, state and local agencies and any special instructions for the proposed fixed works.

Sec. 7. NAC 625.775 is hereby amended to read as follows:

625.775 A professional land surveyor who conducts a construction survey shall place the stakes or other materials used to mark the location of the proposed fixed works within the following positional certainties:

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<tr>
<th>Proposed Fixed Works</th>
<th>Horizontal Positional Certainty</th>
<th>Vertical Positional Certainty</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>{Meters}</td>
<td>{Feet}</td>
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<td></td>
<td>{Meters}</td>
<td>{Feet}</td>
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Rough Grades.................................  [±0.03 m]  ±1 ft  [±0.06 m]  ±0.2 ft
Subgrades.................................  [±0.15 m]  ±0.5 ft  [±0.015 m]  ±0.05 ft
Finish Grades..............................  [±0.15 m]  ±0.5 ft  [±0.015 m]  ±0.05 ft
Buildings.................................  [±0.015 m]  ±0.05 ft  [±0.01 m]  ±0.03 ft
{Sewer Facilities} Sewers...............  [±0.1 m]  ±0.3 ft  [±0.015 m]  ±0.05 ft
Waterlines...............................  [±0.1 m]  ±0.3 ft  [±0.03 m]  ±0.1 ft
{Water Facilities Other Than
Waterlines} Hydrants ...............  [±0.03 m]  ±0.1 ft  [±0.015 m]  ±0.05 ft
Street Lights {and Devices for the
Control of Traffic}......................  [±0.06 m]  ±0.2 ft  [±0.03 m]  ±0.1 ft
Curbs and Gutters.......................  [±0.03 m]  ±0.1 ft  [±0.015 m]  ±0.05 ft

Sec. 8. NAC 625.780 is hereby amended to read as follows:

625.780 A professional land surveyor who conducts a construction survey shall {provide the
owner’s representative} retain any sketches, cut sheets or other field notes created to {describe}
support the survey conducted.

Sec. 9. NAC 625.660 and 625.668 are hereby repealed.
625.660  Responsibility for compliance with standards of practice. (NRS 625.140, 625.250) Responsibility for adherence to the minimum standards of practice for engaging in the practice of land surveying rests with the professional land surveyor in responsible charge of the work. Failure on the part of any Nevada professional land surveyor to comply with these minimum standards may be considered by the Board as evidence of gross negligence, professional incompetence or misconduct in the practice of land surveying.

625.668  Positional certainty: Horizontal and vertical positions of monuments. (NRS 625.140, 625.250) When conducting a land boundary, topographic, control or geodetic survey, a professional land surveyor shall ensure that the horizontal and vertical positions of the monuments established by the surveyor comply with the requirements for positional certainty set forth in NAC 625.666.
16.b.i. Consider Legislative Counsel Bureau Language Proposed for Board Regulation Changes Related to PLS Standards of Practice – LCB file R007-24
PROPOSED REGULATION OF THE

STATE BOARD OF PROFESSIONAL ENGINEERS AND

LAND SURVEYORS

LCB File No. R007-24

May 6, 2024

EXPLANATION – Matter in *italics* is new; matter in brackets [omitted material] is material to be omitted.

AUTHORITY: §§ 1-3 and 5-9, NRS 625.140 and 625.250; § 4, NRS 625.140, 625.250 and 625.350.

A REGULATION relating to professional land surveyors; removing certain duplicative requirements concerning professional land surveyors; revising requirements for positional certainty for components of certain surveys and proposed fixed works; imposing certain requirements on professional land surveyors relating to the conducting of certain surveys; revising provisions governing the preparation of a scaled drawing of a survey; revising the classifications of land boundary surveys; requiring a professional land surveyor to retain certain materials created to support a survey; repealing certain obsolete provisions; and providing other matters properly relating thereto.

Legislative Counsel’s Digest:

Existing law authorizes the State Board of Professional Engineers and Land Surveyors to adopt all regulations, not inconsistent with the constitution and laws of this State, which are necessary for the proper performance of the Board, the regulation of the proceedings before it and the maintenance of a high standard of integrity and dignity in professional engineering and land surveying. (NRS 625.140) Existing law also requires the Board to administer certain provisions and requirements concerning professional land surveyors and requires it to do so by regulation as necessary. (NRS 625.250)

Existing regulations set forth various standards of practice for professional land surveyors. (NAC 625.651-625.795) Section 1 of this regulation removes a duplicative requirement concerning the standards that a professional land surveyor is required to apply when engaging in the practice of land surveying in this State. Section 9 of this regulation repeals a provision which provides that a professional land surveyor is responsible for adherence to the minimum standards of practice of land surveying on works where the professional land surveyor is the person in responsible charge of the work and that any failure to comply with minimum standards of practice may be considered by the Board as evidence of certain violations of the practice of land surveying. (NAC 625.660)

Existing regulations set forth certain requirements for positional certainty for the horizontal and vertical components of land boundary, control, geodetic and topographic surveys.
Existing regulations divide land boundary surveys into the classifications of high urban, low urban, high rural and low rural and set forth requirements for positional certainty for the horizontal component of a land boundary survey specific to each classification. (NAC 625.666, 625.740) **Section 2** of this regulation eliminates the requirements for positional certainty for the horizontal and vertical components of control, geodetic and topographic surveys. **Section 5** of this regulation revises the classifications of land boundary surveys to divide such surveys into the classifications of urban, suburban and rural. **Section 2** revises requirements for positional certainty for the horizontal component of a land boundary survey to set forth requirements for such positional certainty specific to each of the new classifications set forth in **section 5**. **Section 5** additionally provides that land title surveys must be conducted using the requirements for positional certainty for the urban classification.

**Section 2** additionally:
1. eliminates certain requirements for positional certainty that are measured in meters;
2. makes certain distinctions between decisions concerning monuments used for boundary determination and requirements for positional certainty; and
3. imposes certain requirements on a professional land surveyor relating to the conducting of a control survey and a topographic survey and the retention of certain documentation. **Section 9** repeals a provision imposing certain requirements concerning positional certainty for certain surveys that has been rendered obsolete by the revisions made in **section 2**. (NAC 625.668)

Existing regulations require a professional land surveyor to take certain actions in conducting a land boundary survey, including, without limitation, searching for and identifying monuments and other physical evidence that could affect the location of the boundaries of the surveyed property. (NAC 625.670) **Section 3** of this regulation specifies certain types of physical evidence that must be searched for and identified. **Section 3** additionally requires a professional land surveyor, in conducting a land boundary survey, to:
1. consider certain factors; and
2. include certain information on a survey map after making certain discoveries.

Existing regulations require a professional land surveyor to prepare a scaled drawing of the survey for presentation to the client and sets forth certain requirements for such a drawing. (NAC 625.720) **Section 4** of this regulation revises those provisions to eliminate the requirement that such a drawing be prepared and instead sets forth various requirements for a scaled drawing when such a drawing is prepared for a client.

Existing law requires a record of survey to contain a certificate prepared by the surveyor indicating certain information. (NRS 625.350) Existing regulations set forth the required form of a certificate if a certification by a professional land surveyor is required by a statute or local ordinance. (NAC 625.720) **Section 4** specifies that the form of such a certificate set forth under existing regulations applies to a certificate for a record of survey.

Existing regulations require a professional land surveyor who conducts a construction survey to place stakes or other materials used to mark the location of certain proposed fixed works within certain specified positional certainties. (NAC 625.775) **Section 7** of this regulation:
1. revises the proposed fixed works that are subject to such requirements; and
2. eliminates certain requirements for positional certainty that are measured in meters.

Existing regulations require a professional land surveyor who conducts a construction survey to provide to the owner’s representative certain materials to describe the survey conducted. (NAC 625.780) **Section 8** of this regulation revises that requirement to instead require such a professional land surveyor to retain certain materials created to support the survey conducted.
Section 6 of this regulation makes a technical, nonsubstantive change to ensure the consistency of language used in the Nevada Revised Statutes and Nevada Administrative Code.

Section 1. NAC 625.655 is hereby amended to read as follows:

625.655 When engaging in the practice of land surveying in this State, a professional land surveyor shall apply all applicable statutes and regulations. [in addition to the minimum standards of practice for professional land surveyors established in NAC 625.651 to 625.795, inclusive.]

Sec. 2. NAC 625.666 is hereby amended to read as follows:

625.666 1. [The requirements for positional] Positional certainty for the horizontal component of a land boundary topographic, control and geodetic surveys are as follows:

<table>
<thead>
<tr>
<th>Type of Survey</th>
<th>Positional Certainty</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Meters</td>
</tr>
<tr>
<td></td>
<td>±0.02 m</td>
</tr>
<tr>
<td>High Urban</td>
<td>±0.04 m</td>
</tr>
<tr>
<td>Low Urban</td>
<td>±0.1 m</td>
</tr>
<tr>
<td>High Rural</td>
<td>±0.15 m</td>
</tr>
<tr>
<td>Low Rural</td>
<td></td>
</tr>
</tbody>
</table>

Control and Geodetic Surveys

—Precise Measurement Studies........... ±0.001 m to ±0.01 m ±0.002 ft to ±0.03 ft
<table>
<thead>
<tr>
<th>Type of Survey</th>
<th>Positional Certainty</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Meters</td>
</tr>
<tr>
<td>State Network</td>
<td>±0.02 m</td>
</tr>
<tr>
<td>County Network</td>
<td>±0.04 m</td>
</tr>
<tr>
<td>Local Network</td>
<td>±0.06 m</td>
</tr>
<tr>
<td>Photogrammetric Control</td>
<td>±0.06 m to ±1 m</td>
</tr>
</tbody>
</table>

**Topographic Surveys**

<table>
<thead>
<tr>
<th>Survey</th>
<th>Positional Certainty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engineering Design Surveys</td>
<td>±0.01 m to ±0.1 m</td>
</tr>
<tr>
<td>Planning Study Surveys</td>
<td>±0.02 m to ±0.05 m</td>
</tr>
<tr>
<td>Utilities Mapping</td>
<td>±0.15 m</td>
</tr>
<tr>
<td>Feature Mapping</td>
<td>±0.3 m</td>
</tr>
<tr>
<td>Resource Mapping</td>
<td>±0.5 m to ±100 m</td>
</tr>
</tbody>
</table>

Survey must be:

(a) **For a land boundary survey classified as urban pursuant to NAC 625.740, plus or minus 0.05 feet.**

(b) **For a land boundary survey classified as suburban pursuant to NAC 625.740, plus or minus 0.15 feet.**

(c) **For a land boundary survey classified as rural pursuant to NAC 625.740, plus or minus 0.5 feet.**
2. The requirements for positional certainty for the vertical component of a land boundary control, geodetic and topographic surveys are as follows:

<table>
<thead>
<tr>
<th>Type of Survey</th>
<th>Positional Certainty</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Meters</td>
</tr>
<tr>
<td>Land Boundary Surveys..................</td>
<td>±0.05 m</td>
</tr>
<tr>
<td>Control and Geodetic Surveys</td>
<td></td>
</tr>
<tr>
<td>Other Than Photogrammetric Control</td>
<td></td>
</tr>
<tr>
<td>Surveys ................................</td>
<td>±0.005 m to ±0.03 m</td>
</tr>
<tr>
<td>Photogrammetric Control</td>
<td></td>
</tr>
<tr>
<td>Surveys ................................</td>
<td>±0.03 m to ±0.5 m</td>
</tr>
<tr>
<td>Topographic Surveys</td>
<td>National Map Accuracy Standards</td>
</tr>
</tbody>
</table>

survey must be plus or minus 0.15 feet.

3. For the purposes of this section, the National Map Accuracy Standards, as they existed on November 14, 1997, are hereby adopted by reference. A copy of the National Map Accuracy Standards may be obtained from the United States Geological Survey, Department of the Interior, 12201 Sunrise Valley Drive, Reston, Virginia 20192, at no cost. The acceptance or
rejection of an existing controlling monument used for boundary determination is separate and distinct from the requirements of positional certainty set forth in subsections 1 and 2.

4. A professional land surveyor shall:

   (a) For a control survey, document the horizontal and vertical data, the coordinate system and the reference points used to establish the network of control points that provide control for subsequent boundary, topographic or construction surveys;

   (b) For a topographic survey made to determine the configuration of the contour of the surface of the earth or the position of fixed objects, select the equipment and procedures to obtain horizontal positional certainty and vertical positional certainty appropriate for the project; and

   (c) Retain all documentation concerning the level of precision and positional certainty of any map, plat or survey.

Sec. 3. NAC 625.670 is hereby amended to read as follows:

625.670 In conducting a land boundary survey, a professional land surveyor shall:

1. Search pertinent documents, including, but not limited to, maps, deeds, title reports, title opinions and the records of the U.S. Public Land Survey System.

2. Thoroughly examine the information and data acquired and consider:

   (a) Junior and senior property rights;

   (b) Retracement of the original survey;

   (c) Evidence provided by existing records; and

   (d) Proper application of the priority of calls used to determine boundaries when there is a conflict between elements within a land description.
3. Diligently search for and identify monuments and other physical evidence, including, without limitation, evidence of easements, lines of physical occupation and possible observed encroachments upon the property, which could affect the location of the boundaries of the property being surveyed.

4. Conduct field measurements necessary to relate adequately the position of all apparent evidence pertinent to the boundaries of the property being surveyed.

5. Make computations to verify the correctness of field data acquired and confirm that results of measurements are within acceptable limits of tolerance. Computations must be made to determine the relative positions of all found evidence.

6. When a material discrepancy is discovered between the record information that is reported on a map or record of survey and the measured information that is collected by the professional land surveyor, show the measured information on the survey map in addition to all pertinent record information.

Sec. 4. NAC 625.720 is hereby amended to read as follows:

625.720 1. [A] When a professional land surveyor [shall prepare] prepares a scaled drawing of [the] a survey for presentation to [the] a client [The], the drawing must [comply]:

(a) Comply with the provisions of NRS 625.340, 625.350 and 625.565 [ ];

(b) Be of a scale sufficient to clearly show details; and

(c) Include, without limitation:

(1) A scale, legend and north arrow;

(2) On each sheet of the drawing, an indication of the number of the sheet, the total number of sheets within the drawing and its relation to each adjoining sheet;
(3) All recorded, measured and mathematical information and data necessary to locate all monuments and to locate and retrace all interior and exterior boundary lines appearing thereon, including the bearings and distances of straight lines, central angle, radii and arc length for all curves and such information as may be necessary to determine the location of the centers of curves; and

(4) A written narrative on boundary analysis when necessary to explain any material discrepancies or support unclear portions of the drawing.

2. In cases where a certification is required by statute or local ordinance, the professional land surveyor shall certify only those matters personally known to be true.

3. The certificate for a record of survey must be in the following form:

SURVEYOR’S CERTIFICATE

I, …………………….. (name of professional land surveyor), a Professional Land Surveyor registered in the State of Nevada, certify that:

1. This plat represents the results of a survey conducted under my supervision at the instance of ……………………. (owner, trustee, etc.).

2. The land surveyed lies within ……………………… (section, township, range, meridian, county and city, if incorporated), and the survey was completed on ……………………. (date).

3. This plat complies with applicable statutes of this State and any local ordinances in effect on the date that the survey was completed, and the survey was conducted in accordance with chapter 625 of the Nevada Administrative Code.
4. The monuments depicted on the plat are of the character shown, occupy the positions indicated and are of sufficient durability.

5. (Any other information that the professional land surveyor personally knows to be true concerning the land surveyed.)

(Validated seal of the professional land surveyor);

(Name and license number of the professional land surveyor printed below the seal).

Sec. 5. NAC 625.740 is hereby amended to read as follows:

625.740 1. **Boundary** Land boundary surveys **have been** are divided into the following four urban, suburban and rural classifications **[ ]**. The:

(a) **High** Urban **[ ]** Surveys of classification consists of surveys performed on land lying within or adjoining a city or town, including surveys of commercial and industrial properties, condominiums, townhouses, apartments and other multiunit developments, regardless of geographic location.

(b) **Low Urban** **[ ]** Surveys of classification consists of surveys performed on land lying outside **high** urban areas and **used almost exclusively** developed for single family residential use. **[ ]** or residential subdivisions.

(c) **High** Rural **[ ]** Surveys of classification consists of surveys performed on land **[ ]** such as, including farms and **other** undeveloped, lying outside **the low** urban and suburban areas. **[ ]** which may have potential for future development.
(d) Low Rural. Surveys of land normally lying in remote areas with difficult or barren terrain and which usually have limited potential for development.

2. Except as otherwise provided in subsection 3, a professional land surveyor shall use the classifications described in subsection 1 and the requirements for positional certainty for those classifications prescribed in subsection 1 of NAC 625.666 to establish the locations of monuments in a land boundary survey.

3. A professional land surveyor shall, when conducting a land title survey, use the requirements for positional certainty for the urban classification prescribed in paragraph (a) of subsection 1 of NAC 625.666 to establish the locations of monuments in the survey.

Sec. 6. NAC 625.760 is hereby amended to read as follows:

625.760 Before beginning a construction survey, a professional land surveyor must obtain from the owner’s representative a complete set of the contract drawings and specifications approved by the appropriate federal, state and local agencies and any special instructions for the proposed fixed works.

Sec. 7. NAC 625.775 is hereby amended to read as follows:

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\{Sewer Facilities\} Sewers ............. \( \pm 0.1 \text{ m} \) \( \pm 0.3 \text{ ft} \) \( \pm 0.015 \text{ m} \) \( \pm 0.05 \text{ ft} \)
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Control of Traffic\} ...................... \( \pm 0.06 \text{ m} \) \( \pm 0.2 \text{ ft} \) \( \pm 0.03 \text{ m} \) \( \pm 0.1 \text{ ft} \)
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625.780 A professional land surveyor who conducts a construction survey shall provide the owner’s representative retain any sketches, cut sheets or other field notes created to describe support the survey conducted.

Sec. 9. NAC 625.660 and 625.668 are hereby repealed.
625.660 Responsibility for compliance with standards of practice. (NRS 625.140, 625.250) Responsibility for adherence to the minimum standards of practice for engaging in the practice of land surveying rests with the professional land surveyor in responsible charge of the work. Failure on the part of any Nevada professional land surveyor to comply with these minimum standards may be considered by the Board as evidence of gross negligence, professional incompetence or misconduct in the practice of land surveying.

625.668 Positional certainty: Horizontal and vertical positions of monuments. (NRS 625.140, 625.250) When conducting a land boundary, topographic, control or geodetic survey, a professional land surveyor shall ensure that the horizontal and vertical positions of the monuments established by the surveyor comply with the requirements for positional certainty set forth in NAC 625.666.
16.c. Professional Association Liaison Committee
16.d. Public Outreach Committee
16.e. PLS Standards of Practice Subcommittee
17. Board Committee Assignments for Fiscal Year 2024-2025
COMMITTEE ASSIGNMENTS
2024-2025

ADMINISTRATIVE PROCEDURES OVERSIGHT COMMITTEE
Brent Wright, PE/SE, Chair
Matt Gingerich, PLS
Karen Purcell, PE
Robert Fyda, PE
Mark Fakler, Executive Director (Staff Liaison)
Murray Blaney, Operations/Compliance (Staff Liaison)
Patty Mamola, Operations Support (Staff Liaison)

LEGISLATIVE COMMITTEE
Greg DeSart, PE, Chair
Jason Dixon, PE
Matt Gingerich, PLS
Robert Fyda, PE
Chris MacKenzie, Board Counsel (Staff Liaison)
Mark Fakler, Executive Director (Staff Liaison)
Murray Blaney, Operations/Compliance (Staff Liaison)
Patty Mamola, Operations Support (Staff Liaison)

PROFESSIONAL ASSOCIATION LIAISON COMMITTEE
Michael Kidd, PLS, Chair
Brent Wright, PE/SE
Angelo Spata, PE
Mark Fakler, Executive Director (Staff Liaison)
Derek Vogel, Communications (Staff Liaison)

PUBLIC OUTREACH COMMITTEE
Jason Dixon, PE, Chair
Greg DeSart, PE
Michael Kidd, PLS
Thomas Matter, Public Member
Mark Fakler, Executive Director (Staff Liaison)
Derek Vogel, Communications (Staff Liaison)
18. Government Liaison Report
19. Bill Draft Requests Proposed by the Legislature to Amend NRS Related to Regulatory Board and/or changes to NRS 625, 329 and 327
20. Board and Staff Assignments
Action List

BOARD MEETING ITEMS

September 21, 2023, Board Meeting

16. Discussion and possible action on electronic submittals and digital signatures, Nevada Administrative Code chapter 625, NAC 625.610.

Reconvene taskforce to review current guide (update as needed), explore issues relating to digitally signing submittals with multiple disciplines, and review and advise on entity electronic submittal intake requirements. Staff

Develop entry level in-person workshops on preparing and digitally signing electronic submittals. Reach out to stakeholder organizations for opportunities to present/host. Staff

March 14, 2024, Board meeting

12.a. Administrative Procedures Oversight Committee, Chair Brent Wright.

Staff to pursue a contract with Albertson Consulting/Big Picture Software for a new online licensing and license renewal software system, including hosting and maintenance. Also include a 24-month maintenance contract extension with InLumon for the current platform. Staff

19. Discussion and identification of topics for future meetings.

Restart the program of inviting licensees as guests to join board meetings. Staff

May 9, 2024, Board meeting

12. Discussion and possible action on administrative report by staff
  c. Items related to National Council of Examiners for Engineering & Surveying (NCEES)

NCEES Annual conference reports and action items to be available for consideration and pre-discussion at the July 18 board meeting. Ms Mamola + Staff

13. Discussion and possible action on board committee reports.
  b. Legislative Committee report, Chair Greg DeSart.

Schedule PLS Sub-committee meeting to review R007-24 LCB draft language. Staff (Complete)

Schedule Adoption Hearing for R006-24 for June 13, 2024, at 9:00 AM. Staff (Complete)

  c. Professional Association Liaison Committee, Chair Matt Gingerich.

APWA Fall Conference presentation – address/educate/examples relating to QBS (NRS 625.530). Staff
Mr Fakler to connect with Mr Murnane regarding contact information for organization of local purchasing agents. **Mr Fakler**

15. **Discussion and possible action on information provided by government liaison representative from McDonald Carano related to Nevada’s legislative and regulatory matters and any associated board matters.**

Staff to complete draft of BDR support collateral. **Staff**

Possible BDR sponsor. **Ms Wilson**

18. **Discussion and possible action on status of Board and staff assignments.**

Remove obsolete action items – posting staff availability at LV office + research into use of ALJ. **Staff (Complete)**

18. **Discussion and possible action on meeting dates.**

Staff to provide details to board members about the Round Mtn mine tour after finalized by Mr Dixon. **Staff**

Request to adjust November 2024 board meeting date from November 14 to November 7. **Staff (Complete)**

19. **Discussion and identification of topics for future meetings including possible proposed amendments to the Nevada Professional Engineers and Land Surveyors Law, Nevada Revised Statutes and Nevada Administrative Code Chapter 625.**

Add future agenda item relating to AI and professing engineering and land surveying. **Staff + Ms Purcell.**

Consider adding UK MRA agreement for board review and discussion. **Staff + Mr Spata.**

**June 13, 2024, Interim board meeting**

5. **Board approval of non-appearance applications for initial licensure. Refer to Addendum A for list of applicants.**

Staff to contact applicants (Woolman & Randall) to schedule oral interviews. **Staff**

**COMMITTEE ITEMS**

**PROFESSIONAL ASSOCIATION LIAISON COMMITTEE**

**February 9, 2021, Meeting**
7. Discuss board’s updated Strategic Plan—goals and strategies related to PAL Committee and discuss possible tactics/action items.

Goal 2: Licensure – Strategy (5): Provide options to meet land surveyor educational requirements

Consider forming sub-committee to contact with UNLV Dean of Engineering about creating a minor in land surveying. Ms Mamola

March 13, 2024, Meeting

7. Open discussion topics.

Consider pathway for adoption of datum updates and the Board’s role in the at process. Review text proposed by NALS and text adopted by the NC Board. Connect with NDOT to determine their position. Consider meeting with local GIS interest groups to gauge their views. Ms Mamola/Staff

ADMINISTRATIVE PROCEDURES OVERSIGHT COMMITTEE

APOC - March 30, 2021, Meeting

5. Discuss third-party verification of digital signatures for licensees of the board and possible role of the board in the verification process including cost participation.

Continue to monitor other states regulations relating to third-party verification requirements. Staff

March 30, 2023, Meeting

5. Consider executive director work performance and salary.

Update salary study information (use 2017 document as template). Staff

6. Consider proposed budget for fiscal year July 1, 2023, to June 30, 2024.

Suggested that options be explored that could be of some tangible benefit to existing licensees to accelerate the reduction of the reserve. Prepare evaluation of options to be considered by APOC. Staff

May 10, 2023, Meeting

6. Consider proposed budget for fiscal year July 1, 2023, to June 30, 2024.

Projections for health insurance costs in consideration of possible expansion of board covered expenses. Ms Mamola

PUBLIC OUTREACH COMMITTEE

Doodle poll for next POC meeting late Aug/early Sept. Staff
Increase outreach to under-graduates at Nevada, UNLV and GBC. Explore options. **Staff + Committee**

Consider Initial License (and/or FE) Celebration by the board. Staff. Explore options. **Staff + Committee**

**LEGISLATIVE COMMITTEE**

Discuss proposed NAC 625.310(4), requiring engineering applicants to pass a short exam on chapter 625 of NRS and NAC.
Short exam on chapter 625 of NRS and NAC to be updated by staff (periodically) and submitted to LegComm for approval.

*This item has been paused pending the amendment to NAC removing the short exam requirement and replacing it with an attestation of NRS/NAC review by the applicant.*

Consider future licensing of engineers as it relates to emerging technologies and blended engineering degrees including considering retention and/or modification of specific disciplines licensed by the board.

Develop position statement before end of FY 2023/2024 of the issues to be addressed. This item encompasses discipline specific vs PE state discussion. Mr Fyda and Ms Mamola discuss and identify possible solutions to the issues identified by position statement. **In progress**

Possible NRS changes for consideration

- **NRS 625.193**
  Revisions approved by Board 5.9.2024
  (included updates from 4.22.2024 LegComm meeting)
- **NRS 625.270**
  Approved by Board 3.14.2024
  (NOTE Consider impacts of NCEES PLSS module release Oct 2027 + additional housekeeping edits for next Legislative Session).
- **NRS 625.280**
  Revisions approved by Board 5.9.2024
  (included updates from 4.22.2024 LegComm meeting)

Supporting collateral has been drafted and staff are work with govt affairs liaisons to identify possible sponsors

- **NRS Chapter 327**
  Monitoring national datum change impacts on this chapter. Connect with NDOT and NALS to determine pathway forward and the board’s role in it.

Possible NAC changes for consideration

- **NAC 625.310**
Consider impacts of NCEES PLSS module release Oct 2027 on Nevada state specific PLS exam. Text has been drafted but will consider NCEES model law before finalizing for LegComm review.

Schedule for NAC changes currently under review

**Executive Order regulation changes/repeals** – Regulation changes/repeals approved via consent agenda at the Legislative Commission hearing held June 18, 2024. Staff will follow up through the codification process. **In progress.**

**Ticket created w/ licensing platform vendor** – relates NAC 625.420 and generating an identification card (pocket card) that indicates a license has been moved to RETIRED status. **Complete**

**Contract and PLS regulation changes/repeals**

LCB has assigned the following R-file #s

**R006-24** for NAC 625.545 (written contract). Adoption Hearing held June 13, 2024. Regulation change adopted by the board. Submittal package sent to LCB for Legislative Commission consideration on June 19, 2024. **In progress**

**R007-24** for all other proposed amendments relating to the Standard of Practice for PLS

Draft text reviewed and accepted by PLS Standards of Practice Sub-committee on May 29, 2024, and presented to LegComm for consideration at July 9, 2024, meeting. **In progress.**

**STRATEGIC PLAN ITEMS**

DRAFT Annual Report for APOC/Public Outreach committee review.

**BUSINESS PLAN ITEMS**

Electronic submittals + digital signing of documents.

System database comprehensive upgrade.

Website effectiveness.
21. Future Meeting Dates
BOARD MEETING DATES

Board meetings are typically scheduled for the second Thursday of every other month.

    July 18, 2024 — Tonopah
    September 12, 2024 — Las Vegas
    November 7, 2024 — Reno
    January 16, 2025 — Las Vegas
    March 13, 2025 — Reno
    May 8, 2025 — Las Vegas

Future NCEES Meetings

NCEES Western Zone Interim Meetings

    May 2025 — location TBA

NCEES Annual Meetings

    August 14–17, 2024 — Chicago, Illinois
    August 19-22, 2025 — New Orleans, Louisiana
22. Topics for Future Meetings
23. Public Comment
24. Adjournment