DOMAIN 1: TESTING, MEASUREMENT, AND INSPECTION (43.5%)

A. Underground Construction:

1. Inspect and utilize plans, specifications, and construction methods for:
    a. storm sewers.
    b. water systems.
    c. sanitary sewers.
    d. other utility systems.
2. Inspect job site materials for compliance per approved plans (e.g., pipe, backfill, manholes, and valves).
3. Conduct inspections within rights-of-way for:
    a. utility installation (open or trenchless).
    b. utility taps.
    c. trench backfill.
    d. discontinued or interrupted services.
4. Verify and document the following tests for installation of sewer infrastructure:
    a. mandrel test.
    b. air test.
    c. vacuum test.
    d. video inspection.
    e. infiltration/exfiltration.
5. Monitor hydro-static pressure testing on sewer and water lines.
6. Utilize testing of water systems for chlorine residual and bacteria.
7. Verify the location of valves to ensure accessibility.
8. Exercise safety procedures while entering confined spaces or dangerous areas.

B. At-Grade Construction:

1. Inspect and utilize plans, specifications, and construction methods for:
    a. curb and gutter construction.
    b. paving.
    c. sidewalk and driveway approach construction.
    d. restoration work (e.g., fine grading, sod, or seedbed preparation work).
    e. pavement marking.
    f. traffic signal and street light installations.
    g. other traffic control.
    h. erosion control.
2. Conduct inspections within rights-of-way for:
    a. driveways.

b. sidewalks and curb ramps.
c. curb and gutter construction.
d. streets.
e. sign installation.
f. traffic control.
g. clearing and grubbing.
h. erosion and siltation/sedimentation control installations.

3. Propose minor field modifications of line and grade (e.g., match existing features, achieve drainage).
4. Verify and record the location of valve boxes and manhole covers prior to removal.
5. Inspect traffic control within construction zones.

C. Structural Construction:

1. Inspect and utilize plans, specifications, and construction methods for:
   a. bridges.
   b. forming systems.
   c. reinforcing steel.
   d. reinforced concrete structures.
   e. treatment facilities.

D. General Construction Fundamentals:

1. Inspect and utilize plans, specifications, for line and grade.
2. Perform inspections utilizing measurement tools (e.g., survey instruments, digital levels, thermometers).
3. Verify calibration of measurement tools.
4. Inspect materials for compliance per approved plans (e.g., asphalt, concrete, and aggregate).
5. Demonstrate knowledge of pavement preservation (e.g., microsurface, rejuvenator, seals).
6. Perform mathematical calculations to determine:
   a. percent of grade.
   b. invert elevations.
   c. cross slopes.
   d. super elevations.
   e. volume.
   f. area.
   g. stationing.
   h. density.

i. unit conversions.
j. feet in inches vs. feet in tenths.

7. Compare the batch ticket information to the approved mix design.
8. Apply the minimum requirements for accepting/rejecting soils (e.g., moisture, compaction, stabilization).
9. Review geotechnical reports.
10. Utilize specialized technologies (e.g., unmanned aerial drones, GPS, and GIS mapping).
11. Perform pre-construction inspection of existing conditions.

DOMAIN 2: PROJECT PLANNING AND MANAGEMENT (25%)

A. Planning:

1. Review plans and specifications.
2. Review shop drawings and submittals.
3. Verify contractor licenses and permits.
4. Estimate quantities of construction materials.
5. Report rights-of-way activities to various agencies.
6. Recognize when to coordinate with other agencies/stakeholders.
7. Identify when to inform management of variances in schedule or other problems.
8. Perform constructability reviews.

B. Management:

1. Review concrete placement schedule with contractor.
2. Recommend the acceptance of projects through the use of:
   a. completed punch list items.
   b. final walk-through inspections.
   c. warranty inspections.
3. Recognize when a change order is needed and make applicable recommendations.
4. Prepare change orders.
5. Record time and material work.
6. Record project changes to create as-built plans.
7. Review as-built plans.
8. Utilize various software programs (e.g., Access, Excel, CAD, Word).
9. Utilize communication skills to provide project information and schedules to stakeholders.
10. Assess current progress and adherence to schedule and duration limits.
11. Compute estimates of work completed and review payment to contractors.
12. Investigate and respond to citizen concerns.
13. Practice according to the elements of the APWA standards of professional conduct.

DOMAIN 3: PROJECT COMPLIANCE AND DOCUMENTATION (31.5%)

A. Compliance:

1. Interpret and ensure compliance with plans, specifications, and construction methods for ADA compliance.
2. Demonstrate knowledge of codes and specifications.
3. Demonstrate compliance with contract documents regarding:
    a. standards for construction.
    b. regulatory agency permits.
    c. measurement and payment.
    d. quality assurance program for material sampling and testing.
4. Demonstrate knowledge of construction safety standards.
5. Perform post-construction inspection and compare with pre-construction conditions.
6. Demonstrate compliance with environmental controls (e.g., dust, erosion, tracking).
7. Integrate materials testing reports with project requirements.
8. Demonstrate knowledge of violation/non-compliance notices and stop-work orders.

B. Documentation:

1. Evaluate documented quantities of construction materials.
2. Utilize documentation standards for daily project diaries/reports covering:
    a. Personnel.
    b. equipment uses.
    c. type of work performed.
    d. on-site discussions with contractor's staff.
    e. weather.
    f. materials testing activities.
    g. sketches.
3. Assemble a photographic record of the project.
4. Produce and integrate project logs (e.g., change orders, submittals, and notices).
5. Document the accuracy of dimensions of installations and layouts.