Cluster Knowledge and Skill Statement

Academic Foundations

Statement: Perform math operations to complete jobsite/workplace tasks such as estimating and distributing materials and supplies.

Performance Element: Use geometric formulas to determine areas and volumes of various structures.
  - Measurement Criteria: Calculate areas and volumes of structures.
  - Measurement Criteria: Estimate materials and supplies needed.

Performance Element: Use appropriate formulas to determine percentages/decimals.
  - Measurement Criteria: Calculate percentages/decimals.
  - Measurement Criteria: Use percentages/decimals to perform measurement tasks.

Performance Element: Use appropriate formulas to determine ratios, fractions, and proportion measures.
  - Measurement Criteria: Calculate ratios, fractions and proportion measures.
  - Measurement Criteria: Use ratios, fractions and proportion measures to perform measurement tasks.

Performance Element: Use appropriate formulas to determine measurements of dimensions, spaces and structures.
  - Measurement Criteria: Measure dimensions, spaces and structures using Metric units.
  - Measurement Criteria: Use dimensions, spaces and structures calculations to estimate materials and supplies needed.

Statement: Perform physics skills to work with materials and load applications.

Performance Element: Apply basic concepts of static and loads to planning.
  - Measurement Criteria: Use the basic concepts of static and load calculations for rigging and moving loads.

Performance Element: Identify the physical properties present when using common construction materials in order to use the materials safely, effectively and efficiently.
  - Measurement Criteria: Use the basic concepts of physics when working with common construction materials.

Statement: Manage workplace and jobsite chemical materials safely.

Performance Element: Recognize the issues present when mixing compatible and incompatible substances to maintain workplace/jobsite safety.
  - Measurement Criteria: Differentiate between incompatible and compatible substances.
  - Measurement Criteria: Prevent the mixing of incompatible substances.

Performance Element: Describe the chemical process that occurs when using common construction materials to maintain workplace/jobsite safety.
  - Measurement Criteria: Apply chemical processes in relation to environment conditions.

Statement: Read, understand and respond to English language technical and workplace documents to effectively function in the workplace/jobsite.

Performance Element: Read, interpret and use technical and workplace documents to
Cluster Knowledge and Skill Statement

accomplish workplace/jobsite assignments.

**Measurement Criteria:** Read and understand industry-specific terminology.

**Measurement Criteria:** Interpret workplace documents.

**Measurement Criteria:** Use verbal or written processes to report key information.

**Measurement Criteria:** Use technology to transmit reports.

**Measurement Criteria:** Read, understand and interpret blueprints, drawings and specifications.

**Measurement Criteria:** Use written communications such as written estimates, work orders and memos.

**Measurement Criteria:** Read and follow manufacturer’s instructions and manuals.

Statement: Write clear and effective English to prepare workplace/jobsite information.

Performance Element: Complete reports and documents to comply with project requirements.

**Measurement Criteria:** Compose an accurate and organized diary/log of work.

**Measurement Criteria:** Write reports and documents such as estimates, permits, memos, technical reports and work orders that meet industry standards.
Communications

*Statement:* Use and follow industry specific verbal and visual skills to accomplish workplace/jobsite communications.

Performance Element: Match verbal and visual communications to industry specific situations.

*Measurement Criteria:* Use correct terminology to convey verbal and visual communications.

Performance Element: Listen attentively and speak clearly to convey information correctly.

*Measurement Criteria:* Confirm understanding of verbal and visual instructions.
*Measurement Criteria:* Ask questions concerning details of instructions.
*Measurement Criteria:* Perform assignments as requested.

*Statement:* Listen to and speak with a variety of individuals to enhance communication skills.

Performance Element: Speak succinctly and clearly to convey information.

*Measurement Criteria:* Speak so that others can understand and carry out information presented.

Performance Element: Listen attentively to spoken messages to respond to information.

*Measurement Criteria:* Perform oral instructions.

*Statement:* Exhibit public relation skills to address a variety of situations such as increasing internal and external customer/client satisfaction.

Performance Element: Communicate effectively to develop positive customer/client relationships.

*Measurement Criteria:* Develop and maintain customer relations.
*Measurement Criteria:* Apply relationship skills in a variety of situations.
Cluster Knowledge and Skill Statement

Problem Solving and Critical Thinking

Statement: Identify the relationship between available resources and requirements of a project/problem to accomplish realistic planning.

Performance Element: Estimate resources/materials required for a specific project/problem including time management, labor management, job management and job site obligations in order to effectively plan.

Measurement Criteria: Estimate correct amount of required resources/materials.

Performance Element: Use available resources/materials effectively to complete project or resolve a problem.

Measurement Criteria: Evaluate waste of resources/materials.

Measurement Criteria: Evaluate necessity for additional resources/materials.

Performance Element: Determine alternative solutions for a specific project/problem in order to effectively plan.

Measurement Criteria: Evaluate feasibility of alternative suggestions.

Measurement Criteria: Implement appropriate alternatives.

Statement: Evaluate and adjust plans/schedules to respond to unexpected events and conditions.

Performance Element: Incorporate potential job disruptions into planning time lines.

Measurement Criteria: Identify potential events and conditions that disrupt the completion of a job.

Measurement Criteria: Solve situational problems involved with unexpected events and conditions.

Performance Element: Adjust plans and schedules to meet project needs.

Measurement Criteria: Modify existing plans to reflect an unexpected change.

Measurement Criteria: Modify existing schedules to reflect an unexpected change.

Performance Element: Identify and assess critical situations as they arise to resolve issues.

Measurement Criteria: Evaluate potential solutions and determine best solution.

Measurement Criteria: Appraise critical situations and implement appropriate response.

Performance Element: Provide a project update to track changes necessitated by unexpected events and conditions.

Measurement Criteria: Present an oral and/or written status report on the project.

Statement: Synthesize and report conditions to keep the organization appraised of progress and problems.

Performance Element: Provide a project update to keep stakeholders up to date.

Measurement Criteria: Present an oral and written status report on the project.
Cluster Knowledge and Skill Statement

Information Technology Applications

Statement: Use information technology tools specific to Architecture and Construction to access, manage, integrate and create information.

Performance Element: Manage personal schedule and contact information.
Measurement Criteria: Create tasks (to-do) list.
Measurement Criteria: Manage daily/weekly/monthly schedule using applications.
Measurement Criteria: Manage personal and professional contact information.

Performance Element: Create memos and notes.
Measurement Criteria: Create personal reminders.
Measurement Criteria: Create and send notes, informal memos, and reminders using applications.

Performance Element: Use a CAD System to perform drafting duties.
Measurement Criteria: Interpret CAD drawings.
Measurement Criteria: Retrieve and modify drawings using a CAD System.
Measurement Criteria: Create drawings using a CAD System.

Performance Element: Use email to communicate within and across organizations.
Measurement Criteria: Access email system using login and password functions.
Measurement Criteria: Access email messages received.
Measurement Criteria: Create email messages in accordance with established business standards (e.g., grammar, word usage, spelling, sentence structure, clarity, e-mail etiquette).
Measurement Criteria: Practice email etiquette.
Measurement Criteria: Send email messages.

Performance Element: Use email to share files and documents.
Measurement Criteria: Attach documents to messages.
Measurement Criteria: Save email messages/attachments.
Measurement Criteria: Practice contamination protection strategies for email.

Statement: Use Electronic Mail applications.

Performance Element: Search for information and resources.
Measurement Criteria: Select search engine(s) to use.
Measurement Criteria: Select appropriate search procedures and approaches.
Measurement Criteria: Locate information using search engine(s) and Boolean logic.
Measurement Criteria: Navigate web sites using software functions.

Performance Element: Access and evaluate Internet resources.
Measurement Criteria: Access business and technical information using the Internet.
Measurement Criteria: Access commercial, government, and education resources.
Measurement Criteria: Evaluate Internet resources (e.g., accuracy of information).

Statement: Use Internet applications.

Performance Element: Prepare simple documents and other business communications.
Measurement Criteria: Retrieve existing documents.
Cluster Knowledge and Skill Statement

**Measurement Criteria:** Create documents (e.g., letters, memos, reports) using existing forms and templates.

**Measurement Criteria:** Safeguard documents using name and save functions.

**Measurement Criteria:** Format text using basic formatting functions.

**Measurement Criteria:** Employ word processing utility tools (e.g., spell checker, grammar checker, thesaurus).

**Statement:** Use Spreadsheet applications.

**Performance Element:** Create a spreadsheet.

**Measurement Criteria:** Create spreadsheets.

**Measurement Criteria:** Retrieve existing spreadsheets.

**Measurement Criteria:** Edit spreadsheets.

**Measurement Criteria:** Save spreadsheets.

**Measurement Criteria:** Print spreadsheets.

**Performance Element:** Perform calculations and analysis on data.

**Measurement Criteria:** Group worksheets.

**Measurement Criteria:** Create charts and graphs from spreadsheets.

**Measurement Criteria:** Perform calculations using simple formulas.

**Measurement Criteria:** Input/process data using spreadsheet functions.

**Statement:** Use Database applications.

**Performance Element:** Manipulate data elements.

**Measurement Criteria:** Enter data using a form.

**Measurement Criteria:** Locate/replace data using search and replace functions.

**Measurement Criteria:** Process data using database functions (e.g., structure, format, attributes, relationships, keys).

**Statement:** Use Collaborative/Groupware applications.

**Performance Element:** Facilitate group work through management of shared schedule and contact information.

**Measurement Criteria:** Manage daily/weekly/monthly schedule using applications.

**Measurement Criteria:** Maintain shared database of contact information.

**Statement:** Use Computer Operations applications.

**Performance Element:** Manage computer operations.

**Measurement Criteria:** Apply basic commands of operating system software.

**Measurement Criteria:** Employ desktop operating skills.

**Performance Element:** Manage file storage.

**Measurement Criteria:** Apply appropriate file and disk management techniques.

**Measurement Criteria:** Differentiate between files and directories.

**Measurement Criteria:** Determine file organization.

**Measurement Criteria:** Use system utilities for file management.

**Statement:** Use computer-based equipment (containing embedded computers (or processors) used to control electromechanical devices).

**Performance Element:** Operate computer-driven equipment and machines.

**Measurement Criteria:** Secure needed supplies and resources.

**Measurement Criteria:** Follow power-up and log-on procedures.
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**Measurement Criteria:** Interact with/respond to system messages using console device.

**Measurement Criteria:** Run applications/jobs in accordance with processing procedures.

**Measurement Criteria:** Follow log-off and power-down procedure(s).

Performance Element: Use installation and operation manuals.

**Measurement Criteria:** Access needed information using appropriate reference materials.

Performance Element: Troubleshoot computer-driven equipment and machines and access support as needed.

**Measurement Criteria:** Test system using diagnostic tools/software.

**Measurement Criteria:** Repair/replace malfunctioning hardware.

**Measurement Criteria:** Reinstall software as needed.

**Measurement Criteria:** Recover data and/or files.

**Measurement Criteria:** Restore system to normal operating standards.
Cluster Knowledge and Skill Statement

**Systems**

**Statement:** Comply with governmental regulations and applicable codes to establish a legal and safe workplace/jobsite.

Performance Element: Identify occupation-specific governmental regulations and national, state and/or local building codes to establish workplace/jobsite regulations and codes.

- **Measurement Criteria:** Follow governmental regulations and building codes.
- **Measurement Criteria:** Use information given in regulations and codes correctly.
- **Measurement Criteria:** Pass job inspections and comply with regulations at all times.

Performance Element: Monitor workplace/jobsite activities to comply with governmental and other applicable safety regulations such as EPA and OSHA.

- **Measurement Criteria:** Read and discuss information on OSHA, EPA and other safety regulations.
- **Measurement Criteria:** Pass safety inspections and comply with regulations at all times.

Performance Element: Use MSDS information to manage, use and dispose of hazardous materials.

- **Measurement Criteria:** Obtain, understand and follow MSDS information.
- **Measurement Criteria:** Use hazardous materials safely.

Performance Element: Identify workplace/jobsite environmental hazards to promote workplace/jobsite safety.

- **Measurement Criteria:** Follow safe practices relating to environmental hazards.

**Statement:** Examine relationship of roles and responsibilities between trades/professions to complete a project/job.

Performance Element: Plan, organize, schedule and manage a project/job to optimize workflow sequence.

- **Measurement Criteria:** Report results of the project/job.

Performance Element: Use time management skills to schedule a project/job.

- **Measurement Criteria:** Identify timeline required to complete a project/job.
- **Measurement Criteria:** Evaluate efficiency and effectiveness of a project/job.

Performance Element: Recognize relationships between trades/professions to facilitate smooth workflow.

- **Measurement Criteria:** Coordinate work between trades.

Performance Element: Recognize the hierarchy of the jobsite to facilitate smooth workflow.

- **Measurement Criteria:** Incorporate job functions in the reporting chain of supervision.
- **Measurement Criteria:** Evaluate the safety issues and responsibilities managed by each level of supervision.

**Statement:** Examine all aspects of the built environment and its systems to complete project planning.

Performance Element: Align and incorporate the built environment and its systems to the project to complete project.

- **Measurement Criteria:** Label all systems on a set of construction documents.
- **Measurement Criteria:** Discuss the interrelationship of the systems in the built environment.
Cluster Knowledge and Skill Statement

**Measurement Criteria:** Use the concept of "Critical Path Method (CPM)" and/or similar sequential methods so that work progresses efficiently.

**Statement:** Apply industry standards and practices for quality to ensure quality work.

Performance Element: Identify industry standards and practices in order to incorporate quality into projects.

**Measurement Criteria:** Document how quality improves profitability.

**Measurement Criteria:** Report on issues that affect quality.

Performance Element: Use industry standards and practices to appreciation for quality workmanship.

**Measurement Criteria:** Perform work meeting or exceeding the quality standards of the industry.

**Measurement Criteria:** Exhibit pride in personal work.
Cluster Knowledge and Skill Statement

Safety, Health, and Environmental

Statement: Observe rules and regulations to comply with personal and jobsite safety standards.

Performance Element: Align safety issues with appropriate safety standards to ensure a safe workplace/jobsite.

Measurement Criteria: Practice safety rules and regulations.

Performance Element: Identify safety precautions and hazards to ensure a safe workplace/jobsite.

Measurement Criteria: Use appropriate safety practices and equipment.

Performance Element: Select, inspect and use personal protective equipment (PPE) such as respiratory protection and fall protection equipment to ensure a safe workplace/jobsite.

Measurement Criteria: Inspect personal protective equipment to ensure safety.
Measurement Criteria: Report defects found in personal protective equipment.
Measurement Criteria: Use appropriate personal protective equipment.
Measurement Criteria: Wear appropriate personal protective equipment to protect yourself and set an example for co-workers.

Performance Element: Employ hierarchy and workflow of the workplace/jobsite to ensure safety.

Measurement Criteria: Perform job site safety procedures at all times.
Measurement Criteria: Use, interpret and respond to barricades, barriers, and other visual warnings.
Cluster Knowledge and Skill Statement

Leadership and Teamwork

Statement: Establish specific goals to manage project assignments in a timely manner.

Performance Element: Establish project goals in order to meet project specifications and deadlines.

- **Measurement Criteria:** Define and describe project goals.
- **Measurement Criteria:** Identify and list key project activities.
- **Measurement Criteria:** Identify and report activity deadlines.

Performance Element: Organize work teams to effectively manage assignments.

- **Measurement Criteria:** Determine and list assignments by activity and personnel.
- **Measurement Criteria:** Complete assignments.
- **Measurement Criteria:** Monitor and write a report on progress of the project.
- **Measurement Criteria:** Evaluate completed project according to customer requirements.

Statement: Effectively resolve conflicts with co-workers to maintain a smooth workflow.

Performance Element: Use conflict resolution skills to maintain a smooth workflow.

- **Measurement Criteria:** Work collaboratively and cooperatively.
- **Measurement Criteria:** Give and receive criticism in a diplomatic and constructive manner.
- **Measurement Criteria:** Use diplomatic and constructive statements and responses.

Statement: Work as an individual and as a team member to accomplish assignments.

Performance Element: Use human relations skills to work cooperatively with co-workers representing different cultures, genders and backgrounds.

- **Measurement Criteria:** Work effectively with a variety of co-workers.

Performance Element: Track team goals to contribute constructively and positively to the team.

- **Measurement Criteria:** Work effectively within the organization of a team.
- **Measurement Criteria:** Perform work as a team member on a project.

Performance Element: Match team members to appropriate activities.

- **Measurement Criteria:** Identify team goals.
- **Measurement Criteria:** Identify team member strengths and weaknesses.

Performance Element: Manage personal skills to accomplish assignments.

- **Measurement Criteria:** Plan, organize, and manage individual work.

Statement: Use mentoring skills to inspire others to achieve.

Performance Element: Use motivational techniques to enhance performance in others.

- **Measurement Criteria:** Practice motivational techniques.
- **Measurement Criteria:** Develop and use reward and incentive systems.
Cluster Knowledge and Skill Statement

Ethics and Legal Responsibilities

Statement: Exhibit personal accountability, integrity and responsibility to enhance confidence among co-workers.

Performance Element: Apply the professional and ethical standards of the industry to workplace/jobsite conduct.
  Measurement Criteria: Practice professional and ethical standards.
  Measurement Criteria: Maintain personal integrity.
  Measurement Criteria: Promote personal and professional integrity in coworkers.
  Measurement Criteria: Recognize integrity in others.

Statement: Read regulations and contracts to ensure ethical and safety elements are observed.

Performance Element: Study regulations and codes to identify those applicable to the local area.
  Measurement Criteria: Locate and implement regulations and codes applicable to tasks and projects.
  Measurement Criteria: Comply with local, state and Federal agencies and model code setting organizations.

Performance Element: Read and explain the various aspects of service contracts to ensure compliance.
  Measurement Criteria: Evaluate and follow service contracts.

Performance Element: Recognize the relationship between the various parties to a contract in order to interpret responsibilities.
  Measurement Criteria: Fulfill your contractual role and responsibilities.

Performance Element: Recognize the definition of specialized words or phrases to fully understand documents and contracts.
  Measurement Criteria: Use industry jargon or terminology appropriately.
  Measurement Criteria: Use industry acronyms correctly.
  Measurement Criteria: Use words with multiple meanings correctly in context.

Statement: Use ethical and legal standards to avoid conflicts of interest.

Performance Element: Identify conflicts of interest relating to a job or project to prevent ethical or legal problems.
  Measurement Criteria: Resolve issues relating to any potential conflicts of interest.

Statement: Recognize legal and ethical relationships between employees and employers to establish workplace/jobsite rules, regulations and guidelines.

Performance Element: Access appropriate resources to identify the roles, rights and responsibilities of an employee and an employer.
  Measurement Criteria: Practice workplace/jobsite conduct incorporating employee and employer roles, rights and responsibilities.

Performance Element: Examine insurance documentation to determine liability issues associated with a job.
  Measurement Criteria: Describe liability issues as needed.

Performance Element: Comply with employer policies and procedures such as sexual harassment avoidance and substance abuse control to prevent ethical and legal problems.
  Measurement Criteria: Practice policies and protocol.
Cluster Knowledge and Skill Statement

Employability and Career Development

Statement: Exhibit a positive work ethic to comply with employment requirements.

Performance Element: Exhibit behaviors showing you are reliable and dependable.
  Measurement Criteria: Arrive at work fit and on time each day.
  Measurement Criteria: Behave dependably.
  Measurement Criteria: Behave honestly and fairly.

Performance Element: Maintain appropriate dress and behavior for the job to contribute to a safe and effective workplace/jobsite.
  Measurement Criteria: Observe company and workplace/jobsite rules.

Performance Element: Complete required employment forms and documentation such as I-9 form, work visa, W-4 and licensures to meet employment requirements.
  Measurement Criteria: Provide verification that requirements have been met.

Statement: Recognize requirements for career advancement to plan for continuing education and training.

Performance Element: Identify opportunities for career advancement to formulate career goals.
  Measurement Criteria: Identify career ladder.
  Measurement Criteria: Develop career advancement plan.
  Measurement Criteria: Implement career advancement plan.
  Measurement Criteria: Review progress of career advancement plan.

Performance Element: Maintain positive interpersonal skills to enhance advancement potential.
  Measurement Criteria: Perform quality work as measured by a performance evaluation.

Performance Element: Pursue education and training opportunities to acquire skills necessary for career advancement.
  Measurement Criteria: Document successful completion of education and training opportunities.
  Measurement Criteria: Participate in professional development opportunities such as professional organizations and associations, trade shows and seminars.

Performance Element: Read trade magazines and journals, manufacturers’ catalogues, industry publications and internet sites to keep current on industry trends.
  Measurement Criteria: Identify and prepare for new and emerging occupations, practices and procedures as well as declining occupations and practices.

Performance Element: Examine the organization and structure of various segments of the industry to prepare for career advancement.
  Measurement Criteria: Recognize segments of the construction industry and show the relationships to specialty areas.
  Measurement Criteria: Obtain necessary knowledge and skills to enhance employability.
Cluster Knowledge and Skill Statement

Performance Element: Research local and regional labor (workforce) market and job growth information to project potential for advancement.

**Measurement Criteria:**
- Identify sources of career information.
- Identify job opportunities for the trade.
- Identify organizations that offer career and job placement.
- Analyze potential growth of identified careers.
- Apply labor market and job growth information to career goals.

**Statement:** Examine licensing, certification and credentialing requirements at the national, state and local levels to achieve compliance.

Performance Element: Align licensing, certification and credentialing requirements to career goals in order to plan for career advancement.

**Measurement Criteria:**
- Use technologies and resources to research licensing certification and credentialing.
- Evaluate and select suitable sources of licensing, certification and credentialing.
- Identify licenses, certifications and credentials applicable to career goals.
- Document sources and agencies for licensing and certification and credentialing information including contact information.

**Statement:** Recognize the responsibilities and personal characteristics of a professional craftsperson to develop personal goals for professionalism.

Performance Element: Research workplace/jobsite information to identify appropriate craft responsibilities and personal characteristics.

**Measurement Criteria:**
- Practice the responsibilities and characteristics of a professional craftsperson.
- Identify all critical/important functions.
- Document customer satisfaction.

Performance Element: Present a professional image in the workplace/jobsite to enhance career advancement.

**Measurement Criteria:**
- Maintain appropriate professional memberships.
- Follow rules, regulations and guidelines.

**Statement:** Maintain a career portfolio to document knowledge, skills and abilities.

Performance Element: Select educational and work history highlights to create a personal resume.

**Measurement Criteria:**
- Develop a resume utilizing word processing technology.

Performance Element: Contact professional references to acquire recommendations.

**Measurement Criteria:**
- Obtain appropriate letters of recommendation.

Performance Element: Maintain a record of work experiences, licenses, certifications and education to build a portfolio.

**Measurement Criteria:**
- Document work experience.
- Document receipt of licenses, certifications and credentialing.
- Document completion of education and training.
Architecture and Construction

Cluster Knowledge and Skill Statement

Technical Skills

Statement: Read technical drawings and documents to plan a project.

Performance Element: Interpret blueprints and drawings to assist with project planning.
  Measurement Criteria: Recognize elements and symbols of blueprints and drawings.

Performance Element: Study written standards and specifications to apply them.
  Measurement Criteria: Interpret and explain standards and specifications.

Performance Element: Recognize how specifications and standards are arranged to properly access and use them.
  Measurement Criteria: Describe and use specifications and standards appropriately.

Performance Element: Use architect’s plan, manufacturer’s illustrations and other materials to visualize proposed work and to transfer specific data.
  Measurement Criteria: Sketch/draw/illustrate concepts and ideas.
  Measurement Criteria: Draw or sketch plan/layout to be completed.
  Measurement Criteria: Use proper measurements to determine layout.

Performance Element: Conceptualize a three-dimensional form from a two-dimensional drawing to visualize proposed work.
  Measurement Criteria: Build three-dimensional form.

Statement: Use and maintain appropriate tools, machines and equipment to accomplish project goals.

Performance Element: Select tools, machinery and equipment to match requirements of the job.
  Measurement Criteria: Operate tools, machinery and equipment.
  Measurement Criteria: Properly maintain and care for tools, machines and equipment.
  Measurement Criteria: Use tools, machine and equipment productively and efficiently in alignment with industry standards.

Performance Element: Identify sources of information concerning state-of-the-art tools, equipment, materials, technologies and methodologies.
  Measurement Criteria: Read current periodicals, industry publications and manufacturer’s catalogs.
  Measurement Criteria: Use state-of-the-art tools, equipment, materials, technologies and methodologies.