

**COMPETENCY MODEL FOR  
UNDERGROUND DISTRIBUTION CONSTRUCTION MECHANIC  
CLASS CODE 3812**

The following competencies have been identified as those that best separate superior from satisfactory job performance in the class of **UNDERGROUND DISTRIBUTION CONSTRUCTION MECHANIC**. (Numbers refers to the order of competencies in the Competency Bank.)

1. Reading Comprehension
2. Mathematics
8. Safety Focus
10. Physical Capability
20. Job Knowledge
24. Mechanical Aptitude
33. Interpersonal Skills
35. Teamwork

On the following pages are descriptions of each competency, including a definition, the level of the competency required for the class (*italicized*, **bolded**, and underlined), examples of behavioral indicators, and satisfactory and superior performance levels.

**1. READING COMPREHENSION** – Comprehends and correctly applies information presented in written form. Makes correct inferences; draws accurate conclusions.

Level of Competency Required by Job:

**Level 1 Concrete, specific job-related information (work orders; instructions; material/equipment labels)**

Level 2: General information related to field of work and assignments; (articles in trade publications; technical/instructional manuals; memos; letters; e-mails; reports)

Level 3: Abstract/complex information (highly technical articles/ reports in specialized area; legal or other regulatory material)

Examples of Behavioral Indicators:

- Follows written instructions correctly.
- Learns information presented in writing.
- Identifies relevant written information.
- Interprets written legal regulatory material accurately.

Performance Levels:

Satisfactory

Reads instructions correctly. Learns from manual and other printed material.

Superior

Learns from manual and may answer others' questions. Explains information presented in written form to others.

**2. MATHEMATICS** – Performs arithmetic or higher-level mathematical computations accurately.

Level of Competency Required by Job:

**Level 1: Perform arithmetic computations (add, subtract, multiply, divide, ratios, percentages).**

Level 2: Use algebra (substitute numbers for letters in a formula), geometry (angles, distances, area), and/or descriptive statistics (mean/median/mode, standard deviation, range).

Level 3: Apply and interpret calculus, inferential statistics (t-tests, correlations, ANOVA, multiple regression) or other very high level mathematics.

Examples of Behavioral Indicators:

- Quickly and accurately performs arithmetic computations.
- Appropriately selects and applies formulas for stated purpose.
- Correctly identifies an appropriate analysis for a specific purpose and selects the appropriate computer program for computation.
- Accurately interprets and presents results of mathematical/statistical computations.

Performance Levels:

Satisfactory

Knows mathematical requirements of the job and performs them correctly.  
Verifies work to ensure accuracy.

Superior

Identifies additional opportunities for the application of mathematics in work.  
Answers questions/trains others to assist them in their use of mathematics.

**8. SAFETY FOCUS** – Performs work in a way that minimizes risk of injury to self or others.

Level of Competency Required by Job:

Level 1: Maintain awareness of unsafe conditions and actions to avoid injury.

**Level 2: Follow safety rules/procedures; avoid known hazards in the work environment.**

Level 3: Carefully follow safety rules and procedures and consistently use all necessary safety equipment.

Examples of Behavioral Indicators:

- Wears seat belt.
- Ensures safe physical work environment by taking actions such as eliminating unstable stacks of materials, closing drawers so filing cabinets will not tip over, and keeping pathways clear of tripping hazards.
- Reviews safety procedures before beginning each job with known hazards.
- Follows safety procedures while performing work even when it takes more time.
- Uses safety equipment such as goggles, gloves, and earplugs as required or warranted.
- Frequently checks safety equipment for proper condition and operation.

Performance Levels:

Satisfactory

Maintains awareness of personal safety to avoid injury or property damage during all work activities.

Superior

“Safety first.” Places avoidance of injury or property damage above all other job requirements. Mentions the need to follow safe work practices to co-workers. Actively seeks ways to avoid injury.

## **Safety Focus Areas**

1. Knowledge of how to work in close proximity to power equipment, such as a backhoe, in conduit installation.
2. Knowledge of the State Construction Safety Orders relating to underground construction activities, such as traffic control.
3. Knowledge of safety practices involved in the construction of maintenance holes, vaults and substructures as listed in the Construction Safety Rules of the Department of Water and Power.
4. Knowledge of basic first aid techniques and procedures including but not limited to cardiopulmonary resuscitation (CPR), Heimlich maneuver, wound care, controlling bleeding (direct pressure, tourniquet) splinting fractures and assessing vital signs (i.e. pulse, respiration, blood pressure) sufficient to administer emergency care to injured parties until advanced help arrives.
5. Knowledge of traffic control methods when construction activities interrupt normal flow of traffic.
6. Knowledge of the hazards of working around energized electrical equipment such as transformers, electrical cables, potheads and y-pots.
7. Knowledge of the procedures for exposing energized lines and cables, which are encased in concrete.

**10. PHYSICAL CAPABILITY** – Strength, endurance, flexibility, and/or coordination.

Level of Competency Required by Job:

Level 1: Sitting and/or standing for extended periods of time.

**Level 2: Awkward body position and/or precise motions required; and/or repeated lifting, carrying, and/or manipulation of objects; and/or walking for extended periods of time.**

Level 3: Continuous or extreme exertion of physical effort.

Examples of Behavioral Indicators:

- Sits and may occasionally stand or walk for entire workday (except breaks).
- Walks for the duration of the workday.
- Repetitive motion required to perform task.
- Repeatedly lifts and carries heavy objects.
- Exerts maximal effort for extended periods of time.

Performance Levels:

Satisfactory

Performs tasks requiring physical capability satisfactorily and without undue physical stress or harm.

Superior

Performs tasks requiring physical capability correctly with relative ease. May be asked to perform the most physically demanding tasks or be sought by co-workers for assistance.

**20. JOB KNOWLEDGE** – Knows information required to perform a specific job. Includes both widely available courses of study (for example, chemistry, human resources management, graphic arts) and City-specific information (parking regulation and ticketing practices; purchasing procedures; provisions of the City Charter).

Level of Competency Required by Job:

**Level 1: Knowledge is concrete, factual, and/or procedural and may be defined by the organization. Situations in which it is applied are quite consistent.**

Level 2: Knowledge is substantive and may be defined by an external trade, field, or profession. Situations in which it is applied vary and, as such, require breadth and depth of understanding.

Level 3: Knowledge is abstract, conceptual, and/or complex and may be supported by a well-defined academic discipline or authoritative sources (e.g., laws, ordinances, government guidelines/regulations/codes). Situations in which it is applied may vary greatly or be novel.

Examples of Behavioral Indicators:

- Performs work correctly/avoids technical (job content related) errors.
- Answers technical questions about work accurately.
- Asks few technical questions about the performance of routine work activities.
- Offers advice (“coaching”) to new employees regarding their work.
- Develops training programs for other employees.
- Sought out as a source of information by others.

Performance Levels:

Satisfactory

Sufficient job knowledge to perform work correctly independently. Answers technical questions about work correctly.

Superior

Expertise in technical job information sufficient to serve as a resource to others. May develop training manuals/ programs and/or give internal and/or external presentations related to work.

## Job Knowledge Areas

1. Knowledge of the characteristics and handling of materials used in form construction, such as plywood and lumber.
2. Knowledge of electric generators used in form construction.
3. Knowledge of the characteristics and use of materials applied in Portland cement, concrete and cement grout work, such as sand, aggregate, cement, and water ratios.
4. Knowledge of characteristics and techniques of handling and placing of materials used in asphalt work, such as fine rock and oil mixture.
5. Knowledge of materials used in conduit installation, such as P.V.C. adhesive, polyvinyl chloride conduit (2" to 6" diameter), plastic spacers, and polyethylene rope.
6. Knowledge of the methods and procedures involved in digging, shoring, and cribbing, including the installation of a trench shield.
7. Knowledge of standard hand signals used in construction work, such as stop signal, crane signals (raise boom, lower boom, swing left, swing right, shovel, lower cable, raise cable); backhoe signals (curl the bucket, open bucket, extend boom, stop); dump truck and concrete truck signals (raise the bed, lower the bed, forward, reverse, head-in, and back-in).
8. Knowledge of types of conduit (polyvinyl chloride, galvanized steel) and uses of conduit (installation of cable, ventilation, installation of telephone lines, Installation of television cable).
9. Knowledge of survey markings and symbols as related to locating underground facilities, such as gas lines, water lines, street lights, traffic signals, underground telephone lines, cable television lines, western union lines, oil lines, storm drains.



**24. MECHANICAL APTITUDE** – Accurately predicts the impact of forces on objects and assesses the behavior of other physical phenomena (e.g., volume, weight, velocity). Readily learns work involving the application of mechanical principles.

Level of Competency Required by Job:

**Level 1: Maintain a safe work environment by ensuring objects in it are stable, tools and equipment are properly used.**

Level 2: Know the physical properties of objects in the work environment and correctly anticipate the action of forces upon them; performs work accordingly (correctly and safely).

Level 3: In-depth understanding of mechanical and physical phenomena sufficient to design and/or oversee the construction of systems.

Examples of Behavioral Indicators:

- Recognizes the impact of an earthquake on objects in the work environment and re-arranges them as possible to avoid possible damage or destruction and potential to cause injury.
- Uses tools properly to accomplish work correctly and safely.
- Recognizes the effects of various actions on objects and performs only those actions that will accomplish intended result and will not cause property damage or injury.
- Systems designed and/or for which construction is overseen operate as intended upon completion.

Performance Levels:

Satisfactory

Recognizes the operation of mechanical/physical phenomena sufficient to readily learn and perform work of a mechanical nature.

Superior

Displays exceptional insight into the operation of mechanical phenomena, and makes correct inferences regarding it. Promptly and accurately troubleshoots problems.

## **Mechanical Aptitude Areas**

1. Knowledge of the operation and minor maintenance of power tools used in form construction, such as an electric drill, skill saw, radial saw, and gas chain saw.
2. Knowledge of hand tools used in form construction, such as a claw hammer, hand saw, keyhole saw, carpenter's square, levels, and single jack.
3. Knowledge of the techniques in the usage and maintenance of tools applied in Portland cement, concrete and cement grout work, such as a finishing trowel, edger, tamper, square point shovel, wood float, bull float, steel trowel (Fresno), joiner (scorer), and pointed trowel.
4. Knowledge of equipment used in Portland cement, concrete and cement grout work, such as a portable power mixer.
5. Knowledge of the techniques in the usage and maintenance of tools applied in asphalt work, such as asphalt lute and rake, round point shovel and square point shovel.
6. Knowledge of equipment used to excavate, break concrete, and perform asphalt work.
7. Knowledge of the uses of tools utilized in conduit installation, such as single jack, clay spade, 60-lb and 90-lb pavement breaker (pneumatic) and chipping gun (pneumatic).
8. Knowledge of rigging techniques including hoisting, slings, knots, ropes and cables.
9. Knowledge of the methods and procedures for installing concrete, cement and asphalt in electrical conduit work.
10. Knowledge of the procedures and equipment for testing explosive gases, such as maintenance hole opening pick and gas tech.

**33. INTERPERSONAL SKILLS** – Interacts effectively and courteously with others.

Level of Competency Required by Job:

**Level 1:** ***Interact with members of the workgroup, supervision, and/or the public in a cordial, service-oriented manner.***

Level 2: Interact across department lines and with appointed City officials, and/or members of the public, at times under adversarial circumstances, in a cordial, respectful manner.

Level 3: Interact with appointed and elected City officials, department heads, representatives of external organizations, and/or the media in a cordial, effective manner.

Examples of Behavioral Indicators:

- Works well with others toward mutual objectives.
- Does not arouse hostility in others.
- “Disagrees without being disagreeable.”
- Elicits acceptance/cooperation from others.
- Affords all individuals respect, regardless of their role or status.
- Effectively addresses concerns of politicians or others who may have their “own agenda.”

Performance Levels:

Satisfactory

Behaves in a courteous, respectful, cooperative manner toward co-workers, other City employees, and members of the public.

Superior

Facilitates positive interpersonal relations within/among workgroups and toward members of the public. Adept at finding similarities and grounds for cooperation/mutual benefit.

**35. TEAMWORK** – Interacts effectively with others to achieve mutual objectives; readily offers assistance to others to facilitate their goal accomplishment.

Level of Competency Required by Job:

**Level 1: Work effectively as a member of a work unit or project team. Readily offer assistance to others when they have too much work or have too little.**

Level 2: Work effectively as a team member in which different people have different roles/responsibilities and perspectives. Identify points for collaboration with co-workers; readily offer and request assistance.

Level 3: Work effectively as a part of an interdependent team (your work gets done only if the work of the whole team is done; evaluation of team performance is more relevant than individual performance).

Examples of Behavioral Indicators:

- Discusses work-related matters with co-workers.
- Offers and requests assistance readily.
- Offers and is receptive to suggestions.
- Identifies problems with workflow that will prevent team from accomplishing its goals.
- Provides constructive criticism and feedback to team members to improve overall functioning of team.
- Assigns credit to team for accomplishments.

Performance Levels:

Satisfactory

Cooperates with co-workers and fulfills responsibilities as a member of a project team. Maintains a focus on common objectives and offers and requests assistance readily.

Superior

Sees the team as a whole; acknowledges that performance of the team is what in reality is evaluated by others. If anyone fails, everyone on the team fails.