COMPETENCY MODEL FOR
CIVIL ENGINEERING DRAFTING TECHNICIAN (7232) - 2023

The following competencies have been identified as those that best separate superior from satisfactory job performance in the class of **CIVIL ENGINEERING DRAFTING TECHNICIAN.** (Numbers refers to the order of the competencies in the Competency Bank.)

1. Reading Comprehension
2. Mathematics
6. Attention to Detail
20. Job Knowledge
33. Interpersonal Skills
35. Teamwork
43. Follow Oral Directions
44. Follow Written Directions

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

Superior

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

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

Performance Levels:

Satisfactory   Superior

Identifies additional opportunities for the application of mathematics in work. Answers questions/trains others to assist them in their use of mathematics   Knows mathematical requirements of the job and performs them correctly. Verifies work to ensure accuracy.

6. ATTENTION TO DETAIL -   Extremely careful in addressing all aspects of each work assignment in order to produce "completed staff work" and/or avoid any negative outcomes.

Level of Competency Required by Job:

Level 1:   Ensure all aspects of work assignment are completed as directed.

Level 2:   ***Verify that each aspect of work assignment is properly completed; make logical inference regarding additional activities that may need to be performed to produce "completed staff work."***

Level 3:   Include evaluation of final work/work product in its accomplishment; make adjustments as possible to improve.

Examples of Behavioral Indicators:

- Carefully checks all aspects of work for completion and accuracy before submitting.
- Identifies errors (for example, typos, computations, measurements, application of laws/rules/policies) and corrects them prior to submitting.
- Cross-checks work against available resources.
- Sets up a means of checks and balances to ensure work accuracy.
- Considers changes in final work product to ensure usability by recipient.
- Completes all revisions upon request.

Performance Levels:

Satisfactory	Superior
Ensures that each task accomplished represents "completed staff work." No remaining details/ inconsistencies for others to address.	All aspects of each task completed are verified to be correct. Identifies any foreseeable consequences of work that may need to be addressed and does so.

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	Superior
Sufficient job knowledge to perform work correctly independently. Answers technical questions about work correctly.	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 equipment, materials, tools, and their application to civil engineering drafting, (e.g., scales, scanners, plotters, CADD workstation, storage media/devices) sufficient to prepare and complete drafting assignments for Civil related projects.

2.   Knowledge of the drafting disciplines (e.g. structural, civil, and architectural), nomenclature/terms (e.g. section, details, enlargement and elevations), and symbols (e.g. wood, steel, concrete, & flow-lines) used in different types of drawings sufficient to prepare and complete drawings in accordance with various standards, guidelines, and procedures.

3.   Knowledge of arithmetic, algebra, geometry, trigonometry, and curve data tables and their application to the computation of distances, angles, areas and traverses, sufficient to interpret, compute and draft civil plans.

4.   Knowledge of the types of information (e.g., tract information, permits) available from public and private industries for the updating of map information sufficient to interpret data to draft correct and accurate civil plans.

5.   Knowledge of gathering, reading, and interpreting various technical documents such as legal property descriptions (e.g., title information, easement, private streets and tracts), sufficient to prepare schematics, plans, and specifications relating to the construction, alteration, and repair of various utilities and public works improvements (e.g., buildings, bridges, roadways, sewers and waterways).

6. Knowledge of drawing design plans, cross-sections and profiles of streets, storm drains, sewers, sewage treatment plants, bridges, buildings, runways, airport lighting systems, street lighting systems, water distribution systems, power distribution systems, marine structures, retaining walls and earthwork, using computer graphics software (e.g., CADD) sufficient to plan preparation.

7. Knowledge of charts, graphs and tables of streets, storm drains, sewers, sewage treatment plants, bridges, buildings, runways, airport lighting systems, street lighting systems, water distribution systems, power distribution systems, marine structures, retaining walls and earthwork for the production of graphs and tracking the progress of work projects sufficient to interpret project plans.

8. Knowledge of safety policies, precautions and procedures sufficient to ensure safety working conditions.

9. Knowledge of a variety of computer graphic and office application software sufficient to generate civil drawings for various engineering assignments. (e.g., CADD, AutoCAD, AutoCad Civil 3d, Revit, Microstation)

10. Knowledge of the characteristics of various reproduction processes and features such as reduction, enlargement, reproduction quality, and dimensional stability sufficient to produce accurate and correct reproductions of plans and drawings.

11. Knowledge of potential problem areas in construction as relating to details that appear in diagrams, schematics, and plans, sufficient to notify engineers, avoid construction errors, and correct drawings.

12. Knowledge of national and local standards such as American National Standard Institute and CAL/OSHA sufficient to interpret and apply standards to engineering assignments.

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

<u>Level of Competency Required by Job</u>:

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.

<u>Level 2:</u> ***<u>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.</u>***

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).

<u>Examples of Behavioral Indicators</u>:

- 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
- Assigns credit to team for accomplishments

<u>Performance Levels</u>:

<u>Satisfactory</u>	<u>Superior</u>
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.	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.

43. FOLLOW ORAL DIRECTIONS-   Performs work accurately as directed orally

Level of Competency Required by Job:

Level 1:   Receive specific, complete oral directions daily or by individual task assignment throughout the day.

Level 2:   Receive general instructions orally that span across days or for entire assignments.

Level 3:   Receive general instructions/assignments orally regarding long-term objectives/responsibilities.

Examples of Behavioral Indicators:

- Does work assigned orally properly and on time.
- Asks pertinent questions for clarification of assignments.
- Performs work correctly when instructions were given orally.
- Explains assignments to others who received the same instructions.
- Performs work in accordance with general outline provided orally.
- Correctly infers details of assignments given only in general terms.

Performance Levels:

Satisfactory   Superior

Properly performs work when concrete, specific instructions are given orally. Asks pertinent questions when parts of the instructions are unclear or omitted.

Properly performs work assigned orally. Answers questions or explains work to others. Correctly infers details or portions of instructions that were omitted.

43. FOLLOW WRITTEN DIRECTIONS - Performs work accurately as directed in writing.

Level of Competency Required by Job:

Level 1: Perform tasks assigned in writing.

Level 2: ***Perform work after reading instructional manual.***

Level 3: Perform work after completion of training modules or programs presented in writing.

Examples of Behavioral Indicators:

- Correctly completes work assigned in writing.
- Answers questions and/or explains work to others who received the same instructions
- Learns and applies information presented in writing (instruction manual; training program).
- Correctly infers details of work to be performed that were unclear or omitted as presented in writing.

Performance Levels:

Satisfactory	Superior
Correctly performs work assigned or for which training was provided in writing.	Understands instructions and training materials presented in writing to the extent that is able to answer questions or explain to others. Correctly infers unclear or omitted details as presented in writing.