Drafting Technologists and Technicians

NOC 2253

Introduction

Drafting technologists and technicians prepare engineering designs, drawings and related technical information, in multidisciplinary engineering teams or in support of engineers, architects or industrial designers, or they may work independently. They are employed by consulting and construction companies, utility, resource and manufacturing companies, all levels of government and by a wide range of other establishments.

The most important Essential Skills for Drafting Technologists and Technicians are:

- Document Use
- Decision Making

Document Sections

- Reading Text
- Document Use
- Writing
- Numeracy
- Oral Communication
- Thinking Skills
    - Problem Solving
    - Decision Making
    - Critical Thinking
    - Job Task Planning and Organizing
    - Significant Use of Memory
    - Finding Information
- Working with Others
- Computer Use
- Continuous Learning
- Notes

A. Reading Text

Reading Text

Tasks	Complexity Level	Examples
Typical	1 to 3	Drafting Technologists and Technicians • read text descriptions, special requirements and clarifications on completed forms. For example, structural steel detailers review responses on 'Request for Information' forms for answers to questions they posed to designers and owners. (1) • read memos, information sheets and letters to obtain information and direction. For example, they review memos to obtain updates on project activities. (2) • skim trade publications and company newsletters to keep up-to-date on trends in equipment, drafting tools, materials and architecture. (2) • read computer, materials, and company policy and procedures manuals. For example, they may read instructions in manuals to learn how to use features of a computer program. (3)
Most Complex	3 to 4	• scan specification books prepared by project designers for details to include or consider when preparing detail drawings. The specification books are lengthy and include a significant amount of technical details. (3) • scan and interpret relevant regulations such as building, plumbing and electrical codes to ensure projects meet requirements. For example, architectural drafting technologists and technicians interpret federal and provincial fire safety regulations to ensure the construction will be safe and conform to regulations. (3) • refer to regulations and explanations in industry-specific reference manuals. For example, structural steel detailers refer to the Handbook of Steel Construction for explanations of formulas. (3) • may read notes, addenda and supplemental site instructions submitted by team members to evaluate clarity, accuracy and completeness. They ensure that information about building and manufacturing processes is clear and unambiguous. (4)

Reading Summary

The symbol √ is explained in the Use of Symbols section.

	Purpose for Reading			
Type of Text	**To scan for specific information/To locate information**	**To skim for overall meaning, to get the 'gist'**	**To read the full text to understand or to learn**	**To read the full text to critique or to evaluate**
Forms	√	√	√	
Labels				
Notes, Letters, Memos	√	√	√	√
Manuals, Specifications, Regulations	√	√	√	
Reports, Books, Journals	√	√	√	

B. Document Use

Document Use

Tasks	Complexity Level	Examples
Typical	1 to 4	Drafting Technologists and Technicians • identify icons to select the correct software tools or activate drafting features. (1) , (daily) • may interpret graphed information. For instance, they may interpret graphs displaying efficiency data for materials under different conditions or showing industry trends for construction materials. (2) • enter personal scheduling details, tracking information and materials' details into tables and onto forms. For example, they enter current and wire gauge details into electrical reference tables. (2) , (daily) • obtain project details and materials information from tables. For example, they locate bearing loads for various sizes of beams in reference tables. (2) , (daily) • refer to completed forms to obtain information about projects. For example, they may scan forms for dates, locations or land survey findings. (2)
Most Complex	3 to 4	• make changes, corrections and improvements to scale drawings and project schematics. For instance, in cases where the detailing work is completed using three-dimensional modeling programs, the two-dimensional output drawings frequently need editing to ensure production or manufacturing personnel have the information required. (3) , (daily) • review sketches or preliminary drawings, including assembly drawings, land surveys and erection drawings created by engineers, architects or designers illustrating project features. Often, they synthesize information about location, dimensions, elevation, power distribution and materials from multiple drawings. These pieces of information form the bases of the drawings created. (4) , (daily) • examine the continuity of designs through multiple drawings and views to confirm the alignment and placement of drawing elements. They must attend to hundreds of details from different documents to confirm the continuity of the drawings. (4)

Examples

- make rough sketches to work out, develop and explain ideas. (daily)
- create tables to summarize project information. For example, they create tables of materials needed, showing quantities and prices.
- may create assembly drawings detailing fit between components. For instance, a drafting technician may detail the fit between door components and door frames for door manufacturing personnel. (daily)
- may create schematic drawings of electrical, heating and ventilation systems detailing components, connections and process flows. (daily)
- may create single or multiple two-dimensional scale drawings using computer-assisted design software to illustrate all aspects of projects, drawing lines, circles and other shapes using lines of precise length and weight. They use reference points to co-ordinate design placement across multiple drawing sets They illustrate the precise dimensions, relationships and materials needed to realize complex construction and product development projects. The drawings may show surface views or cross sections. (daily)
- may create three-dimensional representations and scale drawings using computer-assisted design software or specially designed software. The virtual models are detailed and complex and illustrate the dimensions, relationships and materials using colours, textures and lighting. The software program uses the information from the three-dimensional models to output two-dimensional plans. (daily)

Document Use Summary

- Read signs, labels or lists.
- Complete forms by marking check boxes, recording numerical information or entering words, phrases, sentences or text of a paragraph or more. The list of specific tasks varies depending on what was reported.
- Read completed forms containing check boxes, numerical entries, phrases, addresses, sentences or text of a paragraph or more. The list of specific tasks varies depending on what was reported.
- Read tables, schedules or other table-like text (e.g., read work shift schedules).
- Create tables, schedules or other table-like text.
- Enter information on tables, schedules or other table-like text.
- Obtain specific information from graphs or charts.
- Interpret information on graphs or charts.
- Recognize common angles such as 15, 30, 45 and 90 degrees.
- Draw, sketch or form common shapes such as circles, triangles, spheres, rectangles, squares, etc.
- Interpret scale drawings (e.g. blueprints or maps).
- Take measurements from scale drawings.
- Draw to scale.
- Read assembly drawings (e.g. those found in service and parts manuals).
- Create assembly drawings.
- Read schematic drawings (e.g. electrical schematics).
- Create schematic drawings.
- Make sketches.
- Obtain information from sketches, pictures or icons (e.g., computer toolbars).

C. Writing

Writing

Tasks	Complexity Level	Examples
Typical	1 to 2	Drafting Technologists and Technicians • write short notes and annotations on drawings for builders and manufacturers to supplement visual information. For example, they write notes on drawings to indicate that a section should not be painted. (1) , (daily) • write short notes on drawings and forms for co-workers. For example, they write notes on drawings to indicate reviews, comments, opinions or requests for additional information from project designers. (2) , (daily) • write e-mail to co-workers and clients exchanging information. For example, they may write a short e-mail describing project status. (2) , (daily)
Most Complex	2 to 3	• may write letters, addenda and lengthy e-mail to clients or contractors detailing project needs and changes, providing or requesting information and inviting bids. Since the clients or contractors may not have the same technical knowledge, they must choose their words carefully. (3) • may write lengthy and complex assembly and building procedure directions to supplement drawings. Builders and manufacturers use these documents during the production stage; risk to the project is great if the directions are not clear. (3)

Writing Summary

The symbol √ is explained in the Use of Symbols section.

	Purpose for Writing						
Length	**To organize/ to remember**	**To keep a record/to document**	**To inform/ to request information**	**To persuade/ to justify a request**	**To present an analysis or comparison**	**To present an evaluation or critique**	**To entertain**
Text requiring less than one paragraph of new text	√	√	√				
Text rarely requiring more than one paragraph	√	√	√				
Longer text	√	√	√	√			

D. Numeracy

The symbol √ is explained in the Use of Symbols section.

Numeracy

Tasks	Complexity Level	Examples
√ Money Math	1	Drafting Technologists and Technicians • purchase drafting supplies using cash or credit cards. (Money Math), (1)
√ Scheduling, Budgeting & Accounting Math	2 to 3	• may determine the cost of materials required for drafting projects. (Scheduling, Budgeting & Accounting Math), (2) • may create daily, weekly, monthly and quarterly work schedules for themselves and team members. They take into account project deadlines, the drafting components required, the amount of time the components will take to complete, the number of team members and the amount of time that can be devoted to the project given other work demands. (Scheduling, Budgeting & Accounting Math), (3)
√ Measurement and Calculation Math	1 to 4	• use on-screen tools to measure distances and angles. (Measurement and Calculation Math), (1) , (daily)
√ Data Analysis Math	1 to 2	• convert distances on scaled drawings to actual dimensions using the drawing ratio. (Measurement and Calculation Math), (2) , (daily) • make calculations to decide whether projects meet the regulations while preparing the detail drawings. For example, an architectural draftsperson may calculate the number of exits a room requires to comply with the National Fire Code. (Measurement and Calculation Math), (2) , (daily)
√ Numerical Estimation	2	• calculate areas and volumes of complex industrial products and construction projects to determine the amounts of materials required. (Measurement and Calculation Math), (3) • use geometry, trigonometry and algebraic formulas when detailing the relationships between shapes in drawings. For example, structural steel detailers may need to determine the angles of bevels required to fit metal pieces together. (Measurement and Calculation Math), (4) , (daily)

		• may carry out structural or system analyses using multiple, complex formulas. For example, they may analyze electrical and mechanical systems by calculating current and fluid flows and resistances through wiring and piping or they may analyze shear forces and bending moments to determine the effect of loads on structures. (Measurement and Calculation Math), (4) , (daily) • compare the dimensions in drawings to specifications to ensure they meet the requirements, and then compare the dimensions in one drawing to others to check their consistency. (Data Analysis Math), (1) • generate statistics that summarize key features of construction projects. For example, an architectural drafting technologist working on an apartment design may calculate square metres per exit, degrees of bend per metre of ductwork, percentage of walls that are glazed and the ratio of parking spaces to residential units. (Data Analysis Math), (2) • may estimate costs of projects by considering the average cost of similar projects in the past and approximate increases in material costs. (Numerical Estimation), (2) • estimate the time needed for drafting projects. They use experience with similar projects to guide the development of schedules for new projects. (Numerical Estimation), (2) , (daily)

Math Skills Summary

a. Mathematical Foundations Used

The symbol √ is explained in the Use of Symbols section.

Mathematical Foundations Used

Code	Tasks	Examples
	Number Concepts	
√	Whole Numbers	Read and write, count, round off, add or subtract, multiply or divide whole numbers. For example, reading drawing labels displaying the drawing number; counting the number of holes in one drawing and comparing it to the number of pegs in the mating drawing.
√	Integers	Read and write, add or subtract, multiply or divide integers. For example, reading and writing elevations above and below grade or uphill and downhill slopes; calculating maximum and minimum dimensions using specified tolerances.
√	Rational Numbers - Fractions	Read and write, add or subtract fractions, multiply or divide by a fraction, multiply or divide fractions. For example, writing fractions of hours on timesheets; calculating Imperial measurements expressed as fractions.
√	Rational Numbers - Decimals	Read and write, round off, add or subtract decimals, multiply or divide by a decimal, multiply or divide decimals. For example, reading and writing measurements in metres and millimetres; calculating maximum and minimum dimensions using specified tolerances; carrying out structural and system analyses.
√	Rational Numbers - Percent	Read and write percents, calculate the percent one number is of another, calculate a percent of a number. For example, reading and writing slopes expressed as percentages; calculating the percentage distribution of loads among building elements; using slopes to calculate changes in elevation.
√	Equivalent Rational Numbers	Convert between fractions and decimals or percentages. Convert between decimals and percentages. For example, converting electrical load losses from ratios to percentages; converting dimensions expressed in fractions of a foot to decimals.
√	Other Real Numbers	Use powers and roots, scientific notation, significant digits. For example, reading and writing areas and volumes; using powers and roots in algebraic formulas.

Code	Tasks	Examples
		Patterns and Relations
√	Equations and Formulae	Solve problems by constructing and solving equations with one unknown. Use formulae by inserting quantities for variables and solving. For example, using formulae to calculate areas, volumes and loads; constructing formulas to maintain relationships between elements in drawings.
√	Use of Rate, Ratio and Proportion	Use a rate showing comparison between two quantities with different units. Use a ratio showing comparison between two quantities with the same units. For example, use printers' pages per minute rates to estimate printing times; reading and writing scaling ratios for drawings; using scale to determine actual dimensions for distances on drawings and vice versa. Using scale drawings.
		Shape and Spatial Sense
√	Measurement Conversions	Perform measurement conversions. For example, converting drawings made in other jurisdictions between feet and metres.
√	Areas, Perimeters, Volumes	Calculate areas. Calculate perimeters. Calculate volumes. For example, calculating areas of project sections; calculating perimeters of building lots; calculating volumes of waste water that flow from buildings.
√	Geometry	Use geometry. For example, constructing or drawing plane figures such as circles, rectangles and hexagons; calculating line angles and distances.
√	Trigonometry	Use trigonometry. For example, using trigonometric ratios to express relationships between lines in drawings; calculating component shear forces for oblique building elements. Recognizing common angles. Drawing, sketching and forming common forms and figures.

Code	Tasks	Examples
		Statistics and Probability
√	Summary Calculations	Calculate averages. Calculate rates other than percentages. Calculate proportions or ratios. For example, calculating the average number of pedestrians that will use sidewalks to determine sidewalk width; calculating outflow rates for given pipe diameters and slopes; calculating the ratios of walls to unprotected openings.
√	Statistics and Probability	Use descriptive statistics (e.g. collecting, classifying, analyzing and interpreting data). Use inferential statistics (e.g. using mathematical theories of probability, making conclusions about a population or about how likely it is that some event will happen). For example, using descriptive statistics to summarize key features of construction projects, such as square metres per exit; using inferential statistics to predict the amount of time a drafting project will take using past projects as guides. Using tables, schedules or other table-like text. Using graphical presentations.

b. How Calculations are Performed

- In their heads.
- Using a pen and paper.
- Using a calculator.
- Using a computer.

c. Measurement Instruments Used

- Time. For example, using watches and clocks.
- Distance or dimension. For example, using rulers, measuring tapes and CAD tools.
- Angles. For example, using protractors and CAD tools.
- Use the SI (metric) measurement system.
- Using the imperial measurement system.

E. Oral Communication

Oral Communication

Tasks	Complexity Level	Examples
Typical	1 to 3	Drafting Technologists and Technicians • exchange operational information with support staff. For instance, they co-ordinate the delivery of drawings, order printing and request supplies. (1) , (daily) • share opinions with co-workers, colleagues and peers about successful projects, problematic projects and drafting techniques. (2) , (daily) • may assign tasks to team members when leading teams. They provide instructions to junior members and assist them as they edit and complete drawings. (2) • talk to their supervisors to obtain work assignments and project requirements, deliver project status information and defend design and detailing choices. (2) • may make presentations to co-workers. For example, designer-detailers in manufacturing may present updates about product development to their co-workers during regular staff meetings. (2)
Most Complex	1 to 3	• participate in or lead group discussions with project teams to co-ordinate work, share project status information and ensure project design and detailing components are accurately referenced to one another. Team members may include designers and other drafting professionals. (3) • meet with architects, engineers, designers, other drafting professionals and various consultants to obtain additional information, clarification and feedback about drawings and to discuss projects' challenges. For example, architectural drafting technologists and technicians meet with structural, mechanical and electrical detailers to discuss joint projects. They might make recommendations for specific changes or persuade specialists to change their drawings to fit larger and more comprehensive plans. (3)

Modes of Communication Used

- In person. For example, interact with co-workers during team meetings.
- Using a telephone. For example, call suppliers for information.

Environmental Factors Affecting Communication

Significant environmental factors affecting oral communication were not reported by job incumbents.

Oral Communication Summary

The symbol √ is explained in the Use of Symbols section.

	Purpose for Oral Communication (Part I)					
Type	**To greet**	**To take messages**	**To provide /receive information, explanation, direction**	**To seek, obtain information**	**To co-ordinate work with that of others**	**To reassure, comfort**
Listening (little or no interaction)						
Speaking (little or no interaction)						
Interact with co-workers			√	√	√	
Interact with those you supervise or direct			√	√	√	
Interact with supervisor/ manager			√	√	√	
Interact with peers and colleagues from other organization			√	√	√	
Interact with customers/ clients/ public			√	√	√	
Interact with suppliers, servicers			√	√	√	
Participate in group discussion			√	√	√	
Present information to a small group			√			
Present information to a large group						

The symbol √ is explained in the Use of Symbols section.

	Purpose for Oral Communication (Part II)					
Type	**To discuss (exchange information, opinions)**	**To persuade**	**To facilitate, animate**	**To instruct, instill understanding, knowledge**	**To negotiate, resolve conflict**	**To entertain**
Listening (little or no interaction)						
Speaking (little or no interaction)						
Interact with co-workers	√	√		√	√	
Interact with those you supervise or direct	√			√		
Interact with supervisor/ manager	√	√		√	√	
Interact with peers and colleagues from other organization	√			√	√	
Interact with customers/ clients/ public	√	√		√	√	
Interact with suppliers, servicers	√			√	√	
Participate in group discussion	√			√	√	
Present information to a small group				√		
Present information to a large group						

F. Thinking Skills

1. Problem Solving

Problem Solving

Tasks	Complexity Level	Examples
Typical	2 to 3	Drafting Technologists and Technicians • discover that key pieces of information required to complete detail drawings are missing. They identify what information is missing, their sources, and determine how best to obtain them. For instance, they may find that information about mating parts is missing and they have to request the details from designers. (2) • experience computer, software and peripheral malfunctions which prevent them from carrying out drawing tasks. They try to resolve the malfunctions themselves using information from technical and user manuals but if that fails, they have to contact technical support. Correcting computer malfunctions efficiently enhances their ability to complete work on time. (2)
Most Complex	3	• find that clients are not satisfied with drawings or that construction or manufacturing staff require additional information before proceeding. They obtain and apply feedback and meet with the clients or designers. They must incorporate the criticisms to ensure their drawings meet the requests. (2) • discover that drafting personnel on their teams have not completed their drawings. They identify the people who have not completed their work, obtain the unfinished work immediately and complete the drawing sets themselves. They may ask their supervisors for support. (2) • encounter design problems or contradictions between drawings and specifications. The discrepancies may result in components not fitting precisely or not meeting standards or regulations. They identify the faulty elements, determine whether they can make the needed design adjustments and either make them or relay information about the problems to the designers for resolution or clarification. (3)

2. Decision Making

Decision Making

Tasks	Complexity Level	Examples
Typical	2 to 3	Drafting Technologists and Technicians • decide whether design adjustments are within their responsibilities or whether they need to obtain input from their supervisors or the designers. (2) , (daily) • decide the order in which to produce drawings by considering who requires them, which are foundational and at which stage they are normally required. (2) • may decide which drafting professionals to assign to particular projects or tasks. They consider team members' abilities, skills and workloads. (2) • decide which standards or regulations to apply in different situations. (2) , (daily) • decide how much detail to include in drawings. They consider the types of drawings, their users and the information requirements for differing types of construction and manufacturing. (2) , (daily) • decide to present additional design details in tables attached to drawing sets, considering how construction or manufacturing employees will use them and what format will be easy for them to use. (3) , (daily)
Most Complex	2 to 3	

3. Critical Thinking

Critical Thinking

Tasks	Complexity Level	Examples
Typical	2 to 3	Drafting Technologists and Technicians • evaluate the suitability of design elements. For example, they evaluate whether door samples suit the vision of the project and meet the appropriate regulations or whether the width of a sidewalk is appropriate given the foot traffic expected. (2) , (daily) • assess the adequacy of preliminary drawings, sketches or data before proceeding with the drafting. They consider all elements, whether they are clear on the project vision and if any key pieces of information are missing. Judging adequacy accurately ensures drawings reflect the designs. (3) • evaluate the accuracy, completeness and continuity of their drawings or those created by other drafting professionals on the projects. They consider all aspects of the drawings, such as if the elements work together, the match between fit and function, whether key points are adequately referenced and if the builders or manufacturers have sufficient information to proceed. (3)
Most Complex	2 to 3	

4. Job Task Planning and Organizing

Job Task Planning and Organizing

Complexity Level	Description
2	Own job planning and organizing • Drafting technologists and technicians' daily routines do not change significantly as they tackle different projects. In workplaces where they are assigned multiple projects at a given time, they may need to determine work priorities among them. In all cases, they must meet project deadlines. In larger offices, they co-ordinate job tasks with other drafting personnel, both within and outside their organizations. They reorganize their schedules to accommodate changing priorities of different projects. Planning and organizing for others • Drafting technologists and technicians may plan and schedule the work of other drafting personnel on their teams. They assign drawing tasks, set timelines and monitor progress. In some companies, they may contribute to organizational and strategic planning.

5. Significant Use of Memory

Examples

- remember project elements applied in the past that may assist with current projects. For example, they may remember the availability of materials, sizes of piping used, or detail drawings that can be modified rather than created anew.
- remember commonly used commands, settings and tools in the software they use.
- remember mathematical formulas used frequently.
- remember the dimensions of commonly used materials.
- remember elements of standards or regulations pertaining to the designs they are drawing.

6. Finding Information

Finding Information

Tasks	Complexity Level	Examples
Typical	2 to 3	Drafting Technologists and Technicians • find information about products and pricing by looking at product samples and information in the company library, conducting web searches and contacting suppliers. (2)
More Complex	2 to 3	• find information about new projects by looking at sketches, scanning data sheets, reviewing preliminary drawings and talking to engineers, architects and industrial designers. (3)

G. Working with Others

Working with Others

Complexity Level	Description
3	Drafting technologists and technicians usually work independently but coordinate their work with larger design teams. In some cases, they may manage or lead teams of draftspersons on large and complex projects. They are responsible for ensuring their work meets the designers', engineers' or architects' vision. When leading teams of draftspersons they are also responsible for communicating project expectations and managing the work of their team.

Participation in Supervisory or Leadership Activities

- Participate in formal discussions about work processes or product improvement.
- Have opportunities to make suggestions on improving work processes.
- Monitor the work performance of others.
- Inform other workers or demonstrate to them how tasks are performed.
- Orient new employees.
- Make hiring recommendations.
- Select contractors and suppliers.
- Assign routine tasks to other workers.
- Assign new or unusual tasks to other workers.
- Identify training that is required by, or would be useful for, other workers.

H. Computer Use

Computer Use

Tasks	Complexity Level	Examples
Typical	2 to 3	Drafting Technologists and Technicians • use database software. For example, to obtain the drawings from past projects. (2) • use communications software. For example, they use communications software to exchange e-mail and attachments such as compressed drawing files. (2) , (daily) • may use other computer and software applications. For example, they use other computer and software applications such as personal digital assistants to communicate while off-site and use digital cameras to exchange images. (2) • use the Internet. For example, they use it to search and navigate through competitor, supplier and contractor websites or to upload and download drawings using file transfer protocol. They may conduct keyword searches to learn about new features of the computer-assisted design programs. (2) • use word processing. For example to prepare letters, write information requests, detailed directions and site instructions. They may use the desktop publishing features of the software to lay out text and digital images. (3)
Most Complex	3 to 4	• use spreadsheets. For example, to create, edit and enter information to calculate, track time spent on projects, organize supplemental information or track data or drawings. For instance, they enter time spent on a project into a pre-existing timesheet spreadsheet. (3) • use hardware and system skills. For example, they have a significant responsibility for maintaining their own workstations. They connect new computers and peripherals, move equipment, load software and set user options. They collect information about software bugs and help support technicians diagnose and correct errors. (3) • use computer-assisted design, manufacturing or machining. For example, they use design software to create, view and edit two-dimensional drawings and three-dimensional representations; take precise measurements, draw lines, circles and other shapes precisely; note key reference points, enter text into the word processing-like feature and search for previous projects using database-like features. (4) , (daily)

Computer Use Summary

- Use word processing.
- Use a database.
- Use a spreadsheet.
- Use computer-assisted design, manufacture or machining.
- Use communications software.
- Use Internet
- Hardware and system
- Other

I. Continuous Learning

Continuous Learning

Complexity Level	Description
2	Drafting technologists and technicians must stay up-to-date with technological advances in the industry as most drafting work requires a thorough and efficient use of computer-assisted design programs. They learn about technological advances from daily work activities, training offered by software companies, trade associations and their employers, and through personal reading and study using trade publications, company newsletters, manuals, books, regulations and websites.

How Learning Occurs

Learning may be acquired:

- As part of regular work activity.
- From co-workers.
- Through training offered in the workplace.
- Through reading or other forms of self-study
    - at work.
    - on worker's own time.
    - using materials available through work.
    - using materials obtained through a professional association or union.
    - using materials obtained on worker's own initiative.
- Through off-site training
    - during working hours at no cost to the worker.
    - partially subsidized.

J. Other Information

In addition to collecting information for this Essential Skills Profile, our interviews with job incumbents also asked about the following topics.

Physical Aspects
Drafting technologists and technicians spend most of their time sitting at workstations. They move around offices to interact with co-workers or to collect drawings. They need hand-eye and upper limb co-ordinations to use computer-assisted design programs efficiently. They are often required to lift drawing sets weighing forty to seventy pounds. They need keen eyesight to discern subtle differences in drawing elements such as pen width.

Attitudes
Drafting technologists and technicians should be patient and persistent when dealing with challenging projects. They should be calm, detail-oriented, reliable and dedicated. They must be able to meet deadlines, work with others, accept criticism and maintain focus for extended periods of time.

Future Trends Affecting Essential Skills
Drafting technologists and technicians will need continuous learning skills to keep up with constant technological change. They will need extensive computer skills to create digital drawings and work collaboratively on design projects involving dispersed teams.

K. Notes

This profile is based on interviews with job incumbents across Canada and validated through consultation with industry experts across the country.
For information on research, definitions, and scaling processes of Essential Skills Profiles, please consult the Readers' Guide to Essential Skills Profiles (http://www.hrsdc.gc.ca/eng/jobs/les/profiles/readersguide.shtml).