



Treasury Board of Canada  
Secretariat

Secrétariat du Conseil du Trésor  
du Canada

**CLASSIFICATION STANDARD**

**DRAFTING AND ILLUSTRATION**

**TECHNICAL CATEGORY**

CONTENTS

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## INTRODUCTION

This standard describes the point-rating plan to be used to evaluate jobs allocated to the Drafting and Illustration Group. It consists of an introduction, definitions of the Technical Category and the occupational group, point-rating scales and bench-mark position descriptions.

Point rating is an analytical, quantitative method of determining the relative values of jobs. It is particularly suited to heterogeneous occupational groups in which jobs consist of varied combinations of tasks. Essentially, point-rating plans define characteristics or factors common to the jobs being evaluated. They define degrees of each factor and allocate point values to each degree. The total value determined for each job is the sum of the point values assigned by the raters.

All methods of job evaluation require the exercise of judgment and the orderly collection and analysis of information in order that consistent judgments can be made. The point-rating method facilitates rational discussion and resolution of differences in determining the relative values of jobs.

### Factors

The combined factors do not describe all aspects of jobs. They deal only with those characteristics that can be defined and distinguished and that are useful in determining the relative values of jobs.

Six factors are used in this plan. Three factors are two-dimensional and are defined in terms of two related elements.

### Point Values

The maximum point value assigned to each factor reflects its relative importance. Similarly, point values have been assigned to the degrees of the factors.

Point values of the degrees of each factor increase arithmetically. The minimum point value assigned to four of the factors is one-fifth of the maximum, and for the remaining two it is one-tenth.

### Rating Plan

In the rating plan the factors, elements, weights and point values shown on the next page are used.

Drafting and Illustration

<u>Factor</u>	<u>Element</u>	<u>Percentage of Total Points</u>	<u>Point Minimum</u>	<u>Values Maximum</u>
Knowledge and Experience	Knowledge Experience	35	70	350
Technical Responsibility		20	40	200
Responsibility for Accuracy and Quality		10	20	100
Responsibility for Contacts	Purpose and Nature of Contacts Persons Contacted	5	5	50
Conditions of Work		15	30	150
Supervision	Nature of Supervisory Responsibility Number of Employees Supervised	15	15	150
		100		

Bench-mark Positions

Bench-mark position descriptions are used to exemplify degrees of each factor or element. Each description consists of a brief summary, a list of the principal duties with the percentage of time devoted to each, and a specification describing each of the point-rating factors and elements as it appears in the job. The benchmark position have been evaluated, and the degree and point values assigned to each factor shown in the specifications.

The rating scales identify the bench-mark position descriptions that exemplify each degree. These descriptions are an integral part of the point-rating plan and are used to ensure consistency in application of the rating scales.

Use of the Standard

There are six steps in the application of this classification standard.

1. Allocation of the position to the category and the group is confirmed by reference to the definitions and the descriptions of inclusions and exclusions.

2. The position description is studied to ensure understanding of the position as a whole and of each factor. The relation of the position being rated to positions above and below it in the organization is also studied.
3. Tentative degrees of each factor in the position being rated are determined by comparison with degree definitions in the rating scales. Uniform application of degree definitions requires frequent reference to the descriptions of factors and the notes to raters.
4. The description of the factor in each of the bench-mark positions exemplifying the degree tentatively established is compared with the description of the factor in the position being rated. Comparisons are also made with descriptions of the factor in bench-mark positions for the degrees above and below the one tentatively established.
5. The point values for all factors are added to determine the tentative total point rating.
6. The position being rated is compared as a whole with positions to which similar total point values have been assigned, as a check on the validity of the total rating.

#### Determination of Levels

The ultimate objective of job evaluation is the determination of the relative values of jobs in each occupational group. Jobs that fall within a designated range of point values will be regarded as of equal difficulty and will be allocated to the same level.

#### Minimum Qualifications

Each of the group definitions in the category includes a statement of "Minimum Qualifications". These requirements are to apply without modification to all "new entrants to the labor force, that is, students who have just completed their fulltime studies and young people commencing full-time employment. With respect to,~ experienced workers who may not possess the formal education prescribed in the definitions, the statements are intended to indicate the norms against which, the qualifications of the individual may be assessed in order to judge whether or. not the combination of his education, training and experience provides, for the particular job being filled, qualifications equal to or higher than those prescribed in the "Minimum Qualifications" of the relevant occupational group.

### CATEGORY DEFINITION

Occupational categories were repealed by the Public Service Reform Act (PSRA), effective April 1, 1993. Therefore, the occupational category definitions have been deleted from the classification standards.

GROUP DEFINITION

For occupational group allocation, it is recommended that you use [the Occupational Group Definition Maps](#), which provide the 1999 group definition and their corresponding inclusion and exclusion statements. The maps explicitly link the relevant parts of the overall 1999 occupational group definition to each classification standard.

Minimum Qualifications

Completion of secondary school education.

RATING SCALES

DRAFTING AND ILLUSTRATION GROUP

FACTOR WEIGHTS

KNOWLEDGE AND EXPERIENCE	350
TECHNICAL RESPONSIBILITY	200
RESPONSIBILITY FOR ACCURACY AND QUALITY	100
RESPONSIBILITY FOR CONTACTS	50
CONDITIONS OF WORK	150
SUPERVISION	150
	1,000



KNOWLEDGE AND EXPERIENCE

This factor is used to measure the difficulty of the work in terms of the knowledge and experience required to perform the duties of the position.

Definitions

"Knowledge" refers to the understanding of drafting and illustration techniques and practices, associated work areas and administrative practices.

"Experience" refers to the relative length of time required to develop skill in using the various instruments and equipment necessary for the application of drafting and illustration techniques and practices.

"Associated work areas", as used in this factor, refers to those occupations and trades to which drafting and illustration services are in support, or with which they are allied, such as hydrographic, geological and typographical surveying, engineering, architecture, medical and biological sciences, photography, editing, printing and duplicating.

Notes to Raters

The degrees of the Experience element assigned to the bench-mark positions have been established by the comparative ranking of key positions in the occupational group. The degree tentatively selected is to be confirmed by comparing the duties of the position being rated with the duties and specifications of the bench-mark positions.

In evaluating positions all the characteristics of each degree of the Knowledge element are to be considered. Generally, the criterion for the assignment of degrees is that the position must include most of the components of the degree that is assigned.

The degree tentatively selected is to be confirmed by comparing the duties of the position being rated with the duties and specifications of the bench-mark positions that exemplify that degree.

RATING SCALE - KNOWLEDGE AND EXPERIENCE

Experience Required and Degree	Knowledge and Degree Required				
	A	B	C	D	
	70	Page 107	Page 144	182	Page
1	Junior Illustrator	48			
	94	131	168	206	
2	Graphics Illustrator	44			
	118	155	192	230	
3	Junior Carto- graphic Drafts.	46			
	142	179	216	254	
4		Arch. Drafts. 23 Cart-Comp. 28 Cart. Comp.-.Scr. 30 Cart. Drafts. 32 _Elect. Drafts. 39 Maint. Drafts. 51 Technical I?.'us.tratar 68	Scientific Illustrator 61		
	166	203	240	278	
5		Checker, Marine Charts 34 Mechanical Draftsman 54 Photogrammetrist 56 Photo. Comp. 59	Team Leader, Mechanical and Electrical Draft- ing 66		
	190	227	264	302	
6					
	214	251	288	326	
7			Supervising Draftsman, Geological Mapping 68	Graphic Art Director 42	
	238	257	312	350	
8				Chief, Chart Compilation 37	

TECHNICAL RESPONSIBILITY

This factor is used to measure the difficulty and importance of the duties of the position in terms of the scope for initiative and judgment within the framework of guidelines, directives and established practices and techniques.

Notes to Raters

In evaluating positions under this factor all the characteristics of each degree of the factor are to be considered. The degree tentatively selected is to be confirmed by comparing the duties of the position being rated with the duties and specifications of the bench-mark positions that exemplify that degree.

RATING SCALE - TECHNICAL RESPONSIBILITY

Technical Responsibility and Degree	Points	Bench-mark Position Descriptions	Paged	
The work is performed according to established practices and techniques.	1	40	Graphics Illustrator	44
			Junior Cartographic Draftsman	46
			Junior Illustrator	48
The work is performed according to established practices and techniques and requires some initiative and judgment in such matters as selecting, placing and accentuating detail or in identifying problems.	2	80	Cartographic Compiler	29
			Cartographic Compiler-Scriber	31
			Cartographic Draftsman	33
			Photogrammetrist	56
			Photogrammetric Compiler	59
			Technical Illustrator	69
The work is performed according to established practices and techniques and requires a moderate degree of initiative and judgment in such matters as selecting and applying practices and techniques or solving problems of detail or presentation.	3	120	Architect. Draftsman	24
			Architect. Draftsman	26
			Checker, Marine Charts	35
			Electrical Draftsman	40
			Maintenance Draftsman	51
			Mechanical Draftsman	54
			Scientific Illustrator	61
			Supervising Draftsman Geo. Map.	64
			Team Leader, Mech. & Elect. Draft.	66
The work <b>is</b> performed according to general instructions and requires a significant degree of initiative and judgment in such matters as modifying and .applying practices and techniques or solving problems pf collection, correlation, evaluation and portrayal of information.	4	160	Chief, Chart Compilation	37
The work is performed according to general instructions or to general plans and requires a high degree of initiative and judgment in such matters as evaluating and developing practices and techniques, interpreting directives, or planning and co-ordinating work.	5	200	Graphic Art Director	42

RESPONSIBILITY FOR ACCURACY AND QUALITY

This factor is used to measure the difficulty of the duties in terms of responsibility for technical accuracy and artistic quality of the work performed.

Definitions

"Technical accuracy" refers to the requirement to achieve the requisite degree of accuracy in developing such details of drawings, maps or illustrations as thickness of line, placement and delineations of features, separation of colors and conformity to scale and to fact.

"Artistic quality" refers to the requirement to achieve an effective and pleasing visual presentation through the use of color and line, balance and symmetry, and which is compatible with good taste.

Notes to Raters

In the degree definitions in the rating scale reference is made to "technical accuracy or artistic quality". In evaluating positions raters are to bear in mind that the duties of some positions require production of work that is both accurate and artistic.

In considering artistic quality in its application to the preparation of maps and drawings the term is to be interpreted to mean the balance and symmetry required, the definition of color and line, the style of lettering and the placement of names and symbols.

RATING SCALE - RESPONSIBILITY FOR ACCURACY AND QUALITY

Responsibility for Accuracy and Quality, and Degree	Points	Bench-mark Position Descriptions	Page	
Responsible for appearance; all aspects of work are normally checked in progress, and technical accuracy and artistic quality is checked again on completion.	1	20	Junior Illustrator	48
Responsible for technical accuracy and/or artistic quality; critical detail may be checked in progress; all work is checked on completion.	2	46	Architectural Draftsman Cart. Compiler Cart. Comp.-Scriber Cart. Draftsman Elect. Draftsman Graphics Illustrator Junior Cart. Draftsman Maintenance Draftsman Mechanical Draftsman Photogrammetrist Photo. Compiler Scientific Illustrator Technical Illustrator	24 29 31 33 40 45 47 51 54 56 59 61 69
Responsible for checking, commenting, and reporting on the technical accuracy and/or artistic quality of the work of the draftsmen or illustrators,			Checker, Marine Charts	35
OR			Supervising Draftsman, Geological Mapping	64
checking the work of subordinate draftsmen or illustrators for technical accuracy and/or artistic quality and taking corrective action to ensure that the requirements of the assignment are met.		73	Team Leader, Mechanical and Electrical Drafting	66
Responsible for the technical accuracy and/or artistic quality and for the checking and final approval of the work of subordinates	4	100	Chief, Chart Compilation Graphic Art Director	38 43

RESPONSIBILITY FOR CONTACTS,

This factor is used to measure the difficulty and importance of the duties in terms of the purpose and nature of the contacts and the level of persons contacted.

Definition

"Officials" refers to professional, administrative and other personnel with some degree of authority to influence projects or the required support services.

Notes to Raters

Only those contacts that are an integral part of the work and that result from the duties assigned or sanctioned by management are to be considered. Contacts between subordinates and supervisors will be rated at the minimum A1.

If the work of the position requires contacts of more than one kind or with persons at more than one level, the points for each combination are to be determined and the highest point value assigned.

Points are to be assigned for written contacts only if the duties of the position being rated include responsibility for signing letters or memoranda. Points will not be assigned if responsibility is limited to contacts by form or pattern letters.

RATING SCALE - RESPONSIBILITY FOR CONTACTS,

Level of Persons Contacted and Degree	Purpose and	Nature of and Degree Contacts		Page	
		A	B		C
Such persons as employees in own work group, and of own department other than officials.	To give and obtain information requiring limited explanation,	5	To give and obtain information requiring discussion, explanation and operation.	To persuade and obtain assistance or agreement of others when dif- ferent points of view are normally to be expected.	
			Page 18	Page 31	
Such persons as officials in own department, employees other than officials of other departments and outside agencies, and members of the general public.	Junior Cartographic Draftsman Junior Illustrator	1	Cart. Comp. Cart. Comp.- Scr. , Cart. Drafts. Checker, Marine Charts Photogrammetrist Photogrammetric Compiler	29 31 33 35 56 59	
		14	27	40	
Such officials of other departments and outside agencies.	Graphics Illustrator	2	-Arch. Drafts. Elect. Drafts. Mainte. Drafts. Scientific Illustrator Supervising Drafts Geological Map. Technical Illustrator	24 40 51 62 64 64 69	thief, Chart Compilation Graphic Art Director 43
		24	37	50	
		3	.Technical Draftsman Team Leader, Mechanical and Electrical Draftsman	54 66	



CONDITIONS OF WORK

This factor is used to measure the demands of the work in terms of the kind, frequency, intensity and duration of attention, concentration and mental-sensory co-ordination required by the work.

Definition

The degrees of the Conditions of Work factor refer to "attention" and to "concentration". The term "attention" is used to describe the effort involved in being observant and exercising care in carrying out the duties of the position. The term "concentration" is used to describe the effort involved in focusing total attention on some aspect of the work, often to the exclusion of everything else.

Notes to Raters

In evaluating positions under the Conditions of Work factor raters are to consider the extent to which the worker is able to control the frequency and duration of attention or concentration.

The degree tentatively selected is to be confirmed by comparing the duties of the position being rated with the duties and specifications of the bench-mark positions that exemplify that degree.

RATING SCALE - CONDITIONS OF WORK

Conditions of Work and Degree	Points	Bench-mark Position Descriptions	Page	
The work requires a normal level of eye-hand co-ordination and attention, with occasional requirements for short periods of concentration.	1	30	Chief, Chart Compilation	38
			Graphic Art Director	43
			Junior Illustrator	49
The work requires a moderate level of eye-hand co-ordination and attention for sustained periods, with occasional requirements for short periods of concentration.	2	60	Architectural Drafts.	24
			Electrical Drafts.	40
			Graphics Illustrator	45
			Junior Cart. Drafts.	47
			Maintenance Drafts.	51
			Mechanical Drafts.	54
			Supervising Drafts. Geol..Maps.	64
			Team Leader, Mechanical and Elect. Draft.	67
Technical Illustrator	69			
The work requires sustained periods of concentration.	3	90	Checker, Marine Charts	35
The work requires a high level of eye-hand co-ordination with sustained periods of concentration.	4	120	Cart. Compiler	29
			Cart. Compiler-Scriber	31
			Cart. Draftsman	33
			Scientific Illustrator	62
The work requires an extremely high level of eye-hand co-ordination with sustained periods of intense concentration.	5	150	Photogrammetrist	57
			Photogrammetric Compiler	59

SUPERVISION

This factor is used to measure the continuing responsibility that the incumbent of the position assumes for the work and guidance of other employees as indicated by the nature of the supervisory responsibility and the number of employees supervised.

Definitions

"Nature of supervisory responsibility" refers to the extent to which supervisory positions have such responsibilities as controlling the quantity and quality of work, assigning work, allocating staff, evaluating employee performance, training and disciplining staff, and making recommendations on the number of positions needed to perform the work.

"Number of employees supervised" refers to the total number of employees for whom the incumbent of the position exercises supervisory responsibility directly or through subordinate supervisors.

Notes to Raters

In all positions there is some requirement for showing others how to perform tasks or duties; therefore, no position will be assigned less than 15 points (A1) under this factor.

Occasional supervision, such as that performed during absences of the supervisor on annual or sick leave, is not to be rated.

For the purpose of this standard, "number of employees supervised" includes the total of the following:

1. The number of employees in the department or agency for whom the incumbent of the position has continuous responsibility.
2. The number of man-years of work performed by casual, part-time and seasonal employees supervised by the incumbent of the position.

In evaluating positions all the characteristics outlined for each degree of supervisory responsibility must be considered. Generally speaking, the criterion for the assignment of degrees to positions is that a position must include most of the characteristics of the degree assigned.

The rating scale shows the point values assigned to five degrees of the Nature of Supervisory Responsibility element. These degrees, which are designated only as A, B, C, D and E on the scale, are defined in the table appearing on the next page.

Drafting and Illustration

Nature of Supervisory Responsibility. and Degree	Bench-mark Position Descriptions	Page	
Shows other employees how to perform tasks or duties.	Architectural Draftsman	27	
	Cart. Compiler	29	
	Cart. Compiler-Scriber	31	
	Cart. Draftsman	33	
	A	Checker Marine Charts	35
	Graphics Illustrator	45	
	Maintenance Draftsman	52	
	Photogrammetrist	57	
Technical Illustrator	69		
Assigns work and deals with difficult work situations. Sets work standards by example. Checks work for adequacy, completeness and adherence to procedures.	B	Architectural Draftsman	24
	C	Team Leader, Mechanical and Electrical Drafting	67
Instructs employees in work methods and procedures, and standards of quality and quantity. Assigns work and maintains work flow. Advises employees on the solution of problems. Reports on employee performance.	D	Supervising Draftsman, Geological Mapping	64
	E	Chief, Chart Compilation Graphic Art Director	38
Organizes and directs the work through subordinate supervisors. Reviews the adequacy of work and performance standards and authorizes or recommends changes. Determines the need for staff training and development and implements appropriate programs. Formally evaluates employee performance and participates in the appraisal of employees. Formally recommends promotions and disciplinary action. Reviews, substantiates and recommends changes in numbers and classification of positions.	E	Graphic Art Director	43

RATING SCALE -SUPERVISION,

Number of Employees Supervised, and Degree	Nature of Supervisory			Responsibility and Degree	
	A	B	C	D	E
Any number of employees	1	15			
1 - 4	2	25	46	68	90
5 - 10	3	40	61	83	105
11 - 20	4	55	76	98	120
21 - 40	5	70	91	113	135
Over 40	6	85	106	128	150

POINT BOUNDARY' TABLE

Drafting and Illustration Group

<u>Level</u>	<u>Point Boundary</u>
DD 1	180 - 260
DD 2	261 - 340
DD 3	341 - 420
DD 4	421 - 500
DD 5	501 - 580
DD 6	581 - 660
DD 7	661 - 740
DD 8	741 - 820
DD 9	821 - 900

BENCH-MARK POSITION DESCRIPTION INDEX

In Alphabetical Order

<u>BENCH-MARK POSITION NO.</u>	<u>LEVEL</u>	<u>DESCRIPTIVE TITLE</u>	<u>PAGE</u>
1	4	Architectural Draftsman	23
2	4	Architectural Draftsman	25
3	4	Cartographic Compiler	28
4	4	Cartographic Compiler - Scriber	30
5	4	Cartographic Draftsman	32
6	5	Checker, Marine Charts	34
7	9	Chief, Chart Compilation	36
8	4	Electrical Draftsman	39
9	9	Graphic Art Director	41
10	2	Graphics Illustrator	44
11	2	Junior Cartographic Draftsman	46
12	1	Junior Illustrator	48
13	4	Maintenance Draftsman	50
14	4	Mechanical Draftsman	53
15	5	Photogrammetrist	55
16	5	Photogrammetric Compiler	58
17	5	Scientific Illustrator	60
18	7	Supervising Draftsman, Geological Mapping	63
19	6	Team Leader, Mechanical and Electrical Drafting	65
20	3	Technical Illustrator	68

BENCH-MARK POSITION DESCRIPTION INDEX

In Ascending Order of Point Values

<u>CRIPITIVE TITLE</u>	<u>BENCH-MARK POSITION NO.</u>	<u>LEVEL</u>	<u>TOTAL POINTS</u>	<u>PAGE</u>
Junior Illustrator	12	1	180	48
Graphics Illustrator	10	2	269	44
Junior Cartographic Draftsman	11	2	284	46
Technical Illustrator	20	3	407	68
Architectural Draftsman	2	4	447	25
Electrical Draftsman	8	4	447	39
Maintenance Draftsman	13	4	447	50
Architectural Draftsman	1	4	457	23
Cartographic Compiler	3	4	458	28
Cartographic Compiler - Scriber	4	4	458	30
Cartographic Draftsman	5	4	458	32
Mechanical Draftsman	14	4	481	53
Photogrammetrist	15	5	512	55
Photogrammetric Compiler	16	5	512	58
Checker, Marine Charts	6	5	519	34
Scientific Illustrator	17	5	544	60
Team Leader, Mechanical and Electrical Drafting	19	6	591	65
Supervising Draftsman, Geological Mapping	18	7	681	63
Chief, Chart Compilation	7	9	830	36
Graphic Art Director	9	9	831	41



BENCH-MARK POSITION DESCRIPTION

Bench-mark Position Number: 1

Level: 4

Descriptive Title: ARCHITECTURAL DRAFTSMAN

Point Rating: 457

Summary

Under the general supervision of an architect in a small architectural section of a department, draws plans for a variety of structures; makes free-hand and presentation drawings; and performs related duties.

Duties

% of Time

- Draws plans of schools, apartment buildings, residences, ware houses and other structures for construction and use at various locations by the department
  - by drafting accurately to scale the structural details of elevations and cross sections of buildings designed by architects,
  - by illustrating complex or unusual design or construction features with large scale drawings,
  - by specifying on plans, standard materials, finishes and construction methods from own knowledge, manuals or the designer's specifications, and
  - by suggesting details of plans and type of construction to effect improvements.75
  
- Makes free-hand and presentation sketches for the guidance of junior draftsmen, and isometric or perspective drawings of projects to present pictorial views. 15
  
- Performs related duties such as assisting junior draftsmen and making necessary corrections to keep master plans of towns and settlements current. 10

Specifications

Degree Points

Knowledge and Experience

The work requires a good knowledge of architectural drafting and construction illustration techniques, and familiarity with building construction and materials. It also requires a familiarity with the arithmetic and geometry used to make such calculations as angles, dimensions and bearing loads. It requires experience in the use of drafting instruments and such architectural drafting techniques as isometric drawings and exploded views to illustrate clearly and accurately the material to be used, the method of construction, and the appearance of the finished structure.

B 4 179

Decree    points

Technical Responsibility

The work requires initiative and judgment in determining the need for special illustration and the most effective type, in choosing construction material and methods within defined limits, and in determining the need for change in plans and specifications to effect economy or improve building use.

3            120

Responsibility for Accuracy and Quality

Responsibility for the accuracy of detail and construction information is a requirement of the position. Drawings produced by the employee and his subordinates are checked by architects upon completion for conformity to specifications and for presentation; special jobs may be checked in progress.

2            46

Responsibility for Contacts

Contacts are made with officials in other divisions about requirements of buildings preparatory to drawing building and space specifications. The work also requires regular contacts with sales representatives to keep informed on new construction materials.

B2            27

Conditions of Work

The work requires eye-hand co-ordination when using drafting instruments and attention when drawing construction detail, drawing layouts, transferring measurements and specifying material and construction techniques.

2            60

Supervision

The work requires the supervision of two student draftsmen employed during the five-month summer season and the part time supervision of a draftsman trainee. Supervisory duties are to assist with work problems and to follow up assigned work to ensure maintenance of time schedules.

B2            25

BENCH-MARK POSITION DESCRIPTION

Bench-mark Position Number: 2

Level: 4

Descriptive Title: ARCHITECTURAL DRAFTSMAN

Point Rating: 447

Summary

Under the general supervision of a drafting supervisor in a district headquarters, makes layouts and drawings for alterations to, and construction of, small buildings of standard design; makes layouts and working drawings of sections of major buildings; and performs related drafting room duties.

Duties,

%of Time

- Makes layouts and working drawings for additions to existing buildings and for the construction of small buildings of standard design within the district
  - by referring to sketches and written or oral instructions that outline space requirements, elevations, basic structure and materials,
  - by visiting building sites and confirming the availability of utilities, noting modifications and alterations not shown on master drawings, and determining measurements and the extent of the alteration,
  - by determining the requirements of mechanical and electrical services,
  - by referring to the departmental building construction manual, graphic standards and materials catalogues,
  - by discussing layouts with the supervisor and making changes as required,
  - by drawing design layouts, giving such details as the construction of walls, floors, entrances, windows, insulation and roofing, and
  - by reviewing mechanical and electrical services drawings to ensure compatibility.

60
  
- Makes layouts and working drawings for specific sections of major buildings, such as loading docks and movable walls, in the design stage
  - by studying sketches and following verbal instructions that outline the requirements and basic structures, and
  - by referring to building and materials catalogues, manuals and graphic standards, and selecting equipment and materials in the light of availability, suitability and cost.

20
  
- Makes working drawings of the detail construction of sections of major buildings from sketches and verbal instructions, applying design techniques as prescribed by standards and manuals.

10
  
- Performs related duties such as preparing sets of drawings for contractor's tender, assisting the supervisor in determining the magnitude of maintenance problems of an architectural nature, assisting specification writers by giving interpretation of drawings and techniques, and maintaining drawing and manual files.

10

September, 1971

<u>Specifications</u>	<u>Degree</u>	<u>Points</u>
<p><u>Knowledge and Experience</u></p> <p>The work requires a good knowledge of the drafting techniques used in constructing and renovating buildings, and familiarity with structural, mechanical and space requirements of buildings. It also requires a familiarity with the plane geometry used in architectural drafting and layout. It requires experience in working from general instructions, determining the techniques and standards that apply, selecting materials and standard items of related equipment, and producing acceptable working drawings.</p>	B 4	179
<p><u>Technical Responsibility</u></p> <p>The work requires, without direction, initiative and judgment in selecting suitable building techniques and standards, materials and items of equipment; in determining when on site, the extent of alterations and the necessity for mechanical and electrical design services; and in determining accurate measurements, method of presentation, and the numbering of drawings and views.</p>	3	120
<p><u>Responsibility for Accuracy and Quality</u></p> <p>Responsibility for the technical accuracy and quality of the layouts and drawings in the application of drafting techniques is a requirement of the position. The work is reviewed in progress when non-recurring methods are used or construction standards and modifications are not covered by specific instructions. It is thoroughly checked on completion.</p>	2	46
<p><u>Responsibility for Contacts</u></p> <p>Contacts are made with draftsmen and technical officers of the mechanical, electrical and structural sections to obtain or provide information pertaining to the project. Contacts are made, on occasion, with building management and client departments in obtaining technical data related to the project. Occasional contacts are made with the representatives of building equipment supply companies to obtain technical data and drawings.</p>	B <sub>2</sub>	27
<p><u>Conditions of Work</u></p> <p>The work requires eye-hand co-ordination when using drafting instruments and attention to the accuracy of layouts and measurements when interpreting related drawings.</p>	2	60

	<u>Degree</u>	<u>Points</u>
<u>Supervision</u>		
The work requires advising and guiding a junior draftsman who is assigned for assistance or training.	A1	15

BENCH-MARK POSITION DESCRIPTION

Bench-mark Position Number:

Level: 4

Descriptive Title: CARTOGRAPHIC COMPILER

Point Rating 458

Summary

Under the general supervision of the supervisor of a general purpose map compilation unit in a large map producing organization, compiles original and revised manuscripts; assembles supporting documents concerning completed projects; and performs related duties.

Duties

% of Time

- Compiles original or revised base map manuscripts where detail may be congested, for the construction of medium- and small-scale topographic, regional and special maps
  - by reviewing specifications, source maps, file notes and the supervisor's instructions to determine the basic information to be shown,
  - by enlarging or reducing source maps or sections to the required scale, using a vertical reflecting projector,
  - by converting distances from maps of different scales through the use of proportional dividers,
  - by selecting and delineating features, smoothing out and simplifying line detail where the topography is crowded,
  - by emphasizing or de-emphasizing topographic features to conform to the scale and purpose of the maps, and
  - by noting for the guidance of draftsmen the addition and deletion of symbols and names.75
  
- Assembles supporting documents concerning completed projects for revision or reference purposes by recording the source data used, decisions made with regard to the adjustments, selection of detail, and other pertinent information. 10
  
- Performs related duties such as plotting specified projections by means of a co-ordinatograph, computing areas by means of a planimeter, and checking the work of junior employees assigned for training. 15

Specifications

DegreePoints

Knowledge and Experience

The work requires a good knowledge of map compilation techniques and practices, and an understanding of survey and map reproduction processes. It also requires a familiarity with the plane geometry and trigonometry as used in map projection and calculations. It requires experience in the use of drafting instruments and of projection, co-ordinatograph and other machines and in the selection, modification and portrayal of source data to meet the needs of the draftsman and the map user. 179

B4

	<u>Degree</u>	<u>Points</u>
<u>Technical Responsibility,</u>		
The work requires adherence to established techniques, specifications and job instruction, but some judgment and initiative is required in identifying the need for additional information, altering the length or direction of lines to avoid overlapping when highways, railways and rivers run together, and simplifying or accentuating features to improve legibility without sacrificing validity.	2	80
<u>Responsibility for Accuracy and Quality</u>		
Responsibility for selecting detail from a variety of source material and portraying it accurately and legibly is a requirement of the position. Unusual work problems and new tasks are discussed with the supervisor. Special assignments may be checked while the work is being done and all assignments are checked on completion.	2	46
<u>Responsibility for Contacts</u>		
Contacts are made with supervisors and fellow workers to discuss problems, receive instruction and provide assistance, and discuss technical problems.	B1	18
<u>Conditions of Work</u>		
The work requires continuous concentration and precise eye hand co-ordination when delineating exacting detail and when using instruments requiring precise settings.	4	120
<u>Supervision</u>		
The work requires advising, guiding and checking the work of junior compilers who are assigned for training.	A 1	15

BENCH-MARK POSITION DESCRIPTION

Bench-mark Position Number: 4

Level. 4

Descriptive Title: CARTOGRAPHIC COMPILER - SCRIBER

Point Rating: 458

Summary

Under the general supervision of the supervisor of a compiling-scribing unit, compile - scribes line positives for medium scale topographic maps, affixes type, and performs the computing and plotting of projections.

Duties% of Time

- Compile - scribes line positives suitable for photography to final negative stage for medium scale topographic maps
  - by reviewing specifications and researching source data to be used 70
  - by controlling source maps to manuscript projection to meet prescribed accuracy requirements
  - by updating source data, as required, on manuscript, using aerial photographs and sketchmaster
  - by selecting from the reduced manuscript image, types and amounts of data to be shown
  - by using judgment in the selection, interpretation and generalization of data, and
  - by scribing on the appropriate base, in accurate register, the selected and generalized data in the prescribed symbols
- Prepares type positives by affixing feature names, labels, and border data, according to specifications, and in the most effective positions. 15
- Computes and diagrams UTM projections at manuscript scale from tables showing earth distances in meters. 5
  - Plots, by co-ordinatograph, the necessary graticule intersections on the manuscript. 5
- Writes history of completed projects describing source data and techniques used, along with a record of supervisory decisions related to the project. 3
- Performs related duties such as providing advice and guidance to junior employees assigned for training. 2

SpecificationsDegreePointsKnowledge and Experience

The work requires a good knowledge of map compilation and reproduction processes and techniques. It also requires an appreciation of the purpose and specifications of medium and large scale topographic map series, and of the mathematics required for converting tabulated co-ordinates from spheroid

B4

179



DegreePoints

distances in meters to map distances in centimeters, and for computing base chord and diagonal measurements. The work requires experience in the selection, interpretation and generalization of data and in the use of scribing instruments and materials..

Technical Responsibility

The work requires adherence to specifications and to established techniques but initiative and judgment is required in assessing the adequacy of source data, in its updating, and in the selection and generalization of features in congested areas. Judgment is required to ensure that legibility is attained without unnecessarily omitting features and without sacrificing accuracy. It is also required in the positioning of featured names and labels, to provide optimum identification with a minimum of obliteration of line detail.

2 80

Responsibility for Accuracy and Quality

There is a requirement for completeness, i.e. that all pertinent data be shown. There is a responsibility that lines and symbols be accurately positioned and conform to line weight and symbol specifications. Work is spot checked by the supervisor during progress, and checked in detail on completion.

2 46

Responsibility for Contacts,

Contacts are made with supervisors and fellow workers to receive instruction, to discuss technical problems, and to provide assistance.

B 1 18

Conditions of Work

The work requires constant attention and precise eye-hand coordination when selecting, interpreting and generalizing data and scribing lines and symbols, and when using the co-ordinatograph.

4 120

Supervision

There is an occasional requirement to show employees assigned to the unit for training, how to perform specific tasks.

A  
1 15

BENCH-MARK POSITION DESCRIPTION

Bench-mark Position Number: 5

Level: 4

Descriptive Title: CARTOGRAPHIC DRAFTSMAN

Point Rating: 458

Summary

Under the general supervision of a supervisor of a drafting unit in a large chart drafting organization, drafts marine charts, technical illustrations and plotting sheets; revises charts; and performs related duties.

Duties

% of Time

- Drafts marine charts in a variety of scales, to meet the requirements of commercial shipping, naval and fishing operations and small craft users; technical illustrations for scientific publications; and plotting sheets for survey use
  - by examining specifications, manuscripts, documents and publications to determine the scope and nature of the project,
  - by using pen and ink or scribing tools to draw or engrave intricate features, contours and aids to navigation to the requisite degree of precision,
  - by placing names and symbols to identify features without obscuring detail,
  - by drawing detail in exact registration on overlays for the production of multiple-color separation negatives, and
  - by extracting data from tables, plotting position and drawing lattices on Decca and Loran charts used to assist mariners in electronically positioning vessels.
  
- Revises charts
  - by drawing new information in pen and ink on film positives or engraving it on black or color negatives in exact registration,
  - by redrawing areas and stripping in names, notes and other information to obtain a contact film negative for insertion into existing negatives, and
  - by covering negatives with emulsion coat and redrafting with correct detail.
  
- Performs related duties such as checking the work of junior draftsmen assigned for training.

Specifications

DegreePoints

Knowledge and Experience

The work requires a good knowledge of cartographic drafting techniques and methods to draft complex hydrographic charts, familiarity with hydrographic survey principles, and an

Degree Points

appreciation of the purpose and use of hydrographic charts. It requires experience in the effective use of cartographic drafting techniques such as pen-and-ink drawing, negative engraving and color separation.

Technical Responsibility

The work requires adherence to specifications and job instructions in the production of informative, accurate and detailed charts to meet the varied and demanding requirements of scientific, naval, commercial, fishing and small craft operations. It requires the exercise of judgment in determining the proper width and density of lines in relation to the complexity of detail to be recorded, in placing names, navigation aids and symbols without obscuring line or other detail, in accentuating features and contours with suitable shading or color, and in identifying differences in overlapping charts used as source material. Such differences are referred to the supervisor for clarification.

2 80

Responsibility for Accuracy and Quality

The work must be extremely legible, with precision in registration of detail, coupled with artistic presentation, and must conform, within limitations of space, to the information shown on the original compilation chart. Detail such as names, symbols, and navigation aids may be checked by the supervisor while the chart is being drawn. All work is checked when completed.

2 46

Responsibility for Contacts

Contacts are made with supervisors and fellow workers to obtain information, clarify instructions and discuss problems of technique and quality.

18

B 1

Conditions of Work

The work requires continuous concentration and precise eye hand co-ordination in doing fine line drawing, depicting intricate detail and maintaining registration of overlays.

4 120

Supervision

The work requires advising and guiding junior draftsmen assigned for assistance and training.

A 1 15

BENCH-MARK POSITION DESCRIPTION

Bench-mark Position Number: 6

Level: 5

Descriptive title: CHECKER, MARINE CHARTS

Point Rating: 519

Summary

Under the general supervision of a supervisor of a marine chart-drafting unit in a large chart-producing organization, checks in detail completed charts for accuracy, adherence to specifications and instructions, quality and general presentation; and verifies proofs and printed charts.

Duties

% of Time

- Checks new, special and revised charts prepared by a section of 18 draftsmen, to ensure accuracy of data and adherence to specifications, techniques, instructions and other work requirements
- by examining such detail as border graduations, delineation of features, aids to navigation, relation of type placement to features named, spelling, depth contour symbolization and accuracy for placement of critical soundings, width and density of lines, style and size of symbols and lettering, conformity to project data and map scale, and suitability to method of-reproduction to be used,
- by obtaining from the supervisor, when necessary, clarification of source data and its interpretation, 85
- by using measuring instruments and making calculations to determine the accuracy and quality of work being checked, and
- by assessing artistic presentation and quality of completed charts and recommending changes or approving them on behalf of the supervisor.
  
- Verifies proofs and printed charts
- by examining them for fidelity to the original, and
- by assessing them for general quality and presentation. 15

Specifications

Degree Points

Knowledge and Experience

The work requires a good knowledge of the work processes and procedures of cartographic drafting. It also requires familiarity with trigonometry and plane geometry, and with hydrographic survey practices sufficient to discuss work problems arising out of source data and a knowledge of chart reproduction practices and techniques. It requires experience in using drafting instruments, interpreting standards, and judging techniques, and a high degree of skill in recognizing errors in a mass of detail.

B 5 203

	<u>Degree</u>	<u>Points</u>
<u>technical Responsibility</u>		
The work requires the careful examination of chart detail. Judgment is required in approving or rejecting on behalf of the supervisor the draftsman's accuracy of scale, method of portrayal of detail, adjustment of accentuation of shape and contour, placement of features and symbols, and location, size and shape of names and lettering.	3	120
<u>Responsibility for Accuracy and Quality</u>		
Responsibility on behalf of the supervisor for the accuracy of detail and conformity to standards of all charts produced by the 18 draftsmen in the section is a requirement of the position. The supervisor checks samples of work for quality and artistic presentation to ensure conformity with work requirements.	3	73
<u>Responsibility for Contact</u>		
Contacts are made with the supervisor to obtain explanations and to discuss errors and problems of presentation and technique.	B <sub>1</sub>	18
<u>Conditions of Work</u>		
The work requires concentration in the continual checking of chart detail to detect errors of fact, technique or presentation.	3	90
<u>Supervision</u>		
There is an occasional requirement to show others how to perform certain tasks.	A 1	15

BENCH-MARK POSITION DESCRIPTION

Bench-mark Position Number: 7

Level: 9

Descriptive Title: CHIEF, CHART COMPILATION

Point Rating: 830

Summary

Under the general direction of a chief of chart production, plans, organizes and co-ordinates the activities of a marine chart compilation section; investigates, evaluates and recommends modifications to chart compilation standards, procedures and techniques; supervises and trains a staff of 54 employees through 3 subordinate supervisors; and performs related duties.

Duties

% of Time

- Plans, organizes and co-ordinates the activities of a section engaged in compiling new charts, reconstructing foreign and Canadian charts into new Canadian chart editions, revising existing charts, and preparing notification of chart amendments for mariners, to meet the requirements of naval, fishing, small craft, bathymetric, hydrographic survey and scientific engineering operations
  - by defining objectives and requirements of projects,
  - by estimating workload and staff requirements,
  - by recommending plans for individual or series-type projects based on good practice and precedent, and establishing priorities, schedules and target completion dates,
  - by issuing instructions and delegating to subordinate supervisors responsibility for detailed planning and allocation of work,
  - by providing advice and guidance on technical details and resolving problems of verification, evaluation, correlation and presentation of source data or initiating requests for further information, 65
  - by reviewing progress of work, re-allocating staff and equipment within the section, modifying established routines to ensure maintenance of priorities, schedules and deadlines or recommending revision of schedules to the chief, and
  - by reviewing the technical quality and adequacy of presentation of completed work in relation to chart requirements and attainment of objectives, and taking corrective action when required.
  
- Investigates, evaluates and recommends modifications to chart compilation techniques and to chart construction and maintenance procedures and techniques to improve production, design and format
  - by reviewing and discussing problem areas with staff,
  - by introducing modified work procedures and techniques, on a trial basis, to research and test materials and processes, and by assessing and reporting on results, 15

% of Time

- by initiating or reviewing suggestions for change in format or design of charts and recommending approval,
  - by serving on technical committees concerning chart requirements,
  - by visiting other charting agencies to observe, report on, and, if applicable, recommend adoption or adaptation of their procedures and techniques,
  - by obtaining information on new products, services and developments, and
  - by reviewing user reaction and comment.
- 
- Supervises and trains a staff of 54 employees through 3 subordinate supervisors
  - by appraising performance of. supervisors and discussing with them their appraisal reports of staff,
  - by interviewing and counseling staff on work and disciplinary problems,
  - by assessing training needs, recommending or providing courses and making rotational assignments to develop capabilities and. further knowledge of staff,
  - by recommending promotion, transfer and formal disciplinary action, and
  - by reviewing and recommending changes to the establishment.
- 10
- 
- Performs related duties such as advising on cartographic production, maintaining effective working relations with other units of the hydrographic service and acting on selection boards.
- 10

Specifications

Degree Points

Knowledge and Experience

The work requires a thorough knowledge of the methods and techniques of cartographic compilation and drafting, and a good knowledge of hydrographic survey principles and techniques and of administrative practices. It also requires a good knowledge of trigonometry and plane geometry as used in chart drawing and navigation. It requires extensive experience in progressively more responsible work in drafting and techniques of chart compilation, requirements of chart users, planning and co-ordination of all phases of chart compilation, administrative practices and procedures, and the organization, co-ordination and supervision of the activities of a large staff.

D<sub>8</sub> 350

Technical Responsibility

The work requires a significant. degree of initiative and judgment in evaluating source material, chart production procedures, administrative practices, chart format and design, and the

	<u>Degree</u>	<u>Points</u>
needs of chart users; in making recommendations to the chief of chart production; in planning and allocating work; and in resolving technical and staff problems referred by subordinate supervisors.	4	160
<u>Responsibility for Accuracy and Quality</u>		
Responsibility for the technical accuracy and quality of the work of the section and for advising on the technical aspects of chart production is a requirement of the position.	4	100
<u>Responsibility for Contacts</u>		
The work requires serving on interdepartmental technical committees concerning chart production and requirements, staff appraisals and selection and rating boards. It is also necessary to develop effective inter-branch working relations through discussion with departmental professional and administrative staff in order to co-ordinate the work and resolve technical problems.	C2	40
<u>Conditions of Work</u>		
The work requires administering the section, with an occasional requirement for concentration when reviewing completed work or resolving technical problems.	1	30
<u>Supervision</u>		
The work requires the supervision of 54 employees through 3 subordinate supervisors; this includes responsibility for appraising staff performance, recommending on staff training, promotion, transfer, leave and formal disciplinary action.	E6	150



BENCH-MARK POSITION DESCRIPTION

Bench-mark Position Number: 8

Level: 4

Descriptive Title: ELECTRICAL DRAFTSMAN

Point Rating: 447

Summary

Under the general supervision of a drafting supervisor in a small drafting section, makes layouts and working drawings for a variety of electrical and associated equipment used for airport lighting and power transmission; makes standard drawings; and performs related duties.

Duties

% of Time

- Makes layouts and complete working drawings for the planning and installation of airport lighting systems, power distribution facilities, power and lighting control systems and panels, static grounding systems, and other equipment
- by discussing the drafting requirements of proposed electrical services and equipment with engineers and own supervisor,
- by referring to government standards on abbreviations, electrical symbols and drafting practices,
- by discussing drawing size and layout with the supervisor and making changes as required,
- by contacting manufacturers' sales and technical representatives for demonstrations of equipment, to transfer functions and details to drawings, and
- by referring to electrical equipment catalogues to prepare bills of material. 70
  
- Makes detailed standard drawings for manufacture, contract installation, and assembly and maintenance of electrical and associated equipment used for airport lighting and power supply systems

  - by checking office records and associated drawings for information,
  - by planning presentation and format of drawings to give the most effective illustrative details, and
  - by re-drawing existing plans to present a clearer, more comprehensive and up-to-date layout. 15

  
- Performs related duties such as checking the drawings of other draftsmen for accuracy on a reciprocal basis; obtaining and filing office tracings, records and catalogues; and keeping a daily work progress report. 15

Specifications

Degree Points

Knowledge and Experience

The work requires a good knowledge of the drafting techniques

## Drafting and Illustration

B.M.P.D. No. 8

### Degree Points

used in planning and installing airport lighting and power equipment, and familiarity with electrical equipment and systems. It also requires familiarity with the geometry used in electrical drafting. It requires experience in working from general instructions and in accordance with construction standards and in using drafting instruments and electrical drafting techniques to produce acceptable working drawings that clearly illustrate the material and equipment to be used.

B 4 179

### Technical Responsibility

The work requires initiative and judgment in determining the need for a change in drawing size, scale or layout if the drawing is not suitable and in determining accurate measurements, method of presentation, and the numbering of drawings and views.

3 120

### Responsibility for Accuracy and Quality

Responsibility for the accuracy and quality of the layouts and drawings in the application of drafting techniques is a requirement of the position. The work produced is reviewed during progress when advice and guidance on non-recurring methods and procedures is required. The work may be checked for accuracy by other draftsmen in the section, and there is a responsibility to reciprocate by checking the work of other draftsmen. All work is thoroughly checked on completion.

2 46

### Responsibility for Contacts

Contacts are made continually with draftsmen, technical officers, and engineers of electrical sections to obtain information and discuss problems pertaining to the work, and occasionally with technical officers of other departments to obtain technical data related to the work. Occasional contacts are also made with manufacturers' sales and technical representatives to arrange for demonstrations or to obtain details of electrical equipment.

B 2 27

### Conditions of Work

The work requires eye-hand co-ordination when using drafting instruments; close attention to detail when preparing planning, layout, contract, and standard drawings; and attention to the accuracy of material specifications.

2 60

### Supervision

There is an occasional requirement to show new employees how to perform tasks and, on an exchange basis, to check the accuracy of drawings of other draftsmen in the section.

A 1 15

BENCH-MARK POSITION DESCRIPTION

Bench-mark Position Numbers ~ 9

Level: 9

Descriptive Title: GRAPHIC ART DIRECTOR

Point Rating: 831

Summary

Under the general direction of a supervisor of a public information division, plans, directs and co-ordinates the work of a section engaged in the production of graphic art; acts as departmental consultant on graphic arts; and supervises the staff of 24 employees *through* 8 subordinate supervisors.

Duties

% of Time

- Plans, directs and co-ordinates the work of the graphic arts section, engaged in the production of technical illustrations, visual aids and graphic art, employing a variety of techniques, to meet the requirements of the Canadian Forces Headquarters and the Defense Research Board for visual aids for training, magazine illustrations, posters, catalogue illustrations, brochures, pamphlets ,and engineering and historical record illustrations
  - by determining requirements in staff, equipment and space to meet the needs of the program,
  - by organizing staff and material resources into functional work units,
  - by developing schedules, determining priorities and coordinating the work of the section,
  - by assigning work and instructing on methods and techniques to be used,
  - by establishing guidelines for quality and quantity and ensuring they are followed, 70
  - by contracting to commercial firms certain jobs not within the time or technical resources of the section,
  - by keeping informed on new developments in the field of graphic art and assessing their value to the section,
  - by developing and introducing new practices and techniques to improve the quality of illustrations or to effect economies, and
  - by suggesting and implementing changes in program.
- Acts as a consultant to the department on the use of graphic art as a means of communication and on the purchase and use of graphic art facilities, equipment and material
  - by discussing with users the purpose and objectives of requests for graphic art, suggesting the theme and determining techniques to be used,
  - by examining, evaluating and recommending on requests for equipment and supplies from departmental units with graphic art facilities to maintain a relationship between equipment

15

% of Time

and supplies requested and the facilities available and capability of the requesting unit, and to co-ordinate the production of graphic arts in the department, and

- by advising on the graphic arts program within the department.

- Supervises, through 8 subordinate supervisors, a staff of 24 technical illustrators, commercial artists, make-up technicians, mechanical reproduction technicians, clerks and illustration design technicians

- by determining training needs and assigning employees for training purposes,
- by appraising and reporting on employees performance,
- by interviewing employees to discuss work performance,
- by assisting in selection of own staff and acting as technical adviser in selection of other staff for graphic arts positions when requested to do so,
- by approving leave schedules and authorizing absenteeism for cause, and
- by exercising discipline and recommending formal discipline, promotions, transfers and establishment changes.

15

Specifications

DegreePoints

Knowledge and Experience

The work requires a thorough knowledge of graphic art techniques and practices and the-effective presentation of-graphic and illustrative material, and a good knowledge of printing and reproduction techniques and requirements and administrative practices. It requires considerable experience in the use of graphic technique and in effective graphic presentation, in directing the production of black-and-white and colored commercial and technical art work and advising on its production and use, and in coordinating the production of a number of graphic arts units.

D 7 326

Technical Responsibility

The work requires determining effective themes or motifs and subject matter that best convey the desired message or impression, in selecting, developing and introducing. new procedures and techniques, in suggesting. changes in program, in coordinating the activities. of a graphic arts section, and in determining the needs for graphic arts in the department and how best to meet these needs with the resources allocated.

5 200

	<u>Degree</u>	<u>Points</u>
<u>Responsibility for Accuracy and Quality</u>		
Responsibility for the work of the section, in which a high degree of accuracy in technical illustrations, artistic presentation, and appeal is of prime importance, is a requirement of the position. There is also responsibility for the quality of work done under contract, for the operations of the section, and for the level of service.	4	100
<u>Responsibility for Contacts</u>		
The work requires establishing and maintaining effective working relations with senior officials under conditions which require that conflicts of priority be resolved, requests be adjusted because of technical and facility limitations, or program or administrative problems be solved. Contacts are also made with representatives of suppliers and contract firms to discuss technical questions and the quality, cost and delivery dates of contract work.	C2	40
<u>Conditions of Work</u>		
The work requires assessing work quality, administering the section, and proposing changes or alterations in production.	1	30
<u>Supervision</u>		
The work requires supervision of 24 employees through 8 subordinate supervisors; this includes responsibility for appraising staff performance, training staff and recommending promotion, transfer, leave and formal disciplinary action.	E5	135

BENCH-MARK POSITION DESCRIPTION

Bench-mark Position Number: 10

Level: 2

Descriptive Title: GRAPHICS ILLUSTRATOR

Point Rating: 269

Summary

Under the supervision of a graphics supervisor in a bio-graphics unit, makes ink drawings of charts, graphs, diagrams and illustrative maps; makes photographic layouts and layouts of copy and illustrations; and performs related duties.

Duties

% of Time

- Makes ink drawings of charts, graphs, diagrams and illustrative maps for publication in scientific journals
  - by studying job instruction sheets, rough sketches or previously published material to determine requirements,
  - by obtaining from the supervisor or scientific staff additional clarification of instructions as required,
  - by using drafting instruments and a light-table, and
  - by applying craftint, zipatone, chart-pack and similar materials to achieve patterned and shaded effects and to denote boundaries.60
  
- Makes photographic layouts and layouts of typed material and illustrations for inclusion in technical and scientific journals and departmental bulletins
  - by trimming and mounting photographs according to instructions on spacing, to achieve the most effective layout, and
  - by pasting up)copy, captions and illustrations according to instructions to prepare final reproducible copy.30
  
- Performs related duties such as operating a head-liner lettering machine to produce captions and numbers and a technifax machine to make diazo material for slide projection. 10

Specifications

Degree Points

Knowledge and Experience

The work requires a knowledge of graphic illustration techniques and drafting and lettering instruments and machines. It requires experience in the use of drawing instruments, materials and symbols and in applying techniques such as zipatone and chart-pack.

A<sub>2</sub> 94

Technical Responsibility

The work is performed under supervision in accordance with detailed instructions and procedures. There is a requirement to

	<u>Degree</u>	<u>Points</u>
choose from a limited range the weight of line and zipatone patterns best suited to the kind of drawing and the method of reproduction.	1	40
<u>Responsibility for Accuracy and Quality</u>		
Charts, graphs and diagrams must be accurate and neatly presented. Scientific data for publication may be checked before the work is completed; all work is checked on completion.	2	46
<u>Responsibility for Contacts,</u>		
Contacts are made with scientific staff in the department and members of the work group to clarify instructions and requirements.	A2	14
<u>Conditions of Work</u>		
The work requires continuous attention to detail and a moderate level of eye-hand co-ordination when using drafting instruments and machines and when mounting, pasting, cutting and stripping in head-lines and other material.	2	60
<u>Supervision</u>		
There is an occasional requirement to show employees assigned to the unit for training how to perform specific tasks.	A1	15

BENCH-MARK POSITION DESCRIPTION

Bench-mark Position Number: 11

Level: 2

Descriptive Title: JUNIOR CARTOGRAPHIC DRAFTSMAN

Point Rating: 284

Summary

Under the supervision of a mapping unit supervisor, inserts detail on forest inventory maps and draws charts and graphs and simple location maps to various scales for publication; and performs related duties.

Duties

% of Time

- Inserts detail-on forest inventory maps and draws charts and graphs and simple location maps to various scales for publication  
- by engraving dots and curved, parallel and double lines on colored or white scribe coat material placed over a light-table or by drawing lines with pen. and ink,  
- by using French curves for drawing irregular curves on maps or graphs, 85  
- by using a map-o-graph and stereoscopic projector to enlarge or reduce map detail according to the scale required, and  
- by manually lettering text and symbols.
  
- Performs related duties such as operating a cold-type photo composing machine to typeset names, captions. and legends for maps, graphs and charts and maintaining a map filing system. 15

Specifications

Degree Points

Knowledge and Experience

The work requires a knowledge, of cartographic terminology and symbols, projection, scribing, lettering, pen-and-ink techniques, and basic drafting tools and equipment. It requires experience in the use of standard techniques, drafting machines and instruments, a map-o-graph and stereoscopic projector.

A<sub>3</sub> 118

Technical Responsibility

The work is performed under supervision in accordance with detailed oral instructions and with procedure manual and other written instructions. There is a requirement to decide the placement of names, legend and symbols on forest cover maps and to delete topographical detail, as instructed, on base maps to permit the addition of, forest detail and avoid crowding of information.

1 40



Degree Points

Responsibility for Accuracy and Quality

Responsibility for uniformity in width and density of lines and for the placement of lines, letters and symbols is a requirement of the position. All work is checked in detail on completion and critical detail is checked in progress. 2 46

Responsibility for Contacts

Contacts are made with members of the immediate work group to clarify procedures or obtain information. A 2 5

Conditions of Work

The work requires constant attention to detail and a moderate level of eye-hand co-ordination when drawing maps and inserting map detail. 2 60

Supervision

There is an occasional requirement to show new employees how to perform tasks or to make a preliminary check of work of others for spelling or accuracy. A 1 15

BENCH-MARK POSITION DESCRIPTION

Bench-mark Position Number: 12

Level: 1

Descriptive Title: JUNIOR ILLUSTRATOR

Point Rating: 180

Summary

Under the supervision of a forms manager, makes pen-and-ink drawings of flow charts, network diagrams, office forms, office layouts and graphs; and performs related duties.

Duties % of Time

- Draws, in ink, flow charts, network diagrams, office forms, office layouts, and bar, line and pie graphs from notes, oral and written instructions, -rough drafts and previously drawn but altered illustrations, for use in office manuals, as instructional aids, as administrative guides, or *in* publications and-pamphlets
  - by drawing in standard format the symbols, marks and characters to depict the desired information,
  - by arranging the drawings to give a symmetrical and balanced appearance, and
  - by using pens, rulers, T-squares, templates, lettering aids, and micro- and standard typewriters.90
- Performs-related duties such as proofreading written and graphic material, maintaining a record of job assignments, maintaining a small stock of supplies and preparing monthly productivity reports.
 10

Specifications DegreePoints

Knowledge and Experience

The work requires knowledge of illustrating work aids and practices and some knowledge of standard designs for simple office charts, such as work flow and organization charts.
 A 1  
70

Technical Responsibility

The work is performed in accordance with detailed instructions and procedures. There is some requirement to arrange drawings to give balance and to arrange the positioning of chart identification and lettering.
 1 40

Responsibility for Accuracy and Quality

Responsibility for neatness and for the positioning and arrangement of lines to give a balanced appearance is a requirement of the position. The work is done from rough sketches or detailed instructions and is checked on completion and as required in progress.
 1 20

	<u>Degree</u>	<u>Points</u>
<u>Responsibility for Contacts</u>		
Contacts are made with members of the immediate work groups to receive instructions and to obtain information.	A 1	5
<u>Conditions of Work</u>		
The work requires spacing of lines and symbols according to the amount of material to be illustrated, format and space available. There is some requirement for eye-hand coordination in drawing forms.	1	30
<u>Supervision</u>		
The work occasionally requires showing others how to perform specific tasks.	A1	15

BENCH-MARK POSITION DESCRIPTION

Bench-mark Position Numbers 13

Level: 4

Descriptive Titles MAINTENANCE DRAFTSMAN

Point Rating: 447

Under the general supervision of a regional buildings and utilities maintenance engineer, makes layouts and drawings for proposed alterations and modifications to regional airport buildings and utilities; makes feasibility study layouts and site plans for building utility and facility project proposals; up-dates drawings of buildings and facilities and maintains office manuals and specifications; and performs related duties.

% of Time

- Makes layouts and working drawings for modifications and alterations

to buildings, grounds, equipment and utilities

- by referring to sketches and oral instructions received from the supervisor and the engineering sections, which outline the design concepts, and by studying drawings of existing buildings and utilities,

- by taking field measurements of existing buildings, equipment and facility layouts,

- by making detailed design layouts and final drawings of support structures and installations such as equipment stands, benches, cabinets, brackets, supports and wall sections from rough sketches and notes,

40

- by referring to equipment and material catalogues and specifications, regional and departmental directives and circulars, material handbooks, manufacturers' equipment catalogues, and drafting manuals, and applying graphic and drafting standards, and

- by determining and applying approved construction and fabrication methods and materials, finishes, limits and tolerances.

- Makes feasibility study layouts and site plans for building utility and facility projects proposals, as directed, to be used in the preparation of cost estimates and contract specifications.

20

- *Keeps* up-to-date records of changes in utilities and buildings by making new and revised drawings.

20

- Makes inserts and drawings for maintenance instruction manuals and circulars for distribution to the maintenance staff.

10

- Performs related duties such as maintaining project progress by

compiling data and transposing the information to graph or chart presentation, and maintaining up-to-date records of drawings, reference books, catalogues, specifications, circulars and drafting supplies.

10

Specifications

DegreePoints

Knowledge and Experience

The work requires a good knowledge of the drafting techniques used in renovating buildings and utilities, and familiarity with structural, mechanical and electrical requirements of buildings, to communicate with engineers and architects and to understand directions. It also requires familiarity with the geometry used structural and engineering drafting. It requires experience in working from sketches and general instructions, selecting standard items of equipment, and producing final drawings that can be readily interpreted by the maintenance staff.

B 4 179

Technical Responsibility

The work requires selection of standard construction materials, suitable construction techniques and standards, standard items of equipment, means of fabrication, and finishes for the preparation of layouts of supporting components and final modification or alteration drawings. It requires judgement in determining accurate measurements - either calculated or taken on site, the method of presentation, and the numbering and sequencing of drawings and views.

3 120

Responsibility for Accuracy and Quality

Responsibility for the technical accuracy and quality of the layouts and drawings and the application of drafting practices is a requirement of the position. The work is reviewed in progress when non-recurring methods are used and when modifications are not covered by specific instructions. It is thoroughly checked on completion.

2 46

Responsibility for Contacts

Contacts are made with departmental maintenance engineers, other branch personnel and operations staff to obtain information and technical details related to projects. Occasional contacts are made with manufacturers' representatives to obtain technical information on equipment, materials and reference drawings and with construction supervisors regarding the interpretation of drawings.

B 2 27

Conditions of Work

The work requires periods of eye-hand co-ordination and of concentration on detail to ensure the accuracy of layouts and measurements, and the correctness of interpretation of manufacturers' specifications and the drawings made by the other branches.

2 60

<u>supervision</u>	<u>degree</u>	<u>points</u>
There may be a requirement to provide working direction to a draftsman assigned to a project.	A1	15

§ENCH-MARK POSITION DESCRIPTION

Bench-mark Position Numbers 14

Level: 4

Descriptive Title: MECHANICAL DRAFTSMAN

Point Rating: 481

Summary

Under the general supervision of a drafting team leader in a mechanical drafting section, makes layouts and production drawings of assemblies and components of mechanical military equipment; writes specifications; and performs related duties.

Duties

% of Time

- Makes layouts, preliminary drawings and production drawings of a wide range of assemblies, sub-assemblies and components of military equipment for engineering and manufacturing purposes
  - by referring to sketches and oral or written instructions received from engineers, project managers or the supervisor,
  - by visiting equipment sites, taking measurements, and noting assembly methods, types of materials and physical settings,
  - by making freehand sketches from prototype and pilot models with sufficient information to allow preparation of production drawings at a later date,
  - by discussing matters such as drafting layout, equipment components, assembly methods and materials with the supervisor, engineers or project managers,
  - by drawing presentation sketches to scale for study by the project manager, 60
  - by illustrating complex and unusual design or assembly features through blow-ups, isometric drawings or other appropriate techniques, and
  - by drawing all views, dimensions and assembly methods necessary for manufacture.
  
- Writes specifications to accompany production drawings of assemblies, sub-assemblies and components of mechanical equipment
  - by determining from project managers or other sources the requirements such as limits and fits, types of materials, surface and protective finishes,
  - by selecting standard components and materials from catalogues 25
  - by referring to standard tables and specification manuals, and
  - by compiling schedules of technical data for use in manufacturing.
  
- Performs related duties such as suggesting ways to improve the design and to reduce costs of manufacture, discussing drawing requirements with contracting drafting firms, reviewing and checking the work of other draftsmen (including that of contractors) for accuracy and adequacy, and instructing junior draftsmen in drafting as required. 15

		<u>Degree Points</u>
<u>Specifications</u>		
<u>Knowledge and Experience</u>		
The work requires a good knowledge of drafting techniques used to convey technical and meaningful information on mechanical equipment and systems, and familiarity with mechanical and electrical equipment. It also requires familiarity with the geometry used in mechanical drafting and layout. It requires experience in working from oral instructions, in selecting materials on the basis of performance records and knowledge of serviceability under varying conditions, in the use of standardized components, and in interpreting and communicating design concepts and mechanical ideas in graphic form.	203	
<u>Technical Responsibility</u>		
The work requires initiative and judgment in selecting suitable illustrating techniques, determining material to be used, and suggesting ways to improve design and reduce costs of manufacture.	3	120
<u>Responsibility for Accuracy and Quality</u>		
Responsibility for the technical accuracy and quality of the drawings and the application of drafting practices is a requirement of the position. The work is reviewed in progress when non-recurring methods are used and when modifications are not covered by specific instructions. The work is thoroughly checked on completion.	2	46
<u>Responsibility for Contacts</u>		
Contacts are made with engineers and project managers to discuss and clarify technical problems associated with the preparation of drawings, and with production plant technical and professional personnel to discuss requirements and details of drafting design and manufacturing.	B3	37
<u>Conditions of Work</u>		
The work requires eye-hand co-ordination when using drafting instruments, attention to accuracy when taking measurements of prototypes and models, and short periods of concentration when illustrating the workings of assemblies and sub-assemblies.	2	60
<u>Supervision</u>		
There is the occasional requirement to provide working direction to draftsmen assigned to a project.	A <sub>1</sub>	15



BENCH-MARK POSITION DESCRIPTION

Bench-mark Position Number: 15

Level: 5

Descriptive Title: PHOTOGRAMMETRIST

Point Rating: 512

Summary

Under the general supervision of the supervisor of an aero triangulation section, establishes supplementary control points on aerial photographs for map compilation; compiles large-scale maps; transfers control points from photographs to glass diapositives; and performs related duties.

Duties

% of Time

- Establishes supplementary control points on aerial photographs to give map compilers fixed points on the earth's surface from which to orient map detail, using a complex precision bridging instrument
  - by projecting overlapping photographs (printed on glass plates to form an exact optical model in miniature of the terrain on which the supplementary control points are to be established,
  - by perfectly positioning and orienting the projectors to duplicate the orientation of the aerial cameras at the instant of exposure, involving inner orientation (film to holders, and settings of cameras), relative orientation (one camera to the other), and absolute orientation (positioning of the cameras in space in relation to the ground surface),
  - by ascertaining the photogrammetric (spatial) co-ordinates for the location and elevation of control points and establishing a pattern between them and the known true co-ordinates of the control points (allowing for apparent parallax), and
  - by converting photogrammetric (spatial) co-ordinates for supplementary control points to true ground elevations and true geographic positions, using the established patterns.60
  
- Compiles large-scale maps from aerial photographs, using a complex stereoscopic plotter and coordinatograph
  - by placing aerial photographs in the machine and making necessary adjustments and settings to establish the floating mark in a known position on the projected image,
  - by manipulating controls to move the floating mark on the apparent surface of the model and automatically delineate the contour detail to scale on the plotting sheet, and
  - by checking detail delineated by the co-ordinatograph to detect errors in setting or judgment, and re-tracing lines.20

September, 1971

% of Time

- Transfers control points from aerial photographs to glass diapositives, using a point transfer device
  - by locating control points on aerial photographs and aligning the glass diapositive,
  - by adjusting the transfer device to establish the marker at control points, and
  - by activating a drill to bore through the emulsion layer of the glass diapositive at indicated points.
  
- Performs related duties such as testing devices to transfer control points from one plate to another, checking contract-produced maps against standards, maintaining compiling equipment, and training new compilers as assigned.

10

10

Specifications

Degree Points

Knowledge and Experience

The work requires a good knowledge of photogrammetric techniques and practices, and familiarity with aerial photography and map reproduction processes. It also requires familiarity with trigonometry and plane geometry sufficient to understand the principles of triangulation. It requires experience in working from aerial photographs and in compensating for apparent errors in aerial photographs, manipulating a complex precision bridging instrument, and visualizing and accurately delineating ground features from a simulated air view.

B<sub>5</sub>

203

Technical Responsibility

The work requires adherence to specifications for large-scale map compilation. There is some judgment required in compensating for parallax and adjusting the orientation of equipment to distribute tolerable errors, in interpreting photographic images, and in selecting proper data required for a particular map.

2

80

Responsibility for Accuracy and Quality

Responsibility for the selection and location of control points, the accuracy of co-ordinate readings, and delineation of detail is a requirement of the position. All-work is checked for proper identification of field control points, readings of similar points on successive models, focal length settings and other detail.

2

46

Responsibility for Contacts

Contacts are made with the work group, and because of the intricate nature of the work, good communication is required with the supervisor on technical matters.

B 1

18

	<u>Degree</u>	<u>Points</u>
<u>Conditions of Work</u>		
The work requires intensive concentration to visualize depth through a stereoscopic instrument. It also requires exacting eye-hand co-ordination to plot contours and land features accurately and at the same time manipulate complex compiling equipment, using hands and feet, to simulate conditions of the flight and the photographic process at the time of exposure of the photograph.	5	150
<u>Supervision</u>		
The work requires guiding and advising trainees when assigned.	A1	15

BENCH-MARK POSITION DESCRIPTION

Bench-mark Position Number: 16

Level: 5

Descriptive Title: PHOTOGRAMMETRIC COMPILER

Point Rating: 512

Summary

Under the general supervision of the supervisor. of a photogrammetric unit, compiles large scale topographic maps using a precision photogrammetric plotter such as a Wild B-8 or Kern P.G. 2.

Duties

% of Time

- Compiles detailed large-scale maps from aerial photographs using a complex stereoscopic plotter
  - by studying all pertinent specifications and instructions for the map,
  - by calculating photogrammetric model scale and panograph vernier settings using aerial photograph, photogrammetric instrument and map manuscript scales,
  - by optically projecting, using the photogrammetric instrument, the overlapping diapositives to form a precise optical model in miniature of the terrain,
  - by precisely positioning and orienting the projectors to duplicate the orientation of the aerial photographs at the instant of exposure, involving the inner orientation (diapositive to holder and calibrated camera setting), the relative orientation (positioning one camera to the other by removing parallax at specified points), and the absolute orientation (positioning of the cameras to best fit the vertical and horizontal ground and photogrammetric control points), and
  - by interpreting (identifying photographic images in the photogrammetric model), selecting (choosing map data appropriate to final map scale), delineating (plotting photographic image with instrument floating mark) transferring (from model to map by means of instrument coordinatograph or pantograph) map data and preparing the line work for reproduction.

90
  
- Performs other related duties such as, checking each completed map sheet for omissions, contour shapes and uniformity of line density; transferring the appropriate sheet edges; maintaining the required records; and routine maintenance of photogrammetric equipment.

10

Degree    Points

Specifications

Knowledge and Experience

B<sub>5</sub>

The work requires a good knowledge of photogrammetric techniques and practices, of large scale map content and a familiarity with map reproduction processes. It also requires a familiarity with trigonometry and plane geometry sufficient to understand the principles of photogrammetry. The work requires many years of experience in working from aerial photographs and in compensating for errors in perspective photographs, manipulating a complex precision photogrammetric instrument, and visualizing and accurately delineating ground features from a simulated air view.

203

Technical Responsibility

The work requires judgment *when* orienting precision instruments to best fit the photogrammetric model to established control positions. Judgment is required in interpreting photographic imagery and in selecting data appropriate to the map scale.

2        80

Responsibility for Accuracy and Quality

Responsible for the correct interpretation, selection and portrayal of the data to be shown on the map and for the accurate positioning of this data on the map manuscript are requirements of the position. The work **is** checked for completeness and adherence to specifications on completion and prior to reproduction.

2        46

Responsibility for Contacts

Contacts are made in the work group to discuss technical problems, to obtain explanation of unusual aspects of a particular project and to co-operate with other senior stereo compilers to ensure a uniform approach to unusual situations.

18

Conditions of Work

The work requires prolonged periods of intensive concentration to visualize depth through a stereoscopic instrument. It also requires exacting eye-hand co-ordination to plot contours and land features accurately and to manipulate complex photogrammetric equipment, to simulate camera orientations at the time of exposure of the photograph.

5        150

Supervision

The work requires guiding and advising trainees when assigned.

A<sub>1</sub>        15

BENCH-MARK POSITION DESCRIPTION

Bench-mark Position Number: 17

Level: 5

Descriptive Title: SCIENTIFIC ILLUSTRATOR

Point Ratings 544

Summary

Under general supervision of the supervisor of a bio-graphic unit, makes accurate and detailed drawings of entomological, botanical and other scientific subjects in line, wash, stipple, black and white, or color; instructs, advises and assists research officers in methods of graphic portrayal and layout; and performs related duties.

% of Time

Duties

- Makes accurate and detailed drawings of entomological, botanical and other scientific subjects in line, wash, stipple, black and white, or color for reproduction in scientific books, journals and other publications
  - by discussing requirements with the supervisor and research officers to determine the purpose and size of the illustration, medium and reproducing process to be used, number of aspects to be shown, kind and fineness of detail desired, and facets to be emphasized,
  - by reading scientific reference material and studying previous scientific illustrations of the subject if available,
  - by examining photographs, slides, preserved or living material for typical aspects and characteristics, using a high-power phase contrast microscope, micro-projector or magnifier,
  - by dissecting, mounting, staining and heating biological specimens, using scalpel, forceps, probe and needle, when specimens in available state are unsatisfactory for the purpose or when interior or sectional views are required,
  - by planning detail and presentation of work that consists of a series of scientific drawings illustrating various aspects of a subject,
  - by making preliminary drawings in the chosen medium, working from a natural or magnified specimen, and checking drawings with a research officer for factual accuracy and interpretation of requirements, and
  - by revising, re-drawing or completing the drawings.
  
- Instructs, advises and assists research officers engaged in producing biological drawings in the methods and media of graphic portrayal suitable for reproduction
  - by demonstrating the advantages and disadvantages of various methods and media,
  - by advising on the feasibility of the proposed number, size and detail of drawings to assure scientific accuracy on reduction, and

75

15

% of Time

- by correcting and completing preparatory drawings made by research officers, to permit reproduction.
  - Performs related duties such as illustrative designing and drafting, retouching photographs and doing fine line work, and instructing casual and summer staff in work methods and checking their work.
- 10

Specifications

Degree Points

Knowledge and Experience

The work requires a thorough knowledge of drawing media and techniques and the use of scientific apparatus, including microscopes, micro-projectors, magnifiers, and dissecting and drafting instruments. It also requires a knowledge of biology sufficient to recognize the basic characteristics of specimens and understand specialized nomenclature; and a knowledge of methods of reproduction, including such considerations as relative costs, size, fineness of detail and quality of color permitted by the various processes. It requires experience in working in a number of drawing media, in the use of microscopes, magnifiers and--dissecting equipment, and in producing drawings of scientific accuracy.

C4 216

Technical Responsibility

The work requires the exercise of initiative in deciding on and developing preliminary drawings after determining from research officers the purposes of illustration. It requires initiative in suggesting to research officers the modification of preliminary drawings and the inclusion of additional drawings to improve clarity and ensure identification of the structure and characteristics of the subject. It also requires initiative in advising research officers on the feasibility of methods and media of illustration. Judgment is required in choosing, simplifying or eliminating detail to fit limited special allotments in publications without loss of scientific accuracy and in selecting the art medium best suited to the subject and the reproduction processes to be used.

3 120

Responsibility for Accuracy and Quality

Responsibility for accuracy and fidelity of drawings is a requirement of the position. Preliminary drawings are presented to research officers to ensure that the proposed illustration meets the need. Completed work is checked by the research officer for technical accuracy and by the supervisor for presentation.

2 46

	<u>Degree</u>	<u>Points</u>
<u>Responsibility for Contacts</u>		
Contacts are made with research officers of the department and members of the work group to discuss subjects to be illustrated and to advise research officers on techniques and materials suitable to the purpose of the illustration and to reproduction processes.	B2	27
<u>Conditions of Work</u>		
The work requires periods of intense concentration and eye-hand co-ordination when drawing large areas of fine line and dot patterns or fine detail and when examining and drawing features of specimens at great magnification.	4	120
<u>Supervision</u>		
The work requires instructing in work methods and checking the work of a casually employed biology student or a summer student.	A1	15



BENCH-MARK POSITION DESCRIPTION

Bench-mark Position Number: 186

Level: 7

Descriptive Title: SUPERVISING DRAFTSMAN,  
GEOLOGICAL MAPPING

Point Rating: 681

Summary

Under the direction of the chief draftsman in. a geological mapping unit, organizes and controls the preparation of geological maps; and supervises and trains a staff of 20 employees through 3 subordinate supervisors.

Duties

% of Time

- Organizes and controls the preparation of geological maps and - illustrations for the publication of geological survey memoirs, bulletins and papers
  - by studying and discussing work requirements with supervisory or professional personnel,
  - by establishing work priorities and schedules, assessing resources and allocating work to team supervisors,
  - by reviewing progress of work assignments with team supervisors, making suggestions, giving instructions, maintaining flow charts and reporting on job progress periodically to the chief draftsman,
  - by resolving problems of techniques, layout of information, and adjustments and corrections to be made to improve the legibility, coherence and appearance of maps, 85
  - by checking auto-positives and color proofs to ensure that all procedures have been correctly carried out,
  - by reviewing maps and illustrations to ensure that established standards of accuracy and quality are maintained, and recommending their approval, and
  - by. keeping informed on new techniques in cartography and appraising them for adoption.
  
- Supervises 20 draftsmen through 3 subordinate supervisors, and trains and develops the staff
  - by assigning junior draftsmen to work with experienced staff for training purposes,
  - by reviewing training methods and making recommendations,
  - by instructing in techniques,
  - by appraising subordinates and interviewing them respecting their work performance, 15
  - by reporting poor conduct, punctuality or breaches of regulations and recommending disciplinary action, and
  - by reviewing and recommending leave schedules and informing staff of working conditions and management policies.

Specifications

Degree Points

Knowledge and Experience

The work requires a thorough knowledge of cartographic drafting

Degree Points

techniques and practices, including scribing, color separations and overlays. It also requires a knowledge of the trigonometry and geometry used in map projection, of geological survey methods and techniques, and of map reproduction practices and limitations. It requires considerable experience in various drafting techniques, map production practices, the use of color separations, the requirements of map users, and the supervision of a large staff and its organization to meet the workload.

C7 288

Technical Responsibility

The work requires determining the techniques and layout of work most suitable to the type and amount of information to be included, the shape and size of maps, and the method of reproduction to be used. It also requires determining what geological detail can safely be omitted where map areas are congested, and how to use color to distinguish contours and strata. Supervisory duties require judgment and initiative in organizing work, establishing work priorities and schedules, and training and evaluating staff.

3 120

Responsibility for Accuracy and Quality

Responsibility under the chief draftsman to ensure that the most effective work methods and techniques are used and that the accuracy and quality of work produced is of the highest calibre is a requirement of the position.

3 73

Responsibility for Contacts

Contacts are made with subordinates in the sub-section, with superiors, and with professional personnel of the department to exchange information and discuss problems.

B2 27

Conditions of Work

The work requires eye-hand co-ordination when demonstrating drafting techniques, concentration on detail when assessing the quality and accuracy of maps, and attention in supervising and organizing map production.

2 60

Supervision

The work requires supervising 23 employees in a sub-section composed of three units each headed by a working supervisor. It also requires appraising the performance of subordinates and allocating staff to meet work demands and to ensure proper training.

D5 113

BENCH-MARK POSITION DESCRIPTION

Bench-mark Position Number: 19

Level: 6

Descriptive Title: TEAM LEADER, MECHANICAL AND  
ELECTRICAL DRAFTING

Point Rating: 591

Summary

Under the general supervision of a supervisor of production drawings in a large organization, organizes and controls the activities of a drafting team which produces mechanical and electrical production drawings; supervises a staff of nine draftsmen; and evaluates and suggests improvement of methods and design.

Duties

% of Time

- Organizes and controls the activities of a drafting team engaged in making sketches, production drawings and technical data schedules of electrical and mechanical equipment
  - by studying work order instructions to assess their effect on existing or proposed equipment,
  - by consulting with project managers and visiting project sites to obtain specifications and an appreciation of the purpose and physical requirements of the object to be illustrated,
  - by planning drafting assignments based on work order instructions,
  - by assigning work according to complexity, staff capability and work demands,
  - by establishing work flow and production schedules and following up on these,
  - by discussing work and periodically checking difficult drawings, assisting draftsmen with difficult problems, and checking completed drawings for accuracy and suitability of presentation before submitting them to a formal check,
  - by assisting in determining specifications and compiling technical data schedules based on experience, good practice and the use of technical handbooks,
  - by continued liaison with the project manager respecting suggestions, difficulties encountered during drafting, changes in design or materials, and results of engineering tests, and
  - by maintaining the security of classified data.
  
- Supervises a staff of nine draftsmen
  - by conducting on-the-job training,
  - by recommending disciplinary action,
  - by discussing work performance with employees, and
  - by recommending staff ratings to the supervisor of production drawings.

75

15

% of Time

- Evaluates and suggests improvement of methods and design
    - by suggesting alternate methods of fabrication, type of material or design,
    - by regularly checking drafting work being produced by a contractor for quality and adherence to specifications and by offering technical assistance to the contractor,
    - by attending plant pre-production and design committee meetings to discuss design features and methods of fabrication, and
    - by keeping abreast of and recommending improved methods of work production and processes.
- 10

Specifications

Degree Points

Knowledge and Experience

The work requires a thorough knowledge of engineering drafting techniques and practices and of methods of illustrating complex mechanisms or machine operation. It also requires a knowledge of trigonometry and geometry used in engineering drafting, of mechanical design principles, and of supervisory practices. It requires varied experience in mechanical and electrical drafting, interpreting novel ideas, and supervising a drafting team making diverse drawings.

C5      240

Technical Responsibility

The work requires determining the method of presentation, type of material and method of fabrication most suitable to the design, and requires judgment in reviewing design proposals to ensure that they are functionally and economically sound and to recommend improved methods.

3      120

Responsibility for Accuracy and Quality

Responsibility for the technical quality and accuracy of the work of subordinates and for ensuring that each component is correctly illustrated with sufficient views, cross-sections and detail to show the proper dimensions, tolerances and materials is a requirement of the position.

3      73

Responsibility for Contacts

Contacts are made with other employees in the section and with project managers, outside production plant personnel, and professional personnel within and outside the department to discuss drafting requirements,, design and fabrication.

B3      37

	<u>Degree</u>	<u>Points</u>
<u>Conditions of Work</u>		
The work requires a moderate level of eye-hand co-ordination when demonstrating drafting or illustration techniques, periods of concentration when assisting with technical problems and assessing the quality of work produced, and attention when supervising the drafting team.	2	60
<u>Supervision</u>		
The work requires maintaining discipline, making effective use of staff and reporting on work performance of a staff of nine.	C3	61

BENCH-MARK POSITION DESCRIPTION

Bench-mark Position Number: 20

Level: 3

Descriptive Title: TECHNICAL ILLUSTRATOR

Point Rating: 407

Summary

Under the general supervision of a publication section supervisor, illustrates the text of engineering publications with black-and-white drawings of technical equipment and schematic wiring diagrams; makes color overlay drawings, and letters title pages and illustrations; draws graphs, charts and forms; and performs related duties.

Duties

% of Time

- Draws to scale, in black and white, technical equipment and schematic wiring diagrams, from sketches, manufacturers' specifications and sample items, to illustrate and clarify details of text
  - by discussing and clarifying requirements, as necessary, with engineers and architects requesting work,
  - by determining weights of lines to prevent loss of detail in reduction, and
  - by using such drawing instruments as ruling and drawing pens, French curves, set squares, scales and proportional dividers.

45
- Makes accurate color overlay drawings, using ink on acetate, to assure registration of colors when photographed or printed. 15
- Letters title pages and illustrations by hand or by use of a mechanical Leroy lettering guide or other drawing device. 15
- Draws graphs, charts and forms for general use or publication
  - by using black ink on white, and
  - by superimposing zipatone screening or color overlay.

15
- Performs related duties **such** as making final layouts for photo graphing and plate-making by combining text, line and half-tone illustrations and color separations, and arranging and stripping in material on a light-table. 10

Specifications

Degree Points

Knowledge and Experience

The work requires a good knowledge of graphic illustrative techniques and equipment to illustrate construction engineering equipment, components and electrical circuits. It also requires familiarity with photographic and printing reproduction techniques. It requires experience in using drawing tools and materials and preparing technically accurate illustrations for diverse and complex equipment.

B4 179

	<u>Degree</u>	<u>Points</u>
Technical Responsibility		
The work requires some initiative and judgment, within established practices and techniques and under supervision, in selecting the weight of lines and the weight and size of lettering, and in planning the presentation for its artistic effect and suitability to the particular method of reproduction to be used. Judgment is also required in drawing in perspective and proportion, and to scale, technical detail that will conform to the text of the publication.	2	80
Responsibility for Accuracy and Quality		
Responsibility for accuracy and quality of drawings in illustrating technical equipment and making overlay drawings, diagrams and graphs is a requirement of the position. All work is checked on completion.	2	46
Responsibility for Contacts		
Contacts are made with members of the work group and with engineers, architects and technicians within the department to discuss and clarify requirements and solve work problems.	B2	27
Conditions of Work		
The work requires attention to detail and eye-hand coordination in drawing technical equipment, components and wiring diagrams, making accurate overlay drawings, and cutting and stripping in material on light-tables.	2	60
Supervision		
There may be a requirement to show others how to perform tasks.	A1	15