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ABSTRACT

Information concerning job characteristics and employment skills for the physically handicapped were provided for 227 occupations contained within the Washington Occupational Information Service (WOIS) career information system. For each occupation, an adjunct description was written, including alternative or feasible occupations in each occupational category. The 227 occupations analyzed for the study indicate the feasibility of employing the handicapped as well as the aptitudes needed for handicapped persons to be successful on the job. In conducting the study, a cooperative plan was developed for pre- and posttesting and evaluation. The evaluation concluded that the occupational information is of value and is useful to the physically handicapped; however, an alternative method of access to the WOIS system should be developed. The body of this report comprises nine pages. The remainder of the document are appendixes of materials used in the study. These include Bibliography, FSCC Physically Handicapped Program Description, Summation, Pretest and Posttest, WOIS QUEST Booklet, Software Book (covering the majority of the document and containing information on 227 occupations), Student Interviews Evaluation, Career Counselor Evaluation, Division of Vocational Rehabilitation Evaluation, Washington Occupational Information System Evaluation, and Occupations Accidentally Omitted--Not in WOIS Computer. (TA)

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FINAL REPORT

Project No. 76-323(204)NN

DEVELOPMENT OF A PLAN FOR PROVIDING OF
CAREER INFORMATION FOR HANDICAPPED STUDENTS

Research Project in Vocational Education
Conducted Under
Part C of Public Law 90-576

The project reported herein was performed pursuant to a grant from the Research Coordinating Unit of the Washington State Commission for Vocational Education. Contractors undertaking such projects under the Commission for Vocational Education sponsorship are encouraged to express freely their professional judgment in the conduct of the project. Points of view or opinions stated do not, therefore, necessarily represent official Commission for Vocational Education position or policy.

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EDUCATION & WELFARE
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June 30, 1976

Project No. 72-323(204)NN
Development of a Plan for Providing
Career Information for Handicapped
Students

Robert L. Metcalf, Project Director
Pearl H. Rose, Project Researcher

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SUMMARY OF THE REPORT

This research activity was carried out by a student intern and begun September 1, 1975. The project was extended when additional monies became available from May 1, 1976 to June 30, 1976 and this is the final report.

Originally, the goal was to develop a plan to provide twenty-five occupational descriptions for physically handicapped students at Fort Steilacoom Community College (FSCC). When a time and monies extension was granted, the goal was modified to provide two hundred twenty-seven occupational descriptions for the physically handicapped. The objectives were to develop a plan to provide career information and data about job characteristics and employment skills to physically handicapped students at FSCC and to negotiate inclusion of the data into the Washington Occupational Information Service (WOIS) so that career information would become available to all physically handicapped students whose schools subscribe to the WOIS system.

An ERIC search was conducted and documents reviewed and a second literature search was conducted. Negotiation with WOIS was successful and verbal agreement was reached to cooperate in the effort to provide career information to the physically handicapped. A cooperative plan was developed to define a population, select a test group, pre-test, expose a population to the WOIS system, randomly select occupations, analyze occupations, enter new data into WOIS system, re-expose the population, post-test the population and evaluate the project. The twenty-five occupations were analyzed using documents and personal interviews to determine the feasibility of the occupation for the physically handicapped.

Two hundred twenty-seven occupations, contained within the WOIS system were analyzed to determine their feasibility for a physically handicapped individual's career. For each occupation an adjunct description was written including alternative or feasible occupations within each occupational category. The new data was entered into the WOIS system. The student population was exposed to the new material and an evaluation was conducted.

The evaluation of the project was conducted internally by personal interview with the participating students, by the Career Counselor at FSCC and externally by the Division of Vocational Rehabilitation and by WOIS. The evaluation concluded that the new occupational information is useful, helpful, informative and desirable.

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Summary of Report - continued

It has been concluded the occupational information is of value and is useful to the physically handicapped. However, it has been concluded that the data is difficult to access and that some problem exists within the WOIS QUEST for the physically handicapped individuals. It is recommended that an alternative method of access to the WOIS system of occupational information should be developed for the physically handicapped.

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BODY OF THE REPORT

STATEMENT OF PROBLEM

Career opportunity and information services were an integral part of a well-rounded vocational education program. Twelve and nine tenths per cent (12.9%) of the population in the United States was physically handicapped or suffering from a disability. Little career information was currently available and accessible to this physically handicapped population. Recent legislation mandated that equal opportunity for employment of the handicapped must exist. Reviewed studies indicated that employers were willing to hire trained handicapped persons. It was obvious that some provision should be made to develop and supply relevant occupational information to these individuals.

There were thirty people identified as physically handicapped and enrolled in vocational programs at Fort Steilacoom Community College. It was estimated, through special parking requests, that one hundred fifty handicapped people were enrolled at Fort Steilacoom. In addition to these enrolled students, one hundred individuals during the academic year 1974-75 were assisted by the Coordinator of the Physically Handicapped Program. These prospective students were involved in a career search through the motivation section of the Vocational Program for the Physically Handicapped at Fort Steilacoom Community College (see Appendix B). At that time no other Washington State Community College or Vocational Technical Institute actively recruited the physically handicapped student; therefore, no other data was available. It was assumed that other districts had a similar population needing assistance in career planning.

With more employers seeking trained physically handicapped individuals, it was assumed that more students would need career guidance and occupational information. It was felt that the development of twenty-five job categories for physically handicapped would provide the needed assistance to students within the Physically Handicapped Program at Fort Steilacoom Community College. In addition, it was thought that the development of a plan for providing career information for physically handicapped individuals would also assist other schools in providing needed career guidance and information about job characteristics and employment skills. Specifically, the problem was that a group of physically handicapped students were needing relevant occupational information to assist them in exploring occupational opportunities and planning for realistic careers.

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Body of the Report - continued

REVIEW OF THE LITERATURE

An intensive review of the literature and the ERIC documents revealed that there was an appalling paucity of research on occupational information for the physically handicapped.

Hoppock (1976) indicates in a reprinted article by Sinick (1964) on occupational information and the handicapped that generally the same principles and practice used in providing occupational information for the non-handicapped apply to the handicapped. However content may need to be selected and adapted to particular disabilities.

PROJECT OBJECTIVE

The major objectives of this project was to provide career information, and information about job characteristics and employment skills for the physically handicapped students at Fort Steilacoom Community College; to conduct a second review of available research material; and to identify twenty-five occupations to be researched and analyzed with the physically handicapped in mind. The final product was to be a brief occupational supplement specifically for the physically handicapped.

Sub-Objectives

To design a plan for collection and formulation of occupational job categories at Fort Steilacoom Community College.

To design an occupational description compatible with the Washington Occupational Information Service's format.

To summarize the current research material in the area of physically handicapped.

To increase the available career information for the physically handicapped students at Fort Steilacoom Community College.

To develop a software booklet containing occupational information specifically for the physically handicapped students at Fort Steilacoom Community College.

To negotiate with Washington Occupational Information Service to make computerized occupational information available for the physically handicapped students at Fort Steilacoom Community College

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Sub-Objectives - continued

To have a third party evaluator conduct an evaluation of the project.

To write a final report of the project for the Research Coordinating Unit.

DESCRIPTION OF THE PROJECT

This research project was carried out by a student intern from The Evergreen State College to Fort Steilacoom Community College, (FSCC) where she was employed as the Coordinator of the Vocational Program for Physically Handicapped (See Appendix B). The project began September first of 1975 and was extended when additional monies became available from May 1, 1976 to June 30, 1976. Originally, the intent was to develop a plan to provide twenty-five occupational descriptions which physically handicapped persons could be expected to perform. The objectives were to develop a plan to provide career information and data about job characteristics and employment skills to physically handicapped students at FSCC and to negotiate inclusion of the data into the Washington Occupational Information Service (WOIS). When time and monies were extended the goal was altered to include analysis and inclusion of the developed information of all two hundred twenty-seven occupations contained in the WOIS system. This alteration made the new career information available to all severely physically handicapped users of the WOIS system.

As planned, for the initial phase of the research project, an ERIC search was conducted and documents reviewed and a second literature search was conducted to find information which would assist in analyzing the occupations. Little information was found which provided an analysis of occupations for the physically handicapped. Robert Hoppock (1976) quoting an article by Sinick (1964) (See Appendix A) on occupational information and the handicapped stated that generally the same principles and practices used in providing occupational information for the non-handicapped apply to the handicapped. However, content may need to be selected and adapted to particular disabilities.

The Dictionary of Occupational Titles (See Appendix A) provided data which could be utilized to analyze jobs but the occupations had not been analyzed with the physically handicapped in mind. Since no data was obtained a summary of current research in the area of physically handicapped occupations could not be written.

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Body of Report - continued

Description - continued

The project researcher was successful in negotiation with the WOIS and a verbal agreement was made to work together in the effort to provide career information to the physically handicapped. In cooperation with WOIS, a plan was formulated to analyze and develop twenty-five occupations for the physically handicapped. The format for information entry into WOIS was obtained. Physically handicapped was defined as those individuals who use wheelchairs or appliances for mobility. A test was developed to evaluate whether career information was helpful. The first two pages were designed to test for usefulness of the WOIS system occupational information since it was assumed that some changes needed to be made. The remaining pages were developed to provide data which might be useful in the future to the WOIS system because it was suspected that a different system of entry to the computerized career information contained within the WOIS system could be suggested by the results of this research project.

The possibility of making changes in the WOIS QUEST were discussed, though this was not a stated objective of this project, it became desirable in developing a plan to provide career information to the physically handicapped. No firm commitment was made to change QUEST. A plan was developed to select a sample of students fitting the definition, present them with the WOIS system data, present the query, evaluate the data and randomly select twenty-five occupations which a physically handicapped person could be expected to perform.

Ten students were selected based on the definition of the physically handicapped. Each student was asked to answer the QUEST booklet provided by the WOIS system, to use the computer to access WOIS information, and to take the pre-test. Over half of the students responded positively to the question, "Would additional information help you make an occupational choice?" And over half of the students responded negatively to the question, "Do you know if you can physically do that occupation?" After the occupational information printouts were evaluated, it was concluded that more specific information would be useful to the physically handicapped. Ten students completed the task but one completed too late to utilize his printout and pre-test of occupations in the random selection process.

It was concluded that it was as important to provide an analysis of occupations which physically handicapped people would not be expected

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Body of Report - continued

Description - continued

to perform as it was to provide information of occupations which physically handicapped could be expected to perform. Hence, in selecting twenty-five occupations which were expected to be suitable for employment of the physically handicapped, twenty-two occupations were randomly found which would be inappropriate or needed to be analyzed to determine whether they were feasible or not feasible for the physically handicapped. A research assistant was hired and the analysis was begun. The analysis was made possible through the use of the Dictionary of Occupational Titles Vol I & II which provides a thorough analysis of the physical skills and requirements of each occupational title within the United States, other documents and formal personal interviews with individuals who worked within the occupational field which was being analyzed. Also, informal interviews were conducted with personnel who worked at the Division of Vocational Rehabilitation (DVR), Division of Labor and Industry, Department of Labor, the Handicapped Advisory Committee and the Governor's Committee for Employment of the Handicapped. If an occupation was feasible for some physically handicapped but not for all physically handicapped it was determined to be feasible and alternative suggested occupations were provided for those physically handicapped who could not be expected to perform the occupational. It was concluded that to label an occupation not feasible when some physically handicapped could be expected to perform the occupation would be discriminating to the more capable person.

Forty-seven occupations were analyzed, new descriptions were written which provided specific information as to feasibility and alternative occupations within the career field, and were entered into the WOIS system. After the forty-seven occupations had been analyzed additional monies became available which made it possible to analyze the remaining one hundred eighty occupations within the WOIS system. Random selection became unnecessary. The criteria for analysis and the presentation format remained the same as the prior study of occupations. After the additional one hundred eighty occupations were analyzed and the new information was entered into the WOIS system, the students who participated in the pre-test and who had used the computerized WOIS system were asked to access the computer once again. Each student (with the exception of one who was unable to participate, carried their first and last computer printout to their (DVR) Counselor or the Career Counselor at FSCC to discuss their occupational goals. Eight of the students completed the post-test (one left FSCC for summer vacation).

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Body of Report - continued

Description - continued

Five students participated in an oral query of the usefulness of the information after they completed the post-test. Each DVR Counselor who saw the student participants was asked to write an evaluation of the project. Also, the Career Counselor at FSCC was asked to write an evaluation of the project. The evaluation guideline which was given to each evaluator was to compare the printouts from the first use and second use and to evaluate the usefulness of the career information provided to their physically handicapped client. The WOIS system has been asked to evaluate the new occupational information. A summary has been prepared of all of the evaluations. A software booklet containing specific occupation information for the physically handicapped is available to students at FSCC.

RESULTS

1. Physically handicapped students were selected, pre-test exposed to WOIS occupational information, post-tested and personally interviewed. (See Appendix D for test).
2. Career information and analysis of two hundred twenty-seven occupations has been provided for physically handicapped who use wheelchairs or appliances for mobility. (See Appendix E).
3. Five physically handicapped students who were interviewed indicated that the information was useful. (See Appendix F).
4. The Career Counselor at FSCC stated that the information was helpful. (See Appendix G).
5. The Division of Vocational Rehabilitation Counselor evaluators stated that the data was informative and helpful. (See Appendix H).
6. Career information for the physically handicapped has been entered into the computerized WOIS system and has become available to physically handicapped students who attend schools who subscribe to the WOIS system. WOIS has stated that the information was compatible in format with their system and is desirable (See Appendix I).
7. Recommendations are now possible for future projects and plans which would further improve career information for the physically handicapped.

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Body of Report - continued

EVALUATIONS

INTERNAL EVALUATION

Students:

Five students who had participated in the project were personally interviewed. In summary, their comments were positive in regard to the new information for physically handicapped. However, without exception they commented on the fact that the QUEST is difficult to use and that some of the initial printout information is not feasible. Most students suggested that the questions of lifting, carrying and mobility should be further refined. They felt they received better information on the post access of the WOIS system because they knew how to use the computer better on their last computer test. (See Appendix F).

Career Counselor:

The career counselor at FSCC was asked to interview four of the students who participated in the project; three of the four were able to do so before Spring Quarter ended. The student who was unable to be interviewed is also the student with whom the researcher discontinued the personal interview (see Appendix F, Student V). The career counselor comments that he notes "some positive affect on handicapped user attitudes." He states that this is valuable in creating an attitude conducive to career guidance efforts. However, he comments upon and makes suggestions for improvement of the method of access to the information specifically aimed at provided occupational data to the physically handicapped user of WOIS system. (See Appendix G).

EXTERNAL EVALUATION

DIVISION OF VOCATIONAL REHABILITATION

Four DVR Counselors were asked to meet with five of their clients who were student participants in the research project. The students were asked to compare the two printouts and discuss their career goals with their counselors. The Counselors were asked to read both printouts and evaluate the occupational information for the physically handicapped. The Counselors stated that the data was helpful and informative but they expressed concern because they felt their clients couldn't properly answer the QUEST system or that more information was needed. All of the Counselors were enthusiastic and felt that the information would be useful to their counseling. (See Appendix H).

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External Evaluation - continued

WASHINGTON OCCUPATIONAL INFORMATION SYSTEM

WOIS was asked to evaluate the analysis of occupations for inclusion into the WOIS system. WOIS found the material to be compatible in format to their system. The information specifically aimed at the physically handicapped using wheelchairs or appliances for mobility has been entered into the WOIS system and a request has been made to change the program so that only those interested in physically handicapped data will receive the information. (Presently, all users of WOIS receive the physically handicapped information.) WOIS has stated that the information is desirable. (See Appendix I).

CONCLUSIONS

It has been concluded that the occupational information which has been developed for two hundred twenty-seven occupations contained within the WOIS system is useful to the identified physically handicapped for which it was developed. In addition, it has been concluded that some problems continue to exist within the entry of personal data system (QUEST) in the WOIS system. It has been suggested that the QUEST is not properly expressed so that a physically handicapped person will be able to provide answers to the question in a manner which will produce occupations which they may be expected to perform. It has been suggested that the QUEST is a subjective test and that objectivity is needed to obtain useful occupational data for the physically handicapped person. Also, it has been concluded that not enough monies were requested to allow funding for a computer programmer and computer time to change the QUEST within the WOIS system. It is concluded that WOIS was generous in supplying a transcriber and computer time to enter the data which was generated in this project.

IMPLICATIONS

The conclusions drawn imply that some research and analysis of the delivery system within the WOIS system needs to be undertaken if the system is to readily meet the needs of the physically handicapped. Presently, it is implied, that there is information available to the physically handicapped which is not easily accessed.

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RECOMMENDATIONS

1. An evaluation of handicapped and non-handicapped users of the WOIS system's QUEST should be instituted and conducted.

2. The results of the study of QUEST should be evaluated and a study conducted which would provide an alternative method of access to the computerized occupational information.

3. The possibility of using an objective measurement tool such as GATBY, VAL PAR and/or JEVS should be studied and implemented if one or all are found to be feasible and useful.

4. The WOIS system should be re-programmed to include an alternative entry method for physically handicapped users.

5. The WOIS system of delivery of occupational choices should be re-assessed and re-programmed to include the refined physical requirements of the two hundred twenty-seven occupations which are now within the WOIS system.

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APPENDIX A
BIBLIOGRAPHY

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APPENDIX A

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Appendix A - continued

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APPENDIX B

PROGRAM DESCRIPTION

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FORT STEILACOOM COMMUNITY COLLEGE

App. No. 19

EDUCATION PROGRAM FOR PHYSICALLY HANDICAPPED & DISABLED

Address	9401 Farwest Drive Southwest - P. O. Box 99186
Phone	552-3181 (Fort Steilacoom Community College, Office of Occupational Education) Ask for Handicapped Program Coordinator
Office Hour	Call for appointment 8 a.m. to 5 p.m.
Description	<p>Fort Steilacoom Community College is providing a special program for the physically handicapped and physically disabled. It is intended for those individuals who would benefit from vocational training or career planning or rehabilitative self help skills. Specific programs available are the hydro therapy (aquatics) program, Veterans Affairs Program, Individual Progress Center, peer group meetings, and graduated learning programs. The referred person or self-applicant will be assisted in making the appropriate program selection.</p> <p>Fort Steilacoom Community College will make use of the occupational programs described in the "Career Opportunities" brochure available from the college, as well as the following:</p> <ul style="list-style-type: none">High School Completion ProgramIndividual Development CoursesMinorities Program with Occupational proficiencyCareer Counseling interest and aptitude testingCommunity Service Special programsHome Study College Courses
Who is Eligible	The individual who is medically physically handicapped and those individuals who have become physically disabled and are interested in furthering their education.
Fee System	Introductory and certain activities are provided free of charge. Later programs, or progress into regular college vocational courses, require payment of regular fees by the individual or by an assisting agency, or fee waiver by application approval may be obtained.
Procedures	Individuals may make a personal contact with the school or be referred by an agency or by recommendation of an individual from the community.

Fort Steilacoom Community College is a two-year community college serving greater Pierce County. FSCC provides a special program for the physically handicapped and physically disabled. The individual will be assisted in making choices from the following career choices.

HIGH SCHOOL DIPLOMA PROGRAM

The High School Diploma Program is designed for adult students to complete high school.

ASSOCIATE IN GENERAL STUDIES

The Associate in General Studies Degree allows you, through individual counseling, to design a program with specific education goals.

ASSOCIATE IN ARTS AND SCIENCES

The Associate in Arts and Sciences Degree parallels the requirements of the state colleges, private colleges and universities. You may transfer from FSCC to a four-year college or university with all junior standing.

TWO YEAR PROGRAMS LEADING TO AN "ASSOCIATE DEGREE" IN:

- Accounting
- Animal Technology
- Construction Engineering Technology
- Data Processing
- Dental Hygiene
- Early Childhood Education
- Fashion Merchandising
- Fire Command & Administration
- Food Marketing Institute
- Industrial Relations
- Law Enforcement
- Mental Health Technology
- Mental Retardation Technology
- Mid-Management
- Professional Management (Military/Ft. Lewis)
- Recreational Leadership
- Secretarial Science: Secretary
- Secretary
- Medical Secretary

General Office:
Clerical
Management

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OCCUPATIONAL PROGRAM FOR THE PHYSICALLY DISABLED & HANDICAPPED



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EDUCATION PROGRAM FOR PHYSICALLY HANDICAPPED & DISABLED

Address	9401 Farwest Drive Southwest - P. O. Box 99186
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Procedures	Individuals may make a personal contact with the school or be referred by an agency or by recommendation of an individual from the community.

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APPENDIX C

SUMMATION, PRE-TEST AND POST TEST

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Students

Robert L. Metcalf, Project Director
Pearl H. Rose, Project Researcher

APPENDIX C

SUMMATION OF TESTS RESULTS

Seven of the ten students who completed the access to the WOIS system completed the pre-test or ten completed and three pre-test have been inadvertently misplaced. Of the seven responding four indicated that they utilized the QUEST supplied by WOIS system to access the computer and three did not respond. Four students responded that they utilized the Description file and three did not respond. Three students indicated that they used the education file and four did not respond. Two of the respondents were female, five were male and all were caucasian. Two students indicated their education goal was transfer, two replied that their intention was vocational, one responded to personal interest and two were undecided. All seven students indicated that they had some training beyond high school.

Eight of the ten students completed the post-test. Of the eight students who completed the pre-test, six students utilized the QUEST, supplied by WOIS, two students did not respond. Four students indicated that they used the Description file and four did not respond. One student indicated that s/he used the education file and seven did not respond. Two of the respondents were female, six were male and all were caucasian. Three students indicated that their educational goal is transfer, one indicated that his/her goal is high school completion, two students indicated that they were undecided and two indicated that their goal is some college. Of the eight responding, one indicated that s/he had not completed high school and did not have a G.E.D. and seven indicated that they have some training beyond high school. No sophisticated comparative analysis of the pre-test and post-test has been performed.

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SUMMATION OF TEST RESULTS

Pre-test - 7 responding

Post-test - 8 responding

#	YES	NO	U	FS	VS	NR	#	YES	NO	VU	U	FS	VS	NR
1	1	6					1	8						
2	6	1					2	8						
3	4	2				1	3	5	3					
4	7						4	8						
5		7					5	2	6	1=couldn't manipulate				
6	2	5					6	1	6					1
7	1=lots; 4=some; 2=none							7	3=lots; 4=some; 1=none					
8	3=certain; 3=not certain						1	8	5	3				
9a	4	3					9a	7	1					
9b	2	4				1	9b	5	3					
9c	1=lots; 4=some; 2=none							9c	2=lots; 5=some; 1=none					
10	6	1					10	8						
11	7						11	8						
12	3	4					12	7	1					
13	6	1					13	7	1					
14	1=very favorable 3=favorable 3=can't evaluate							14	2=very favorable 5=favorable 1=unfavorable					

VS=Very sure; FS=Fairly sure; U=Unsure; VU=Very unsure; NR=No response

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Summation of Test Results - continued

Pre-test - 7 responding							Post-test - 8 responding								
#	YES	NO	VU	U	FS	VS	NR	#	YES	NO	VU	U	FS	VS	NR
15	3	4						15	4	4					
16a	3	3						16a	6	2				1	
16b	2=better QUEST						5	16b	1=better QUEST 1=More educational data						6
17	3	4		2	1	4		17	2	6		1	4	3	
18	7				3	4		18	7	1			3	5	
19	7			1	2	4		19	4	4		1	4	3	
20	4	3			2	5		20	4	4			3	4	1
21	5	2		1	2	4		21	6	2		1	1	6	
22a	6				3		1	22a	6	2		1	2	5	
22b	6			1	2	3	1	22b	7	1			4	4	
23a	6	1		1	1	5		23a	7	1			3	5	
23b	6	1		1	2	4		23b	7	1			2	6	
24a	2	4		3	1	2	1	24a	5	3		2	3	3	
24b	4	3		2	2	3		24b	5	3		1	5	2	
25	5	2			4	3		25	5	2			3	5	
26	3			1	4	1	1	26	2	1			2	6	
	4=I could								1=I could 5=I could						
27	7				3	4		27	8				5	3	
28	7				2	5		28	8		1		1	6	
29	4	3		1	1	5		29	8				6	2	

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Summation of Test Results - continued

Pre-test - 7 responding								Post-test - 8 responding								
#	YES	NO	VU	U	FS	VS	NR	#	YES	NO	VU	U	FS	VS	NR	
30	3	1			3	4		30	5		3=I could					
31a	5				4	3		31a	7	1			2	6		
31b	7				3	4		31b	8				2	6		
32a	6	1			2	5		32a	7	1				4		
32b	6	1			2	5		32b	7	1			5	3		
33	4	1		2	3			33	7	1		1	7			
34	4	2			3	4		34	4	2		1	3	3	1	
35	3=light work; 1=can lift 40, can't carry; 1 can lift 50, can't carry							35	1=medium work; 4=light work 2=no lifting or carrying; 1=can lift 20, carry=0							
36	5	2			6	1		36	4	2				8		
37		7			6	1		37	6	2				8		
38		7			6	1		38		6				7	1	
39	2	2		1	2	2	2	39	2	4		2	1	5		
40a	7							40a	8							
40b	7							40b	8							
41	5	1					1	41	7	1						

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APPENDIX C

PRE-TEST AND POST-TEST

Computer time used

<u>PART USED</u>	<u>AGE/SEX</u>	<u>ETHNIC GROUP</u>	<u>EDUCATION GOAL</u>
<u>QUEST</u>	1 Female 25/older	1 American Indian	1 Transfer
<u>DESC</u>	2 Female under 25	2 Asian American	2 Vocational
<u>AD. FILE</u>	3 Male 25/older	3 Black American	3 High School Compl.
<u>OTHER</u>	4 Male under 25	4 Mexican American	4 Personal Interest
		5 White American	5 Undecided
		6 Other	6 Other

EDUCATION AND TRAINING:

How much schooling do you have? (Check One)

- I am still in Junior High or High School.
- I have not finished high school and do not have a G.E.D.
- I have finished high school or have a G.E.D.
- I have some training beyond high school.
- I have a college degree.
- I have an advanced degree.

- Have you used WOIS before? yes no
- Did you have an idea about a career before you used WOIS?
 yes no
- How certain are you about that career? certain not certain
- Was the computer located in an accessible room? yes no

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Appendix C - continued

Education and Training - continued

5. Did you find it difficult to use the computer? yes no
 couldn't understand couldn't manipulate keys
6. Did you find it difficult to decide how to respond to some of the questions? yes no. If so, which questions? _____
7. How satisfied are you with your experience with WOIS program?
 lots some none
8. Now that you have used WOIS, how certain are you that your choice of a career is a good one? certain not certain
9. If you used QUEST:
 - (a) Did the list of occupations given you include ones that you had not thought of before? yes no
 - (b) Did you (do you) want to investigate any of them? yes no
 - (c) Did QUEST help you? lots some none
10. Did the description of an occupation give you a better understanding about any occupation? yes no
11. Do you know how and where you can get training for that occupation?
 yes no
12. Do you know if you can physically do that occupation? yes no
13. Have you, or do you plan to, utilize a counselor, career information files, other resources for continued career exploration? yes no
14. What is your overall reaction to the WOIS system? very favorable
 favorable unfavorable can't evaluate
15. Do the questions as asked apply to you? yes no
16. (a) Would additional information help you make an occupational choice? yes no
(b) If yes, better QUEST more precise job description more educational data. Other _____

Appendix C - continued

INTERESTS:

Some people have strong likes and dislikes about the things they do on a job.

17. I would like to work mainly with objects or materials that I can do things with. (Things and Objects)
___ Yes, I would consider a job where this is a major part of the work.
___ No, I don't want a job with a lot of this kind of activity.

How sure are you of your answer? (Circle one)

Very Unsure Unsure Fairly Sure Very Sure

18. I would like a job where I work to get ideas across to people. (Communication of Data)
___ Yes, I would consider a job where this is a major part of the work.
___ No, I do not want a job with a lot of this kind of activity.

How sure are you of your answer? (Circle one)

Very Unsure Unsure Fairly Sure Very Sure

19. I would like a job where I have a lot of business contact with people. (Business Contact)
___ Yes, I would consider a job where this is a major part of the work.
___ No, I do not want a job with a lot of this kind of activity.

How sure are you of your answer? (Circle one)

Very Unsure Unsure Fairly Sure Very Sure

20. I would like to do scientific or technical work where I learn many facts and always have to be careful to do things right. (Scientific and Technical)
___ Yes, I would consider a job where this is a major part of the work.
___ No, I do not want a job with a lot of this kind of activity.

How sure are you of your answer? (Circle one)

Very Unsure Unsure Fairly Sure Very Sure

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Appendix C - continued

Interests - continued

21. I would like a job where the work is well organized and I know exactly what my duties are. (Routine, Concrete and Organized)
___ Yes, I would consider a job where this is a major part of the work.
___ No, I do not want a job with a lot of this kind of activity.

How sure are you of your answer? (Circle one)

Very Unsure Unsure Fairly Sure Very Sure

22. (a) I would like a job where I figure things out all the time and come up with my own ideas. (Abstract and Creative)
___ Yes, I would consider a job where this is a major part of the work.
___ No, I do not want a job with a lot of this kind of activity.

How sure are you of your answer? (Circle one)

Very Unsure Unsure Fairly Sure Very Sure

- (b) I would like a job where I have to use originality and imagination in doing my work. (Abstract and Creative)
___ Yes, I would consider a job where this is a major part of the work.
___ No, I do not want a job with a lot of this kind of activity.

How sure are you of your answer? (Circle one)

Very Unsure Unsure Fairly Sure Very Sure

23. (a) I would like a job where I get to know people and help them with their problems. (Working for the Presumed Good of People)
___ Yes, I would consider a job where this is a major part of the work.
___ No, I do not want a job with a lot of this kind of activity.

How sure are you of your answer? (Circle one)

Very Unsure Unsure Fairly Sure Very Sure

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Appendix C - continued

Interests - continued

24. (a) I would like a job where I have equipment or regular procedures to do my work. (Processes, Machines or Techniques)
 Yes, I would consider a job where this is a major part of the work.
 No, I do not want a job with a lot of this kind of activity.

How sure are you of your answer? (Circle one)

Very Unsure Unsure Fairly Sure Very Sure

- (b) I would like a job where I must use specific methods and/or standards in working with things. (processes, Machines or Techniques)
 Yes, I would consider a job where this is a major part of the work.
 No, I do not want a job with a lot of this kind of activity.

How sure are you of your answer? (Circle one)

Very Unsure Unsure Fairly Sure Very Sure

TEMPERAMENTS

Different jobs have different kinds of conditions and work settings; you would probably adjust more easily to some kinds of work settings than others:

25. On some jobs things are always changing and you must do many different kinds of things. Could you handle such a work setting? (Variety and Change)
 Yes, I could.
 No, I wouldn't be able to.
 I could, but wouldn't want to.

How sure are you of your answer? (Circle one)

Very Unsure Unsure Fairly Sure Very Sure

Appendix C - continued

Temperaments - continued

26. On some jobs you do the same things many times a day, and you work at a steady pace. Could you handle such a work setting? (Repetitive, Continuous)

Yes, I could.
 No, I wouldn't be able to.
 I could, but wouldn't want to.

How sure are you of your answer? (Circle one)

Very Unsure Unsure Fairly Sure Very Sure

27. On some jobs you plan and direct projects and figure out what other people need to do. Could you handle such a work setting? (Direction, Control and Planning)

Yes, I could.
 No, I wouldn't be able to.
 I could, but wouldn't want to

How sure are you of your answer? (Circle one)

Very Unsure Unsure Fairly Sure Very Sure

28. On some jobs you work closely with others and meet the public. Could you handle such a work setting? (Dealing with people)

Yes, I could.
 No, I wouldn't be able to.
 I could, but wouldn't want to.

How sure are you of your answer? (Circle one)

Very Unsure Unsure Fairly Sure Very Sure

29. On some jobs you work to convince people or bring them around to your point of view. Could you handle such a work setting? (Influencing)

Yes, I could.
 No, I wouldn't be able to.
 I could, but wouldn't want to.

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Appendix C - continued

Temperaments - continued

30. On some jobs you must work well under pressure. Could you handle such a work setting? (Performing under Stress)

- Yes, I could.
 No, I wouldn't be able to.
 I could, but wouldn't want to.

How sure are you of your answer? (Circle one)

Very Unsure Unsure Fairly Sure Very Sure

31. (a) On some jobs you must size things up and draw conclusions about vague situations. Could you handle such a work setting? (Sensory or Judgmental Criteria)

- Yes, I could.
 No, I wouldn't be able to.
 I could, but wouldn't want to.

How sure are you of your answer? (Circle one)

Very Unsure Unsure Fairly Sure Very Sure

(b) On some jobs you must size things up and make decisions based on your best judgment. Could you handle such a work setting? (Sensory or Judgmental Criteria)

- Yes, I could.
 No, I wouldn't be able to.
 I could, but wouldn't want to.

How sure are you of your answer? (Circle one)

Very Unsure Unsure Fairly Sure Very Sure

32. (a) On some jobs you must determine technical facts and draw objective conclusions. Could you handle such a work setting? (Measurable or Verifiable Criteria)

- Yes, I could.
 No, I wouldn't be able to.
 I could, but wouldn't want to.

Appendix C - continued

Temperaments - continued

32. (a) continued

How sure are you of your answer? (Circle one)

Very Unsure Unsure Fairly Sure Very Sure

(b) On some jobs you must draw conclusions based on verifiable criteria. Could you handle such a work setting? (Measurable or Verifiable Criteria)

Yes, I could.

No, I wouldn't be able to.

I could, but wouldn't want to.

How sure are you of your answer? (Circle one)

Very Unsure Unsure Fairly Sure Very Sure

33. Some jobs require a lot of artistic expression. Could you handle such a work setting? (Feelings, Ideas or Facts)

Yes, I could.

No, I wouldn't be able to.

I could, but wouldn't want to.

How sure are you of your answer? (Circle one)

Very Unsure Unsure Fairly Sure Very Sure

34. On some jobs there is little room for error so you must be very precise. Could you handle such a work setting? (Set Limits, Tolerances or Standards)

Yes, I could.

No, I wouldn't be able to.

I could, but wouldn't want to.

How sure are you of your answer? (Circle one)

Very Unsure Unsure Fairly Sure Very Sure

Appendix C - continued

PHYSICAL LIMITATIONS

Your physical abilities may affect your job choice.

35. Lifting. How much lifting can you do? (Check the heaviest work you can do.)
- Very Heavy work. I can lift more than 100 pounds and often carry 50 pounds or more.
 - Heavy work. I can lift up to 100 pounds and often carry up to 50 pounds.
 - Medium work. I can lift up to 50 pounds and often carry up to 25 pounds.
 - Light work. I can lift up to 20 pounds and often carry up to 10 pounds.

36. Sedentary Work. On some jobs you sit in one place or don't move around much. Could you handle such a work setting?
- Yes, I could.
 - No, I wouldn't be able to.
 - I could, but wouldn't want to.

How sure are you of your answer? (Circle one)

Very Unsure Unsure so-so Fairly Sure Very Sure

37. Climbing. Could you do work where you climb a lot?
- Yes, I could.
 - No, I wouldn't be able to.
 - I could, but wouldn't want to.

How sure are you of your answer? (Circle one)

Very Unsure Unsure So-So Fairly Sure Very Sure

38. Stooping. Could you do work where you stoop or bend a lot?
- Yes, I could.
 - No, I wouldn't be able to.
 - I could, but wouldn't want to.

How sure are you for your answer? (Circle one)

Very Unsure Unsure So-So Fairly Sure Very Sure

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Appendix C - continued

39. Handling. Could you do work where you handle objects a lot?

Yes, I could.

No, I wouldn't be able to.

I could, but wouldn't want to.

How sure are you of your answer? (Circle one)

Very Unsure Unsure So-So Fairly Sure Very Sure

40. (a) Hearing. Do you hear well enough to carry on a conversation?

Yes, I do.

No, I don't.

(b) Hearing. Are you able to hear people when they are talking to you?

Yes, I can.

No, I can't.

41. Vision. Can you see fairly well, with glasses? That is, are you able to do close work or tell distance?

Yes, I can see fairly well, with glasses.

No, I cannot see well, even with glasses.

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APPENDIX D

QUEST BOOKLET

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APPENDIX E

SOFTWARE BOOK

39

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DESC 1614 Accountants and Auditors

Accountants and auditors compile and analyze business records and prepare financial reports which are needed for effective management. Their work often involves devising accounting systems and procedures, and appraising assets and investment programs. Management accountants are responsible for their firms' financial records; government accountants may handle budgets or audit financial records of businesses and individuals; public accountants provide accounting services to firms or individuals. Specialties: Auditor, tax accountant or budget and control.

Aptitudes: Numerical aptitude, ability to concentrate and conceptualize, good vocabulary, ability to organize work, and memory for detail. **Hiring Practices:** Formal training or long experience are required; applicants with a 4-year college degree with a major in accounting are preferred by employers. Many employers state that appearance and communications skills are important, particularly for those doing outside auditing. **Employers:** About 1/5 work for accounting firms; about 3/5 are employed by other private businesses; most others work for government agencies, and a few teach. Those who are certified public accountants often become self-employed. **Training:** Available at most universities, community colleges and private business schools (See PREP 1614). **Licensing:** Certified public accountants are licensed (See PREP 1614).

UP-12-31-75, 2-27-76

For the Physically Handicapped: This occupational field is feasible for the physically handicapped and offers a variety of work settings for the individual. Related occupations that are feasible for the physically handicapped are: bookkeeping (See DESC 1616), and appraising and underwriting (See DESC 1634).

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DESC 6126 Air Traffic Controllers

Air traffic controllers are responsible for directing air traffic to and from airports. Controllers use two-way radios to issue clearances, effect aircraft separation, give traffic information, monitor electronic landing and navigational aids and all airport lights; and use radar to monitor aircraft, determine traffic information and issue radar vectors. Work Setting: Indoors; night shifts and overtime are common. Almost all controllers in Washington belong to the professional air traffic controllers organization.

Aptitudes: Excellent health, have vision correctable to 20/20 and must be able to speak clearly and precisely. Ability to work under stress. Hiring Practices: Maximum age limit is 30 for jobs at towers and centers with no age limits for jobs at light service stations. Training: Skills are learned through classroom and on-the-job instruction. See PREP 6126 for additional information.

UP-1-7-76

For the Physically Handicapped: This high stress occupation is not feasible for the physically handicapped because of the physical stamina needed. Since the airlines are increasingly using computers for various systems, the individual, interested in this occupation, should explore the possible positions in this area (See DESC 1686 for computer operations):

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DESC 3116 Aircraft Mechanics

Aircraft Mechanics (Airframe and powerplant technicians) service. Repair and overhaul aircraft and aircraft engines to insure safety and dependability.

Aptitudes: Mechanical ability, form and spatial perception, eye-hand coordination, good use of hands and fingers, ability to do detail work, average strength and agility. Work Setting: Inside, but frequently outside for emergency repairs. Work areas are noisy when engines are tested. Mechanics often work in awkward positions. Almost all buy their own hand tools. Employers: Scheduled airlines, independent repair shops, aircraft manufacturing plants and the armed forces. Hiring Practices: Graduation from an FAA approved school. A mechanic's certificate, with both airframe and powerplant rating is required from the Federal Aviation Administration. Persons applying to major airlines must be willing to relocate outside Washington. License: Must pass oral, practical and written exams. Training: Skills can be acquired through informal on-the-job training, formal apprenticeship programs of FAA approved schools (See PREP 3116).
UP 1-7-76, 2-17-76

For the Physically Handicapped: This occupation is not feasible for the physically handicapped because of the physical agility required. However, several other occupations related to machinery repair are feasible for the physically handicapped. See DESC 3118 for small engine repair; DESC 3164 for office machine repair; DESC 3168 for radio and TV repair; DESC 3169 for appliance repair and DESC 3186 instrument repair.

For an individual who had the skills necessary for this occupation, prior to becoming physically handicapped, job opportunities exist as a service manager for a shop. (See DESC 1162).

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DESC 3169 Appliance Repairers

Appliance repairers service and repair large and small appliances that are usually used in the home. These range from relatively uncomplicated appliances such as food mixers and toasters, to refrigerators and washing machines that have complex control systems.

Aptitudes: Mechanical ability, 20/20 vision with corrective lenses and ability to deal effectively with people; good finger and manual dexterity and physical strength.

Work Setting: Indoors, either in the customer's home or in a repairshop; often working in cramped, awkward positions. Usually work 40 hrs/week with some weekend work. Most repairers buy their own handtools. **Employers:**

Appliance retail shops, service and repair shops. **Hiring**

Practices: Applicants should have a driver's license with a good driving record. Employers prefer experienced repairers but will hire applicants with technical training. **Training:** Skills are acquired through informal

on-the-job training, formal apprenticeship, community colleges or private vocational schools (See PREP 3169).

UP-12-8-75

For the Physically Handicapped: This occupational field is feasible for the physically handicapped provided that employment is sought in a business that is large enough to have more than one repairer. The physically handicapped individual would be able to handle the repair of the smaller machines. For other related occupations, See DESC 3118, small engine repair; DESC 3164, office machine repair; DESC 3168, radio and TV repair; or DESC 3186 instrument repair.

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DESC 163/ Appraisers and Underwriters

Appraisers and underwriters evaluate real property and insurance policies to advise their clients or organizations. Appraisers inspect property to determine its value for purchase, tax, investment or loan purposes. Underwriters review insurance applications to evaluate the degree of risk involved. Most underwriters specialize in one of three major categories: Life, property liability or health. Appraisers can specialize in residential, agricultural or income and investment properties. Work Setting: Generally work in an office setting; appraisers do some work outside when making inspections.

Abilities; average intelligence, verbal and numerical ability, and the ability to visualize three dimensional forms and relationships. Hiring Requirements: Experience in related job specialties where a working knowledge or appraising and underwriting could be acquired. College degrees preferred (See PREP 1634).
UP-3-1-76

For the Physically Handicapped: Underwriting is an occupation that is feasible for the physically handicapped and offers the individual an opportunity to specialize in the area of their interest in insurance. Currently, because many buildings are not barrier free, it would not be feasible for a physically handicapped individual to be an appraiser. However, for the individual who has the real estate experience necessary to be an appraiser there are other occupations available such as sales manager for a real estate company (See DESC 1162). Firms employing appraisers and underwriters also need those individuals with clerical skills (See DESC 1400).

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, DESC 2316 Architects

Architects translate the needs of clients into structures that satisfy both functional and aesthetic requirements. Work includes designing and monitoring the construction of all types of buildings. Architects consult with clients to determine their needs and preferences; provide information about building costs and materials; prepare sketches and specifications for the proposed building; and observe building sites to make certain that plans are being followed. Related Occupations: Engineers, drafters, interior designers and decorators, and land use planners.

Aptitudes: Creativity; ability to visualize spatial relationships; drawing ability; good vision; ability to organize work and to communicate ideas to others. Work Setting: Often seated at drawing boards for long hours; also spend time in discussions with clients, contractors, other architects. Work Week: Often exceeds 40 hours a week and includes evenings. Hiring Requirements: Graduation from an approved professional program in architecture. Employers: Most operate or are employed by architectural consulting firms; others work for government agencies, colleges, or construction firms. Training: Available at University of Washington and Washington State University. Licensed Occupation: (See PREP 2316).
UP-12-31-75, 31-1-76

For the Physically Handicapped: This occupational field is feasible for the Physically Handicapped. Related occupational fields also feasible for the physically handicapped are drafting (See DESC 2364), land use planners, (DESC 2314), and engineering (DESC 2354). For those individuals who do not desire to complete a 4-year college course, opportunities exist as an engineering aide (DESC 2356).

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DESC 3112 Automobile Mechanics

Automobile Mechanics repair and maintain automotive equipment. Specialties: Radiator Repairers; Automatic Transmission, Tune-up and Front-end Mechanics. Related Occupations: Truck & Heavy Equipment Mechanics (3114), Aircraft Mechanics (3116), Small Engine Repairers (3118), Service Station Attendant (3124).

Aptitudes: Good use of hands and fingers, average eyesight, color discrimination and hearing. Work Setting: Usually indoors, rooms are sometimes noisy and exhaust filled. Mechanics work in awkward positions, handle greasy, heavy parts, and constantly refer to manuals and charts. Overtime during the week and some Saturday work is common. Employers: Car dealers, rental agencies, garages, service stations, and public agencies. Hiring Practices: Experience or on-the-job training as a mechanic preferred. Applicants should have hand tools, a current vehicle operator's license, a good driving record and be in good physical condition. Licensing: None required but voluntary testing for national certification exists. Training: Skills can be acquired through apprenticeship or community college and vocational-technical school programs (See PREP 3112). UP-12-8-75, 2-23-76

For the Physically Handicapped: This occupation is not feasible for the physically handicapped because of the physical agility required. However, several other occupations related to machinery repair are feasible for the physically handicapped. See DESC 3118 for small engine repair; DESC 3164 for office machine repair; DESC 3168 for radio and TV repair; DESC 3169 for appliance repair and DESC 3186 instrument repair. For an individual who had the skills necessary for this occupation, prior to becoming physically handicapped, job opportunities exist as a service manager for a shop. (See DESC 1162.)

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DESC 7418 Automobile Salespeople

Automobile salespeople assist customers in selecting new or used cars and trucks from dealers' showrooms and car lots. After discussions with customers concerning type of auto desired, salespeople often quote tentative prices and trade-in allowances which are usually subject to sales managers' approval. They may also arrange financing and insurance and obtain license plates and registrations for cars they sell.

Aptitudes: Ability to deal with people and to express themselves well, and a high degree of initiative and determination. **Work Setting:** Inside and outside. Many work 40-50 hours/week including evenings and weekends. **Hiring Practices:** Most employers require at least a high school diploma. Experience in saleswork is helpful. **Training:** Skills are usually learned through informal on-the-job training. (See PREP 7418).
UP-12-18-75

For the Physically Handicapped: This occupational field is feasible for the physically handicapped. Several related sales occupations are also feasible for the physically handicapped. For additional information see DESC 7400 for the various sales related occupations.

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DESC 4324 Bakers

Bakers mix dough according to formulas and bake breads, pastries, and other bakery goods. Duties include measuring and mixing ingredients, rolling, cutting and shaping doughs, and setting oven temperatures. Specialties: Pizza baker, pastry cook, and pie maker.

Aptitudes: Average use of hands and finger, eye-hand coordination and the ability to meet prescribed standards. Work Setting: Indoors, standing a great deal, frequently bending and handling hot objects. Often lift and carry objects weighing up to 50 pounds. Work schedules vary from 35-40 hours a week and may include early mornings, nights, or weekends. Organizations: nearly all wholesale bakers and about half of all retail employees belong to the Bakery and Confectionary Workers Union. Employers: Sale and retail bakeries, hotels and restaurants. Some are self-employed and manage small shops. Hiring Practices: Must be 18 years old, have good health and neat and clean appearance. Training Requirements vary from none to 3-4 years' experience, depending upon the specialty (See PREP 4324).

UP-1-7-76

For the Physically Handicapped: This occupational field is not feasible because of the physical stamina and mobility required. Individuals interested in being involved in this food industry can be involved as a sales clerk (See DESC 7484) in a retail establishment selling this product. Another related occupation in a retail business would be as a bookkeeper (See DESC 1616).

8184 Barbers

Barbers cut, style and shape hair and provide a variety of personal services related to physical appearance. Common services include cutting and tapering hair, shaving, trimming mustaches & beards; shampooing and massaging hair and scalp; selling various lotions and tonics. Some barbers offer additional services such as selling and fitting hair pieces, permanent waving, hair coloring, hair analysis and conditioning. Specialities: Hair stylists. Environment: Work in shops, standing for long periods with both hands at shoulder level. Work-Week: Most work 40 hours a week, usually Tuesday through Saturday.

Abilities, Aptitudes: Ability to perceive slight differences in color and forms, eye-hand coordination, good finger movement and an artistic sense; a personable manner, patience and good disposition are essential. Licensed occupation: See PREP 8184 for details. Training available: See PREP 8184.

UP-17-17-75, 2-18-76

For the physically handicapped: This is not a feasible occupation for the physically handicapped because the physically handicapped would not be able to complete the needed training. However, some opportunities exist in the wig industry for those individuals whose interest is in hair styling without the need of a license. A wig manufacturer or wig retailer should be consulted for entry into this field.

7852 Bartenders

Bartenders mix & often serve alcoholic & other beverages to customers in bars & restaurants. Duties often include selling some food & appetizers, ordering liquors and supplies, washing glasses and general clean-up. Work Setting: Indoors, standing for long periods and often carrying on conversations with customers. Schedules may include nights, weekends, and holidays.

Aptitudes: Ability to understand & follow orders; physical stamina, good use of hands, & courteous, outgoing manner, and dependability are essential. **Hiring Practices:**

Neat and clean appearance and at least 21 years old,

Employers: Bars, taverns, restaurants, and related establishments. **Training:** Most acquire their skills on the job. See PREP 7852.

UP-1-6-76

For the Physically Handicapped: This occupation is not feasible for the physically handicapped. For an individual who was a bartender prior to becoming physically handicapped, opportunities exist to teach at a bartending school. For individuals interested in this type of service industry, some related occupations are hotel and motel management (See DESC 1132) and business management (See DESC 1144).

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DESC 5488 Blacksmith and Forge Shop Workers

Blacksmiths and forge shop workers make metal objects that are exceptionally strong by heating and shaping metals. This technique is forging and is used to make tool and machine parts and horseshoes. All use a special furnace known as a forge. Blacksmiths and farriers (or Horseshoers) use hand tools, anvils, presses and power hammers. Modern forge shops substitute heavy power equipment and precision die blocks to do the work more rapidly and accurately. Work Setting: Exposed to heat, fumes, smoke and noise although hazards are reduced by modern equipment and safety devices. Usually work a 40-hour week.

Abilities: Spatial perception to read blueprints and diagrams; knowledge of forging temperatures required for different materials and techniques for producing various properties in metal; finger-hand dexterity and eye-hand coordination; ability to do arithmetic; good vision and physical health. Employers: Forge job shops, manufacturing, railroad and mining industries. Training Available: See PREP 5488. Organizations: A majority are members of labor unions.

UP-2-4-76

For the Physically Handicapped: This occupational field is not suitable for the physically handicapped. Although a physically handicapped individual could perform some of the jobs involved in this occupational field, they would not be able to complete the requirements of the apprenticeship program or gain entry through on-the-job experience because they would not be able to perform entry laborer jobs. For an individual who is interested in working with machine, related occupations to explore are: Small engine repair (See DESC 3118), appliance repair (See DESC 3169), woodmaking machine operation (See DESC 4556) or furniture making machine operation (See DESC 4584). The clerical support services, such as secretaries (See DESC 1412) and bookkeeping (See DESC 1616), are always needed in the office of these businesses and are suitable for the physically handicapped.

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DESC 4222 Blasters

Blasters assemble, position and detonate explosives to loosen earth, rock, and stumps, often to clear the way for roads for the logging and construction industries. They also decide the type and amount of explosives needed as well as operate drilling equipment. Work Setting: Outside, usually on job building crews, some hazards from handling explosives. Workers often must move to different job sites in the state or region.

Aptitudes: Physical stamina, eye-hand coordination, good use of hands and fingers and ability to make independent judgments.

Hiring Requirements: Good physical condition and preferably some experience or training. Organizations: Most blasters are members of laborer's unions. Employers: Logging and construction industries, and the Navy and some work in the munitions industry. Licensing: An explosives users' (blasters') license is necessary to detonate explosives. Training: Most people learn the skills informally on the job (See PREP 4222 for details).

UP-1-3-76

For the Physically Handicapped: This occupation is not feasible for the physically handicapped because of the mobility and physical stamina required. A related occupation that is feasible for the physically handicapped is a manager for a firm employing these personnel.

5486 Body and Fender Repairers

Body and Fender Repairers fix or replace the damaged portions of automobile bodies and frames. They remove dents from fenders & body panels, weld torn metal, replace body parts, and straighten bent frames. Sometimes the straightening of frames is done by specialists. In small shops, repairers estimate repairs, sand & mask the vehicle, mix and match the paint, and paint the repaired area. Work Setting: Indoors with high noise and paint dust and odor in the air; not all work areas are well-ventilated; they often work in cramped and awkward positions performing strenuous work, with some risk of injury from cuts, burns and bruises.

Abilities: Above average eye-hand coordination; broad knowledge of auto construction & repair techniques; ability to determine efficient repair methods. Hiring Requirements: See PREP 5486. Employers: Auto repair and paint shops; service departments of brand truck dealers. Training available: See PREP 5486.
UP-12-15-75, 2-17-76

For the Physically Handicapped; This is not a feasible occupation for the physically handicapped because of the physical agility required. Those individuals desiring to work around the automotive repair industry could consider employment in the parts department as a stock clerk (See DESC 7118) or in one of the clerical fields such as book-keeping (See DESC 1616). Another related field would be as an automobile salesperson (See DESC 7418).

5944 Boiler Operators

Boiler Operators regulate and maintain equipment such as boilers and turbines which are used to supply heat or power. They read & record pressure and water levels; operate levers, switches and other devices that regulate the machinery; and do basic equipment maintenance and repair. Specialties: Stationary engineers, stationary firers, powerhouse operators, and substation operators. Related: Instrument repairers (3189), millwrights (3143), and sewage plant operators (5946).

Aptitudes: Mechanical ability, average manual dexterity, good physical condition, average vision and normal hearing. Ability to follow instructions and ease in adjusting to a routine. Work Setting: Indoors in reasonably clean and well-lighted areas; may be exposed to noise, heat & grease. Risk of burns exists. May work evenings, weekends, or holidays on a rotating basis. Training: Skills are usually acquired on the job. (See PREP 5944).
UP-1-7-76

For the Physically Handicapped: This occupation is not feasible for the physically handicapped because of the physical mobility required. For those individuals interested in working with machinery, some related fields are production assemblers (See DESC 5966) or instrument repairers (See DESC 3186).

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DESC 1616 Bookkeepers

Bookkeepers and accounting clerks record day-to-day business transactions on various accounting forms which are needed for effective management. Duties may include calculating payrolls, preparing summary statements and customers' bills, operating adding machines and complex bookkeeping machines, and general office tasks. Work Setting: Work in offices using adding machines and printing calculators; much work is done by hand.

Abilities: Above average aptitude for working with numbers; ability to concentrate on details; legible handwriting; good vision and finger dexterity. Hiring Requirements: For entry-level positions as accounting clerks, high school graduation and course work in business arithmetic and bookkeeping; experience or advanced training for higher level bookkeeping positions. Employers: Manufacturing firms, retail stores, banks, insurance companies, and other public and private establishments. Training: Available in high schools, private business schools and community colleges (See PREP 1616).

UP-12-17-75

For the Physically Handicapped: This occupational field is feasible for the physically handicapped and offers a variety of work settings for the individual. Related occupations that are feasible for the physically handicapped are: General office clerk (See DESC 1418) and cashiering and bank telling (See DESC 1642). For those individuals who desire to complete a 4-year college course, opportunities exist in accounting (See DESC 1614) and in appraising and underwriting (See DESC 1634).

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DESC 4264 Bricklayers

Bricklayers use masonry materials and mortar to build walls, fireplaces, chimneys, arches, and piers. Working from blueprints, they assemble brick, stone, terra cotta tile, glass and cement blocks, and pre-cast concrete panels. Specialties: Some included occupations are tilesetters, hod carriers, bricklayers, terrazzo workers. Related Occupations: Cement masons (4246), floor layers (4276), and plasterers and drywall installers (4244).

Aptitudes: Average ability to perform arithmetic, to visualize objects of two and three dimensions, to coordinate eyes and hands; a good sense of balance. Work Setting: Indoors and outdoors; stooping, lifting, reaching and bending for long periods; risk the danger of falls or being struck by falling material. Bricklayers work an average of 9 months a year. Organizations: Many belong to the Bricklayers Union. Employers: Contractors, construction companies, home builders. Hiring Practices: Past experience or completion of formal training and good physical condition. Training: Skills are acquired on the job or through a 3-year apprenticeship (See PREP 4264). UP-1-7-76, 2-17-76.

For the Physically Handicapped: This occupational field is not feasible for the physically handicapped because of the physical agility and stamina required. The physically handicapped individual can become involved in this field through one of the related fields that are feasible for the physical handicapped. Examples of these are: Sales of the product (See DESC 7454); management of the business (See DESC 1144); or the support services of secretarial (See DESC 1412) or bookkeeping (See DESC 1616).

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DESC 5664 Broadcast Technicians

Broadcast Technicians install, operate and maintain electronic equipment used to record or transmit radio and television programs. Specialties include transmitter maintenance, audio control, video control, lighting, field recording and video tape technicians. Related Occupations: Radio and TV repairers (3168), electricians and electrical repairers (5656), Radio and television announcers (9824)

Aptitudes: Good use of hands; average ability to visualize objects of two and three dimensions and to learn to apply technical principles to materials; facility for math, and good color vision. Work setting: In studios or at transmitter sites. Schedules may include weekend and night work on a rotating or split-shift basis. Self-employed radio technicians service several stations. Organizations: In Washington about half belong to International Brotherhood of Electrical Workers. Employers: radio and TV stations. Hiring Requirements: Most employers prefer some post-high school electronics training and an FCC license. TV stations generally require 2 years of technical training in broadcast technology. Licensing: Must pass a written exam. Training: Available at technical schools, community colleges and universities (See PREP 5664).
UP-1-7-76

For the Physically Handicapped. This occupational field is feasible for the physically handicapped individual in the media arts provided the physically handicapped individual can locate a station that is barrier free. Related occupations are radio and television announcing (See DESC 9824) and radio and TV repair (DESC 3168).

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DESC 3422 Building Maintenance Workers

Building maintenance workers repair and maintain plumbing, electrical fixtures, machinery, and the physical structure of commercial, industrial and public buildings. Duties also include preventive maintenance and periodic inspections. Work Settings: Varies with site; building maintenance workers typically work indoors, 40 hours/week and may lift and carry objects weighing up to 50 pounds.

Abilities: Average intelligence, manual and finger dexterity, and spatial and form perception. Hiring Requirements: Related work experience is often specified; high school graduation is usually not mandatory. Employers: Retail stores, factories, hospitals, schools, and other public and private establishments. Training: Most maintenance workers acquire skills through related occupations.

UP-1-2-76, 2-17-76

For the Physically Handicapped: This occupation is not feasible for the physically handicapped because of the mobility required. Other related occupations, feasible for the physically handicapped individual who wants to be involved in this service field are Business Services Salespeople (7422); Business Executives (1144); Service and Sales Managers (1162); or as a bookkeeper (1616) or secretary (1412).

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DESC 6152 Bulldozer Operators

Bulldozer Operators drive heavy equipment machinery that levels and digs out earth, trees and rocks. They operate tractors equipped with such special accessories as bulldozer blade, logging arch, cable winches, hoisting rack and crane boom. Work Setting: Outdoors under all weather conditions. Work is active, often strenuous and during summer months often includes overtime; layoffs are common during winter.

Aptitudes: Spatial discrimination, eye-hand-foot coordination, good use of hands, ability to follow instructions. Hiring Practices: Possession of necessary physical abilities and some previous experience in operating machinery. Employers: Logging, sawmill and construction industries. Training: Most acquire their skills informally on the job. See PREP 6152.
UP-1-7-76

For the Physically Handicapped: Because of the physical agility and stamina needed for this occupation, it is not feasible for the physically handicapped. Related occupations which are feasible for the physically handicapped individual who wishes to be involved with heavy equipment are: Selling of the equipment (See DESC 7454); management of the sales and service business (See DESC 1162); or through one of the support services of a business, such as secretarial (See DESC 1412) or bookkeeping (See DESC 1616)

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DESC 6142 Bus and Taxi Drivers

Bus and taxi drivers operate motor vehicles to transport passengers. Bus drivers may operate school buses, charter buses, or common carriers within a local area. Taxi drivers operate autos to transport one to four passengers at a time.

Aptitudes: Ability to judge distances accurately and to deal effectively with people. **Average eye-hand-foot coordination and quick reflexes.** **Work Setting:** Bus and cab drivers usually work 40 hrs./week on a shift basis. Schedules include early mornings, evenings and weekends. Most school bus drivers work part-time in the early morning and late afternoon, but some combine driving with building and equipment maintenance for full-time employment. **Employers:** School Districts, bus and taxi companies. Many taxi drivers are self-employed. **Hiring Practices:** An endorsement to the driver's license plus a good driving record; employers prefer a driver with experience. **Training** Received on the job. See PREP 6142 UP-2-4-76.

For the Physically Handicapped: This occupational field is not feasible for the physically handicapped. For the individual interested in the transportation field, related occupations that are feasible are as a dispatcher, business manager (See DESC 1144) or any of the support clerical occupations (See DESC 1400).

1144 Business Executives

Business Executives develop and administer policies to increase profits and make their organization run smoothly. In large organizations, they work with other key people, reviewing and establishing goals, coordinating plans, and making necessary procedural changes for optimum operation and efficiency of the organization. They also direct financial programs and develop & implement policies aimed at maintaining good relations with the public, stockholders, employees and customers. Work Setting: Often work long hours under considerable pressure; some travel a great deal.

Aptitudes: High level of intelligence, good judgement, oral and written communications, and leadership; numerical skills are becoming increasingly more important. Employers: All large organizations. Hiring Practices: Graduation from a 4-year college is usually a minimum requirement for entry positions in large firms. Usually up to ten years experience in supervision or management is required. Entry level positions are supervisory or trainee, progressing to upper-management. Modern managers and executives are often required to upgrade their training by attending lectures, conferences, workshops or by returning to school. Training: Available (See PREP 1144).

UP-3-5-76, 7-14-76

For the physically handicapped: This is a feasible occupation for the physically handicapped. Refer to DESC 1146 for Business Managers for additional information on education and/or experience requirements.

1146 Business Managers

Business Managers develop and administer policies to increase profits and make their organization run smoothly. In large organizations, they work with other key people, reviewing and establishing goals, coordinating plans, and making necessary procedural changes for optimum operation and efficiency of the organization. They also direct financial programs and develop & implement policies aimed at maintaining good relations with the public, stockholders, employees and customers in small firms, managers may perform first-line supervisory duties in addition to their managerial functions. Work setting: Often work long hours under considerable pressure; some travel a great deal.

Aptitudes: Intelligence, good judgement, oral and written communications and leadership; numerical skills are becoming increasingly more important. Employers: Businesses & industries. Hiring practices: Graduation from a 4-year college is usually a minimum requirement for entry positions in large firms. Small establishments in retail trade and service industries may hire people without college degrees, though some college is often helpful. Entry level positions are supervisory or trainee, progressing to mid-management. Modern managers and executives are often required to upgrade their training by attending lectures, conferences, workshops or by returning to school. Training: Available (See PREP 1144).
UP-12-31-75, 2-26-76, 3-5-76

For the physically handicapped: This is a feasible occupation for the physically handicapped allowing the individual an opportunity to complete a 4-year college degree in a field of interest to them. Often, these positions are filled through promotion and entry is gained through other positions such as accountant (See DESC 1614).

7422 Business Service Salespeople

Business Service Salespeople sell various types of services such as credit information, accounting services, printing services, and media advertising. Tasks include developing lists of prospective customers and gaining their accounts, calling on present customers to sell new services and resolve problems, and reviewing the market for ideas to expand services available.

Aptitudes: Average or above numerical and verbable ability, perception for details, and high degrees of initiative, tact and patience in dealing with people. **Work Setting:** Both indoors and outdoors; travel by car to clients' businesses. May work more than 40 hours a week; schedules may include evening and weekend work. **Employers:** Advertising agencies, janitorial companies, protective service agencies, telephone companies, public utilities, accounting firms, freight transportation firms, consulting firms, TV & radio stations & other firms that provide services to businesses. **Hiring Practices:** Many employers prefer persons with college training in liberal arts, marketing, journalism or business administration. Others require related expertise; some fill their selling positions by promotion. **Training:** Related programs are available at most universities, private business schools, community colleges and vocational-technical institutes (See PREP 7422).
UP-12-18-75, 3-1-76

For the Physically Handicapped: This occupational field is suitable for the physically handicapped. The physically handicapped individual would probably be more successful in pursuing employment in one of the areas of the occupation which does not require extensive traveling. For those individuals whose interest is in selling a product rather than a service, several related fields are available: Commodities salespeople (See DESC 7414), securities salespeople (See DESC 7415), insurance salespeople (See DESC 7416), real estate salespeople (See DESC 7417) and automobile salespeople (See DESC 7422).

1184 Buyers and Purchasing Agents

Buyers and Purchasing Agents buy the materials, supplies and equipment needed for their firm to function. Work includes examining estimates, conferring with salespeople, and negotiating contracts.

Aptitudes: Ability to work with people; ability to work on details; and understanding of contract, property and insurance laws; reading comprehension and conversational ability.
Work Setting: Most work is conducted in offices but occasional inspection, information or procurement trips are required. **Employers:** Industrial & manufacturing firms, retail establishments, department stores, government agencies. **Hiring practices:** Some employers prefer graduates with a background in business administration, but most jobs do not require college background, industry experience, agents & buyers are trained on the job. For advancement to high-level purchasing agent positions, however, a college degree is generally stressed. See PREP 1184.

UP-12-31-75

For the Physically Handicapped: This occupation is appropriate for the physically handicapped. Often, individuals in this occupation, especially in the retail areas, have started as salespersons and been promoted. Consult DESC 7454 for more information on salespeople. The trend is toward more education for entry level positions. See PREP 1184 for related educational programs.

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DESC 4586 Cabinetmakers

Cabinetmakers build, install, and repair cabinets, shelving and fixtures for homes and business firms. They work from blueprints on drawing specifications, marking outlines or dimensions of parts on paper or lumber stock. Cabinetmakers use hand or power tools to cut parts from stock, and then join these parts together to form complete units. Cabinetmaking has been increasingly changing into an assembly-line operation. Work Setting: Inside, although outside work is not uncommon; risk injury from saws and other machines.

Aptitudes: Keen vision, good use of hands and fingers, eye-hand coordination, attention to detail, knowledge of basic math, and ability to understand and apply mechanical principles. Hiring Practices: No formal requirements for assembly-line jobs; entry to the cabinetmaking trade is through traineeship or apprenticeship. Employers: Millwork plants, cabinet shops. Training: Skills are acquired through apprenticeship programs, informally on the job, or through educational programs (See PREP 4585).
UP-12-17-75

For the Physically Handicapped: This occupation is feasible for the physically handicapped individual provided the person selects a firm that is large enough to have several employees so that the larger machines or outside work can be handled by another employee. Related occupations that are feasible for the physically handicapped are woodworking machine operation (See DESC 4556) and furniture making machine operation (See DESC 4584).

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DESC 4348 Cannery Workers

Cannery workers sort and prepare fruit, vegetables, meat and seafoods for canning and freezing. Type of food prepared varies geographically: Vegetables are processed around Walla Walla and Waitsburg; fruits in the Yakima Valley; and seafoods in the Grays Harbor-Willapa Bay and Puget Sound areas, with the heaviest concentration in Seattle. Work Setting: Usually indoors, sometimes subject to extreme temperature changes in places that are wet and humid. Jobs involve standing for long periods, reaching and handling. Work week is often more than 40 hours during peak season, and shift work is common.

Aptitudes: Good eye-hand coordination and finger dexterity. Some jobs need good color vision. Hiring Practices: Food processing or handling experience is helpful when applying for entry positions, but often not required. Many jobs are filled in advance by employees who work for the same cannery year after year with some additional hiring during the peak season. Organizations: Over half are union members. Training: Most skills are acquired through on-the-job training.
UP-12-2-76

For the Physically Handicapped: This occupational field is not feasible because of the physical stamina and mobility required. A related occupational field feasible for the physically handicapped involving assembly line employment is as a production assembler (See DESC 5966).

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DESC 7112 Car Loaders

Carloaders and stevedores load and unload products for shipment by rail, truck or ship. They estimate maximum loads, stack materials, band materials together, tag products and install braces or padding around the load to prevent damage in transit. They operate equipment such as cranes, lift trucks, hoists, handtrucks or dollies.

Aptitudes: Physical stamina and agility, eye-hand coordination, ability to use basic math, ability to follow instructions and use independent judgment. Work Setting: Both indoors and outdoors where work is classified medium heavy. Hiring Requirements: Possession of necessary physical skills and proven dependability in related work. Organizations: All persons in the stevedore specialty are members of labor unions. Employers: Word products and transportation firms. Hiring Channels: Most car loaders are hired directly by employers, but stevedores are hired through the union. Training: Available through on-the-job training (See PREP 7112)
UP-2-4-76

For the Physically Handicapped: This occupational field is not feasible for the physically handicapped because of the physical mobility and lifting required. Related occupations feasible for the physically handicapped are as packers and wrappers in firms handling small items (See DESC 7126) and as a stock clerk specializing in inventory control (DESC 7118).

4254 Carpenters

Carpenters build, repair & maintain wood structures ranging from rough scaffolds & concrete forms to residential, industrial & commercial buildings that require exact finish work. Using both hand & power tools, carpenters erect wood frameworks in buildings, install window frames, apply exterior siding & install moldings, cabinets, doors & hardware finish. Specialties include carpenters, maintenance carpenters, framers, and carpenter supervisors. Related occupations: Plasters and drywall installers (4222).

Aptitudes: Must have an average ability to visualize objects of two or three dimensions, to coordinate eyes & hands rapidly and accurately, and to attain precise standards. Work Setting: Indoors and outdoors; areas may be muddy, dusty & noisy; work involves lots of standing, climbing, & squatting; risk injuries from falls, falling materials, sharp tools & power equipment. Organizations: Carpenters union. Employers: Building contractors & large firms in manufacturing industries; some are self-employed. Hiring practices: Experience or formal training in carpentry. Training is available through a 4-year apprenticeship; some acquire skills informally on the job (See PREP 4254).

UP-1-7-76, 2-23-76

For the Physically Handicapped: This is not a feasible occupation for the physically handicapped because of the physical agility necessary. However, an individual with good manual dexterity and mechanical ability may want to consider being a draftsman (See DESC 2364) or an architect (See DESC 2316). Those individuals desiring to produce an actual product, may want to consider one of the hand-crafts (See DESC 5982).

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DESC 8416 Caseworkers

Caseworkers provide a multitude of services to help people solve their individual and family problems. Caseworkers specialize in such fields as child welfare, family services, and medical, psychiatric, public assistance, school, and parole and probation casework. They interview clients to identify their problems and eligibility for assistance funds, aid them in securing necessary services and record case progress.

Aptitudes: Flexibility, emotional maturity, respect for individual and cultural differences and the ability to handle paperwork and write reports. Work Setting: Much time spent in contact with clients, employers, teachers & specialists. Sometimes confronted with distressing situations especially during home visits. Employers: Government and private non-profit agencies. Hiring Practices: A college or graduate degree is often specified, but in some cases, people enter with related experience alone. Training available; see PREP 8416.

UP-1-2-76

For the Physically Handicapped. This occupational field is suitable for the physically handicapped and offers a variety of work settings for the individual to choose. Related occupational fields an individual might want to consider are: Social program planning (See DESC 2164); counseling (See DESC 8414), social service specialist (See DESC 8424), or for the individual who does not want to complete a 4-year college level course, a position as a social service aide (See DESC 8428) would be feasible.

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Robert L. Metcalf, Project Director
Pearl H. Rose, Project Researcher

DESC 1642 Cashiers and Bank Tellers

Cashiers and bank tellers handle money received from their employer's customers to transact business. Cashiers receive payments, make change, issue receipts, handle credit transactions, and account for amounts received. Tellers work in banks and handle transactions for checking accounts, savings accounts, cashiers' checks, loan payments, new accounts and savings bonds. Work Setting: Indoors, often in small booths or behind counters, operating cash registers and related machines. Cashiers often work evenings, weekends and holidays. Some work part-time.

Aptitudes: Able to work accurately with figures, good finger dexterity, and ability to meet and work with the public. Hiring Requirements: High school diploma not always specified: Usually age 18 for tellers and eligible for bonding. Employers: Cashiers work in food and other retail stores, restaurants, theaters, and other businesses. Training: Usually trained on the job (See PREP 1642).
UP-12-17-75, 2-17-76

For the Physically Handicapped: These occupations are feasible for the physically handicapped. Cashiers can find employment in a variety of settings. For the individual who desires to be a teller, employment should be sought for one of the specialty areas such as new accounts or savings bond where bank counters would not be a barrier. Other related occupational fields are clerical occupations (See DESC 1400), loan officer (DESC 1636), or bookkeeping (DESC 1616).

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DESC 4246 Cement Masons

Cement masons primarily smooth out fresh concrete surfaces on construction projects such as sidewalks, commercial buildings and concrete highways. They build forms into which concrete is poured. Finishers then level the surface with a straight-edge, and work the concrete with a float and finally finish it with a hand trowel. Related occupations: Bricklayers (4264), construction laborers (4286).

Aptitudes: Good use of hands and fingers, eye-hand coordination, spatial and form perception, ability to read and follow specifications and extremely good physical stamina. Organizations: Nearly all cement finishers are members of the Cement Mason Union or the Bricklayers Union. Employers: Contractors and public works departments; some are self-employed. Hiring Requirements: Formal training or past experience doing concrete finishing and good physical condition. Work Setting: Usually outdoors, doing heavy work and often bending and stooping. Training is available through a 3-year apprenticeship; others acquire skills informally on the job (See PREP 4246).
UP-1-7-76, 2-17-76

For the Physically Handicapped: This occupation field is not feasible for the physically handicapped because of the physical agility and stamina required. The physically handicapped individual can become involved in this field through one of the related fields that are feasible for the physically handicapped. Examples of these are: Sales of the product (See DESC 7454); management of the business (See DESC 1144); or the support services of secretarial (See DESC 1412) or bookkeeping (See DESC 1616).

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DESC 7824 Chefs and Dinner Cooks

Chefs and dinner cooks are responsible for preparing, seasoning, and cooking various soups, meats, vegetables, desserts and other foodstuffs for the public. Tasks include estimating and ordering food purchases, regulating cooking temperatures, measuring and mixing ingredients and preparing serving plates. Chefs and dinner cooks in large restaurants may serve in supervisory capacities. Work Setting: Indoors, standing constantly, working in kitchens which are usually warm and humid; may lift objects up to 50 pounds; use kitchen utensils, many of which are sharp and pose a danger of cuts. Scheduled hours may include weekend and evening duty.

Aptitudes: The necessary physical strength and stamina to perform the work; ability to work with people in a team relationship, to work under pressure during busy periods and a keen sense of taste. Hiring Practices: Good health and physical condition. Some formal education or apprenticeship training is usually required. Many employers consider a record of dependability and industriousness to be quite important. Employers: Restaurants, hotels, hospitals, and school cafeterias. Training: Skills can be acquired through apprenticeship or at community colleges and vocational-technical institutes. (See PREP 7824).
UP-1-8-76, 2-18-76

For the Physically Handicapped: This occupation is not feasible for the physically handicapped because of the mobility needed and the lifting requirements. For those individuals who desire to be involved in the food service industry, some can gain entry as a cashier in a cafeteria or restaurant. For those individuals who complete a 4-year college level program, opportunities exist in the management area of a food service (See DESC 1144 for business management) or as a dietician in an institutional setting. For the individual who was a chef or dinner cook prior to becoming physically handicapped, some firms will hire an individual, with this experience, to become a food service manager without further educational training.

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DESC 8459 Child Care Workers

Child Care Workers help supervise and care for children who attend private, community or government child care centers. Children's ages range from 1 month to 12 years old. Workers lead recreation activities and teach basic concepts such as colors, shapes, and numbers. They must also maintain discipline and supervise eating and rest periods. Work Setting: Indoors and outdoors, supervising 10-15 pre-schoolers. Most child care centers operate 9-10 hours, 5 days a week, year around.

Abilities: Enjoyment of and ability to work with children, patience, and emotional stability. Hiring Requirements: Aides must be 16 years of age. For teachers, an Associate Degree in Early Childhood Education or proven competency in child care and supervision is required. Employers: Public and private day care centers and nursery schools, recreation programs, church-related programs, and afterschool programs. Training: Available at community colleges and vocational-technical institutes (See PREP 8459).

UP-1-9-76

For the Physically Handicapped: This occupation is feasible for the physically handicapped individual who desires to work with children. It would be best for the individual to specialize in the teaching and craft areas of this field. Related occupations also feasible are as a teacher's aide (See DESC 1422) or as the operator of a day care business (DESC 1142).

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DESC 8122 Chiropractors

Chiropractors are health care practitioners who adjust the spinal column and occasionally other parts of the body to prevent disability and correct abnormalities caused by interference with the nervous system. Chiropractors diagnose disorders by examining patients and using X-ray machines and other diagnostic instruments. They treat disorders primarily by manual manipulation, but may also employ such measures as heat therapy, hydrotherapy, diet and exercise. Chiropractors do not prescribe medicines, practice obstetrics or surgery, or use X-rays for treatment purposes.

Aptitudes: Above average intelligence, hand and finger dexterity, desire to work with people, ability to work independently and to work with detail. **Work Setting:** Indoors, usually with patient. **Employers:** Most chiropractors are in private practice; some work for chiropractic clinics and industrial firms; others teach or conduct research at chiropractic colleges. **Licensed occupation:** See PREP 8122 for details. **Training:** Not available in Washington (See PREP 8122).

UP-1-2-76, 2-18-76

For the Physically Handicapped: This occupational field is not feasible for the physically handicapped because of the mobility required. Related occupational fields feasible for the physically handicapped are: dieticians (See DESC 8116), pharmacy (See DESC 8124), speech and hearing specialist (See DESC 8128) or laboratory testing (See DESC 2656).

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DESC 4516 Chokersetters

Chokersetters fasten cables, commonly known as chokers, around logs so they can be hauled from the falling and bucking area for loading. Workers drag the choker to the log, wrap the free end around one end of the log and hook the knob end onto the bell or sling fastener. Work Setting: Outdoors in all extremes of weather, climbing up and down hills over rough terrain, stooping, kneeling, crawling, lifting, and carrying chokers weighing 50-100 pounds; danger from rolling logs and whiplashing cables.

Aptitudes: Good coordination and quick reflexes, ability to get along with fellow workers. Hiring Practices: Necessary physical strength to perform the work, possession of caulk boots and hard hat. Training: Available through on-the-job training (See PREP 4516).

UP-12-3-75

For the Physically Handicapped: This occupation is not feasible for the physically handicapped because of the physical agility necessary. A physically handicapped individual desiring to work around wood products should consider another related occupational field such as forestry (See DESC 4124), furniture making machine operation (See DESC 4584), cabinetmaking (See DESC 4586), or as a stock or inventory clerk in a lumberyard (See DESC 7118). Any of the clerical occupations involved in a lumberyard or sawmill business office would be feasible for the physically handicapped. For more information on clerical positions, See DESC for 1400, clerical occupations.

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DESC 8436 Clergy

Clergy provide spiritual leadership for their congregations through worship services and other functions associated with their religious faith. Their work includes preparing and delivering sermons, conducting wedding and funeral services, giving religious instruction, counseling individuals or groups, visiting the sick and overseeing the administration of church programs in the parish and to the community. Specialties: Ministers, priests, rabbis.

Aptitudes: Religious commitment, dedication, sincerity, the ability to relate to people, and a vigorous and creative mind.
Work Setting: Most clergy serve a congregation; however, some clergy may work in foreign countries, or as chaplains in the armed forces, hospitals, and other institutions. They may teach or work for social agencies.
Hiring Practices: Although some religious groups have no formal educational requirements, most require a college degree plus a 3-year course in theology.
Training: Educational programs are available at several colleges in Washington and at theological seminaries in the U.S. (See PREP 8436).

UP-1-2-76, 2-18-76

For the Physically Handicapped: This occupation is feasible for the physically handicapped since many of the clerical functions center around service to individuals, the physically handicapped individual may want to consider one of the other social service occupations described under DESC 8400.

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DESC 1416 Clerk Typists

Clerk Typists produce typed copies from written materials and dictaphone tapes for others in the firm. Typing is the most common duty, but the typist may also file, sort and distribute mail, cut stencils, and answer the telephone. Work Setting: Usually a 40-hour week in an office setting.

Aptitudes: Good spelling, attention to detail, and finger dexterity. Hiring Requirements: High School graduation and ability to type 40-60 WPM with few errors. Employers: Industries, businesses, public schools and government agencies. Training: Available at high schools, business schools and community colleges (See PREP 1416).
UP-1-6-76

For the Physically Handicapped: This occupational field is feasible for the physically handicapped as are many related clerical occupations offering a variety of work settings. For more information see DESC 1400 for clerical occupations. For information on clerical functions in the railroad industry, See DESC 1646.

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DESC 4442 Clothes Designers and Patternmakers

Clothes Designers and Patternmakers design and construct full size paper or fiberboard clothing patterns from sample garments or sketches. Patternmakers work with the designer, transferring ideas and sample designs into actual patterns. In some shops designers or all-round tailors make patterns while in others the assistant designer performs patternmaking tasks. Work Setting: In large firms, work in clean, well-lighted areas away from the main sewing and pressing operations; in small shops, these 2 areas may be combined.

Abilities: Eye-hand coordination, good vision, ability to apply precise standards and specifications, attention to detail. Hiring Requirements: For the designer, creativity as well as skill is important. Knowledge of current fashions and materials is vital. Employers: Apparel industries, designer-dress shops, fashion houses. Training Available. See PREP 4442 for more information.
UP-12-11-75

For the Physically Handicapped: This occupational field is feasible for the physically handicapped who desires to work in the clothing industry. Other related occupations feasible for the physically handicapped are custom sewing and tailoring (See DESC 4446) and sewing machine operation (DESC 4448).

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DESC 4724 Commercial Artists and Designers

Commercial artists and designers illustrate ideas through sketches and drawings. They prepare artwork for newspapers and magazine advertisements, book illustrations, and designs on commodity packages. Specialties: Art director, illustrator, layout artist, and display artist. Work Setting: Indoors using delicate drawing materials and instruments. Workweek is usually 35-40 hours with additional evening and weekend work to meet deadlines. Related occupations: Interior designers and decorators (2366).

Aptitudes: Aesthetic appreciation, creativity, form perception, color discrimination, eye-hand coordination, manual dexterity.

Hiring Requirements: Training in art or designing plus demonstrated skill. Talent and originality are important.

Employers: Advertising agencies, art studios, advertising departments of large firms, publishing companies, and large retail stores. Many are self-employed or freelance artists.

Training: Skills can be learned at universities, community colleges and vocational-technical institutes (See PREP 4724).

UP-2-3-76

For the Physically Handicapped: This occupational field is feasible for the physically handicapped individual with an artistic ability. Related occupational fields feasible for the physically handicapped are the printing production occupations (See DESC 4766) and photography (DESC 4734).

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DESC 4328 Commercial Fishermen

Commercial fishermen use nets, hooks and other devices to catch a variety of ocean fish and marine life. Principal summer catches in Washington are salmon, halibut and bottom fish; crab constitutes the main winter catch.

Attributes: Above average physical strength and good health; mechanical aptitude helpful. **Work Setting:** Outdoors, working long hours in all kinds of weather. Fishing trips last from one day to several weeks. Living in close quarters, crew members must be compatible. Fishermen risk falls on pitching, slippery decks and back injuries from frequently lifting heavy loads. **Tools:** Many commercial fishermen own boat and fishing equipment. **Licensing:** See PREP 4328 for fees. **Training:** Most learn their skills informally on the job, but programs in commercial fishing and marine maintenance and repair are available (See PREP 4328).

UP-12-18-75, 2-23-76, 3-15-76

For the Physically Handicapped: This occupational field is not feasible because of the physical stamina and mobility required. Individuals interested in being involved in this food industry can be involved as a sales clerk (See DESC 7484) in a retail establishment selling this product. Another related occupation in a retail business would be as a bookkeeper (See DESC 1616).

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DESC 7414 Commodities Salespeople

Commodities salespeople sell equipment and supplies to wholesale and retail businesses. Usually traveling to the customer's business. They may display and demonstrate merchandise, quote prices, and prepare sales contracts. They may also install equipment and instruct buyers in its operation.

Aptitudes: Average verbal and mathematical ability; a high degree of initiative; and the ability to deal effectively with many types of people. Work Setting: Indoors and outdoors; overnight travel and weekend work are common; however, much work is done by telephone. Many work irregular hours and often more than 40 hrs/week. Employers: Companies that produce food products, chemicals, heavy machinery, transportation equipment, and other products; wholesalers dealing in food products, drugs, apparel, and other goods. Hiring Practices: College graduates with sales or other work experience are increasingly preferred as trainees. Training: Skills are learned through informal on-the-job training, formal company training programs, or programs offered at colleges and universities or community colleges (See PREP 7414).

UP-1-2-76, 2-18-76

For the Physically Handicapped: This occupational field is not feasible for the physically handicapped, because of the physical mobility required and because of the necessity of carrying samples and stock. However several other sales occupations are feasible for the physically handicapped. The individual interested in sales should see DESC 7400 for the sales occupations.

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DESC 1686 Computer Operators

Computer operators monitor and control computers to process data according to operating instructions. Duties include selecting and loading input and output units with materials such as tapes, punch cards or printout forms; observing the machines for stoppage or faulty output; and determining the causes of and correcting operating problems. Related occupations: Keypunch operators, programmers and systems analysts. Work Setting: Work in well-lighted, clean but noisy areas in somewhat cool temperatures (65 degrees); walk and stand for long periods; hours usually include evening, weekend and night duty.

Aptitudes: Reasoning ability, ability to carry out detailed and organized procedures; training beyond high school may be specified, though some acquire skills on the job. (See PREP 1686).
UP-1-6-76, 3-1-76

For the Physically Handicapped: This occupation is feasible for the physically handicapped and offers the individual a wide choice of work settings because of the diversity of firms and agencies using this position. Opportunities also exist as a keypunch operator (DESC 1688) or as a programmer or systems analyst (DESC 1684) if the individual has a number of years of experience or a college level degree.

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DESC 4286 Construction Laborers

Construction laborers do some of the work that does not require special skills on buildings, dams, highways, and pipelines. They load and unload materials, shovel dirt and other matter, dismantle and build scaffolds, pour and spread concrete. Highway construction laborers clean, grade and prepare sites for concrete pouring. Specialties: Flagman, highway maintenance and construction workers. Related occupations: Bricklayers (4264), railroad laborers (4288), blasters (4222), cement masons (4246), carpenters (4254), Plumbers (4274).

Aptitudes: Good use of hands and fingers, good general physical condition. Work is often outdoors and is physically strenuous, requiring frequent bending, stooping and heavy lifting. Bad weather can cause a loss of work time. Organization: Laborers' international union. Employers: Utilities, lumber, construction and government industries. Hiring practices: Some jobs require experience and general knowledge of construction methods and materials. Most require little training. Many contractors hire through the union halls. Training: Skills are generally learned informally on the job (See PREP 4286).

For the physically handicapped: This occupation is not feasible for the physically handicapped because of the mobility and physical stamina required. A related occupation feasible for the physically handicapped is as a manager for a firm employing these personnel.

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Robert L. Metcalf, Project Director
Pearl M. Rose, Project Researcher

DESC 1152 Construction Superintendents

Construction Superintendents plan and direct building projects in order to satisfy the contractor's specifications and schedules. Projects include buildings, dams, bridges, and highways. Superintendents coordinate the activities of craftsmen, supervisors, and subcontractors, order tools and materials, inspect projects, and prepare reports on materials used, cost, and progress.

Attitudes: Ability to interpret instructions in written, oral, diagrammatic or schedule form; ability to understand drawings and specifications, to present ideas clearly and to do arithmetic calculations quickly and accurately. **Work Setting:** Work inside and outside of construction sites. **Hiring Practices:** Many complete apprenticeship first and after working as craftsmen, advance to supervisory positions when superintendent. **Training:** Construction technology available; See PREP 1152 for details.
UP-12-11-75

For the Physically Handicapped: This occupation is feasible for the physically handicapped individual who had acquired the necessary skills prior to becoming physically handicapped. That individual would have to secure a position with a large company that would have other superintendents who could do the on-site inspections. Related occupations that are feasible for the physically handicapped are drafting (See DESC 2364) and/or an engineering technician (DESC 2356). The physically individual may also want to consider being a salesperson (7454) of construction equipment or supplies.

8186 Cosmetologists

Cosmetologists (Beauticians) provide beauty services to women. A majority of time is spent shampooing, tinting, bleaching, cutting, and styling hair. Cosmetologists may also give manicures and scalp and facial treatments, provide make-up analysis & shape eyebrows. Other duties may include making appointments, cleaning equipment, and sterilizing instruments. Specialties: Electrologists, Work Setting: Some work over 40 hours while others work part-time during peak periods; scheduled hours usually include late afternoon and Saturday work. Work standing for long periods of time and hands are often exposed to strong chemical irritants.

Abilities: Ability to perceive slight differences in color and form; eye-hand coordination and finger dexterity; a personable manner; creative flair. Employers: About half work for wages and the rest are self-employed. Licensed occupation; see PREP 8186 for details. Training: Available at many schools throughout Washington. See PREP 8186.
UP-12-17-75

For the Physically Handicapped: This is not a feasible occupation for the physically handicapped because the physically handicapped would not be able to complete the needed training for their license. However, some opportunities exist in the wig industry for those individuals whose interest is in hair styling. A wig manufacturer or wig retailer should be consulted for entry into this field.

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DESC 8414 Counselor

Counselors help others to understand themselves better and to apply that understanding toward living and working more effectively. Most work in schools, helping students to make future plans. Environment: May counsel one person or work with a group of people; evening work is not uncommon.

Aptitudes: Understanding of human behavior, patience, tolerance, empathy, concern for human welfare, ability to communicate well. Hiring Requirements: Those desiring work in public schools must meet state requirements for an educational staff associates certificate and a master's in counseling. Graduate degrees are currently emphasized for rehabilitation and family counseling positions too, although a B.A. plus several years of experience may substitute. See PREP 8414 for further training information. Employers: Schools, colleges, public agencies, private and non-profit organizations.

UP-1-2-76, 2-18-76

For the Physically Handicapped: This occupational field is suitable for the physically handicapped and offers a variety of work settings for the individual to choose. Related occupational fields an individual might want to consider are: social program planning (See DESC 2164), casework (See DESC 8416); social service specialist (See DESC 8424), or for the individual who does not want to complete a 4-year college level course, a position as a social service aide (See DESC 8428) would be feasible.

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DESC 4446 Custom Sewers and Tailors

Custom sewers and tailors perform all sewing operations, either by hand or machine, necessary to put together, alter or repair articles made of textiles and other fabrics. Typical tasks include positioning and pinning pattern sections on fabrics, cutting the fabric, sewing the fabric by hand or machine, and finally pressing to remove wrinkles and to smooth seams. Specialties: Drapery, laundry and dry cleaning, and linen service sewers. Work Setting: Indoors in generally clean, well-lighted areas.

Abilities: Eye for detail, good color distinction, eye-hand-foot coordination. Hiring Requirements: Good eyesight, manual and finger dexterity, and some previous training in sewing. Employers: Retail trade, laundry and dry cleaning establishments; self-employed working out of the home. Training: Available at a few schools; many learn the trade informally, qualifying after several years experience (See REP 4446). UP-12-17-75, 2-17-76

For the Physically Handicapped. This occupational field is feasible for the physically handicapped who desires to work in the clothing industry. Other related occupations feasible for the physically handicapped are sewing machine operation (See DESC 4448) and clothes designing and patternmaking (DESC 4442).

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DESC 8176 Dental Assistants

Dental Assistants receive and prepare dental patients and assist dentists during treatment. Tasks include handing dentists proper instruments and medication, helping with general office management, maintaining and sterilizing instruments, and sometimes taking and processing x-rays and preparing dental compounds. Assistants may keep medical, appointment and payment records. Assistants with formal training in expanded functions may now legally perform certain additional procedures within the patient's mouth.

Aptitudes: Exactness with detail, eye-hand coordination, ability to learn and apply technical training, personable manner, good health. Environment: Office setting, working closely with people. Employers: Dentists, public health departments, private clinics, dental schools. Training: Available at several vocational-technical institutes, community colleges and proprietary schools (See PRE 8176).
UP-1-2-76, 2-18-76, 3-15-76

For the physically handicapped: This occupational field is not feasible for the physically handicapped because of the mobility required. For the individual who desires to work in a dental setting, entry can be gained as a receptionists (See DESC 1452) or as a bookkeeper (See DESC 1616). The individual who likes working in a laboratory may want to explore employment in the construction of dental appliance.

8174 Dental Hygienists

Dental Hygienists help people improve their dental health. They work under the general supervision of a dentist, cleaning and polishing teeth, noting conditions of decay and disease for diagnosis by dentists, and taking and developing x-rays. They also teach patients proper dental care & may sterilize instruments & keep records.

Aptitudes: Good manual & finger dexterity; eye-hand coordination; attentiveness to detail; cleanliness; good health; ability to put others at ease. Environment: Usually work in clean, well-lighted offices, standing some of the time. Work Week: Often divide time between several dental offices, working 35-40 hours/week; part-time employment is also common. Licensed occupation; see PREP 8174. Training: Available at community colleges and universities.

For the Physically handicapped: This occupational field is not feasible for the physically handicapped. Entry into dental offices, for the physically handicapped, can be gained as a receptionist (See DESC 1452) or as a bookkeeper (See DESC 1616). A feasible related occupational field is in the construction of dental appliances.

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DESC 8113 Dentists

Dentists try to prevent and correct dental problems. 90% are general practitioners who deal with a wide variety of dental problems, such as disease prevention, tooth fillings, extraction and oral surgery. More dentists are delegating duties to hygienists and dental assistants and concentrating on complex dental procedures. Specialties: Orthodontists, oral surgeons, pedodontists and periodontists. Related occupations: Dental hygienists, dental assistants.

Aptitudes: Above average intelligence, interest in science, good judgement of space and shape, a high degree of manual dexterity and delicacy of touch. Work Setting: Work 40-50 hours a week in an office, using sophisticated tools and medicines. Licensed occupation; see PREP 8113 for details. Training: Available (See PREP 8113).
UP-1-2-76, 2-9-76

For the Physically Handicapped: This occupational field is not feasible for the physically handicapped because of the mobility required. Related occupational fields, feasible for the physically handicapped are: dieticians (See DESC 8116), pharmacy (See DESC 8124), speech and hearing specialist (See DESC 8128) or laboratory testing (See DESC 2656).

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DESC 8116 Dietitians

Dietitians plan nutritious meals to help people maintain or recover good health. Work includes planning menus and diets for therapeutic treatment, supervising the preparation of meals, and managing personnel and food purchases. Specialties: Most are administrative dietitians, who plan and supervise meal in hospitals, schools, and other institutions: Therapeutic dietitians counsel persons with special diet needs; others are engaged in teaching and research. Some dietitians perform more than one of these functions. Environment: Work in kitchens and adjoining offices, often in consultation with patients, doctors, and other staff members. Some weekend and holiday work.

Abilities: Aptitude for science; an interest in serving people; appreciation for appetizing, nutritious foods; ability to plan and supervise. Hiring Requirements: Bachelor's degree in home economics, specializing in foods and nutrition or institution management. Many employers also require internship training, and some require registration (See PREP 8116 for details). Employers: Hospitals and health care facilities, colleges and universities, school systems, private businesses and public health agencies. Training: Available (See PREP 8116).

UP-1-2-76, 2-27-76

For the Physically Handicapped: This occupation is feasible for the physically handicapped. Other related occupations in the medical field that are feasible for the physically handicapped individual are: laboratory testers (See DESC 2656) and pharmacy (See DESC 8124).

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DESC 7888 Dining Room Attendants

Dining room attendants primarily clear tables and counter areas in eating places to prepare for the next customers. Duties may include setting tables, replenishing linens, silverware, glassware and dishes, serving water and coffee, and performing various cleaning duties. Work Setting: Indoors, always on their feet, lifting and carrying moderately heavy loads, which are often hot. Scheduled hours usually include evening and weekend duty; some jobs entail 'split shifts' which require two periods of duty with more than an hour off in between.

Abilities: Ability to follow instructions and to work in a routine. Hiring Practices: Clean, neat, able to work rapidly and a cordial manner. Training: Skills are learned on the job. See PREP 7888.
UP-1-9-76

For the Physically Handicapped: This occupation is not feasible for the physically handicapped because of the mobility needed and the lifting requirements. For those individuals who desire to be involved in the food service industry, some can gain entry as a cashier in a cafeteria or restaurant. For those individuals who complete a 4-year college level program, opportunities exist in the management area of a food service (See DESC 1144 for business management) or as a dietician in an institutional setting.

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DESC 3456 Domestic Service Workers

Domestic service workers assume household responsibilities such as cleaning, cooking, laundering and babysitting for individuals or families. They often care for a household with little or no supervision. Many specialize in cleaning, cooking, babysitting or care of elderly people. Work Setting: Inside doing household duties and/or caring for children. Often work for several households. Work week varies greatly, since many are employed part time; often more than 40 hours for live-in housekeepers.

Abilities: Good use of hands; ability to follow instructions and work independently; ability to cook, sew, clean house and/or care for children. Hiring Requirements: Most employers prefer persons who are neat, clean, trustworthy and in good health. Some require those with skills in in-home nursing care as well as housekeeping. Training: Generally not required; however, related courses are available at community colleges, vocational-technical institutes, and in high school (See PREP 3456). Most acquire skills informally from family members and peers.
UP-12-18-75, 3-1-76

For the Physically Handicapped: This occupation is not feasible for the physically handicapped because of the mobility required. Other related fields, feasible for the physically handicapped individual who wants to be involved in the service field, are sales of the service (See DESC 7422), management of the business (See DESC 1144), service manager (See DESC 1162) or through the support fields of bookkeeping (See DESC 1616) or secretarial (See DESC 1412).

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DESC 2364 Drafters

Draftsment translate the ideas and rough sketches of engineers and architects into detailed drawings, which enable other workers to manufacture the product according to the designer's concept. Drafters utilize various machines, drafting tools, math and knowledge of engineering practices to complete drawings. Drafters often specialize in architectural drafting or one of the branches of engineering. Specialties: Designers, detailers, tracers. Related occupations: Engineers, architects, engineering technicians.

Abilities: Ability to visualize spatial relationships of plane and solid objects, facility with math and language ability to do precision and detailed work. Work Setting: Work in well-lighted rooms. Hiring Requirements: High school diploma with drafting courses or formal training in drafting. Employers: Engineering and architectural consulting firms manufacturing firms and government agencies. Training: Available at community colleges and universities (See PREP 2364).
UP-12-31-75

For the Physically Handicapped: This occupation is feasible for the physically handicapped. Related occupations feasible for the physically handicapped are engineering (See DESC 2354) and architecture (DESC 2316). For the individual who does not desire to complete a 4-year college course, opportunities for employment exist as an engineering technician (DESC-2356).

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DESC 2626 Earth Scientists

Earth scientist study the history, composition and characteristics of land, oceans and atmosphere to increase man's knowledge and solve problems. Geologists investigate the structure and composition of the earth; they may work in locating natural resources, determining suitable construction sites, or researching earth processes or history. Geophysicists study the physical characteristics of the earth and other planets, such as magnetic and gravitation fields, solar radiation, and earthquakes. Meteorologists study the atmosphere and its processes. Oceanographers search for data about the ocean and its animals and plants. Work Setting: Mostly in laboratories, though some work is outdoors, often in remote areas; irregular hours are common.

Aptitudes: High intellectual and mathematical ability; writing ability, form and spatial perception, an inquisitive mind, thoroughness and attention to detail. Hiring practices: At least a bachelor's degree in a relevant major. In geophysics, meteorology and oceanography, graduate degrees are almost essential. Employers: Universities and colleges; state and federal government agencies; and the aerospace, petroleum; and mining industries. Training: Programs are available in Washington (See PREP 2626).
UP-1-1-76, 2-27-76

For the physically handicapped: This occupation is feasible for the physically handicapped provided the individual is selective of their work settings. Those positions requiring outdoor work are not feasible because of the physical mobility required. Other related occupations feasible for the physically handicapped are as a laboratory tester. (See DESC 2656), and physical scientist (See DESC 2624).

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2318 Ecologists

Ecologists are scientists who deal with the relations between organisms and their environment so as to increase their understanding and solve difficult problems. Growing public awareness of environmental problems has focused new interest on the field of ecology. Problems encountered deal with wildlife control; air, water, and land pollution; resource protection, and land use planners. Work Setting: Most research work in ecology is performed by university faculty members through teaching assignments and studies of environmental problems. Other work is performed by private organizations through research, consultation and planning.

Aptitudes: Above average intelligence to grasp the necessary training and concern for natural resources. Ecologists are generalists. In other words, they must have a broad understanding of many disciplines. Hiring Requirements: Bachelor's degree in chemistry, plant or animal ecology, or environmental sciences is usually the minimum requirement. It is helpful to have some background in wildlife, forestry, and range management. Employers: Universities, local, state and federal government agencies, and some large private firms. Training: Related programs available at most 4-year colleges and universities.

For the Physically Handicapped: This occupation is feasible for the physically handicapped provided they specialize in the areas which do not require outside assignments. Many related occupations, previously mentioned in the above description, are feasible for the physically handicapped.

8458 Education Program Specialists

Education program specialists provide services such as testing programs, curriculum planning and coordination of outside activities for classroom teachers. Audio-visual specialists select and disseminate equipment and materials and help teachers and students learn to use them. Outdoor education & career education specialists develop and implement curriculums and programs. Curriculum specialists help teachers develop new plans and solve problems in subject fields. Work schedule: Usually a regular work week and many are year-round positions.

Abilities: Organizing ideas into instructional units for students & teachers, writing & speaking ability & working well with people. Hiring requirements: An advanced degree, teaching experience & expertise in a subject are often specified. Licensing: Most positions in Washington require a teaching certificate. Employers: Local, state, and federal educational jurisdictions and private educational firms & organizations. Training: General teacher education programs are available at most 4-year colleges; See PREP 8458 for more information.

UP-1-2-76

For the physically handicapped: This is a highly feasible occupational field for the physically handicapped allowing the individual to choose a specialization in their educational interest area. A related occupation is education administrators (See DESC 1136). For the individual interested in the field of education but not desiring to complete college level and graduate work, See DESC 1422 for teachers aides.

5626 Electricians & Elect, Repairers

Electricians and Electrical Repairers install wiring and maintain electrical equipment such as generators and lighting systems. Industrial electricians also inspect and service electronic control devices. Related occupations: Linemen (5624); broadcast technicians (5664); radio and TV repairers (3168); heating and cooling systems mechanics (3146).

Aptitudes: Average or above ability to apply shop mathematics to practical problems. Ability to visualize objects of 2 or 3 dimensions and to make visual comparison. Good eye-hand coordination and manual dexterity. Work Setting: Indoors and outdoors, electricians often stand for long periods or work in small spaces, also risk the danger of falls and electrical shocks. Construction electricians move to different work sites in the state or region. Many belong to the International Brotherhood of Electric Workers. Employers: Construction lumber, communications and utility industries. Hiring Practices: Formal apprenticeship or informal training as an electrician's helper. Many employers use union hiring halls. License: Must work 4 years in an apprenticeship and pass a written exam (See PREP 5626), UP-2-4-76

For the Physically Handicapped: This occupation is not feasible for the physically handicapped because of the physical dexterity needed. For the physically handicapped individual interested in this field, a related field would be as an electrical engineer (See DESC 2354) or engineering technician (See DESC 2356). Other related occupations are appliance repairers (See DESC 3169) and radio and TV repairers (See DESC 3168).

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DESC 5686 Electronics Assemblers

Electronics assemblers wire and assemble electronic parts such as capacitors and transistors into electrical products.

Aptitudes: Good vision for close work, depth perception, color discrimination and eye-hand coordination; average ability to adapt to a routine and to work with set standards; and above average use of hands and fingers. **Work Setting:** Assembly line operations doing repetitive tasks. May involve evening and night work. **Employers:** Electronic manufacturing firms.

Hiring Requirements: Formal training is unnecessary for plant jobs, but a high school diploma is frequently required. Firms with government contracts may require a certificate for soldering. **Training:** Mostly on the job (See PREP 5686).

UP-12-15-75

For the Physically Handicapped: This occupation is feasible for the physically handicapped individual with good eye-hand coordination and above-average finger dexterity. Related occupations feasible for the physically handicapped are hand-crafters (See DESC 5982) and jewelers (DESC 3184).

Elementary and secondary teachers develop and plan teaching materials and provide class room instruction to students. Elementary teachers normally work with one group of pupils during the entire school day. Secondary teachers usually specialize in their teaching subjects. Specialties include educating the handicapped, coaching sports, and teaching vocational subjects. Work setting: Usually work at least 40 hours a week including after-school duties such as preparation, planning, and supervising student activities, nine months a year. Many teachers take course work or hold part-time jobs after school and during the summer.

Abilities: The ability to relate well to people and to organize and present materials and ideas. Hiring requirements: A college degree and a Washington teaching certificate. UP-1-2-76, 2-23-76

For the physically handicapped: This is a highly feasible occupation. A related field not requiring a college degree is as a teacher's aide (See DESC 1422). Other related fields requiring teaching experience or graduate work are Education Program Specialist (DESC 8458), University and College Teachers (DESC 8454) and Educational Administrators (DESC 1136).

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DESC 2356 Engineering Technicians

Engineering technicians assist engineers in the planning, research and development of engineering projects. They may work on a survey party, do computations, test products and equipment, prepare drawings and technical reports, search records and inspect construction projects for satisfactory workmanship and adherence to specifications. Related Occupations: Construction superintendents, engineers, drafters. Work Setting: Most work is performed indoors under comfortable, well-lighted conditions. Surveying and construction inspecting is performed outdoors.

Abilities: Ability to do precision and detailed work, working knowledge of math, trigonometry and basic engineering procedures, ability to use field or office engineering instruments. Hiring Requirements: Some technicians are trained on the job; however, some formal training is increasingly preferred. Employers: about two-thirds work in manufacturing industries, engineering firms, and other private businesses; most others work in government agencies. Training: Available at community colleges, vocational-technical institutes, private vocational schools, and through engineering and science programs at universities (See PREP 2356); some opportunity for on-the-job training.
UP-12-31-75, 3-1-76

For the Physically Handicapped: This occupation is feasible for the physically handicapped. Engineering (See DESC 2354) and architecture (DESC 2316) are two related occupations that are feasible for the physically handicapped. For the individual who does not desire to complete a 4-year college course, opportunities for employment exist as a drafter (DESC 2364).

2354 Engineers

Engineers determine how to combine raw materials to produce products or equipment or to build projects such as roads, dams, buildings and bridges. Duties vary with engineering fields, but may include planning and overseeing construction and research projects, designing equipment and machinery, preparing drawings, and inspecting and testing materials & products. Major specialties: Aerospace, civil, industrial, electrical and mechanical; others include nuclear, ceramic, metallurgical, agricultural and chemical engineering. Work setting: Many work both outdoors and indoors.

Abilities: Ability to visualize spatial relationships of plane and solid objects, initiative and creativity, high math and science aptitude. Hiring requirements: Most positions in private industry do not require a license. However, responsible positions in government or with firms that offer services to the public require meeting state requirements for a professional engineer's license. Licensing: See PREP 2354. Training: Available in Washington (see PREP 2354). Employers: Over half work for manufacturing firms; others are employed by public agencies, private consulting firms, utilities, and self-employment.
UP-12-31-75, 3-1-76

For the physically handicapped: Many opportunities exist for the physically handicapped in the field of engineering because of the variety of areas of specialization already mentioned. For those who do not desire to complete a 4-year college program, a related field is an engineering technician (see DESC 2356). Another related occupation is as a drafter (see DESC 2364).

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DESC 4514 Fallers and Buckers

Fallers and buckers work in the woods where trees are felled and sawed into specified log lengths. Usually two men work together as the cutting crew. They select the best direction to fell trees and use power chainsaws to saw cuts to fix the direction of fall. They buck felled trees into specified log lengths. Work Setting: Work in the woods under noisy conditions, risking hazards of falling limbs, throwback of trees and rolling logs.

Aptitudes: Good hand and wrist movement, and eye-hand coordination.
Hiring Practices: Above average strength and endurance to handle chainsaws, usually previous logging experience and sometimes experience with chainsaw is specified to become a bucker. Training: Available through on-the-job training (See PREP 4514).

UP-12-8-75

For the Physically Handicapped: This occupation is not feasible for the physically handicapped because of the physical agility necessary. A physically handicapped individual desiring to work around wood products should consider another related occupational field such as forestry (See DESC 4124), furniture making machine operation (See DESC 4584), cabinetmaking (See DESC 4586), or as a stock or inventory clerk in a lumberyard (See DESC 7118). Any of the clerical occupations involved in a lumberyard or sawmill business office would be feasible for the physically handicapped. For more information on clerical positions, See DESC for 1400, clerical occupations.

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DESC 4166 Farm Workers

Farm workers perform various farm duties, usually on a year-round basis, helping the farmer in general maintenance and farming operations. Although tasks vary with the type of farm, workers may prepare soil by plowing, harrowing, and fertilizing. They may tend livestock, spray crops, and operate machinery such as tractors, hay balers, and milking machines. Farm workers may also be called upon to supervise seasonal workers, repair farm buildings, fences and equipment, and to haul livestock and produce to market. Work Setting: Usually outdoors; work week may be long during busiest seasons.

Aptitudes: Mechanical aptitude, physical stamina, ability to follow instructions. Hiring Requirements: Knowledge of various tasks related to agriculture and possession of necessary physical skills. Previous experience in operating or repairing farm equipment and machinery is helpful. Training: Courses are available at community colleges; see PREP 4166 for more information.

UP-1-2-76, 2-9-76

For the Physically Handicapped: This occupation is not feasible for the physically handicapped because of the mobility needed. However, for the individual who possesses farm skills, some opportunity, for employment, may exist, as a farm manager (See DESC 4164). Other related occupations would be in the areas of bookkeeping for a large farm (See DESC 1616). Since the field of environmental protection is expanding so rapidly, it would be wise for the physically handicapped individual who is interested in this occupational field, to confer with a vocational counselor regarding jobs in that field.

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DESC 4164 Farmers and Farm Managers

Farmers and farm managers are concerned with efficient and prosperous production of agricultural goods. Since today's farms are increasing in size and mechanization, farming often involves large capital outlays and numerous skills as well as a lot of personal time and energy. The typical farmer is manager, crew boss, laborer, and bookkeeper and needs to be knowledgeable about many technical subjects affecting crop growth. Some farm on a part-time basis, supplementing their incomes with other work; others are semi-retired. Large firms sometimes hire managers to oversee and coordinate farming activities. Work Setting: Inside and outside, subject to long hours and all weather conditions.

Abilities: Interest in outdoor work, physical stamina, ability to understand and apply agricultural principles, managerial ability and knowledge of operating a business. Training: Programs are available at WSU and several community colleges; See PREP 4164 for details.
UP-12-18-75, 2-23-76

For the Physically Handicapped: For the individual who has farming skills prior to becoming physically handicapped, opportunities exist as a farm manager where the individual could coordinate the farming activities. It is possible for tractors to be equipped with hand controls for the physically handicapped. For those individuals having farming knowledge some positions are available through governmental agricultural extension services and the individual should explore occupational possibilities with them.

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DESC 9426 Fire Fighters

Firefighters protect communities against the loss of life, injury, and destruction of property by fire. Firefighters work as a team with each person assigned to a special job. Duties include operating and maintaining fire equipment and trucks. Other tasks include inspecting buildings for fire safety, promoting fire prevention, and fire cause investigation.

Aptitudes: Excellent health, agility, good vision, emotional stability, mental alertness, and a mechanical aptitude. Ability to work with others and to follow orders. Work Setting: Indoors and outdoors, performing heavy work for prolonged periods under dangerous conditions. Work shifts vary with employers; for example, some are on duty 24 hours, then off duty for 48 hours, resulting in 56 hrs/week. Many belong to the international association of firefighters. Employers: Municipal fire departments. Until recently, small and rural community fire stations were manned by volunteers. Hiring Practices: Candidates must take competitive exams and pass rigorous health and physical qualifications. All must be high school graduates. Training: Skills are learned through on-the-job training or community college programs (See PREP 9426)
UP-12-23-75

For the Physically Handicapped: This occupation is not feasible for the physically handicapped because of the mobility and physical stamina required. The individual who desires to be involved in this service should explore the possibilities of becoming a dispatcher through their local fire department. Fire departments also in need of supported staff such as bookkeepers (See DESC 1616) or clerk typists (DESC 1416).

4126 Fish and Wildlife Specialists

Fish and wildlife specialists work with such natural resources as soil, water, plants and animals to produce an environment that supports animal life. These specialists manage natural resources and wildlife for the overall best interests of man, whether these be economic, commercial, recreational or aesthetic. Duties include surveying and restoring marshes, lakes, streams and surrounding areas; managing wildlife refuges and game areas; enforcing conservation regulations; educating others about wildlife conservation, and doing research to develop scientific solutions to problems. Some fishery specialists work in artificial propagation of fishes and in water quality assessment and control.

Abilities: Above average intellectual and numerical abilities, and the ability to work alone as well as with others. Those interested in research should have a high degree of academic ability. Hiring requirements: A 4-year college degree in biological sciences, or in fish and wildlife management or research is required. Some employers report that a Master's Degree is becoming increasingly important in obtaining a job. Good health is imperative for many assignments. Employers: Federal and state agencies governing wildlife, conservation, parks and forests. Training: Available at several colleges and universities in Washington (See PREP 4126).
UP-1-2-76, 3-12-76

For the physically handicapped: This is a feasible occupation for the physically handicapped. There would be some limitations to the variety of work assignments a physically handicapped individual could accept because some jobs in this occupational field require a high degree of mobility. The physically handicapped individual interested in this occupational field would be wise to check the library and speak with vocational counselors regarding new areas of specializations that are emerging in the field of environmental protection.

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DESC 7856 Flight Attendants

Flight attendants represent airlines and assume the responsibility for passenger comfort and safety. They are the personal links between passengers and airlines, giving them an important public relations position for the airlines. Flight attendants commonly serve food and beverages, perform nursing duties, aid in child care, and distribute reading material. Work Setting: Indoors, spend most of their time on their feet attending to passengers. Schedules often do not permit return to home base at night and include duty at night, on weekends, and holidays. Overtime is paid for flight time in excess of 65 hrs./month.

Aptitudes: Courteous, cheerful personality; willingness to follow orders; and manual dexterity. Vision must be correctable to 20/30 or better. Airlines wish to hire attractive, poised, and resourceful young people. Some airlines require that applicants are between 62 and 72 inches tall, in excellent health and a high school graduate. Applicants with 2 years of college or prior public contact experience are preferred. Training: Regardless of previous training, most airlines train new employees in their own school, See PREP 7856.

UP-12-17-75, 2-18-76

For the Physically Handicapped: This occupation is not feasible for the physically handicapped because of the physical mobility required. For the physically handicapped individual interested in this occupation a related field that would be feasible is as a travel agent. Travel agencies usually hire individuals with at least a high school diploma and with some clerical skills and public relations abilities.

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DESC 4276 Floor Layers

Floor layers, also called floor covering installers, apply carpeting, linoleum and various kinds of tile to floors, countertops and other surfaces. Some specialize in laying only one or more materials such as rigid countertops. Specialties: Floorlayer, carpetlayer, carpetcutter. Related Occupations: Carpenters (4254), painters (4242) and bricklayers (4264).

Aptitudes: Good use of hands and fingers; eye-hand coordination; an average ability to work within precise standards; and to visualize objects of two or three dimensions. Work Setting: Usually indoors, some outdoor work installing all-weather carpeting; generally work regular daytime hours; some weekend and evening work may be required. Installers often develop knee problems as they do much of their work while kneeling. Many are members of the Linoleum and Carpetlayer's Union. Employers: Flooring contractors; furniture and department stores that sell and install floor covering. Hiring Practices: High school graduates at least 17 years old with average manual abilities are preferred. A neat physical appearance and pleasant manner are important for those working in people's homes. Training: Skills are acquired informally on the job or through a formal 2 to 3 year apprenticeship; See PREP 4276.
UP-1-7-76, 2-17-76

For the Physically Handicapped: This occupational field is not feasible for the physically handicapped because of the physical agility and stamina required. The physically handicapped individual can become involved in this field through one of the related fields that are feasible for the physically handicapped. Examples of these are: Sales of the product (See DESC 7454); management of the business (See DESC 1144); or the support services of secretarial (See DESC 1412) or bookkeeping (See DESC 1616).

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DESC 4146 Floral Designers

Floral designers prepare floral arrangements for a variety of occasions, using flowers, greenery and artificial aids at the request of customers. Designing is a creative occupation because the floral arrangement must be appropriate for the event and meet customer specifications as to cost and color and flower preference. In many shops floral designers have a variety of duties other than arrangements; these might include selling, cleaning and preserving flowers, taking phone orders and monitoring supplies. Work Setting: Usually work 8 hours a day, Monday through Saturday, with a day off during the week.

Abilities: Good color vision, manual and finger dexterity, attention to detail, and artistic ability. Employers: Most are employed by floral shops; a few work for large grocery stores that feature floral services; others are self-employed and act as shop managers. Training: Available on the job, though formal training is available (See PREP 4146).
UP-1-2-76

For the Physically Handicapped: This occupational field is feasible for the physically handicapped with artistic ability. Related occupations also feasible for the physically handicapped are handcrafting (See DESC 5982) clothes designing and pattern-makers (DESC 4442) and jewelry craftsmen (DESC 3184).

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DESC 4124. Foresters

Foresters work to achieve best use of forest land and resources for economic and recreational purposes. They evaluate forest resources; plan and supervise reforestation projects; do research; develop methods to protect forests from fire, insects and disease; and manage wildlife protection and recreation areas. Work Setting: Indoor and outdoor, often in remote areas. Specialties: Timber and range management, forest recreation, and fire control.

Aptitudes: Above average intelligence, good verbal skills, facility with math, and ability to work independently with minimum supervision. Hiring Requirements: Good physical condition and a B.S. in forestry are the minimum requirements for entry level jobs. Employers: Most work for federal and state agencies, and for pulp, paper, lumber and logging companies. Training: Available at the University of Washington and Washington State University (See PREP 4124).
UP-2-9-76

For the Physically Handicapped: This occupation is feasible for the physically handicapped provided the individual specializes in the research areas. Other areas require an individual to perform outdoors work and would not be feasible. Individuals interested in this field would be wise to confer with a vocational counselor regarding the new occupations emerging in the field environmental protection.

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DESC 4128: Forestry Technicians and Aides

Forestry technicians and aides assist foresters in managing and caring for public and private forests for recreational and economic purposes. Duties include measuring timber volumes and marking trees for harvest; inspecting trees for disease and insects; investigating causes of water pollution; and participating in survey and firefighting crews. Related Occupations: Foresters, engineering technicians. Work Setting: Outdoors, performing physically active work, carrying objects weighing up to 25 pounds; often assigned to remote areas.

Aptitudes: Average intelligence, physical stamina, ability to work without direct supervision. Hiring Requirements: Experience in forest work or formal training. Employers: Federal and state government agencies and lumber industry. Training: Available through on-the-job training and at several community colleges.
UP-1-2-76

For the Physically Handicapped: Since this occupation involves a great deal of outside work, it is not feasible for the physically handicapped. Related occupations that are feasible are as an engineering technician (DESC 2356) and land use planner (DESC 2314). With the emphasis on environmental protection programs today, it would be advisable for the individual with an interest in this occupation, to consult with a vocational counselor regarding positions in that field.

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DESC 6158 Forklift Operators

Forklift operators drive such vehicles as jitneys, forklifts, and log stackers in various industries to move and lift heavy materials.

Aptitudes: Average use of hands, eye-hand-foot coordination, physical condition and eyesight including good depth perception; mechanical ability and ability to work under pressure. Work Setting: Inside and outside; work is classified as medium-heavy. Noise, congestion and moving equipment are frequently part of the work area. Schedules are usually 40 hours/week with many jobs requiring shift work. Employers: In Washington, chief employers are lumber and plywood mills, and warehouses. Hiring Practices: Most positions are filled by those with related work experience and seniority. Training: Skills are usually acquired informally on the job. See PREP 6158.
UP-1-7-76

For the Physically Handicapped: This occupational field is feasible for the physically handicapped provided the vehicles are adapted with hand controls. At this time, no firms have been located in Washington that have their equipment so adapted and the physically handicapped individual would, undoubtedly, have to convince an employer of their ability to perform the required work and to provide the adapted equipment. Related occupations that are feasible for the physically handicapped are as a stock clerk (See DESC 7118) or as a packer and wrapper (DESC 7126).

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DESC 5426 Foundry Workers

Foundry workers produce finished metal parts known as castings from patterns and molds. Sand mixers prepare special blends of sand that are used by molders and coremakers. Furnace operators run the furnaces that melt the metal that is poured into the molds. Shakeout workers dump castings from the molds after the metal has solidified. Tumbler operators run machines that clean and smooth dirty, rough surfaces of castings. Chippers and grinders use hand and power tools to smooth casting surfaces. Work Setting: Often exposed to heat, smoke, fumes and hazards, although these are reduced by modern equipment and safety devices.

Abilities, Aptitudes: Strength to do moderately heavy work; the ability to detect differences in shapes and textures; and an understanding of machinery. Hiring Requirements: None required for entry level positions as general laborers; others require experience. Employers: Machinery and equipment manufacturers, foundries. Training: No formal training available--most learn their skills on the job (See PREP 5426)
UP-2-3-76

For the Physically Handicapped: This occupational field is not suitable for the physically handicapped. Although a physically handicapped individual could perform some of the jobs involved in this occupational field, they would not be able to perform entry laborer jobs. For an individual who is interested in working with machine, related occupations to explore are: Small engine repair (See DESC 3118), appliance repair (See DESC 3169); woodmaking machine operation (See DESC 4556) or furniture making machine operation (See DESC 4584). The clerical support services, such as secretaries (See DESC 1412) and bookkeeping (See DESC 1616), are always needed in the office of these businesses and are suitable for the physically handicapped.

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DESC 2174 Freelance Writers

Freelance writers inform and entertain their readers in all forms of creative literary composition. Freelance writers are distinguished by the fact that they are self-employed, even though they frequently contract with publishers for specific assignments.

Aptitudes: Creativity and imagination, an extensive vocabulary, ability to identify with others and their experiences. Work Setting: Usually the freelance writer seeks work environments conducive to his creativity and concentration. Hiring Practices: Proven writing ability is of prime importance regardless of educational background; college courses in journalism, literature, or liberal arts may be helpful for entry. Training: Related courses are available at most schools (See PREP 2174).
UP-1-6-76

For the Physically Handicapped. This occupational field is feasible for the physically handicapped and allows the individual to work at home. Related occupations also feasible for the physically handicapped are as a writer or editor (See DESC 2176) or as a public relations worker (See DESC 1195).

7826 Fry Cooks:

Frycooks primarily prepare fried foods such as hamburgers, fries, eggs, bacon, and hotcakes to be served in restaruants and cafes. Although some work alone, many assist chefs and dinner cooks in preparing various foods. Duties include cleaning equipment and keeping simple kitchen records. Work Setting: Indoor, work in kitchens which are hot & humid; constantly standing and walking while preparing food; must work rapidly during peak rush times. Scheduled hours may include any during which the establishment is open.

Aptitudes: The abilities to lift & carry objects up to 25 pounds & work for long periods in warm temperatures; the ability to follow orders but also work without constant supervision; good vision; and the ability to work under pressure during busy periods. Hiring Practices: Neat appearance, good health & compatibility with other employees. Also, many employers consider a record of dependability to be quite important. Employers: Any eating establishments including large hotels and restaurants, lunch counters and hamburger stands. Training: Most acquire skills on the job (See PREP 7826).
UP-1-8-76, 2-18-76

For the Physically Handicapped: This occupational field is not feasible for the physically handicapped because of the standing and walking necessary. For those individuals who want to be employed in the food industry, some entry can be gained in a cafeteria operation through cashiering. For those individuals who want to pursue a 4-year college program, opportunities exist in the management of restaurants (See DESC 1144) or the accounting field (See DESC 1614).

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DESC 4584 Furniture Making Machine Operators

Furniture making machine operators use woodworking machines to manufacture furniture components. Duties vary with the particular item being produced, but often involve use of drills, saws and lathes to make table and chair legs, and machines that stamp out items such as table tops and chair seats.

Aptitudes: Eye-hand coordination, good use of hands and fingers, preference for working with hands, ability to work within prescribed standards and adapt to a work routine. Some specialties require good color perception. Work setting: Indoors, continually standing, usually 5 days a week. Many belong to either the Millmen's Union or the Furniture Workers Union. Employers: Furniture manufacturers. Hiring Practices: Experience in production work is usually preferred. Training: Most acquire skills on the job. See PREP 4584.

UP-12-17-75, 2-23-76

For the Physically Handicapped: This occupation is feasible for the physically handicapped individual provided the person selects a firm that is large enough to have several employees so that the larger machines or outside work can be handled by another employee. Related occupations that are feasible for the physically handicapped are woodworking machine operation (See DESC 4556) and cabinetmaking (See DESC 4586).

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DESC 1418 General Office Clerks

General Office Clerks are all-round office personnel performing numerous clerical duties essential to smooth office operations. They may file records; compile reports; tabulate and post data in record books; prepare and mail bills, receipts, invoices, statements and checks; and operate typewriters, calculators, and duplicators. Related Occupations: Clerk typists, secretaries and receptionists. Work Setting: Generally a 40-hour week in an office setting.

Abilities: Above-average perception for clerical detail and finger dexterity. Hiring Requirements: Completion of high school often required; classes in typing, bookkeeping and other business courses are helpful. Major employers: Manufacturing firms; insurance companies; banks and other businesses; and government agencies. Training: Available through high schools, private business schools and community colleges (See PREP 1418).
UP-1-6-76

For the Physically Handicapped: This occupational field is feasible for the physically handicapped as are many related clerical occupations offering a variety of work settings. For more information see DESC 1400 for clerical occupations. For information on clerical functions in the railroad industry, See DESC 1646.

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DESC 7134 Grocery Baggers

Grocery baggers normally work in stores putting items in sacks or cartons and carrying or pushing them in carts to customers' cars. Grocery baggers clean work areas, move empty bottles and trash to storerooms, and may stock shelves and put price labels on merchandise. Work Setting: Some work a five-day, 40-hour week, including weekend duty; others work part-time during holidays, weekends and evenings. Many part-time positions are filled by students. Hiring Requirements: The occupation is entry-level, not requiring previous experience although some work experience is helpful. Because of the public contact, many employers consider personal appearance and manners important. Good physical strength and stamina are necessary for busy days. Training: Trained on the job, see PREP 7124.

UP-1-6-76

For the Physically Handicapped: This occupational field is not feasible for the physical handicapped because of the physical mobility and lifting required. Related occupations feasible for the physically handicapped are as packers and wrappers in firms handling small items (See DESC 7126) and as a stock clerk specializing in inventory control (DESC 7118).

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DESC 4144 Groundskeepers and Gardeners

Groundskeepers and gardeners take care of lawns, shrubs, and trees in parks, building grounds, and gardens. Job Duties include trimming and watering lawns and plants, pruning trees and shrubs, raking leaves, picking up litter, and applying fertilizers and insecticides. Groundskeepers and gardeners may also work in landscape planting or tree planting. Work Setting: Work in all kinds of weather, performing physically active work that at times requires lifting and carrying heavy objects, spending much time stooping and kneeling. Seasonal slack periods during winter cause layoffs.

Abilities: Eye-hand coordination, good use of hands and fingers, ability to follow verbal instructions. Hiring Requirements: Previous experience not usually specified; some knowledge of horticulture is helpful. Employers: Government agencies, private businesses, landscape contractors, and private home owners. Training: Most acquire skills on the job; however, training is available at community colleges (See PREP 4144 for details).

UP-1-2-76

For the Physically Handicapped: This occupation is not feasible for the physically handicapped. Related occupational fields feasible for the physically handicapped are forestry (See DESC 4124) and floral designers (See DESC 4146). Since most employers of groundskeepers and gardeners are relatively large businesses, a physically handicapped individual could be involved through secretarial work (See DESC 1412) or through bookkeeping (See DESC 1616) for the firm.

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DESC 5982 Handcrafters

Handcrafters make custom handmade products for the public. Usually they are self-employed which requires them to perform several tasks in addition to obtaining tools and materials and setting up a work area. They work primarily with hand tools, turning raw materials into finished products. Handcrafters also sell the products and perform minor book-keeping tasks. Specialties: Woodworkers, jewelers, potters, leatherworkers, Work Setting: Varies with specialty; some must work in studios or work areas furnished with special equipment, while others use portable tools and equipment. Work Schedules can be flexible, but handcrafters usually insure sizeable inventory before peak buying seasons such as Christmas and fairs; long hours are common.

Aptitudes: Success requires manual dexterity, patience, self-discipline, artistic flair, originality, and interest in dealing directly with people; 'business sense' is a valuable asset. Expenses: Initial investment for materials, tools and facilities varies from under \$50 to \$1,000 depending on the craft and ingenuity of the handcrafter. Training: coursework in craft specialties is available at many schools. Formal apprenticeships are available for jewelry workers (See PREP 5982).
UP-2-4-76

For the Physically Handicapped: This occupation is feasible for the physically handicapped individual with good eye-hand coordination and above-average finger dexterity. Related occupations feasible for the physically handicapped are electronic assemblers (See DESC 5986) and jewelers (DESC 3184).

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DESC 1134 Health Service Administrators

Health Service Administrators manage hospitals and other health facilities and organizations to assure satisfactory patient care. Duties are varied and often include developing and administering policies and programs, hiring and coordinating personnel, and making speeches before various community clubs and organizations. Specialties: Hospital administrator, clinic director, nursing home administrator. Related Occupations: Social program planners, public administrators. Work Setting: Indoors in an office setting, often working long hours; may be called to handle emergency problems night or day.

Aptitudes: Organizational ability to plan and implement policies, verbal ability, ability to relate to people and gain their confidence, financial aptitude. Hiring Requirements: Variable (See PREP 1134). Employers: Hospitals, nursing homes, government agencies, health maintenance organizations and health clinics. Most nursing home administrators are self-employed. Training: Available (See PREP 1134).

For the Physically Handicapped: This occupation is feasible for the physically handicapped offering the individual a variety of work settings. Related occupations feasible for the physically handicapped are public administration (See DESC 1138) and social program planning (See DESC 2164). For those individuals who do not desire to complete a 4-year college level course, entry can be gained into a hospital or clinical setting through any of the clerical occupations (See DESC 1400).

2654 Health Technicians/Technologists

Health Technicians/Technologists use x-ray and other medical equipment to aid in the diagnosis and therapy of various health problems. Electrocardiograph (EKG) & Electroencephalograph (EEG) technicians operate equipment that monitors patients' heart or brain activity respectively. Radiologic technicians operate x-ray machines. Respiratory therapists use special apparatus to treat patients with breathing problems. Operating room technicians assist surgeons and anesthesiologists before, during and after surgery. Orthotists and prosthetists construct and fit braces and artificial limbs.

Attributes: Average manual dexterity, good vision, an aptitude for working with equipment, & ability to work with patients. Work Setting: Indoors, work involves stooping and reaching. Usually a 40-hour week which may include nights, weekends & holidays. Employers: Hospitals, physicians, & other health facilities. Hiring Practices: Some jobs require high school graduation; for others, applicants should have related health training or experience. Licensing: For some educations, certification is available. Training: Programs are offered at several hospitals & community colleges. Skills for some specialties are acquired on the job. See PREP 2654.
UP-2-10-76

For the Physically Handicapped: Because of the broadness of of this occupational field, there are some areas that are appropriate for the physically handicapped and some are not. Those areas requiring the using diagnostic and/or respiratory equipment are not appropriate for the physically handicapped because the machines require stooping and lifting to adjust them to the patient. The field of orthotics and prosthetics is appropriate for the physically handicapped. See PREP 2654 for the educational requirements for this field. A related field for those interested in hospital or laboratory settings is as laboratory testers (See DESC 2656).

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DESC 8126 Health Therapists

Health Therapists work with patients in the recovery and rehabilitation of their physical and mental abilities. They administer tests, evaluate degree of impairment, keep progress records and teach patients how to use artificial limbs and aids. Physical therapists treat diseases and injuries through exercise, massage, and mechanical devices. Occupational therapists use activities and instruction in manual skills and recreational therapists use sports, dramatics, and arts and crafts in the rehabilitation of people who are physically or emotionally handicapped.

Aptitudes: Verbal ability to instruct patients, emotional stability, physical coordination, an interest in serving people, patience and the ability to work toward a long-range goal. Work Setting: Indoors in offices or rooms using equipment such as parallel bars, wheelchairs, walkers, or hydrotherapy tanks to work with patients. Employers: Most therapists work in hospitals; others work in schools for the handicapped, nursing homes, rehabilitation centers and public health agencies. Training: Professional programs in physical therapy and occupational therapy are available in Washington. Also there are community college programs for therapy assistants (See PREP 8126).
UP-1-2-76 2-18-76

For the Physically Handicapped: This occupational field is not feasible for the physically handicapped because of the mobility required. Related occupational fields, feasible for the physically handicapped are: dieticians (See DESC 8116), pharmacy (See DESC 8124), speech and hearing specialist (See DESC 8128) or laboratory testing (See DESC 2656).

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DESC 3146 Heat and Cooling Systems Mechanics

Heating and cooling systems mechanics install and repair refrigeration and heating equipment used in homes, schools and commercial buildings. They work on equipment ranging from window air-conditioners, private home heating units to large, complex systems in plants and factories. Related Occupations: Electricians and electrical repairers (5626), sheet metal workers (5484), plumbers (4274), appliance repairers (3169).

Aptitudes: Mechanical ability, color vision and good eye-sight.
Work Setting: In and outdoors, generally a 5-day, 40 hr. week, with evening and weekend work in emergencies. Overtime work is common during busy seasons (summer and winter). May spend up to 90% of the work day away from their employer's shop. Employers: Repair and service shops, cooling and heating contractors, fuel dealers and utility companies. Hiring Practices: Although a high school diploma is not essential, the trend is to require related courses in high school and community college or prior experience. Applicants must be able to deal effectively with people (See PREP 3146). UP-12-11-75

For the Physically Handicapped: This occupation is not feasible for the physically handicapped because of the physical agility required. However, several other occupations related to machinery repair are feasible for the physically handicapped. See DESC 3118 for small engine repair; DESC 3164 for office machine repair; DESC 3168 for radio and TV repair; DESC 3169 for appliance repair and DESC 3186 instrument repair.

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DESC 1132 Hotel and Motel Managers

Hotel and Motel Managers direct the business operations of hotels and motels to serve their patrons successfully. Common to any manager's job is the profitable administration of the establishment's activities. Specific duties vary according to the size, type, and location of the business. Managers in large hotels and motels mostly concentrate on administration, while managers of small firms may perform clerical work, relieve the desk clerk or PBX operator and perform cleaning tasks and general building repairs. Work Setting: Varies; spends most of the time inside; frequently confers with social groups and participates in community affairs; weekend and night work common. Related Occupations: Small business operator.

Aptitudes: Organizational and administrative ability, ability to communicate with people and gain their confidence, financial ability. Employers: Hotels, motels, resorts. Hiring Practices: Although related experience is of prime importance, larger employers increasingly emphasize a college education. Training: Hotel and motel management training is available (See PREP 1132).
UP-1-6-76

For the Physically Handicapped: This occupation is feasible for the physically handicapped provided the individual chooses a large hotel or motel where other personnel would perform the cleaning and building maintenance tasks. Related fields a physically handicapped individual might consider are small business operation (See DESC 1142), business management (SEE DESC 1144) and public relations work (See DESC 1195).

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SC 3186 Instrument Repairers

Instrument repairers service, inspect, and install delicate instruments and control systems used to measure and regulate machine operations. They repair, adjust or replace units in instrument and systems that measure time, weight, pressure, fluid flow and record data. Work Setting: Generally a 40 hour week (day or night shifts) with some emergency weekend or holiday work. Repairers working in factories encounter noise, oil and fumes; those located in shops work in relatively quiet, clean and well-lighted surroundings.

Aptitudes: Good understanding of machinery and electronics, good use of hands and fingers, eye-hand coordination, and the ability to apply prescribed methods and standards.

Hiring Practices: High school graduation plus experience in related jobs or technical training preferred. **Employers:** Public utilities and airlines; petroleum, chemicals, pulp and paper, instrument manufacturing, and metals industries; and federal agencies. **Training:** Skills acquired through informal on-the-job training, apprenticeship and technical school programs (See PREP 3186).

UP-12-11-75, 2-17-76

For the Physically Handicapped: This occupational field is feasible for the physically handicapped provided that employment is sought in a business that is large enough to have more than one repairer. The physically handicapped individual would be able to handle the repair of the smaller machines. For other related occupations, See DESC 3118, small engine repair; DESC 3164, office machine repair; DESC 3168, radio and TV repair; or DESC 3169, appliance repair.

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SC 7416 Insurance Salespeople

Insurance salespeople sell policies to individuals and businesses for protection against future losses and financial difficulties. They analyze the client's needs and resources, then recommend a specific amount and type of insurance. Other duties include maintaining records, preparing reports, identifying prospective customers, assisting in collecting premiums, and preparing insurance claims for clients. Related Occupation: Securities salespeople.

Aptitudes: Above average communication skills, ability to deal with people, and a high degree of motivation.

Work Setting: Inside, with a considerable amount of travel to clients' homes or businesses. Usually work more than 40 hrs/wk with appointments during evenings and weekends. Employers: Life, property-liability, and health insurance firms; many are self-employed as independent agents or brokers. Hiring Practices: Many employers prefer applicants with some job experience.

Licensing: Must pass a written exam and be at least 18 (See PREP 7416). Training: Related programs available at most universities, community colleges, private business schools and vocational-technical institutes (See PREP 7416).

UP-1-2-76, 2-18-76

For the Physically Handicapped: This occupational field is feasible for the physically handicapped. Several related sales occupations are also feasible for the physically handicapped. For additional information, see DESC 7400 for the various sales related occupations.

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DESC 2366 Interior Designers and Decorators

Interior Designers and decorators plan interior space to enhance the attractiveness and function of commercial and residential buildings. They consult with clients and architects in order to coordinate and select colors, fabrics, floor and wall coverings, light fixtures, furniture, and other accessories. They also provide cost estimates, presentations of floor plans and colored perspective drawings; often, they sell home furnishings as well. Work Setting: Indoors. Work week is often long and irregular to accommodate clients' schedules.

Abilities and aptitudes: Artistic talent, creativity, good business judgment, flexibility, attention to detail, and sales ability. Hiring requirements: Employers prefer graduates of design programs who are still expected to serve an informal apprenticeship. Employers: Department and furniture stores, large hotel and restaurant chains, architectural firms, furniture manufacturers, interior design firms; some are self-employed as free-lance designers.
UP-2-10-76, 2-23-76

For the Physically Handicapped: This occupation is not feasible for the physically handicapped because of the physical mobility needed. Related occupations feasible for the physically handicapped are as an art teacher in a high school (See DESC 8456) or university (DESC 8454) and as a commercial artist or designer (DESC 4724).

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DESC 3455 Janitors

Janitors are responsible for maintaining buildings in clean and orderly condition. Duties involve mopping, sweeping, dusting, waxing and polishing, and emptying waste baskets. Some janitorial jobs require lawn mowing, clearing snow and ice, tending furnaces and boilers, painting, and minor plumbing and wiring repairs. Work Setting: Usually work without direct supervision, lifting and carrying objects which may be heavy, and operating power equipment and hand tools. Evening and weekend work is often required.

Abilities: Average manual dexterity, and ability to follow set procedures. Hiring Requirements: Not highly formalized in terms of education, training or experience; most are trained on the job. A knowledge of building materials and cleaning compounds is necessary in some positions. Employers: Schools, hotels, hospitals, factories, and other businesses as well as firms furnishing janitorial services on a contract basis. Training: Available on the job.
UP-1-2-76, 2-17-76

For the Physically Handicapped: This occupation is not feasible for the physically handicapped because of the mobility required. Other related fields, feasible for the physically handicapped individual who wants to be involved in this service field are sales of the service (See DESC 7422), management of the business (See DESC 1144); service manager (See DESC 1162) or through the support fields of bookkeeping (See DESC 1616) or secretarial (See DESC 1412).

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DESC 3184 Jewelers

Jewelers make and repair various jewelry articles such as rings, bracelets, necklaces and watches for customers. Specialties: Diamond-setting, engraving, watch repair and manufacturing jewelers.

Attitudes: Above average finger dexterity; average use of hands, eye-hand coordination, mechanical ability; form and spatial perception; near acuity and depth perception; ability to deal with people. Work Setting: Inside doing close, precise work and waiting on customers. Work Week: Usually 35 hours for repairers; 40-48 hours for store owners.

Employers: Most are self-employed; others work for jewelry manufacturers, repair shops or retail stores. Hiring practices: Most employers require experience. For Trainees, high school graduates with a background in chemistry, physics and mechanical drawing are preferred. Training: Most learn the trade through a formal apprenticeship or through informal on-the-job training (See PREP 3184).

UP-1-7-76, 2-17-76

For the Physically Handicapped: This occupation is feasible for the physically handicapped individual with good eye-hand coordination and above-average finger dexterity. Related occupations feasible for the physically handicapped are electronics assembly (See DESC 5986) and handcrafting (DESC 5982).

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DESC 1688 Keypunch Operators

Keypunch operators operate machines similar to typewriters to transcribe data from source material onto punch cards or tapes that are used in computers. The operator's main function is to correctly type specific items of information, in both alphabetic and numeric form. Work Setting: Noisy and sometimes cluttered atmosphere, performing repetitious work; may work evenings and nights.

Abilities: Willingness to perform routine work according to specified procedures; ability to work with detail; eye-hand-finger coordination and good vision. Hiring Requirements: Typing proficiency and graduation from high school or business school. Employers: Most firms and government agencies using data processing operations. Training: Available at high schools, private business schools and community colleges. UP-12-17-75, 3-1-76

For the Physically Handicapped: This occupation is feasible for the physically handicapped and offers the individual a wide choice of work settings because of the diversity of firms and agencies using this position. Other opportunities that exist for the physically handicapped in related fields are as a computer operator (DESC 1686) or as a programmer or system analyst (DESC 1684).

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DESC 7884, Kitchen Helpers

Kitchen helpers assist cooks in restaurants, hotels and institutions by performing the simpler tasks in food preparation.

Typical duties include washing and peeling fruits and vegetables, transferring supplies from storage to work areas, scraping and washing dishes, removing garbage, and sweeping and mopping floors. Work Setting: Indoors, areas are often hot; constantly standing or walking while performing duties; work load is uneven and helpers are busiest during and after regular meal hours. Schedules often include evening and weekend duty.

Aptitudes: A willingness to follow instructions and work in a set pattern. Hiring Practices: Many employers consider a record of reliability and industriousness more important than education. Physical stamina and strength, good health and vision are important. Training: Most skills are learned on-the-job (See PREP 7884).

For the Physically Handicapped: This occupational field is not feasible because of the physical stamina and mobility required. A related occupation feasible for the physically handicapped is as a cashier (See PROG 149) in a cafeteria or restaurant.

2656 Laboratory Testers

Laboratory testers provide physicians with data to use in diagnosing diseases and furnish manufactures with information to use for quality control and product development. They operate technical equipment to determine chemical & physical characteristics of various materials such as food, chemicals or body tissues and fluids. Specialities: Medical technologists, laboratory assistants, & food processing technicians.

Aptitudes: Above-average ability to recognize physical differences in materials, average or above numerical ability & finger dexterity, good eyesight, attentiveness to detail and ability to work under stress. Work setting: Indoors, usually in clean well-lighted laboratories where unpleasant odors may be present. Employers: Hospitals, medical laboratories, lumber testing laboratories, food processing firms, and colleges. Hiring practices: A high school diploma with a background in math & science is usually the minimum requirement. Medical technologists must have a four-year degree; medical laboratory technicians should graduate from a one-year program. Training: Available at several schools in Washington; for laboratory helpers, skills are learned on the job (See PREP 2656).
UP-1-8-76

For the physically handicapped: This is a feasible occupation for the physically handicapped offering a variety of work settings depending on the interests of the individual. Other related fields are quality control inspectors (See DESC 2672) and health technicians/technologists (See DESC 2654).

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DESC 2314 Land Use Planners

Land use planners develop comprehensive plans for the overall growth and improvement of cities, counties and metropolitan areas. They collect and analyze data on such matters as industrial development, transportation networks, housing needs, air and water pollution, and community resources such as parks and libraries. Land use planners typically confer with citizens, governmental bodies, and local organizations to determine community needs and goals; they present their recommendations by speaking before groups and by writing reports. Work Setting: Indoors in offices. Specialties: Social, economic and physical planners.

Aptitudes: Ability to work with people and to effectively communicate ideas orally, graphically and in writing; ability to work under pressure; analytical ability and imagination. Hiring Practices: Although training in architecture, engineering, or the social sciences has been adequate in the past, today most are obtaining graduate level education in planning. Employers: City, county, or regional planning agencies, state and federal government, and consulting firms. Training: Available (See PREP 2314).
UP-12-31-75, 2-17-76

For the Physically Handicapped: This occupational field is feasible for the physically handicapped. Related occupational fields also feasible for the physically handicapped are public administrators (See DESC 1144), social scientists (DESC 2144), engineering (DESC 2354), architecture (DESC 2316) and social program planning (DESC 2164).

4464 Laundry & Dry Cleaning Workers

Laundry and Dry Cleaning Workers receive, clean, press, and deliver laundry and other articles. They mark and sort garments, remove stains, load and tend washing machines, extractors and driers. Others fold articles for delivery and operate hand irons or pressing machines. Work setting: Work in areas that are often above room temperature due to hot liquids and equipment; may lift and carry loads weighing 10 to 50 pounds.

Abilities: Ability to follow a set work pattern, good physical condition, average hand and finger use and average eye-hand-foot coordination. Hiring Requirements: Most important is the necessary stamina to perform the work. Employers: Laundry and dry cleaning firms, coin-operated laundromats, & firms specializing in cleaning uniforms, diapers & towels. Training: Most jobs do not require formal training; some specialities in dry cleaning are more complex & require a longer on-the-job training period (See PREP 4464).
UPI2-15-75

For the Physically Handicapped: This occupational field offers the physically handicapped individual limited access because most jobs in this field require mobility to operate the heavy machines. A physically handicapped individual could be a spotter, removing stains and preparing the garments for cleaning. Related occupations which would allow an individual to be employed in a cleaning establishment are: general office worker (See DESC 1418) bookkeeping (See DESC 1616) and business management (See DESC 1144).

9414 Law Enforcement Officers

Law Enforcement Officers have the responsibility of protecting life, property and preserving the peace. They prevent violations of the law, investigate complaints and crimes, apprehend violators, and assist in prosecutions in order to preserve law and order. Officers also prepare and submit reports of their activities and testify in court. Specialties: Deputy, sheriff, patrolman, sergeant, detective, chief, immigration patrol inspector, and parking control attendant. Work setting: Indoors & outdoors working irregular hours as well as holiday and weekend duty.

Aptitudes: Ability to make quick judgments and perform well under stress, ability to relate & converse well with people. Hiring Practices: For some employers, competitive exams which test for aptitudes, attitudes, strength & general health must be passed; education beyond high school is increasingly preferred. Applicants with felony convictions are often disqualified. Candidates must also meet age requirements. Employers: City, county, state, and federal governments. Training: All receive on-the-job instruction which may be extensive; institutional training offered at most community colleges and two universities (See PREP 9414).
UP-1-2-76

For the Physically Handicapped: Although many assignments within this field would not be feasible for the physically handicapped, there are some within the field that are appropriate such as property clerk or communications/dispatch clerk. For the physically handicapped individual interested in law enforcement, it would be appropriate to contact the personnel department of a law enforcement agency to secure the requirements for these positions. Most positions are filled through a written exam process. Many opportunities exist, for entry into a law enforcement agency, through clerical positions such as secretarial (See DESC 1412) clerk typist (See DESC 1416) and bookkeeping (See DESC 1616).

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DESC 8432 Lawyers

Lawyers advise people of their legal rights and obligations and represent them in courts of law. Lawyers often negotiate out-of-court settlements, represent clients before government agencies, and act as trustees and guardians. Work Setting: Often start as assistants or law clerks for lawyers and judges; all work long hours under pressure when preparing cases.

Abilities: Intelligence and diligence; accuracy in complex and detailed work; ability to reason and analyze as well as to relate well to people. **Licensing requirements:** Graduation from an approved law school and passage of the bar exam. **Employers:** Private practice, law firms, government, and private companies. **Training:** Available at three universities in Washington (See PREP 8432)
UP-1-2-76

For the Physically Handicapped: This occupation is feasible for the physically handicapped and offers a variety of work settings dependent on the area of the lawyer's specializations. The individual who has the ability to complete the educational program to be a lawyer would have the ability to complete the programs for the other occupations described under DESC 8400.

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DESC 7164 Librarians

Librarians organize and coordinate the functions of a library in order to produce satisfactory service. Typical duties include ordering, cataloging, and classifying materials; developing the library's collection of books, periodicals, documents, films, and recordings; providing services to individuals and groups such as reference service and preparation of reading lists; and furnishing information on library activities, facilities, and services to other agencies and individual users. Job specialties include law librarians, medical librarians, industrial librarians, reference and special collections librarians, school librarians, children's librarians and others. Work Setting: Work 4 days/week from 35-40 hours. Weekend and evening work is often required. Part-time employment may be available, particularly in smaller cities.

Aptitudes: Above average ability to clearly present information and ideas; ability to understand information presented in verbal or written form; ability to plan and carry out library programs and procedures; facility with numbers and words; and ability to communicate and relate well to people. Hiring Requirements: For some positions, a Washington Librarian's Certificate is required (See PREP 7164). Training: Available (See PREP 7164).
UP-2-3-76

For the Physically Handicapped: This occupation is feasible for the physically handicapped and offers a variety of work settings. For the individual who does not desire to complete a 4-year college level course, opportunities for employment exist as a library assistant (See DESC 7166).

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Robert L. Metcalf, Project Director
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DESC 7166 Library Assistants

Library Assistants aid librarians in maintaining and circulating library material. Common duties include book rebinding, card filing, reshelving, sorting and processing new materials and answering simple inquiries on the telephone and in person. When books are returned, library assistants inspect them for damage, verify due dates, and compute library fines. Related Occupations: Librarians, general office clerks. Work Setting: Schedule of public and college libraries often requires some weekend and evening work. Part-time student workers are often used in libraries.

Abilities: Ability to understand information presented in verbal or written form; attention to detail and ability to follow set procedures. Hiring Requirements: Graduation from high school. Some employers prefer graduates of Associate Degree programs. Employers: Educational institutions and municipal governments. Training: Available through some community colleges and vocational-technical institutes (See PREP 7166); others acquire skills gradually on the job.

UP-12-23-75

For the Physically Handicapped: This occupation is feasible for the physically handicapped and offers a variety of work settings. For the individual who desires to complete a 4-year college level course, opportunities exist as a librarian (See DESC 7164).

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DESC 8164 Licensed Practical Nurses

Robert L. Metcalf, Proj. Director
Pearl H. Rose, Proj. Researcher

Licensed practical nurses provide nursing care and treatment of patients under direction of physicians or registered nurses. They administer medication; monitor equipment; change dressings; prepare food trays and feed, bathe, massage and dress patients; maintain patients; charts and take temperatures, pulse rates and blood pressures. Some work in specialized units such as coronary or intensive care. Experienced LPN's can advance to supervisory positions. Private duty LPN's care for a single patient in the home or hospital.

Abilities: Good physical health and strength; a liking for people and good judgment: Work Week: Evening and weekend work is common. Some part-time jobs are available. Most are employed by hospitals and nursing homes; others by clinics, doctor's offices, and private individuals. Licensed Occupation; see PREP 8164 for details. Training: Available at several vocational-technical institutes and community colleges (See PREP 8164).
UP-1-2-76, 3-1-76

For the Physically Handicapped: This occupational field is not feasible for the physically handicapped because of the mobility requires. Related occupational fields feasible for the physically handicapped are: dieticians (See DESC 8116), pharmacy (See DESC 8124), speech and hearing specialist (See DESC 8128) or laboratory testing (See DESC 2656).

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DESC 5624 Linemen

Linemen install and repair electrical, telephone and telegraph transmission systems for business and residential customers. Linemen climb poles or work in manholes to attach cables and repair and replace lines. Job specialties include ground helpers, splicers, electrical linemen and telephone and telegraph linemen. Work Setting: Indoors and outdoors, occasionally working long and irregular hours to restore damaged equipment. Some danger of falls or burns. Related occupations: Electricians and electrical repairers (5626) broadcast technicians (5664) telephone installers-repairers (3166) radio and T.V. Repairers (3168).

Aptitudes: Numerical and spatial ability, form perception good use of hands and fingers, and color discrimination. Employers: Telephone companies, electrical utility firms. Construction firms and television cable firms. Hiring Practices: Valid driver's license and good driving record may be required; some firms require an applicant to work as a ground helper before being considered for a lineman position. Organizations: Nearly all linemen belong to the international brotherhood of electrical workers. Hiring Channels: Many employers hire through the union hiring halls. Training: Skills are acquired informally on the job or through a formal apprenticeship program (See PREP 5624).
UP-2-3-76

For the Physically Handicapped: This occupation is not feasible for the physically handicapped because of the mobility and physical stamina required. Related occupations feasible for the physically handicapped are broadcast technicians (See DESC 5664) radio and TV repairers (DESC 3168) and instrument repairers (DESC 3186)

1636 Loan Officers

Loan Officers evaluate applicants' financial backgrounds to determine whether or not they will receive loans. Loan officers review reports of credit analysts & weigh all aspects. Thus, good judgment and knowledge of economic conditions are essential. In larger banks, officers often specialize in such areas as commercial, installment, or real estate loans. Work setting: Generally a 40 hour week in an office setting.

Aptitudes: Above-average intelligence, ability to understand and apply procedures, ability to communicate with and relate to people. Hiring requirements: College degree preferred (See PREP 1636). Employers: Banks and private finance companies. Training: Related course work available (See PREP 1636).

UP-1-6-76, 2-12-76

For the physically handicapped: This occupation is feasible for the physically handicapped. For those individuals desiring employment in a financial institution, there are several related fields available. See DESC 1614 for accountants and auditors; DESC 1616 for bookkeepers; DESC 1634 for appraisers and underwriters and DESC 1642 for cashiers and bank tellers.

4538 Lumber Graders and Inspectors

Lumber Graders and Inspectors are certified by grading associations to inspect wood by set standards and label the products by grade and quality. They inspect lumber comparing the wood with association standards, and stamp or label the products designating grade or quality. Work Setting: Inside, work classified as medium to heavy.

Aptitudes: Ability to understand and apply detailed specifications and standards, spatial and form perception, attention to detail, good use of hands and fingers, eye-hand coordination. Employers: Lumber and sawmill firms and inspection bureaus. Training: Skills learned informally on the job (See PREP 4538).

UP-12-17-75

For the Physically Handicapped: This occupational field does not offer opportunities for the physically handicapped. A physically handicapped individual whose interest is working around lumber should consider another occupational field that would allow them to work in a lumber yard. Such related occupations could be business management (See DESC 1144), public relations workers (See DESC 1195), bookkeeping (See DESC 1616), or any of the various clerical occupations.

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DESC 5472 Machine Tool Operators

Machine Tool Operators, including both skilled and semi-skilled workers, specialize on one or several machine shop power tools that are used to shape metal to precise dimensions. Examples of such machinery are a drill press, lathe, milling machine, boring mill, shaper, planer, or grinder. Skilled operators plan and set up machine operations according to blueprints and other instructions; semi-skilled operators do more repetitive and simpler tasks, such as placing materials in machine tools and watching gauges and dials to make sure of proper machine functioning. **Work Setting:** Work in areas that are well-lighted, but risk injury from cutting tools, moving machinery, metal chips and abrasive dust; operators wear safety glasses and other protective devices.

Abilities and Aptitudes: Above-average ability to visualize objects of two or three dimensions and to make visual comparisons; good hand and wrist movement and usage. **Hiring Requirements:** Formal apprenticeship training or several years experience on machine tool operations. **Employers:** Firms in the manufacturing industries, fabricating metals and machine shops. **Training:** Most operators acquire skills on the job; a few months are usually required for semi-skilled operators to reach proficiency; skilled operators need one to two years (See PREP 5472).

UP-2-4-76

For the Physically Handicapped: This occupational field is not suitable for the physically handicapped. Although a physically handicapped individual could perform some of the jobs involved in this occupational field, they would not be able to complete the requirements of the apprenticeship program or gain entry through on-the-job experience because they would not be able to perform entry laborer jobs. For an individual who is interested in working with machine, related occupations to explore are: Small engine repair (See DESC 3118) appliance repair (See DESC 3169), woodmaking machine operation (See DESC 4556) or furniture making machine operation (See DESC 4584). The clerical support services, such as secretaries (See DESC 1412) and bookkeeping (See DESC 1616) are always needed in the office of these businesses and are suitable for the physically handicapped.

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DESC 5464 Machinists

Machinists are highly skilled operators of machine tools that are used to make metal parts. They make or repair metal pieces, tools and machines, following blueprints, sketches or specific dimensions. Duties include selecting tools and materials, making basic computations, reading gauges and micrometers, using various machines, and finishing the articles using files and scrapers. Work Setting: Work is not physically strenuous; risk injury from high speed cutting tools, moving machinery, metal chips and abrasive dust. Machinists wear safety glasses and other protective devices.

Abilities, Aptitudes: Average ability to visualize objects of two or three dimensions and to make visual comparisons; average use of hands and eye-hand coordination; ability to follow complex directions and to perform arithmetic computations.

Hiring Requirements: Formal apprenticeship training as a machinist or several years of on-the-job training in machining jobs. Organizations: Many are union members. Employers: Firms in the manufacturing industries, fabricating metals and machine shops. Training: Limited opportunities available through a 3 to 4 year apprenticeship (See PREP 5464).

UP-1-6-76, 2-23-76

For the Physically Handicapped: This occupational field is not suitable for the physically handicapped. Although a physically handicapped individual could perform some of the jobs involved in this occupational field, they would not be able to complete the requirements of the apprenticeship program or gain entry through on-the-job experience because they would not be able to perform entry laborer jobs. For an individual who is interested in working with machine, related occupations to explore are: Small engine repair (See DESC 3118), appliance repair (See DESC 3169), woodmaking machine operation (See DESC 4556) or furniture making machine operation (See DESC 4584). The clerical support services, such as secretaries (See DESC 1412) and bookkeeping (See DESC 1616) are always needed in the office of these businesses and are suitable for the physically handicapped.

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DESC 7122 Mail Carriers

Mail carriers and clerks engage in the collection and distribution of mail. Postal clerks sort mail, sell stamps and money orders, weigh letters and parcels, and register and insure mail. Mail carriers deliver and collect letters and packages in a certain area. Work Setting: Mail carriers work outdoors in all kinds of weather, walking a great deal and carrying a mailbag weighing up to 35 pounds. They also work part of each day indoors sorting mail. Postal clerks work indoors, handling heavy sacks of mail and doing considerable walking, throwing, and reaching. Work Week: Mail carriers begin early in the morning. Scheduled work for clerks is more variable and may include early morning and late night duty.

Abilities: The necessary physical strength to safely perform all duties, clerical aptitude. Hiring requirements: Must be at least 18 years of age, a U.S. citizen, pass postal service exam, rigorous physical examination; letter carriers must have a valid driver's license and a good driving record. Training: Available through on-the-job training. Organizations: Most are members of labor unions.

UP-2-4-76

For the Physically Handicapped: This occupational field is feasible for the physically handicapped provided the individual is selective of their areas of employment. A physically handicapped can function as a postal clerk. Other clerical occupations (See DESC 1400) are feasible for the physically handicapped and are utilized by the postal service.

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DESC 2332 Mathematicians and Statisticians

Mathematicians and statisticians conduct research and analyze numerical data to help solve problems in various fields. Pure mathematicians work with mathematical systems and theories and conduct research to advance mathematical knowledge. Applied mathematicians develop theories, techniques and approaches to solve problems in natural science, social science, engineering and management. Statisticians commonly collect and analyze data about fields such as agriculture, public health, population and economics and attempt to draw inferences from these data. Actuaries apply mathematical principles to design sound insurance and pension plans. Related occupations: Programmers and system analysts (1684).

Aptitudes: Ability to relate and represent abstract ideas by means of symbols; attention to detail; an interest in research. Hiring Requirements: A B.A. in math or statistics or in the field of application is the minimum requirement for entry positions; advanced degrees are becoming increasingly necessary. Employers: Pure mathematicians are virtually all employed as college and university teachers (See DESC 8454). Over 50% of applied mathematicians and statisticians are employed in private industry; others in educational institutions, federal and state governments. Most actuaries work for insurance firms or insurance rating bureaus. Training: Available at most 4-year colleges and universities (See PREP 2332).
UP-2-4-76, 2-23-76

For the Physically Handicapped: This is a feasible occupational field for the physically handicapped offering the individual a variety of work settings. Related occupations also feasible for the physically handicapped are programming and systems analysis (See DESC 1684) or as a college or university teacher (See DESC 8454). Mathematicians and statisticians often find employment in government agencies doing research or evaluation.

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DESC 4326 Meat Cutters

Meat cutters prepare meat, fish and poultry for wholesale and retail trade. Specialties include the butcher who works in slaughtering plants, the meat cutter-jobber who cuts large segments of meat into wholesale cuts, and the meat cutter who reduces the wholesale cuts into retail portions.

Aptitudes: Good hand and wrist movement, form and depth perception, color discrimination, eye-hand coordination, above average physical strength. Work Setting: Indoors, continually standing, frequently lifting heavy loads and using sharp tools and cutting machines. Often exposed to extreme temperature changes between the cooling room and work area. Many belong to the Meat Cutters and Butcher Workmen Union. Employers: Retail food stores, wholesale food distributors, meat packing plants and a few hotels and restaurants. Hiring Practices: Physical stamina is important. Retail employers emphasize math and the ability to get along with people. Both wholesale and retail employers stress agility, speed and mechanical ability. Training: Skills are acquired through informal on-the-job training or apprenticeship programs or vocational-technical institutes and community colleges. (See PREP 4326).
UP-1-2-76, 2-9-76

For the Physically Handicapped: This occupational field is not feasible because of the physical stamina and mobility required. Individuals interested in being involved in this food industry can be involved as a sales clerk (See DESC 7484) in a retail establishment selling this product. Another related occupation in a retail business would be as a bookkeeper (See DESC 1616).

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DESC 1456 Messengers

Messengers deliver messages; documents, packages and other items to assist the flow of work to offices or departments within a firm, to other businesses, or to customers. They may collect money from customers, keep records of deliveries and do some clerical work. Setting: Work indoors and outdoors, traveling by foot, bicycle or truck; may lift and carry loads in excess of 50 pounds.

Abilities: A willingness to follow instructions; stamina to walk considerable distances and to perform lifting and carrying.
Hiring Requirements: A driver's license is needed for positions involving the operation of motor vehicles. Employers: Business, industry, and government. Training: A brief training period is provided by most employers.
UP-12-23-75, 2-9-76

For the Physically Handicapped: The opportunity for employment in this field, by a physically handicapped individual is extremely limited because the physically handicapped would only be able to deliver messages and documents within an office. This has basically been an entry position which allowed for advancement into other clerical positions. Related occupations feasible for the physically handicapped are any of the other clerical occupations (See DESC 1400.)

DESC 5421. Metal Refining Occupations

Metal refining occupations are found in factories that convert metal ore or scrap metal into usable metal. Major refining industries include iron and steel, aluminum, copper, and other metals. Most production workers in the metal refining industry operate very large machines. Work Setting: Usually in areas that are hot and noisy.

Aptitudes, Abilities: Preference for working with machinery and equipment, ability to pay close attention to machine operations, and the ability to adapt to routine work. Hiring Requirements: Good physical condition. Education and training depend on the specific occupation and industry. Unskilled workers begin their careers in labor pools, filling positions that become vacant due to absences, death or retirement. Craftsmen learn skills on the job informally or through apprenticeship; a few processing and technical jobs require a bachelor's degree in science or engineering or graduation from a technical program. Training: Programs are not available for production workers; coursework in engineering available (See PREP 5421 for details).

For the Physically Handicapped: This occupational field is not suitable for the physically handicapped. Although a physically handicapped individual could perform some of the jobs involved in this occupational field, they would not be able to complete the requirements of the apprenticeship program or gain entry through on-the-job experience because they would not be able to perform entry laborer jobs. For an individual who is interested in working with machine, related occupations to explore are: Small engine repair (See DESC 3118), appliance repair (See DESC 3169); woodmaking machine operation (See DESC 4556) or furniture making machine operation (See DESC 4584). The clerical support services, such as secretaries (See DESC 1412) and bookkeeping (See DESC 1616), are always needed in the office of these businesses and are suitable for the physically handicapped.

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DESC 5422 Metalworking patternmakers

Metalworking patternmakers are highly skilled craftsmen who build patterns to make molds in which metal castings are formed. Master patterns are made of wood and are constructed from blueprints. Patternmakers select the proper stock, form patterns by using various woodworking machines, and assemble pattern segments by hand. A rough metal casting is made from the master pattern. This casting is finished using various metalworking tools and becomes the pattern used to make molds. Work Setting: Indoors where work is often dusty and noisy.

Abilities: Form and spatial perception, eye-hand coordination, ability to apply precise standards, knowledge of basic math and a preference for working with machines and the hands. Hiring Requirements: Completion of a patternmaking apprenticeship. Employers: Foundries, motor vehicle and equipment manufacturers. Training: Limited opportunities available through a 5-year apprenticeship (See PREP 5422).
UP-1-7-76, 3-1-76

For the Physically Handicapped: This occupational field is not suitable for the physically handicapped. Although a physically handicapped individual could perform some of the jobs involved in this occupational field, they would not be able to complete the requirements of the apprenticeship program or gain entry through on-the-job experience because they would not be able to perform entry laborer jobs. For an individual who is interested in working with machine, related occupations to explore are: Small engine repair (See DESC 3118), appliance repair (See DESC 3169); woodmaking machine operation (See DESC 4556) or furniture making machine operation (See DESC 4584). The clerical support services; such as secretaries (See DESC 1412) and bookkeeping (See DESC 1616), are always needed in the office of these businesses and are suitable for the physically handicapped.

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DESC 9436 Military Enlisted Personnel

Enlisted personnel are employed by Army, Navy, Air Force, Marine Corps and Coast Guard, in various occupations. About 14% are in ground combat operations; about 15% work in electronics, about 8% are in medical, dental and musical fields; 18% in administrative and clerical occupations; 26% in maintenance of aviation, ordnance, shipboard and communication equipment; 7% in construction, metal working and shipboard crafts; about 12% in motor/transport, food service and security. Work Setting: Varies depending on duties and location but some work takes place out of doors in all kinds of weather and in shops that are generally more crowded than civilian work areas. Basic training is designed to help personnel adapt to physical and mental stresses of combat and other hazardous situations. Training develops physical strength and ability to communicate, understand and follow directions.

Requirements: Good physical condition; ability to work with people from all educational levels, religions, races, and geographic areas, and with varied abilities. Must make legal commitment to enlist for fixed period of at least two years, a portion of which will be spent away from home and family. Training: Training is provided by all military branches. (See PREP 9436).
UP-12-8-75

For the Physically Handicapped: At the present time, the armed services would not accept a physically handicapped individual into its services. Since an individual can have any of several different occupations while in the armed services, the physically handicapped individual who has received this occupational description should refer to the other descriptions received from the computer, for selection of an occupational goal.

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DESC 1172 Military Officers

Military officers hold leadership and supervisory positions in Army, Navy, Air Force, Marine Corps, and Coast Guard. They bear legal responsibility for preparing for and carrying out effective military operations in defense of the United States and other countries. This requires technical and managerial ability as well as ability to assume leadership of combat operations and peacetime maneuvers. Military operations must be supported by (1) Intelligence (Study of friendly and enemy capabilities); (2) Effective delivery of supplies and maintenance of equipment; (3) Training and administration of personnel. Services employ some officers as specialists in these fields as well as in medicine, dentistry, law and engineering. Most officers, however, are less specialized persons who can supervise effectively in several areas. Work Setting: Varies according to assignment, but at times involves supervising work out of doors in all kinds of weather, sometimes under hazardous conditions.

Requirements: Good physical and mental ability; sense of responsibility and other leadership qualities such as self-discipline, stamina, initiative, and ability to communicate. Most positions require bachelor's degree. Officers must make legal commitment to serve at least two years, a portion of which will be spent away from home and family. Training Available: Most officers are trained in ROTC programs, service academies, or office candidate schools (See PREP 1172).

UP-12-8-75

For the Physically Handicapped: At the present time, the armed services would not accept a physically handicapped individual into its services. Since an individual can have any of several different occupations while in the armed services, the physically handicapped individual who has received this occupational description should refer to the other descriptions, received from the computer, for selection of an occupational goal.

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DESC 3142 Millwrights

Millwrights install and repair industrial machinery. The equipment is set up by construction millwrights and is kept in sound operating condition by industrial millwrights who are also known as industrial machine repairers.

Aptitudes: Mechanical ability; above-average manual dexterity, strength and agility; average eye-hand coordination and finger dexterity. **Work Setting:** Inside, around heavy noisy equipment. Often work in stooped or cramped positions; frequently lift or carry objects weighing up to 50 lbs. Industrial millwrights usually work year round, while construction millwrights have periods of unemployment and frequently work away from home. Most belong to one of several unions. **Employers:** Lumber, paper, metal-working and chemical industries, public utilities and construction companies. **Hiring Practices:** This is generally not an entry level occupation; openings are usually filled through promotion by people with previous experience. Construction millwrights are often hired through the carpenters' union. **Training:** Skills are learned informally on the job, through a formal apprenticeship or at community colleges (See PREP 3142).

UP-1-7-76, 2-17-76

For the Physically Handicapped: This occupation is not feasible for the physically handicapped because of the physical agility required. However, several other occupations related to machinery repair are feasible for the physically handicapped. See DESC 3118 for small engine repair; DESC 3164 for office machine repair; DESC 3168 for radio and TV repair; DESC 3169 for appliance repair and DESC 3186 instrument repair.

For an individual who had the skills necessary for this occupation, prior to becoming physically handicapped, job opportunities exist as a service manager for a shop (See DESC 1162.)

9842 Models

Models try to convey an idea by their appearance, persuading people to buy the product or service they advertise. They frequently demonstrate new products and services at exhibits, in commercial films or on TV. Others are hired by individual artists, illustrators and art schools. Models work with clothing, makeup, and costume accessories in a variety of poses and settings. Related occupation: performing artists.

Aptitudes: Some acting ability to create the desired mood under sometimes uncomfortable situations (hot lights, cold or wet conditions) patience, good physical condition to endure fatigue. Acting conditions and length of employment vary according to employer and assignment. **Employers:** Art schools, advertising agencies, manufacturing firms, designers and artists, retail and wholesale firms, and television. **Hiring requirements:** Employers prefer hiring models with experience and a few prefer some college training in art, drama or fashion design (See PREP 9842). **Training:** Some private schools feature training in modeling; See PROG 319.
UP-1-2-76, 2-9-76

For the physically handicapped: This is not a feasible occupation for the physically handicapped. However, for those individuals desiring careers centering around fashion, and photography, there are related occupations available to the physically handicapped. See DESC 4442, clothes designing and patternmaking, DESC 4724, commercial art and designing and photography DESC 4734.

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DESC 5424. Molders

Molders make molds from which metal parts known as castings are made. This process is used in making many finished metal products from automobile engines to cooking utensils. Molders use one of six principal methods of casting. Basically, they pack sand around a pattern which is a model of the object to be duplicated. After removing the pattern, molten metal is poured into the cavity, which solidifies and forms the casting. Molds used to produce large quantities of identical parts are usually made with machines; molds used to make small quantities of castings typically require the use of hand tools. Environment: Often exposed to heat, fumes, smoke and hazards, although these are reduced by modern equipment and safety devices.

Aptitudes, Abilities: Spatial perception to work from blueprints and diagrams; finger and manual dexterity; eye-hand coordination; good vision and physical strength. Hiring Requirements: Completion of a formal apprenticeship. Employers: Foundries and machinery manufacturers. Training: Limited opportunities available through a formal apprenticeship (See PREP 5424).
UP-1-10-76, 2-23-76

For the Physically Handicapped: This occupational field is not suitable for the physically handicapped. Although a physically handicapped individual could perform some of the jobs involved in this occupational field, they would not be able to complete the requirements of the apprenticeship program or gain entry through on-the-job experience because they would not be able to perform entry laborer jobs. For an individual who is interested in working with machine, related occupations to explore are: Small engine repair (See DESC 3118), appliance repair (See DESC 3169); woodmaking machine operation (See DESC 4556) or furniture making machine operation (See DESC 4584). The clerical support services, such as secretaries (See DESC 1412) and bookkeeping (See DESC 1616), are always needed in the office of these businesses and are suitable for the physically handicapped.

8182 Morticians

Morticians arrange and direct funeral services. Funeral directors consult with families of deceased persons to plan such aspects of funerals as selection of a casket, religious rites, time of the services, transportation of the body, and the location of a cemetery. They also assist families with details of legal and insurance arrangements and often provide emotional support through a difficult time. Embalmers prepare the body for viewing and burial. Except in large cities, most funeral homes are small, and in these cases the same individual often functions as both funeral director and embalmer.

Attitudes, Abilities: Moderate physical strength; and interest in serving people's emotional stability. **Environment:** Labs are usually isolated, quiet, clean and scientifically planned to minimize physically unpleasant aspects; funeral homes are quiet and often well furnished; sometimes morticians live on premises. **Work Week:** Often irregular depending on the work load. **Employers:** Most work in funeral homes, generally beginning as an employee and sometimes becoming an owner or a partner. A few are employed by hospitals, morgues, or funeral home suppliers. **Organizations:** In the Seattle and Tacoma areas, some are union members. **Li-** censed occupation; see PREP 8182 for details. **Training:** Available in Oregon and California; See PREP 8182.
UP-1-2-76, 3-1-76

For the Physically Handicapped: The trend in this occupational field is toward larger funeral homes where there will be a greater specialization in the various functions of this field. Allowing for this, it will be feasible for the physically handicapped to enter this field in the business management aspects of it and in counseling of the purchasers of this service.

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DESC 7124 Newspaper Carriers

Newspaper carriers are independent contractors who purchase newspapers from newspaper publishing companies by written agreement. Carriers sell and deliver the newspapers to the carrier's customers, and usually are responsible for collecting payments from the subscribers for sale of the newspapers. Carriers also may solicit new subscriptions by contacting prospective customers on the carrier's route. **Work Setting:** Carriers work in all weather conditions and generally 7 days a week, either in the morning or evening--or work a schedule that combines both. Hours spent working will depend on the number of subscribers. Carriers walk, ride bicycles or drive automobiles to deliver newspapers to customers.

Abilities: Strength to carry and lift bundles of paper weighing up to 25 lbs.; ability to do basic math and keep records; and ability to deal with the public. **Hiring Requirements:** Carriers must be at least 12 years of age, and dealer-drivers must possess a valid Washington Driver's license, be a minimum age of 18, and have access to an insured vehicle. **Training:** Skills learned on the job. See PREP 7124.
UP-1-6-76, 2-17-76

For the Physically Handicapped: This occupational field is feasible for the physically handicapped provided the individual is selective of their areas of employment. A physically handicapped individual with a car adapted with hand controls could perform on a rural route where the newspapers are placed in boxes near the edge of the road.

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DESC 8166 Nurse Aides and Orderlies

Nurse aides and orderlies work under the direction of health care professionals, performing numerous less skilled tasks in caring for hospital and nursing home patients. Duties include assisting patients in getting out of bed and walking; giving back rubs and bathing and shaving patients; recording temperatures, pulse, and respiration rates; sterilizing instruments; cleaning rooms and changing bed linens.

Aptitudes: Manual dexterity, coordination, good mental and physical health, clean personal habits, and interest in the welfare of people, and a desire to be of assistance. Environment: Work in places that are sometimes old and dreary, night and weekend duty. Employers: Work in hospitals and in convalescent and nursing homes. Training: On-the-job training is customary; however, programs are offered at several vocational-technical institutes and community colleges throughout Washington (See PREP 8166).

UP-1-2-76, 2-23-76

For the Physically Handicapped: This occupational field is not feasible for the physically handicapped because of the mobility required. A related medical occupation that is feasible for the physically handicapped is as a laboratory tester (See DESC 2656). Other occupations that would allow an individual to work in a hospital setting would be in any of the clerical occupations (See DESC 1400) or in bookkeeping (See DESC 1616) or accounting (See DESC 1614).

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DESC 1692 Office Machine Operators Pearl H. Rose, Project Researcher

Office Machine Operators use a variety of office equipment to speed the flow of paperwork. Proof machines are used to prove the records of bank transactions; billing machines are used in preparing customers' bills; bookkeeping machines are employed in recording financial transactions; duplicating machines produce copies of documents; and calculators and adding machines help in computing data. Work Setting: Often work in large rooms with other machine operators using machines that are noisy.

Aptitudes: Average to above average finger dexterity, attention to detail, alertness, and good vision. Hiring Requirements: Employers prefer high school graduates; most give some on-the-job training. Employers: Work in all industries with concentrations in insurance and finance. Training: For most beginning positions, general knowledge of office equipment (learned in high school) is usually sufficient; usually a brief period of on-the-job training is given.
UP-12-23-75, 2-23-76

For the Physically Handicapped: This occupation is feasible for the physically handicapped and offers the individual a wide choice of work settings because of the diversity of firm and agencies using this position. Physically handicapped individuals with an interest in office machine operation may also want to consider one of the computer occupations such as computer operator (DESC 1686) or keypunch operator (DESC 1688). Another related field feasible for the physically handicapped is as a shorthand reporter (DESC 1415).

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Pearl H. Rose, Project Researcher

DESC 3164 Office Machine Repairers

Office machine repairers service and repair office equipment used for correspondence and business transactions. Duties include periodic inspecting, cleaning, oiling and adjusting machines in offices. Major repair is usually done at repair shops. Work Setting: Inside; work is cleaner and lighter than in most other mechanical trades, requiring considerable traveling within the area served by the employer.

Aptitudes: Mechanical ability, good eyesight, color vision, and finger dexterity. Hiring Practices: Many firms prefer applicants with experience or training. Employers who provide training want high school graduates with some knowledge of mechanics, electricity or electronics. Employers: Firms that sell and service own equipment and private repair shops. Training: Skills are learned through informal on-the-job training, formal apprenticeship, manufacturers' training schools, vocational-technical institutes or community colleges (See PREP 3164).
UP-1-7-76, 2-9-76

For the Physically Handicapped: This occupational field is feasible for the physically handicapped provided that employment is sought in a business that is large enough to have more than one repairer. The physically handicapped individual would be able to handle the repair of the smaller machines. For other related occupations, See DESC 3118, small appliance repair; DESC 3168, radio and TV repair; DESC 3169, appliance repair, or DESC 3186, instrument repair.

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DESC 6154 Operating Engineers

Operating Engineers run mobile and stationary power-driven machines used in heavy construction. Machinery includes derricks, cranes, shovels, scrapers, graders, concrete mixers and compressors; they are used to excavate and grade earth, erect structural and reinforcing steel, pour concrete, and move heavy materials and equipment.

Aptitudes: Average vision, depth perception, hand-leg-eye coordination, and hand and wrist movement; good health and physical stamina. Work Setting: Outdoors, performing work that is physically tiring because of the constant movement of the machines. Often work long hours during mild weather months and are laid off during winter. Workers often must move to different job sites in the state or region. Employers: Construction contractors, lumber industries, utility companies, state and local public works, highway departments; a few are self-employed. Hiring Practices: A high school education and experience operating machinery are preferred. Most construction contractors hire through the operating engineers union. Training: Skills are usually acquired informally on the job or through apprenticeship. See PREP 6154.

UP-1-5-76

For the Physically Handicapped: Because of the physical agility and stamina needed for this occupation, it is not feasible for the physically handicapped. Related occupations which are feasible for the physically handicapped individual who wishes to be involved with heavy equipment are: Selling of the equipment (See DESC 7454); management of the sales and service business (See DESC 1162); or through one of the support services of a business, such as secretarial (See DESC 1412) or bookkeeping (See DESC 1616).

Opticians prepare corrective lenses and eyeglasses according to prescriptions of Ophthalmologists and Optometrists. Dispensing opticians fit glasses and sell frames, while optical mechanics prepare glasses for customers by grinding, polishing and cutting lenses, and mounting them in frames. Some opticians make and fit contact lenses also.

Aptitudes: Patience, steady concentration, attention to details, good use of hands and fingers, ability to meet precise standards. Ability to meet the public and salesmanship are important for dispensing opticians. **Work Setting:** Indoors; facilities are usually modern and well-equipped. **Optical mechanics work** involves little exertion. **Employers:** Most dispensing opticians work in retail optical shops and optical departments of department stores; many are proprietors of retail optical shops. Many optical mechanics work for wholesale optical laboratories. **Hiring Practices:** High school graduation generally required. **Licensing:** See PREP 2644. **Training:** Most learn their skills through an apprenticeship or on-the-job training (See PREP 2644).

For the Physically Handicapped: This occupation is feasible for the physically handicapped who have good vision and use of hands. For those individuals whose interest is in optical mechanics, a related occupation would be as a dental technician where one is involved with the manufacture of dental appliances. The physically handicapped individual interested in this occupation should consult with a vocational counselor for preparation in this field.

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DESC 8115 Optometrists

Optometrists help people protect and improve their vision. They examine the eyes to determine the presence of vision impairments, eye diseases, vision malfunctions, or other abnormalities. They are licensed to prescribe and adapt lenses, contact lenses, or other optical aids, and utilize vision training to preserve, restore and improve vision efficiency. The roles of the optometrist, optician, and ophthalmologist are sometimes confused. An optician is a qualified craft worker who fabricates and dispenses lenses and frames to prescriptions written by optometrists and ophthalmologists (See DESC 2644). Ophthalmologists are licensed physicians who provide medical care of the eye (See DESC 8112)

Aptitudes: Above-average intelligence, math and science ability, business ability, ability to deal tactfully with patients. **Employers:** 90% are self-employed; others teach in colleges or work for clinics, hospitals and government agencies. **Licensed occupation:** See PREP 8115 for details. **Training:** Only pre-optometric college coursework is available in Washington (See PREP 8115).
UP-1-6-76

For the Physically Handicapped: This occupation is feasible for the physically handicapped provided the individual can find a college or university that would accept them and make some allowances for the training that they must secure. Other related medical occupations feasible for the physically handicapped are in pharmacy (DESC 8124), dietetics (DESC 8116), the speech and hearing specialties (DESC 8128) and as an optician (DESC 2644).

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DESC 7126 Packers and Wrappers

Packers and wrappers package various products by hand or by machine to be shipped or marketed. Machine operators tend machines that pack, mark, wrap and sort. They often replenish packaging supplies, observe machines to detect malfunctions, and make minor repairs and adjustments. Hand packers and wrappers normally assemble cartons, obtain products and insert them into containers, seal and label containers for shipping. Work Setting: Usually work indoors, performing work that varies from light to heavy.

Abilities: At least average use of fingers and hands, eye-hand coordination and form perception. Hiring Requirements: Possess the necessary physical strength and stamina to perform the work. Work usually requires no previous training and only a short explanation of tasks. Many positions in the food canning industry are filled through promotion, on the basis of seniority, from within the firm. Employers: The majority work in the food industry, while many others work in the lumber industry. Training: Receive on-the-job training. See PREP 7126.

UP-12-17-75, 2-18-76

For the Physically Handicapped: This occupation is feasible for the physically handicapped provided they seek employment from a firm that handles small items. A related occupation also feasible for the physically handicapped is as a stock clerk specializing in inventory control (See DESC 7118).

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DESC 4242 Painters

Painters use their knowledge of paints and other coating materials to apply decorative and protective coatings to various kinds of structures. Typical duties include preparing surfaces, under-coating, applying finish coats, and applying new wall coverings. Tools include brushes, rollers, and spray guns. They know how to set up scaffolds, place ladders, and rig jacks and planks. Specialties: Interior and exterior painters. Work Setting: Stand, climb and bend while exposed to fumes and heights.

Abilities: Good color vision and no allergies to paint, varnish or solvents. Hiring Requirements: Good physical condition and training as a painter. Organizations: Many are members of the Painter's Union. Employers: Private contractors and organizations that do their own maintenance work. A few painters are self-employed as licensed contractors. Training: Most painters learn their skills through informal on-the-job training as a painter's helper or a 3-year formal apprenticeship. (See PREP 4242).

UP-1-7-76

For the Physically Handicapped: This occupation field is not feasible for the physically handicapped because of the physical agility and stamina required. The physically handicapped individual can become involved in this field through one of the related fields that are feasible for the physically handicapped. Examples of these are: sales of the product (See DESC 7454); management of the business (See DESC 1144); or the support services of secretarial (See DESC 1412) or bookkeeping (See DESC 1616).

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DESC 9866 Performing Artists

Performing artists, including musicians, singers, dancers, and actors and actresses, attempt to translate human emotions into some artistic form for entertainment. Since the number of competent artists far exceeds the number of job openings, many performers supplement their incomes with other work. Work Setting: Varies; typically long hours and weekends in rehearsal and perhaps extensive travel while under contract. Many face long periods of unemployment and low wages during their first years.

Abilities: Talent, dedication to the chosen field, determination creativity. Hiring Requirements: Proven proficiency as an actor, dancer, musician, or singer; formal training at an established institution may be helpful for entry positions.

Employers: Often self-employed or employed by theater companies, motion pictures, orchestras, studios, or education institutions. For training details, see PREP 9866. Unions: Many actors, musicians, singers and dancers belong to their respective labor association or federation.

UP-12-5-75

For the Physically Handicapped: This occupation is feasible for the physically handicapped. However, the individual will have to be selective of their work settings because some places are not barrier free. The individual with the talent to be a performing artist may also want to consider a teaching occupation (See DESC 8456). Music stores are interested in persons with musical ability for positions in sales and demonstrations of instruments (DESC 7454).

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DESC 1186 Personnel Workers

Personnel managers plan and implement policies concerning an organization's manpower activities in order to attract and keep the best available employees. Duties include recruiting, interviewing and hiring job applicants, counseling and disciplining employees, classifying jobs, and planning wage and salary scales. They may also handle labor grievances, training and safety programs, and administer retirement and employee benefit programs.

Aptitudes: Ability to speak and write effectively and work with data; above average skill in working with people. Work Setting: Usually work in offices; travel may be required. Hiring Practices: Some combination of college training with experience. In personnel work is becoming increasingly important for entry positions. Employers: Large establishments, government units, manufacturers, and wholesale and retail trade firms. Training: Available (See PREP 1186).
UP-12-23-75

For the Physically Handicapped: This occupation is feasible for the physically handicapped offering the individual a variety of work settings. Other related occupations feasible for the physically handicapped are as freelance writers (See DESC 2174) or as a writer or editor (See DESC 2176). Individuals with a background in commercial art or design (See DESC 4724) or photography (See DESC 4734) can sometimes gain entry into a public relations firm. Clerical support services (See DESC 1400) are also needed in public relations firms.

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DESC 5914 Petroleum Processing Occupations

Petroleum processing occupations deal with the processing of crude oil into gasoline, kerosene, fuel oil, lubricants, and other home and industrial products. Since the refining process is highly mechanized, most production workers observe gauges and meters and adjust machinery when necessary.

Aptitudes: Above average mechanical ability and average ability to move hands easily and skillfully. **Work Setting:** Usually work is safe. Most work 40 hours/week although twin shifts and weekend work are common. **Employers:** Petroleum processing companies. **Hiring practices:** Most employers prefer a high school diploma or vocational training and mechanical ability. **Training:** Most learn their skills informally on the job (See PREP 5914).

UP-12-17-75, 2-17-76

For the Physically Handicapped: This occupation is not feasible for the physically handicapped because of the large equipment that is used. However, for those individuals interested in working with machines, occupations that are feasible for the physically handicapped are electronic assemblers (See DESC 5686), textile machine operators (DESC 4424), instrument repairers (DESC 3186) and small engine repairers (DESC 3118).

8124 Pharmacists

Pharmacists compound and dispense medicines, Doctors and Dentists prescribe these medicines with the knowledge that the health of their patients depends upon the pharmacist's integrity and scientific knowledge. Most pharmacists prepare, package, and sell medicines, but some specialize in pure research. Pharmacists learn to recognize and classify hundreds of medicines, many of which are new, and must know how to prepare others. Environment: Work in well-lighted labs & stores, standing most of the time. Usually work over 40 hrs. a week which may include evening & weekend duty.

Aptitudes: Above average ability in science and math clerical perception & attention to detail, ability to deal with the public. Employers: Self-employment; pharmacy departments of retail stores; hospitals; research labs. Licensed occupation: See PREP 8124 for details. Training available at the University of Washington and at Washington University.
UP-1-2-76

For the physically handicapped: This occupational field is feasible for the physically handicapped who have good eye-hand coordination and who are willing to work irregular hours, especially at the beginning of their career. With the trend toward health maintenance organizations, more opportunities will exist in the clinic settings. For those individuals interested in pharmaceutical research, they may want to consider becoming chemists (See DESC 2624 for more information on chemists).

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DESC 4734 Photographers

Photographers record visual images on film to graphically illustrate or explain an idea. They develop the film and prepare the pictures for presentation. Specialties: Include motion picture, portrait work, industrial, scientific and aerial photography. Related Occupations: Commercial artists and designers (4724) and printing production occupations (4766).

Aptitudes: Above average form and spatial perception; good eyesight, color perception and creativity; plus a facility for dealing with people. Work Setting: Indoors and outdoors, spending considerable time in laboratories and handling heavy equipment. Deadlines often require working long hours. Schedules may be irregular and include weekend and night work. Employers: Commercial and portrait studios, news media, and scientific and industrial firms. Some photographers are self-employed. Hiring practices: Experience is important. A thorough background in the technical or aesthetic aspects of photography can be acquired as a hobby, through class work or military service. Many employers prefer some college background in chemistry and art. Training: Skills can be learned at several universities, vocational-technical institutes and community colleges or through on-the-job training (See PREP 4734).
UP-1-6-76, 2-17-76

For the Physically Handicapped: This occupational field is feasible for the physically handicapped individual with an artistic ability. Related occupational fields feasible for the physically handicapped are commercial art and designing (See DESC 4724) and the printing production occupations (DESC 4766).

2624 Physical Scientists

Physical Scientists study the basic laws of the physical world to increase man's knowledge about matter and energy and often apply their knowledge to solve problems. Chemists study the composition and properties of matter and often specialize in such fields as organic, inorganic, analytical, physical, or bio-chemistry. Physicists investigate the relations between matter and energy and study the laws governing forces such as gravity, heat flow, and electromagnetism; Many specialize in electronics, nuclear physics, optics, solid-state physics, or other fields. Many chemists and physicists engage in applied research to develop new products and processes. Astronomers collect and analyze data on the planets and stars, and develop theories to explain the structure and evolution of the universe. Work setting: Usually in well-equipped labs, offices or classrooms; chemists handle dangerous chemicals.

Aptitudes: Extremely high intellectual and mathematical ability; above average spatial and form perception; imagination, curiosity, and thoroughness. Hiring practices: A Bachelor's Degree is the minimum requirement; an advanced degree is essential for more responsible research positions. Employers: Many teach in colleges or universities; chemists and physicists also work in manufacturing industries in research and quality control. Training: Programs in chemistry, physics, astronomy and biology are available at several universities (See PREP 2624).
UP-2-27-76

For the physically handicapped: This is a feasible occupation for the physically handicapped allowing the individual many choices in areas of specializations because of the variety of education programs which one can elect. See related education programs under PREP 2624. Other related occupations are Earth Scientists (See DESC 2626) and Soil Scientists (See DESC 2628).

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DESC 8112 Physicians

Physicians work to maintain and improve the health of their patients. Duties vary, but most diagnose health problems and prescribe medicines and other treatments. Increasingly, physicians are assigning tasks of a more routine nature to other health professionals and devoting more time to complex medical procedures. Major Specialties: Primary care physicians include family practitioners, pediatricians, obstetricians and gynecologists, internists, and general surgeons; among specialists, most are psychiatrists, surgical specialists, anesthesiologists, radiologists, and ophthalmologists.

Aptitudes: High intelligence, interest in science, good judgment, ability to make decisions in emergencies, emotional stability.
Work Setting: Clinics and hospitals. Work Week: Often irregular, and usually long hours, especially for family practitioners and pediatricians. Older physicians often practice part-time. Licensed occupation; see PREP 8112 for details.
Training: Available at the University of Washington.
UP-1-2-76, 2-18-76

For the Physically Handicapped: This occupation is feasible for the physically handicapped provided the individual can find a college or university that would accept them and make some allowances for their physical handicap and the training an individual must secure. The specialties most feasible would be radiology, pathology and psychiatry. Related occupations are dietetics (See DESC 8116), pharmacy (DESC 8124) and speech and hearing specialties (DESC 8128).

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DESC 8117 Physician's Assistants

A physician's assistant, also called a medex, is a highly skilled worker who, under the supervision of licensed physicians, performs many less complex duties usually done only by doctors. Washington Law states that physician's assistants may perform at the direction of the employing physician such medical procedures as they are qualified to do by training, experience, and job description as approved by the state medical board at the time of licensing (See PREP 8117). Duties may include preparing medical histories and insurance reports, examining patients, and conducting tests for physicians. They may also give medicine and vaccinations, treat and suture minor wounds, apply and remove casts, and assist in surgery. Some work in specialized areas such as obstetrics or orthopedics.

Aptitudes: Above average intelligence and good judgment; also, must be able to work under supervision of physicians.
Licensed occupation: See PREP 8117. Training: Available at the University of Washington.
UP-1-2-76, 3-12-76

For the Physically Handicapped: This occupational field is not feasible for the physically handicapped because of the mobility required. For those desiring to work in a medical office or laboratory, these related occupations are feasible for the physically handicapped: As a receptionist (See DESC 1452), as a bookkeeper (See DESC 1616) or as a laboratory tester (See DESC 2656).

6188 Pilots and Flight Engineers

Pilots & Flight Engineers as a team are responsible for the safe and efficient operation of aircraft. Pilots operate the controls and perform other tasks essential for getting planes into the air, as well as supervising the crew. Copilots assist pilots in communications, monitoring flight instruments, and in operating controls. Flight engineers help make pre-flight checks and monitor the operation of various mechanical and electrical devices during flight.

Aptitudes: Numerical facility; must be able to work under stress and to make quick decisions. Good emotional and physical health including good hearing and vision not worse than 20/100 corrected to 20/20. Can not have any physical handicaps that prevent quick reactions. **Work Setting:** May be away from their home base one-third of the time. Flying time does not exceed 85 hours a month and may include irregular schedules. Most airline pilots are members of the airline pilots association. Flight engineers may belong to one of three unions. **Employers:** Airlines, Armed Forces, business firms & aircraft manufacturers. **Hiring Practices:** Applicants must have the necessary technical skills & have a license from the federal aviation administration. **Training:** Skills can be acquired through military flight training & experience or through instruction from private flight schools, community colleges or vocational-technical institutes. See PREP 6188.
UP-1-7-76

For the Physically Handicapped: This occupational field is not feasible for the physically handicapped. For the physically handicapped individual with a high degree of physical endurance, a related field is air traffic control (See DESC 6126). Others desiring to be involved in the aeronautical field, can enter through the various clerical positions or through personnel work (See DESC 1186).

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DESC 4528 Planer Mill Occupations

Planer mill occupations are located in the stage of the mill where the rough lumber is finished and reduced to specified dimensions. Planer operators set up and maintain the planing machine which planes all four sides in one operation. Planer feeders lubricate the guide to reduce friction and align lumber on feed rollers to pass it into the planer. Work Setting: Indoors, usually noisy. The air is often filled with sawdust and the work ranges from light to heavy.

Aptitudes: Physical strength, stamina, good use of hands and fingers, the ability to adjust to routine work. Hiring Requirements: Most begin at the entry level as laborer before breaking in on the planer crew. Many employers post job openings above the entry level to enable employees to bid for jobs based on seniority and qualifications. Training: Skills acquired on the job. See PREP 4528.

UP-12-8-75, 2-23-76

For the Physically Handicapped: These occupations are not feasible for the physically handicapped because of the physical dexterity and stamina needed. Since these occupations are basically assembly type employment, an individual interested in these occupations may want to explore production assembly, (See DESC 5966). Other occupations that are related to wood products and are feasible for the physically handicapped are cabinetmaking (See DESC 4586), furniture making machine operation (See DESC 4584), and woodmaking machine operation (See DESC 4556).

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DESC 4244 Plasterers and Drywall Installers

Plasterers and drywall installers prepare and apply textured finishes to walls and other building surfaces. Lathers construct lathes which are metal mesh or plasterboard backing to which plaster readily adheres; plasterers then apply a wet accoustical or finish coat to the lathe. Drywall applicators build interior walls and place predried sheetrock. Drywall finishers or tapers tape and cover seams, joints and nailheads. Related: Painters (4242), carpenters (4354).

Aptitudes: Average ability to visualize objects of two or three dimensions, average use of hands, and good physical condition.
Work Setting: Both indoors and outdoors while standing, stooping and lifting. Depending on the specialty, they may be members of the Plasters, Carpenters or Painters Unions. Work is seasonal and workers often move to job sites in the state or region.
Employers: Construction contractors. Hiring Practices: Good health; related experience or training. Training: Skills are acquired informally on the job or through formal apprenticeship (See PREP 4244).
UP-12-17-75

For the Physically Handicapped: This occupation field is not feasible for the physically handicapped because of the physical agility and stamina required. The physically handicapped individual can become involved in this field through one of the related fields that are feasible for the physically handicapped. Examples of these are: Sales of the product (See DESC 7454); management of the business (See DESC 1144); or the support services of secretarial (See DESC 1412) or bookkeeping (See DESC 1616).

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DESC 4274 Plumbers

Plumbers install and repair pipe systems used for water, gas, air and waste disposal. Specialties: Some occupations included are plumber apprentices, pipefitters and gas main fitters. Related occupations: Sheet metal workers (5484); millwrights (3142); heat and cooling system mechanics (3146).

Aptitudes: Average ability to visualize objects of 2 and 3 dimensions, to coordinate eyes and hands rapidly and accurately and good physical strength. Work Setting: Indoors and outdoors, often standing and occasionally working in cramped positions; often lift and carry pipe, tools and other heavy objects. Risk danger of falls, cuts and burns. May work evenings and weekends during emergencies. Organizations: Nearly all plumbers are members of the Plumbers and Pipefitters' Union. Hiring Practices: Formal training or past experience. Some plumbers find jobs through the union hiring hall. Licensing: Must pass an examination. Training: Available through a 5-year formal apprenticeship (See PREP 4274).
UP-12-11-75

For the Physically Handicapped: This occupational field is not feasible for the physically handicapped because of the physical agility and stamina required. The physically handicapped individual can become involved in this field through one of the related fields that are feasible for the physically handicapped. Examples of these are: Sales of the product (See DESC 7454); management of the business (See DESC 1144); or the support services of secretarial (See DESC 1412) or bookkeeping (See DESC 1616). For the individual interested in design of systems opportunities exist as a drafter (See DESC 2364) or as an engineering technician (See DESC 2356).

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DESC 4552 Plywood Finishing Occupations

Plywood finishing occupations are found in the last stage of plywood production preparing the wood with final treatments for marketing. Finish patchers repair and patch defects on exterior surfaces of plywood panels prior to final sanding. Panel sawyers trim plywood panels to specified lengths and widths. Belt sanders smooth patched surfaces of plywood panels, and sander feeders position and insert panels in sanding machines, by sander operators. Sander graders grade and size sized and sanded plywood panels. Work Setting: Plywood plants, where most workers are exposed to a high level of noise; most work is classified as medium to light except for sander feeders.

Aptitudes: Attention to detail, keen vision, eye-hand coordination, manual finger dexterity, physical stamina and ability to adapt to changing situations.

Hiring Practices: Most positions are filled by those having previous work experience in plywood plants.

Employers: Plywood industry. Training: Skills learned informally on the job.

UP-12-17-75

For the Physically Handicapped: These occupations are not feasible for the physically handicapped because of the physical dexterity and stamina needed. Since these occupations are basically assembly type employment, an individual interested in these occupations may want to explore production assembly, (See DESC 5966). Other occupations that are related to wood products and are feasible for the physically handicapped are cabinetmaking (See DESC 4586), furniture making machine operation (See DESC 4584 and woodmaking machine operation (See DESC 4556).

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DESC 4554 Plywood Laborers

Plywood Laborers perform various tasks that do not require high skills and relieve production line workers during breaks and absences to keep the mill running continuously. Laborers also assist others in setting up machines and in loading and unloading materials from railroad cars and trucks. Work Setting: Inside and outside, doing work classified as very heavy, often exposed to a high noise level and air filled with sawdust.

Aptitudes: Physical stamina, good hand usage, eye-hand coordination, ability to adjust to a routine. Hiring Practices: The necessary strength to perform the work. Employers: Plywood industry. Training: Skills learned informally on the job. (See PREP 4554.)
JP-12-8-75

For the Physically Handicapped: These occupations are not feasible for the physically handicapped because of the physical dexterity and stamina needed. Since these occupations are basically assembly type employment, an individual interested in these occupations may want to explore production assembly, (See DESC 5966). Other occupations that are related to wood products and are feasible for the physically handicapped are cabinetmaking (See DESC 4583), furniture making machine operation (See DESC 4584), and woodmaking machine operation (See DESC 4556).

4548 Plywood Lay-Up Occupations

Plywood Lay-Up Occupations glue dry veneer together to form plywood sheets. Core feeders feed and adjust machines which spread glue over surfaces of veneer core strips. Core layers lay glue-coated veneer strips across veneer back sheets to form the inner core of plywood panels. Sheet turners lay veneer sheets onto the glue-coated veneer strips to form plywood panels. Hot press operators, assisted by press helpers, adjust and control machines which bond pre-glued and assembled plywood panels. Glue mixers use equipment to measure and combine ingredients to form glue used in the glue spreading process. Work Setting: Inside; substantial noise and glue odor present; hot press operators and sheet turners engage in the most strenuous work.

Aptitudes: Average use of hands and wrists, eye-hand coordination, ability to work rapidly and efficiently, and the ability to adapt to routine work. Hiring Practices: Good physical condition and necessary strength to perform the work. Employers: Plywood industry. Training: Skills acquired informally on the job. See PREP 4548 UP-1-6-76

For the Physically Handicapped: At the present time, this occupational field is not feasible for the physically handicapped. Since the trend is toward the use of machinery to replace many of the manual operations, it is prudent for the individual whose interest is in this field to continue to follow the automation that is occurring. At the present time, it appears that a physically handicapped individual could operate the machinery that is being developed.

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DESC 4524 Plywood Log and Block Handlers

Plywood log and block handlers get peeler logs started into a plywood mill for processing and production. Pond workers work on the pond with pike poles separating logs by specie and directing logs into certain areas to be hauled into the mill. Pond sawyers buck logs to specified lengths using power saws. Block graders sort logs as to specie and quality. Log rollers operate power equipment such as conveyers to move peeler blocks to and from the barker of lathe deck, and also measure blocks to mark log centers or to compute board feet. Barker operators control machines, remove bark and foreign matter from logs; this job primarily involves pushing buttons and adjusting controls.

Abilities: Physical strength, stamina, and agility; good use of hands, and the ability to adapt to routine work. Hiring Practices: The necessary strength and endurance to perform the work. Training: Skills acquired on the job. (See PREP 4524).
UP-12-8-75

For the Physically Handicapped: This occupation is not feasible for the physically handicapped because of the physical agility necessary. A physically handicapped individual desiring to work around wood products should consider another related occupational field such as forestry (See DESC 4124), furniture making machine operation (See DESC 4584), cabinetmaking (See DESC 4586), or as a stock or inventory clerk in a lumberyard (See DESC 7118). Any of the clerical occupations involved in a lumberyard or sawmill business office would be feasible for the physically handicapped. For more information on clerical positions, See DESC for 1400, clerical occupations,

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DESC 4766 Printing Production Occupations

People in printing production occupations operate and maintain equipment used to transfer ink impressions of words and symbols to paper, metal and other material. Letterpress (Relief) printing, used primarily by large metropolitan newspapers which require long production runs, generally employs 'hot metal' typesetters, camera operators, hand compositors and mailers. Offset (lithographic) printing, used by commercial printing firms and smaller newspapers, employs 'cold type' phototypesetters, camera operators, paste-up workers, negative assemblers (strippers) and graphic finishers. Both processes employ press operators.

Aptitudes: Good physical condition, mechanical ability, average finger and hand usage, and ability to follow a set work pattern. Work Setting: Indoors, usually 35-40 hours a week. Newspapers may require shift and weekend work. Most workers belong to one of several labor unions. Employers: Newspapers, commercial printing firms, large public agencies and private businesses. Hiring Practices: Employers prefer high school graduates; some seek only applicants who can work evenings and weekends. Training required varies with the job specialty. Skills can be learned through schools, formal apprenticeship programs or on-the-job training (See PREP 4766).
UP-2-4-76

For the Physically Handicapped: This occupation is feasible for the physically handicapped provided the individual seeks employment in a large firm where the physically handicapped individual would be able to operate the smaller machines or presses. For the individual who desires to work around machinery, related occupations feasible for the physically handicapped are small engine repair (See DESC 3118), office machine repair (DESC 3164), appliance repair (DESC 3169) or instrument repair (DESC 3186). The physically handicapped individual may also want to consider electronics assembly (DESC 5986).

5966 Production Assemblers

Production Assemblers perform one or more repetitive assembly operations to mass produce goods such as refrigerators, automobiles, and bicycles. Assemblers may bolt, screw, or cement parts together by hand or use hand tools or power tools. This job often involves tending such machines as presses, riveters and resistance welders. Operations often include force fitting or fastening on an assembly line.

Aptitudes: Average use of hands and fingers. Eye-hand coordination, and the ability to adapt to routine and repetitive tasks. **Work Setting:** Indoors, usually in clean and well-lighted areas; sometimes exposed to high noise level and/or oil and grease. **Employers:** Various manufacturers such as automobile, aircraft and electronics industries. **Hiring Practices:** High school graduation or completion of vocational courses are preferred, but not necessary. **Experience is preferred.** **Training:** On-the-job training is usually provided. See PREP 5966.
UP-2-4-76, 2-20-76

For the Physically Handicapped: This occupation is feasible for the physically handicapped. However, the individual interested in this field needs to anticipate some resistance from employers who have traditionally hired only the mobile so they could be rotated in the various assembly jobs, if the need arose. The best prospects for employment in this field is with small products manufacturers. For those individuals who would be interested in repairing rather than assembling appliances, opportunities exist (See DESC 3169).

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DESC 5926 Production Painters and Finishers

Production painters and finishers paint and polish articles such as autos, toys, jewelry and furniture. Painters use machines, spray guns of hand brushed to apply final protective and decorative coats to objects. A finisher's duties ay include examining articles for defects, trimming or grinding excess matter or rough edges, and/or patching and sanding.

Aptitudes: Ability to stand for long periods of time, a steady hand and good eyesight. Work Setting: Indoors. Painters are exposed to paint fumes making it necessary to wear protective goggles and masks. They may also work in awkward, cramped positions. Most work 40 hour/week. Employers: Nationally, 3/4 of production painters are in manufacturing. Hiring Practices: Many employers prefer applicants who are both painters and finishers, and are in good physical condition; previous experience is preferred. Training: Skills are usually learned informally on the job (See PREP 5926).
UP-1-9-76, 301-76

For the Physically Handicapped. This occupation is feasible for the physically handicapped provided the individual seeks employment in a large firm where the physically handicapped individual would be able to operate the smaller machines, presses. For the individual who desires to work around machinery, related occupations feasible for the physically handicapped are small engine repair (See DESC 3118), office machine repair (DESC 3164), appliance repair (DESC 3169) or instrument repair (DESC 3186). The physically handicapped individual may also want to consider electronics assembly (DESC 5986).

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1154 Production Superintendents

Production superintendents assure that their firm's products or services are made economically and produced on time. Typical duties include training and supervising workers, enforcing safe practices, handling grievances, quality control, and keeping production and employee records. Related occupation: Construction superintendents.

Aptitudes: Ability to deal effectively with people; ability to carry out policies and programs; facility with numbers and record-keeping. Work setting: Indoors, generally 40 hrs/week; sometimes working evenings and weekends to meet tight deadlines. Employers: Most are employed by manufacturing firms; others work for public utilities and in trade and service industries. Hiring practices: Usually several years of experience in closely-related occupations from which they are promoted; sometimes college graduates are hired and trained. Training: Programs and related courses are available at several schools (See PREP 1154).

UP-12-31-75, 2-9-76

For the physically handicapped: This occupation is feasible for the physically handicapped. For the individual who has become physically handicapped after several years experience with a firm can sometimes move into this occupation without formal training. For individuals without work experience, it is best to enter by completing a 4-year college level course, such as those suggested in PREP 1154.

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DESC 9868 Professional Athletes

Professional athletes earn their living by participating in competitive athletic events such as football, baseball, basketball, golf, and tennis. They are usually selected from a college draft, picked as a free agent, or gradually advance from amateur or part-time status. Many professional athletes never reach the highest ranks; many drop out after several years in the lower levels of professional sports and must seek a late start in some other occupation. For this reason, many professional athletes have other jobs at which they work during their off season. Other occupations connected with sports are: Team managers, coaches, sportscasters, public relations people, and business managers.

Aptitudes: Physical strength and coordination, good eyesight and ability to move with speed and accuracy. **Work Setting:** Must adhere to a strict training and practice routine spending hours on developing endurance, speed and skill. Playing schedule is often irregular and hectic with most weekday games being played in the evening and most season's games are played away from the home base of the team. Extensive travel is required and many athletes do not live in the home base city of the team. Less travel is required for those professional athletes who are hired as resource people for country clubs or athletic organizations. **Training:** Professional athletic ability is developed through many years of practice and dedication. Few professional sports have formal training programs.
UP-1-6-76

For the Physically Handicapped. This occupational field is not feasible for the physically handicapped. Related occupations that are feasible are as a broadcaster (DESC 9824) doing public relations (DESC 1195) or as a business manager (DESC 1144). Sporting good stores generally hire individuals with an interest in athletics as their salespersons (DESC 7454).

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DESC 1684 Programmers and Systems Analysts

Programmers and systems analysts deal with complex business, scientific and engineering problems that are processed by a computer. Systems analysts define problems and design data processing systems to solve them. Programmers convert these problems into a logical form capable of being processed by a computer. Related Occupations: Computer operators. Work Setting: Usually office with some work done in computer rooms; some evening and weekend work.

Abilities: Ability to organize ideas and data, patience, good memory and clerical perception. Hiring Practices: Variable (See PREP 1684). Employers: Manufacturing firms; banking and insurance firms; wholesale and retail businesses; transportation and public utilities; government agencies; universities; colleges and public school systems; and research organizations. Training: Available at several community colleges and private business schools; 4-year and graduate programs also offered (See PREP 1684).

UP-12-17-75, 3-1-76

For the Physically Handicapped: This occupation is feasible for the physically handicapped and offers the individual a wide choice of work settings because of the diversity of firms and agencies using this position. For those individuals who do not desire to complete a college level course, opportunities exist as a computer operator (See DESC 1686) or as a keypunch operator (See DESC 1688).

8418 Psychologists

Psychologists study the behavior of individuals and groups & try to help persons to achieve satisfactory personal adjustment. They may deal with the total human personality or certain aspects such as perception or learning. Some engage in teaching or research, others serve people through testing, counseling, or treatment in clinics, schools, & industries. Specialties: Experimental, clinical, counseling, school, and industrial psychologists.

Abilities, Aptitudes: High degrees of rationality and self-awareness, patience, strong interest and understanding in human motivation & behavior & ability to communicate well with others. Hiring requirements: Most positions require a Master's or Ph.D. in psychology. Employers: Colleges, government agencies, public schools, industry & clinics. Training: Graduate programs are available at several colleges throughout the state (See PREP 8418).
UP-1-2-76

For the physically handicapped: This is a feasible occupation for the physically handicapped offering a variety of working settings dependent on the individual's area of interest. Related occupations are counseling (See DESC 8414) and case-work (See DESC 8416). For those individuals desiring not to complete a college level or graduate program, it is possible to enter the human service field as a social service aide (See DESC 8428).

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DESC 1138 Public Administrators

Public Administrators are trained managers who coordinate and direct public services toward meeting the nation's, state's or community's needs. They analyze problems and recommend solutions to governing bodies. Specialties include transportation managers, parks managers, managers of public utilities, city managers, social program administrators, staff assistants, and others. Related Occupations: Social program planners, land use planners.

Aptitudes: Ability to plan, organize and implement policies and programs; ability to relate to and communicate with people; analytical mind to solve complex problems. Employers: cities, counties, special districts, state and federal agencies. Hiring Practices: Minimum requirement is a 4-year college degree in a related field. Training: Specialization varies with type of position: Majors include public arts and law; advanced positions may require a master's degree in public administration plus several years of experience (See PREP 1138).
UP-1-6-76, 2-9-76

For the Physically Handicapped: This occupation is feasible for the physically handicapped offering the individual a variety of work settings. Related occupations feasible for the physically handicapped are social program planners (See DESC 2164), land use planners (See DESC 2314) or health service administrators (See DESC 1134).

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DESC 1195 Public Relations Workers

Public relations workers aid their respective firms to build and maintain favorable public images. They prepare information about their employers' business and communicate this material to the public through radio, television, newspapers and magazines. Other duties often include writing speeches and arranging speaking engagements for company officials, and participating in such community activities as school assemblies and safety campaigns.

Aptitudes: Ability to write clearly, relate and communicate well with people; originality, persuasiveness, and interest in public affairs. **Work Setting:** Spend much time away from agency in the community delivering speeches, attending meetings and community functions. **Work Week:** Ranges from 35-40 hours with irregular hours quite common. **Employers:** Manufacturers, stores, public utilities, public relations firms, trade associations, labor unions and government. **Hiring practices:** A college degree is increasingly necessary for these positions. Creativity and past success in extracurricular activities are weighed heavily. **Training:** Available (See PREP 1195)
UP-12-31-75

For the Physically Handicapped: This occupation is feasible for the physically handicapped offering the individual a variety of work settings. In smaller companies, an individual can sometimes be promoted from a clerical position to personnel. The clerical positions most likely to lead to personnel work are as an administrative secretary (See DESC 1412) or as an office manager (See DESC 1411).

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DESC 4574 Pulp and Paper Workers

Pulp and Paper workers tend machines that produce newsprint, paperboard containers, and boxes. Most workers tend machines and seldom handle the materials being produced. Pulp and paper manufacturing jobs often involve technical work as well as operating, installing and repairing equipment. Work Setting: Inside, where workers engage in work classified as light; some work in hot, noisy and smelly areas. Because plants usually operate around the clock, 7 days/week, 40 hour schedules may include evening, night or weekend work on a rotating basis, nearly all belong to 1 of 3 unions.

Aptitudes: Physical stamina, ability to follow instructions, ease in adjusting to a work routine. Hiring Practices: Most firms prefer high school graduates between 18-25 for entry positions: Lumber industry experience is sometimes required. Employers: Pulp and paper mills. Training: varies with speciality. Some jobs require little training, and skills are learned on the job. Others require technical training to assist engineers and chemists in research and analytical testing. See PREP 4574.
UP-12-17-75

For the Physically Handicapped: This occupation is not feasible for the physically handicapped because of the large equipment that is used. However, for those individuals interested in working with machines, occupations that are feasible for the physically handicapped are electronics assemblers (See DESC 5686), textile machine operators (DESC 4424), instrument repairers (DESC 3186) and small engine repairers (DESC 3118).

2672 Quality Control Inspectors

Quality Control Inspectors examine products and construction projects to assure set standards are met. Tasks include reading blueprints, using technical measuring instruments, making mathematical computations, and writing reports. Specialties: Construction inspectors and manufacturing inspectors. Work Setting: Both indoors and outdoors inspectors of manufactured products mainly work indoors in production areas and laboratories.

Aptitudes: Above-average ability to reason and make judgments, to present information clearly, and to perform arithmetic operations; and the ability to work well with people. Employers, federal, state and local government inspection agencies and large manufacturing firms. Hiring practices: In manufacturing, most jobs are filled by promotion of experienced workers although there are some entry level positions in certain industries. Licensing: Usually not required, although some inspectors of food products must be certified. Training: Many acquire their skills on the job; relevant courses are available (See PREP 2672), UP-1-1-76, 2-17-76

For the physically handicapped: This occupation would be feasible for the physically handicapped except in the construction trades where an individual would need physical maneuverability to inspect the building, wiring and plumbing. See PREP 2672 for the needed preparations for this field and for the related educational programs one could undertake.

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DESC 9824 Radio and Television Announcers

Radio and television announcers talk to audiences over the airwaves, providing information and entertainment. Announcers perform such duties as introducing programs and selections, acting as master/mistress of ceremonies, reading news and sports reviews and doing commercials. They are responsible for coordination of music, commercials, network and local programming, and station announcements. Work Setting: Usually in studios; evening, night and weekend work is common.

Abilities: A pleasant, persuasive speaking voice; good vocabulary, clear pronunciation, ability to keep track of several things at once and meet a tight schedule. Hiring Requirements: A neat personal appearance is necessary for TV announcers. Licensing: Only announcers operating transmitters are required to have an FCC radiotelephone first class operator license. All other announcers need an FCC third class operating license with a broadcaster's endorsement. To obtain a license, applicants must pass a series of exams given by the FCC. Organizations: With some stations, announcers may be expected to join a union after being hired. Employers: Radio and TV stations including cable television and educational broadcasting stations. Training: Available (See PREP 9824)
UP-1-6-76

For the Physically Handicapped: This occupational field is feasible for the physically handicapped individual in the media arts provided the physically handicapped individual can locate a station that is barrier free. Other related occupations are broadcasting technicians (See DESC 5664) and radio and TV repair (DESC 3168).

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DESC 3168 Radio and TV Repairers

Radio and TV Repairers install and repair electrical and electronic equipment. They diagnose and repair troubles in radios, TV's, phonographs, tape recorders, and electronics instruments.

Aptitudes: Ability to manipulate parts and tools; average eye-hand coordination, hearing, eyesight and color vision. Work Setting: Inside shops and customers' homes, driving between work sites; often required to lift and carry objects weighing up to 50 pounds; exposed to the hazard of electrical shock although serious injury rarely results. Employers: Many are self-employed; others work in service shops or stores that sell and service televisions and radios. Hiring Practices: Most employers prefer applicants with experience or technical training and the ability to deal with the public. Training: Skills are learned through informal on-the-job training, formal apprenticeship, or programs offered at some community colleges and technical schools (See PREP 3168).
UP-12-8-75

For the Physically Handicapped: This occupational field is feasible for the physically handicapped provided that employment is sought in a business that is large enough to have more than one repairer. The physically handicapped individual would be able to handle the repair of the smaller machines. For other related occupations, See DESC 3118, small engine repair; DESC 3164, office machine repair; DESC 3169, appliance repair; or DESC 3186, instrument repair.

6174 Railroad Brakemen and Switchmen

Railroad Brakemen and Switchmen help control the safety and movement of trains by following signals and instructions from others. Brakemen work with conductors of crews, checking the air brakes and seeing that tools and other equipment are in proper places. During runs brakemen inspect the train, looking for indications of equipment failures. Switchmen or yard brakemen throw switches, couple & uncouple cars, and adjust hand brakes when trains are being made up or broken up.

Aptitudes: Above-average eyesight & hearing; good physical stamina & agility. Ability to follow exact instructions and to concentrate on detail. Work Setting: Outdoors; irregular hours in all kinds of weather; weekends & holidays. Brakemen usually travel with the train, while switchmen work in the yard. Brakemen face greater accident risks than most other workers. Most belong to the United Transportation Union. Hiring Practices: For the entry level position of switchman, applicants must pass an examination on job duties and regulations within a 90-day probationary period. Brakemen positions are filled on a seniority basis. Applicants can not be color blind. Training: Skills are acquired informally on the job. See PREP 6174.
UP-1-7-76

For the Physically Handicapped: This occupational field is not appropriate for the physically handicapped because of the physical mobility needed. For those individuals desiring to be in the railroad industry, entry is best gained through the various clerical positions such as bookkeeping, (See DESC 1616), general office clerk (See DESC 1418), secretarial (See DESC 1412), or railroad clerking (See DESC 1646). The trend in the railroad industry is toward using computers in the various yard duties, and an individual may want to prepare for the future through the study of computer science (See DESC 1686).

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DESC 1646 Railroad Clerks

Railroad clerks handle the paperwork and electronic data processing necessary to keep the business accounts for the railroad industry. Duties often include collecting bills, adjusting claims, tracing shipments, compiling statistics, selling tickets, keeping books, and other clerical tasks. There are two major specialties: Freight clerks and yard clerks. Related Occupations: General office clerk. Work Setting: Most work a 40 hour week; some, especially new clerks, work nights and weekends. Organizations: All are union members.

Aptitudes: Facility with words and numbers, attention to detail. Hiring Requirements: A high school education is usually specified and clerical aptitude tests are sometimes given. Persons who have had clerical training or experience working with figures are preferred. Training: Community colleges and private schools. Additional on-the-job training is usually given.
UP-12-17-75, 3-1-76

For the Physically Handicapped: This occupation is feasible for the physically handicapped but is often difficult to secure a position because of the surplus of applicants. The trend with railroads has been toward a greater use of computer technology for operations. The individual who desires to work in the railroad industry might want to consider one of the computer occupations such as computer operator (See DESC 1686) or keypunch operator (See DESC 1688).

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DESO 6128 Railroad Conductors

Railroad conductors are responsible for the safety of passengers and for seeing that trains are moved according to orders. Before runs, conductors receive train orders from dispatchers and confer with crew members to make sure they understand the orders. During runs conductors supervise car inspections and arrange for repairs or for defective cars to be set out on a siding. Since they are the superior officers on any train, conductors take charge in emergencies, during which all employees on that train are subject to their instructions. Work Setting: In- and out- doors; schedules often include duty at night, on weekends and holidays; some work on the 'extra board' (relief duty) and have very irregular hours. Most are members of the United Transportation Union.

Aptitudes: Good hearing and eyesight are essential. Color blindness is an absolute barrier to employment. Hiring Practices: Openings are filled by promotion. To qualify, applicants must have several years of experience as a brakeman and successfully pass a written examination (covering signals, air brakes, timetables, operating rules and related subjects) and a physical exam. Training: Informal, on-the-job. See PREP 6128.
UP-1-6-76

For the Physically Handicapped: This occupation is not feasible for the physically handicapped because of the mobility and physical stamina required. For the physically handicapped individual who desires to be involved the railroad industry, opportunities exist as a railroad clerk (See DESC 1646).

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DESC 6172 Railroad Engineers

Railroad engineers are responsible for the safe and efficient operation of locomotives. Passenger or freight service engineers operate trains over the road. Yard engineers operate switch-engines to move cars when trains are being made up, broken up, or switched for loading and unloading. Firers are responsible for checking supplies and making necessary mechanical and electrical adjustments during runs. Work Setting: Work schedules often include nights, weekends and holidays; frequently they must be away from home; the extra board (relief duty) works very irregular schedules. Most belong to the Brotherhood of Locomotive Engineers or the United Transportation Union.

Aptitudes: Above average physical condition, hearing and vision, including color perception; able to work in confined areas. Hiring Practices: For firer positions, high school graduates over 18 years are preferred; applicants must pass periodic physical exams with high standards of eyesight and hearing. For engineer positions, either experienced firers who have passed comprehensive exams or graduates of company training programs who have passed the exams are promoted. Training: Skills are acquired on the job or through company operated training programs. (See PREP 6172).

UP-1-7-76, 2-17-76

For the Physically Handicapped: Because of the physical agility and stamina needed for this occupation, it is not feasible for the physically handicapped. Related occupations which are feasible for the physically handicapped individual who wishes to be involved with heavy equipment are: Selling of the equipment (See DESC 7454); management of the sales and service business (See DESC 1162); or through one of the support services of a business, such as secretarial (See DESC 1412) or bookkeeping (See DESC 1616) or through one of the clerical functions (See DESC 1646) for railroad clerks.

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DESC 4288 Railroad Laborers

Railroad laborers build, maintain and repair railroad tracks and roadways for safe and effective operations. Workers in section crews patrol and inspect existing roadways, performing maintenance and repair work. Other laborers work with sophisticated machines to build new roadways. Specialties: Track layers, track walkers and track repairers. Related occupation: Construction laborers (4286).

Aptitudes: Good use of hands and fingers and good health and physical strength. Work setting: Most work within commuting distance of their homes; however, 'floating' crews travel from place to place living in trailers provided by the railroads. These camps are often isolated and offer little privacy. Jobs involve lifting and carrying objects weighing up to 50 lbs. Organizations: Maintenance of way employees union. Hiring Practices: Must pass a physical examination; experienced workers are preferred. Training: Most learn their skills on the job. (See PREP 4288)
UP-1-7-76, 2-23-76

For the Physically Handicapped: This occupation is not feasible for the physically handicapped because of the mobility and physical stamina required. For the physically handicapped individual who desires to be involved the railroad industry, opportunities exist as a railroad clerk (See DESC 1646).

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DESC 7417 Real Estate Salespeople

Real estate salespeople arrange sales or rentals of property for clients. Working under a real estate broker, salespeople locate new property to sell, show property, negotiate agreements, and rent and manage property. Brokers also make appraisals, develop new building projects, and handle general office management.

Aptitudes: Ability to work effectively with people, enthusiasm, and ability to work with numbers and clerical details. Work Setting: Inside and outside, usually more than 40 hours/week, and may include evenings and weekend work. A few work part-time. Hiring Practices: Employers prefer applicants with a least a high school education. Experience in business and/or salework is helpful. Licensing: Must pass a written exam and be at least 18. Training: Related programs available at most community colleges, private schools and at some universities (See PREP 7417).
UP-12-18-75, 3-1-76

For the Physically Handicapped: This occupational field is feasible for the physically handicapped. Several related sales occupations are also feasible for the physically handicapped. For additional information see DESC 7400 for the various sales related occupations.

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DESC 1452 Receptionists

Receptionists greet callers at business offices to determine the purpose of their visits and instruct them accordingly. Receptionists make appointments and supply requested directions or information. Other tasks may include keeping records, sending bills, opening mail, receiving payments, typing, filing and telephone answering. Work Settings: Usually work 40 hours/week in well-furnished front offices.

Abilities: Ability to communicate information accurately and to work without direct supervision. Hiring requirements: In medical and dental offices, an understanding of medical office practices and technical terminology is sometimes needed; sometimes a knowledge of PBX switchboard operation is helpful. Neat appearance and a pleasant manner are also important. Employers: Banks, factories, and other public and private organizations. Training: Offered in high schools, business schools and at all community colleges.

UP12-17-75, 3-12-76

For the Physically Handicapped: This occupational field is feasible for the physically handicapped as are many related clerical occupations offering a variety of work settings. For more information see DESC 1400 for clerical occupations. For information on clerical functions in the railroad industry, See DESC 1646.

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8488 Recreation Aides

Recreation Aides assist recreation leaders in implementing recreation programs such as music, sports, arts and crafts, dramatics, camping, and hobbies. Duties involve teaching & helping persons engaged in the activities, and scheduling & coordinating use of facilities & equipment. Work setting: Varies with season & activity. Work Week: Most aides work part-time.

Abilities: Ability to communicate with and relate to other people, good health and emotional maturity. Hiring requirements: Most employers prefer persons with experience in a particular activity; part-time positions are often filled by high school or college students who are majoring in recreation. Employers: Most work for state, local & federal governments & in schools. Training: Available (See PREP 8488) although most employers do not require prior training.
UP-1-6-76

For the Physically Handicapped: This occupational field is feasible for the physically handicapped. For those individuals interested in completing a college-level program, opportunities exist as recreational leaders (See DESC 8486) and recreational program directors (See DESC 8486).

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DESC 8486 Recreation Leaders

Recreation leaders arrange and supervise recreational activities in public and voluntary agencies, private firms, and recreational developments. They often supervise staff and plan, organize and direct activities such as arts and crafts, sports, music and dramatics, and camping, according to the interests of all age groups. Specialties: Camp counselors, wilderness leaders, senior citizen program leaders.

Aptitudes: An interest in teaching others, group leadership skills, ability to relate to people, and good health. Work Setting: Indoors and outdoors, depending on the activity. Evening, weekend and holiday work is often required. Hiring Practices: Employers prefer persons with previous experience as recreation aides. Licensing or certification: Customary in some fields; see PREP 8486. Employers: Most work for state, local and federal agencies, school districts and voluntary agencies; a few work for large private firms, resorts, and colleges. Training: Programs in recreation and park management are available. See PREP 8486. Instruction and skills in an activity like skiing are often acquired through private lessons.

UP-1-6-76

For the physically handicapped: This occupational field is feasible for the physically handicapped. Related occupations feasible for the physically handicapped are as a recreation program director (DESC 8482) or as a recreation aide (See DESC 8488).

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DESC 8482 Recreation Program Directors

Recreation program directors supervise paid and volunteer personnel who run recreational programs in public and voluntary agencies, private firms and recreational developments. They promote and administer various programs such as instruction in activities like golf, dance, arts and crafts, hiking and camping. Duties often include training and evaluating personnel, introducing new programs, equipment and materials to the staff, and adapting recreation programs to meet the needs of special groups. Work Setting: Usually inside an office or recreation area; some work is conducted outdoors. Work week is often irregular, with evening, weekend and holiday work being common.

Abilities: Ability to relate and communicate with others and to lead groups; ability to plan and implement policies and programs; good health and emotional maturity. Hiring Requirements: Most jobs specify a college degree in recreation and experience as a recreation leader. Employers: Principally cities and park districts; others include colleges, private agencies, hospitals, state parks, large private firms, recreational developments and community schools. Training: Specialty programs in park and recreation management are available (See PREP 8482).
UP 12-23-75

For the Physically Handicapped: This occupational field is feasible for the physically handicapped. Related occupations feasible for the physically handicapped are as a Recreation Leader (DESC 8486) or as a recreation aide (DESC 8488).

8162 Registered Nurses

Registered Nurses work to promote health and prevent disease; they are responsible for nursing care provided to patients. Duties vary depending on employment setting. General responsibilities include planning and providing the nursing care of patients, evaluating and recording patient progress, administration of drugs, performance of treatments, supervising practical nurses and nurses aides, teaching health care, and working with physicians and others in the health care team to assist patients return to health. Increasingly, the role and responsibilities of registered nurses are expanding, and some with additional experience and training are specializing in such areas as coronary or pediatric care.

Aptitudes: Interest in serving others, ability to take responsibility & supervise others, interest in science, good health and physical stamina. Environment: Indoors; evening, weekend or night shift duty common. Employers: Hospitals, nursing homes, physicians, public health agencies, industrial plants, clinics, and public schools. Licensed occupation: See PREP 8162. Training programs at several colleges, universities, community colleges and hospital schools of nursing.
UP-1-2-76, 3-1-76

For the Physically Handicapped: This occupational field is not feasible for the physically handicapped because of the physical mobility required. For the individual who possessed a registered nursing degree prior to becoming physically handicapped, some opportunities exist in hospitals becoming a medication supervisor or in the record keeping department. Related occupational fields are pharmacists (See DESC 8124) speech and hearing specialists (See DESC 8128), dieticians (See DESC 8116). For those desiring to teach nursing science courses, see DESE 8454 for university and college teachers.

DESC 4278 Roofers

Roofers apply composition roofing, wood shingles, and other materials to the roofs of buildings. They cut roofing paper to size, nail or staple it to the roof, and then fasten the shingles using cement or nails. Some jobs involve mopping or pouring hot tar, asphalt and gravel onto the roof until a desirable thickness is achieved. Related Occupations: Construction laborers (4286); railroad laborers (4288).

Aptitudes: Good use of hands and fingers and eye-hand coordination. Work is strenuous, involving lots of standing, climbing, bending, and squatting; risk injuries from falls. Organizations: Roofer's Union. Employers: Roofing contractors, self-employed. Hiring Practices; applicants must be at least age 18, have a good sense of balance, and be able to meet the physical demands of the trade. Training: Skills acquired informally as helpers to experienced roofers or through a 3 - 4 year apprenticeship program (See PREP 4278).

UP-1-7-76, 2-17-76

For the Physically Handicapped: This occupational field is not feasible for the physically handicapped because of the physical agility and stamina required. The physically handicapped individual can become involved in this field through one of the related fields that are feasible for the physically handicapped. Examples of these are: Sales of the product (See DESC 7454); management of the business (See DESC 1144); or the support services of secretarial (See DESC 1412) or bookkeeping (See DESC 1616).

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DESC 3454 Room Cleaners

Room Cleaners, also known as room maids, clean hotel and motel rooms and make them ready for the next night's use. They perform various duties including cleaning furnishings, floors and lavatories, and provide guests with fresh linens. Cleaners may also launder soiled linens. Work Setting: Inside; some weekends and holiday work shifts.

Abilities: Ability to follow instructions; ability to adjust to a routine. Hiring Requirements: Employers prefer persons who are neat, clean and in good health; many prefer those with 2 to 3 years of high school. Employers: Hotels, motels and resorts. Training: Skills are usually acquired on the job.

UP-1-2-76

For the Physically Handicapped: This occupation is not feasible for the physically handicapped because of the mobility required. Other related fields, feasible for the physically handicapped individual who wants to be involved in this service field, are sales of the service (See DESC 7422), management of the business (See DESC 1144), service manager (See DESC 1162) or through the support fields of bookkeeping (See DESC 1616) or secretarial (See DESC 1412).

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DESC 7434 Route Salespeople

Route Salespeople, also known as Driver-salespeople, drive light trucks to sell and deliver goods to wholesale and retail customers. Duties vary according to the industry in which they work and the type of route they have; tasks may include loading their trucks, stocking shelves or vending machines, soliciting business, collecting for deliveries, and keeping sales records. Specialties: Milk, laundry and dry cleaning, grocery, and vending machine route salespeople.

Aptitudes: Ability to do simple arithmetic, write legibly, carry heavy loads, work without supervision, and to work with people. Work Setting: Usually inside with limited supervision. May work in bad weather with frequent lifting and carrying. The number of hours worked varies and may be irregular. Employers: Food products, trade and service industries. Hiring Practices: Most employers prefer applicants who are good drivers and have sales ability. Depending on vehicle driven, a truck driving endorsement to the driver's license may be required. Training: Skills are learned on the job (See PREP 7434).
UP-1-2-76

For the Physically Handicapped: This occupation is not feasible for the physically handicapped because of the physical mobility required and because of the necessity of carrying samples and stock. However several other sales occupations are feasible for the physically handicapped. The individual interested in sales should see DESC 7400 for the sales occupations.

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DESC 5918 Rubber and Chemical Process Occupations

Rubber and chemical processing occupations typically involve the preparation of raw materials for use in the production of paints, fertilizers, explosives, plastic materials and objects made of rubber stock. Since the processing and manufacture of these items is highly mechanized, typical production jobs may involve installing and repairing or observing and adjusting machinery.

Aptitudes: Ability to follow instructions and apply precise standards. **Work Setting:** Inside clean plants; some may be exposed to dust, odors, and high temperatures. Most work 40 hours/week, although swing shifts and weekend work are common. **Employers:** Chemical, plastic and rubber processing factories. **Hiring Practices:** Education and training depend on specific occupation and industry. **Training:** Skills are usually acquired informally on the job. See PREP 5918 UP-12-17-75.

For the Physically Handicapped: This occupation is not feasible for the physically handicapped because of the large equipment that is used. However, for those individuals interested in working with machines, occupations that are feasible for the physically handicapped are electronic assemblers (See DESC 5686) textile machine operators (DESC 4424) instrument repairers (DESC 3186) and small engine repairers (DESC 3118).

DESC 5924 Rubber and Plastics Fabricators

Rubber and plastics fabricators operate machines that cut out rubber and plastic items according to certain designs or templates. Examples of items produced are such products as beach balls, rubber mats, plastic bags, and pads.

Aptitudes: Good form perception and manual dexterity. Work Setting: Inside clean, well-lighted plants. Some may be exposed to odors and noise from machines. Most work 40 hours/week; shift work is common. Employers: Plastics and rubber fabricating industries. Hiring Practices: Most employers prefer a high school diploma and factory experience or machine shop training. Training: Skills are usually acquired informally on the job (See PREP 5924).

UP-1-7-76

For the Physically Handicapped. This occupation is feasible for the physically handicapped provided the individual seeks employment in a large firm where the physically handicapped would be able to operate the smaller machines or presses. For the individual who desires to work around machinery, related occupations feasible for the physically handicapped are small engine repair (See DESC 3118), office machine repair (DESC 3164), appliance repair (DESC 3169) or instrument repair (DESC 3186). The physically handicapped individual may also want to consider electronics assembly (DESC 5986).

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DESC 1162 Sales and Service Managers

Sales and service managers direct the distribution of products and services to customers in order to increase business. Sales managers direct marketing staffs and coordinate the marketing process by establishing sales territories, quotas and goals. Service managers supervise workers in such fields as customer services, repair, record keeping and stock control, and often obtain information from customers concerning the types of services desired. Work Setting: Evening and weekend duty not uncommon.

Abilities: Ability to plan, initiate and carry out ideas and programs, enthusiastic manner and leadership ability.
Employers: Almost all firms dealing with services and products sold to the public and industry. Hiring Practices: Familiarity with the product or service is essential, previous experience in sales and management preferred and sometimes a college degree is specified. Internal promotion of experience salespersons is still a primary method of filling positions. Training: Programs in management, sales, and business are offered at most community colleges and universities (See PREP 1162).
UP-12-31-75

For the Physically Handicapped: This occupation is feasible for the physically handicapped offering the individual a variety of work settings. Related occupations feasible for the physically handicapped are business managers (See DESC 1144), or office managers (See DESC 1411). For those individuals who desire to be in direct sales rather than management, several opportunities exist for the physically handicapped. (See DESC 7400, Sales Occupations).

DESC 7484 Sales Clerks

Sales clerks accept payment and package merchandise for retail store customers. They do not assist customers in selecting merchandise to the extent that salespersons do. Duties vary with the type of merchandise sold, but may include keeping sales records, stocking shelves and taking inventories. Related Occupations: Salespersons (See DESC 7454).

Aptitudes: Ability to do simple arithmetic accurately and quickly, write legibly, stand for long periods of time, and to work with the public. **Work Setting:** Inside, usually in clean, well-lighted places, standing much of the time; usually work 40 hrs/week including evenings and weekends; many work additional hours during the peak holiday season. Part-time work is often available, especially during peak periods. **Employers:** Department stores, drug, variety, and other retail stores. **Hiring Practices:** Employers prefer high school graduates. **Training:** Skills are usually learned informally on the job (See PREP 7484).

UP-12-17-75, 2-18-76

For the Physically Handicapped: This occupational field is feasible for the physically handicapped. Several related sales occupations are also feasible for the physically handicapped. For additional information, see DESC 7400 for the various sales related occupations.

DESC 7454 Salespersons

Salespersons provide customers with a general knowledge of products in order to sell the merchandise. After determining the type and quality of merchandise desired they show various items, noting design, quality and usefulness. Other tasks may include preparation of sales slips or contracts, receiving payments or obtaining credit authorizations. Salespersons must have more knowledge of products than sales clerks and often specialize in a particular product. Related Occupations: Sales clerks.

Aptitudes: The ability to do simple arithmetic, communicate clearly, and to deal effectively with the public. Work Setting: Inside, usually in clean, well-lighted places, standing most of the time. Most work 40 hours/week including evenings and weekends; many work additional hours during the peak holiday season. Part-time work is often available especially during peak periods. Employers: Department stores and other retail stores. Hiring Practices: Employers prefer high school graduates with sales experience and initiative. Training: Most learn their skills informally on the job, although related programs are offered in some high schools, community colleges, and vocational-technical institutes (See PREP 7454).
UP-12-18-75

For the Physically Handicapped: This occupational field is feasible for the physically handicapped. Several related sales occupations are also feasible for the physically handicapped. For additional information, see DESC 7400 for the various sales related occupations.

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DESC 2674 Sanitarians

Sanitarians work for long-range protection from health hazards by performing inspections and enforcing laws and regulations. Sanitarians may investigate conditions in restaurants, food processing firms, water systems, sewage and garbage disposal systems, industrial plants, swimming pools, or other facilities. Work Setting: Both indoors and outdoors, occasionally in contact with unpleasant surroundings. Workweek is usually 40 hours, but may involve limited evening and weekend activities.

Aptitudes: Attention to detail, ability to communicate well with people, report writing ability, and an interest in science.

Hiring Practices: A college degree in environmental health is preferred, but a degree in basic science is acceptable.

Employers: Most are employed by federal, state and local governments; some work for food products and other manufacturers.

Licensing: See PREP 2674. **Training:** Related programs are available in Washington (See PREP 2674).

UP-1-1-76, 2-17-76

For the Physically Handicapped: This occupation is not feasible for the physically handicapped because of the physical mobility required for the outdoor functions of the field. However, a closely related occupation feasible for the physically handicapped is as a laboratory tester (See DESC 2656) performing the tests on samples.

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DESC 5468 Saw Filers and Tool Sharpeners

Saw filers and tool sharpeners repair and sharpen various types of industrial saws and tools that are used in manufacturing firms. Duties are divided between periodic maintenance and removal of saws, blades and tools from machines, and repairs due to unexpected breakdowns. Saw filers work with grinding, straightening and conditioning machines, welding equipment, pneumatic swaging tools and hand tools although other specialties do not require such high skill requirements. Specialties: Saw filers, knife grinders, tool grinders. Work Setting: Indoors where noise level is high. There is a risk of injury from sharp saws.

Aptitudes: Preference for working with the hands and with machinery; independent judgement to select proper tools and plan work procedures; spatial and form perception; good use of hands and fingers; eye-hand coordination; and the ability to meet precise standards and specifications. Hiring Requirements: Positions are normally filled by those with seniority and related work experience. Employers: Lumber and plywood, saw and other manufacturing firms; saw repair shops. Training: Skills are usually acquired informally on the job (See PREP 5468).
UP-2-3-76

For the Physically Handicapped: This occupational field is not suitable for the physically handicapped. Although a physically handicapped individual could perform some of the jobs involved in this occupational field, they would not be able to complete the requirements of the apprenticeship program or gain entry through on-the-job experience because they would not be able to perform entry laborer jobs. For an individual who is interested in working with machine, related occupations to explore are: Small engine repair (See DESC 3118), appliance repair (See DESC 3169), woodmaking machine operation (See DESC 4556) or furniture-making machine operation (See DESC 4584). The clerical support services, such as secretaries (See DESC 1412) and bookkeeping (See DESC 1616), are always needed in the office of these businesses and are suitable for the physically handicapped.

DESC 4534 Sawmill Drying Occupations

Sawmill drying occupations are located at the drying kiln where moisture is extracted from the dimensional lumber before it is run through the planer or prepared for shipping. Kiln operators control dry kilns and direct the kiln crew to season lumber according to specification. Stacker operators run the machine that stacks and spaces lumber designated for kiln drying. Sticker pullers prepare and position empty kiln cars for loading, placing stickers into hoppers for spacing between lumber stacks, and controlling other components of the stacking process. Kiln-transfer operators drive electrically-powered cars and operate electric winches to transfer dry-kiln cars between lumber stacking, dry kiln, unstacking and storage areas. Work Setting: Work varies from light to medium; danger of falling lumber is always present.

Aptitudes: Physical stamina, good use of hands and fingers, eye-hand coordination. Hiring Practices: Most begin at the entry-level before breaking in on the drying crew. Many employers post job openings above the entry-level so employees can bid for jobs based on seniority and qualifications. Training: Skills learned informally on the job. (See PREP 4534).
UP-1-6-76, 2-23-76

For the Physically Handicapped: This occupation is not feasible for the physically handicapped because of the physical agility necessary. A physically handicapped individual desiring to work around wood products should consider another related occupational field such as forestry (See DESC 4124), furniture making machine operation (See DESC 4584), cabinetmaking (See DESC 4586), or as a stock or inventory clerk in a lumberyard (See DESC 7118). Any of the clerical occupations involved in a lumberyard or sawmill business office would be feasible for the physically handicapped. For more information on clerical positions, See DESC for 1400, clerical occupations.

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DESC 4536 Sawmill Green-Chain Offbearers

Sawmill green-chain offbearers pull and stack lumber according to specie, grade markings and dimensions. They pull boards from the conveyor that have already been graded as to dimensions, specie and grade and stack them in corresponding carts. Offbearers are located at several stations and are designated accordingly as green-chain offbearers, dry-chain offbearers, and planer-chain off-bears. Transfer controllers control segments of the conveyor system to route lumber and carts to various processing stations according to dimensions, specie, grade marks and the need for further processing. Counters maintain daily records of sawmill production by specie, grade and dimension. Lumber straighteners align carts and lumber on chain conveyers to facilitate further processing. Work Setting: Offbearers perform medium to heavy work while other occupations are less strenuous.

Aptitudes: Necessary physical strength, good use of hands, ability to adjust to routine work. Hiring practices: most begin as laborers. Many employers post job openings above entry level to enable employees to bid for jobs based on seniority and qualifications. Training: Skills learned informally on the job (See PREP 4536).

UP 12-17-75

For the Physically Handicapped: This occupation is not feasible for the physically handicapped because of the physical agility necessary. A physically handicapped individual desiring to work around wood products should consider another related occupational field such as forestry (See DESC 4124), furniture making machine operation (See DESC 4584), cabinetmaking (See DESC 4586), or as a stock or inventory clerk in a lumberyard (See DESC 7118). Any of the clerical occupations involved in a lumberyard or sawmill business office would be feasible for the physically handicapped. For more information on clerical positions, See DESC for 1400, clerical occupations.

DESC 4559 Sawmill Laborers

Sawmill laborers replace regular workers during absences and relieve unskilled workers such as offbearers and lumber straighteners during breaks to keep the mill running continuously: They sort and stack lumber to aid processing, load and unload materials from railroad cars and trucks, and assist others in setting up machines. Laborers also perform cleanup tasks around the mill. **Work setting:** Work at a different task and work station from day to day, both indoors and outdoors; at times, perform heavy lifting and carrying; noise levels are severe and the air is filled with sawdust.

Aptitudes: Average movement of wrists and hands; eye-hand coordination; form perception; ability and willingness to follow instructions. **Hiring Practices:** Most important is strength and stamina; after an employee has served a thirty-day trial period, he becomes eligible to bid for job openings as they arise. **Training:** Skills learned informally on the job. See PREP 4559. UP-12-8-75

For the Physically Handicapped: This occupation is not feasible for the physically handicapped because of the physical ability necessary. A physically handicapped individual desiring to work around wood products should consider another related occupational field such as forestry (See DESC 4124), furniture making machine operation (See DESC 4584), cabinetmaking (See DESC 4586), or as a stock or inventory clerk in a lumberyard (See DESC 7118). Any of the clerical occupations involved in a lumberyard or sawmill business office would be feasible for the physically handicapped. For more information on clerical positions, See DESC for 1400, clerical occupations.

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DESC 4522, Sawmill Log Handling Occupations

Sawmill log handling occupations are located in the first stage of the mill where logs are transferred from storage areas to the mill and prepared for sawing. Pond workers sort and select logs in ponds, perform any necessary cutting and bucking, and transfer logs into holding pockets or onto log slips. Slipworkers use pike poles to direct the logs onto the slip conveyer which pulls the logs from the pond to the barker deck. Log rollers control the conveyor system that transfers logs from the pond to the barker deck, and prepares the logs for barking. Barker operators direct logs through barking machines to remove bark and foreign matter from logs. Work Setting: Outdoors, spending most of the time standing while performing heavy work, with danger of falls constantly present.

Appitudes: Necessary physical strength and stamina, motor coordination. Hiring Practices: Most begin as labors; job openings above the entry-level are filled by employees who bid for jobs based on seniority and qualifications. Training: Skills acquired informally on the job (See PREP 4522).

UP-1-6-76

For the Physically Handicapped: This occupation is not feasible for the physically handicapped because of the physical agility necessary. A physically handicapped individual desiring to work around wood products should consider another related occupational field such as forestry (See DESC 4124), furniture making machine operation (See DESC 4584), cabinetmaking (See DESC 4586), or as a stock or inventory clerk in a lumberyard or sawmill business office would be feasible for the physically handicapped. For more information on clerical positions, See DESC for 1400, clerical occupations.

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DESC 4532 Sawmill Sawing Occupations

Sawmill sawing occupations are usually located in the first stages of the mill, to reduce the log to lumber of specified dimensions and grade. Head sawyers operate the head saw which first begins cutting the log. Gang sawyers operate multibladed saws to reduce lumber to uniform thickness. Edgers operate multi-bladed saws, locate defects in the cants and adjust saws to get maximum board feet. Trimmers operate the trip saw, a bank of circle saws, to further cut the lumber to specified length. Re-sawyers operate a bank resaw-machine to upgrade defective lumber by sawing it to specified width and thickness. Work Setting: Usually noisy and the air is filled with sawdust, work ranges from light to heavy.

Aptitudes: Physical stamina, good use of hands and fingers.
Hiring Practices: Most begin as laborers before breaking in on sawing crews. Many employers post job openings to enable employees to bid for jobs based on seniority and qualification. Training: Skills learned informally on the job.
UP-12-17-75

For the Physically Handicapped: This occupation is not feasible for the physically handicapped because of the physical agility necessary. A physically handicapped individual desiring to work around wood products should consider another related occupational field such as forestry (See DESC 4124), furniture making machine operation (See DESC 4584), cabinetmaking (See DESC 4586), or as a stock or inventory clerk in a lumberyard (See DESC 7118). Any of the clerical occupations involved in a lumberyard or sawmill business office would be feasible for the physically handicapped. For more information on clerical positions. See DESC for 1400, clerical occupations.

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DESC 4542 Sawmill Waste Recovery Occupations

Sawmill waste recovery occupations are involved in alvaging and processing scraps and trimmings for future use. Chippers and hog tenders tend machines that reduce waste to wood chips and hog fuel. Operators scan the scrap for crossed pieces and remove non-chippable waste to avoid jamming the machines. Hog tenders remove salvageable wood and feed it to the chipper. Work Setting: Indoors, usually noisy. Work is medium to heavy and involves frequent reaching, bending and stooping.

Aptitudes: Good use of fingers and hands, ability to adapt to routine work. Hiring Practices: Many employers post job openings above the entry-level to enable employees to bid for jobs based on seniority and qualifications. Training: Available informally on the job. See PREP 4542.
UP-1-6-76

For the Physically Handicapped: These occupations are not feasible for the physically handicapped because of the physical dexterity and stamina needed. Since these occupations are basically assembly type employment, an individual interested in these occupations may want to explore production assembly, (See DESC 5966). Other occupations that are related to wood products and are feasible for the physically handicapped are cabinetmaking. (See DESC 4586), furniture making machine operation (See DESC 4584) and woodmaking machine operation (See DESC 4556).

DESC 4168 Seasonal Farm Laborers

Seasonal farm laborers, also known as manual laborers or pickers, are engaged in physical farm work on a seasonal basis. These workers may specialize in harvesting or packing crops and some workers move from place to place, following the harvest. Duties include harvesting such crops as apples, strawberries, grapes and sugar beets by picking, cutting, lifting and sorting produce as to size and quality. Seasonal workers are also employed in non-harvest activities such as cultivating, hoeing, weeding and pruning. Work Setting: Generally outdoors; may lift and carry heavy containers; work standing, crouched or bending, or from ladders which may be high.

Abilities: Good use of hands, ability to follow instructions and work quickly in a set routine. Hiring Requirements: Ability to do work that involves lifting, stooping, and bending. Training: Available on the job.
UP-1-2-76, 2-12-76

For the Physically Handicapped: This occupation is not feasible for the physically handicapped because of the mobility needed. However, for the individual who possesses farm skills, some opportunity, for employment, may exist as a farm manager. (See DESC 4164). Other related occupations would be in the areas of bookkeeping for a large farm (See DESC 1616). Since the field of environmental protection is expanding so rapidly, it would be wise for the physically handicapped individual who is interested in this occupational field, to confer with a vocational counselor regarding jobs in that field.

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DESC 1412 Secretaries

Secretaries perform a variety of clerical tasks, assuming minor executive responsibilities in order to keep the office functioning smoothly. Their chief purpose is to conserve the employer's time by organizing office functions and by taking over some administrative details. Duties may include scheduling appointments, screening telephone calls, welcoming visitors, taking dictation, operating office machines, filing and typing. Work Setting: Usually 35-40 hr/week. Specialities: Legal, medical, and executive secretaries.

Aptitudes: Above average intelligence, clerical perception and finger dexterity. Hiring Requirements: Good typing and spelling, punctuation, grammar and vocabulary skills are essential. Employers: Government, business and industry. Training: Available at high schools, private business schools, community colleges, and universities (See PREP 1412).
UP-12-23-75

For the Physically Handicapped: This occupational field is feasible for the physically handicapped as are many related clerical occupations offering a variety of work settings. For more information see DESC 1400 for clerical occupations. For information on clerical functions in the railroad industry, See DESC 1646.

DESC 7415 Securities Salespeople

Securities salespeople help people select and purchase stocks, bonds and mutual funds. They analyze investments, furnish information to customers about market conditions, and securities, and carry out buy and sell transactions. Related occupations: Insurance salespeople.

Aptitudes: Ability to deal effectively with people, responsibility, initiative, and ability to work independently. Work Setting: Inside, with the possibility of some local traveling to confer with clients. Generally work 40 hours/week with occasional evening and weekend work. Some mutual fund representatives work part-time. Employers: Brokerage investment bankers, investment firms, and insurance companies. Hiring Practices: A college degree is becoming increasingly important. Licensing: Salespeople must pass exam covering general field of securities. Training: Related programs offered at most universities, community colleges, and vocational-technical institutes (See PREP 7415).
UP-12-18-75

For the Physically Handicapped: This occupational field is feasible for the physically handicapped. Several related sales occupations are also feasible for the physically handicapped. For additional information see DESC 7400 for the various sales related occupations.

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DESC 9476 Security Guards

Security guards protect industrial and commercial property from damage or loss from fire, robbery, intruders, and other hazards. They typically patrol grounds or buildings checking windows, doors, and lights, punching clocks or other devices along the route to record their position. In emergencies, security guards sound alarms or call police or fire departments. Related occupations: Law Enforcement officers.

Aptitudes: Good vision and hearing; ability to follow set procedures. Work Setting: Indoors and outdoors. Work shifts vary; many work weekends, evenings and holidays, and some work part-time. Many companies supply uniforms and equipment. Employers: Factories, office buildings; government buildings, hospitals, nursing homes, hotels, banks, schools, warehouses, airports, and private security firms. Hiring Practices: Applicants must be in good physical health and often must pass a background investigation to verify reliability; bonding may also be required. They should be mentally alert and emotionally stable. Training: Primarily on the job; however, related formal training is available. (See PREP 9476)
UP-1-2-76

For the Physically Handicapped: This occupation is not feasible for the physically handicapped because of the mobility and physical stamina required. For the individual who desires to be involved in a security service, entry can be gained as a bookkeeper (See DESC 1616) for a security firm. Some occupations in a law enforcement agency (property clerk, communication dispatch) are also feasible for the physically handicapped individual.

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DESC 3124 Service Station Attendants

Service Station Attendants greet customers and provide service to trucks and autos. Typical duties include operating gas pumps, checking oil, water, air pressure, fan belts, oil filters, and transmission and brake fluid levels. Attendants also make minor auto repairs and adjustments, and may drive tow trucks and make emergency repairs at breakdown sites. Work Setting: Work outdoors in all kinds of weather with prolonged standing and some stooping.

Aptitudes: Ability to work with figures, and willingness to deal with the public. Hiring practices: A driver's license, a general understanding of how an automobile works, and some sales ability are important. Knowledge of simple arithmetic to figure bills quickly and accurately is essential. Most important is the willingness to work evenings, weekends, and sometimes on holidays. Training: Skills acquired on the job (See PREP 3124).
UP 12-8-75, 2-23-76

For the Physically Handicapped: This occupation is not feasible for the physically handicapped because of the physical agility required. However, several other occupations related to machinery repair are feasible for the physically handicapped. See DESC 3118 for small engine repair; DESC 3164 for office machine repair; DESC 3168 for radio and TV repair; DESC 3169 for appliance repair and DESC 3186 instrument repair.

5946 Sewage Plant Operators

Sewage Plant Operators operate various types of equipment in sewage treatment plants to control the flow & processing of sewage. Duties include monitoring control ponds, adjusting valves & gates, & operating pumps, engines, and generators. Operators may also collect sewage samples and run laboratory tests, as well as supervise plant attendants and sewage disposal workers.

Aptitudes: Mechanical ability, agility, average use of hands, ability to follow written and oral instructions, and ability to do simple arithmetic. **Work Setting:** Indoors and outdoors; exposed to fumes and noisy motors; most plants are clean. Shift and weekend work are common. **Employers:** Municipal and industrial waste liquid treatment plants. **Hiring Practices:** High school graduation is required. Many employers specify additional formal training. **Licensing:** Certification in Washington is required and may be obtained by passing a written exam. **Training:** Skills are acquired informally on the job or through programs offered at community colleges (See PREP 5946).
UP-1-9-76, 2-17-76

For the Physically Handicapped: This occupational field is not feasible for the physically handicapped. For the individual desiring to work with machinery, related occupations are engineering (See DESC 2354), as an engineering technician (See DESC 2356), or as a production assembler (See DESC 5966).

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DESC 4448 Sewing Machine Operators

Sewing machine operators operate high-speed electric sewing machines in factories producing garments and other cloth articles. Although some specialize in tasks such as making buttonholes, most operators run regular sewing machines that sew pieces of cloth together. Work Setting: Indoors in generally clean, well-lighted areas, sitting; usually work at a fast pace since earnings often depend upon production.

Abilities: Good use of hands and fingers; eye, hand, and foot coordination; ability to detect differences in shapes, textures and surfaces; ability to understand and follow instructions. Hiring Requirements: Previous training in sewing is preferred but not necessary. Employers: Garment manufacturers, motor vehicle and equipment manufacturers. Training: There is a brief training program given to most operators (See PREP 4448). UP-12-22-75

For the Physically Handicapped: This occupational field is feasible for the physically handicapped who desires to work in the clothing industry. Other related occupations feasible for the physically handicapped are custom sewing and tailoring (See DESC 4446) and clothes designing and patternmaking (DESC 4442).

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DESC 5484 Sheet Metal Workers

Sheet metal workers assemble, install or repair products or equipment made of sheet metal. They select and mark the metal and then cut, form, and assemble the metal using various tools and machines. Work Setting: Work in shops or at construction sites which are sometimes noisy and permeated by fumes from welding. Sheet metal workers often work in awkward positions, and risk injury from cuts and burns.

Aptitudes: Ability to work in situations involving high degrees of precision and meeting set standards. Hiring

Requirements: Proven experience as a skilled sheet metal worker gained on the job or through apprenticeship training.

Employers: The railroad, aircraft and shipbuilding industries, plus firms that fabricate and install heating, refrigeration and air-conditioning equipment. Training available

(See PREP 5484)

UP-2-3-76

For the Physically Handicapped: This occupational field is not suitable for the physically handicapped. Although a physically handicapped individual could perform some of the jobs involved in this occupational field, they would not be able to complete the requirements of the apprenticeship program or gain entry through on-the-job experience because they would not be able to perform entry laborer jobs. For an individual who is interested in working with machine, related occupations to explore are: Small engine repair (See DESC 3118), appliance repair (See DESC 3169), woodmaking machine operation (See DESC 4556) or furniture making machine operation (See DESC 4584). The clerical support services, such as secretaries (See DESC 1412) and bookkeeping (See DESC 1616), are always needed in the office of these businesses and are suitable for the physically handicapped.

6184 Ship Officers and Engineers

Ship Officers & Engineers work as a team to insure the safe and efficient operation of powered vessels. Ship Officers supervise and coordinate the ship's crew, inspect holds during loading, stand watches at certain times, and assume command in case the ship master becomes incapacitated. Pilots exercise navigational control of ships to steer them into and out of harbors, rivers and bays. Marine engineers stand watches and supervise crew members engaged in operating and repairing engines, deck machinery, refrigeration and sanitary equipment aboard ship.

Aptitudes: Average eyesight, color perception, and good physical condition. Ability to supervise and direct others. **Work Setting:** Indoors and outdoors, in all kinds of weather. Trips last from one day to several months. Generally working in somewhat confined areas, crew members must be compatible. Hours vary according to the size of the crew and length of voyage. Most are members of one of several unions. **Employers:** In Washington, most work for water transportation companies aboard tug boats, state and private ferry systems and for coastal charter services aboard fishing boats. **Hiring practices:** Possess the necessary technical skills. Must be 21 years of age, U.S. citizen, and pass an examination before obtaining a license. **Training:** Many acquire skills informally on the job. Formal training available in Washington (See PREP 6184).
UP-1-8-76, 2017-76

For the Physically Handicapped: This is not a feasible occupation for the physically handicapped because of need for physical agility on board. Those individuals desiring to be in a sea-related industry would be wise to prepare for one of the office positions available in a company involved with the maritime. Any of the clerical positions would be applicable as well as a career in personnel (See DESC 1186). Shipping and receiving clerks (See DESC 7116) as well as stock clerks (See DESC 7118) can be employed in maritime related industries.

7116 Shipping and Receiving Clerks

Shipping and receiving clerks keep records of incoming merchandise and prepare merchandise for shipment. In addition, shipping clerks pack, weigh, label, and dispatch articles, insuring that shipments comply with purchase orders. They determine shipment methods and may also direct loading of items to be shipped. Receiving clerks, in addition to keeping records, may unpack items and route them to final destinations in the plant or warehouse. Small organizations often employ persons under the combination title of shipping and receiving clerks. Work setting: Perform much of their work in warehouses, shipping and receiving rooms or outside on loading platforms; stand for long periods while checking merchandise.

Abilities: Average finger and hand usage, spatial and form perception and eye-hand coordination. Hiring requirements: Usually, some work experience with the firm is required. Training: Available through on-the-job training (See PREP 7116).
UP-2-4-76

For the physically handicapped: This is a feasible occupation for the physically handicapped if the individual is selective in their work setting. Small companies where an individual needs the ability to perform several functions, such as packing, labeling and unpacking, besides the clerical functions of inventory control and shipment, would be difficult for the physically handicapped to perform. See DESC 7118 for stock clerks for a related field.

4496 Shoe Repairers

Shoe Repairers repair and refinish shoes according to nature of damage or customers specifications. Tasks include attaching new soles and heels using cement, nails and sewing machine; stretching shoes; building up portions of shoes for orthopedic purposes; and repairing belts, luggage, purses, and other products made of canvas, leather, or plastic. Work Setting: Many of the smaller shops are crowded and noisy. Shoe Repairers usually stand a great deal.

Abilities: Manual and finger dexterity, eye-hand coordination, form and spatial perception. Hiring Requirements: Training in vocational education or high school industrial arts is helpful for entry positions. Repairers typically begin as helpers or apprentices and learn their skills on the job. Training: While many acquire skills informally on the job, apprenticeship training is available (See PREP 4496).
UP12-15-75

For the Physically Handicapped: This is an appropriate occupation for the physically handicapped currently, most shoe repair shops have the machines, that are used, at a standing level and, the physically handicapped would have to adjust the machines to a sitting height. For those individuals desiring to own their shoe repair shops, See DESC 1142 for small business operators.

1415 Shorthand Reporters

Shorthand reporters record and preserve statements made at legal and other proceedings, using manual or machine shorthand. They record proceedings from court trials, legislative hearings, business conferences and arbitrations. Other duties include reading portions of testimony during trials and preparing official transcripts of court proceedings. Specialities: Court reporters, hearing reporters and free-lance reporters.

Abilities: Good hearing and finger dexterity, above average facility with spelling and grammar, and willingness to sit in a courtroom or hearings room. May work over 40 hours/week.

Employers: Federal, state, and local court systems, government agencies, legal firms and reporting agencies; some are self-employed and do freelance work. **Hiring practices:** Most employers require graduation from an approved court reporting school and a certificate of proficiency.

The majority of court reporters are selected by the judge in whose court they will work. **Training:** Available in Washington (See PREP 1415):

UP-12-31-75, 3-1-76

For the physically handicapped: This occupation is feasible for the physically handicapped with good finger dexterity. Many related occupations exist, such as, stenography (See DESC 1414); clerk typist (See DESC 1416); general office clerks (See DESC 1418); telephone and telegraph operators (See DESC 1456); and office machine operators (See DESC 1692).

1142 Small Business Operators

Small Business Operators run various business establishments, manufacturing products and selling goods and services to their customers. Operating a small business shop (often require specialized experience and training with the public, and technical knowledge of the particular services or products supplies. A small business is a high-risk undertaking since the operator must invest a lot of time, energy and money -- But many like the responsibility and sense of independence. It often requires long hours, especially in the first few years.

Abilities: Organizational ability, ability to relate to and communicate with people, bookkeeping skills, the ability to use basic mathematics. Training: Programs & courses in business, management & economics are available at most colleges, universities, private schools and community colleges (See PREP 1142).

UP-1-6-76

For the physically handicapped: This occupation is appropriate for the physically handicapped. However, because of the capital out-lay involved in purchasing a small business, it may be more feasible for the physically handicapped individual with these interests to explore managing a business (See DESC 1144). Other related fields are buying & purchasing (See DESC 1186); business services salespeople (See DESC 7422) and general sales occupations (DESC 7454 and 7484).

DESC 3118 Small Engine Repairers

Small Engine Repairers service and repair gasoline engines used in such products as motor boats, motorcycles, chainsaws or power lawn mowers. Related Occupations: Automobile mechanic (3112), truck and heavy equipment mechanic (3114).

Aptitudes: Average ability, eyesight, hearing and strength; manual and finger dexterity; ability to work independently. Work Setting: Most shops are well-lighted and ventilated but are noisy when engines are being tested. Usually work 40 hrs/week, with an increased work load during warmer weather. Often consulting manuals and parts catalogs, mechanics lift motors and work for varying periods in a standing, kneeling or squatting position. They are usually required to furnish their own hand tools. Employers: Motorcycle dealers, boat dealers, marina or shops specializing in small engine repair. Hiring Practices: Mechanical ability. High school graduation preferred but applicants with less education are hired. Some employers prefer repairers with experience. Many employers hire people who have interests related to their specialty, such as motorcycle riding and boating. Training: Repairers usually learn their skills on the job although formal training is available (See PREP 3118).

UP-12-8-75, 2-9-76

For the Physically Handicapped: This occupational field is feasible for the physically handicapped provided that employment is sought in a business that is large enough to have more than one repairer. The physically handicapped individual would be able to handle the repair of the smaller machines. For other related occupations, See DESC 3164, office machine repair; DESC 3168, radio and TV repair; DESC 3169, appliance repair; or DESC 3186, instrument repair.

DESC 2164 Social Program Planners

Social program planners analyze community needs and design policies and programs to alleviate social problems. This occupation includes research, policy and program planning, and program evaluation positions in such program areas as social welfare, corrections, manpower, and health planning. Program planners spend most of their time studying problems, analyzing data, and writing reports; they may also confer with community groups regarding their needs. Some spend as much as 1/3 of their time in program administration. Related Occupations: Land use planners, public administrators.

Aptitudes: Ability to work effectively with program administrators, clients, and agency staff; analytical and organizational abilities; report writing ability. **Employers:** State, county and city governments, universities, councils of government, private social agencies. **Hiring Practices:** A graduate degree is usually preferred, though related successful experience in the appropriate social program may substitute. **Training:** Available (See PREP 2164).
UP-12-31-75, 3-1-76

For the Physically Handicapped: This occupational field is suitable for the physically handicapped and offers a variety of work settings for the individual to choose. Related occupational fields an individual might want to consider are: Counseling (See DESC 8414), caseworker (See DESC 8416), social service specialist (See DESC 8424), or for the individual who does not want to complete a 4-year college level course, a position as a social service aide (See DESC 8428) would be feasible.

2144 Social Scientists

Social Scientists study man's behavior and social environment to increase knowledge and solve difficult social problems. Economists study how man uses resources such as land, labor and capital to produce goods and services; anthropologists analyze the cultures of various peoples; political scientists study theories and organization of governments; historians describe and interpret people and events of the past and present; sociologists study social groups and institutions and their relationship to individuals and society; geographers study the distribution of people, land and water masses, and natural resources. Related occupations; High School and College teachers, Mathematicians and statisticians, social program planners.

Abilities: Intellectual capacity to understand basic principles and methods, analytical ability, clarity in expression. Work setting: Teaching, researching, and program planning occupy most of the time. Employers: The majority are employed as college & university teachers (see Desc 8454); sociologists, economists, and geographers are also employed in government, especially in Washington D.C. Also, many economists work in private industry. Hiring requirements: Graduate degrees are usually necessary. Training: Available at most schools (see PREP 2144). UP-12-31-75, 2-27-76

For the physically handicapped: This occupational field offers many opportunities for the physically handicapped because of the variety of related occupations, all of which, are feasible for the physically handicapped. For specific examples of related education programs. See PREP 2144.

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Pearl H. Rose, Project Researcher

DESC 8428 Social Service Aides

Social service aides provide much of the legwork necessary in implementing social service, manpower training, and community health programs. Aides are typically entry-level personnel. Duties often include serving as contacts between the agency and people in the community who need services, providing transportation for disadvantaged persons, arranging appointments, and helping to run day care centers.

Abilities: Concern for an ability to relate to people and their problems. Hiring Requirements: High school or college graduation is usually not required, but aides must learn all about programs and procedures on the job. Residents of the community to be served are often preferred. Employers: State, county, and city governments; and voluntary or private social service agencies. Training: Programs are available at several community colleges; See PREP 8428.
UP-1-2-76

For the Physically Handicapped: This occupational field is suitable for the physically handicapped and offers a variety of work settings for the individual to choose. Related occupations most of which require a 4-year college level course, are: Social Service Planners (DESC 2164); Counselors (DESC 8414); and Caseworkers (DESC 8416).

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DESC 8424 Social Service Specialists

Social Service Specialists provide professional assistance in the implementation of social programs such as community service centers, counseling, and tutorial programs. They are often responsible for determining the needs and providing appropriate services to clients in such areas as public housing, employment or social insurance. Specialties: Employment interviewer, outreach worker, agency specialist, and community youth advisor.

Aptitudes: Ability to relate to people and their problems, and the ability to implement sometimes complex social programs. Hiring Practices: A college or graduate degree is sometimes specified, but in other cases people become social service specialists without college by working as social service aides. Employers: State, county, and city governments; voluntary or private agencies, and community action agencies. Training: Related training is available at most colleges and universities; See PREP 8424 for related educational programs.
UP-1-2-76, 2-27-76

For the Physically Handicapped: This occupational field is suitable for the physically handicapped and offers a variety of work settings for the individual to choose. Related occupational fields, most of which require a 4-year college level course, are: Social program planning (See DESC 2164), counseling (See DESC 8416), casework (See DESC 8416).

DESC 2628 Soil Scientist

Soil Scientists deal with natural resources and ways to protect, develop, and manage them. Soil Scientists study the characteristics and behavior of soils and provide technical assistance to farmers and others for conserving soil, water, and vegetation. Related Occupations: Foresters, Forestry technicians, earth scientists. Work Setting: Often involves work outside in addition to time spent in labs, offices and classrooms.

Aptitudes: Good intellectual and verbal ability; above average numerical ability; thoroughness and attention to detail. Hiring Practices: A bachelor's degree is the minimum requirement; see PREP 2628. Employers: Most are employed by federal, state, and local governments; others work for colleges of agriculture, fertilizer companies, real estate firms, and private research laboratories. Training: The only program in soil science is offered at Washington State University. See PREP 2628.
UP-12-18-75, 2-17-76

For the Physically Handicapped: This occupation is feasible for the physically handicapped provided the individual is selective of their work settings. Those positions requiring outdoor work are not feasible because of the physical mobility required. Other related occupations feasible for the physically handicapped are as a laboratory tester. (See DESC 2656) and physical scientist (See DESC 2624).

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Pearl H. Rose, Project Researcher

DESC 8128 Speech and Hearing Specialists

Speech and hearing specialists help persons with speech or hearing problems by examining the disorder and then providing treatment. They conduct diagnostic tests, carry out remedial programs to improve communication skills and provide counseling. Tools include sensitive electronic instruments and equipment used to test speech and hearing responses. A few teach or conduct research. Related occupations: Physical therapists, counselors.

Abilities, Aptitudes: Interest and liking for people; patience, emotional stability; good speech and hearing skills. Working Setting: Usually a 5-day, 40 hour week, working in a clinic or office. Employers: Most work in public schools; others work in hospitals, colleges, community and government organizations and private practice. Hiring Practices: A master's degree is required by most employers for employment in public schools and in federal programs. Training: Available in Washington (See PREP 8128).
UP-1-8-76, 2-9-76

For the Physically Handicapped: This occupation is feasible for the physically handicapped. Other related occupations in the medical field that are feasible for the physically handicapped individual are: Laboratory testers (See DESC 2656), and pharmacy (See DESC 8124).

DESC 1414 Stenographers

Stenographers record and transcribe letters and reports to facilitate communications. General stenographers take dictation in shorthand and perform routine office tasks; some take dictation in technical terms or in foreign languages and work in settings such as law courts, conventions, and conferences. Related Occupations: Clerk-typists, shorthand reporters, secretaries. Work Setting: In an office operating typewriters and other office machines.

Abilities: Good hearing, finger dexterity, and clerical aptitude.
Hiring Requirements: Certain jobs require knowledge of specialized terminology in such fields as medicine, law and engineering.
Shorthand skills of at least 80 words per minute are normally required; spelling, punctuation, grammar and vocabulary are essential. Employers: Business, industry, and government. Training: Available at high schools, business schools and community colleges (See PREP 1414).
UP-1-6-76, 2-9-76

For the Physically Handicapped: This occupational field is feasible for the physically handicapped as are many related clerical occupations offering a variety of work settings. For more information see DESC 1400 for clerical occupations. For information on clerical functions in the railroad industry, See DESC 1646.

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DESC 7118 Stock Clerks

Stock clerks are normally employed in wholesale and retail trade, storing merchandise and keeping stock records to assist in the sale of products. Stock clerks count, sort, or weigh incoming goods, fill orders from stock, requisition articles to fill orders, and prepare stock inventories. Some may supervise other workers. Specialties include stock supervisors and inventory clerks. Work Setting: Perform much of their work in warehouses, stock rooms and storage yards as well as outside platforms which may be drafty and cold. Work requires frequent lifting and carrying objects of 10 to 50 pounds, standing for long periods while checking merchandise, bending, stooping, and stretching.

Abilities: Necessary physical strength and stamina needed to carry out job duties and the ability to concentrate on clerical detail and keep orderly records. Hiring Requirements: High school graduation sometimes specified; can be helpful in securing jobs. On-the-job training is usual method of training. Employers: Work in most industries with over half in wholesale and retail trade. Training: Available through on-the-job training and community colleges. See PREP 7118.
UP-1-6-76

For the Physically Handicapped: This occupation is feasible for the physically handicapped provided the individual is selective of their employment. The physically handicapped individual can requisition articles, prepare inventories and supervise workers. A related occupation that is also feasible is as a packer and wrapper. (See DESC 7126).

DESC 5483 Structural Metal and Boiler Makers

Structural metal and boiler makers assemble frameworks such as bridges, and build stationary boilers and storage tanks. Specialties: Structural ironworkers, ornamental ironworkers, reinforcing ironworkers, and boiler makers.

Aptitudes: Good health, physical stamina, and sense of balance. Mechanical ability, above-average ability to visualize objects of two or three dimensions, average finger and manual dexterity, and the ability to work within set standards. Work Setting: Both indoors and outdoors, doing work classified as heavy, often in cramped quarters or at great heights. Workers often move to job sites in the region, and must plan for seasonal unemployment. Principal unions are Structural Ironworkers, Boiler Makers, and Steelworkers. Employers: Construction contractors, public utilities, governmental agencies, iron and steel companies, and large industrial firms that do their own construction. Hiring Practices: Most employers prefer trained or experienced people; many use union hiring halls. Training: Skills are learned informally on the job or through formal apprenticeship (See PREP 5483).
UP-1-7-76, 2-23-76

For the Physically Handicapped: This occupational field is not suitable for the physically handicapped. Although a physical handicapped individual could perform some of the jobs involved in this occupational field, they would not be able to complete the requirements of the apprenticeship program or gain entry through on-the-job experience because they would not be able to perform entry laborer jobs. For an individual who is interested in working with machine, related occupations to explore are: Small engine repair (See DESC 3118), appliance repair (See DESC 4556) or furniture making machine operation (See DESC 4584). The clerical support services, such as secretaries (See DESC 1412) and bookkeeping (See DESC 1616), are always needed in the office of these businesses and are suitable for the physically handicapped.

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DESC 1422 Teacher Aides

Teacher aides provide classroom and clerical assistance to elementary and secondary teachers. Duties include typing and recordkeeping; supervising study halls, cafeterias and hallways; assisting in libraries and operating audio-visual equipment. Aides may handle students' behavior problems, and help in directing students; learning activities. Specialties: Teaching assistant, laboratory and library aides. Work Setting: Mostly indoors; about half work 40 hours/week, the rest part-time.

Abilities: An interest in children and the goals of the education system; responsible conduct; ability to speak clearly. Hiring Requirements; some clerical skills and a high school diploma are usually required. Advancement is limited unless special training and education are acquired. Employers: Public schools and possibly some federal government projects. Training: Available at most community colleges. UP-12-31-75, 2-12-76

For the Physically Handicapped: This occupation is feasible for the physically handicapped. Other related occupations feasible are as a school secretary (See DESC 1412) or as a library assistant (See DESC 7166). For those physically handicapped individuals who desire to complete a college level course, it is feasible to be a teacher (See DESC 8456).

DESC 3166 Telephone Installers-Repairers

Telephone Installers-Repairers install, service and repair telephone and private exchange systems.

Aptitudes: Mechanical aptitudes and the ability to deal effectively with people. Good hand and finger dexterity, physical condition, color vision, and eye-hand coordination. **Work Setting:** Indoors and outdoors in all kinds of weather, usually carrying a belt of tools that weighs about 2-4 pounds. Handles and climbs extension ladders up to 28 ft. Climbs poles and works aloft with hand tools. Work week is typically 40 hours. During emergencies, may be required to work overtime and are subject to 'call outs' during the day or night. Most are members of the Communication Workers of America. **Employers:** Telephone companies. **Hiring Practices:** Valid driver's license and good driving record are essential. Ability to drive a vehicle with a manual gear shift may be required. Applicants are not expected to have prior skills; high school diploma is not required. Some companies have aptitude tests which applicants must take. **Training:** Skills are acquired through company training programs which include classroom instruction and on-the-job training. Also, an apprenticeship program is available (See PREP 3166). UP-12-11-75, 2-9-76

For the Physically Handicapped: This occupation is not feasible for the physically handicapped because of the physical agility required. However, several other occupations related to machinery repair are feasible for the physically handicapped. See DESC 3118 for small engine repair; DESC 3164 for office machine repair; DESC 3168 for radio and TV repair; DESC 3169 for appliance repair and DESC 3186 instrument repair.

For an individual who had the skills necessary for this occupation, prior to becoming physically handicapped, job opportunities exist as a service manager for a shop (See DESC 1162).

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Robert L. Metcalf, Project Director
Pearl H. Rose, Project Researcher

DESC 1454 Telephone and Telegraph Operators

Telephone and Telegraph Operators tend relatively complex equipment aiding the communication process for individuals and businesses. Telephone operators work at switchboards, keeping track of numerous incoming and outgoing calls. Telegraph operators send and receive morse code messages. Work Setting: Schedules of operators who work for telephone companies, hospitals and hotels frequently include evenings, holidays and weekends; those working in other business offices keep normal office hours.

Aptitudes: Attention to detail, eye-hand coordination, normal eyesight and hearing; tact and the ability to work under pressure are also important. Hiring Requirements: Most important is the willingness to work at any hour or day. Employers: Telephone companies, businesses and government agencies. Training: Most are trained on the job.

UP-12-17-75, 2-9-76

For the Physically Handicapped: This occupational field is feasible for the physically handicapped as are many related clerical occupations offering a variety of work settings. For more information see DESC 1400 for clerical occupations. For information on clerical functions in the railroad industry, See DESC 1646.

DESC 4424 Textile Machine Operators

Textile machine operators tend machines that run cloths and yarns through chemical and physical treatments to prepare these materials for manufacturing or marketing. They may treat cloths and yarns with chemicals, heat, mechanical action, and cleaning agents to reach desired weight, pliability, size, texture, water or soil resistance and finish. Duties often include placing and moving materials on the machines during operation. Local related occupations: Laundry and dry cleaning occupations.

Aptitudes: Ability to follow instruction, eye-hand coordination, manual dexterity, attention to detail and the ability to adapt to routine work. Hiring Practices: A work history showing dependability is felt to be the most important requirement by some employers. Employers: Textile mills. Training: Most are trained on the job (See PREP 4424).
UP-12-8-75, 2-9-76

For the Physically Handicapped. This occupation is feasible for the physically handicapped provided the individual seeks employment in a large firm where the physically handicapped individual would be able to operate the smaller machines or presses. For the individual who desires to work around machinery, related occupations feasible for the physically handicapped are small engine repair (See DESC 3118), office machine repair (DESC 3164), appliance repair (DESC 3169) or instrument repair (DESC 3186). The physically handicapped individual may also want to consider electronics assembly (DESC 5986).

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Robert L. Metcalf, Project Director
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DESC 5462 Tool and Die Makers

Tool and die makers are highly-skilled, creative workers whose products are the basis of mass produced metal and plastic products used in industry and by consumers. Tool and die makers must have a broad knowledge of machining operations, shop practices, mathematics, and blueprint reading, and must be able to use every type of machine tool and precision-measuring instrument. Specialists make metal stamping dies, diecasting molds, jigs and fixtures, and do experimental machining. Work Setting: Duties can be physically strenuous; must follow strict safety regulations such as wearing safety glasses and protective equipment when working around high speed machine tools and sharp cutting instruments. Great precision is required.

Abilities, Aptitudes: A working knowledge of mathematics and physics; considerable mechanical ability and good use of hands and fingers. Hiring Requirements: Completion of a tool and die making apprenticeship or past experience as a skilled tool and die maker's helper. Employers: Manufacturing firms, transportation equipment industries, metal working factories. Training: Limited apprenticeships are available; see PREP 5462.

UP-1-6-76

For the Physically Handicapped: This occupational field is not suitable for the physically handicapped. Although a physical handicapped individual could perform some of the jobs involved in this occupational field, they would not be able to complete the requirements of the apprenticeship program or gain entry through on-the-job experience because they would not be able to perform entry laborer jobs. For an individual who is interested in working with machine, related occupations to explore are: Small engine repair (See DESC 3118), appliance repair (See DESC 3169), woodmaking machine operation (See DESC 4556) or furniture making machine operation (See DESC 4584). The clerical support services, such as secretaries (See DESC 1412) and bookkeeping (See DESC 1616), are always needed in the office of these businesses and are suitable for the physically handicapped.

DESC 6144 Truck Drivers

Truck Drivers operate truck and trailer combinations to deliver various materials to manufacturers and markets. Long-haul truck drivers operate diesel, butane, or gasoline-powered trucks and trailers over distances ranging from hundreds to thousands of miles. Many drivers operate log trucks, dump trucks, garbage trucks and numerous others, primarily in local areas. Work Setting: Some drive over regular routes; others are assigned different routes each day. Frequently work 48 hours or more, most work during daytime hours, some schedules require nights spent away from home. Governed by the U.S. Department of Transportation Regulations, long-haul drivers may work 60-70 hours in any 8-day period.

Aptitudes: Mechanical aptitude; ability to judge distance accurately; average foot-eye-hand coordination and quick reflexes. Employers: Any firm or industry that offers local or long-distance hauling or storage. Hiring Practices: Qualifications vary with the type of equipment operated and the nature of the employer's business; department of transportation regulations establish minimum qualifications for drivers engaged in interstate commerce; most truck drivers must have an endorsement to their driver's license; employers usually check traffic and police records; a work history showing dependability is important. Training: Skills are learned through community colleges, private driving schools, and on-the-job training (See PREP 6144).
UP-2-4-76

For the Physically Handicapped: Because of the physical agility and stamina needed for this occupation, it is not feasible for the physically handicapped. Related occupations which are feasible for the physically handicapped individual who wishes to be involved with heavy equipment are: Selling of the equipment (See DESC 7454); management of the sales and service business (See DESC 1162); or through one of the support services of a business, such as secretarial (See DESC 1412) or bookkeeping (See DESC 1616).

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DESC 3114 Truck and Heavy Equipment Mechanics

Truck and Heavy equipment mechanics maintain and repair trucks, buses and heavy equipment. Specialities: Construction equipment, logging equipment, farm equipment, diesel and tractor mechanics. Related Occupation: Auto Mechanics (3112).

Aptitudes: Mechanical ability, good physical strength and manual dexterity. Work Setting: Usually inside noisy garages; some work outdoors. Most buy their own hand tools. Handling greasy parts, mechanics often work in awkward positions and risk injury when lifting heavy parts. In Washington, about half belong to one of several unions. Almost all construction equipment mechanics are placed through the operating engineers hiring hall; work for these mechanics is seasonal. Employers: Most industries; main ones are lumber, vehicle service, wholesale trade, construction and transportation. Hiring Practices: Most employers stress experience and on-the-job training. Some construction contractors request mechanics who have welding or hydraulics background. Training: Skills can be acquired through community colleges, formal apprenticeship programs or informally on the job (See PREP 3114).
UP-12-8-75, 2-23-76

For the Physically Handicapped: This occupation is not feasible for the physically handicapped because of the physical agility required. However, several other occupations related to machinery repair are feasible for the physically handicapped. See DESC 3118 for small engine repair; DESC 3164 for office machine repair; DESC 3168 for radio and TV repair; DESC 3169 for appliance repair and DESC 3186 instrument repair.

For an individual who had the skills necessary for this occupation, prior to becoming physically handicapped, job opportunities exist as a service manager for a shop. (See DESC 1162.)

DESC 8454 University and College Teachers

University and college teachers are employed to educate and train students. They prepare and present materials and evaluate students through assigned problems, discussions, research papers, lab work, and examination; teachers at universities and 4-year colleges must also engage in scholarly research and writing. They commonly serve as advisors to students and often as consultants to industry and government. Related Occupations: Elementary and secondary teachers, counselors, and educational administrators. Work Setting: Teaching schedules for university and college teachers vary; while hours spent in the classroom are limited, additional duties often involve long work weeks. In many cases, teachers may choose between 9 and 12-month appointments; part-time employment may be available, particularly with community colleges.

Abilities: Good communication skills and ability to relate to students; ability to work with abstract concepts; self-discipline and good judgment. Hiring Requirements: most jobs require completion of all educational requirements for a PH.D., except for the dissertation. In the community college, the master's degree is usually required; teachers of vocational subjects must demonstrate a minimum level of proficiency plus have work experience. Training: Graduate programs in many subjects are available at several universities throughout the state (See PREP 8454).

UP-12-23-75

For the Physically Handicapped: This is a feasible occupation for the physically handicapped offering the individual an opportunity for specialization in a field of their interest. Related occupational fields are, elementary and secondary teaching (See DESC 8456) and education program specialist (See DESC 8458). The individual who does not desire to complete a 4-year college level course may want to consider being a teacher's aide (See DESC 1422).

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DESC 4494 Upholsterers

Upholsterers normally repair and rebuild upholstered furniture, automobile interiors, and convertible tops. Some may work in factories and shops fashioning new upholstered furniture. Duties include replacing defective covering, webbing, padding, and springs; measuring and cutting new covering material; and finally installing new material using tacks and sewing by machine or hand. Work Setting: Often work in dusty areas, frequent bending, stooping, and lifting.

Abilities: Eye for detail, color discrimination, good eye-hand coordination. Hiring Requirements: Completion of high school industrial arts courses or vocational training is desirable; some employers consider a work record which demonstrates dependability and compatibility with other employees more important than education. Employers: Upholstery shops, auto upholsterers, furniture stores; many are self-employed; elsewhere in the U.S. There are large factories which hire upholsterers. Training: While many acquire skills informally on the job, apprenticeships and other formal training are available (See PREP 4494).

UP-12-8-75, 2-17-76

For the Physically Handicapped: This occupation is feasible for the physically handicapped provided they seek employment in a large manufacturing firm or upholstery shop where they could specialize in one phase of the operation. Related occupations feasible for the physically handicapped are sewing machine operation (See DESC 4448) and textile machine operation (DESC 4424).

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DESC 4526 Veneer Production Occupations

Veneer production occupations work with machines that produce veneer for plywood. Lathe operators adjust the cutting knife for proper veneer thickness, rotate the peeler block and advance the cutting knife to the rotating block. Lathe spotters place peeler blocks between chucks and assist lathe operators in watching for defects. Tipple (apron) tenders operate the apron that routes the ribbon of veneer from the lathe to the holding trays. Clipper spotters push buttons to move veneer from conveyor trays to clipper feed conveyers and align veneer with the clipper blade. Clipper operators push buttons to remove defects from veneer and to cut green veneer sheets into specified widths. Greenchain offbears pull veneer from the conveyors and place it in the appropriate carts.

Aptitude: Physical stamina, good use of hands and fingers, eye-hand coordination, ability to adapt to routine work. Work Setting: Indoors. Some specialities require heavy lifting. Employers: Plywood and veneer plants. Hiring Practices: Most employers require applicants to be 18 years of age. Training: Skills acquired informally on the job. See PREP 4526.
UP-1-6-76

For the Physically Handicapped: These occupations are not feasible for the physically handicapped because of the physical dexterity and stamina needed. Since these occupations are basically assembly type employment, an individual interested in these occupations may want to explore production assembly, (See DESC 5966). Other occupations that are related to wood products and are feasible for the physically hadicapped are cabinetmaking (See DESC 4586), furniture making machine operation (See DESC 4584), and woodmaking machine operation (See DESC 4556).

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DESC 4546 Veneer Salvage and Upgrading Occupations

Veneer salvage and upgrading occupations convert defective veneer into more useable forms. Edge gluers and jointer operators control machines which glue odd-width veneer strips together to make standard-width veneer. Edge-glue offbearers pull the finished veneer from the machine and stack it in appropriate carts. Veneer patchers operate machines which punch out defective portions of veneer and replace them with Veneer patches or plugs. Work Setting: Inside (often noisy); work classified as light to medium.

Aptitudes: Physical stamina, eye-hand coordination, average use of hands and wrists, ability to adapt to routine work, and some attention to detail. Hiring Practices: Good physical condition and strength necessary to do the work. Employers: Veneer and plywood plants. Training: Skills acquired informally on the job. See PREP 4546.
UP-1-6-76

For the Physically Handicapped: These occupations are not feasible for the physically handicapped because of the physical dexterity and stamina needed. Since these occupations are basically assembly type employment, an individual interested in these occupations may want to explore production assembly (See DESC 5966). Other occupations that are related to wood products and are feasible for the physically handicapped are cabinetmaking (See DESC 4586), furniture making machine operation (See DESC 4584), and woodmaking machine operation (See DESC 4556).

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4544 Veneering Drying Occupations

Veneer Drying Occupations deal with the process by which green veneer is dried & prepared for plywood lay up. Drier feeders feed green veneer sheets into position on the feed deck. Drier grader-off bearers inspect dried veneer for defects and pull & stack the veneer in appropriate carts. Drier tenders adjust drier machine controls & observe the feeding, offbearing, & grading to insure uniform grading & careful veneer handling. Dry clipper operators push pedals to clip out knots & other defects in dried veneer. Dry clipper offbearers pull the clipped veneer off the conveyor & place it in appropriate carts. Work Setting: Inside, standing near noisy machinery in sometimes hot and humid conditions.

Aptitudes: Physical stamina, average use of hands & wrists, eye-hand coordination, ability to work rapidly, ability to adapt to routine and repetitive tasks. Employers: Plywood Industry. Training: Skills learned informally on the job. See PREP 4544.

UP-1-6-76, 2-9-76

For the Physically Handicapped: These occupations are not feasible for the physically handicapped because of the physical dexterity needed. Since this is basically assembly type employment, an individual interested in this field may want to explore production assembly (See DESC 5966).

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DESC 8114 Veterinarians

Veterinarians attempt to prevent, control and cure animal diseases. Duties vary, but most diagnose and prescribe treatment. They administer tests, observe the animal's condition, perform surgery and prescribe medicine or therapy. In government, veterinarians try to control and eliminate disease, protect wildlife, and examine livestock in slaughterhouses. Others do research and teach. Work-Setting: Indoor as well as outdoor work in farm areas; some exposure to physical injury, disease and infection. Work week is often irregular and over 40 hours; some work part-time after normal retirement age.

Aptitudes: Above-average intelligence, an interest in science, good judgment and a liking for animals. Employers: private practice, veterinary hospitals, meat products industry, government agencies, colleges, military. Licensed occupation; see PREP 8114 for details. Training available at Washington State University (See PREP 8114).

UP-1-6-76

For the Physically Handicapped: This occupation is feasible for the physically handicapped provided the individual can find a college or university that would accept them and make some allowances for their physical handicap and the training on individual must secure. The physically handicapped individual would need to specialize in the care of small animals. Related occupations would be as the owner of a pet shop (See DESC 1142) or bookkeeper (DESC 1616) for a veterinary clinic.

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Robert L. Matcalf, Project Director
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DESC 7854 Waiters/Waitresses

Waiters/waitresses primarily sell and serve food and beverages to customers. Duties include greeting patrons, discussing menus, taking orders, serving food, making out checks and occasionally collecting payment. In small firms, waiters/waitresses may help prepare food, and clear and set tables and counters. Work Setting: Usually indoors, always on their feet lifting and carrying objects that are often hot. Often include late evening and weekend duty and entail 'split shifts' which involve two periods of duty with more than an hour off in between.

Aptitudes: The necessary physical and mental stamina to work rapidly, and a cordial manner. Hiring Practices: A clean, neat appearance; some employers require a person 21 years of age so they may serve alcoholic beverages. Training: Most are trained on the job. See PREP 7854.
UP-1-5-76

For the Physically Handicapped: This occupation is not feasible for the physically handicapped because of the mobility needed and the lifting requirements. For those individuals who desire to be involved in the food service industry, some can gain entry as a cashier in a cafeteria or restaurant. For those individuals who complete a 4-year college level program, opportunities exist in the management area of a food service (See DESC 1144 for business management) or as a dietician in an institutional setting.

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Robert L. Metcalf, Project Director
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DESC 4556 Woodworking Machine Operators

Woodworking machine operators set up and tend machines to surface, size of join lumber or to cut tongues, grooves, bevels, beads, or patterns. Operators make various machine adjustments for specific sizes and angles, as well as feed wood stock into the machine. Woodworking machine operators may also set up and run wood-lathes to form such items as broom handles and furniture legs. Work Setting: Indoors, noisy and often with sawdust in the air. Schedules may include evening or night work.

Aptitudes: Eye-hand coordination, good use of hands and fingers, spatial and form perception, ability to work within set standards. Hiring Requirements: Positions are filled by experienced workers or through promotion. Employers: Typically work in specialized wood processing plants and in furniture production plants. Training: Skills acquired informally on the job.
MP-1-6-76

For the Physically Handicapped: This occupation is feasible for the physically handicapped individual provided the person selects a firm that is large enough to have several employees so that the larger machines or outside work can be handled by another employee. Related occupations that are feasible for the physically handicapped are furniture making (See DESC 4584) and cabinetmaking (See DESC 4586).

2176 Writers & Editors

Writers & Editors communicate information & ideas as accurately & clearly as possible to specific audiences. Reporters who work for newspapers & radio & TV stations gather and evaluate facts & write stories for publication or broadcast. Other writers are employed in industries & public agencies to write articles, technical reports, or advertising or publicity copy. Editors supervise writers & edit and organize their material for publication. Related occupations: Public relations workers, freelance writers, and radio and TV announcers.

Aptitudes: Writers must understand and use words effectively; they must also be able to gather information through research or interviewing and organize it effectively. Typing, good spelling, and the ability to work under pressure are also required. Editors must spell correctly and understand in detail the nuances of English grammar & the technical requirements of their publication. Work setting: In offices, though reporters travel to gather information; long and irregular hours at times; deadlines often require rapid work. Employers: News media like newspapers, magazines and radio and TV stations as well as manufacturing firms, advertising agencies, and other organizations. Hiring practices: A college degree is becoming the standard education requirement for writers in the larger publication firms. However, a high school graduate may still be hired by smaller newspapers. Training: Journalism and related writing courses are available at most private schools, community colleges and universities (see PREP 2176).
UP-12-18-75, 2-23-76

For the physically handicapped: This occupational field is feasible. However, there would be some limitations for those entering newspaper reporting because some reporting jobs require a high degree of mobility. Related occupations include public relations workers. (See DESC 1195) and freelance writers (See DESC 2174).

6156 Yarding and Loading Occupations

Yarding & Loading Occupations are responsible for moving the logs from the cutting areas to the trucks. Rigging slingers direct chokersetters as to which logs to fasten the chokers around, & then signal yarding engineers who operate diesel-powered yarding machines that drag in the logs. Chasers direct placement of logs brought to the landing, remove chokers and mark ends of logs with branding hammers. Loader operators sort, select and place logs in truck bunkers to attain balanced loads. Work Setting: Most loggers start at the entry-level as chokersetters or chasers and are exposed to hazardous & strenuous work conditions. Some more highly skilled jobs such as yarder engineer are less dangerous & rugged but involve greater responsibility.

Aptitudes: Most important is the necessary strength & stamina to perform the work. Hiring practices: Some employers post job openings above the entry-level to enable employees to bid for jobs based on seniority and qualifications; other employers are less formal but usually follow the principle when practical. Training: Skills are usually acquired through informal on-the-job training; See PREP 6156.
UP-1-7-76

For the Physically Handicapped: This occupational field is not appropriate for the physically handicapped. However, for those individuals who desire to work around forest products, other related fields are available. A physically handicapped individual could become involved in inventory and stock control (See DESC 7118) or in any of the various clerical positions.

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Pearl H. Rose, Project Researcher

APPENDIX F

STUDENT INTERVIEW EVALUATIONS

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Pearl H. Rose, Project Researcher

APPENDIX F

STUDENT I (verbatim)

Question: What is your opinion of Washington Occupational Information Service?

Answer: Like the idea but the results weren't all that good.

Question: What results weren't good?

Answer: Didn't give me what I wanted. I say I can't be an engineer -- but it wasn't clear it wasn't one of the recommended fields -- It ruled out engineering in the first printout.

Question: Does it help you when you ask for the Description file?

Answer: Yes, sort of -

The initial quest ruled me out because I used words different than they do. The use of hands -- they lump too much in the question -- I had to say no to some -- yes to some -- so I answered no and it ruled me out. Percision work I had to rule out because of the way it was worded and this ruled out my career choice.

Question: Did you find it discouraging when your occupation wasn't in the printout?

Answer: A little, I've learned not to listen to most people. The selling and convincing question was confusing because that's necessary in all jobs -

Question: What changes would you make?

Answer: The main changes are in the questions - they're too broad and vague -- you get confused, you don't know what they want and what they want out of the question -- either that or say that if any part is true, answer it true

Question: Did you pull any other descriptions?

Answer: Yes, one.

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Pearl H. Rose, Project Researcher

Appendix F - continued

Student I - continued

Question: Was the information for physically handicapped helpful?

Answer: Yes, it's pretty helpful -- it tells you more than the one on Engineering.

Question: Would you recommend that students use Washington Occupational Information Service?

Answer: Yes, but it depends on the person. If the person needs information it will help. It does have some helpful information.

Question: Did you feel better about Washington Occupational Information Service this time?

Answer: Yes. I knew what I was doing this time. I knew how to use the machine.

Question: Would you recommend Washington Occupational Information Service be used more than once?

Answer: Yeah, it wouldn't hurt -- the person might want to change what he's doing presently and want to find another occupation.

Question: What's wrong with Washington Occupational Information Service?

Answer: The questions and how they answer based on the answers you give.

STUDENT II (verbatim)

Question: What is your opinion of Washington Occupational Information Service (WOIS)?

Answer: It didn't do anything for me personally -- I'm not qualified for half of what I'm going to do -- the computer is too impersonal -- I'm going to damn well do what I know I can do.

Example: The finger-dexterity question immediately knocked out Data Processing and my minor is going to be computer programming and I'm sure I can do it with no problem -- I know the computer is a tool and I can use it as a tool in spite of my handicaps.

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Appendix F - continued

Student II - Continued

Question: How would you change WOIS?

Answer: I don't know -- it may be great for people who don't have their minds made up -- it didn't say I couldn't when I asked it why not.

Question: Did you find the information for physically handicapped helpful?

Answer: Oh yes, yes --

Question: How?

Answer: I queried it on truck driving -- it explained what other areas I could become involved within the industry.

Question: Did you find any new information for your career field?

Answer: Yes, the jobs aren't as available as I thought. The physically handicapped information would be helpful to a person who didn't know as much as I know about the field.

Question: Was the use of computer different this time?

Answer: No --

Question: Would you recommend that new students use WOIS?

Answer: Yes, they would learn and receive information that they don't know.

Question: What is your primary concern about WOIS?

Answer: It's impersonal -- the questions aren't conclusive enough.

Question: Anything further?

Answer: No, not really. But, the pre-post-test is not conclusive enough. There is no provisions in it for wheelchair people. The lifting and carrying and mobility questions don't specifically deal with people in wheelchairs. As a matter of fact that question isn't even asked, that would include people who use

Appendix F - continued

Student II - continued

Ans. appliances; anyone who doesn't have their hands free to lift and carry.

STUDENT III (verbatim)

Question: What is your opinion of WOIS?

Answer: It's better than the first time because a lot of things were geared for the physically handicapped and I wasn't thrown into professional sports. It could be better yet, for instance, when it asks the questions about physically handicapped it ought to ask a question which would indicate that a person had mobility problems. The farther you wade into the computer you really get good information -- it's done very well. Of course, the thing broke down 3 times when I was taking it. One of the questions was on dexterity -- I'm ambidextrous -- but the question is worded so I had to say no because my feet aren't dextrous.

Question: Was it helpful to you?

Answer: It was nice to have the computer say I could do what I already thought I could do. It would be very helpful for someone who had all kinds of abilities but didn't know where to go or what to do.

Question: Was it easier to use WOIS?

Answer: Yes, because I had done it before and because the helper told me what the computer could do. It answered questions better -- when I asked for information I received better information -- I compared the two when I went home.

Question: What changes would you make?

Answer: I'd change QUEST but I don't know how to ask questions of mobility which would be broad enough for all types of mobility problems. I still received some occupations on the first of the printout which are just not possible for me.

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Appendix F - continued

Student III - continued

Question: Would you recommend that other students use WOIS?

Answer: Yes, particularly when they first come in and then maybe again after a couple of quarters.

Question: Anything further?

Answer: No, no - I don't think so.

STUDENT IV (verbatim)

Question: What is your opinion of WOIS?

Answer: Pretty helpful.

Question: What changes would you make if any?

Answer: Can't think of any.

Question: Was the physically handicapped information helpful to you?

Answer: Very much so - gave me exactly what I needed to know -- now to apply -

Question: Would you recommend it?

Answer: Sure - I would recommend it for people before they start a course -- wish I had had it.

Question: Did you find ~~any~~ information?

Answer: Yes.

Question: What?

Answer: For instance in Recreation - number of jobs--

Question: Was alternative information of value?

Answer: No, not really -

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Appendix F - continued

Student IV - continued

Question: Was it more successful this time?

Answer: Yes, more information and I knew more how to use the machine.

Question: Would you recommend more use of WOIS than once?

Answer: Yes, particularly after several months in a program.

Question: Was there difference in assistance this time than 1st time?

Answer: No.

Question: How did you learn the machine?

Answer: Repetition helps improve any skill -

Question: Anything further?

Answer: Yes, it helps to talk with Dick Crombie after going through the computer -- He gave me new ideas which are very helpful. I need to make some changes.

Question: Dick was helpful with more ideas?

Answer: Yes.

Question: How do you feel when you receive an occupation suggestion which is impossible?

Answer: I'd rather have all jobs available to all types of handicap - I can choose those which are impossible -- Not enough questions are asked to narrow the fields and determine what jobs I can do. The questions are hard for a physically handicapped person to answer.

STUDENT V (verbatim)

Question: What is your opinion of WOIS?

Answer: They don't ask about physical conditions. The Gates Test is much better, it asks questions. It was used by the Utah

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Appendix F - continued

Student V - continued

State Employment Security. It didn't ask how long I could work without a break.

Question: Was the information for physically handicapped helpful to you?

Answer: Yes, but I still don't know what I can do when I complete high school. I don't know what my physical condition will be.

Question: Did it help when you asked for the Description File?

Answer: What's the Description File?
(Explanation was given.)
Well . . . yes, but I don't know if I can do any of the jobs. I want more pay, I used to earn more pay. I don't know what I'll be able to do.

Question: Well perhaps we can talk about that when you complete high school.

Answer: I'd like that, I really want to finish high school first.

(The interview was terminated early because this student has a progressive disease and the questioner thought it unfair to pursue since the student was not really concerned with the data but was most concerned about himself.)

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APPENDIX G

CAREER COUNSELOR EVALUATION

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Fort Steilacoom Community College

P. O. Box 99186

Tacoma Washington 98499

MEMORANDUM

DATE

June 23, 1976

TO Pearl Rose

FROM Dick Crombie

Project No. 72-323(204)NN
Development of a Plan for Providing
Career Info for Handicapped Students
Robert L. Metcalf, Project Director
Pearl H. Rose, Project Researcher

SUBJECT Modification of WOIS for the Handicapped User -- Evaluation

General

The WOIS modification that has taken place to-date has had some positive affect on handicapped user attitudes. The handicapped user commented on their "appreciation" that something is being done to account for their unique limitations.

Specific

1. The positive attitude created by the new handicapped information is valuable in creating a positive attitude which serves as an adjunct to career guidance efforts to assist the handicapped individual.
2. The new WOIS information does not allow handicapped students to report to what degree they are handicapped, so even some of the alternative occupations listed are not possible occupational goals.
3. Modification of the "quest" portion of the WOIS program might improve its adaptability for use by handicapped persons. Some possible modifications are:
 - A. Early in the questionnaire, have sorting items that would allow shift to a set of different questions depending on the degree of limitation of the handicapped user.
 - B. Add additional possible responses to existing questions pertinent to handicapped users -- example: Degree of ability with mechanical device assistance.

RDC/mr

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Robert L. Metcalf, Project Director
Pearl H. Rose, Project Researcher

APPENDIX H

DIVISION OF VOCATIONAL REHABILITATION EVALUATION

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Project No. 72-323(204)NN
Development of a Plan for Providing
Career Info for Handicapped Students
Robert L. Metcalf, Project Director
Pearl H. Rosa, Project Researcher

June 25, 1976

State of
Washington
Department
of Social & Health
Services



MEMORANDUM

TO: Pearl Rose
Ft. Steilacoom Community College

FROM: Division of Vocational Rehabilitation Evaluators

SUBJECT: Evaluation of Career Information Research Project.

EVALUATOR I - Sally Devin

In regard to the WOIS, I feel that a terminal at the DVR office for the counselor's use rather than for the client would be most helpful, especially for occupational data, i.e., requirements and market in Washington.

Regarding the questions asked the students, I feel that the computer receives misleading data when asking for the students own opinion of aptitudes. Many students who have a very good eye for accuracy and ability with words in comparison with the general public might answer modestly, comparing themselves with what they perceive to be expected in the professions. I believe it would be interesting to plug in GATB scores instead, if these could be done.

As to interest, my handicapped client did not answer his own interest accurately, as he took into consideration his physical limitations. I know my client well enough to know that he prefers working with things---he had dropped out of school to become a carpenter before his accident---and if he were not disabled he would prefer to be a carpenter. However, he marked "no" on No. 13, primarily because he is a quadriplegic. I believe a counselor who knows her client well might get a more accurate printout.

Regarding the handicap suggestion or comment on the printout, I have too little information to comment upon. Since Larry indicated that he intended to get a four-year degree, many opportunities exist for individuals (handicapped or otherwise) with that level of education. It would be more interesting to read the alternative that they suggest for carpenter.

I would be interested in having a terminal for my use.

EVALUATOR II - Richard Krack

I think this information is very helpful, it is a good planning tool. I think that my client could have found it more useful if he were more open-minded about his capabilities. It showed me that there are a lot of things he is afraid to try or is not willing to do. He limits himself. There are things I saw which he fails to recognize. It was a useful tool to me, as his counselor. I was made aware of some of the opportunities that are open to my client.

DIVISION OF VOCATIONAL REHABILITATION
Tacoma Office

1305 Tacoma Avenue South, Tacoma, WA 98402

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Robert L. Metcalf, Project Director
Pearl H. Rose, Project Researcher

Pearl Rose
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EVALUATOR III - Enid McAdoo

I found the printout very informative. However, I feel it would be beneficial, if along with the educational information, there was added information on which schools offered the training.

Although it may be too involved, it would also be a good feature to know which schools are best for handicapped students.

I hope this helps with your evaluation.

EVALUATOR IV - [redacted] ckens

In reviewing the NOIS for Gordon [redacted], I feel that adding the physical limitations is a good improvement. Stating the physical limitations helps the handicapped individual determine the feasibility of his goal. I feel this is a step in the right direction; the addition of further items to more fully describe the physical requirements of each job would be helpful.

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Robert L. Metcalf, Project Director
Pearl H. Rose, Project Researcher

APPENDIX I

WASHINGTON OCCUPATIONAL INFORMATION
SYSTEM EVALUATION

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Development of a Plan for Providing
Career Info for Handicapped Students
Robert L. Metcalf, Project Director
Pearl H. Rose, Project Researcher



Washington Occupational Information Service

711 S. Capitol Way 608 Evergreen Plaza Olympia, Wa 98504 (206) 753-0311

Scan 234-0311

June 25, 1976

Ms. Pearl Rose
Ft. Steilacoom Community College
Office of Occupational Education
9401 Farwest Drive Southwest
Tacoma, Washington 98499

Dear Pearl:

Mark Johnson, Executive Director for WOIS, has asked that I evaluate the materials you developed for the physically handicapped (wheel chair and appliance bound). The following is my assessment:

The objective of your project, as I understand it, was to provide relevant occupational information for the physically handicapped that would be compatible with the WOIS format. An examination of the developed material revealed that:

1. The descriptions designed specifically for the physically handicapped were prepared in a manner that permitted the WOIS transcriber to enter the information into the computer verbatim.
2. The prepared information was augmental to the WOIS occupational descriptions, and was compatible in format providing additional detail for physical requirements, thus providing users with supplemental information.
Note: WOIS initially entered the information in a manner that all users accessing WOIS occupational descriptions received the physically handicapped information. A memo of June 18 from WOIS to EWSC requested the programmers to change the program so that a question would be asked and those users requesting physically handicapped information would be the only ones to receive the developed information.
3. The developed materials did provide sufficient information to determine whether the occupation was appropriate for a wheel chair or appliance bound person. When the occupation was not appropriate, reasons were given and alternative related occupations were noted. This was viewed, by me, as being desirable. These supplemental segments were completed in an acceptable manner to WOIS.

I would like to take this opportunity to encourage you to continue conducting research relative to the physically handicapped and occupational information. It is desperately needed, as you know.

Sincerely,

Roy L. Schmidt
Roy L. Schmidt, Associate Director
Research and Evaluation

RLS/jn

WOIS SERVED BY WASHINGTON OCCUPATIONAL INFORMATION CONSORTIUM (WOIC) AN INTERAGENCY ORGANIZATION COMPRISED OF OFFICE OF THE GOVERNOR, COMMISSION FOR VOCATIONAL EDUCATION, STATE BOARD FOR COMMUNITY COLLEGE EDUCATION, SUPERINTENDENT OF PUBLIC INSTRUCTION, COUNCIL FOR POST-SECONDARY EDUCATION AND EMPLOYMENT SECURITY DEPARTMENT

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Project No. 72-323(204)NN
Development of a Plan for Providing
'Career Information for Handicapped'
Students
Robert L. Metcalf, Project Director
Pearl H. Rose, Project Researcher

APPENDIX J

OCCUPATION ACCIDENTLY OMITTED -
NOT IN WOIS COMPUTER

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Project No. 72-323(204)NN
Development of a Plan for Providing
Career Info for Handicapped Students
Robert L. Metcalf, Project Director
Pearl H. Rose, Project Researcher

DESC 1136 Education Administrators

Education Administrators manage school systems to promote satisfactory academic and business operations for staff members and students. Administrators recruit and hire personnel, prepare and present budgets and new programs, and develop policy guidelines for teaching and non-teaching staff. Specialties: Principals, vice-principals, college presidents, deans, and division heads. Related Occupations: College, secondary, and elementary teachers; school counselors. Work Setting: Usually a regular work week, although special events often require evening attendance. Some administrators may work long hours.

Abilities: Ability to relate well to people, to organize plans and ideas, and to respond to the changing needs of students and the community. Employers: Public school systems, colleges and universities.

Hiring Requirements: In elementary and secondary schools Washington administrators' credentials are needed, requiring a Washington teaching certificate, 3 years teaching experience and some graduate study.

Training: Graduate training available; see PREP 1136 for more information.

UP-12-31-75

For the Physically Handicapped: This is a highly feasible occupational field for the physically handicapped allowing the individual to choose a specialization in their educational interest area. A related occupation is Education Program Specialist (See DESC 8458). For the individual interested in the field of education but not desiring to complete college level and graduate work, See DESC 1422 for teachers aides.

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