

GEORGIA INSTITUTE OF TECHNOLOGY

OFFICE OF RESEARCH ADMINISTRATION

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GEORGIA INSTITUTE OF TECHNOLOGY

OFFICE OF RESEARCH ADMINISTRATION

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**ENVIRONMENTAL PROTECTION IN GEORGIA:
NATURE OF PROGRAMS AND JOB
RELATIONSHIPS, SUMMER 1973**

Summary of Preliminary Research Findings
Prepared for
The Office of Vocational and Adult Education
State Department of Education

Industrial Management Center
Georgia Institute of Technology
Atlanta, Georgia 30332

ENVIRONMENTAL PROTECTION PROGRAMS IN GEORGIA RELATED TO JOB TITLES
AND JOB FUNCTIONS BY INDUSTRIAL CATEGORY
SUMMER 1973

Based on Exploratory Interviews with a cross section of
Georgia Employers during Summer of 1973

Summary of Preliminary Research Findings

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For

Georgia State Department of Education

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Industrial Management Center
Georgia Institute of Technology

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JOB TITLES IDENTIFIED WITH ENVIRONMENTAL PROTECTION PROGRAMS IN GEORGIA BY INDUSTRIAL CATEGORY

INTRODUCTION

During the Summer of 1973, in connection with the exploratory investigation of the nature of Environmental Protection, including Waste Collection, Waste Recovery and Waste Disposal, and including also, the job and job functions to be tied into these different programs, the author interviewed sixty-two companies which supplement to a major extent, the twelve previous interviews held during the Summer of 1971, when THE CAREERS FOR YOUTH SURVEY IN GEORGIA, 1971-76, was instituted. In close personal interviews with the supervisors of Environmental Protection in companies and other organizations, including information on Waste Recovery and Recycling and Disposal, the author has identified 342 jobs closely associated with this type of work. Thirty-nine of these jobs are located in Federal and State Regulatory Agencies, while eighty-five jobs were identified in County and City Government, some of which are quasi-regulatory in nature, having close ties with State Regulatory Agencies.

Durables and Nondurables manufacturers reported sixty-two jobs; contractors, including demolition reported forty-one jobs. Waste Collection and Recycling of waste metals, etc., had seventy jobs and all other categories (institutions, electric power company, transportation, and warehousing) had forty-five jobs related to Environmental Protection or Waste Collection and Disposal.

The objective of this study was to greatly expand the exploratory investigation into what was happening in environmental programs over the very skimpy information that was turned up in the 1971 exploratory study.

The objective was to learn all about the types of programs that were underway in a cross-section of companies in Georgia, including also the jobs identified with this type of work and the job functions of these workers. The result of this intensive exploratory investigation, to date, would seem to be sufficient to have structured and accurately defined the problem relative to Environmental Protection. The results, therefore, justify a full scale mailed survey to a random sampling of Georgia employers in order to build up certain basic information on training requirements for these types of jobs needed by the Georgia economy.

More specifically, the information gotten through mailed questionnaires would provide the following types of information: a) number of annual job openings for each of the 342 jobs identified, including both the growth and replacement demand for jobs; b) estimate the yearly net training requirements required of educational institutions.

If it is desired to determine the specifics of the training curricula for each of the broad category of workers in Environmental Protection programs in companies, as well as Waste Collection, Waste Recovery or Waste Recycling and Waste Disposal by companies, it would be necessary to conduct intensive interviews with a broad cross-section of Georgia employers in order to determine the specific training background they require of new employees in the different categories of jobs which are identified in the following sections of this report.

GENERAL NATURE OF ENVIRONMENTAL PROGRAMS BY INDUSTRIAL CATEGORY

Federal Regulatory Agencies

In this study three aspects of the Federal Government relative to Environmental Protection only are covered. These are OSHA Monitoring, the Environmental Protection Laboratory, and Water Testing in the coastal plains for salt.

The Occupational Health and Safety Administration of the U. S. Department of Labor (OSHA) does maintain an active monitoring set-up in every state. The compliance officer or his staff have the authority to inspect every work place coming under the OSHA regulations at any time without notice. OSHA regulations are applicable to all work places having eight or more workers except mining. The law requires that all employers under the regulations keep three basic records on all operations. These are: a) OSHA Form 100, for all Occupational Injuries or Illnesses. It must be kept current on all work force and in files for five years. b) OSHA Form 101, Supplementary Record of Occupational Injuries and Illnesses. On this form, is kept a detailed record of each recordable injury or illness. c) OSHA Form 102, Summary of Occupational Injuries and Illnesses. This is a summary report for the year on all recordable injuries and illnesses. In case of an accident causing a fatality or hospitalization for five or more employees, the company must within 48 hours notify the nearest area director of OSHA.

The U. S. Environmental Protection Agency Laboratory in Athens, Georgia, a Surveillance and Analysis Division, has the function of picking up problem areas in pollution which states in Region IV are not covering. More particularly, the agency is involved in field surveys of waste, including industrial waste, plant out-falls, municipal out-falls.

It is also concerned with pollution in streams and the effects on the streams. At the moment, it is most concerned with the accumulating effect of waste in streams and is interested in treatment processes from the raw waste, taking this through the treatment and reducing pollution before it is discharged.

Special Studies: Studying urban run-offs from the streets and from combined sewers that collect storm water and regular sewage. Rain often causes a bypass around the treatment plant, directly into the river.

This office works closely with computer programmers to predict in advance how much urban run-off pollution will be generated from a developing urban area. It is also concerned with agricultural waste and its distribution and effects on streams.

Chemical Services: The laboratory staff receives and logs in field samples of water and air pollution (air pollution samples have been bubbled through chemical solutions in the field or filtered through paper filters to concentrate air pollutants). Much air pollution testing is done by field monitors. The Air Surveillance staff at this laboratory checks these to see that they are done properly and service them when needed. In this work they also recommend to the state which instruments are best adaptable to their needs. All the staff must be familiar with the problems that are likely to develop, also with limitations of the various monitors.

The water testing in the coastal plains is performed by a two-person staff of Hydrologists who are employed by the U. S. Interior Department. The problem has been some leaks of salt water from water drawn out of very deep wells. A very strong delivery of water from these wells tends to pull salt pollution from deep, salt bearing rocks. Sea water which

covered the coastal plains was moved geologically and left some salt in rocks. This is the source of minor salt pollution that now occasionally occurs. The Hydrologists have a test well installed by the Interior Department to monitor the flow of water caused by high pressure wells. The problems of salt invasion is still quite minor, but the monitoring work of the Hydrologists is designed to keep track of changes and make reports in order that agencies concerned can take remedial action when needed.

State Government Program

The Department of Natural Resources has the responsibility to enforce state law relative to environmental protection. The agency operates to standards of state regulations, with supplementary programs to meet federal regulations also. The Federal Environmental Protection Agency stays clear so long as state operations or state programs are up to standards, but would intervene if state programs fall short of federal requirements.

In the environmental programs, personnel from the environmental division plans, organizes and directs on a statewide basis requirements relative to land reclamation, solid waste management, air quality control and water quality control. It sets priorities for legal enforcement, ensuring that all laws, rules, regulations, and standards are explicitly enforced, working within the framework of the Environmental Protection Agency of the Federal Government and the Department of Natural Resources.

The program relative to environmental health includes surveys, investigations and other actions necessary to detect, identify, and control pollutants; also, a statewide program to control environmental contaminants,

resulting from raw materials used in a manufacturing process. Personnel from the Natural Resources Department assist local jurisdictions to set up and service pilot programs and it also provides advice to local public health personnel in the development of local programs.

The Georgia Pesticides Program operates under an Act of 1972 which sets standards and regulations for the application of fungicides, herbicides, defoliants, desiccants, plant growth regulators, nematodes and other pesticides applied by aircraft or ground equipment manually in Georgia. Establishment of standards and regulations for use of pesticides and licensing of pesticide equipment operators and also pesticides applicators directly is a responsibility of the Georgia Department of Agriculture, which also has to provide for inspections and also for penalties, subpoenas and enforcement provisions.

The State Highway Department has a program operated by a professionally trained agronomist to control grass growth on roadsides and under rails, as well as planning for tree location.

County Program

The county studied had an environmental health division which supervises solid waste, air pollution, occupational health, noise pollution, radiological health, waste pollution and industrial hygiene. Staff persons inspect and conduct surveys of housing in important areas of the county to determine the extent of deterioration, lack of facilities, inadequate maintenance, unsafe and unsanitary conditions, extent of overcrowding, and overall condition of premises inspected; conduct conferences with owners and occupants of housing that are found to be unsafe or below minimum standards to induce corrective action. Investigate housing violations or

other unsanitary conditions. Food serving establishments are inspected for compliance with rules and regulations and the inspector discusses findings with the management.

The county's general health program requires checking for violation against complaints and follow up to determine if violations have been rectified.

The water pollution program requires inspection of possible violations, source or cause of pollution, determination of type and effect of effluent by chemical and biological analyses; and take appropriate action to correct problem if hazardous. Also, reviews water and water treatment facilities and investigates pollution of and contamination of water resources.

The air pollution program involves surveys and studies to detect pollutants or contaminants in the air. Set up field laboratories to research and analyze samples and determine nature and extent of pollution. Also investigate conditions which relate pollution to possible pollution of the air.

Solid waste collection is picked up and hauled to the landfill and crushed with a bulldozer and then covered with dirt. Disposable waste is hauled to an incinerator and burned.

DeKalb County is experimenting with solid waste pulverization in which the materials are ground or beat up, including all refuse except brick, rock and cement blocks. The pulverization process reduces volume of waste by 51%. Pulverized materials are deposited in landfill and compacted but are not covered by dirt. A university research study indicates that pulverized materials will not sustain rodents or attract birds and insects.

The water works in a second county includes pumping water into a facility for treatment to make it sanitary. This involves operation of pumps, chemical feed equipment, back washer filters and checks of water and water gauges in water plants. Reagents to check water are mixed and used in laboratory checks of water standards. Chemical analysis and bacteriological tests are also made.

Waste water operations include sewage treatment, sludge treatment, disposal equipment which controls flow and processing of sewage. Sewer lines are repaired and serviced as needed. New sewer lines are installed when needed to expand service and this involves a construction crew that specializes in the installation and maintenance of sewer lines.

Large City Program

City collects garbage and trash as well as animals from streets and from residential and commercial installations. Collects rubbish - hedge and grass collection if domestically generated. Streets are also swept to collect litter. Controls garbage collection, litter, etc., by having an enclosed blow-free body on the truck, either solid cover or tarpaulin. Trash, grass litter, and dead animals go to the incinerator, but recoverable paper is sorted out and sold for recycling. Dead animals are cremated in a pathological incinerator. Metal delivered in trash at the incinerator is recovered and if cans, is shredded. Salvaged metals are sold on contract for recycling. Debris and collections on streets, including garbage, are hauled by truck to landfill for track driven bulldozer with blade or loading bucket to crush and bury in landfill and cover with dirt. Deposits by the general public and commercial enterprises are permitted, but this is under close supervision.

Vacant lots are checked to keep in healthy condition. Junk automobiles are removed by contractor and pressed for shredding; shredded automobiles go to contractors for metal recycling.

Tree control department regulates tree removal from large areas which are being developed into commercial enterprises. The builder's request for a permit is checked over carefully by the arborist. He looks over the plans and observes the details, and their relationship to the tree stand. He makes suggestions of how minor changes in the building plans can save some or all of the trees. If suggestions are ignored, then the arborist later presents a plan after the structure is completed for replacing many of the trees.

The city also has a staff person who inspects for insects and diseases and sprays to kill or treat the disease; or as a deterrent against insect infestation or disease infestation. Maintenance of the street right-a-way from obstruction of trees or tree limbs is another program. Forester crews with bucket trucks remove limbs, dead trees, etc., in order to keep the streets free of obstruction.

Public buildings are maintained in accordance with city policy and regulations. Grass and shrubberies are planted as needed; also watered and fertilized. Rubbish is removed from construction site, storm drainage structures or recreation areas. Limited landscaping is performed where only hand tools or small tractors are required. There is also the program for maintenance, repair and painting of structures, equipment buildings and fixtures.

The water plant set up in operation as well as the sewage plant operation is a duplicate of the presentation above under the large county operation.

Water Plant and Waste Water Operations of Small Towns and Sparsely
Populated Counties

The less densely populated counties and small towns of Georgia pursue a variety of approaches in solving the problems of potable water and treatment of waste water to acceptable State standards before discharge into a stream. In a State as diverse as Georgia, the methods vary widely and there is a tendency to combine job functions, involving also some cross-over responsibilities of some workers, like maintenance mechanics.

Often a county will obtain potable water from a not-too-distant large city or from a densely populated county which has highly developed water services. Some sparsely populated counties will have a number of waste water plant operations scattered over the county in response to concentrated economic activities or population concentrations. Often a small town will have a superintendent of water plant and waste water plant operations with three or four classes of operating personnel, including laboratory technicians and maintenance mechanics, as well as outside grass cutters and clean up workers, to operate and maintain each division of the operation.

The problem of water supply for many small cities in the Coastal Plains, as well as some small Georgia cities in other parts of the State, poses a rather unique and interesting problem. Where there is not an accessible stream of water, small towns must draw their water from city owned wells. The water is pumped into a reservoir where it is aerated and chlorinated. After these two operations are completed, the water is stored in large tanks for customer service through water lines established by the city. In some of these small towns also, if a manufacturing operation is in existence it will often have its own well for water supply, and this must be a rather deep well, in order to tap water resources that can

supply a large manufacturing operation, particularly if it's oriented heavily toward water. In the lower coastal plains, some of these wells from factories have been extended to such great depths that they are absorbing water from areas under the earth's crust that are tapping sources of salt that were deposited by the ocean when the coastal plain was covered by water. This may prove to be a problem in the future for some coastal plain cities and manufacturing operations.

Institutions

This category includes hospitals and educational institutions. A certain amount of radiation is emitted by hospital X-ray equipment, radioisotopes and radio-pharmaceuticals. The use of this equipment must be carefully controlled and monitored for the safety of all patients. Radioisotopes from hospitals involved in nuclear medicine generally have some leakage into sewers, although most of this type of radiation has a short half-life cycle.

In the case of colleges or universities, radiation develops in laboratories if radiation type equipment is used in a physics lab or otherwise. In cases where nuclear experimentation occurs in universities or colleges, the problem is enlarged somewhat. Seepage of radiation fall-out into water is the chief problem at the large institutions where this equipment is employed.

Electric Power Industry

The thermal method of generation of electric power generates steam which is exhausted to condensers where water is used to cool steam and picks up heat. This goes back to river or lake. SO₂ caused by burning coal goes into the air. Coal used for thermal heat is ground fine and

blown into the hot furnace which gets bottom ash and fly ash, some of which of the latter goes into the air. This fly ash goes through the precipitator which removes 99% of the fly ash. The fly ash and the bottom ash which have been removed by the precipitator go to a pond. An intense program of monitoring is conducted to determine the type and extent of pollutants emitted - how much ash into air and how much temperature of the river rises.

Nuclear power plants emit radioisotopes which go into the atmosphere which modern technology reduces to meet AEC standards. Reactors contain heat elements in the form of uranium oxide. The plant burns up fuel elements. After they have been in operation for a period, some of the rods are removed and replaced by new rods. These will be taken to a reprocessing plant and the unused uranium will be reclaimed to be used as fuel plus other radioisotopes. The biggest problem of reprocessing plant is liquid waste. The typical procedure is for liquid waste to be incorporated in cement and then buried. This waste is a source of radiation. Electric power plants operate water monitoring equipment and radiological monitoring equipment in order to determine degree of pollution. Chemical analysis is done with water, and biologists also sample water and air to determine nature and extent of water pollution and its effects on fish and other aquatic life.

Construction

OSHA requires hard hats and other dangers or health factors are guarded against. The big factor in construction is cleanup for beginning of the project. This includes grading and removal of trees. Another problem is location of utilities. Often the contractor must relocate temporarily the utilities and then later rehook them up.

Cleanup occurs during the entire process of construction and all crafts engage in this as part of the normal function. Each craft is responsible for clearing up its particular waste materials. Left-overs are assembled in some spot and reusable materials recovered. Other left-overs are put in compactors, except concrete, and hauled to the landfill. Concrete supply companies have more dangerous and complex problems. Supply trucks are rinsed of concrete in the concrete yards and later the accumulation is hauled to a landfill. In case of OSHA even more care must be exercised with the concrete supply companies. Workers are required to wear hard hats; conveyor belts are guarded; height of ladders above ground is limited; open pits are enclosed or grating is used over them. State Highway permits only twenty thousand three hundred pounds per axle on concrete trucks and they are in constant process of inspecting these concrete trucks.

Construction companies that specialize in sewers and water line construction and highways, clear off trees and do grubbing. Some also prepare approaches for highway jobs, parking lots, homes, etc., by filling in and building up, having to haul in dirt for filling.

Nondurables Manufacturing

Air Pollution: Of the fourteen companies interviewed in this section of the report, only three reported any significant problems with air pollution. And only one of these had a major problem. This company is a wood pulping company that makes pulp for raw material for rayon, cellophane, plastics, etc. Air pollution in this company develops from use of major cooling chemicals used in the wood pulping process. But these chemicals

are collected mechanically, evaporated and burned. There is an odor left, however, that dependent on inorganic materials with proper chemical treatment can be recovered and be reused for cooling.

In the burning, material associated with chemicals escape and develops as a very fine particulate. These fine particles must be recovered to meet State requirements for particulate emission control. Of the other two companies concerned with air pollution, one reported a minor pollutant from dust and sulphur dioxide. The third company reported also a minor problem with dust in a manufacturing process but kept it out of the atmosphere. In this company solvents and finished products also get into the air in minor quantities.

Water Pollution: Emulsion products develop from working down paint pigments. In water treatment stations the pH is adjusted down below 5. Then the waste is tested with flocculate to cause material to settle to the bottom. This material is then pumped out of the tank once monthly and taken to a landfill. The water then is released and flows into the county manhole which the county monitors for effluent to determine if it is at an acceptable level.

A meat manufacturer gives large pieces of meat to a dog food manufacturer but the small particles which flow into the septic tank during the washing and cleaning up operation at night are held in a septic trap, which is cleaned out once weekly by a septic tank company.

Water from an industrial chemical operation picks up two contaminants - suspended solids and sulphur solutions. The solids are removed as sludge and hauled to the landfill.

The wood pulping operation previously mentioned in connection with the formation of raw materials for rayon, cellophane, plastics, etc., also pollutes large quantities of water. But the water is treated before

discharge to meet State standards through clarification, whereby the effluent is run through a device that settles the suspended materials. These are settled and hauled to a landfill. The other pollution problem concerns B.O.D. which must be reduced to an acceptable level before the water can be discharged into a stream. The effluent is held in ponds and is aerated to enable bacteria to consume organic material and bring water to an acceptable level in terms of B.O.D..

In a paint operation a settling tank is used under the tank washer to wash out materials. The deflocculator is then used to knock solutions out of water that are accumulated in a tank. An outside contractor hauls this accumulation to a landfill.

In a news printing operation water pollution is cleaned out by use of chemicals and the water is returned to the sewer in its original state. This proves to be a minor problem of water pollution.

The tanning operation creates waste water which includes tanning materials and waste. But the company uses a process to screen air particles and solids. Each day's run is adjusted to the required pH level. Then flocculant is added which picks up minute particles that settle to the bottom of the tank. The effluent is then subjected to biological oxidation in an aeration tower. Then it goes through a settling process which removes solids. The effluent is then put into an aeration pond for 36 hours, after which water due to bacterial action meets standards for discharge into a nearby stream.

OSHA - Occupational Safety and Health Act: All companies in study were very conscious and observant of occupational health safety standards. Dangerous machinery was covered or bracketed. Where noise was high tests

were made on hearing of workers and where needed ear plugs prescribed; and some were working on methods to improve machinery in order to reduce noise. Companies follow one of three alternative in observing OSHA standards: a) safety engineer full-time; b) safety engineer part-time; c) area committees of workers and foremen or supervisors who monitor safety hazards and make recommendations at regular intervals for improvement.

Waste: All companies had some form of waste such as paper, boxes, waste paper and sometimes waste products from manufacturing process. The typical method was to collect all waste in plant by designated workers who deposit these materials in a dumpster or a compactor. A contractor then hauled off the materials here, either in the dumpster or the compactor. Others permitted individuals to pick up collections of waste and haul off for resale or for use in further manufacturing process. An example of each of these cannot be given. In the case of meat scraps from a meat packing company, this was accumulated and given to a firm which picked it up to be made into dog food. The collections of cardboard and boxes and sometimes waste paper were accumulated in a spot and a young man came by once weekly and picked this up free of charge from the company and transported it to a recycling company which converted the paper materials including boxes into usable materials again.

Durables Manufacturing

Air Pollution: This is not a serious problem for most of the companies studied in this category. One of the companies, however, did take samples of air at regular intervals to determine how its deposits which were relatively minor in terms of smoke, were affecting the purity of the air. It was mainly trying to determine the quality of the air. This company also

maintained a weather station which determined wind direction, velocity, and also, precipitation. Through its methods of analysis it determined the content of clean air and how much the company had added to it. A second company indicated that air pollution was mainly limited to the shop and was confined to such things as dust, melting smoke and fumes from burning stainless steel.

Waste Water: Industrial waste water is a more serious problem. One plant filters industrial waste water through three pits, with monitoring for the pH level at each pit. In the monitoring process, if the acid is either too high or too low it is offset by adding acid or a caustic. If after the water arrives at the third pit the pH is still not correct, the filtering process through the three pits is repeated. And this may be repeated several time before the water is sufficiently cleaned and the pH level is satisfactory for deposit in a stream. In the general process, that of filtering, the third pit deposits waste in a pipe which takes it to the clarifier. Here Polymer is introduced and the waste deposited and when it is deposited it looks like cottage cheese. These solids settle on the bottom of the clarifier and go through pipes to a storage tank; and then to a filter press. Solid waste in the filter press is dumped into a truck and hauled to a landfill.

In a second plant, industrial water originates in booths for use of water scrubbers. Waste is recirculated from under the booth and goes to the tank that is treated chemically to separate and deposit sludge which is blown into a sludge container. Liquids left, if at an acceptable level sufficient to meet the standards of the county, are discharged into the sanitary system.

OSHA: In one company measurements are made for noise level and also for toxic substances. Hearing of all workers is tested and areas are surveyed for noise level and to seek remedies if it is high. Industrial hygiene falls to the responsibility of the area supervisor who looks after the safety of his men. He makes regular inspections to determine dangerous conditions or causes of dangers and this information is coordinated with the maintenance division, which will take steps to remedy any dangerous situation that has been reported by the area supervisor.

In a second plant OSHA environmental health and protection are inter-related. Engineers work on noise control and have ear mufflers or mufflers for the tools. They inspect the work area and equipment continuously to eliminate noise.

In a third plant noise is taken care of by recommending, and in most cases, requiring men to wear ear plugs. Workers are tested for acuity levels. An engineer on a part-time basis works on methods to reduce noise level of machines, concentrating on particular machines and in a particular work area. All machines in operation have guards on them to keep workers from falling into moving mechanisms or gears.

Solid Waste: Solid waste occurs in several of these companies. Some is solid waste metal that can be remelted and reused in the plant. Dust created in the electric melt shop is collected and hauled to the landfill. Metal slag is sorted by outside contractors for reuse. Non-usable slag is hauled to a landfill.

In a second company scrap is collected in bins throughout the plant. These bins are portable and are moved to a railroad siding where they are dumped and hauled away to a recycling contractor. Stainless steel is accumulated and held in staging area until sold on contract to some industrialist in another part of the country.

A third company accumulates boxes, papers, etc., in a compactor, which are sold for recycling. Other trash and debris are collected in a second compactor and hauled to a landfill. Waste metal collected in this process is accumulated and then sold to scrap dealers.

Warehousing, Large Retailers, Etc.

Two major types of warehousing were studied. A grocery warehouse and a general merchandising warehouse. Neither operation is bothered with air and water pollution. Both, however, have collections of cardboard and waste paper which are placed in a compactor and resold for recycling. The grocery warehouse has in addition, produce trimmings which are placed in a compactor and are hauled away to a landfill.

A service outfit in Atlanta manufactures balers for paper and cardboard. These balers are sold to grocers and other retail outlets. Waste paper and cardboard are collected by the staff in these grocery outfits or otherwise baled and held for the service company to pick up and sell for recycling. Other wastes from the grocery which consist of vegetables, waste and meat trimmings are placed in a dumpster and hauled to a landfill. Where a grocery does not own a baler, all waste including boxes, paper, vegetables and meat trimmings are placed in a compactor which is picked up twice weekly and hauled to a landfill.

A large retail merchandise operation, another type that was studied, depends on the compactor entirely for all of its waste accumulation including also metallic trade-ins which are compacted. A contractor picks up the compactor every five days and hauls it to the county landfill. Waste from restaurant operations, including cans, food and semi-liquids are also compacted and hauled away by contractors. But these are assembled into sealed plastic bags and are readily transported to a large compactor. This outfit plans to add a small commercial compactor for daily use for restaurant wastes.

Hotels and food service establishments grind light, disposable foods and discharge into sewers. Trash in rooms at hotels and restaurants are collected by janitorial force and deposited into dumpster. The more bulky left-over foods and food wastes are collected by kitchen help, often in large garbage cans with liners, loaded on inside hand trucks, and hauled to dumpster. The dumpster contents are hauled to landfill either by contractor or some service establishment.

Transportation

Industrial waste water pollution is the major problem. In an airlines company it originates in the maintenance and plating shop. Treatment involves breaking up the emulsion, settling and removal of solids. The treated water is then discharged in a stream while the solids are hauled to a landfill. For a railroad, water pollution also emanates from large shops and the maintenance program which generates large amounts of waste water. Also when an engine stops to be refueled, spillage of oil occurs. A spillage facility, a log concrete tank trip floats out the oil which is skimmed off. Water is then discharged in a stream.

Waste collection for the airlines consists of paper, metal and wood and a variety of debris. All of which is deposited in a compactor, where it is picked up by a metro waste collector and carried away to a landfill. The metal, however, is assembled separately at one point for resale to a contractor who reclaims. In the case of railroad, solid waste collection is done in-house. Some shops collect waste and then dispose of it in landfill, generally by a dumpster contractor. In the trucking operation, truck is swept clean upon arrival at station. The freight depot carries workers on a part-time basis to sweep clean and clear out boxes and other debris. This is deposited in the dumpster and then it is hauled away by a dumpster contractor to a landfill.

Waste Collection And Disposal

A considerable number of companies specialize in providing dumpster and/or compactors for companies to deposit waste materials in. Then with special types of equipment, waste from dumpster is removed and hauled to the landfill, or to the incinerator by these waste disposal companies. The compactors may be sent to a paper recycling outfit or they may also be dumped in a landfill.

One company which specializes in collecting waste paper cardboard, boxes, IBM cards, and in effect everything of a cellulose fiber content, represents a unique sort of specialized activity. It sorts and bales the waste and sells to mills for recycling. The fact is the entire activity of a corporate enterprise in Atlanta is a point of great interest.

A septic tank company specializes in clearing septic tank traps for some companies, but spends most of its efforts in clearing septic tanks in residential areas; removes roots and other objects that get into systems to fill lines; and also when necessary, clean lines from house to tank.

One interesting operation includes the manufacture and sale of balers to retailers for collection and baling of paper and cardboard. This company picks up these baled collections of waste paper and cardboard and sells for recycling. It represents two activities, first the manufacture of balers and second the collection of baled materials for recycling.

In some cases individuals specialize in removing stocks of cardboards or boxes and waste paper from companies on a regular basis, say once a week. They then resell this waste paper and cardboard to recycling companies. It is known that some of these individuals spend their entire time

collecting such waste and delivering it for sale to companies for recycling, thus earning a living out of this specialized activity.

Demolition Work

Demolition involves demolishing old buildings and structures to vacate space for a new building enterprise. Construction demolition offers a range of services from outhouses to major hotels and skyscrapers, including some of the highest wooden buildings in the world. Included also, are smoke stacks, bridges; and residential, commercial and industrial structures of all sizes. It includes also, partial demolition for remodeling and refurbishing work. Recovery of materials is a factor in cost of demolition but it is not as important as twenty years ago, because of the relatively larger increase in the cost of labor. However, materials covered include all kinds of scrap metals. Structured steel can be recovered for reuse. Where scrap iron and I-beams are involved scrap dealers buy and process for resale to steel industries. Cranes with demolition balls weighing 3000 to 6000 pounds, crane loaders, caterpillars with buckets, dump trailers, flat bottom trucks, etc., are some of the exotic heavy equipment involved.

Not so closely related but highly important to the preservation of resources are the demolition processes involving abandoned automobiles. These are hauled to wrecking yards by wrecker or ramp truck. The wrecking process involves a heavy tractor with a type of fork attachment on the end which jerks motor, transmissions and gasoline tanks off the automobiles as a starting process. A crew of two men with power equipment removes the wheels. Remaining part of automobile is then placed into a presser where it is pressed flat. Four pressed cars make a bundle. These are loaded onto a flat bottom truck and hauled to a shredder machine in

another part of town, which cuts up the vehicle so it can be reprocessed as steel. The gas tanks, small pieces of metal, tires and wheels are hauled to the city dump. Motors, including transmissions, are shipped to an Alabama steel mill.

Waste Recycling or Recovery

A large Atlanta enterprise specializes in preparing and shipping all kinds of metals for recycling. It dismantles railroad cars, cuts up and ships scrap iron. Makes briquettes from cinders and cut offs from stamping mills. It segregates, processes and ships all types of nonferrous metals, including aluminum, copper, brass, etc. Examples of the exotic types of equipment owned and operated by this enterprise include the automobile shredder, overhead traveling crane on rails, crawler cranes, pedestal cranes, shears varying from 750 to 1000 tons shearing force of the cutting blades; and machines that break railroad ties into small pieces.

Another form of recovery that is just short of recycling includes a returnable bottle process which is used by the various companies preparing soft drinks. In order to qualify as a returnable bottle, the bottle must weigh at least 16 ounces and not have any defects anywhere. The bottles are usually returned by the man making the delivery of soft drinks to a retail outlet. When the delivery truck of bottles arrives at the plant, the products are unloaded by a fork lift truck operator who uses the fork lift truck to pick up the pallets of bottles and then they are sent through a series of steps to prepare them for reuse . These bottles are first sent to the depalletizer. When they come out of the depalletizer, the decase operator lifts bottles from cases and then they go

into a bottle washer, being automatically placed there. At the end of the bottle washing line an inspector looks them over to find any defects in the bottles, such as broken bottles or foreign types or even green bottles. Green bottles are not used because there is not a demand for them sufficient to carry them through this process. All rejected bottles, whether by the inspector at the end of the washing line, or by an electric eye, or by the worker on the depallatizer, or the decaser or otherwise, go into a chute and are deposited downstairs in a large container or bin. Then they are broken up and a contractor from a disposal company comes and picks them up and carries them to a recycling plant.

At the recycling plant, broken bottles are ground up into fine materials and are mixed in with raw materials for regular bottles by the batchman. The batchman through various control levers, controls the type of bottle that comes out of the production line.

Another type of recycling operation involves blending and cleaning textile waste materials. Also included are trimmings from the rug industry and cuttings from garment industries. The recycling process is such that the fibers in these waste materials are returned to a fiber state where they can be reused again in a textile industry to make clothing, or other types of spun materials. As a side product, the company makes carpet cushions from rug trimmings which are run through various machines at the plant. Waste thread and trim from the mill are returned to a form where it can be used for stuffing the carpet cushions.

One company in the Atlanta area specializes in recycling waste paper of all sorts in order to obtain from the manufacturing process

paper board of various kinds. The company obtains 350 tons of waste paper per day and is able to turn out 310 tons of paper, cardboard, etc. In order to use this material for recycling, however, the company specifies that the waste be free of cellophane, foil, laytex or similar materials.

The manufacturing process is a simple one. The waste paper is broken down into individual forms of fiber and reformed into paper board in sheet or roll form, which is then sold to box manufacturers, tube manufacturers or others for innumerable uses.

There is an entire operation in the lower part of the state which is dependent upon using waste materials to derive chemicals, some of which are insecticides, but these chemicals are widely used in paints and otherwise. The two waste materials that are used by this plant are pine stumps and pulp mill liquor or the turpentine fraction that comes as a by-product from the pulping process.

An aluminum recycling operation investigated obtains waste aluminum from industrial plant off-fall. This comes from the shaping process, trimmings, rejects and obsolete materials. The local company prepares these materials for smelters by sorting according to type and then packaging them in bales or briquettes of aluminum waste which are shipped to industrial users either by truck or rail car.

JOBS AND JOB FUNCTIONS IDENTIFIED WITH ENVIRONMENTAL
PROGRAMS BY INDUSTRIAL CATEGORY

I. REGULATORY AGENCIES

A: FEDERAL GOVERNMENT

1. OSHA Monitoring

SAFETY OFFICER: He would be expected to do much the same as the Safety Engineer, however, at perhaps a somewhat lower level; and under the supervision of the Safety Engineer. In doing this work, checking safety hazards, etc., he would not be expected to have the engineering background and abilities. He, therefore, would draw from experience, records, publications, etc., for his basic knowledge on how to proceed in inspecting machinery or equipment in industry and other places that hold potential hazards.

SAFETY ENGINEER: He is responsible for evaluating potential safety hazards and making a professional judgement as to whether feasible engineering has been used to abate or correct the potential hazards in the work place. He also might evaluate a piece of machinery or equipment as to whether a potential hazard could be engineered out.

INDUSTRIAL HYGIENIST: His is more technically oriented than any of the other two jobs. He has the ability to recognize the potential of occupational diseases as a result of a man's working environment. He must be able to evaluate feasible engineering efforts to control potential hazards as well as the possibilities of change or processes, i.e., isolation and/or processes and such control measures as toxical exhaust ventilation, barriers, and enclosures.

2. Environmental Protection Agency,
Surveillance and Analysis Division

SANITARY ENGINEER, JR.: Performs assigned functions in field involving sample collections, evaluation of where to collect samples. This also involves reconnaissance of streams of treatment plants. He is responsible, also, for the evaluation of industrial processes to see where waste comes from. Often will work with technicians in their functions. In laboratory he is concerned with preliminary interpretations of chemical and field data that has been collected, and preparing reports of the environmental significance of the pollution measured; and to some extent, recommends solutions.

SANITARY ENGINEER: Supervises field studies, approves study plans of junior Sanitary Engineer. He determines higher areas that have to be studied or surveyed. And he guides the report preparation. He coordinates the field activities and findings to serve the needs of the regional headquarters in Atlanta.

PHYSICAL SCIENCE TECHNICIAN: Receives and logs in samples and maintains custody for testing where this is required.

PHYSICAL SCIENTIST: Operates very extensively, involving all the backup activities, including water sampling, boat handling, equipment servicing. He is responsible for preparation of bottles and labeling samples and in performing field analysis where this can be done in the field. If it cannot be done in the field, it is sent to the laboratory for analysis. In the laboratory, he assists engineers in preparation of data for reports; and, also, in assembling and preparation of equipment for field exercises.

CHEMIST: Receives the samples, prepares for analysis and gives appropriate samples to specialty team of chemists and either performs or supervises non-specialty analyses. He also performs quality control checks to insure accuracy and precision of his analysis. He maintains records of his analyses and checks the results which he, in the end, delivers to the engineers.

MICROBIOLOGIST TECHNICIAN: He assists the Microbiologist in preparation of media and equipment used in lab for analysis.

MICROBIOLOGIST: Performs bacterial analyses both in field and in the main laboratories, and prepares a report of these findings for inclusion in the main, combined report of the environmental agency.

BIOLOGIST: Conducts field surveys determining numbers and identity of species in the field. Collects biological samples for further identification and enumeration in the laboratory. They sometimes prepare reports of their findings as part of the overall report of the environmental agency. They also, sometimes, prepare a separate biology report. The specialties involved in this field are: aquatic biologists, phytoplankton biologists, bioassay biologist, and fisheries biologist. The Bioassay biologist determines mortalities in the field as well as in the laboratory. The studies done in the field are to determine the toxicity of the composite streams of water; and in the lab, the tests will determine the toxicity of particular chemical compounds, using the bioassay technique.

WATER MONITORING TECHNICIAN: He services monitors in the fields; repairs them in the laboratory and prepares preliminary data as necessary for the data processing technician to insert this data into the Storett system.

ELECTRICAL ENGINEER: He designs and supervises the servicing of field monitors for water pollution. In addition, he will oftentimes service laboratory equipment, and/or design new components for particular needs.

DATA PROCESSING TECHNICIAN: He is responsible for preparation of data for card punching, and operating the computer terminals.

DATA PROCESSING SPECIALIST: He coordinates the data system of the 8 states in Region IV and supervises the preparation of data from these states and from the federal agencies from the Southeast for processing into the Storett system.

PROGRAMMER: Specialist who solves problems by writing programs to work with the overall agency computer system. He has more detailed knowledge of the computer and its inner workings and more detailed know-how to write programs which will run, than other programming specialists.

MATHEMATICAL MODELER: He takes engineering and chemical data and projects pollution under critical conditions and from this determines controls needed to limit the severity of pollution under the assumed critical conditions. Often will have to go to the programmer for detailed help.

3. Water Testing (Salt)

HYDROLOGIC TECHNICIAN: He is responsible for gathering basic data that the hydrologist uses. These include water levels, discharge of wells, certain field chemical determinations, and maintains equipment - ground water level records, geophysical water loggers. He monitors and is the primary operator of this equipment. He is responsible also for operating and maintaining water quality monitors. Records temperatures, dissolved oxygen, specific conductance and pH. Those who work with surface water maintain steam gauges, make discharge measurements and some field chemical determinations.

HYDROLOGIST: Main function is to study the geological framework and movement of water within this framework. He also deals with quality of water. Does geologic investigation of surficial deposits, sub-surface structure and the stratigraphic relations, i.e., which rocks are aquifers (or water bearers), and those rocks which do not permit water to flow at an appreciable rate. Also determines which rocks produce good water, and the differences in quality of water from different formations. Determines quantitative relations of water and what happens if there is discharge from these formations. May analyze by making aquifer tests. Observes discharge of water as accurately as possible and notes effect on water levels to determine transmissivity and co-efficient of storage. He also has the responsibility of working with surface water dealing with discharges in rivers and creeks, etc. He prepares reports on studies he has made.

B: STATE GOVERNMENT

1. Environment

ENVIRONMENTAL TECHNICIAN I: Assists professional sanitation personnel in implementing a comprehensive environmental sanitation program, and receives training and instruction in the techniques of sound public relations and the methodology of sanitation inspections. Takes water and milk samples for analysis. Collects mosquito larvae and adult mosquitoes, recording necessary data on mosquito breeding areas. Inspects premises for presence of rats. Maintains equipment and keeps necessary inventory of all items necessary to a program of insect and rodent control. Investigates complaints regarding stray dogs and investigates compliance with inoculation and tagging of dogs. Disposes of unclaimed animals. Applies spray and gas; digs and cleans ditches; mixes rodenticides and insecticides; places rodent baits; and dusts for rodent fleas.

ENVIRONMENTAL TECHNICIAN II: Assists professional personnel in carrying out field inspections to determine compliance with applicable regulations and ordinances. Establishes and inspects sample stations. Makes routine laboratory analyses to detect presence of selected environmental contaminants. Tabulates and keeps records of laboratory results and field observations as directed. Assists professional staff members in training less technically qualified personnel. Inspects food service establishments, schools, kindergartens, tourist courts, housing, swimming pools, and trailer parks for sanitation and safety. Inspects septic tank systems and issues permits if requirements are met; makes sketch drawings for permanent record. Supervises and participates in an insect, rodent, or animal control program. Answers nuisance calls and complaints and exercises judgement in satisfying the public in making appropriate referrals to other services.

ENVIRONMENTAL TECHNICIAN III: Performs sub-professional duties of average difficulty in conducting a specialized or comprehensive environmental sanitation program or in conducting specialized or comprehensive environmental studies or determinations. Inspects eating and drinking establishments, food processing plants, food vending machines, retail food stores, abattoirs, poultry processing plants, meat and fish markets, public places, and swimming pools to insure compliance with established ordinances and regulations governing sanitation. Investigates routine complaints of nuisances which may constitute a public health problem and/or a violation of certain types of environmental regulations. Provides advice and assistance to local governmental officials, industry, builders, food handlers, and individual citizens on problems of sanitation. Supervises routine field and related laboratory work of other technicians. Assists professional personnel in environmental studies and supervises selected portions of the study in the absence of professionals. Makes routine field determinations as directed and reports results to supervisor or other appropriate personnel for analysis. Trains lower level personnel in techniques of professionally functioning in the capacity of Environmental Technician.

ENVIRONMENTAL ENGINEER I: Performs a variety of duties of average difficulty as a trainee in the field of Environmental Engineering, receiving instructions and guidance from experienced engineers to prepare for advancement to more responsible professional positions. Assists in the preparation of technical reports and reviews plans and specifications of environmental health and engineering structures, systems, operations, and establishments in the field of assignment. Makes limited inspections and assists in field work on public health surveys and investigations. Assists in the set-up and operation of field laboratories to determine the nature and extent of pollution or contamination. Performs special assignments of elementary difficulty relating to any phase of environmental engineering and prepares for more important assignments by observation, study, on-the-job training; review of reports, and increased participation in assignments of increasing difficulty and responsibility.

ENVIRONMENTAL ENGINEER II: Performs professional level environmental engineering duties in one or more engineering programs of the Department of Public Health. Investigates and makes reports and recommendations in such environmental engineering areas as air pollution, food and milk control, general environmental sanitation, housing, industrial hygiene, institutional hygiene, ionizing radiation, radiation; rural and recreational sanitation, shellfish sanitation, solid waste disposal, swimming pools and bathing beaches, water resources, and water supply. Confers with local industry officials and the general public relative to environmental engineering problems. Instructs and supervises the work of sample collectors. Prepares technical reports on the results of various studies and maintains appropriate records to provide continuing data for program planning.

ENVIRONMENTAL ENGINEER III: Performs advance professional, technical, supervisory, or administrative duties of considerable difficulty in the field of environmental engineering. Participates in or maintains supervisory control over the technical aspects of environmental engineering activities, such as air pollution, food and milk control, general environmental sanitation, housing, industrial hygiene, ionizing radiation; rural and recreational sanitation, shellfish sanitation, solid waste disposal, swimming pools and bathing beaches, vector and rodent control; waste water collection and treatment, and water resources supply. Provides technical assistance and advice to public, public officials, industrialists, architects, and consulting engineers. Supervises subordinate engineers and other professional and clerical personnel engaged in environmental engineering activities. Examines and evaluates plans and specifications for environmental engineering structures, systems and operations.

ENVIRONMENTAL ENGINEER IV: Performs professional administrative, or supervisory duties as Chief of Section over a specialized function in a field of environmental engineering. Develops and administers a specialized program in the field of environmental

engineering. Gives leadership, advice and guidance in the area of environmental engineering to local officials and the general public. Organizes an effective training program for personnel within the assigned area of responsibility. Provides supervision and technical advice to engineers and other employees engaged in surveys, reports, reviews of operations; and the making of recommendations for approval of plans and specifications.

SECTION CHIEF, ENVIRONMENTAL PROTECTION DIVISION: Plans, organizes and directs on a statewide basis one of the major sections of the Environmental Protection Division such as Land Reclamation, Solid Waste Management, Air Quality Control, or Water Quality Control. Within the assigned section, establishes a positive program to prevent and abate pollution problems by planning, organizing and administering the operational activities of the section. Sets priorities for legal enforcement, insuring that all laws, rules, regulations, and standards of the assigned section are equitably enforced. Sets policies and procedures for the section within the framework of the Environmental Protection Division and the Department of Natural Resources. Prepares legislation relating to the section for consideration by the General Assembly; testifies at legislative hearings and answers all questions regarding proposed legislation.

DIRECTOR, ENVIRONMENTAL HEALTH SERVICE: Plans, organizes and directs one of the environmental health services within the State Health Department. Directs the conduct of surveys, studies and investigations; and other actions necessary to detect, identify and control pollutants resulting from raw materials or manufacturing processes. Develops a statewide control program providing consultative services and pilot programs to local jurisdictions in relation to a specific environmental health service. Provides advice and assistance to local public health personnel in the development of local environmental health programs. Gives speeches to both professional and lay groups on matters relating to environmental health. Inspects plant construction for compliance with approved environmental health practices.

2. Pesticides

PESTICIDE FIELD AGENT I: Works under direct supervision of the Pesticide Field Agent II in enforcement of the Georgia Pesticide Use & Application Act, and certification of pesticide applicators pursuant to the Federal Environmental Pesticides Control Act of 1972, in cooperation with the Environmental Protection Agency. Thoroughly familiar with assigned area and knowledgeable of applicators and operators and must periodically check to insure their compliance with licensing requirements. Inspects applicators' operations to determine if required records are being maintained and to insure that chemicals are being properly stored and safely disposed of. Periodically inspects application equipment. Samples materials being applied and submits to laboratory for analysis. Investigates and reports to Field Agent II on complaints involving claims of damage from misuse of pesticides. Investigates and reports to Field Agent II on complaints involving

use of ineffective materials or methods of application. Knowledgeable of the properties of agricultural pesticides and provides information and assistance in cases of spills and poisonings. Assists when requested in the sampling of pesticides which are offered for sale. Serves as liaison between Agricultural Chemical Industry, Pesticide Applicator and Grower.

PESTICIDE FIELD AGENT II: Works under supervision of Agriculture Section Chief in supervising and providing on-the-job training to Field Agents I to insure compliance with requirements of the Georgia Pesticide Use and Application Act and the Federal Environmental Pesticide Control Act of 1972. Thoroughly familiar with Georgia Laws and Federal Acts pertaining to pesticides and their application. Communicates effectively with cooperating personnel from the Environmental Protection Agency. Acquainted with and to regularly communicate with personnel in other state agencies whose functions are interrelated with pesticides, i.e., Solid Waste Disposal Section of Department of Human Resources. Trains and supervises Pesticide Field Agents I in performance of their routine duties in field. Assists Field Agents I in investigation of complaints alleging misuse of pesticide applicators in securing the safe disposal of pesticides and contaminants. Provides information and assistance in emergencies, i.e., pesticide spills and poisonings.

PESTICIDE FIELD AGENT III: Under supervision of Agricultural Section Chief, supervises and provides training for personnel in assigned regions of state to insure compliance with requirements of the Georgia Pesticide Use and Application Act and the Federal Environmental Pesticide Control Act of 1972. Duties are complex and technical. Interprets and applies Georgia Laws and Federal Acts pertaining to pesticides and their applications. Communicates effectively with cooperating personnel from Environmental Protection Agency. Knows and regularly communicates with personnel in other state agencies whose function is interrelated with pesticides, i.e., Solid Waste Disposal Section of Department of Natural Resources. Trains and supervises Pesticide Field Agents in performance of their routine duties in the field. Reviews and seeks solution to problems referred from the field. Recommends to and assists state office personnel in formulation and implementation of new practices and procedures necessary for effective enforcement. Assists Agricultural Chemical and Pesticide Applicators in securing the safe disposal of pesticides and containers. Provides information and assistance in emergencies, i.e., pesticide spills and poisonings.

AGRICULTURE SECTION CHIEF OF PESTICIDE SECTION: Examines applicants and issues licenses to Pesticide Applicators and Operators. Assists in recruiting and training of and supervises Pesticide Field Agents in the enforcement of the Georgia Pesticide Use & Application Act and the new Georgia Treated Timber Act. Cooperates with the Environmental Protection Agency in joint enforcement of certification of pesticide applicators under the Federal Environmental Pesticide Control Act of 1972. Works under direct direction of the Division Director for Pesticide Regulation.

3. Pollutants

LABORATORY AIDE I: Performs duties of routine difficulty in the preparation of routine laboratory supplies and in manual cleaning. Dusts laboratory bench areas, cleans sinks, and cleans and defrosts refrigerators. Assists in preparation of a variety of specimen collection outfits. Washes and/or sterilizes soiled and contaminated glassware and equipment; and prepares articles for sterilization in autoclave.

LABORATORY AIDE II: Performs duties of routine difficulty in laboratory test preparation and maintenance. Maintains supply of equipment used in laboratory unit. May assist in preparation of specimen for testing. Performs custodial services for laboratory quarters and sterilizes special areas. Maintains laboratory animal colony and quarters. Opens a variety of animal heads, removes brains; and delivers to laboratory for examination. Performs other laboratory duties such as packing and shipping of supplies, refrigerating or incubating materials, or placing articles in autoclaves for sterilization.

POLLUTION CONTROL SPECIALIST I: In a training capacity, performs progressively responsible duties in the physical, chemical, or biological analyses of water, land, and air pollutants. Under close supervision, participates in water quality investigations of lakes, streams, and estuaries. Assists Pollution Control Specialists performing analyses of high degree of difficulty. Becomes familiar with the use, application, and maintenance of the instrumentation involved in the chemical, physical, and biological analyses of water, land and air pollutants.

POLLUTION CONTROL SPECIALIST II: Performs physical, chemical or biological analyses on water and air pollutants; or participates in evaluations of land reclamation areas. Assists more experienced personnel in the assimilation, interpretation, and data relevant to the control and abatement of pollution in the areas of water quality, air quality, solid waste. Duties are of above average difficulty and are performed under general supervision. Laboratory Services: a) Interprets physical and chemical factors which influence the water quality of lakes, streams, and estuaries; b) identifies and quantifies chemical composition of environmental samples by instrumental analysis; c) provides technical input to the engineering and biological staff regarding the chemical factors of samples taken from the field. Regulatory Services: a) Makes limited inspections and assists in field work on surveys and investigations; b) assists in preparation of technical reports incorporating multi-discipline inputs; reviews plans and specifications, systems, operations, and establishments in the field of pollution control; c) prepares for more responsible assignments by observation, study, on-the-job training, review of reports; and participation in assignments of increasing difficulty and responsibility.

POLLUTION CONTROL SPECIALIST III: Performs, or supervises the performance of laboratory determinations of biological or chemical contaminants in the water or atmosphere. Laboratory Services: a) Provides training for subordinate Pollution Control Specialists in performing the laboratory determinations of toxic biological, atmospheric, and raw material contaminants; b) supervises specific phases of chemical or biological examinations such as organic chemistry, inorganic chemistry, or bacteriology; c) prepares comprehensive technical reports relating laboratory interpretations and results to particular pollution control projects. Regulatory Services: a) Participates in the planning and implementation of a statewide program of pollution control; may supervise subordinate technical personnel; b) visits communities, industrial waste sites, land reclamation areas, or other areas to study and evaluate pollution problems, recommending corrective or control measures as needed; c) assists in the preparation of comprehensive technical reports by providing data and data interpretation regarding toxic biological, atmospheric, or raw material contaminants.

POLLUTION CONTROL SPECIALIST IV: Directs one of the major laboratories in the Environmental Protection Division of the Department of Natural Resources, or provides supervisory control over the technical aspects of selected pollution control activities in the regulatory services of the Environmental Protection Division. Laboratory Services: a) Directs all laboratory analyses within an assigned area such as water quality, water supply, or air quality; b) directs all training activities of professional personnel in the laboratory section; c) develops and coordinates all professional and administrative activities in the laboratory section. Regulatory Services: a) Serves as Chief Consultant in a specialized field of pollution control such as hazardous waste control; municipal water supply or waste water treatment; industrial, air, or land pollution; or industrial waste management; b) assignment and supervision of the work of subordinate pollution control specialists and other professional, technical and clerical personnel engaged in pollution control activities; c) directs and supervises activities in a specific pollution control project such as a river basin study.

4. State Highway

AGRONOMIST: Has the responsibility of establishing herbicide control and grass burning-outs under guard rail through use of chemicals; also, use growth retardants. He is responsible also for planning for tree location and for grass cutting slopes, or covering where nothing else will grow.

II. LOCAL GOVERNMENT REGULATION AND SERVICES

A. COUNTY GOVERNMENT

1. Environmental Control

SANITARIAN: Conducts surveys of housing in incorporated areas, determines extent of deterioration, lack of facilities, inadequate maintenance, unsafe and unsanitary conditions, extent of overcrowding and overall conditions of premises inspected; conducts conferences with owners and occupants of housing violations or other unsanitary conditions; maintains log of re-inspections and progress made; inspects food handling establishments for compliance with rules and regulations for food service; discusses findings with management and makes report of inspection; inspects report of complaints concerning unsanitary conditions; discusses findings with persons involved and renders report to supervisor. Appears in court as required when persons are cited to appear in recorder's court for code violations.

SENIOR SANITARIAN:

A. Checks complaints concerning general health violations for validity; determines possible solution for health of community and rights of violator; issues court summons if necessary, and follows up inspections to determine if violation has been rectified.

B. Investigates reported water pollution, checking at site to verify complaint of pollution; traces to source and determines cause; determines type and effect of effluent by chemical and biological analysis; takes appropriate action to correct if hazardous; maintains laboratory equipment and runs analysis; plans review of water and waste treatment facilities; and investigates pollution and contamination of water sources.

C. Investigates air pollution, participating in surveys or studies to detect pollutants or contaminants in the air; assists in setting up and in the operation of field laboratories to secure and analyze samples to determine nature and extent of pollution; participates in collection and interpretation of data; maintains work records and prepares draft reports; investigates condition relating pollution to possible pollution of the air; and determines the degree of pollution from emission sources.

SUPERVISING SANITARIAN: Supervises the entire pollution program which involves air pollution; industrial hygiene, solid waste, water pollution, noise pollution, radiological health, and occupational health. He makes studies in each of these fields and determines their properties: Organizes and conducts surveys of the environmental problems; coordinates with other governmental agencies in carrying out a constructive and efficient program, working together for the good of the community. Directs in-service training for personnel under his supervision, establishing a workable program for personnel under his direction.

Makes monthly reports to the head supervisor. Coordinates these programs with the division of nursing, division of health, Education and our General Sanitation Section. Conducts hearing when required to determine whether to take legal action or to suspend a permit (burning permit, landfill permit, etc.). Reviews all plans pertaining to his section and makes recommendations to the head supervisor when advice is needed. Conducts meetings with lay groups and other community leaders in order to inform the public and gain standing in public relations.

2. Solid Waste Pulverization

SOLID WASTE PLANT MECHANIC I: Work involves responsibility for the performance of a variety of mechanical tasks in the maintenance and repair of refuse equipment and facilities. Lays out , constructs, alters, repairs and performs preventive maintenance on a variety of solid waste plant and related equipment. Performs mechanical work on electric cranes, conveyors, bridge trolley, holding and closing mechanisms. Repairs gear reducers, shafts, couplings, and related equipment. Fabricates metal articles for equipment; solders, unites, seams and bolts, metal parts.

SOLID WASTE PLANT MECHANIC II: Work involves responsibility for supervising and performing a variety of skilled tasks in maintaining and repairing the machinery and miscellaneous mechanical equipment used for solid waste disposal. Supervises and instructs subordinates in disassembling, repairing, overhauling, solid waste disposal equipment. Operates hand and machine tools in repairing and maintaining motors, valves, plant machinery and equipment; makes repairs and adjustments to air curtain destructors and related equipment. Supervises and plans work of subordinates engaged in plant maintenance. Performs electrical work on controls for plant operations; orders tools, parts and equipment.

SOLID WASTE PLANT WELDER: Work involves responsibility for performing skilled journeyman level tasks in the maintenance and repair of metal tools, machinery, and equipment by use of acetylene and electric arc welding equipment. Performs cutting and welding operations on machinery and equipment; repairs refuse containers, water and sewer mains and pipes; and related facilities; makes repairs and fittings on truck and automobile parts. Preheats and cleans metals; lays out, cuts and fits material for welding; brazes, solders and coats nonferrous metals. Makes metal articles such as brackets, braces, and repair parts for machinery, implements and equipment. Maintains and makes minor repairs on welding equipment.

SOLID WASTE EQUIPMENT OPERATOR I: Work involves responsibility for safe and efficient operation of a variety of trucks and light road equipment; and may perform some light servicing and maintenance of equipment to which assigned. Drives dump or flat bed trucks in street cleaning or related sanitation operations; drives water trucks; hauls dirt, rock and related materials.

Operates small road sweepers; operates truck in towing small power lawn mowing equipment. Reports equipment malfunctions; checks mechanical status of equipment used and exercises precautions in operations.

SOLID WASTE EQUIPMENT OPERATOR II: Work involves responsibility for the safe and efficient operation of a variety of heavy road automotive equipment used in the construction and maintenance of streets, sewers, pipelines, and other public works facilities. Operates tractor drawn moving equipment; operates sewer cleaning machines; supervises personnel assigned as assistants on equipment; operates mobile street sweepers. Operates front bucket high loading equipment used for loading dirt and sand from one spot to another; operates hoist. Operates trenching machines in digging water and sewer ditches; services and makes light road repairs to assigned equipment. Operates a refuse collection truck; acts as lead man over a small crew of workers collecting, compacting, and disposing of trash and garbage.

SOLID WASTE EQUIPMENT OPERATOR III: Work involves responsibility for the safe and efficient operation of specialized heavy construction equipment, involving the application of previously learned skills and a high degree of manipulative dexterity. Operates bulldozer in landfill, street maintenance, and other related work; operates dragline at borrow pits loading dirt onto dump truck. Operates motor patrol in street construction and maintenance; loads rubble and debris with crane equipment; serves as heavy duty wrecker operator for moving wrecks and other heavy gear equipment; operates garbage loading truck in lifting, emptying, and replacing large garbage disposal units. Excavates for laying sewer lines, water lines, and other deep trenches and holes needed by the County; makes adjustments and minor repairs to equipment; does cable and rigging work for lifting heavy objects; makes straps and slings.

SOLID WASTE PLANT OPERATOR: Work involves responsibility for the operation and general maintenance of equipment and facilities at the solid waste disposal plant. Work includes the processing and movement of refuse, disposal of residue; and the cleaning, maintenance, and minor repair of equipment and facilities. Operates the conveyor system to distribute refuse, mix it for shredding efficiency; and place it in the hopper. Assists in the cleaning, maintenance and repair of a wide variety of heavy mechanical and electrical equipment and disposal plant facilities. Prepares routine operating reports and maintains recording devices; takes samples for testing and adds chemicals as specified.

PULVERIZATION PLANT MANAGER: Work involves supervision of the operations and maintenance of a solid waste pulverization plant facility. Assists in developing administrative and program standards for the various activities of a solid waste pulverization plant facility; assists in coordinating the activities of the facilities with other county departments and other public and private agencies. Makes and supervises work assignments; determines logistical and operational needs for the pulverization plant. Keeps abreast of current developments in the field by attending meetings and holding individual conferences with comparable

officials in other jurisdictions. Supervises record keeping and prepares reports; assists in evaluation of personnel.

SUPERINTENDENT OF DISPOSAL OPERATIONS: Work involves responsibility for planning, organizing and directing the activities and operations of county solid waste disposal plants. Plans, organizes, and directs the activities and operations of county solid waste disposal plants. Supervises directly or through subordinate supervisors, a large-sized staff of employees engaged in plant operations. Analyzes operating reports to determine level of efficiency of incinerators, air curtain destructors and pulverization plants; and production quantity and quality; directs corrective measures. Directs the inspection of plant operations, discusses with the assistant supervisors in dealing with equipment, personnel, safety, and work load problems. Develops long range plans and operating programs to meet future processing requirements and to effect optimum utilization of equipment and personnel. Prepares comprehensive operating reports, equipment specifications, purchase requisitions, and work schedules.

LANDFILL SUPERINTENDENT: Work involves responsibility for planning and supervising activities at county sanitary landfills. Plans, organizes and supervises activities for refuse disposal at county sanitary landfills. Supervises a medium-sized staff of employees engaged in operating various types of equipment to crush, level and bury refuse. Determines the layout of fill sequence; directs the maintenance of proper burn around working areas; assures that all refuse is covered suitably; directs the checking of vehicle permits and the recording of estimated weights. Segregates highly combustible materials to allow evaporation of flammable properties before burying. Informs members of the public of landfill regulations and advises them about disposing of refuse; prepares and maintains necessary records and reports.

3. Waste Collection

MOTORIZED SCOOTER PICK-UP OPERATOR: Operates semi-independently three scooters on one pickup vehicle, under supervision of heavy equipment operator. He cruises along from house to house until all scooters are full. Then he goes to heavy truck pickup for unloading, and repeats. Employed by municipality or private firm.

HEAVY EQUIPMENT OPERATOR, WASTE DISPOSAL: Operates equipment same as bulldozer. In small areas is also manager of landfill. In large areas is Foreman and Director, Equipment Operators; and people who do weighing and keeping of records.

DISTRICT CHIEF OR FOREMAN: Supervises two-three work crews. Uses pickup truck to maintain contact.

DISTRICT SUPERVISOR: Three-five Foremen under his supervision.

4. Incinerator

LABORER: Assists operators by locating and delivering equipment, materials, etc.

CRANE OPERATOR: Operates crane to lift refuse into burning chamber of silos.

INCINERATOR OPERATOR: Adjusts feed rate, air proportions, fuel requirements, if needed. Operates forced draft; and forms needed space in burning chambers for efficient operation of incinerator.

5. Water Works

BUILDING CUSTODIAN: Cleans building, mops bathrooms, cleans windows, keeps supplies in restrooms. Any problem involving cleaning is his responsibility.

UTILITY MAINTENANCE MAN: Cuts grass, fills in for water plant operators when they are off. Assists mechanic on job. May substitute for BUILDING CUSTODIAN when he is away.

MECHANIC MAINTENANCE MAN: As a mechanic he makes repairs on water-works equipment -- pumps, motors, chemicals feeders, tractors, lawn mower; and repairs anything generally in plant or building that needs repair.

WATER PLANT OPERATOR: Under shift supervisor, operates pumps, chemical feed equipment; and has certain clean-up details related to chemical feed equipment. Also he checks off water and other gauges in plant. He backwashes filters and does any other duty called upon by shift supervisor.

LABORATORY TECHNICIAN: Mixes all reagents to be used in laboratories for checks of water. Makes chemical analyses and performs all bacteriological tests.

SHIFT SUPERVISORS: When on 8-hour shifts around the clock, they are responsible for being directly in charge of water operations. Controls pumpage rate, filter backwash, and authorizes or makes chemical feed adjustments. For their 8 hours they are responsible for water quality.

PLANT ENGINEER: Is responsible for maintenance and upkeep for all physical layout - pumps, motors, chemical feed equipment. Calibrates all meters and charts for totalizers and receivers. Mechanic, Utility Man and Custodian, report directly to him.

PLANT SUPERINTENDENT: Responsible for total operation of plant, including personnel, water quality and quantity, and maintenance and upkeep of all equipment. Purchases all supplies and does record keeping. Provides supervision for LABORATORY TECHNICIAN.

6. Waste Water Operations

WASTE WATER PLANT HELPER: Acts as any other laborer. Helps in activities around Waste Water Plant; cleans up; assists with equipment; and cuts grass. He is learning to be Waste Water Plant Operator, assisting him and doing some of his functions.

WATER CONSTRUCTION HELPER: Works as member of a waterline and sanitary sewer crew; digs and backfills trenches; assists in laying pipe to grade, manholes and sanitary sewers; unstops sewer by using rods, buckets, specialized cleaning equipment and by hand.

WASTE WATER PLANT OPERATOR: Operates sewage treatment, sludge treatment, sludge processing, and disposal equipment in sewage treatment plant to control flow and processing sewage.

WATER CONSTRUCTION FOREMAN OR SEWER SERVICE FOREMAN: Supervises crew engaged in installing, maintaining, repairing, and servicing water distribution and sewage facilities.

WATER CONSTRUCTION SUPERVISOR: Directs and coordinates activities of Water-and-Sewer Systems Foreman engaged in installing, maintaining, repairing, servicing, enlarging, relocating water distribution and sewage facilities.

WATER CONSTRUCTION SUPERINTENDENT: Supervises and coordinates activities of workers engaged in installation, maintenance, repair, servicing, enlargement; and relocation of water distribution and sewage facilities.

WASTE WATER TREATMENT PLANT SUPERVISOR: Supervises all Waste Water Plant Operators in System.

B. CITY GOVERNMENT

1. General

ENTOMOLOGIST: He inspects for insects and disease and sprays to kill or to treat the disease or as a deterrent against insect infestation or disease infestation. He supervises a spraying crew with a spray truck.

CITY ARBORIST: His main duty is to enforce the tree ordinance. And this man is a graduate landscape architect, and knows the details of how to make the landscape look beautiful. All the building site plans must have his approval, that is, building site plans for commercial development. He checks out the commercial plans involving tree removal to preserve as many trees as possible. Often he can save existing trees. If this is not possible, then he will often insist on a tree replanting plan to meet his approval. He also meets and talks to garden clubs, business associations and encourages private money for the planting of trees downtown.

FORESTER SUPERINTENDENT: He maintains streets, right of ways, trims limbs, takes down dead trees. He supervises two forester crews with bucket trucks to remove limbs, dead trees, etc.

SUPERVISOR OF COLLECTIONS: Collects waste for residential or commercial installations. Collects rubbish-hedge and grass collections if domestically generated, sweeping in streets and collecting litter. Vacant lots are checked to keep in healthy condition. Junk automobiles are removed; also collections of dead animals. Must make disposal of everything collected. Debris and collections on streets are trucked to landfill. Contractor removes abandoned autos and this agency deposits them. Controls privately owned landfills jointly with state, county, and city. Controls garbage collection, litter, etc., by having an enclosed, blow-free body, either solid cover or a tarpaulin. Garbage can must be an air tight container-can, bag, etc. City collects rubbish but containers must be within 10 feet of curb line.

2. Sanitation Management

DISPATCHER: Receives telephone calls from the public concerning complaints about streets and sewers, and refuse collection and relays to field personnel; prepares work orders for crews; records information received and action taken, including time, location and source of information; transmits instructions to Water Department service personnel to begin or discontinue water service; maintains daily reports on delinquent accounts that are paid during the day and have service resumed as the accounts are cleared; dispatches traffic sign and marking crews to work locations; compiles attendance figures and prepares labor report; posts and files data and performs general typing and clerical work as requested; completes accident reports on injured employees; adjusts volume, tone, and interference levels on transmitter-receiver unit; reports need for service to supervisor.

SANITATION ASSISTANT SUPERINTENDENT: Inspects incinerator plants, collection sub-stations and refuse collection routes; confers with field supervisors regarding operating, equipment and personnel problems; coordinates dumping procedure and volume of dumping between sub-stations and incinerators; determines equipment and personnel requirements for normal growth of City Sanitary Services; reviews vehicle accident reports and recommends appropriate terms for settlement; reviews complaints regarding unsanitary refuse disposal; attempts to secure cooperation of property owners in complying with ordinances and departmental rules, and authorizes special cleanup campaigns; makes formal presentations to groups and organizations on departmental operations, policies and problems; assists in annual budget presentation; attends conferences with division head and line supervisors; coordinates all mobile and stationary equipment purchase requests; reviews specifications and bid proposals.

SANITATION ASSISTANT INSPECTOR: Maintains station personnel records; processes hiring of waste collectors; receives citizen complaints and forwards to district inspector; investigates accidents on-the-spot; does time and motion study by riding with trucks and walking with collectors, counts units and measures distances; makes simple maps; contacts businesses regarding complaints about cans, lids, location, litter, waste volume, billing status, etc.; inspects businesses for sanitation violations; supervises downtown municipal street sweeping and cleaning; receives requests from businesses for sanitation services and explains requirements; weighs City and private trucks and records weight at incinerator; supervises steam cleaning of litter baskets, trucks, trash collection barrels; repairing, painting, placement of baskets; distribution of rain gear, hand tools; cleaning of sub-station.

SANITATION INSPECTOR: Supervises and inspects refuse collection by several crews of collectors and drivers; investigates citizen and employee complaints regarding unsanitary conditions of streets, alleys and premises outside of buildings; issues notices and warrants to clean up property or repair refuse containers; issues and revokes private waste collection vehicle permits and initiates prosecution of permit regulation violators; assigns and inspects the work of manual sweeping of downtown streets; serves on Accident Review Board to investigate accidents involving Sanitation Department Vehicles; assists in performance of collection route surveys to improve efficiency; may inspect landfill operations; may perform commercial waste inspection and billing work.

SANITATION SUPERINTENDENT: Interprets and administers city ordinances regarding solid waste collection and disposal; formulates operational policies, procedures and plans; reviews refuse collection, landfill, incinerator, and junk car removal operations for efficiency; directs the analysis of sanitation operations to evaluate methods and procedures and to develop operational improvements; prepares operating budget and controls budget expenditures; directs the preparation and initiation of special charges for

commercial and industrial refuse collection services; participates in conferences concerning refuse collection and disposal problems; addresses public groups and organizations.

3. Area Sanitation

WASTE COLLECTOR I: Collects refuse from residential and commercial areas; uses shovels, forks and hands in collecting and depositing trash in collection trucks; assists mechanical broom operators in cleaning streets by removing damaging objects from path of mechanical sweeper; pushes two-wheeled cart and drum, and using pushbroom, removes dirt, litter and debris in congested areas and areas not accessible to a mechanical sweeper; removes dirt from street, cleans and services collection vehicles.

EQUIPMENT OPERATOR II: Operates large mechanical sweepers, front-end loaders, water flushing truck, drum or rubber-tired rollers, bulldozers, concrete agitator trucks, tractor-trailers, ditching machines, hydraulic backhoes, sludge tank vehicles and road graders in a wide variety of construction and maintenance operations; operates more complex construction equipment on a training basis; transports equipment and materials; grades, cleans and compacts park areas, streets and roads; reads grade stakes; excavates and fills for utility installation, road and street grades; supervises workers in absence of supervisory personnel; prepares simple records and performs equipment servicing and minor maintenance operations.

SANITATION AREA FOREMAN: Assigns work to sanitation crews; dispatches men and equipment to designated sections and routes; handles special requests and complaints and takes appropriate action; takes attendance and inspects equipment to see if in good working order; makes changes in work assignments, scheduling of equipment to balance work loads or to meet emergencies; inspects work performed by sanitation crews and makes frequent sanitation inspections to determine general condition of area and to spot recurring problems; enforces sanitation codes and regulations as necessary; assists in planning and organizing cleaning operations; maintains work records, attendance sheets, equipment records and accident reports; evaluates work performance of men and recommends appropriate personnel actions; counsels employees and investigates disputes; acts as area supervisor in his absence.

4. Waste Collection and Disposal

WASTE COLLECTOR II: Collects refuse by means of a small vehicle or hand carried container; transfers refuse to large refuse collection trucks; assists in dumping refuse at landfills and incinerator plants; picks up dead animals and transports them to incinerator plants for disposal.

EQUIPMENT OPERATOR I: Operates stake body, panel, and dump trucks to move personnel, equipment, and materials; operates a vehicle tow truck; operates dump trucks with granular spreaders; operates hydraulic platform or snorkel trucks; operates large tractors with landscape or mowing attachments, and light mechanical sweepers; operates trucks with detachable refuse hoppers; operates construction equipment to greater complexity or capacity on a training basis.

WASTE COLLECTION DRIVER I: Operates dump truck, open scow, rear and side loading compactor hydraulic lift; operates truck on route collecting garbage and rubbish, hauling it to incinerators and landfills respectively; operates cinder (dump) truck to landfill and dumps it; washes and cleans cinder truck; inspects trucks on a paralleled street, shifting collectors on dumping trips; supervises walking or motorized collectors and reports inadequate performance to inspector; reports to inspector any inadequate or improperly placed cans, scattered garbage, vicious dogs; collects dead animals from streets, dog pounds, animal shelters, veterinarians, hospitals; uses tubs for small animals, winch and ramp for large ones; may operate two-way radio.

WASTE COLLECTION DRIVER II: Drives truck on assigned route collecting garbage and refuse and hauls it to incinerators; operates levers to control hydraulic lifting arms when metal boxes are emptied; instructs laborer-helper in the performance of his duties; keeps records of miles driven, tons of refuse collected and dumped; may operate two-way radio; inspects trucks routinely for servicing or repair needs; reports to inspector any difficulty encountered in collection of refuse.

WASTE COLLECTOR III: Operates a small refuse collection vehicle on City streets and private property; empties refuse collection cans; transfers refuse from small refuse collection vehicle to large refuse collection vehicle.

SANITATION AREA SUPERVISOR: Organizes and directs sanitation activities in assigned area; supervises moderately large numbers of unskilled and semi-skilled workers, inspectors, equipment operators and foremen; shift assignments of men and equipment to ensure effective utilization of resources; directs the keeping of records and preparation of routine reports; reports mechanical breakdowns and vehicular accidents.

5. Building and Plant Maintenance

LABORER I: Uses air hammer, pick and spade to dig trenches; assists in laying pipe, moving tools and materials; rakes and shovels hot asphalt for paving or patching streets; operates small lawn mower for cutting grass in parks, golf courses or the grounds around public buildings and facilities; sweeps streets and gutters and loads sweepings into barrel cart; performs routine and less complicated tasks in assisting mechanics, tradesmen and equipment operators.

LABOR FOREMAN: Supervises the planting, fertilizing and watering of grass, shrubbery and small trees at various public facilities; supervises the removal of rubble from construction sites, storm drainage structures or recreation areas; supervises limited landscape work requiring the use of hand tools or small tractors; supervises the cleaning, minor maintenance and repair, and painting of structures, equipment, buildings, and fixtures; supervises the manual moving of materials and supplies; supervises the repair and installation of fencing and playground equipment.

PLANT MAINTENANCE MECHANIC I: Lubricates, checks, and adjusts a variety of plant equipment and machinery, such as pumps, motors, control lines, gauges and valves; scrapes, cleans and reconditions pump housings, motor mounts and brackets; packs pump bearings, replaces filters and fills oil reservoirs; assists in disassembly and repair of heavy plant equipment; helps set up rigging to move and install heavy equipment; grinds, drills and cuts metal shafts and parts as instructed.

PLANT MAINTENANCE FOREMAN I: Supervises the maintenance and repair of a variety of plant equipment and machinery such as incinerators, pumps, motors, valves, chemical feeders, conveyors and cranes; installs, checks and adjusts equipment, setting up rigging and aligning shafts, mounts and pulleys; analyzes faulty equipment and supervises disassembly to replace or repair parts; supervises personnel operating lathes, grinders, milling machines and other metal cutting equipment to fabricate, grind or cut shafts, grooves, keyways, threads and tapers; supervises overhaul of large equipment and machinery; orders replacement parts as needed; supervises acetylene and arc welding; supervises replacement of electric motor brushes and switches; orders parts, supplies, materials and equipment; assists subordinate craftsmen in solution of technical problems of work; estimates time and materials and keeps records of same.

6. Incinerator Operation

PLANT MAINTENANCE MECHANIC II: Installs, maintains and repairs equipment and machinery and equipment in water purification, water pumping, sewage treatment, incinerator, boiler and other plants and facilities; installs, maintains and repairs chemical feeders, chlorinators, control units, sample pumps, air lines, water lines, steam lines, heaters, fluoride systems, sterilizing equipment, dehumidification systems, water tanks, wells, filter rate controllers, head gauges, mercury wells, washwater pumps, auxiliary pumps, electric supply panels, filter sweeps, filter rehabilitation sand graders, boilers and other machinery and equipment; repairs brick in kilns; repairs overhead cranes and controls; repairs incinerator controls; rebuilds pumps, clarifiers, air compressors, motors; in installing machinery and equipment, does foundation work, sets equipment, does plumbing of air, oil, water and drain lines; operates metal lathes; does oxygen, acetylene and electric welding; solders, cuts and brazes; fabricates needed parts; supervises less skilled personnel in work; may order materials and supplies; may do some building maintenance tasks; keeps records.

INCINERATOR OPERATOR I: (See page 49)

INCINERATOR OPERATOR II: Operates an overhead electric crane with clamshell to distribute refuse in the pit, mix it for maximum burning efficiency, and place it in an incinerator hopper; operates metal reclamation and ash disposal equipment; observes fireboxes, kilns and stack discharge to determine efficiency of incinerator; observes various meters, and adjusts air and fuel control motors for improved incineration; assists in the maintenance and repair of a wide variety of heavy mechanical and electrical equipment; prepares simply operating reports and maintains automatic recording devices; takes boiler water samples for testing and adds chemicals as specified; fits and lays kiln brick; instructs and supervises less experienced plant workers.

INCINERATOR FOREMAN: Supervises a group of workers involved in the operation of a large incineration plant; supervises operation of truck scales, overhead cranes, mechanical grate and kiln equipment, conveyor machinery and metal can shredding equipment; inspects and directs the proper mixing of refuse to insure maximum incineration efficiency; inspects dead animal storage cooler for proper operation and schedules operation of pathological incinerator; supervises and participates in the direction of refuse dumping by truck and general light maintenance and housekeeping activities in the plant; prepares operating reports and personnel reports.

INCINERATOR SUPERVISOR: Plans and assigns plant operation and/or maintenance tasks; analyzes operating reports to determine level of efficiency of incinerator and directs corrective measures; assists subordinate supervisors in dealing with equipment, personnel, safety and work load problems; prepares comprehensive operating reports, equipment specifications, purchase requisitions and work schedules; advises subordinate foreman on complex or particularly difficult plant operation problems.

INCINERATOR SUPERINTENDENT: Plans, directs and coordinates refuse incineration activities through subordinate supervision; maintains liaison with other sanitation division operations to coordinate related work programs such as refuse collection and delivery; inspects incinerator plant to insure effective operations; receives and resolves the more difficult complaints and inquiries related to refuse incineration operations; provides information to the public and to interested groups regarding modern incineration methods and concepts; prepares a variety of reports, statistics and recommendations; develops budget requirements for incinerator plant operations; maintains liaison with air purification authorities.

7. Landfill Operation

LANDFILL OPERATOR: Directs private and city-owned trucks to dumping points; determines whether or not various materials may be deposited in the landfill; prepares and maintains simple records related to private contractors' use of the landfill; segregates highly combustible materials to allow evaporation of flammable properties before burying; operates track-driven bulldozers with push blade or loading bucket to crush and bury refuse to control drainage and to accomplish the proper construction of the landfill; operates bulldozers to expose and distribute buried materials which have caught fire; sprays fires with water; informs members of the general public of landfill regulations and advises them about disposing of refuse.

LANDFILL FOREMAN: Directs a small number of subordinates in the operation of individual sanitary landfills; schedules, trains, and keeps time on subordinates; may assist in operation of individual landfills by operating equipment; informs members of the general public of landfill regulations and advises them about refuse disposal; confers with collection personnel on use and availability of sanitary landfills.

SANITATION FIELD SUPERINTENDENT: Directs continuous studies to evaluate and improve refuse collection routes and methods; directs landfill site selection and landfill operation; assures adequate dead animal pick-up services city-wide; supervises refuse collection in the downtown area and review of commercial refuse fees; directs the investigation of all accidents involving departmental equipment, and makes necessary reports and recommendations; arranges for the repair of all departmental equipment and coordinates the movement of such equipment; evaluates the performance of departmental equipment and assists in the preparation of bid specifications; conducts a permit program for trash hauling and for landfill dumping, including vehicle inspection, ordinance and regulation compliance and permit issuance and revocation; enforces laws and ordinances relevant to exterior sanitation of buildings and property.

8. Water Works (See County for Jobs)

9. Waste Water Operations (See County for Jobs)

C. WATER PLANT & WASTE WATER PLANT OPERATIONS
OF SMALL TOWNS & SPARSELY POPULATED COUNTIES

1. County Waste Water Operations

CONSTRUCTION CREW WORKER: Puts pipe in place, back fills, sets fire hydrants and meters. Cuts brushes and removes from right-of-way. Helps unstop sewer lines. Cleans out drying beds at sewer plant.

CLEVELAND OPERATOR: Digs ditches for water mains. This is a wheel-like mechanism that turns and throws dirt out of water main lines.

BACKHOE OPERATOR: Digs for corners, fire hydrants, under drain lines and removes large rocks that are too large for Cleveland Operator. Lays pipe and covers ditches.

WATER CONSTRUCTION FOREMAN: Puts in water lines, meters, and does repair work. Supervises construction crew and sees that work is done efficiently.

MAINTENANCE MECHANIC: Responsible for checking all sewer plants and checks also all different kinds of equipment (Preventive maintenance). Repairs machinery when trouble develops; checks and oils as necessary for all machinery.

LABORATORY TECHNICIAN: Responsible for sampling sewage before treatment and after treatment. Determines if B.O.D. meets State standards.

SUPERINTENDENT OF SEWER DEPT.: Looks after treatment plant and is responsible for reports to State on Sewage B.O.D. Checks equipment every day, including blowers. Checks chlorine content of treated sewage every day; also checks dissolved oxygen. Keeps equipment lubricated. Sends someone to cut grass and keeps cleaned up. Calls maintenance to make necessary repairs. Is responsible for all sewage plants in county and projected. Also responsible for maintenance of all water lines.

2. Small Town Water Plant & Waste Water Plant Operations

a) Waste Water Plant

MAINTENANCE LABORER: Cuts grass and does other minor maintenance around sewage plant. Also helps on sewer lines and unstops lines when trouble develops.

MAINTENANCE MECHANIC: Inspects aeration equipment at waste water plants twice weekly and makes necessary repairs and adjustments in equipment and machinery. Checks oil level and lubricates as needed.

LABORATORY TECHNICIAN: Take samples of sewer water at sewage ponds once weekly and tests to determine B.O.D. of both influent and effluent. The oxygen content is also determined for various points in ponds at the different waste water plants. Maintains necessary records on all test results for sewer ponds and for different points of sewer ponds where oxygen is determined.

WASTE WATER PLANT OPERATOR: Must see that Laboratory Technicians run B.O.D. and Dissolved Oxygen tests on both influent and effluent to determine percentage reduction of oxygen. Sees that these records are kept. Responsible that maintenance and operation of waste water plant is kept to high state of efficiency, supervising maintenance mechanics in these duties. Also responsible that maintenance laborers keep grounds around plant in good order, grass cut regularly and any debris cleaned up.

b) Water Plant

MAINTENANCE MECHANIC: Inspects all mechanical equipment at Water Plant twice weekly. Makes necessary repairs and lubricates machinery when needed. On call for emergency needs on equipment.

WATER PLANT OPERATOR ASSISTANT: Under direct supervision of Water Plant Superintendent and does same work: operates plant, runs tests for water purity, treats with five chemicals. Sees that level of tests meet requirements of State Department of Natural Resources. Maintains appearance and operating efficiency of Water Plant.

WATER PLANT FILTRATION SUPERINTENDENT: Responsible for operating Water Plant and coordinating work of Water Plant Operator Assistants. Runs necessary tests for water purity, including appearance and smell (Potable). Water is treated with chlorine dioxide and sodium fluoride. Responsible for maintaining proper level in test results from water treatment to satisfy Department of Natural Resources of State.

SUPERINTENDENT OF WATER PLANT & WASTE WATER OPERATION: Responsible for both water purification plant and sewage plants. All operators of these plants are under his supervision. Inspects sewer plants once weekly and water plant daily. Watches for general appearance and cleanliness of each of these plants. Responsible for water

sample being sent to State Environmental Department once monthly. Retains records on tests run on sewer influent and effluent for Federal or State inspection. Current problem is to move with planning and modifications to up-date Sewage Waste System by 1977 in line with new Federal Environmental Protection Agency requirements. Will retain consultants and engineers to help make these plans.

3. Town Water Plant Based on Well Water

LABORER AT WATER PLANT: He does the work on maintenance of pumps, pipes, meters and this is all under the direction of the supervisory personnel. Locates metallic components and collects, at designated points where they are picked up by people in the public works department of the city for scrapping or being hauled to the landfill. Another responsibility of the laborer is that he carries new parts to replace a broken down pump, meter or other equipment at a trouble spot which the craftsman can use at that point to replace.

PUMP OPERATOR: Responsibility to answer radio and telephone calls relative to complaints of customers on the water service they are getting. Monitors pumps in the reservoir, both incoming and outgoing relative to the water flow.

ASSISTANT SUPERINTENDENT: Responsibility is to assist the Superintendent of the Water Plant in all his responsibilities. When the Superintendent is not on the job or absent for any reason, the Assistant Superintendent assumes all of his responsibilities and keeps the plant in operation.

WATER PLANT OPERATOR: He is responsible for the whole water plant operation. This includes maintenance of pumps, meters from wells to reservoirs and from the reservoir to the customer. He is also responsible for installation of new mains, meters and services and sees that tests for bacteria in the water are made daily. And is responsible, also, for the reading of meters of customers who use the water. He supervises all other personnel who work for him.

(Cont. from page 45)

INCINERATOR OPERATOR I: Operates an overhead electric crane with clamshell to distribute refuse in the pit, mix it for maximum burning efficiency, and place it in an incinerator hopper; observes fireboxes, kilns and stack discharge to determine efficiency of incinerator; observes various meters, and adjusts air and fuel control motors for improved incineration; operates metal reclamation and ash disposal equipment; assists in the maintenance and repair of a wide variety of heavy mechanical and electrical equipment; prepares simple operating reports and maintains automatic recording devices; takes boiler water samples for testing, and adds chemicals as specified.

III. INSTITUTIONS

A. HOSPITALS

NUCLEAR MEDICAL TECHNOLOGIST: (Medical ser.) 078.381. Radioisotope Technologist. Prepares, administers, and measures radioactive isotopes in therapeutic, diagnostic, and tracer studies, utilizing variety of radioisotope equipment.

RADIOLOGIC TECHNOLOGIST: (Medical ser.) 078.368. X-ray technologist. Applies roentgen rays and radioactive substances to patients for diagnostic and therapeutic purposes: positions patients under X-ray machine, adjusts immobilization devices, and affixes lead plates to protect unaffected area.

RADIATION SAFETY OFFICER: Responsible for the monitoring equipment, disposal of radioactive waste, and calibration of equipment. Monitors radiation equipment used in the isotope laboratories in X-ray department. Instrumental in recommending changes for patient safety and working personnel safety in the use and disposal of radioactive products and by-products. Responsible for recommending safety precautions and also to formulate and review institutional training programs for the use of radioisotopes. Maintains records of actions of the radioisotope committee. Coordinates and supervises with the physician in charge for the safe administration of radio-pharmaceuticals. Responsible for the delegation of the day-to-day radiation monitoring surveys.

B. EDUCATIONAL INSTITUTIONS

RADIATION MONITOR: Performs routine and special safety surveys in laboratories and related activities.

RADIOLOGICAL SAFETY SPECIALIST: Reviews on-going utilization radiation programs to determine that appropriate safety regulation and procedures are being followed.

HEALTH PHYSICIST TECHNICIAN: Consults with radiation users regarding their planned research and teaching activities using radiation; and causes radiation safety surveys to be performed. Supervises appropriate records.

IV. AIR & WATER POLLUTION CONTROL IN ELECTRIC POWER INDUSTRY

A. ENVIRONMENTAL ENGINEERING & LABORATORY

BIOLOGY AID (ASSISTANT OR HELPER): Assists biologists or technician in collecting samples. Makes access to equipment for sampling collections, including utensils. Makes available boating equipment and helps with it. May skin dive to collect samples. Sets up laboratory equipment and may record results of tests, and may do some of basic statistical work or use computer in analysis and for print-out of results.

ENVIRONMENTAL-ENGINEERING AID: Handles boats and motors; does SO₂ analysis, operates water monitoring equipment, and radiological monitoring equipment. Does some hydrology work and assists in hydrological surveys. Works with metrological instrumentation. Does some chemical analysis of water samples. Accumulates data, makes statistical analysis, and puts data on computer tapes for storage and analytical purposes. May do elementary statistical analysis of computer and printout results.

BIOLOGICAL TECHNICIAN: In field handles equipment, sampling equipment, and works with boats. Assists biologist to take samples of water, air, leaves. Assists in identifying animals, fish, insects.

WATER QUALITY ENGINEER: Investigates water quality parameters to determine extent of pollution in a stream. Makes chemical analysis, temperature, and flow rates. Doing studies on modeling temperature predictions of river and dissolved oxygen studies.

AIR QUALITY ENGINEER: Investigates air quality parameters to determine extent of pollution in air. Analyzes the SO₂ and particulate discharged from the plant.

METEROLOGIST: Responsible for monitoring the company weather stations to see that they are operating properly. Summarizes weather data that is collected to provide weather information for laboratory. For example, what is wind dominant direction and velocity for any given month or period.

HEALTH PHYSICIST (RADIOLOGICAL HEALTH ENGINEER): Responsible for determination of radiological parameters, i.e., what is going into the atmosphere. Looking at data collected from monitoring stations, determine impact of radiation that is released from the plant.

ENVIRONMENTAL SPECIALIST: Coordinates work of specialists working under him. These include Water Quality Engineer, Senior Biologist, Environmental Technician, Air Quality Engineer, Meterologist, Health Physicist. These report to him and he gives

direction for their activities and determines areas of investigation where there should be coordination of activities in order to get a more complete and integrated solution to a particular problem of pollution or radiation.

BIOLOGIST: Plan, schedule, and perform benthic studies to evaluate the effects of present and proposed company facilities upon the environment. Report all harmful findings to the Environmental Engineer in order to prevent claims against the company. Supervise, train, and develop the subordinates to insure efficient performance.

B. NUCLEAR PLANT:

LABORATORY SUPERVISOR: Performs various types of Environmental sampling to measure ionizing radiation in the surrounding area and any increase in this radiation resulting from plant operation. Insure that the Reactor's feed water is properly treated and tested to meet all specifications for water quality. Supervise and direct a monitoring program to measure radiation levels in various work areas to insure that individual exposure limits are not reached or exceeded. And insure that all plant personnel are properly instructed in radiation safety procedures to minimize incidents of radiation over-exposure.

HEALTH PHYSICIST RADIO/CHEMIST: Develop a health physics program to provide effective radiation protection in and around the plant. Assist in the direction of maintenance work on possibly contaminated equipment to insure safety performance. Maintain the plant makeup demineralizer insuring cleanliness of water for piping and equipment in the plant. Maintain various environmental measurements in the plant. Maintain various environmental measurement stations around the plant site insuring up-to-date information on environmental conditions. Advise on equipment and instrumentation necessary for monitoring radiation in the plant. And maintain records vital to safety measure measurements and necessary for reports to regulatory agencies.

ENVIRONMENTAL ANALYST: Performs Air and Water analyses to insure plant discharges conform to the Federal Pollution Standards. Writes procedures on water analysis to enable company to make all analyses on water, thus eliminating the expense of contracting an outside firm. And assists Biologist in collecting water samples from lakes to determine the oxygen depletion (B.O.D.) and collects fly ash samples occasionally.

C. GENERAL OFFICE

ENVIRONMENTAL TECHNICIAN: Makes all necessary arrangements for Benthic and Algae survey trips to company generating plant sites to obtain samples for laboratory analysis. Supervises the collection of Benthic samples to insure proper preservation and labeling for lab identification. Prepares summary reports of

all Biological surveys made by him to provide his supervision with the results of these surveys. Performs Algae surveys and lab analysis to determine the Algae population in water around generating plant sites. And assists in Marine Life surveys as requested to obtain samples for lab analysis.

BIOLOGIST: Insures the consolidation and administration of Environmental survey data from all the fossil fuel and nuclear plants. Insures coordination of Environmental activities between the civil and mechanical engineering department and the production department by serving as liaison between the two departments. Insures the layout of the Environmental Laboratory by assisting in the selection of radiological and chemical instrumentation. Insures compliance with guidelines and laws established by governmental agencies by consolidating test data required and providing technical support to plant personnel gathering information. Insures solution to mosquito complaints around reservoirs by coordinating the complaints with the Albany Air Service. And insures compliance with department of natural resources requirements to have certified operators at plants where drinking water is treated by arranging training.

SENIOR BIOLOGIST: Conducts Fishery surveys in waters near generating plant sites to count and identify the fish population. Gather samples of fish, fish eggs, water, sediment, mussels, and other organisms to utilize in radiation studies in waters near nuclear generating plant sites. Design and implement a study to determine the effects of both intake and discharge structures at Plant Hatch on organisms in the river near these structures. And insures that all laboratory work is performed to evaluate samples taken from fishery surveys.

SENIOR ENVIRONMENTAL ANALYST: Supervises a subordinate staff that conducts art work, typing, filing, data analysis, and field assistant necessary to assist the Environmental Engineer in supplying Management with various reports on the environmental effects of company generating plants. Coordinates the administrative activities of the Environmental Division to insure that Division functions are carried out in an efficient and accurate manner. And compiles input for, writes portions of, and edits Environmental reports to describe the effects of company generating plants on the Environment in making application to Federal Agencies for permission to construct and/or operate these plants.

V. CONSTRUCTION

A. CONTRACTORS

LABORER: The Labor Foreman usually has five laborers under his direction for picking up debris according to his instructions and under his supervision. They place debris at key points on the construction project and before the cleanup crew as such. However, the contractor cannot take the full responsibility from the sub-contractor or sub-contractors. All usable stuff must be removed by someone; and the sub-contractor has responsibility to do that. But if he does not, then it falls back on the labor foreman and his crew of laborers.

LABOR FOREMAN: Responsible for receiving all the debris and packing materials out of working areas and remove from the building site by truck or otherwise. Sometimes he uses a compactor. Other responsibilities of his are: stacking blocks, brick and lumber; electrical scraps from wiring, tubing, piping, scrap sheet metal, etc. All these items must be assembled and kept in collection areas. He also has responsibility of cleaning up lunch bags, etc. Normally, he will seek out underground facilities, strip wood out of restraint caissons, pump water out of the site. He is also responsible for getting rid of rodents.

SAFETY OFFICER FOR HEALTH & OCCUPATIONAL SAFETY ACT: In charge of all actions, equipment and conditions affected by the Occupational and Health Safety Act. Makes sure all equipment and personnel meet requirements of Health and Occupational Act. Also checks equipment noise abatement requirements. Sees that decibel works and population of area are protected according to decibel.

B. CEMENT DISTRIBUTION

YARD LABORER: Keeps yard clean of build-up, trash, etc. Unloads and handles all materials that come to plant.

BATCHMAN: Loads cement mixing truck. Weighs out of all material that goes into truck. Helps in ordering material by watching inventory.

TRUCK DRIVER: Delivers mixed concrete to the job. Unloads through discharge chute. Be able to govern accurately amount delivered at each spot. May fill concrete buckets on wheelbarrows. Buckets moved by crane (holds yard of concrete which weighs 2 tons). Driver must be careful to keep concrete in mixing truck from running out on inclines while enroute. Must make sure that drum on truck is running fast enough to keep concrete in truck. If spills enroute, calls office to come pick up. Material in mixing drum is perishable in that very limited time to place after loaded (about 1 hour). Must dispose of left-over concrete which customer did not need. Then has to wash out inside of truck mixing drums. Has to watch that truck is kept clean.

TRUCK DISPATCHER: Takes orders over telephone and gives direction to driver as to where and to whom to deliver, and assigns number of trucks to each job, depending on volume of concrete ordered. Is in constant contact with driver at all times by 2-way radio. He is also in contact with the customer by telephone until delivery. Prepares data sheets, showing time of delivery and amount of concrete hauled to each job location. When a job is finished, must see that truck is cleared, cleaned and ready for another job.

MECHANIC OR SERVICEMAN: Makes mechanical repairs designated by supervisor. Services trucks, changes oil and greases. Knows importance of getting to truck quickly with mechanical trouble enroute in order to not lose load of concrete. Other responsibilities include rebuilding and painting equipment, correct electrical problems, and does welding when necessary.

QUALITY CONTROL TECHNICIAN: Designs and mixes a variety of cements for test purposes and to meet specifications. Looks after quality of concrete being shipped to the job. Makes test cylinders. These are laboratory tested for strength of concrete. He checks raw materials before they go into concrete mix ... sand for fullness and clay content; and stone for granulation.

SALESMAN, CONCRETE MIXED PRODUCTS: Contacts contractors at main office and often on the job. Gets specifications for job and then gives a price quotation, i.e., delivered price. Checks afterwards to see if contractor is satisfied. Does lots of public relations work between contractors and concrete plant. Makes lots of calls on telephone personally in order to pick up new business.

GENERAL MAINTENANCE SUPERINTENDENT: Supervises all repairs of equipment. Buys all parts, oil, fuel and tires. He inspects trucks and equipment for general mechanical condition and he keeps records on all equipment. Each piece of equipment is brought into shop periodically for inspection and maintenance, including servicing for greasing and oil changes. He also assists in buying of equipment. If trouble develops enroute to delivery job, he dispatches repair or service men to where truck or trucks are broken down or stalled on road. He is also responsible for seeing that shops are kept clean.

C. SPECIALIZED CONSTRUCTION

1. Clearing Way for Highways

LABORER: (For clearing, clean-up). He collects scattered and isolated small trees, bushes, stumps, etc., and accumulates to a point where he either loads this material on truck directly or the materials are picked up by the front end loader and loaded on the truck.

BULLDOZER-TRACTOR DRIVER: Pushes down trees, shoves stumps; and also, may in some cases, do some rough grading.

TRUCK DRIVER: Drives truck and positions it so it can be loaded with disposable material by either the front end loader or the drag line operator. He drives to the disposal area and dumps.

DRAG LINE OPERATOR: With clam shell bucket, picks up trees, stumps and other heavy materials and loads on truck.

FRONT END LOADER: Uses tractor front end loader bucket to load on truck for hauling, either to disposal area or to a landfill. He loads trees and other excess materials which the bulldozer-tractor driver has turned up.

FOREMAN FOR CLEARING OPERATIONS: Supervises the clearing of trees, stumps and other debris. The bulldozer, tractor driver, front end loader operator, drag line operator, truck driver and laborer are under his direct supervision and take direction from him. He is responsible for the efficiency of performance of crew and general superintendent of the project.

2. Sewer and Water Line Construction

LABORER: General all around helper in moving pipe to proper place, placement of it and also, helps with joining the pipe.

BULLDOZER OPERATOR OR FRONT END LOADER OPERATOR: Moves dirt to cover ditch which has had pipe placed in it and packs this dirt.

BACK-HOE OPERATOR: Digs ditch and lifts and places the heavy materials, i.e, pipe and fitting, etc.

PIPE LAYER: The pipe layer is responsible that the pipe is properly placed and joined and that it is directed and adjusted in such a way that it is on grade and in proper alignment to maintain the flow of materials in a proper manner, i.e., flow with regularity through this pipe line.

SUPERINTENDENT FOR SEWER & WATER LINE JOBS: He is directly responsible for the supervision of all of the operations including heavy materials collected for the job. He supervises all installations according to plan and specifications. He is responsible for the efficiency of performance of workers and also for removal of any pipe and other materials left over from any particular job.

VI. NONDURABLES MANUFACTURING

A. MEAT PROCESSING

MEAT PROCESSING MACHINE CLEANING WORKER: Mixes cleaning compounds according to specifications as to proper strength. Washes down each piece of equipment with chemical solutions, using a power spray, and then thoroughly rinses. Then spray approved edible oils on machines to prevent rust and keep working parts in order. Work crew in the morning uses hot hose with water to remove all of edible grease before beginning day's operations.

SUPERVISOR OF MEAT PROCESSING MACHINE CLEANING: Pump down refrigeration and supervises meat processing machine clean-up crew. See that they use right chemicals in correct mixture (liquid and powder). Must watch that workers have right solution of the chemicals. After through cleaning with chemical solutions, supervises greasing of all working parts and machine parts with an edible grease and he must be sure that this type of grease has been used on all fittings. Inspects to determine that all cleaning and greasing have been done properly before men are relieved for the night's work. In morning Federal Inspector with Plant Superintendent goes over each piece of equipment carefully to make sure it has been properly cleaned. If a machine is found to have been improperly cleaned, it is pulled out of the production line until the deficiency is corrected.

B. MILK PROCESSING

SANITATION CREW WORKER - MILK FACTORY: Responsible for particular work area or machines to see that they are properly cleaned; checks by visual inspection. The Quality Control Superintendent applies sophisticated tests to determine if cleaning is done properly and meets standards.

SHIFT SUPERVISOR IN MILK FACTORY: See that product is produced or manufactured according to specifications with respect to cleanliness, taste, etc., in his area of responsibility. Includes pasturizing, filling milk containers according to standards. Responsible for sanitation crew and that clean-up and sanitation are done properly. Make sure that solutions are mixed properly to avoid fumes and splashing on workers. Must see that right detergents are used and rinsed but this is all done automatically by lines that run to the machines.

QUALITY CONTROL SUPERINTENDENT: Responsible for quality of raw product or milk, as well as quality as it passes through factory, inventory in stores; and until consumed. Milk stored in cabinets after 10 days is checked to see if still palatable and would likely be also for another 5 days. Inspects machines, storage tanks, pasturizer lines, valves and filters. Passes on inspection defects to Shift Supervisor for correction.

C. BAKERY

WASTE HANDLING: Employee should be familiar with air and water pollution laws. Know how to operate an incinerator; know safe temperatures of operation; smoke pollution controls and heat gauges. Be able to operate manual or automatic baling equipment. Be familiar with salvageable waste that can be sold; should be trained in compactor equipment and its safety features.

FLOOR SANDER: Sand floors and refinish when needed. Run a Power Scrubber and a Power Sweeper. Be familiar with materials: urethane, epoxi cleaners and detergents. Know applications and proper use of sanding paper, steel rolls and fiber rolls.

GENERAL CLEANER FOOD INDUSTRIES: Cleans overhead and washes down walls. Mop floors and clean drains. Know detergents and proper amounts to use; type of equipment to be used, including brushes and sponges. Use ladders and manual or automatic lifts properly for safety reasons. Report anything in equipment or other which does not look right.

PAINTER FOR FOOD INDUSTRIES: Should know equipment and paints needed for them. Know the surfaces he can paint and those which are not to be painted. He must know lay-out of entire food plant. What area can be painted and what day it is to be painted. It is essential that all equipment below the painting act be covered. Knowing machines and machines to be painted is most important. Know how to set up scaffolding for different heights.

PEST CONTROL EMPLOYEE: See that plant is sprayed on schedule. Fumigate on schedule (monthly) storage bins and know dangers in using fumigants; follow directions closely. Responsible for rodent control with rodenticides. Bait traps and change rodenticides when needed. He is closely supervised by department head. Must know lots about chemicals and show pride in work. Keep schedules updated, showing when and what he has done according to set schedule. Keep record of where rodents are detected and how they have responded to rodenticides. (Rodents are kept out of plant). Must know uses and dangers of chemicals, rodenticides, etc.

STEAMROOM CLEANER: Know equipment that is being cleaned, whether it can be done wet or dry. What are the functions of the machines; where are burners and electrical controls. Should have some knowledge of detergents and sanitizers used and purposes. Know temperatures, i.e., what equipment can take high temperatures. If a machine is in contact with food and can't take high temperatures, it must be sanitized and then rinsed cleanly. Be conscious of safety practices; wear boots, and be careful not to slip.

GROUND MAINTENANCE WORKER: Trained to operate tractor and various types of mowers. Know fertilizers and methods of weed treatment, pre-and pro-emergence of weeds. Know soil and when to apply lime

and different types of fertilizers. Recognize differences between different types of grasses. What type responds to shade and unusual soil conditions, and select accordingly. Know pruning, how to prune shrubs and when to prune. Some idea about using sprinkler system, i.e., best type to use for this area. Ideas on flowering plants and trees. Some knowledge of parking facilities.

FOREMAN, ENVIRONMENTAL SERVICE: Must know dangers, the proper use, amount to be used of all the chemicals that are handled in all of the upkeep. Know responsibilities of all jobs and how to train people and correct as necessary. Essential that a Foreman know management and labor agreements; also they must know Federal law; Equal Opportunity, as well as other laws of city, county, state, etc. Must know company policy and standards and how to handle people and employees; train, understand, and advise. Must have the ability to absorb disappointments, discouragements, and ridicule. In supervision, this is one of the main structures of a good Foreman. These traits enable him to handle employees with facility and get the most out of them; and makes it easier to train and gain confidence of subordinates. These factors make the Foreman more efficient and avoids labor problems. Most of all the Foreman should have the ability to lead.

ENVIRONMENTAL HEALTH DIRECTOR: Responsible for all activities pertaining to environmental health and control in the operation. Must be able to set up schedules and formulate programs. Ability to organize an Environmental Department from the beginning, without trained men to assist him. Escorts all inspectors; local, state and Federal throughout the plant. Have knowledge of food laws, requirements of local, state and Federal Governments. Have had training in water and air pollution and have a chemical training background, preferably a college graduate in Chemistry or the minimum of 2 years college equivalent. Should know to inspect all equipment, buildings and grounds. Should have same abilities as Foreman to absorb disappointments, discouragements, and ridicule. Be able to guide and control everyone under his supervision. Often is moderator between employees and his subordinates, including supervisor under him. Should know labor and management agreements, company policies, rules, and regulations. Most of all should be in position to handle any emergency that may arise, keeping a level head at all times. Also should have some idea of plant security and be able to train guards if necessary.

D. TEXTILE MANUFACTURING

SALVAGE WORKER: Collects all types of left-overs from manufacturing, wrapping, wooden containers, packages, left-over raw materials, metal parts, anything remaining. Separates out usable materials or recyclable materials and sends to appropriate department which ships to other processors. All non-usable materials are then loaded on truck and hauled to landfill for county or city on daily basis if required.

WASTE TREATMENT PLANT HELPER: Assists Waste Treatment Plant Operator as needed. Cleans up place and performs routine maintenance. Moves equipment and materials; some reading of meters, anything in plant goes amiss, bring to attention of Waste Treatment Plant Operator.

WASTE TREATMENT PLANT OPERATOR: Responsible for operation of Waste Treatment Plant, maintenance of plant, making necessary tests to determine extent to which pollution is removed. Tests include B.O.D. (Biological Oxygen Demand), chemical oxygen demand, pH content, settleable solids, suspended solids, and volatile suspended solids.

NOISE ABATEMENT TEST TECHNICIAN: Perform tests to determine noise levels in various departments of the plant. Keep records of noise levels. Makes inspections of machinery relative to condition producing noise and make recommendations for noise abatement or reduction; and be responsible for plant noise level being kept to lowest practical limit. May recommend change in equipment from gear type to belt type equipment.

HEARING ACUITY TEST TECHNICIAN: (Special Class of Medical Technician). Tests workers in departments with noise at regular intervals to determine hearing acuity levels. Keeps records on change in acuity level of workers and reports to management and also to Noise Abatement Technician. Takes temporary steps with ear-muffs or ear-plugs to alleviate acuity problem of workers while mechanical difficulty is being remedied.

E. SEWING

CLEAN UP MAN (SWEEPER): This man has the responsibility to clean up continuously around the machines, sweeping up all cuttings from the patterns that have been prepared for sewing. He keeps all this waste cleared and takes it to the dumpster. He also picks up anything else around the machines, such as patterns, etc., and this is also hauled to the dump. He is responsible for taking cartons, collecting them in an area, breaking them down, stacking them up and preparing them for the pick-up person who comes twice a week to take them away.

F. LEATHER (TANNERY)

WASTE WATER PLANT HELPER: Assists in operation, sampling and monitoring; and also helps correct any mechanical difficulties or problems which may develop in the plant. He may take some of the samples required at the different points every hour under instruction and direction of the operator.

WASTE WATER OPERATOR, SHIFT: Duties are essentially those chief operator, but he works a shift. Starts with controls and rate of flow set by Chief Waste Water Operator. Makes some minor adjustments but basically he follows set plan and also takes samples at 4-5 points in plant each hour during the time he's on this shift. Some of these samples are used for lab corporate tests. But the majority are used by him in his normal monitoring of the waste water plant.

WASTE WATER OPERATOR, CHIEF: Operates waste water treatment plant. Does sampling and feeding of chemicals. Controls rate of treatment. Does maintenance and upkeep of equipment. Reports operating results to the chemist. Trains, as needed, any workers under him. Sets controls, rates of flow and works operating tests on each batch of water going through the system to see how he can best operate the daily flow. He monitors operation and takes samples at 4-5 points in plant each hour. Some of this is used in composite laboratory test, but the majority is used by him in normal monitoring of operation.

LABORATORY TECHNICIAN: Responsible for sampling industrial waste water, analysis and reporting results from lab tests to chemist. Later when program is enlarged to include air and waste, he will be responsible for these tests also.

CHEMIST: Responsible for operation maintenance and control of waste water treatment. Supervises analysis of water operation of waste water plant, and the mechanical parts of the plant. Responsible for staffing and also the supplies needed in the plant. He must know new regulations and other programs to meet requirements as they develop. He also does developmental work and maintenance operations to keep up efficiency. Responds to the tests conducted by the lab technician.

MANAGER OF WATER & WASTE TREATMENT: (New Job Anticipated). Responsible for water treatment, waste water treatment, solid waste disposal, air and water pollution control. In these major responsibilities he will be assisted in details by the plant operator helper.

G. CHEMICALS

1. Industrial Chemicals

a) Polishes and Sanitation Chemicals

ASSISTANT QUALITY ANALYSIS TECHNICIAN: Works under supervision of Quality Analysis Chemist and performs all quantitative and qualitative tests required on raw materials finished products, inventoried raw materials, and finished product before going into inventory to determine if it meets standards relative to phosphate content, flash point, pH, and absence of forbidden poisons or substances. If in doubt relative to whether tests meet standards, the Quality Analysis Chemist makes final decision. Assistant Quality Analysis Technician in a branch factory often heads up test work on raw materials, finished materials, and inventory of both raw materials, finished materials and finished product. He does sample tests and makes reference of results to Quality Analysis Chemist at Corporate Headquarters. He does not set standards or determine corrective actions. He reports to Quality Analysis Chemist who decides corrective actions and whether acceptable standards are being met.

QUALITY ANALYSIS CHEMIST: Analyze raw materials purchased by company and products manufactured from the raw materials to assure their compliance with the standards under which the product was registered with the agency. Both quantitative and qualitative laboratory tests are made of raw materials and the finished products in order to determine if standards are met. Raw materials are tested for phosphate content, flash point, pH, and for absence of forbidden poisons or substances and that basic raw materials meet company standards for solids. When raw materials are stored in inventory six months or longer, tests are made to determine if deterioration has occurred. After product is manufactured and before inventory, the quantitative and qualitative tests are repeated in order to assure that products are up to standards in terms of content, pH, flash point, odor, and viscosity.

b) Industrial Inorganic Chemicals

SERVICE OPERATOR: He has the responsibility of driving the dump truck and picking up miscellaneous trash and waste from collection points (in small dumpsters). And also picking up the waste that is in waste cans. These hold 50 gallons. The collection of these materials in the dump truck is then hauled to the company landfill.

CHEMICAL OPERATOR: His responsibility is that he loads from the central tank, solid chemical waste into the tank truck. Hauls this waste material to the company landfill. The solid chemical is pumped in as a slurry to this central storage tank by designated chemical operators in the plant. (This is only a minor part of their total job function).

CHEMICAL ENGINEER: It is his responsibility to design and supervise the construction of the waste water treatment plant. When this is completed, he will be responsible for starting it up and training of the operating personnel. It is expected that as this work progresses he will later assume responsibility for air pollution, water pollution and for the company landfill.

2. Plastics

PLANT HELPER, WASTE RECOVERY & DISPOSAL: Grinds scraps for reuse in a recycle or reclaim system. Collects unusable scrap and loads truck body which is hauled to landfill on contract basis.

MATERIALS HANDLER: Primary responsibility is to make sure right type of polyethylene goes to the right machines, considering the plastic container being made. Plant uses 5-6 types of polyethylene in producing its wide variety of plastic containers. He must be sure that no mistake is made in feeding the type of polyethylene required for the type of product being made. He also has responsibility for collecting scrap polyethylene, accumulating it in 1,000 pound boxes for re-sale to the re-processors.

3. Paint

TECHNICAL DIRECTOR OF ENVIRONMENTAL CONTROL AT PLANT: Is responsible for certain technical and engineering aspects for regulations which apply to the local plant operation. He helps to interpret regulations and makes recommendations to aid compliance with regulations, with environmental regulations in mind. Environmental protection is a responsibility of the entire plant staff.

H. PLASTICS FROM WOOD PULPING

SLUDGE PLANT OPERATOR: Operates plant which removes solids from waste. Loads solids into truck that is dumped into landfill. He also handles the aerators in the lagoons. He starts and stops them, and keeps a daily record of their operations. If one of the aerators fails, he notifies the maintenance people and gets them to come out and restore the aerator. He drives a truck to dump the solids generated by the filter operation.

ENVIRONMENTAL CONTROL TECHNICIAN: (Operate on a shift schedule); monitors mill wastes through checking instruments by picking up samples and re-testing in the laboratory twice per shift. In monitoring control the shift technicians also run C.O.D. (chemical oxygen demand). It is the responsibility of the environmental control technician on whatever shift to locate spills and take steps to stop them; and make sure that the pH is controlled before the waste water goes into the lagoon for aeration. The environmental control technician uses chemicals mixed by the senior environmental control technician in making these tests which are done by each shift man.

SENIOR ENVIRONMENTAL CONTROL TECHNICIAN: He is in charge of day shift program. Primary function is to monitor mill waste. He has many instruments which give information on mill waste. He backs up this information by picking up samples, and re-testing in laboratory. In his monitoring work he controls the pH. He, along with other environmental technicians, use C.O.D. (chemical oxygen demand) to test control organic loads to treatment system. If his instruments detect any spill in the mill, he locates the spill and takes steps to stop it. He makes sure pH is controlled before waste water goes into the lagoon for aeration. He is certified by the State as drinking water operator. Checks drinking water daily in mill to be sure chlorine is being added in proper amounts. Sends drinking water samples to State once a month. Mails blotters to radioactivity lab daily for them to determine radiation released into the atmosphere. He has five air filters around the plant which measure any fallout of pollution from plant. Prepares various reports for submission (see page 63)

of data within the company and to regulatory agencies. This is sent to them once weekly and covers all the results of the tests which show what goes into the river and these results are sent to them. He makes chemical solutions used in testing which is done by the environmental test control technicians of the other shifts.

ASSISTANT ENVIRONMENTAL ENGINEER: He works directly under the direction of the environmental engineer and takes charge when the environmental engineer is out of town or assigned to other duties. He supervises and does smoke stack monitoring for particulate and gaseous emissions. He assists environmental engineer in all his responsibilities including public relations work. He coordinates maintenance work of the environmental control equipment. Assists in setting up jobs to be performed by the various technicians. He reviews daily test results and charts so that he can point out problems or take action to insure the proper operation of the mill and water treatment systems and to minimize mill chemical and fiber losses. He meets the public to present efforts of company at abating pollution both of water and air. He also has occasions to deal with regulatory agencies in explaining company operations in the absence of the environmental engineer.

ENVIRONMENTAL ENGINEER: (Degree in Chemistry; or now an Environmental Control degree). He is responsible for the overall program of overseeing the environmental aspects of the mill. See that it has a program of treatment and abatement that meets requirements. He must be sure that the mill is in compliance with all the State's requirements for environmental control and must know the regulations so that he knows what has to be done. He must have test programs set up with sufficient tests so he can demonstrate at any time what company environmental staff is doing. He makes reports on all these things to local plant officials and also State and Federal regulatory agencies when they have requirements. He negotiates with various State and Federal officials on any of these problems. Makes recommendations on equipment to accomplish the company environmental goals. He has to attend hearings and give evidence for formulation of new rules and regulations. He also is responsible for answering complaints from neighbors and others in the company area, and makes recommendations for settlement if the company is determined to have done damage, or when it is shown to be at fault. He handles all the mill's external contacts on pollution problems. A good part of this is public relations, and he also gives talks about programs to schools, civic clubs, environmental groups; and also to customers.

I. PULP AND PAPER

1. Corporate Headquarters

RESEARCH ASSISTANT, WATER POLLUTION: Runs tests similar to those by Senior Research Assistant but under his direction. Carries out instructions of Senior Research Assistant, and runs specifically: Spectrophotometers, pH meters and tertiary devices, dissolved oxygen meters. He gains competency in laboratory.

SENIOR RESEARCH ASSISTANT, WATER POLLUTION: Has overall responsibility for running tests in laboratory as laid out by his superior. Runs tests, records tests, lays out data so it is useful to managers. Includes going into mill to run special studies-to-running bench scale studies of a new process, both in water and air pollution.

TECHNICAL DIRECTOR, AIR & WATER POLLUTION: Responsible for performance of headquarters staff in research results pertaining to control of Water and Air Pollution. Supervises and monitors.

2. Plant or Mill Structure

PICK-UP MAN, AIR & WATER POLLUTION: Collects samples of water and assists laboratory assistants. Monitors instruments and metering devices of facilities, both inside and outside; and reports any condition which needs attention.

LABORATORY ASSISTANT, AIR POLLUTION: Performs routine laboratory duties in support of laboratory functions but is especially responsible for Air Pollution. Performs dust fallout studies, sulphuration plate studies. Some cases performs laboratory tests on gaseous emissions from stacks to determine different organic gases present -- mercaptans, SO_2 , H_2S . Shift Operators, Air and Water Pollution (same functions as Laboratory Assistant performs during day). Keep dissolved Oxygen Probe calibrated, regulate flows of effluent from ponds, just on 4 - 12 and 12 - 8 shifts. Regulates Oxygenation of effluent.

LABORATORY ASSISTANT, WATER POLLUTION: Receives water from inflow and effluent leaving plant. Tests for B.O.D., pH, solids, temperature, same for C.O.D. (chemical oxygen demand), alkalinity, and other analyses to technical operation of the plant.

PROCESS ENGINEER, WATER & AIR POLLUTION: Responsible for carrying out programs for accumulating data; reporting on the technical feasibility of the various methods of controlling and improving effluent and air control facilities. Review for the Technical Director results of tests in laboratory and make recommendations relative to direction in which should move in program of Water and Air Pollution. Primarily responsible for technical performance of Laboratory Assistants, work of Process Engineer, and Assistant Technical Director.

ASSISTANT TECHNICAL DIRECTOR, AIR & WATER POLLUTION:
Supervises all the laboratory personnel and is responsible
for technical accuracy of work including record keeping.

VII. DURABLES MANUFACTURING

A. CONCRETE MANUFACTURE

CUBER: Places blocks in right position in semi-automatic cuber. This arranges blocks in a certain order (alternating so that they can be stacked). Keeps them in stacks for about a month before they can be loaded by a fork lift operator and hauled to the job.

FORK LIFT OPERATOR: Drives fork lift to put block into kiln. When blocks are cured, takes them out and puts into the yard.

YARD FORK LIFT OPERATOR: Stores blocks in cubes and loads trucks to fill orders from contractors and other customers.

MATERIAL MAN: Keeps material for concrete blocks in bin. Runs them up to the bucket on "feeder lines". The materials for each product being manufactured are weighed automatically and run into the mixer. He also helps with the cleanup at the end of the job.

TRUCK DRIVER OF CONCRETE & BRICK PRODUCTS: Main functions are to position trucks so that they can be loaded by fork lift operator. Then drives the load of cement block or cement brick to construction site. Uses unloading boom to deliver block or brick at place on ground or in other position where contractor wants them located. The truck driver must exercise care to avoid spilling any of load before arriving at delivery point.

SUPERINTENDENT OF CONCRETE BLOCK PLANT: He is responsible for the efficient and effective operation of the block and brick manufacturing plant. He watches quality of blocks and safety of men. Sees that they have ear plugs or air protectors where they are close to the actual operation. He monitors the materials in the "skip buckets" and changes as needed in order to keep up the quality of the products being manufactured. Maintenance of quality in products is controlled through machines which have control mechanisms that he can change as needed.

B. FABRICATE METALS

1. Aluminum

WASTE & TRASH MATERIAL CONTROL MAN: Collects containers of trash and delivers to compactor where it is picked up at regular intervals by Dumpster outfit.

SCRAP COLLECTION MATERIAL MAN: Collects scrap metal from operations, loads and ships to a company affiliated plant which reprocesses scrap metal into new usable metallic materials.

WATER POLLUTION TREATMENT OPERATOR: Responsible for all aspects of water treatment requirements which are reflected in pH levels of effluent. pH levels are shown filtering automatically by monitoring device which records pH levels on a chart at each of three pits. If charts show high acid level or high alkali level, adjustments are introduced automatically by the monitoring device which either adds acid or alkali. He may at times send out samples of polluted water for laboratory tests. His responsibility is to observe slope of pH graphs and confer with operating people inside to determine cause of irregular variation. Checks operating practices to get pH control at reasonable levels. Water goes through pipes and through three filtering pits and to clarifier where polymer is added to coagulate chemical wastes into a cheese-like substance. Solid waste goes to bottom and then is pumped through pipe into storage tanks and then to filter press. Solids from press are hauled to landfill.

2. Steel

LABORER, MILL CLEAN UP: Picks up slag pieces of steel and hauls to scrap piles. Has also other general cleaning duties.

CLEAN UP MAN: Cleans up yards and salvages finished products which are moved to storage area. He also picks up non-salvageable materials which are collected in Dumpster or otherwise disposed of.

SWEEPER OPERATOR: Operates sweeper to clean dust, loose pieces of strapping and other debris. He moves it to landfill and disposes of this collection of worthless sweepings.

DUMPSTER OPERATOR: Operates specially designed truck to pick up Dumpsters located throughout the plant. Takes this collection of waste materials and dumps in landfill.

HEAVY EQUIPMENT OPERATOR FOR SLAG: Goes into slag pits which are alongside melting furnaces. Scoops out with front end loader the slag. Then loads into dump-type gondola freight cars; yard people pull car from melt shop to slag dump. Railroad switchman pulls lever which causes dump to empty.

ENVIRONMENTAL TECHNICIAN: Performs measurements of environmental factors which may be hazardous to the safety and health of employees, determines air and water quality, and tests personnel for exposure to those factors to be measured. Includes, but are not limited to, heat, ventilation, air flow, mist fumes, mist sprays, noise levels, vibration, paint residues, industrial water quality, air quality, etc. Various instruments must be maintained, calibrated, duplicated and used in precise manner to measure these environmental factors. Prepares collected data for computer input and compares data with established standards.

SAFETY SUPERVISOR: Maintains awareness of new standards, instrumentation, procedures, and personal protective equipment and performs evaluation of same. Administers audiometric and vision testing of employees. Inspects sanitation facilities and emergency equipment. He reports to Senior Engineer for Health and Safety, implications involving machinery.

C. AUTO ASSEMBLY

SALVAGE MECHANIC: Tear down production assemblies, sort, repair, classify, pick-up and deliver to collection point. If parts are good, they go back to operation. If they are not satisfactory, they are scrapped for metal and are then dumped into a trash compactor or a metal salvage container.

FOREMAN, SALVAGE SUPERVISOR: Inspection, repair and/or salvage of production parts. Supervises salvage mechanics who collect and sort these parts into sets.

SALVAGE DEPARTMENT MANAGER: Collects all general parts not usable or which have been broken. But some parts can be re-salvaged. The others have to be scrapped, and still some are classified and assembled into classes to be sold. These include: steel, copper, brass, and fiber, all handled separately.

SAFETY ENGINEER: He is charged with responsibility of reducing occupational hazards and frequency of accidents. He examines plans and specifications for new machinery and equipment to ascertain if all precautions have been included.

ENVIRONMENTAL ENGINEER: Responsible for reviewing, testing, recommending, and reporting the precision of facilities or tooling that affect control or involve specific environmental and/or ecological conditions. Also, must be knowledgeable of applicable, local, State and Federal regulations, including corporate. These include: codes, laws and policies involving ecology and environmental aspects.

VIII. WAREHOUSING, LARGE RETAILERS, ETC.

A. FOOD CHAINS

SCRUBBER RIDER: He rides the scrubber machine as he scrubs the floors with the machine to make them clean, using various cleaning chemicals.

SWEEPER RIDER: Rides the sweeper which sweeps floor clean of miscellaneous items including scraps, small pieces of paper and small pieces of cardboard. His sweepings are accumulated at a point where they can later be carried to the compactor.

CLEAN UP MAN: Collects cardboard, also waste or damaged fresh produce. Carries to compactor. Cleans out racks also and sweeps them out.

CARDBOARD BALER: Cardboard is delivered to him from the salvage area. He picks it up and puts it into the baler and forms bales of cardboard which are later delivered to a central point for ultimate sale.

SALVAGE WORKER: He unloads trucks, floats, bread and produce. He also loads baled cardboard on trucks to be taken to a central location.

PLANT SANITARIAN: His major responsibilities are to handle insects and rodent control problems. And he also oversees the clean-up and salvage operations of the warehouse.

B. LARGE MERCHANDISE WAREHOUSE

SWEEPER RIDER: Rides the sweeper which sweeps floor clean of miscellaneous items including scraps, small pieces of paper and small pieces of cardboard. His sweepings are accumulated at a point where they can later be carried to the compactor.

COMPACTOR OPERATOR: He takes carts off the tow line and unloads in compactor and then operates the compactor. He also goes out over the plant when time is free, and picks up carts of cardboard, paper, etc., and puts on tow line, which takes the material directly to the compactor.

C. HOTELS AND FOOD SERVICE

HOUSEMAN, TRASH: Special responsibility in removing trash from rooms and putting in dumpster.

KITCHEN HELPER, GARBAGE: Grinds light, disposable left-over foods and runs into sewer. But most of food left-overs and food wastes go into garbage cans. He picks this up and fills garbage cans which generally have liners. These are loaded on hand truck and hauled to Dumpster. Unloads garbage cans in Dumpster and returns empty garbage cans on hand truck to kitchen areas.

DUMPSTER MAN: Cleans up around Dumpster. Steams down Dumpster. Cleans out Dumpster can. Disinfects cans and some of garbage cans from kitchen which had liners broken by hot food; or if liners were left out of garbage cans carelessly, must wash out and disinfect. Rakes through food at Dumpster to recover any silverware picked up with food.

IX. TRANSPORTATION

A. TRUCKING

SAFETY SUPERVISOR IN TRUCKING: Responsible that drivers are qualified to drive large diesels with safety in interstate commerce. Knows the rules and regulations of the Federal Department of Transportation and also State regulations and acts in accordance with these regulations. Aware that all pieces of equipment are maintained in order to meet monthly inspections and be sure and willing to correct malfunction. Responsible for Occupational Safety and Health Act requirements as to safety and health of workers. Is inspected relative to these regulations regularly and outlines in letter needed replacements to which company must comply. He must be sure terminal is in proper order, insulation in good working order, adequate lighting; and office equipment working properly for personnel. Responsible for anything which may affect adversely health of terminal employees. Does road checks to determine level of performance of drivers, writing up reports on findings. Checks logs of drivers to determine if Federal Regulations are being complied with. May ride with driver to determine any deficiencies in his performance as a driver. Responsible also to keep terminal and grounds in order.

SAFETY DIRECTOR IN TRUCKING: Responsible for setting safety policies and standards that must be complied with. Does spot checking any time on tires, brakes, lighting, and proper labeling, if flammable liquid is being hauled. Responsible to follow through to determine if letter from Occupational Safety and Health Act, setting forth needed adjustments are being met, so that company is in compliance for the re-check.

B. AIRLINES

INDUSTRIAL WASTE TREATMENT PLANT MAINTENANCE MECHANIC: Does preventive maintenance on all motors, pumps, agitators and performs overhaul type maintenance where a machine or mechanism has to be rebuilt. Also is responsible for all the electrical work.

LABORATORY ASSISTANT, INDUSTRIAL WASTE TREATMENT: Analyzes water after plant treatment to determine impurities and if meets standards, return water to stream. Tests for settleable solids, pH value, B.O.D. (Bio-Chemical Oxygen Demand); Cyanide, Phenolics, heavy metal (Al, Cd, Cr, Cu, Pb, Ni, Ag).

INDUSTRIAL WASTE TREATMENT PLANT OPERATOR: Responsible for treating all waste that comes into plant; jar tests to determine how to treat oil emulsions. Keep check on plant operations through Control Panels by monitoring acids, caustics, aluminum sulphate. Monitors pumps; determines Chrome and Cyanide levels and treatment. Is responsible for preventive maintenance of plant equipment: changes oil, greases pumps and runs filter.

SUPERVISOR OF INDUSTRIAL WASTE TREATMENT: In charge of operation of Industrial Waste Treatment Plant, testing of results from treatment process, reporting to Environmental Protection Agency monthly; and accountable to assistant Vice-President for meeting standards of programs.

C. RAILROADS

1. Headquarters

DRAFTSMAN ENGINEERING TECHNICIAN: Assists in design and engineering work for waste water treatment plants. The design work consists of drafting and surveying.

ASSISTANT ENVIRONMENTAL ENGINEER: Assists Supervisor of Environmental Engineering in developing and monitoring an effective program of pollution control and abatement; and in negotiating and coordinating technical aspects of program with various State and Federal Regulatory Agencies relative to pollution standards and pollution control facilities. Assists in planning and designing a waste water facility for construction on contract and helps in getting the newly completed facility in operation, monitoring its operation over time and reporting to the Supervisor of Environmental Engineering. Prepares and helps furnish information to top management on operation of program and current developments in environmental control. Conducts research under direction of Supervisor into new technology related to waste treatment and Environmental matters.

SUPERVISOR OF ENVIRONMENTAL ENGINEERING: Responsible for managing company's pollution control and pollution abatement program. Dealing, negotiating and coordinating with various State and Federal Regulatory Agencies relative to pollution standards and pollution control facilities. Preparing and planning design work for waste treatment plants after construction is completed. Monitors plant operations of plants after in operation. Responsible for advising and furnishing information to top management on environmental matters. Responsible in areas of budgets and cost control related to environmental projects and programs. Must institute research into new technology related to waste treatment and environmental matters.

2. Waste Water Plant Operations

CHEMICAL LABORATORY TECHNICIAN, WASTE WATER TESTING: Physically carries out all of tests assigned by Chemist relative to Waste Water from a variety of Waste Water Plants located widely throughout the company system. The technician gives the results of his tests to the Environmental Engineer and also reports them to both State and Federal Regulatory Agencies.

CHEMIST FOR WASTE WATER TESTING: Responsible for analyzing waste water samples for pollutants, such as oil, solids, pH, C.O.D. (Chemical Oxygen Demand) and analyzes water for a variety of chemicals (Chromate, Phenol, etc.). Reports results from analyses to Supervisor of Environmental Engineering and appropriate persons in State and Federal Regulatory Agencies. He conducts both qualitative and quantitative analyses.

WASTE WATER PLANT OPERATOR: Responsible for operating waste water plant facilities and equipment in plant. Maintains and repairs waste water facilities. Collects waste water samples at varying intervals which are sent to special laboratory for tests. Types of equipment: gravity type, oil separators, air flotation separators, sludge removal and disposal systems, assorted oil skimmers and pumps and air compressors.

X. WASTE COLLECTION AND DISPOSAL

A. LARGE CORPORATE ENTERPRISES

LABORER, SALVAGE: Salvages materials in industrial or commercial establishment by collecting such reusable items as sacks and staves, and waste materials such as lumber, paper, rags, fiber, yarn, rubber, beer, soft drinks, chemicals, and scrap metal; in scrap gondolas, barrels, or other containers, using handtruck, industrial truck or wheelbarrow. Separates waste into reusable, recyclable and nonusable.

BALER OPERATOR: Operates baler to condense waste into large, fairly heavy bales. Manually ties bale with wire. Chain hoists or lifts bale and weighs. After weighing puts ticket on bale showing its weight.

FORK LIFT OPERATOR: Picks up bales from baling area and transports to storage area. Loads on rail car or truck at night or other time. Rips off part of weight-ticket from bale and presents to purchasing department which consolidates and bills purchasers for baled waste.

WASTE DISPOSAL MAN: Responsible for accumulating all waste and separating all reusable waste or waste that is scheduled to other plants for recycling. Nonusable waste is either delivered to incinerator or landfill or is picked up on contract at regular intervals by private contractors. Supervises Laborer, Salvage, Baler Operator, Fork Lift Operator, or others. Makes contacts and contracts for shipments of reusable waste or for recycling and for disposal of nonusable waste.

B. WASTE PAPER COLLECTION

BALER HELPER: Assists baler in his duties. Sticks wire through baler machine so baler can tie up bale.

FORK LIFT DRIVER: He picks up bales at baler press with fork lift machine and delivers to storage area in warehouse. He also loads bales on trucks and rail cars for shipment to mills which recycle this waste paper baled products.

BALER: He is supervised by the plant manager, and is instructed and directed how to remove the different grades of paper from belt. Then bales in standard size bales of a variety of waste paper products. These bales vary in weight from 1100 pounds to 2500 pounds, depending upon the grade of paper baled.

MAINTENANCE MECHANIC: Keeps baler and fork lift machines and trucks operative. He must be mechanically trained to make necessary repairs or replace parts as needed to keep machines in operation.

FOREMAN OF PLANT: Takes up paper waste as it arises. Sorts and makes sure it gets to baler or conveyor belt. He supervises all work and the workers, also, in the sorting department.

SHIPPING & RECEIVING CLERK: Weighs paper, when it arrives, writes out receipt for paper that is received. In fact this man does all the paper work, posting inventory of bales, and when they are shipped, keeps track through invoices of how much is shipped and to whom.

PLANT MANAGER: It is his responsibility to remove paper from customers as they deliver it, sorting as necessary. He is also responsible for baling it and making it ready for shipment to mills. They pick it up by truck or it is sent to them in rail cars.

SALESPERSON & PUBLIC RELATIONS MAN: He calls on customers for the purchase of paper, cardboard, etc. Makes contract to buy and for delivery of paper to plant where it is sorted and baled. In many cases, however, the plant picks up these waste materials from the customer.

C. WASTE COLLECTION BY COMPANIES ON CONTRACT

1. Septic Tank

SEPTIC TANK SERVICE WORKER: Assist Foreman Septic Tank Service to "Rod out" and/or replace sewer pipe line from house; and also to operate large 3 inch suction hose to clean out accumulation from septic tank and deposit it in large tank on truck. He drives truck to job and also to the large county or city sewer tank which has special receptacle for receipt of sewer collections for processing as with other types of sewage. Also assists Foreman with repairs and maintenance work on truck and its equipment.

FOREMAN, SEPTIC TANK SERVICE: Responsible that he and Septic Tank Service Worker keep septic tanks under contract operative. Gets calls through Telephone Answering Service from owners of septic tanks; and sets up appointments for corrective and maintenance work on septic tanks. Usually one of two possible actions. First, clean out septic tank, using large 3 inch suction hose which fastens to truck power motor with tank. This sucks out of septic tank thick accumulation of stuff. Second, clean out or replace sewer line pipe from house. Sewer spring with big head goes inside pipe and "rods" out line from house to septic tank. When required replaces broken sewer line pipe from house to septic tank; also lid to septic tank when broken.

2. Waste Removal Contract Companies

CONTAINER & COMPACTOR REPAIR & MAINTENANCE MAN: Weld, repair and paint containers and compactors, either at customer's location or at headquarters of operation. Replaces tops as needed and if hole is punched in side, must weld or replace.

MAINTENANCE MAN FOR WASTE DISPOSAL TRUCKS & FIELD OR EQUIPMENT BULLDOZER: Maintains trucks for waste collections and landfill equipment or bulldozers in working order mechanically. Repairs motors and working parts as needed or replaces.

WASTE COLLECTION TRUCK DRIVER: Picks up waste container boxes or dumps in truck and hauls to landfill and dumps as instructed by heavy field equipment operators. Makes out report for every stop, indicating containers picked up at each location.

HEAVY FIELD EQUIPMENT OPERATOR: Takes what is dumped by trucks, spreads out and packs, and then covers with dirt or buries with bulldozer. Determines where waste on trucks should be dumped. Maintains landfill roads by filling low spots or removing irregularities in roads. Digs dirt for landfill operations as needed.

DISPATCHER OF WASTE COLLECTION TRUCKS: Dispatches truck according to schedules to meet customer requirements. Responsible for drivers' schedules, their efficiency and performance; and hires and fires to meet standards and obtain properly qualified drivers who can meet performance standards.

XI. DEMOLITION WORK

A. AUTOMOBILES

GROUND MAN IN AUTO DEMOLITION WORK: Takes off radiators, starters and generators. He also picks up odds and ends of pieces of metal, accumulates on ground in wrecking areas and then puts in Press Machines with automobiles which are being pressed into bundles.

TRACTOR TRAILER OPERATOR: Supervises loading of pressed cars, chains them down to keep from falling off during drive to shredder mill. Drives to Shredder Company, pulls under crane at Shredder Mill and unloads bundles of pressed cars into storage area. Often, however, unloads bundles of pressed cars directly into Shredder Machines at mill.

LOADER OPERATOR (LARGE TRACTOR WITH FORKS) Fork-pops motor out of car. Turns car over and rips tank off car. Tires and wheels are removed with tire impact wrenches under his supervision and help. Lifts cars onto Press Machine. The Press Machine presses four cars into a bundle. Then he unloads car bundle from press and loads onto trailer.

SUPERVISOR OF DEMOLITION WORK: Keeps flow of abandoned and wrecked automobiles flowing into wrecking areas equal to outflow of pressed autos plus other materials to prevent overloading or overcrowding of autos in order to have necessary space for Presser Machine. Maintains efficiency of work force. Receives and approves orders from Atlanta City for picking up abandoned autos. Maintains good trade relations with shredder company.

B. STRUCTURAL DEMOLITION

LABORER: He must be familiar with the various tools and have minor skills as a plumber, carpenter and electrician. He works with all these varied things in demolition work. And he must have the tenacity and strength to stick out the job once it starts. Another characteristic is that he does not fear heights or climbing or moving around on buildings that are in process of being demolished.

TORCH BURNER: He must be capable of using a torch and know how to take care of it for demolition work. He must not be afraid of heights or climbing whenever off the ground on partial structures. He must have a fair working knowledge of the crane and how to rig a lift load line of the crane to structure or portion of the structure, and he must also be able to cut loose from the structure if need be.

FRONT END LOADER OPERATOR: Loads truck in fast time, but effectively so as to produce volume of business. Responsible for care of equipment, including greasing, watching oil pressure gauges to keep correct and see that fuel tank is full.

TRUCK DRIVER IN DEMOLITION WORK: Responsible that truck is loaded properly and full and that pieces of material extending above top of truck are trimmed off to level of body. At dumping place in landfill, make sure on hard soil so wheels not bog and turn over truck. Operates truck so as to avoid carelessness and misuse of truck. Makes sure has proper pressure in tires, water in radiator, and fuel in tank. Knows how to change tire if flat develops. Cleans up after dump at landfill and makes sure all materials and dirt are emptied from truck at landfill.

CRANE OPERATOR: The term "crane operator" applies to workers who operate cranes to hoist, move, and place materials and objects using attachments, such as sling, electromagnet, grapple hook, bucket, demolition ball and clamshell. The crane in demolition work is one of the most important instruments to be involved. In operating the crane effectively in demolition work, he must become personally involved in the handling of the demolition ball on the crane. It takes more hand and eye coordination than setting steel beams. He must be able to do an adequate and safe job with the ball that is being thrown by the crane.

FOREMAN: He has personality training and broadness to meet all types of clients and the ingrained ability to make other men want to follow him. Knows his capabilities and also the limitations. He must be mechanically inclined and not have fear of heights on buildings that are being demolished. The mechanical capabilities and becoming immune to the fear of heights must come from work experience. The foreman will usually have up to 15 men working with him who possess a variety of skills whom he assigns and supervises using equipment, recognizing the technical requirements of the job in order to get the job done efficiently and according to schedule.

ESTIMATOR: Makes quantity take-offs, either from blue prints or from field measures. Prices by unit price method. He should be experienced enough to make a time and material estimate. His abilities are such that he must be able to visualize to determine the best method for doing the job, so he can arrive at least expensive estimate. His abilities are such that he must be able to communicate with field supervisory personnel or the general superintendent in order to explain what method he had in mind when he bids on the job.

SAFETY ENGINEER: Checks all jobs, equipment, and tools to determine if they meet OSHA standards. Checks personnel for shoes, hard hats and if rated correctly for demolition and inspect for hazards and make recommendations and/or provide protection against hazards. Checks each demolition job to determine if new hazards are developing and the extent to which previous hazards have been eliminated. Keeps log and makes report of all injuries in a specified period of time, from simultaneously to up to 72 hours.

SALVAGE SALESMAN: He must be highly versed and have a broader working knowledge of building materials and values of these materials than any other person in demolition work. In addition, he must be dependable and reliable in selling the customer what he needs for the particular job; and it is required that he have technical knowledge of salvageable plumbing materials, steel, electrical gear, the whole gamut of building materials. A prime requirement for him is the ability to sell a trade and in a satisfactory manner for the job that is under consideration. There are varying degrees of usability of materials. He must be able to relate all these factors in his thinking as he sells to a customer in order to meet the customer's requirements and have him return as a repeat customer.

XII. WASTE RECYCLING OR RECOVERY

A. BOXBOARD AND PAPER RECYCLING

MACHINE TENDER: He is responsible for the operation of the wet end of the paper machine. The raw pulp goes on the machine and he has the responsibility for it until it goes into the dryer section.

BACK TENDER: Responsible for the paper proper from the dryer section throughout the manufacturing section. His work includes calendering section; applies finish and coating. He is also responsible for the slitting, sheeting or winding of the final product. Slits it into different lengths, winds into rolls and labels.

ASSISTANT BACK TENDER: He is directly under the Back Tender and assists him in his duties.

HEAD BEATERMAN: He is in charge of getting waste paper in pulp form along with Beatermen.

HEAD FINISHER: He is under the direction of the Back Tender and carries out the duties assigned to him by the Back Tender.

SHIFT FOREMAN: Has the same responsibility in that shift as does the regular Mill Superintendent. He takes over the Mill Superintendent's duties in his absence. This means that in the absence of the Mill Superintendent, he is in charge of the manufacturing process, and must have machines running in proper order. He also is responsible for making a good product of high quality and in high volume.

MILL CHEMIST: Responsible for quality control on products. Also for research and development on new products. He supervises the colors that are introduced in different products, water treatment, etc.

MAINTENANCE SUPERINTENDENT OR SHOP FOREMAN: He is responsible for keeping machines in operation. Repairs breakdowns, working under the plant engineer. Assigns and supervises the work of all the maintenance mechanics.

MILL ENGINEER: Responsible for keeping mill in good mechanical operation. When something stops he must be able to know the reason why it stops, both theoretically and mechanically. He also has general supervision over breakdowns and sees that these are corrected. And he keeps the plant going. He recommends and installs any new machinery with the help of the maintenance engineer, the superintendent and other workers in the plant.

MILL SUPERINTENDENT: He is in charge of the entire manufacturing process, and it is his responsibility that the machines are run properly and are turning out the product that is specified. He is also responsible for making a good product of high quality

and in as large a quantity as possible, in order to obtain certain products. And he sees that this is done by people under him.

MILL MANAGER: In charge of operation of mill. Supervises operations and delegates work to subordinates down the line.

B. TEXTILES AND RELATED PRODUCTS

MACHINE ATTENDANT: Unskilled laborer who feeds machines, looks for choke-ups. Clears choke-ups if possible. If unable to clear up difficulty, cuts off machine and calls for help.

ROOM FOREMAN: During First Shift, supervises feeding of machines. Informs maintenance personnel if any difficulty with machines. He also coordinates efforts of Machine Attendants.

SECOND SHIFT FOREMAN: Keeps machines running but must take care of mechanical difficulties with machines since Maintenance Supervisor is not on this shift. He is also responsible for plant security.

FIRST SHIFT FOREMAN: Keeps machines running and workers occupied efficiently. If problem with machines, call in Maintenance Supervisor who is attentive to the needs of the machines.

PLANT SUPERINTENDENT: Responsibility to maintain plant, supervision of workers in plant and make product for shift. Applies necessary quality standards which make a sample. Specifications are rigidly applied.

C. CHEMICALS FROM WASTE WOOD AND WOOD PULP CHEMICAL LIQUOR

1. Operations

LABORER: Digs ditches, transports trash to dumpster or designated areas where this trash can be picked up. He mows grass also. And is used to help the various crafts in moving materials to the jobs they are working on, or also, he may hand them tools they need.

EFFLUENT TREATMENT EQUIPMENT OPERATOR: He has a responsibility for operation of effluent treatment equipment which is in plant operation 24 hours, 7 days a week. Basically, his work involves pumps, valves and meters. The endless hours indicated by this work are managed in the labor system by dividing the work week into shifts.

CHEMICAL ENGINEER: He has the responsibility for the operation of the facilities; supervises operators. He inspects these treatment facilities continuously and, if he observes something wrong, calls in the applicable craft worker to correct the deficiency.

2. Monitoring Operations

RESEARCH ASSISTANT: He is responsible for maintaining sampling equipment which is generally automatic. Picks up samples that are automatically collected and also picks up special samples manually. In general, this man has a pretty broad range of experience. And his primary function is to assist technical people in their work.

MONITORING TECHNICIAN: This analyst does two major types of tests: chromatography and spectroscopy. Chromatography separates mixtures into compounds based on color. Spectroscopy involves measurement of transmitted light at different wave lengths.

MONITORING ANALYST: He analyzes the samples as a matter of daily routine that have been collected by the research assistant. He runs tests to determine pH, suspended solids, B.O.D., chlorides and conductivity, and dissolved oxygen.

3. Technical Services

RESEARCH ASSISTANT IN TECHNICAL SERVICES: Responsibilities are to assist the technical engineer and chemist. This man is a skilled analyst in the laboratory. He has had experience in operating chemicals equipment. He can troubleshoot minor maintenance problems on any of the pollution abatement equipment. He knows why things don't work. He also has the responsibility to accumulate and analyze data related to pollution abatement.

TECHNICAL SERVICE MAN: He must be either a graduate engineer or a graduate chemist. Major responsibilities are to design pollution abatement equipment and processes. In many cases this is a matter of selection of such equipment available from other manufacturers.

CHEMICAL SUPERINTENDENT: He is in charge of chemical control and analysis. Also responsible for technical improvement of existing processes and is continuously assessing them. He is also responsible for research and development to discover new products and new processes.

D. RECOVERY OF RETURNABLE, USABLE BOTTLES

BOTTLE SORTER: Inspects bottles in cases before decasing to remove any broken or foreign bottles.

FORK LIFT OPERATOR: Unloads pallets of bottles from delivery truck which has returned from retail outlets and other places, and they are placed in the pallets on the depalletizer.

DEPALLETIZER OPERATOR: It is his responsibility to feed the empty bottles into the depalletizer. If in the process he finds bad wooden pallets or cases, he corrects this. He also watches to remedy any malfunctions of the depalletizer, operations and equipment.

DECASER OPERATOR: He is located at the point of the end feeding of bottles. He inspects bottles and picks out any foreign bottles or broken bottles, or bottles with paint on them. Helps keep machine working properly.

INSPECTOR: Primary job is to inspect each bottle being discharged from bottle washer, to eliminate any cracked or broken bottles or foreign bottles. These are removed and put into chute which accumulates rejects. They are crushed and hauled by a contractor to a recycling plant.

FOREMAN: He is a container control foreman. He also supervises the receipt, inspection, and washing of the returnable bottles. Any malfunctions of the machinery are reported by him to the maintenance department. His main concern is to have a man in each position to properly receive and process returnable bottles and remove any bottles that are not usable.

E. GLASS BOTTLE RECYCLING

BATCH MIXER: Controls flow of waste glass into batch mixing with other raw materials. He controls mix through various automatic devices according to the type of bottle that has been scheduled to be produced.

CULLETT RECEIVING CLERK: Receives bottles brought into plant by outside person. Weighs and authorizes payment for amount of bottles received. Customers have already sorted and cleaned the bottles, keeping the flint and amber separate. Green is not used and is not purchased by the plant.

SAFETY ENGINEER: Responsible to see that the company is following guidelines set up by OSHA. He makes weekly inspections to see that hazard protection is being complied with by workers, and observes to see if anything is dangerous that he had not seen before. He recommends to the plant manager changes in safety practices including machine designs.

F. METAL RECYCLING

Broad Variety of Metals

WASTE HANDLING LABORER: Do the normal work around scrap yard. Unloads and sorts all kinds of scrap metal; assembles in piles.

TORCH MAN: Takes cutting torches and makes smaller pieces out of larger pieces of scrap so can fit into processing machines.

FORK LIFT OPERATOR: Runs fork lift truck to lift bales of aluminum, barrels of metal, drums of other types of non-ferrous metals. Loads box cars with these bales, barrels and drums for shipment.

PRESS OPERATOR: Runs a baling press that hydraulically compresses scrap into dense packages. Watches after machine to keep it in working order.

SHEAR OPERATOR: Operates thousand ton shears efficiently and with skill. The machine takes scrap iron after sized for box by torch and cuts into smaller pieces. This is to fit the steel mill specifications.

CRANE OPERATOR: Operates crane efficiently and effectively with skill and finesse, which vary from ten tons capacity up. Moves unprepared scrap to machine for processing (baling of light material, shearing of heavy material; and bales of aluminum). After processed, moves processed materials to vehicles being loaded: railroad cars (50 to 100 tons) or trailers of various sizes (15 to 20 tons).

SHREDDER OPERATOR: Runs shredder that shreds automobiles into fine particles. Responsible for proper feeding of machine. Watches to see that it does not clog up. Keeps close watch on general working and necessary assistance to restore to proper working conditions.

MAINTENANCE WELDER: Responsible for welding maintenance on equipment, containers, repairing trailers, etc., and in general keeping all of equipment in working order.

FOREMAN OF OPERATION: Supervises from 5 to 15 men and they are under the direct supervision of the General Foreman. Responsible for acceptable product (quality and quantity). Examples: aluminum processing, 2 shear operators and baling press operators, nonferrous metals warehouse and rail cropping yard. The Foreman of Operation supervises preparation, handling and loading.

2. Aluminum Recovery for Recycling

SORTER: Recognizes various kinds of aluminum and separates accordingly. Removes trash, including steel and non-aluminum metals. He recognizes also other metals that are valuable and sorts and assembles them; and puts tub or barrel, setting aside for later resale.

OPERATOR OF GRAPPLE MACHINE FOR UNLOADING MATERIALS: Unloads scrap from truck when it arrives and places it in the briquette press or baler; or places on floor entry.

TRACTOR-TRAILER DRIVER: Delivers and picks up materials according to assignment. He is responsible for reporting machine failures or troubles and drives tractor-trailer to shop for repair.

BALER OPERATOR: Bales materials which sorter has put into baler. He sorts alongside sorter when he has time from his regular baling operation.

FORK LIFT OPERATOR: Takes care of all materials to be handled. Uses fork lift tractor to take materials out of storage or put materials in storage, either as bales, boxes, crates or pallets. In taking out of storage, the prepared materials for shipment, such as bales or briquettes, he loads on a truck or rail car, for shipment to an industrial user.

PRESS OPERATOR: Operates press to make aluminum briquettes. The type of material going in the briquettes is generally aluminum siding which lends itself to this type of packaging. He also helps out with sorting when he has time.

FOREMAN: Able to perform all functions of workers under him as well as special duties assigned. Supervises all operations and makes sure sorting is done properly. Supervises clean-up operation after trucks are unloaded. Checks to be sure all employees are at work and applying themselves.

PLANT SUPERINTENDENT: Supervises all operations. He is able also to do any of the operations. He keeps inventory records of materials going in and out of inventory.

APPENDIX

JOB TITLES IDENTIFIED WITH ENVIRONMENTAL PROTECTION PROGRAMS IN GEORGIA BY INDUSTRIAL CATEGORY

I.	Regulatory Agencies	1
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LIST OF JOB TITLES BY CATEGORIES

I. Regulatory Agencies

A. FEDERAL

1. OSHA Monitoring
 - 100 - Safety Officer
 - 101 - Safety Engineer
 - 102 - Industrial Hygienist
2. Environmental Protection Agency
 - 110 - Sanitary Engineer, Junior
 - 111 - Sanitary Engineer
 - 112 - Physical Scientist Technician
 - 113 - Physical Scientist
 - 114 - Chemist
 - 115 - Microbiologist Technician
 - 116 - Microbiologist
 - 117 - Biologist
 - 118 - Water Monitoring Technician
 - 119 - Electrical Engineer
 - 120 - Data Processing Technician
 - 121 - Data Processing Specialist
 - 122 - Programmer
 - 123 - Mathematical Modeler
3. Water Testing (Salt)
 - 130 - Hydrologist Technician
 - 131 - Hydrologist

B. STATE GOVERNMENT

1. Environment
 - 150 - Environmental Technician I
 - 151 - Environmental Technician II
 - 152 - Environmental Technician III
 - 153 - Environmental Engineer I
 - 154 - Environmental Engineer II
 - 155 - Environmental Engineer III
 - 156 - Environmental Engineer IV
 - 157 - Section Chief, Environmental Protection Division
 - 158 - Director, Environmental Health Services
2. Pesticides
 - 160 - Pesticide Field Agent I
 - 161 - Pesticide Field Agent II
 - 162 - Pesticide Field Agent III
 - 163 - Agriculture Section Chief of Pesticide Section

LIST OF JOB TITLES BY CATEGORIES

(Cont'd)

3. Pollutants

- 165 - Laboratory Aide I
- 166 - Laboratory Aide II
- 167 - Pollution Control Specialist I
- 168 - Pollution Control Specialist II
- 169 - Pollution Control Specialist III
- 170 - Pollution Control Specialist IV

4. State Highway

- 171 - Agronomist

II. Local Government Regulation and Services

A. COUNTY GOVERNMENT

1. Environmental Control

- 200 - Sanitarian
- 201 - Senior Sanitarian
- 202 - Supervising Sanitarian

2. Solid Waste Pulverization

- 205 - Solid Waste Plant Mechanic I
- 206 - Solid Waste Plant Mechanic II
- 207 - Solid Waste Plant Welder
- 208 - Solid Waste Plant Operator I
- 209 - Solid Waste Plant Operator II
- 210 - Solid Waste Plant Operator III
- 211 - Solid Waste Plant Operator
- 212 - Pulverization Plant Manager
- 213 - Superintendent of Disposal Operations
- 214 - Landfill Superintendent

3. Waste Collection

- 215 - Motorized Scooter Pick-up Operator
- 216 - Heavy Equipment Operator, Waste Disposal
- 217 - District Chief of Foreman
- 218 - District Supervisor

4. Incinerator

- 220 - Laborer
- 221 - Crane Operator
- 222 - Incinerator Operator

5. Water Works

- 225 - Building Custodian
- 226 - Utility Maintenance Man
- 227 - Mechanic Maintenance Man
- 228 - Water Plant Operator

- 229 - Laboratory Technician
- 230 - Shift Supervisors
- 231 - Plant Engineer
- 232 - Plant Superintendent

- 6. Waste Water Operations
 - 235 - Waste Water Plant Helper
 - 236 - Water Construction Helper
 - 237 - Waste Water Plant Operator
 - 238 - Water Construction Foreman or Sewer Service Foreman
 - 239 - Water Construction Supervisor
 - 240 - Water Construction Superintendent
 - 241 - Waste Water Treatment Plant Supervisor

B. CITY GOVERNMENT

- 1. General
 - 250 - Entomologist
 - 251 - City Arborist
 - 252 - Forester Superintendent
 - 253 - Supervisor of Collections
- 2. Sanitation Management
 - 255 - Dispatcher
 - 256 - Sanitation Assistant Superintendent
 - 257 - Sanitation Assistant Inspector
 - 258 - Sanitation Inspector
 - 259 - Sanitation Superintendent
- 3. Area Sanitation
 - 265 - Waste Collector I
 - 266 - Equipment Operator II
 - 267 - Sanitation Area Foreman
- 4. Waste Collection and Disposal
 - 270 - Waste Collector II
 - 271 - Equipment Operator I
 - 272 - Waste Collection Driver I
 - 273 - Waste Collection Driver II
 - 274 - Waste Collector III
 - 275 - Sanitation Area Supervisor
- 5. Building and Plant Maintenance
 - 280 - Laborer I
 - 281 - Labor Foreman
 - 282 - Plant Maintenance Mechanic I
 - 283 - Plant Maintenance Foreman I
- 6. Incinerator Operation
 - 284 - Plant Maintenance Mechanic II
 - 285 - Incinerator Operator I
 - 286 - Incinerator Operator II
 - 287 - Incinerator Foreman
 - 288 - Incinerator Supervisor
 - 289 - Incinerator Superintendent

7. Landfill Operations
 - 295 - Landfill Operator
 - 296 - Landfill Foreman
 - 297 - Sanitation Field Superintendent
8. Water Works
 - 225 - Building Custodian
 - 226 - Utility Maintenance Man
 - 227 - Mechanic Maintenance Man
 - 228 - Water Plant Operator
 - 229 - Laboratory Technician
 - 230 - Shift Supervisors
 - 231 - Plant Engineer
 - 232 - Plant Superintendent
9. Waste Water Operations
 - 235 - Waste Water Plant Helper
 - 236 - Water Construction Helper
 - 237 - Waste Water Plant Operator
 - 238 - Water Construction Foreman or Sewer Service
Foreman
 - 239 - Water Construction Supervisor
 - 240 - Water Construction Superintendent
 - 241 - Waste Water Treatment Plant Supervisor

C. WATER PLANT AND WASTE WATER PLANT OPERATIONS OF SMALL TOWNS AND SPARSELY POPULATED COUNTIES

1. County Waste Water Operations
 - 300 - Construction Crew Worker
 - 301 - Cleveland Operator
 - 302 - Backhoe Operator
 - 303 - Water Line Construction Foreman
 - 304 - Maintenance Mechanic
 - 305 - Laboratory Technician
 - 306 - Superintendent of Sewer Department
2. Town Water Plant and Water Plant Operations
 - a. Waste Water Plant
 - 310 - Maintenance Laborer
 - 311 - Maintenance Mechanic
 - 312 - Laboratory Technician
 - 313 - Waste Water Plant Operator
 - b. Water Plant
 - 315 - Maintenance Mechanic
 - 316 - Water Plant Operator Assistant
 - 317 - Water Plant Filtration Superintendent
 - 318 - Superintendent of Water Plant and Waste Water Plant
Operations

- 3. Town Water Plant Based on Well Water
 - 320 - Laborer
 - 321 - Pump Operator
 - 322 - Assistant Superintendent
 - 323 - Water Plant Operator

III. Institutions

A. HOSPITALS

- 350 - Nuclear Medical Technologist
- 351 - Radiologic Technologist
- 352 - Radiation Safety Officer

B. EDUCATIONAL INSTITUTIONS

- 353 - Radiation Monitor
- 354 - Radiological Safety Specialist
- 355 - Health Physicist Technician

IV. Air and Water Pollution Control in Electric Power Industry

A. ENVIRONMENTAL ENGINEERING AND LABORATORY

- 370 - Biology Aid
- 371 - Environmental-Engineering Aid
- 372 - Biological Technician
- 373 - Water Quality Engineer
- 374 - Air Quality Engineer
- 375 - Meteorologist
- 376 - Health Physicist (Radiological Health Engineer)
- 377 - Environmental Specialist
- 378 - Biologist

B. NUCLEAR PLANT

- 380 - Laboratory Supervisor
- 381 - Health Physicist Radio/Chemist
- 382 - Environmental Analyst

C. GENERAL OFFICE

- 390 - Environmental Technician
- 391 - Biologist
- 392 - Senior Biologist
- 393 - Senior Environmental Analyst

V. Construction

A. CONTRACTORS

- 400 - Laborer
- 401 - Laborer Foreman
- 402 - Safety Officer for Occupational Safety and Health Act

B. CEMENT DISTRIBUTION

- 405 - Yard Laborer
- 406 - Batchman
- 407 - Truck Driver
- 408 - Truck Dispatcher
- 409 - Mechanic or Serviceman
- 410 - Quality Control Technician
- 411 - Salesman, Concrete Mixed Cement
- 412 - General Maintenance Superintendent

C. SPECIALIZED CONSTRUCTION

1. Clearing Way for Highway, Etc.

- 425 - Laborer
- 426 - Bulldozer - Tractor Driver
- 427 - Truck Driver
- 428 - Dragline Operator
- 429 - Front End Loader
- 430 - Foreman for Clearing Operations

2. Sewer and Water Line Construction

- 431 - Laborer
- 432 - Bulldozer Operator
- 433 - Backhoe Operator
- 434 - Pipe Layer
- 435 - Superintendent for Sewer and Water Line Jobs

VI. Nondurables Manufacturing

A. MEAT PROCESSING

- 450 - Meat Processing Machine Cleaning Helpers
- 451 - Supervisor of Meat Processing Machine Cleaning

B. MILK PROCESSING

- 455 - Sanitation Crew Helper, Milk Plant
- 456 - Shift Supervisor, Milk Plant
- 457 - Quality Control Superintendent

C. BAKERY

- 460 - Waste Handling
- 461 - Floor Sander
- 462 - General Cleaner Food Industries
- 463 - Painter for Food Industries
- 464 - Pest Control Employee
- 465 - Steamroom Cleaner
- 466 - Ground Maintenance Worker
- 467 - Foreman Environmental Services
- 468 - Environmental Health Director

D. TEXTILE MANUFACTURE

- 470 - Salvage Worker
- 471 - Waste Treatment Plant Helper
- 472 - Waste Treatment Plant Operator
- 473 - Noise Abatement Test Technician
- 474 - Hearing Acuity Test Technician

E. SEWING PLANT

- 477 - Clean up Man or Sweeper

F. LEATHER (TANNERY)

- 480 - Waste Water Plant Helper
- 481 - Waste Water Plant Operator, Shift
- 482 - Waste Water Plant Operator, Chief
- 483 - Laboratory Technician
- 484 - Chemist
- 485 - Manager of Water and Waste Water Treatment

G. CHEMICALS

1. Industrial Chemicals

a. Polishes and Sanitation Chemicals

- 490 - Assistant Quality Analysis Technician
- 491 - Quality Analysis Chemist

b. Industrial Inorganic Chemicals

- 495 - Service Operator
- 496 - Chemical Operator
- 497 - Chemical Engineer

2. Plastics

- 498 - Plant Helper, Waste Recovery and Disposal
- 499 - Materials Handler

3. Paint

- 500 - Technical Director of Environmental Control
at Plant

H. PLASTICS FROM WOOD PULPING

- 505 - Sludge Plant Operator
- 506 - Environmental Control Technician
- 507 - Senior Environmental Control Technician
- 508 - Assistant Environmental Engineer
- 509 - Environmental Engineer

I. PULP AND PAPER

1. Corporate Headquarters

- 520 - Research Assistant, Water Pollution
- 521 - Senior Research Assistant, Water Pollution
- 522 - Technical Director, Air and Water Pollution

2. Plant or Mill (Pulp and Paper)

- 525 - Pick-up Man, Air and Water Pollution
- 526 - Laboratory Assistant, Air Pollution
- 527 - Laboratory Assistant, Water Pollution
- 528 - Process Engineer, Air and Water Pollution
- 529 - Assistant Technical Director, Air and Water Pollution

VII. Durables Manufacturing

A. CONCRETE MANUFACTURE

- 530 - Cuber
- 531 - Fork Lift Operator
- 532 - Yard Fork Lift Operator
- 533 - Material Man
- 534 - Truck Driver of Concrete Blocks and Brick
- 535 - Superintendent of Concrete Block Plant

B. FABRICATE METALS

1. Aluminum

- 536 - Waste and Trash Material Control Man
- 537 - Scrap Collection Material Man
- 538 - Water Pollution Treatment Operator

2. Steel

- 540 - Laborer Mill Clean Up
- 541 - Clean Up Man
- 542 - Sweeper Operator
- 543 - Dumpster Operator
- 544 - Heavy Equipment Operator for Slag
- 545 - Environmental Technician
- 546 - Safety Supervisor

C. AUTO ASSEMBLY

- 550 - Salvage Mechanic
- 551 - Foreman, Salvage Supervisor
- 552 - Salvage Department Manager
- 553 - Safety Engineer
- 554 - Environmental Engineer

VIII. Warehousing

A. FOOD CHAINS

- 560 - Scrubber Rider
- 561 - Sweeper Rider
- 562 - Clean-Up Man
- 563 - Cardboard Baler
- 564 - Salvage Worker
- 565 - Plant Sanitarian

B. LARGE MERCHANDISE WAREHOUSE

- 561 - Sweeper Rider
- 566 - Compactor Operator

C. HOTELS AND FOOD SERVICE

- 567 - Houseman, Trash
- 568 - Kitchen Helper, Garbage
- 569 - Dumpster Man

IX. Transportation

A. TRUCKING

- 570 - Safety Supervisor
- 571 - Safety Director

B. AIRLINES

- 575 - Industrial Waste Treatment Plant Maintenance Mechanic
- 576 - Laboratory Assistant Industrial Waste Treatment
- 577 - Industrial Waste Treatment Plant Operator
- 578 - Supervisor of Industrial Waste Treatment

C. RAILROADS

1. Headquarters

- 580 - Draftsman Engineering Technician
- 581 - Assistant Environmental Engineer
- 582 - Supervisor of Environmental Engineering

2. Waste Water Plant Operations

- 583 - Chemical Laboratory Technician, Waste Water Testing
- 584 - Chemist for Waste Water Testing
- 585 - Waste Water Plant Operator

X. Waste Collection

A. LARGE CORPORATE ENTERPRISES

- 590 - Laborer Salvage
- 591 - Baler Operator
- 592 - Fork Lift Operator
- 593 - Waste Disposal Man

B. WASTE PAPER COLLECTION

- 595 - Baler Helper
- 596 - Fork Lift Driver
- 597 - Baler
- 598 - Maintenance Mechanic
- 599 - Foreman of Plant
- 600 - Shipping and Receiving Clerk
- 601 - Plant Manager
- 602 - Salesperson and Public Relations Man

C. WASTE COLLECTION BY COMPANIES ON CONTRACT

- 1. Septic Tank
 - 605 - Septic Tank Service Worker
 - 606 - Foreman Septic Tank Service
- 2. Waste Removal Contract Companies
 - 610 - Container and Compactor Repair and Maintenance Man
 - 611 - Maintenance Man for Waste Disposal Trucks and Field Equipment or Bulldozer
 - 612 - Waste Collection Truck Driver
 - 613 - Heavy Field Equipment Operator
 - 614 - Dispatcher of Waste Collection Trucks

XI. Demolition Work

A. AUTO DEMOLITION

- 620 - Ground Man in Auto Demolition Work
- 621 - Tractor Trailer Operator
- 622 - Loader Operator (Large Tractor with Forks)
- 623 - Supervisor of Auto Demolition Work

B. STRUCTURAL DEMOLITION

- 625 - Laborer
- 626 - Torch Burner
- 627 - Front End Loader Operator
- 628 - Truck Driver in Demolition Work
- 629 - Crane Operator
- 630 - Foreman
- 631 - Estimator
- 632 - Safety Engineer
- 633 - Salvage Salesman

XII. Waste Recycling or Recovery

A. BOXBOARD AND PAPER RECYCLING

- 650 - Machine Tender
- 651 - Back Tender
- 652 - Assistant Back Tender
- 653 - Head Beaterman
- 654 - Head Finisher
- 655 - Shift Foreman
- 656 - Mill Chemist
- 657 - Maintenance Superintendent or Shop Foreman
- 658 - Mill Engineer
- 659 - Mill Manager
- 660 - Mill Superintendent

B. TEXTILES AND RELATED PRODUCTS

- 665 - Machine Attendant
- 666 - Room Foreman
- 667 - Second Shift Foreman
- 668 - First Shift Foreman
- 669 - Plant Superintendent

C. CHEMICALS FROM WASTE WOOD AND WOOD PULP CHEMICAL LIQUOR

1. Operations

- 680 - Laborer
- 681 - Effluent Treatment Equipment Operator
- 682 - Chemical Engineer

2. Monitoring Operations

- 683 - Research Assistant
- 684 - Monitoring Technician
- 685 - Monitoring Analyst

3. Technical Services

- 686 - Research Assistant in Technical Services
- 687 - Technical Service Man
- 688 - Chemical Superintendent

D. RECOVERY OF RETURNABLE OR REUSABLE BOTTLES

- 690 - Bottle Sorter
- 691 - Fork Lift Operator
- 692 - Depalletizer Operator
- 693 - Decaser Operator
- 694 - Inspector
- 695 - Foreman

E. GLASS BOTTLE RECYCLING

- 697 - Batch Mixer
- 698 - Cullett Receiving Clerk
- 699 - Safety Engineer

F. METAL RECYCLING

1. Broad Variety of Metals
 - 710 - Waste Handling Laborer
 - 711 - Torch Man
 - 712 - Fork Lift Operator
 - 713 - Press Operator
 - 714 - Shear Operator
 - 715 - Crane Operator
 - 716 - Shredder Operator
 - 717 - Maintenance Welder
 - 718 - Foreman of Operation
 - 719 - General Foreman
2. Aluminum Recovery for Recycling
 - 730 - Sorter
 - 731 - Operator of Grapple Machine for Unloading Materials
 - 732 - Tractor-Trailer Driver
 - 733 - Baler Operator
 - 734 - Fork Lift Operator
 - 735 - Press Operator
 - 736 - Foreman
 - 737 - Plant Superintendent

**CAREERS FOR YOUTH SURVEY
GEORGIA, 1971-76**

Research Report Prepared under Contract
For
The Office of Vocational and Adult Education
State Department of Education

Industrial Management Center
Georgia Institute of Technology
Atlanta, Georgia 30332
October 1972

CAREERS FOR YOUTH SURVEY
GEORGIA, 1971-76

Survey of Employment Opportunities, Career Ladders and
Training Requirements for Basic Jobs in the Vocational
Job Clusters, 1971-76

Research Conducted and
Report Prepared

By

Dr. John L. Fulmer
Project Director and
Regents' Professor of Economics
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Georgia Institute of Technology
Atlanta, Georgia 30332

For

Georgia State Department of Education

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under Authority of Part C of the
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Industrial Management Center
Georgia Institute of Technology
Atlanta, Georgia 30332

October 1972

FOREWORD

This study is the outgrowth of two previous Manpower studies the author has produced during the last ten years. First, there was the Georgia Skills Study, published in March 1963 which provided the basic data that assisted in gaining funding from the State Legislature for the network of Area Vocational-Technical Schools in Georgia, which emphasizes Post High Training of Mechanics, Electricians, Key-punch Operators, Typists, Stenographers, and a great variety of specific skills for a large number of crafts and clerical workers. The second Manpower Survey was conducted for the Louisville, Kentucky, SMSA, in 1967 and was published in 1968. This led to greatly expanded facilities in the vocational and technical schools to meet the demand for trained workers. The author gained many special insights into employment criteria for entry level jobs and nature of job restructuring in response to technology which makes the production line more routine all the time.

The present study is an outgrowth of several minor research jobs I have conducted for Dr. Gene Bottoms, Associate State Director, Division of Vocational Educational Services - Leadership Services. One of the most significant of these studies and having a direct bearing on the present study was the "Survey of Employment Opportunities in Horticultural and Floral Businesses in the Atlanta Metropolitan Area, Summer 1969". From this study I learned the interest and significance of the Career Ladder approach for focusing the attention of teachers and pupils in high school on specific Career Areas. The series of pictures and the pay range charts got across the message quickly and made enthusiasm high, if students had the capabilities and the interest to venture into an area of work.

In the present study we have expanded on the techniques learned from this latter study in two dimensions. First, the Career Areas have been enlarged to coincide with the recognized Vocational Job Clusters in high school. Secondly, the universe was expanded from Atlanta Metropolitan Area to include the entire state of Georgia.

These two expansions in the scope of the study led to a multiplicity of problems in structuring the study. First, decision had to be made as to what jobs should be included in each of the Job Clusters. This rather time-consuming task was accomplished by study of the Dictionary of Occupational Titles and through conferences with a large number of experts in the Georgia Departments of Education and Labor, and with numerous trade association directors. As a result of these conferences, it was decided that the questionnaire used in the 1969 study would have to be tailored to the different employer categories in the State in order to reflect significant differences in the job combinations. The result was 34 different questionnaires which went through trial mailings in order to determine response and gain any critical comments on their applicability from employers.

In doing this very complex study which has encountered unexpected problems and difficulties, I have had the enthusiastic and most valuable support of a number of people from State organizations, and also a rather long list of sponsors. There has also been widespread support from many companies throughout the State in providing information and assisting in tracing out the numerous Career Ladders which are printed separately in five brochures. Acknowledgements to the sponsors and companies who have cooperated in helping get together the information for the Career Ladders are listed on two separate pages which follow immediately after this Foreword.

From State agencies, I acknowledge with sincere gratitude the assistance

of Messrs. Riley, Weilbaker, and Thompson, Data Processing Division, Georgia Department of Labor, who cooperated in programming for selection of random samples from the ES-202 tapes, based on Third Quarter data for 1970, with mailing labels to get out the questionnaires to the sample firms. Later when the pressure of work from new State and Federal programs prevented them from doing further work with the tapes, they made copies of the ES-202 tapes for use by the Systems Analysis and Data Processing unit of the State Department of Education, where Mr. John A. Hoffman, EDT Systems Analyst, produced a supplemental sample drawing with mailing labels. He also made numerous sorts with the tapes to enable sample analysis against a stratified universe, arranged by company size. My gratitude and praise for Mr. Hoffman's work in furthering the study are inadequate for expressing just how effective and cooperative he was in this work.

In follow-up work relative to getting the mailed questionnaires returned, I had support and excellent cooperation from Mr. Howard L. Weeks, Director, Georgia Training and Employment Service, Georgia Department of Labor, who had his field representatives inquire as to the status of the questionnaire, if the firm was a sample company, during calls these representatives made on companies relative to training or job placement. Mr. J. E. Whechard, Management Analyst of Mr. Weeks' Department also went over the questionnaires with me prior to their printing in order to detect discrepancies, omissions, or other factors of design or definition that would have detracted from the effectiveness of the questionnaire.

Finally, I acknowledge the assistance of Mr. B. M. Dillard, Forestry Consultant, Agricultural Education Service, Georgia Department of Education, who contacted in the field and made numerous calls on woodpulp dealers to increase the questionnaire response from them.

The programming work for getting the punched cards on tapes, sample

inflation, and print-outs of analytical tables was performed most efficiently and in a timely fashion by C. Richard Shepherd, Jr., Graduate Research Assistant, in the College of Industrial Management. In all this work he had the fullest cooperation and highpriority status in the Rich Electronic Computer Center at Georgia Tech. I am most grateful for this expert help on the part of Shepherd and for the fine cooperation which I received from Dr. Perlin and Mr. Bezaire of the Computer Center. I commend especially Messrs. Benny Love, Jerry Segers and Willie Whitehead who often stayed after hours to help us meet priority needs.

In all of this research, I have had the enthusiastic support of Mr. Paul Scott, Director, Research Coordinating Unit, Office of Vocational and Adult Education, State Department of Education. He has stayed in constant contact and helped on numerous occasions to iron out difficulties on contract specifications; and he has been a real understanding and cooperative administrator in clearing promptly materials and manuscripts submitted in progress reports and for final publication.

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HIGHLIGHTS OF STUDY

Conclusions and Recommendations

At the present according to Sidney P. Marland, U. S. Commissioner of Education,¹ eight of 10 high school students are not getting occupational training of any sort. One-half of the 1,500,000 high school students each year are being offered irrelevant general education pap! Drop-outs are more from the failure of education than failure of the students.

The author has found that high school youth are totally lost in thinking about a life's future and college youth, in my experience, are faring but little better in finding what they really want to do. College students in cooperative education programs and high school youth in work-study programs are faring much better in finding themselves and a life's work.

1. The educational process must become oriented in such a way that it is a total process involving the parents, the community, the schools, and industry and business in order that the child's opportunities for development of communication skills, tool skills, exploration of the world of work, and gain work experience are given maximum emphasis in a total integration and dedication toward investment of effort and resources in the child's future and the nation's future. No better investment returns can be found anywhere, for money, time, and effort spent with youth until they are independent, self-sustaining, located happily in an interesting job or career, will return dividends to the community,

¹Career Education Now, an Address by Sidney P. Marland, Jr., U. S. Commissioner of Education, at 1971 Convention of National Association of Secondary School Principals, Sam Houston, Texas, January 23, 1971, p. 1.

the state, and the nation for the entire working life of the individual, about 50 years. You cannot find the equal of that sort of investment opportunity anywhere, with such a high significance for the future welfare and development of the nation.

2. The effort begins first with the parents who must show an intense interest in the exploratory experiences of the child from the very early years; relate to him or her in activities and word building. Children in broken homes must be provided supplemental help through Day Care Centers or in residential types of schools.

3. The community is continuously involved from the beginning and on until the end in providing recreation and group youth activities in order that the youth begins to learn about his or her peers and that there are interesting things out there to explore and learn about. Children in broken homes and under poverty circumstances must have facilities, adult interest, and exploratory opportunities to learn about the world's activities, interact with other children, and feel the interest and protective assurance of adults.

4. The community, the county, and the state develop schools and programs which will enable youth to study, learn, and apply the learning to specific work situations or work exploration. This means intense interest and activity on the part of parents in what is going on in the schools and what they are learning. Parents must insist that course work is relevant and problem situations are worked out where this knowledge can be applied, remembering the old rule that one remembers 90 percent of what he does in practice or through a structured problem that is staged.

5. The fifth very important segment of society which must be involved if

this new era is to come for education is the business community, including industrialists. Estimates indicate that the industrial and business sector of the economy spend about half as much on training of workers as does the educational system, public and private, from elementary education on through college, graduate education. First, it is suggested that there be closer coordination in these training efforts, particularly in the upper grades where there is need for career exploration and work-study programs. If there are enlarged insurance risks and extra costs to employing or spending time showing one or so youth, then it is up to the Federal and State governments to subsidize these enlarged costs. The results in terms of efficient and happy workers will more than pay off both sources of funds, and will be to the unending advantage of industrialists and businessmen.

6. There is great need for very close cooperation between education and job placement experts in canvassing companies for job exploration arrangements, work-study programs, and job placement after the youth has finished the program of study in the public schools. Even after he or she is on the job, contact should be maintained through the labor department representative and the school counselor for additional services of counseling and possible supplemental training for at least six months.

7. Based on my concept of Career Education and how to make it more effective, the author offers the following sequential steps:

First: Pre-school exploration by small children through travel and visiting a variety of living conditions, recreation, and areas of the country. Interchanges with pre-school children in social activities and Day Care Centers where possible. Parents give special attention to word identification, concept formation, and muscle coordination.

Second: 1-4 grades emphasis on vocabulary building for the World of

Work. Choose words and concepts from present classroom materials for class discussion, spelling, and written exercises. Exercises in the handling of money -- bills and coin -- assuming purchases and making change. In upper grades produce problems requiring simple debit and credit entries against a pupil's assumed monetary account. Some class group explorations of places of work.

If possible develop a World of Work Laboratory for actual use at scheduled hours. Have children punch in a time clock; and allow minor imitation (or real) payroll allowance at regular intervals.

Third: 5-6 grades emphasize, explore, explain, and have class discussion of such terms as work, jobs, working hours, punctuality at work, payroll, compatibility of interest of worker and employer, serious application to work, quality of work, efficiency of work, and community prosperity and welfare. Give special emphasis to word "Integrity".

Have students report on job titles held by father, mother, sisters or brothers, uncles, and aunts; also next door neighbors.

Fourth: 7-8 grades, Career Exploration. What are the skills applied in job by father, uncle, aunt, or some other favorite person. Have all students read brochures from this report and give class reports on the various job clusters.

Eighth grade, have students report on skills and job attitudes in brief form for different Job Clusters. Visit one or more employers to view some of these jobs.

Fifth: 9-10 grades, Career Exploration, and tentative choice of 3 or more career areas. Study skills and job attitudes required for each career area and have class discussion.

Ninth graders explore nature and environment of one or more specific jobs in an actual work situation, observing and talking with a selected worker in a cooperative company who will permit students to come with instructor and be assigned to a specially selected worker from 3-4 P.M. one afternoon in the week. School must furnish bus transportation. Student reports what he or she learned to class, including impressions.

Sixth: 11-12 grades, Comprehensive High School provide Entry Level Skills and special emphasis on work attitudes in workshop established at school with experienced instructors who not only have had similar training but have also had work experience on the actual job.

Eleventh grade, summer work experience under school supervision

in the job area of highest priority in the choice for the pupil. Detailed emphasis should be placed on following types of training.

- a. The Tools of the Trade and Skills in their use and maintenance; blueprint reading for some of the specialized crafts.
- b. Raw materials, purpose, how prepared, and how used on the job.
- c. Equipment used on the job and training in its use and maintenance.
- d. Extended practice of the work skills, clerical or service skills, that will be used on the job.
- e. Learn and practice special types of mathematical calculations required in some crafts.
- f. Learn and practice words and concepts of the trade in order to improve communication with workers on the job, supervisory personnel and other tradesmen often involved on the job.
- g. Continuous review and practice of work attitudes through creation of environment or work situation where they will have to be practiced during the course of the training.
- h. Cooperative work experience on the job during Summer of 11th grade.

8. The World of Work Laboratory advocated for grades 1-4 is of key importance to gaining interest of youth in the World of Work and how it operates. It will also teach them the elements of work attitudes and reward system. It would have to include thirty work stations with storage and supply rooms. The objective would be to teach young children the importance of being on time and punching a time clock. The types of work programs could be designed around making things, assembly and disassembly imitation of industrial products. Identification and elementary use of some of the common tools could be a part of the program. The work period could vary from one hour monthly for first graders to one hour weekly for fourth graders. At the end of significant work

periods, a payroll type check is issued which could be cashed either at school or deposited in a child's savings account. One could well imagine the impact on parents a payroll check from a child in the early grades could have. The total cost of payroll would not be really large and would bring big dividends to children and the public and affect favorably their work attitudes.

9. A highly significant part of making Career Education relevant for the career areas in this study is to set-up formal arrangements with representative companies in each nearby town or towns, or better, large city by which key workers with empathy for children, highly rated craftsmen, clerical workers or otherwise, could be on regular assignment to permit one or two, and possibly three, children in the ninth grade to visit with him one hour during one day of the week, say on Wednesday from 3-4 p.m., to view him at work, ask him or her questions, and maybe occasionally hand this person some work materials or even perform a minor piece of the work for a moment for illustrative purposes. This will affect company performance of that worker and perhaps increase insurance costs. Allowance for these should be made out of public funds. The schools would have to provide bus or other transportation for the assigned youth to get to the work place. Close cooperation between school administrators and labor department placement personnel will be required to identify companies and get them to select and assign workers for this sort of work experience.

10. In order to help them find themselves, it is proposed that 11th graders be given the chance to have some work experience on an actual job during summer vacation, but preferably during an off quarter when public education converts to 12 months. Work on the part of youth will encounter no problems from the labor minimum age laws since these provisions are exempt for work-study programs under the supervision of school administrators in the general area of work.

Companies would find advantages from publicity, possible cheap source of labor, and observe worker for possible later recruitment without the usual risks of poorly trained, poor work attitudes, and high labor turnover. Close cooperation between school administrators and labor department placement personnel will need to exist in order to locate employers for this type of arrangement, set it up, and then supervise it in operation.

11. In order to assure maximum success after graduation from a Comprehensive High School with skills and work attitudes for a specific job in a career area, the youth should be assisted to locate a job and be counseled on that job for six months in order to give him opportunity, confidence in himself, and access to remedy skills or work attitude deficiencies which turn up in his initial job. In job placement, placement personnel of local Comprehensive High Schools should assume prime responsibility in connection with the Georgia Training and Employment Service. Where youth have been placed in work-study programs, the placement officer and his staff should assume placement as a primary function, and it should come about as a result of widespread contacts with business and industry which have been cooperating with public education in career education. The school counseling service has a function to perform also in being associated with this placement effort and follow up to determine problems of the youth in his or her first job in terms of personal problems, skill deficiencies, and work attitude problems which would require supplemental instruction and counseling for a period of six months.

12. In conclusion, the author is suggesting a gigantic revamping of the whole approach in education to obtain a workable career education program for all youth. This change would be in terms of curricula and emphasis on the

methods and concepts of teaching, relevance of education to life and to work, and a massive involvement of school administrators and a new staff in order to gain the fullest possible cooperation with industry in providing career exploration, work observation, and work study. Supplemental funding will be required for these enlarged activities and also to reimburse industry and business for extra costs for insurance and drop in efficiency of some selected workers. The program also will depend for its effectiveness upon a greater involvement by the Georgia Department of Labor in helping set up Career Exploration programs, work activities observation and work-study programs. Placement of youth trained for jobs through career education will involve job placement by labor and school placement personnel, as well as counseling these youth in their initial jobs for a limited period of time. All of this will require greatly enlarged staffs in job placement and counseling in order to visit companies frequently and maintain good personal contacts to keep them interested and participating in the program. A re-orientation of Chambers of Commerce, important business leaders, and leading political leaders to the philosophy that greatness in a nation or a state can be achieved by proper emphasis on goals for youth, with special emphasis on Careers for youth through Career Education. If we begin this movement with youth with proper dedication, monetary support, and fortified by relevant publicity in the news media, the greatness of this country in the decades ahead can reach the highest pinacles yet and these would be beyond the imagination of most of us.

Digest of Findings

1. The Survey which began July 1, 1971, due to large volume of preliminary planning in choice of specific jobs to be surveyed, consultation with large number of experts and sponsors for study, design and testing of the 34 types of questionnaires for mailing to a sample of approximately 12,000 establishments, was not mailed until late October, with repeated mailings and follow-ups through publicity in newspapers, radio, personal telephone calls, and office visits to a large number of firms, was discontinued at end of March at which time 1,893 usable questionnaires had been received. This represents a response ratio of 16 percent; and in terms of universe employment a sampling ratio of 27 percent was obtained.

2. Based on sample inflation of 1,893 questionnaire returns, representing all areas and segments of the state, expected growth will average over 5 percent yearly. While it is certain we are entering a more rapid growth era than during the 1960's due to the big upsurge in the housing market which is expected from the very large surge in marriages and home formation for the 1970's, from the World War II high birth rates, the growth projections should be viewed from the conservative side for two reasons. First, the base period for the study was September 1970, the low point in that recession; and secondly, the period of study extended from October 1971 until March 1972, and reflect not only optimism from the fast recovery then underway, but also seasonal factors associated with end of the year holidays.

3. Growth expectations for the 183 jobs included in the survey, which are concentrated in the crafts, marketing and distribution, clerical, services, and agriculture and nature related occupations, show an overall yearly job increase for the five year period 1971-76 of 24,900, with over 80 percent of

the job growth expected to occur in the skill crafts, office occupations, and marketing and distribution. Replacement requirements for workers who retire, die, or withdraw from the labor market for any reason will average 25,806 workers yearly for the period 1971-76. Total employer demand is thus 50,706 yearly. This means that replacement needs will constitute 51 percent of employer demand during the next five years. Companies have training programs to update skills and to train workers for entry level jobs but are training only 25 percent of the newly hired employees needed among the 183 jobs surveyed,² chosen for the study because of their significance to contemplated programs of training in the Comprehensive High Schools. Thirty-nine of the 183 jobs were entry level jobs³ and while the ratio of company training relative to total employer demand for entry level jobs is about five points higher or 30 percent, a significant gap in training needs still exists for these beginners in the work force.

4. We are in an age of rapid technological change and company managements recognize the advantage of being able to reflect the new skills in their work force. During the survey date companies had in training 27,282 workers to update a skill, which was 7 percent of the work force or one worker in 14 in such programs. But as expected the largest updating skill training programs were associated with those job clusters where developments in science and technology are more viable and have greatest impacts. This is shown by how the ratios in training varied directly with the career category closely related to science or technology. The ratios varied as follows: conservation, recreation and wildlife, 26 percent; drafting, 17 percent; agriculture-power and mechanics, 13 percent; and electro-mechanical and transportation, each 10 percent.

²Nine of the 183 jobs failed to get any response from the 1,893 employers reporting.

³Seven of these jobs, however, received no reported data.

5. Considering the broad skills categories, unskilled, semi-skilled, skilled, service and clerical workers, respondents have criteria not only for employment but also age requirements for initial employment and also for mandatory retirement. In case of age criteria 45 percent of respondents failed to specify a mandatory retirement age. Of those reporting requirements for initial employment, a higher ratio permit employment at age 17 or under for unskilled and semi-skilled types of workers, with trade and services being somewhat more lax in the age requirement, and the larger the company the higher are the odds for youth of 17 or under to find employment.

In case of mandatory retirement, only 29 percent of the companies specify at what age one must retire and practically all of these set mandatory retirement at age 65 or above; the larger companies apparently have given more attention to determining mandatory retirement age.

6. Educational criteria as a factor for employment was specified by 68 percent of the respondents. In general the higher the level of skills of the job the higher the ratio specifying a high school education for initial employment. This ratio varied from 15 percent for unskilled workers to 89 percent for clerical workers.

7. Previous work experience as a criterion for initial employment was specified by 66 percent of the companies replying to the questionnaire. The condition of previous work experience was applied two or three times more rigorously for the skilled crafts and clerical workers than for unskilled, semi-skilled, and service workers; 50 percent of the companies required previous work experience for skilled craftsmen.

8. Fifty-seven percent of the companies specified on-the-job training and

38 percent Apprenticeship for skilled craftsmen; only 4 percent specified vocational or trade school training for clerical workers, indicating that source of training was not a factor so long as the clerical class of workers could perform up to the standards required for the job.

9. An important element of modern day development of workers into efficient employees and to enable them to gain promotions, introducing important elements of job satisfaction and motivation, are company training programs. Despite its importance for motivation and efficiency of the work force, 35 percent of the companies reported no formal training programs, although many provided orientation to the company and a number of other programs, even on-the-job training, on an informal basis. As expected the ratio of companies reporting formal training programs increased with size of company, and this ties in directly with the size of the personnel department and the staffing to manage formal programs, which the smaller sized companies do not have. Over all for all 1,893 companies replying to the questionnaire, significant ratios by types of training, formal or informal, are as follows: on-the-job training, 65 percent of total sample; orientation to company, 38 percent; the "Buddy System" for the disadvantaged worker, 19 percent; supervisor's special training, 18 percent; and Apprenticeship, 15 percent.

10. In reply to the "Open-ended" question, "Special Aptitude Required?" for employment approximately 40 percent of the companies bothering to reply gave a great variety of answers, varying in form but when consolidated and summarized, they fell into three broad categories: skills, personality factors, and experience and training. The personality factors led for the five categories of workers. Specific skills for the job received a high ratio of response for the semi-skilled and skilled workers, with special emphasis being put on mechanical

aptitude and coordination. Only skilled workers received significant emphasis for previous experience and training.

11. Another type of open-ended question pertained to "Hard-to-Fill" jobs and the reasons why companies were experiencing these difficulties. Relative to the Job Clusters included in the study, the jobs reported "hard-to-fill" by companies include the following, ranked in declining order by number of reports: auto mechanic, secretary, salesman, cook, electrician, welder, carpenter, and clerk-typist. It is noted that all these jobs are of key significance to the state's economy. The reasons given for companies for jobs being "hard-to-fill" are as follows, ranked from the highest to lowest frequencies of reporting: "lack of trained or experienced workers; lack of basic education and skills". It should be noted that the emphasis is on training of the skills needed in the job market and providing basic education, ability to read, understand, and follow instructions.

12. Size of the employer is a basic factor in the relative use of the secretarial staff of varying degrees of training and experience. The data show that there is a strong rise in the relative use of secretaries and administrative secretaries and a decline in the use of clerk-typists as size of company increases. The construction industry is a relatively large user of secretaries, as is manufacturing and trade and services. Transportation and communication employers place relatively the largest emphasis on administrative secretaries. The clerk-typist, being generalized in a variety of office functions, is favored by the small firms which do not engage in as much formal correspondence and as many high level appointments as the larger concerns.

13. Technology applications have also had a significant impact on the relative use of certain specialized office staff. The reference here is to the

computer which has been developed in line with modern technology to handle masses of financial transactions and other statistical data, quickly and in a form which assists management decision making. The analysis compared the relative use of three types of office-accounting personnel (accounting clerk, bookkeeper, and bookkeeping machine operator) with three types of data processing jobs (key-punch operator, digital-computer operator, and programmer). The conclusion is that there is a very rapid shift to computer personnel and a shift away from office accounting personnel as the firm increases in size and complexity. The relative use of computers tends to be lowest in the construction industry and highest in government, particularly in the Federal Government. The significance of this shift, with these trends continuing into the future, is that a key-punch operator is trained more readily than accounting clerks and bookkeepers, provided there are personal aptitudes for preciseness and routineness. This development, therefore, is favorable for the unskilled classes of females in our modern day society.

14. Analysis of employer requirements from workers in terms of work skills and work attitudes in entry level jobs during the initial phases of work, or during the first six months on the job, varies somewhat with the type of job cluster.

In the case of construction and drafting not much emphasis is given to requirements for specific skills initially, but a great deal of emphasis is put on work attitudes, seriousness of purpose, applications to the requirements of the job, and energy in learning. The employee must in first six months demonstrate knowledge of tools of the trade, skills in their use and purpose for which used, ability to read blueprints, and cooperate with other crafts.

15. The consolidated Job Cluster which includes transportation, metal

working, and electro-mechanical, cuts across the board in almost every variety of work skills. While the construction industry initiates at growth points in the economy factories, streets and roads, housing, and other buildings, the types of workers in this Job Cluster category maintain and keep the economy moving. Transportation concerns auto and diesel mechanics in which mechanical aptitudes, skills with tools, and seriousness of purpose are critically important. In the metal working category, jobs include machine shop work, sheet metal fabrication, and welding. Machinists operate machines which shape, grind, or drill metal plates, pipes and bars and castings. The sheet metal worker works on the fabrication of such things as ducts or gutters for air conditioning and on a contract job helps erect ductwork and metal siding. The welder joins metal parts together by application of heat or pressure to form a permanent bond between the two pieces joined. The electro-mechanical career categories include nine major craftsmen involved with heating, air conditioning, and maintenance and upkeep, not only of these systems, but also general building maintenance which cuts across the board in all the skills. A wide range of technical skills are involved. Worker must know tools of trade, components and functions of mechanical or electrical unit with which he is working; craft skills in welding, machining, and metal fabrication; identification of differences in wiring and switches and the techniques of installing and pulling cable through conduits. All must be safety conscious and observe precautions conscientiously. The work attitudes of punctuality, serious applications to requirements of job, energy in learning required skills, and ability to work with others and learn from a mature craftsman or Journeyman are strongly emphasized.

16. Agriculture and nature related careers are a broadly based composite of job clusters that cuts across the board in terms of skills and work attitudes.

Except for agricultural power which relates to mechanical skills to keep farm equipment and tractors in repair and operative, there are elements which bind the others into some common skills and attitude orientations. These are love for the outdoors, recreation enjoyment, extrovert behavior patterns, showing up in sportsmen and hunting instincts, and the ability to concentrate on the needs for plants, flowers, and forest products and how they relate to industry and life in the cities.

17. Service to people careers is primarily people-oriented either face to face contact or responding to wishes, orders, or other means of communication to the personal needs of individuals for food, entertainment, medical service through dietary service in hospitals or through programs of child care in the pre-school training found in day care centers which are growing rapidly in popularity. Skills in food preparation are important but the basic factor involves personal attitudes which show up in the employee's sensitivity to the needs, desires, and wishes of people, responding directly to openly expressed or implied acts and suggestive moves for help or service by customers, hospital patients, or small children.

18. A fifth and final category of career areas or job clusters includes office, sales and stock control, and data processing types of jobs. These jobs are close to and directly connected with the heart of every business enterprise, which can only exist as a result of the timely, accurate flow of information on the financial transactions and the inflow and outflow of goods and services which make possible the survival of the enterprise. Bookkeepers keep accurate records of financial transactions. The general clerical staff receives telephone messages, directs visitors, and provides information for

company officers. They file correspondence and a variety of documents in systematic fashion to enable ready reference. Secretarial work is a means of communicating in formal fashion by officers and managers in the business with each other, to employees, and with business leaders and the public. Workers in the data processing unit are using computer technology to develop accurate, rapid access to financial transactions and the flows of goods and services, but are not involved in the personal exchange functions which characterizes the clerical staff. Skills, of course, involve those essential to doing the technical jobs of typing, filing, bookkeeping, and the secretarial functions of correspondence and keeping an appointments agenda for officers of the company. Data processing skills have to do with key punching numerical and alphabetical cards, programming the computer and operating it to get print-out results. But basic to the office and clerical jobs are abilities to deal with the public, employees, and officers, show neatness in appearance; and good communication skills with each other, the public, and with superiors.

19. Joint Apprenticeship Training programs for six of the major crafts included in the study are in operation in seven major cities and all six programs are available in Atlanta, Augusta, Columbus, and Savannah and are offered with absence of one or two programs in the other three major cities, Albany, Macon, and Rome. Total registration for these very intense training programs, varying from 3 to 5 years, as of January 1, 1972 according to the Georgia Office of the Bureau of Apprenticeship Training, was 2,369. Considering that the average training period is four years, broken up into 8-six month training intervals, with admittance to Journeyman rating, if all requirements are passed at the end of 8-sixth month training period, it is likely that roughly 500 Journeymen are graduated from these programs annually, allowing for attrition. This is not

meeting a fourth of yearly training needs for bricklayers, carpenters, cement masons, electricians, plumbers or pipefitters and sheet metal mechanics, and much of this training output is probably already reflected in data companies supplied in the questionnaires. The conclusion, therefore, is that there is plenty of scope for programs of training in public education for all six of these crafts.

20. An entry level job is the first level job in a career ladder that a youth without experience or training may consider applying for after graduation from high school, or as a school drop-out. The odds for landing one of these entry level jobs depends upon the tightness of the job market, the timing of the job applicant, and the impressions he makes on the personnel director, or possibly the supervisor, in terms of attitudes and willingness to work. Examples of entry level jobs included in this study are bricklayer, helper; carpenter, helper; cook's helper; and 36 additional such jobs. However, response data were obtained for only 32 of the 39 entry level jobs. The total number of workers in these 32 positions in the Georgia economy in the Fall of 1971 and Winter of 1972 were 107,491, representing 1/4 of the total jobs reported for all 183 job titles included in the survey and 1/12 of the universe total of all jobs. Total job openings for new workers in the 32 entry level jobs are estimated at 13,949. Companies are training, according to their reports, 4,122 or about 1/3 of annual needs. This leaves roughly 10,000 entry level jobs open each year for employment of youth out of high school. In order to provide a fairly sure chance of a youth obtaining one of these jobs, public education should provide basic training in job and tool skills, communication skills and work attitudes.

More specifically, the following:

1. Familiarity with the tools of the trade or limited skills for service type jobs.
2. Background information on work environment.
3. Training fortified by some make-work experience in work attitudes, including punctuality at work, serious applications to the duties of the job, voluntarily helping or going it alone on work that needs to be done in the work area, experience in working and cooperating with others on the job, and intense interest in applying self on the job and through reading to learn the basic entry level skills and how to cooperate with others in a work assignment, including other craftsmen in order to assure that job meets specifications and is high quality workmanship.

INTRODUCTION

The theme of this study is directed toward furthering the re-orientation of education, in high school particularly, toward "Career Education", which is a complete integration of academic education and vocational education. The result will be a youth graduating from high school better prepared for life and more confident of the future. This means that "All our efforts as educators must be bent on preparing students either to become properly, usefully employed upon graduation from high school or to go on to further formal education", quoting directly Sidney P. Marland, Jr., U. S. Commissioner of Education.⁴ And excerpts from this talk point up the painful problem we face in re-orienting education:

I think our choice is apparent. Certainly continued indecision and preservation of the status quo can only result in additional millions of young men and women leaving our high schools, with or without benefit of diploma, unfitted for employment, unable or unwilling to go on to college, and carrying away little more than an enduring distaste for education in any form, unskilled and unschooled. Indeed, if we are to ponder thoughtfully the growing charge of 'irrelevance' in our schools and colleges, let us look sharply at the abomination known as general education.

Of those students currently in high school, only three out of 10 will go on to academic college-level work. One-third of those will drop out before getting a baccalaureate degree. That means that eight out of 10 present high school students should be getting occupational training of some sort. But only about two of those eight students are, in fact, getting such training. Consequently, half our high school students, a total of approximately 1,500,000 a year are being offered what amounts to irrelevant, general education pap! The liberal arts and sciences of our traditional college-preparatory curriculum are indeed desirable for those who want them and can use them. But there

⁴Career Education Now, An Address by Sidney P. Marland, Jr., U. S. Commissioner of Education, at 1971 Convention of National Association of Secondary School Principals, Sam Houston, Texas, January 23, 1971, p. 1.

must be desire and receptivity, and for millions of our children, we must concede, such knowledge is neither useful nor joyful. They do not love it for its own sake and they cannot sell it in the career market place.

Small wonder so many drop out, not because they failed, but because we have failed them. Who would not at the earliest convenience and legal moment leave an environment that is neither satisfying, entertaining, nor productive? We properly deplore the large numbers of young men and women who leave high school before graduation. But, in simple truth, for most of them dropping out is the most sensible elective they can choose. At least they can substitute the excitement of the street corner for the more obscure charms of general mathematics.⁵

The failure syndrome has been encountered repeatedly by the author of this report. The youth in high school are totally lost in thinking about a future life's work, and college youth, in my experience, are little better prepared. The science, the mathematics, and most other scholarly activities have not been made relevant. College students in cooperative education programs or high school youth in work-study programs have fared much better in finding themselves and a life's work. It is too much for adults to expose youth for 14 or more years of purely academic subjects and expect them to leave the halls of the institution prepared for work, and if he or she is not prepared for work, then there is not preparation for life. The results are confusion, aimlessness, and youth unrest.

Two major objectives of the study are: (a) Project job openings and training requirements for the period 1971-76; and (b) trace out 35 or more career ladders, basic and broadly chosen in order to lead youth to ask questions, argue among themselves, and explore the World of Work alone or through guidance programs while in school which represent a joint effort on the part of education,

⁵Ibid.

business and industry.

The importance of the former was emphasized by Dr. Marland in his speech as follows:

Right now State training programs fill only half the jobs available each year. The other half are filled by job seekers with no occupational job training of any kind. We do better in some fields than others, of course, particularly production agriculture where we are able to come closer to meeting the total need because it is a relatively static job market with little growth projected. About 70 percent of the demand in farm jobs will be met with trained help this year compared with only about 38 percent in the health occupations and 35 percent in various technical fields. This is nice if you happen to own a farm, not so nice if you run a hospital or laboratory.⁶

This means that we must identify the jobs which are of great consequence for the state's economy, determine the growth needs, and the replacement requirements in order to determine employer demand for specific jobs that have job specifications so specific that training programs can be introduced into the school curricula to meet the employer demand. Otherwise the economy suffers for lack of enough trained workers, and what is even worse, the youth out of high school particularly suffer even more because they have either not been trained in any skills at all or have been trained in non-marketable skills.

A number of methods have been employed to obtain estimates of employer demand for trained employees in the future. There is first the matrix method worked out by the U. S. Department of Labor which seems simple and easy to apply. It has at least two defects. First, there is an application of national coefficients to a local situation and the ratios are based on outdated Census data, 1960. Second, the method over generalizes on job categories, that is, aggregate trends in very broad job categories only are given. Curricula need

⁶Ibid., p. 10.

to be more accurately defined and the student needs to aim in a direction where he can see several related jobs which have interest and meaning. This latter problem we will attempt to answer by tracing out 35 or more Career Ladders from entry level positions for several steps up the Career Ladder. The steps will be illustrated with pictures and legends written for each picture, outlining the major job functions of each job.

The methodology will rely on the questionnaire approach, employing a stratified random sample of Georgia employment, as relied on by the author during two previous studies.⁷ The emphasis has been put on the Job Cluster approach in selecting the specific jobs for survey. The following are the Job Clusters or occupational categories included in the questionnaire survey:

Construction	10 specific jobs
Transportation	13
Drafting	6
Food Service	10
Metal Working	17
Electro-Mechanical	24
Hospital Diet Service	4
Marketing and Distribution	29
Agricultural Power	5
Ornamental Horticulture	9
Conservation, Recreation & Wildlife	12
Forestry Occupations	13
Day Care Centers	5
Office Occupations	20
Data Processing	6
TOTAL	183 ⁸

⁷Georgia Skill Study, 1933 (with Dr. Green) and the Manpower Survey of the Louisville, Kentucky, Standard Metropolitan Area, 1967 (with Dr. Ellis).

⁸It is to be noted that the original list of jobs included 183 job titles but no reports of jobs were received on nine of these, most of which occurred in the agricultural sales field. This could be due to lack of high specialization in this type of work. In other words the more generalized salesman is dominant except in some of the large retailing or service institutions. Attention is directed to the fact that under the Forestry Occupations, the sample returns were inadequate and the statistics reported are not statistically significant.

Questionnaires were tailored to meet the specific nature of the industry, business, or service; and in order to develop a reasonably satisfactory reply ratio, follow-up was pursued by reminder letters, repeat mailings, personal contacts, and direct telephone calls.

Objectives of the Study

1. Determine for each job constituting a vocational job cluster the current number employed in the Georgia economy, yearly job openings, net number which need to be trained, based on projections from 1971 to 1976.
2. Ascertain for each vocational entry level job the major skills which employers expect worker to perform with facility during the first six months of employment.
3. For each vocational entry level job determine the typical steps up the job ladder, time interval required, and range in pay scales which accompany each advance. Based on representative employers, ascertain criteria for advances up the job ladder.
4. Determine for each vocational job cluster, jobs which are typically filled initially and the lines of advance up the job ladder.
5. Provide information on employment criteria of employers for the various vocational entry level jobs, including personal attitudes.

Methodology

The questionnaire survey was based on a stratified random sample from practically all SIC⁹ 2-digit industries in Georgia but excluded 07-09, 10, 13, 14,

⁹SIC means Standard Industrial Classification Code. See Appendix D, pp. 11-13 for exact outline of how SIC's were structured.

and 64. SIC 19 was omitted also because this pertains to Ordinance and Accessories, for which County Business Patterns only show one firm whose identity is withheld. Questionnaires were tailored with advice from Georgia Department of Labor experts. A total of 34 separately designed questionnaires were employed. Details on them and where they apply are given in the Appendix D.

The stratified random sampling was limited to firms reporting four or more workers to the Georgia Department of Labor under the Unemployment Insurance Law. In addition to the listing of UI-covered firms obtained from the Georgia Department of Labor, data pertaining to the 3rd Quarter of 1970, listings were obtained from a variety of sources on noncovered establishments. These included local government, schools and colleges, pulpwood dealers, and nonprofit institutions.

The sample design followed that recommended by the Bureau of Employment Security, U. S. Department of Labor with sampling ratios, as specified by this publication, which are as follows:¹⁰

<u>Size of Firm</u>	<u>Sample Ratio</u>
4-19 Workers	4 percent
20-99 Workers	20 percent
100 and over Workers	100 percent

In order to increase the sample reply, the sampling ratios for the first two classes were raised to more than double the ratios shown. It is noted that employers with less than three workers were generally excluded, although some reports were obtained from employers of this size because they happened to fall in the larger category (over four workers) during the Georgia Department of Labor base period for this study, 3rd Quarter, 1970.

¹⁰"Handbook on Employment Security Job Market Research Methods", Area Skill Survey, U. S. Department of Labor, Bureau of Employment Security, U. S. Employment Service, BES No. E-252, Nov. 1965, pp. 24-25.

The basic data on current employment, Fall 1971 through March 1972, were obtained through mailed questionnaires, by usual follow-up techniques, reminder letters, repeat mailings, telephone calls, and personal visits. The questionnaire, sample copies of which are given in Appendix D, varied in length from two pages printed on both sides to four pages printed on all sides. Job definitions were supplied in separately printed forms, as were the detailed instructions on how to fill out the questionnaire.

Data to work out the Career Ladders were obtained by a combination of methods. Questionnaires were employed to follow-up on firms replying in order to obtain pay ranges for different jobs, promotion intervals, employment criteria, and job skills expected of workers in first six months on the job. These data were further supplemented by detailed personal interviews with representative employers to obtain pictures of workers on the different steps of the Career Ladder, job functions for each worker, and company policies on employment, training, job rotation, and other aids for promotion. A great deal of emphasis by employers was placed on worker attitudes on the job and ability to cooperate with other workers. Information tracing out the Career Ladders in detail which also includes pay range charts, and a general discussion of how a worker obtains an entry level job and gains promotion to higher levels, are reported in five separate brochures aside from the general findings in this report.

Limitations of the Study

Three major limitations to the study are recognized. They are the relatively low response ratio, possible bias in the results reported by the more responsive firms who tend to be the more prosperous and progressive firms, and the possible cyclical and seasonal factors represented in the results from the 1970 base period until questionnaire procedures were finally discontinued at the end

of March. Relative to the response ratio, the returns resulted in a 16 percent response, although the randomized selection was larger than recommended in order to obtain an adequate sample return. In terms of total employment, however, the response ratio was 27 percent. Other things being equal this is probably an adequate sample for the entire state, omitting subdivision of data to the larger cities of Georgia as was done in 1963. The total usable questionnaires obtained were 1,893, but this is a great under-estimation, as many firms reported total operations for all units in the state. In one case a large firm reported 79 operations in its single report. This is a statewide operation and would be adding further difficulties compiling totals for the different areas of the state.

A second difficulty involves the problem associated with the fact that the base period was 3rd Quarter of 1970 which was near the low point of the recession. Comparable data for firms responding show 4.3 percent larger employment for a period that was subject to some seasonal variation on the low side in the case of construction, although the respondents were urged to correct the seasonal factor. Related to the cyclical factor is the fact that due to a number of circumstances, mainly the fact that 6 weeks were wasted trying to make IBM tapes from the Georgia Department of Labor compatible with UNIVAC tapes at Georgia Tech. The result was that the questionnaires could not be mailed before late in October. This delay caused complications associated with Thanksgiving, Christmas, and tax returns and numerous other reports in the Spring.

The third possible limitation of the results relates to possible bias of firms who responded to the questionnaire. These tend to be the more progressive and responsive firms. And it may be expected that growth factors are somewhat larger than would be found from the non-respondent firms. The

only way to correct completely for this factor is through a process of expensive field interviews with a cross section of non-respondents to determine the extent to which they fall below in the data factors reported by the responding firms. This, however, would be quite expensive and time consuming.

The conclusion is that the results may be on the high side, particularly in regards to expected growth in employment which is reflected in the total job demands¹¹ given for the 183 jobs included in the study. The author has compared the growth prospects for totals obtained from the study, as well as for some broad categories with growth rates for the Georgia economy as a whole, and they are not significantly out of line. If the users of data will plan programs on the conservative side, it is believed that programs developed from them will be on sound grounds.

¹¹Total job demands of employers are projected on the basis of expected growth in total employment plus replacement needs annually.

TRENDS IN THE OCCUPATIONAL STRUCTURE OF GEORGIA

Based on the 1970 Census of Population for Georgia which has just become available, data are provided in Table 1 which compares shifts in the major occupational categories in Georgia from 1960 to 1970, and the comparisons are given by sex. It is noted that in terms of occupational categories of some statistical significance, that professional, technical, and kindred workers have shown the largest relative growth, followed closely by clerical and kindred workers. In absolute number of jobs, male workers had the largest absolute growth in craftsmen, foremen, and kindred workers, up over 55,000 in the decade. Female workers had the largest absolute growth in clerical and kindred workers, up almost 90,000 workers in the decade. The second largest growing category for male workers was professional, technical and kindred workers which grew over 47,000 workers during the decade. Second ranking for female workers was the category of service workers, except private household, which had a growth of 31,000 during the 1960-70 decade. For both males and females, sales workers showed great strength in growth.

The conclusion from this analysis is that the Job Clusters included in this study, which have been outlined above, encompass the strongest growing areas of the job market in Georgia for both males and females.

Table 1

Comparison of Major Occupational Trends by Sex in Georgia From 1960 to 1970

Occupational Category And Sex	1960		1970		1960 to 1970
	Number (000)	Percent Total	Number (000)	Percent Total	Percent Increase
<u>Male Employed, 14 years old & over</u>					
Professional, Technical, and Kindred Workers	61.5	6.9	108.9	10.3	77.1
Managers & Administrators, except Farm	101.5	11.4	118.5	11.2	16.7
Sales Workers	60.0	6.7	74.9	7.1	24.8
Clerical and Kindred Workers	51.3	5.8	73.6	6.9	43.5
Craftsmen, Foremen, and Kindred Workers	160.3	18.0	215.2	20.3	34.2
Transport Equipment Workers	61.1	6.9	65.2	6.2	6.7
Service Workers, except Private Household	53.5	6.0	66.3	6.3	23.9
Subtotal	549.2	61.7	722.6	68.2	31.6
All Others	340.2	38.3	337.4	31.8	-0.8
TOTAL	889.4	100.0	1,060.0	100.0	19.2
<u>Female Employed, 14 years old & over</u>					
Professional, Technical, and Kindred Workers	52.2	10.5	90.8	12.9	73.9
Managers & Administrators, except Farm	17.5	3.5	23.2	3.3	32.6
Sales Workers	31.5	6.4	40.6	5.8	28.9
Clerical and Kindred Workers	107.9	21.8	197.8	28.2	83.3
Craftsmen, Foremen and Kindred Workers	6.1	1.2	12.9	1.8	111.5

Table 1

Comparison of Major Occupational Trends by Sex in Georgia From 1960 to 1970
(Continued)

Occupational Category And Sex	1960		1970		1960 to 1970 Percent Increase
	Number (000)	Percent Total	Number (000)	Percent Total	
Transport Equipment Workers	0.7	0.1	2.7	0.4	285.7
Service Workers, except Private Household	59.0	11.9	90.0	12.8	52.5
Subtotal	274.9	55.5	458.0	65.2	66.6
All Others	220.7	44.5	244.3	34.8	10.7
TOTAL	495.6	100.0	702.3	100.0	41.7

Source: U. S. Department of Commerce, Bureau of the Census, General Social and Economic Characteristics: Georgia, PC(1)-C12 Ga., March 1972, p. 237.

GROWTH EXPECTATION OF EMPLOYMENT CATEGORIES IN GEORGIA
BASED ON REPORTS BY SAMPLE FIRMS

The questionnaire on page 1 contained a series of questions on current total employment and expected total employment in one and three years. The fifth year employment was obtained by computer extrapolation, based on rate of growth. The data for the sample firms, 1,893, have been inflated to universe values and totals for categories of employment in Georgia are provided in Table 2. Based on aggregate employment inflated for sample firms for the period October 1971 through March 1972, we have the following projected growth rates for Georgia's economy:

<u>Period</u>	<u>Number of Jobs</u>	<u>Percent Gain</u>
1 year	81,815	6.2
3 years	233,263	17.7
5 years	384,711	29.1

The average yearly growth rate over the next five years is 5.8 percent, and it is noted that the largest gains are expected in construction, trade and services and utilities. Federal government is the only category projecting a decline in employment. The very large increase in non-profit institutions should probably be ignored as the number of units represented are comparatively small and there is no way to know if they are representative. The large relative gains in construction could be in part due to complications over the seasonal factor but rapid growth in construction is not unexpected in view of the fact that high birth rates in the Post World War II period are now forming families at a very high rate and this will continue for most of this decade.

The trends are in terms of total employment which relate to specific jobs that will be discussed later in the report in an individualized manner, depending upon the peculiarities of the market demand for specific crafts, or services.

TABLE 2

Total Current Employment and Expected Employment For Industrial Categories
Included in the Georgia Careers For Youth Survey
(Based on Sample Inflation)

Industrial Category	Total Employment		Total Employment Expected			Percentage Increase in Total Employment in ^b		
	Sept. 1970	Fall 1971	1 Year	3 Years	5 Years ^a	1 Year	3 Years	5 Years
MANUFACTURING								
A. Durables	139,644	145,890	154,098	171,796	189,494	5.6	17.8	29.9
B. Nondurables	299,979	323,135	339,507	367,579	395,650	5.1	13.8	22.4
Subtotal	439,623	469,025	493,605	539,375	585,144	5.2	15.0	24.8
CONSTRUCTION	63,543	81,460	95,794	116,860	137,926	17.6	43.5	69.3
UTILITIES ^c	76,852	93,586	98,793	112,338	125,883	5.6	20.0	34.5
TRADE & SERVICES	366,632	368,430	399,363	452,674	505,986	8.4	22.9	37.3
GOVERNMENT & OTHER								
A. Federal	79,000	80,938	78,106	77,703	77,209	-3.5	-4.0	-4.5
B. State & Local	109,474	112,298	117,015	125,628	134,241	4.2	11.9	19.5
C. Schools & Educational Services	101,349	111,944	115,313	123,860	132,406	3.0	10.6	18.3
D. Non-Profit Institutions	2,387	2,405	3,908	4,908	5,908	62.5	104.0	145.6
TOTAL	1,238,760	1,320,083	1,401,898	1,553,346	1,704,794	6.2	17.7	29.1

^aObtained by extrapolation of rate of gain between one and three years to five years.

^bFrom Fall 1971.

^cTransportation, communication, electric, gas and sanitary services.

NOTE: Data do not include firms of 3 Workers or less; railroads, ordinance, mining, agriculture, insurance carriers, and legal and miscellaneous services. Only food service of hospitals is included.

GROWTH EXPECTATIONS OF BROAD CATEGORIES OF CAREER CLUSTERS
IN GEORGIA, 1971-76

Table 3 summarizes growth prospects for the Georgia economy in terms of broad categories of career clusters. The following are the net job increases expected for the six summarized categories of Career Clusters:

Skilled Crafts	1971-76 Expected Employment Growth		Ratio to Aggregate Job Increase For Six Groups
	Number	Percentage Increase	
Skilled Craft Careers	48,343	42	39
Agriculture & Nature Related Careers	4,751	52	4
Office Careers	28,703	23	23
Data Processing Careers	3,464	35	3
Marketing & Distribution Careers	23,052	19	18
Service to People Careers	<u>16,211</u>	31	13
AGGREGATE TOTAL	124,524	29	100

It is noted that the skilled crafts account for by far the largest ratio of the expected growth in jobs, office careers second, and marketing and distribution third. The fastest growing career areas, however, are agriculture and nature related careers, skilled crafts careers and data processing careers. It may be expected, therefore, that these career areas identify where the most training needs will occur. In a discussion below, based on Table 10, specific jobs under each category, amounting in all to 75 jobs will be shown to have sufficient significance for individualized programs. In Appendix A, trends in employment, job openings yearly, and net training needs will be identified for all 183 jobs included in the study.

Table 3

Summary of Current Employment, Expected Employment in
1 Year, 3 Years, 5 Years,
Careers For Youth Survey, Georgia, Fall, 1971

Broad Categories And Career Clusters	Current Employment Fall 1971	Expected Employment in			Percentage Increase 1971-76
		1 Year	3 Years	5 Years	
SKILLED CRAFTS CAREERS					
Construction	34,187	39,490	46,102	52,911	55
Drafting	2,056	2,204	2,520	2,851	39
Transportation (Auto/Truck, Diesel Mechanics)	23,622	26,564	30,689	34,970	48
Metal Working	19,053	21,105	23,652	26,369	38
Electro-Mechanical	35,461	37,668	41,648	45,621	29
Subtotal	114,379	127,030	144,431	162,722	42
AGRICULTURE & NATURE RELATED CAREERS					
Tractors & Farm Equipment (Mechanic)	1,331	1,537	1,754	1,985	49
Ornamental Horticulture	5,157	5,817	6,937	8,076	57
Conservation, Recreation & Wildlife	1,831	2,048	2,458	2,868	57
Forestry	806	828	889	947	18
Subtotal	9,125	10,230	12,038	13,876	52
OFFICE CAREERS					
Bookkeeping	33,931	34,568	35,985	38,410	13
Clerical	37,089	37,874	39,291	41,952	13
Secretarial	48,485	51,793	58,406	65,022	34
Other Clerical	5,417	5,978	7,109	8,241	52
Subtotal	124,922	130,213	140,791	153,625	23
DATA PROCESSING CAREERS					
Subtotal	9,896	10,453	11,907	13,360	35

Table 3

Summary of Current Employment, Expected Employment in
1 Year, 3 Years, 5 Years,
Careers For Youth Survey, Georgia, Fall, 1971
(Continued)

Broad Categories And Career Clusters	Current Employment	Expected Employment in			Percentage Increase
	Fall 1971	1 Year	3 Years	5 Years	1971-76
MARKETING AND DISTRIBUTION CAREERS					
Purchasing and Selling	98,301	99,754	106,702	114,774	17
Sales Specialties	14,570	15,206	16,685	18,309	26
Agricultural Sales	403	412	448	480	19
Partsman and Salesman	6,567	7,280	8,280	9,330	42
Subtotal	119,841	122,652	132,115	142,893	19
SERVICE TO PEOPLE CAREERS					
Food Service	43,619	46,424	50,765	55,106	26
Dietary Service in Hospitals	1,360	1,386	1,476	1,582	16
Day Care Centers	7,091	7,818	9,705	11,593	64
Subtotal	52,070	55,682	61,946	68,281	31
AGGREGATE TOTAL	430,233	456,205	503,228	554,757	29

EMPLOYMENT CRITERIA FOR BASIC OCCUPATIONAL CATEGORIES IN THE GEORGIA ECONOMY

Age on Initial Employment and Mandatory Retirement

Neither the initial age for employment nor the mandatory retirement age appears to be firmly fixed in the Georgia economy. Table 4 gives comparisons by size of employer on age required for initial employment and the mandatory retirement age. The interesting fact is that of the 1,893 employers included in the study 45 percent failed to specify the age requirement for initial employment and 71 percent did not specify a mandatory retirement. The data in the table show that a higher ratio of companies permit initial employment at age 17 or below for the unskilled and semi-skilled types of workers. And for these two skill levels transportation, communication, and trade and service employers are still more lax on hiring the 17-year olds or under, and the larger the company the more chances 17-year olds or under have for employment.

In the case of mandatory retirement, it is surprising that only 29 percent specify a specific age when employees must retire and practically all of these set the retirement age at 65 or above; only a minor proportion (2 percent) permit it at 62 years of age. Again the larger the company the more work has been done on determining a mandatory retirement age. Note that companies of 100 workers or over have almost twice the ratio specifying age 65 or above as the retirement age compared to the composite for all sizes and industry groups.

High School Graduation for Initial Employment

Educational criteria for employment was reported on by only 68 percent of the companies responding to the questionnaire. In general the higher the skills level the higher the ratio of companies requiring high school graduation or its

Table 4

Analysis of Age Criteria of Companies in Sample on Initial Employment and Retirement,
Careers For Youth Survey, Georgia, 1971

Size of Firm and Broad Industry Type	Ratio of Companies that Reported Which Specified or Accepted for Initial Employment Youth of:			Percent of Companies	
	Age 17 or under	18-24 Years	Not Reporting ^a	Reporting Retirement Age 65 or Over	Not Reporting ^b
COMPANIES WITH LESS THAN 100 WORKERS					
A. <u>Construction & Manufacturing</u>					
Unskilled Workers	6	64	28	23	73
Semi-Skilled	3	61	34	24	73
Service	-	19	80	7	91
Skilled	2	63	27	23	72
Clerical	2	61	31	25	72
B. <u>Transportation, Communication, and Trade & Service</u>					
Unskilled Workers	10	36	54	20	77
Semi-Skilled	4	30	64	16	82
Service	2	24	71	14	85
Skilled	2	36	55	21	77
Clerical	2	48	47	25	73
COMPANIES WITH 100 OR OVER WORKERS					
A. <u>Construction & Manufacturing</u>					
Unskilled Workers	14	75	9	53	45
Semi-Skilled	12	79	7	53	45
Service	5	46	46	34	65
Skilled	5	76	14	51	48
Clerical	6	85	6	55	43

Table 4

Analysis of Age Criteria of Companies in Sample on Initial Employment and Retirement,
Careers For Youth Survey, Georgia, 1971
 (Continued)

Size of Firm and Broad Industry Type	Ratio of Companies that Reported Which Specified or Accepted for Initial Employment Youth of:			Percent of Companies	
	Age 17 or under	18-24 Years	Not Reporting ^a	Reporting Retirement Age 65 or Over	Not Reporting ^b
B. <u>Transportation, Communication, and Trade & Service</u>					
Unskilled Workers	18	55	26	53	46
Semi-Skilled	12	50	38	44	54
Service	7	50	41	43	56
Skilled	6	59	29	50	47
Clerical	9	78	12	67	31
AGGREGATE TOTAL	9	46	45	27	71

^aPercent will not add to 100 because some companies specified initial employment age over 25 years.

^bPercent will not add to 100 because some companies reported the retirement age under 65 years of age.

equivalent for employment. Previous work experience as a factor in initial employment showed somewhat comparable results. Sixty-six percent of the companies replying to the questionnaire reported any requirement for previous work experience as a condition for employment. The condition of previous work experience was applied two to three times more rigorously for the skilled crafts and clerical workers than for unskilled, semi-skilled and service workers. However, the approximately 50 percent of the companies reporting required previous work experience for employment as a skilled craftsman.

The following tabulation relates company educational and previous work experience requirements to the skilled level of the job:

Skilled Category of Applicant	Percentage of Companies Reporting on Criteria Specifying for Initial Employment	
	High School Education or Equivalent	Previous Work Experience
Unskilled	14.8	4.6
Semi-skilled	23.0	17.1
Service	28.4	14.8
Skilled	56.9	49.7
Clerical	88.9	34.7

Other criteria often applied by companies include on-the-job training, apprenticeship training, or vocational trade school in order to obtain and retain the job, which means that the craftsman could be exposed to some of the required training after initial employment. Fifty-seven percent of the companies specified on-the-job training and 38 percent Apprenticeship training for skilled craftsmen, but surprisingly only 4 percent specified vocational or trade school training for clerical workers.

Company Training Programs

An important aspect of modern day development of workers into efficient workers and to enable them to gain promotions, introducing important elements of job satisfaction and motivation, are company training programs. All have heard of on-the-job training and Formal Apprenticeship programs but few know a great deal of the great variety of training programs some of the companies, generally the larger companies with resources, provide. They certainly repay the expenses manifold through increased worker productivity. Some companies, such as General Motors Plant at Doraville, have a tuition refund plan, and participates in the General Motors Training Institute where it is possible to gain a college degree and even graduate degrees.

Table 5 shows a summary of what companies responding to the questionnaire in this study have reported about their programs. First it should be noted at the top of the table that a significant ratio of companies did not report any formal or informal training programs. This non-response declines with company size and is lowest of all with government and other noncovered employment, which is almost one-half of the company size 4-19 workers in non-response or 23 percent. Of the specific types of training programs reported on in Table 5, the most important type of company training by far is on-the-job training, being almost twice as large as any of the other programs reported, and about four times as large as some programs reported. This program was about four times as large relatively as Formal Apprenticeship. Orientation to company is generally informal and is of necessity of brief scope. It is the second ranking program in the sample reports. From the standpoint of size of company, the ratios for all types of programs increase with size of employment, and this ties directly to a Personnel Department and the funds to organize needed programs of training. Government and other noncovered employment rank well up with the

TABLE 5

Relationship of Size of Company in Sample Reporting Company Training Programs
To Types of Company Training Offered Employees,
Careers For Youth Survey, Georgia, 1971

Status of Company Training and Type of Company Training Program Reported	Effect of Size of Company on Ratio of Specified Types of Company Training Available for Employees				Composite Percent For All Groups
	4-19 Employees	20-99 Employees	100 or Over Employees	Government and Other Noncovered Employment	
Ratio of Companies Reporting No Programs	40	38	29	23	35
<u>Ratio Total Sample Reporting:</u>					
Orientation to Company ^a	27	40	56	43	38
Buddy System ^a	10	21	24	11	19
On-Job-Training ^a	54	70	84	64	65
Job Rotation ^a	13	27	27	13	20
Apprenticeship	12	18	20	15	15
Adult Education, Outside	8	11	21	19	12
Unit Classroom	2	5	11	12	5
Supervisors, Special Training	8	17	37	34	18
University Executive Development Programs	3	7	16	18	9

^aClassified as "No Formal Training" by many companies.

larger concerns. The type of service, public relations, and sources of funding are undoubtedly influencing factors here. Attention is called to the "Buddy System" which was originated in recent years to facilitate employment of the disadvantaged in order to improve communication and provide a source of counseling to employees very much out of their normal element. Almost one-fifth reported the "Buddy System" of training, which also increases rather significantly with size of company. A worker with similar background or culture appears to have provided the answer to find a method to train and integrate such employees into the work force.

Worker Aptitudes Required or Sought by Employers

This category enlarges on the sections we have been discussing relative to age, previous experience, and educational level. The analysis was based on companies in the questionnaire who responded to an open-ended question which requested the employer to respond to the question for each category of skills as follows: "Special aptitude required?" The replies were written in company language and the office personnel on this project, including the author, compiled the numerous statements and then consolidated them in order to gain a degree of homogeneity in the statements relative to three categories of worker aptitudes: skills, personality factors, and experience and training. Summary of the aptitudes most frequently mentioned by sample firms replying to the question is shown in Table 6.

It is noted that personality factors lead by a substantial margin for all five types of skills. For the unskilled and semi-skilled "Willingness to work and learn" rank first in this group. But note also that "Ability to read and write" rate high in the "Experience and Training" category; while in the skills category, employers are looking for workers who are mechanically inclined and

TABLE 6

Worker Aptitudes Required by Employers of Specified Classes of Skilled Classes of Workers,
Careers For Youth Survey, Georgia, Fall, 1971

Worker Aptitudes	Number of Sample Companies Specifying Aptitude for Following Classes of Workers				
	Unskilled	Semi-Skilled	Service	Skilled	Clerical
<u>EXPERIENCE AND TRAINING</u>					
Pass Aptitude Test	7	7	8	8	11
Experience in job for which applied	6	17	8	18	9
General knowledge of business machines	--	--	--	--	67
Read and write	68	35	--	--	--
<u>SKILLS</u>					
Be mechanically inclined; have coordination	49	170	39	152	--
Be able to work with figures; follow instructions	39	32	9	22	230
Basic skills for job and other factors	--	--	15	--	295
<u>PERSONALITY FACTORS</u>					
Be able to work with others; have a pleasant personality	30	13	60	16	52
Be alert and dependable; have common sense; and take pride in work	63	21	33	27	27
Willingness to work and learn on the job	102	83	17	31	26
Be neat in appearance	--	--	24	--	40
TOTAL	364	378	213	274	762

have coordination. In the case of the skilled craftsman, major emphasis is put on: "Be mechanically inclined; have coordination." For service workers, as one would expect, specifications are concentrated on all four of the personality conditions given, with first priority being placed on: "Be able to work with others; have a pleasant personality." Employers concentrate on two categories of skills for clerical workers: (a) basic skills for the job, and (b) be able to work with figures. And note that all four personality factors are given considerable emphasis.

Hard-To-Fill Jobs

Related to employment criteria applied by employers is the success with which they are able to recruit workers meeting the above standards. In order to obtain some measure of this problem, an open-ended question was provided on the front page asking for a list of jobs hard-to-fill and the reasons. The results are given in Table 7, and it is noted that many of the job titles chosen for the different Job Clusters are listed in the table. Jobs hard-to-fill reported most frequently were: auto mechanic, secretary, salesman, cook, electrician, welder, carpenter and clerk-typist. These results support informal information which we have been receiving about scarcities of certain types of workers in the job market. A further point of interest is that all jobs listed are of key significance to the economy, and should prove of special interest to training programs which develop out of this report.

The reasons for jobs being hard to fill, based on statements which were made in support of listing a specific job, are summarized in Table 8. The leading reasons given are: "lack of trained or experienced workers; lack of basic education and skills." The number reporting these reasons was 268 and this outnumbered the other major categories by a wide margin. The emphasis is again

Table 7

List of Selected Hard-To-Fill Jobs
Reported by Companies in Mailed Survey
Fall 1971

Skills Category & Occupations	Number of Companies Reporting
<u>Building Crafts</u>	
Bricklayer	6
Carpenter	20
Electrician	23
Plumber	14
Pipefitter	5
Cement Mason	6
<u>Mechanics</u>	
Maintenance Mechanic	15
Diesel Mechanic	5
Auto Mechanic	59
Sewing Machine Mechanic	15
<u>Electro-Mechanical</u>	
Air Conditioner Mechanic	10
Air Conditioner Mechanic Helper	5
TV Technician	4
<u>Metal Working</u>	
Welder	21
Machinist	18
<u>Secretarial</u>	
General Clerk	6
Clerk-Typist	20
Stenographer	5
Secretary	42

Table 7

List of Selected Hard-To-Fill Jobs
 Reported by Companies in Mailed Survey
 Fall 1971
 (continued)

Skills Category & Occupations	Number of Companies Reporting
<u>Data Processing</u>	
Key Punch Operator	17
Computer Operator	5
Computer Programmer	11
<u>Selling</u>	
General Sales Clerk	13
Driver Salesman	5
Auto Salesman	10
Salesman	26
<u>Service Workers</u>	
Cooks & Bakers	24
Busboy or Busgirl	5
Waiter or Waitress	9
Dietary Aide	7

Table 8

Reasons Given for Hard-To-Fill Jobs According to Designated Categories

Reasons	Number of Companies in Sample Reporting								Total Reporting
	Building Crafts	Mechanics	Electro- Mechan- ical	Metal Working	Office Occu- pations	Data Pro- cessing	Selling	Service Workers	
Lack of trained or experienced workers; lack of basic education and skills	43	63	17	29	55	20	23	18	268
Lack of interest; poor attitude; lack of pride in work	8	19	--	4	4	2	20	11	68
Low pay; demand exceeds supply; long hours; lack of glamour	25	14	3	11	20	10	15	21	119

put on the importance of training skills needed in the job market and providing basic education, ability to read, understand, and follow instructions. In third rank are worker attitudes and conditions in the job market which puts the responsibility in the first case on the worker and in the second on the demand-supply conditions in the job market, including pay levels, which may in part be due to excess supply of untrained workers.

JOB DEMAND BY EMPLOYERS AND NET
TRAINING REQUIREMENTS YEARLY, 1971-76

Expected Employment Growth and Replacement Requirements

In introductory sections previously, it has been noted that inflation of the 1,893 sample firms on basis of sampling ratios indicates a growth in total employment of 29.1 percent for 1971-76. Application of the same procedures of inflation to the 183 specific job titles included in the study indicate 28.9 percent growth in the five-year period.

In order to gain an adequate measure of size of the training needs by job clusters and specific job titles, it is necessary to extend the analysis and determine total demand and training needs annually for each job title. These data will show where programs need to be expanded; others, perhaps, cut-back. Employer job demand is defined as containing two major components. There is first the net annual growth which occurs in a specific job that relates to growth in the economy of Georgia. Secondly, there must be added to the annual growth needs of employers, the replacement needs for employees who withdraw from the labor force permanently from retirement, death, pregnancy of female workers, or simple withdrawal from working altogether for any reason. These two components of employer demand when added give a measure of the total job demand by years for a particular job or when several jobs are added for a job cluster. A third aspect of program formation must consider the extent to which companies train workers to meet their own job demands. We have seen above in Table 5 that approximately two-thirds of all companies reporting in this survey have some sort of training program. The extent to which these programs meet the need of employers for job expansion needs and for replacement needs

must be measured before it is possible to determine the training requirements from public agencies to meet the unmet needs.

The broad scope of these three measures are given in Table 9 by occupational category and career areas, which consolidates the information on growth, replacement and company training into six subdivisions.

Some very significant conclusions can be deduced from Table 9 on the relative importance of the three factors which will determine the training needs for the jobs under study. First, the annual job openings for 1971-76 are estimated from the sample reports to equal 24,900, the yearly replacement requirements are put at 25,806, and the average yearly number completing training or promoted in companies is estimated to equal 13,151. The first two numbers (growth rate and replacement needs) add to 50,706, indicating total yearly job demand for the job titles under study by employers for nearly 51,000 trained employees. However, employers in Georgia will train in their own training programs which have been outlined in detailed fashion above, 13,151. This leaves a net of 37,555 training needs which must come from public education and the Apprenticeship programs.

Further inspection of the table will reveal that employer job demands for this five-year period rank in order of magnitude as follows: skilled crafts careers, office careers, marketing and distribution careers, and service to people careers. The other two, data processing careers might be treated with office careers, while those related to agriculture and nature related careers stand in a unique relationship to development, maintenance and preservation of our natural resources.

TABLE 9

Current Employment Related To Number of Projected Employment and Number
To Complete Training, Careers For Youth Survey, Georgia, Fall 1971

Occupation Category And Career Area	Total Current Employment	Average Yearly Growth In Total Employment, 1971-76		Average Replacement Requirements Yearly, 1971-76		Average Number Completing Training or Promoted Yearly, 1971-76	
			Ratio to		Ratio to		Ratio to
		Total Number	Current Employment	Total Number	Current Employment	Total Number	Current Employment
<u>SKILLED CRAFTS CAREERS</u>							
Construction	34,187	3,745	11.0	2,600	7.6	1,311	3.8
Drafting	2,056	159	7.7	135	6.6	140	6.8
Transportation or Auto & Truck Mechanics	23,622	2,270	9.6	1,469	6.2	1,135	4.8
Metal Working	19,053	1,463	7.7	934	4.9	548	2.9
Electro-Mechanical	35,461	2,032	5.7	1,678	4.7	1,316	3.7
Subtotal	114,379	9,669	8.5	6,816	6.0	4,450	3.9
<u>AGRICULTURE AND NATURE RELATED CAREERS</u>							
Agricultural Mechanics	1,331	131	9.8	108	8.2	76	5.7
Ornamental Horticulture	5,157	584	11.3	175	3.4	195	3.8
Conservation, Recreation and Wildlife	1,831	207	11.3	115	6.3	88	4.8
Forestry	806	27	3.5	17	2.1	6	0.7
Subtotal	9,125	949	10.4	415	4.6	365	4.0
<u>OFFICE CAREERS</u>							
Bookkeeping	33,931	895	2.6	2,283	6.7	1,207	3.6
Clerical	37,089	971	2.6	2,132	5.7	914	2.5

TABLE 9

Current Employment Related to Number of Projected Employment and Number
To Complete Training, Careers For Youth Survey, Georgia, Fall 1971
(Continued)

Occupation Category And Career Area	Total Current Employment	Average Yearly Growth In Total Employment, 1971-76		Average Replacement Requirements Yearly, 1971-76		Average Number Completing Training or Promoted Yearly, 1971-76	
		Total Number	Ratio to Current Employment	Total Number	Ratio to Current Employment	Total Number	Ratio to Current Employment
<u>OFFICE CAREERS (Contd.)</u>							
Secretarial	48,485	3,308	6.8	3,596	7.4	1,276	2.6
Other Clerical	5,417	564	10.4	583	10.8	266	4.9
Subtotal	124,922	5,738	4.6	8,594	6.9	3,663	2.9
<u>DATA PROCESSING CAREERS</u>	9,896	693	7.0	847	8.6	301	3.0
<u>MARKETING AND DISTRIBUTION CAREERS</u>							
Purchasing and Selling	98,301	3,295	3.4	5,386	5.5	2,680	2.7
Sales Specialties	14,570	748	5.1	624	4.3	234	1.6
Agricultural Sales	403	15	3.7	46	11.4	46	11.7
Partsman and Salesman	6,567	553	8.4	412	6.3	296	4.5
Subtotal	119,841	4,611	3.8	6,468	5.4	3,256	2.7
<u>SERVICE TO PEOPLE CAREERS</u>							
Food Service	43,619	2,297	5.2	2,208	5.1	975	2.2
Dietary Service in Hospitals	1,360	44	3.2	54	4.0	26	1.9
Day Care Centers ^a	7,091	899	12.7	404	5.7	116	1.6
Subtotal	52,070	3,240	6.2	2,666	5.1	1,117	2.1
AGGREGATE TOTAL	430,233	24,900	5.8	25,806	6.0	13,151	3.1

^aIncludes employees in Day Care Centers, but also housekeepers and maids reported by Hotels and Motels.

Employer Demand and Net Training Requirements For Specific Jobs of a High Degree of Significance

In order to plan and conduct training programs in the Comprehensive High Schools which will be relevant and also assure youth taking such courses of a place in the job market after graduation, it is necessary to identify specific jobs of high significance and possessing demand characteristics which will meet these objectives. This has been done by selecting all jobs from the computer print-outs in Appendix A, Tables I and II, which showed a current employment of 1,000 or more workers during the survey period, after inflation to universe totals on the basis of the sample response to the questionnaires.

According to the criterion of 1,000 jobs or more in current employment, the data which have been summarized in Table 10 indicate that there are 75 specific jobs in the job clusters under study which would have great significance for setting up specific programs. This, however, does not mean that jobs of significance on other grounds, importance to natural resources, emerging as new types of enterprise, etc., should not be considered. Data in Appendix A, Tables I and II, give information which enable derivation of data similar to those provided in Table 10 for all 183 specific job titles included in the study.

Examination of Table 10 in more detail indicates largest yearly net training needs in following categories, arranged in declining order of importance as follows: office occupations, 15 jobs with yearly net training needs of 10,531; marketing and distribution occupations, 15 jobs with yearly net training needs of 6,890;¹² construction, 9 jobs with yearly net training needs of 4,921 food service occupations, 6 jobs with yearly net training needs of 3,463; transportation

¹²If 315, Partsman or Salesman, is added and this is justified on the grounds of similarity of requirements, another 669 training needs would be required or a total of 7,559.

7 jobs with yearly net training needs of 2,239; electro-mechanical, 8 jobs with yearly net training needs of 1,944; and metal working occupations, 7 jobs with yearly net training needs¹³ of 1,341; and Day Care Center occupations, 3 jobs with yearly net training needs of 1,170. Close inspection of Table 10 will reveal specific jobs which show relatively high potentials for training. Of these the following jobs show a net annual training need of 1,000 or over: clerk-typist, general salesperson, secretary, stock clerk, waiter or waitress, cashier, carpenter - laborer, and general clerk. Those specific jobs indicating a net yearly training need of between 500 and 1,000 are: cook, bricklayer, carpenter, cashier - currency exchange, stenographer, bookkeeper, rough carpenter, electrician, telephone operator, partsman or salesman, key-punch operator, assistant teacher or aide, accounting clerk, sheet metal worker, busboy or busgirl, typist, and maintenance man building. The total of the specific jobs listed constitute 25 out of the 75 listed in Table 10. As is obvious, training programs for specific jobs cannot be treated in isolation. There must be a relationship of training for all the jobs in the cluster. The construction cluster, for instance, shows an annual training need of 4,921 in Table 10, plus 112 additional needs. But if the program were to concentrate on carpentry, for instance, there would be the whole spectrum of four jobs with an annual net training need of 2,959. Another important point about carpentry is that it is basic to the construction industry, as practically all construction requires carpenters in one form or another and usually in the initial phases of the construction project.

¹³Net training needs yearly is an average rate for period 1971-76 and deducts company training from total job demands of employers on yearly basis also.

Table 10

Current Employment Related to Average Yearly Job Openings and Training Requirements
For Period 1971-1976, CAREERS FOR YOUTH SURVEY, Georgia, Fall 1971

(Based on Job Titles Reporting 1,000 or More Jobs on Survey Date)

Career Cluster And Specific Job Title	Number Employed Fall 1971	Average Net Job Openings ^a Yearly For Period, 1971-76		Average Net Training Requirements ^b For Jobs Yearly For Period, 1971-76	
		Job Openings Yearly	Ratio to Current Employment	Job Training Needs Yearly	Ratio to Current Employment
<u>CONSTRUCTION</u>					
100 Bricklayer Helper	2,891	591	20.4	376	13.0
101 Bricklayer	4,075	1,075	26.4	868	21.3
104 Laborer, Carpentry	8,427	1,513	18.0	1,204	14.3
105 Carpenter, Rough	4,451	798	17.9	693	15.6
106 Carpenter, Labor Foreman	2,156	349	16.2	293	13.6
107 Carpenter	6,117	950	15.5	769	12.6
110 Cement Mason, Helper	1,162	283	24.4	188	16.2
111 Cement Mason	1,224	307	25.1	256	20.9
120 Pipefitter or Plumber	2,897	338	11.7	274	9.5
Subtotal	33,400	6,205	18.6	4,921	14.7
Percent Total	97.7	97.8	--	97.8	--
All Others	787	140	17.8	112	14.2
TOTAL	34,187	6,345	18.6	5,033	14.7

Table 10

Current Employment Related to Average Yearly Job Openings and Training Requirements
For Period 1971-1976, CAREERS FOR YOUTH SURVEY, Georgia, Fall 1971

(Based on Job Titles Reporting 1,000 or More Jobs on Survey Date)
(Continued)

Career Cluster And Specific Job Title	Number Employed Fall 1971	Average Net Job Openings ^a Yearly For Period, 1971-76		Average Net Training Requirements ^b For Jobs Yearly For Period, 1971-76	
		Job Openings Yearly	Ratio to Current Employment	Job Training Needs Yearly	Ratio to Current Employment
<u>TRANSPORTATION</u>					
145 Automobile-Mechanic Helper	3,033	557	18.3	404	13.3
147 Automobile-Body Repairman	2,761	513	18.6	402	14.6
150 Automobile-Service Mechanic I	3,141	522	16.6	339	10.8
151 Automobile Mechanic	5,657	810	14.3	457	8.1
152 Mechanic, Industrial Truck	1,181	193	16.4	121	10.2
153 Truck Mechanic	2,479	333	13.4	302	12.2
156 Diesel Mechanic	2,284	306	13.4	214	9.4
Subtotal	20,536	3,234	15.8	2,239	10.9
Percent Total	86.9	86.5	--	86.0	--
All Others	3,086	505	16.4	365	11.8
TOTAL	23,622	3,739	15.8	2,605	11.0
<u>DRAFTING</u>					
TOTAL	2,056	294	14.3	154	7.5

Table 10

Current Employment Related to Average Yearly Job Openings and Training Requirements
For Period 1971-1976, CAREERS FOR YOUTH SURVEY, Georgia, Fall 1971

(Based on Job Titles Reporting 1,000 or More Jobs on Survey Date)
(Continued)

Career Cluster And Specific Job Title	Number Employed Fall 1971	Average Net Job Openings ^a Yearly For Period, 1971-76		Average Net Training Requirements ^b For Jobs Yearly For Period, 1971-76	
		Job Openings Yearly	Ratio to Current Employment	Job Training Needs Yearly	Ratio to Current Employment
<u>FOOD SERVICE</u>					
170 Cook Helper	6,873	720	10.5	474	7.0
173 Cook	10,245	1,102	10.8	875	8.5
174 Chef	1,066	94	8.8	22	2.1
176 Busboy or Busgirl	5,603	668	11.9	549	9.8
177 Waiter or Waitress	16,619	1,622	9.8	1,436	8.6
178 Hostess	1,222	143	11.7	107	8.8
Subtotal	41,628	4,349	10.4	3,463	8.3
Percent Total	95.4	96.5	--	98.1	--
All Others	1,991	157	7.9	68	3.4
TOTAL	43,619	4,506	10.3	3,531	8.1
<u>METAL WORKING</u>					
189 Metal-Fabrication Ship Helper	1,501	274	18.2	199	13.3
191 Sheet Metal Worker	4,589	751	16.4	596	13.0
194 Welder Arc	2,419	207	8.6	127	5.3

Table 10

Current Employment Related to Average Yearly Job Openings and Training Requirements
For Period 1971-1976, CAREERS FOR YOUTH SURVEY, Georgia, Fall 1971

(Based on Job Titles Reporting 1,000 or More Jobs on Survey Date)
(Continued)

		Average Net Job Openings ^a		Average Net Training Requirements ^b	
		Yearly For Period, 1971-76		For Jobs Yearly For Period, 1971-76	
Career Cluster And Specific Job Title	Number Employed Fall 1971	Job Openings Yearly	Ratio to Current Employment	Job Training Needs Yearly	Ratio to Current Employment
<u>METAL WORKING (Contd.)</u>					
195 Welder, Gas-shielded Heliarc (Oxyacetylene)	1,288	79	6.1	68	5.3
197 Welder, Spot	1,105	190	17.2	163	14.8
199 Welder, Combination	1,741	55	3.2	37	2.1
200 Laborer, General (Machine Shop)	2,011	206	10.2	151	7.5
Subtotal	14,654	1,762	12.0	1,341	9.2
Percent Total	76.9	73.5	--	72.6	--
All Others	4,399	634	14.4	507	11.5
TOTAL	19,053	2,396	12.6	1,848	9.7
<u>ELECTRO-MECHANICAL</u>					
232 Air-Conditioning Mechanic (Commercial)	1,627	294	18.1	221	13.6
234 Electrician Helper	2,554	430	16.8	111	4.3
236 Electrician	9,080	843	9.3	692	7.6
240 Maintenance Man, Helper	1,064	104	9.8	28	2.6

Table 10

Current Employment Related to Average Yearly Job Openings and Training Requirements
For Period 1971-1976, CAREERS FOR YOUTH SURVEY, Georgia, Fall 1971

(Based on Job Titles Reporting 1,000 or More Jobs on Survey Date)
(Continued)

		Average Net Job Openings ^a Yearly For Period, 1971-76		Average Net Training Requirements ^b For Jobs Yearly For Period, 1971-76	
Career Cluster And Specific Job Title	Number Employed Fall 1971	Job Openings Yearly	Ratio to Current Employment	Job Training Needs Yearly	Ratio to Current Employment
<u>ELECTRO-MECHANICAL (Contd.)</u>					
241 Maintenance Man, Building	5,369	543	10.1	503	9.4
242 Maintenance Man, Factory or Mill	7,390	411	5.6	229	3.1
243 Maintenance Mechanic II	1,060	83	7.8	56	5.3
245 Loom Fixer	2,480	229	9.2	104	4.2
Subtotal	30,624	2,937	9.6	1,944	6.3
Percent Total	86.4	79.2	--	81.2	--
All Others	4,837	773	16.0	450	9.3
TOTAL	35,461	3,710	10.5	2,394	6.8
<u>DIETARY SERVICE IN HOSPITALS</u>					
TOTAL	1,360	98	7.2	72	5.2

Table 10

Current Employment Related to Average Yearly Job Openings and Training Requirements
For Period 1971-1976, CAREERS FOR YOUTH SURVEY, Georgia, Fall 1971

(Based on Job Titles Reporting 1,000 or More Jobs on Survey Date)
(Continued)

		Average Net Job Openings ^a Yearly For Period, 1971-76		Average Net Training Requirements ^b For Jobs Yearly For Period, 1971-76	
Career Cluster And Specific Job Title	Number Employed Fall 1971	Job Openings Yearly	Ratio to Current Employment	Job Training Needs Yearly	Ratio to Current Employment
<u>MARKETING AND DISTRIBUTION</u>					
280 Stock Clerk	22,467	2,355	10.5	1,568	7.0
281 Stock Supervisor	3,590	162	4.5	67	1.9
282 Buyer, Assistant	1,199	71	5.9	-9	--
283 Buyer, II	5,763	220	3.8	-25	--
284 Sales Clerk	6,285	556	8.8	283	4.5
286 Salesperson, General	36,710	2,851	7.8	2,128	5.8
287 Cashier II	13,360	1,614	12.1	1,332	10.0
288 Telephone Solicitor	1,408	224	15.9	186	13.2
289 Solicitor	2,854	189	6.6	116	4.1
290 Salesman, Driver	3,694	382	10.3	298	8.1
293 Salesman, Food Products	2,995	102	3.4	71	2.4
294 Salesperson, Womens' Garments	3,195	194	6.1	159	5.0
295 Salesperson, Men's & Boys' Clothing	2,329	148	6.4	101	4.3
297 Salesman, Automobiles	3,017	489	16.2	414	13.7
298 Salesman, Building Construction Equipment & Supplies	1,414	216	15.3	201	14.2

Table 10

Current Employment Related to Average Yearly Job Openings and Training Requirements
For Period 1971-1976, CAREERS FOR YOUTH SURVEY, Georgia, Fall 1971

(Based on Job Titles Reporting 1,000 or More Jobs on Survey Date)
(Continued)

Career Cluster And Specific Job Title	Number Employed Fall 1971	Average Net Job Openings ^a Yearly For Period, 1971-76		Average Net Training Requirements ^b For Jobs Yearly For Period, 1971-76	
		Job Openings Yearly	Ratio to Current Employment	Job Training Needs Yearly	Ratio to Current Employment
<u>MARKETING AND DISTRIBUTION (Contd.)</u>					
Subtotal	110,280	9,773	8.9	6,890	6.2
Percent Total	97.4	96.6	--	96.3	--
All Others	2,994	340	11.4	263	8.8
TOTAL	113,274	10,113	8.9	7,153	6.3
<u>315 PARTSMAN OR SALESMAN</u>					
TOTAL	6,567	965	14.7	669	10.2
<u>AGRICULTURE-POWER AND MECHANICS</u>					
TOTAL	1,331	240	18.0	164	12.3

Table 10

Current Employment Related to Average Yearly Job Openings and Training Requirements
For Period 1971-1976, CAREERS FOR YOUTH SURVEY, Georgia, Fall 1971

(Based on Job Titles Reporting 1,000 or More Jobs on Survey Date)
(Continued)

Career Cluster And Specific Job Title	Number Employed Fall 1971	Average Net Job Openings ^a Yearly For Period, 1971-76		Average Net Training Requirements ^b For Jobs Yearly For Period, 1971-76	
		Job Openings Yearly	Ratio to Current Employment	Job Training Needs Yearly	Ratio to Current Employment
<u>ORNAMENTAL HORTICULTURE</u>					
335 Floral Designer	1,004	115	11.5	84	8.4
Subtotal	1,004	115	11.5	84	8.4
Percent Total	19.5	15.1	--	14.9	--
All Others	4,153	644	15.5	481	11.6
TOTAL	5,157	759	14.7	565	10.9
<u>CONSERVATION, RECREATION & WILDLIFE</u>					
TOTAL	1,831	322	17.6	234	12.8
<u>FORESTRY</u>					
TOTAL	806	44	5.5	38	4.7

Table 10

Current Employment Related to Average Yearly Job Openings and Training Requirements
For Period 1971-1976, CAREERS FOR YOUTH SURVEY, Georgia, Fall 1971

(Based on Job Titles Reporting 1,000 or More Jobs on Survey Date)
(Continued)

Career Cluster And Specific Job Title	Number Employed Fall 1971	Average Net Job Openings ^a Yearly For Period, 1971-76		Average Net Training Requirements ^b For Jobs Yearly For Period, 1971-76	
		Job Openings Yearly	Ratio to Current Employment	Job Training Needs Yearly	Ratio to Current Employment
<u>DAY CARE CENTERS</u>					
400 Assistant Teacher or Aide	2,682	679	25.3	603	22.5
401 Head Teacher	1,197	305	25.5	291	24.3
402 Maid ^c	2,815	288	10.2	276	9.8
Subtotal	6,694	1,272	19.0	1,170	17.5
Percent Total	94.4	97.5	--	98.5	--
All Others	397	32	8.1	18	4.5
TOTAL	7,091	1,304	18.4	1,188	16.8
<u>OFFICE OCCUPATIONS</u>					
410 Accounting Clerk	8,764	1,044	11.9	602	6.9
411 Billing Clerk II	4,541	685	15.1	494	10.9
412 Bookkeeping Machine Operator	2,604	154	5.9	133	5.1
413 Bookkeeper	17,413	1,273	7.3	739	4.2
415 Clerk, General	19,038	1,500	7.9	1,003	5.3
416 Telephone Operator	10,073	770	7.6	679	6.7

Table 10

Current Employment Related to Average Yearly Job Openings and Training Requirements
For Period 1971-1976, CAREERS FOR YOUTH SURVEY, Georgia, Fall 1971

(Based on Job Titles Reporting 1,000 or More Jobs on Survey Date)
(Continued)

Career Cluster And Specific Job Title	Number Employed Fall 1971	Average Net Job Openings ^a Yearly For Period, 1971-76		Average Net Training Requirements ^b For Jobs Yearly For Period, 1971-76	
		Job Openings Yearly	Ratio to Current Employment	Job Training Needs Yearly	Ratio to Current Employment
<u>OFFICE OCCUPATIONS (Contd.)</u>					
417 File Clerk	3,735	466	12.5	285	7.6
418 Receptionist	2,252	266	10.0	171	7.6
419 Personnel Clerk	1,991	141	7.1	51	2.6
425 Typist	3,703	671	18.1	540	14.6
426 Clerk-Typist	18,796	2,848	15.2	2,188	11.6
427 Stenographer	4,931	871	17.7	741	15.1
428 Secretary	18,312	2,202	12.0	1,878	10.3
429 Administrative Secretary	2,743	312	11.4	276	10.1
436 Cashier, Currency Exchange	3,948	949	24.0	746	18.9
Subtotal	122,844	14,112	11.5	10,531	8.6
Percent Total	98.3	98.4	--	98.7	--
All Others	2,078	220	10.6	138	6.6
TOTAL	124,922	14,332	11.5	10,669	8.5
<u>DATA PROCESSING</u>					
451 Key Punch Operator	4,695	809	17.2	641	13.7

Table 10

Current Employment Related to Average Yearly Job Openings and Training Requirements
For Period 1971-1976, CAREERS FOR YOUTH SURVEY, Georgia, Fall 1971

(Based on Job Titles Reporting 1,000 or More Jobs on Survey Date)
(Continued)

Career Cluster And Specific Job Title	Number Employed Fall 1971	Average Net Job Openings ^a Yearly For Period, 1971-76		Average Net Training Requirements ^b For Jobs Yearly For Period, 1971-76	
		Job Openings Yearly	Ratio to Current Employment	Job Training Needs Yearly	Ratio to Current Employment
<u>DATA PROCESSING (Contd.)</u>					
453 Digital Computer Operator	1,856	280	15.1	242	13.0
455 Programmer, Business	1,521	179	11.8	128	8.4
Subtotal	8,072	1,268	15.7	1,011	12.5
Percent Total	81.6	82.3	--	81.6	--
All Others	1,824	272	14.9	228	12.5
TOTAL	9,896	1,540	15.6	1,239	12.5
Subtotal for Jobs Listed	389,736	45,026	11.6	33,594	8.6
Percent Total	90.6	88.8	--	89.5	--
Subtotal for All Other Jobs Not Listed	40,497	5,680	14.1	3,961	9.8
AGGREGATE TOTAL	430,233	50,706	11.8	37,555	8.7

^aEquals increase in projected total employment plus replacement needs for workers expected to withdraw from the work force permanently.

^bEquals net job openings less number of workers expected to be trained or promoted within companies from company training programs, job rotation, etc.

Net total job openings¹⁴ yearly show a ratio of 11.8 percent of current employment during the survey period¹⁵ for the 183 jobs included in the survey. The net training requirements¹⁶ yearly for the survey period 1971-76 is 8.7 percent. This means that companies are training about one-fourth of their annual requirements.

The data in Table 10 show variations in the ratio of net total job openings yearly (total employer demand yearly) to total current employment of the jobs surveyed which vary from a high of 18.6 percent for the construction occupations to a low of 8.9 percent for the occupations in marketing and distribution¹⁷ which were included in the survey, the former showing a training requirements ratio of 79 percent and the latter 71 percent.

The training effort by employers in Georgia, however, may be regarded from another standpoint. Compared to the 50,706 net job openings yearly during 1971-76, employers reported 24,576 (See Appendix A, Table I) newly employed workers in training to enter a position, which appears to fill 48.6 percent of employer yearly demand needs. However, this figure must be interpreted in another light to get at the true rate of output relative to needs. The previous Table 9 shows that the total number of employees completing training yearly is barely half of this number or 13,151; and related to total employer demand for new workers for the categories surveyed, the latter figure (13,151) is only 25.9 percent of needs, leaving 74.1 percent of training needs unfilled.

¹⁴Net total job openings yearly equals jobs created from growth in the economy plus replacement requirements to replace persons retiring, deaths, etc.

¹⁵Fall 1971 to Spring 1972.

¹⁶Includes total job openings yearly or employer demand for workers in Georgia minus expected total training output from companies.

¹⁷Ignores categories in the composite without specific jobs listed. But some of these were considered to have an inadequate sample, forestry for instance.

The interpretations to be placed on this relatively low output of trained workers to those in training to enter a position involve two considerations: (a) the relatively high drop-out rate from most entry level jobs, and (b) the considerable length of time required for some kinds of skilled jobs to complete the training cycle, varying from 3-5 years for construction workers under the Joint Apprenticeship Training Programs.

RELATIONSHIP OF SIZE OF COMPANY AND DATA PROCESSING
EQUIPMENT TO RELATIVE USE OF OFFICE STAFF

Effect of Size of Establishment and Type of
Industry on Secretarial Staff

The size of the company is a basic factor in job structure because the larger the number of employees, the greater is the scope for specialization of functions and the division of labor. In the case of secretarial staff the small company with only a few top managers does not need as much secretarial work relatively as where management is large and more complex. If the small firm must hire office help, the broader skilled clerk-typist will serve the needs better. On the other hand, the large company will need and can afford specialized functions in the office staff.

How the size of company and type of industry affect the job structure of the secretarial staff was investigated by analysis of employment patterns of the secretarial staff of firms returning the mailed questionnaire. Data on administrative secretaries, secretaries, stenographers, clerk-typists and typists were tabulated by firm size, based on number of employees and by industry type. The results are presented in Table 11, and Chart 1.

For the major industries there is a strong rise in the relative use of secretaries with size of company, and a corresponding decline in the use of clerk-typists. The construction industry is a larger user relatively of secretaries and low in the other secretarial categories. Manufacturing and trade and services are relatively large users of secretaries. Transportation and communication place relatively the largest emphasis on administrative secretaries. The influence of size results from the rise in volume of work to be processed.

Table 11

Relationship of Industry Type and Size of Company to The
Structure of Secretarial Services, Careers For Youth Survey,
Georgia, Fall 1971

Size and Industry Category	Total Employment Five Jobs	Ratio to Total Employment				Administrative Secretary
		Typist	Clerk-Typist	Stenographer	Secretary	
<u>Companies with 4-19 Workers</u>						
Construction	104	--	5	25	69	--
Manufacturing	930	--	88	--	12	--
Transportation & Communication	31	--	71	--	29	--
Trade & Services	6,151	6	66	3	31	3
Subtotal	7,216	5	68	3	20	3
<u>Companies with 20-99 Workers</u>						
Construction	964	4	11	11	72	2
Manufacturing	2,913	6	37	12	44	1
Transportation & Communication	798	26	40	8	20	6
Trade & Services	5,920	7	46	6	38	3
Subtotal	10,595	8	40	8	41	2

TABLE 11

Relationship of Industry Type and Size of Company to The
Structure of Secretarial Services, Careers For Youth Survey,
Georgia, Fall 1971
(Continued)

Size and Industry Category	Total Employment Five Jobs	Ratio to Total Employment				Administrative Secretary
		Typist	Clerk-Typist	Stenographer	Secretary	
<u>Companies with 100 or More Workers</u>						
Construction	1,035	1	27	8	61	4
Manufacturing	3,924	8	28	10	42	12
Transportation & Communication	1,422	20	12	4	31	33
Trade & Services	5,298	7	31	5	46	11
Subtotal	11,679	8	27	7	44	13
<u>Government and Other</u>						
Federal	5,160	--	54	2	26	18
State and Local	5,949	18	29	11	26	16
School & Educational Services	7,569	4	26	--	56	14
Non-Profit	320	19	1	18	44	18
Subtotal	18,998	8	34	4	38	15
AGGREGATE TOTAL	48,485	8	39	6	38	10

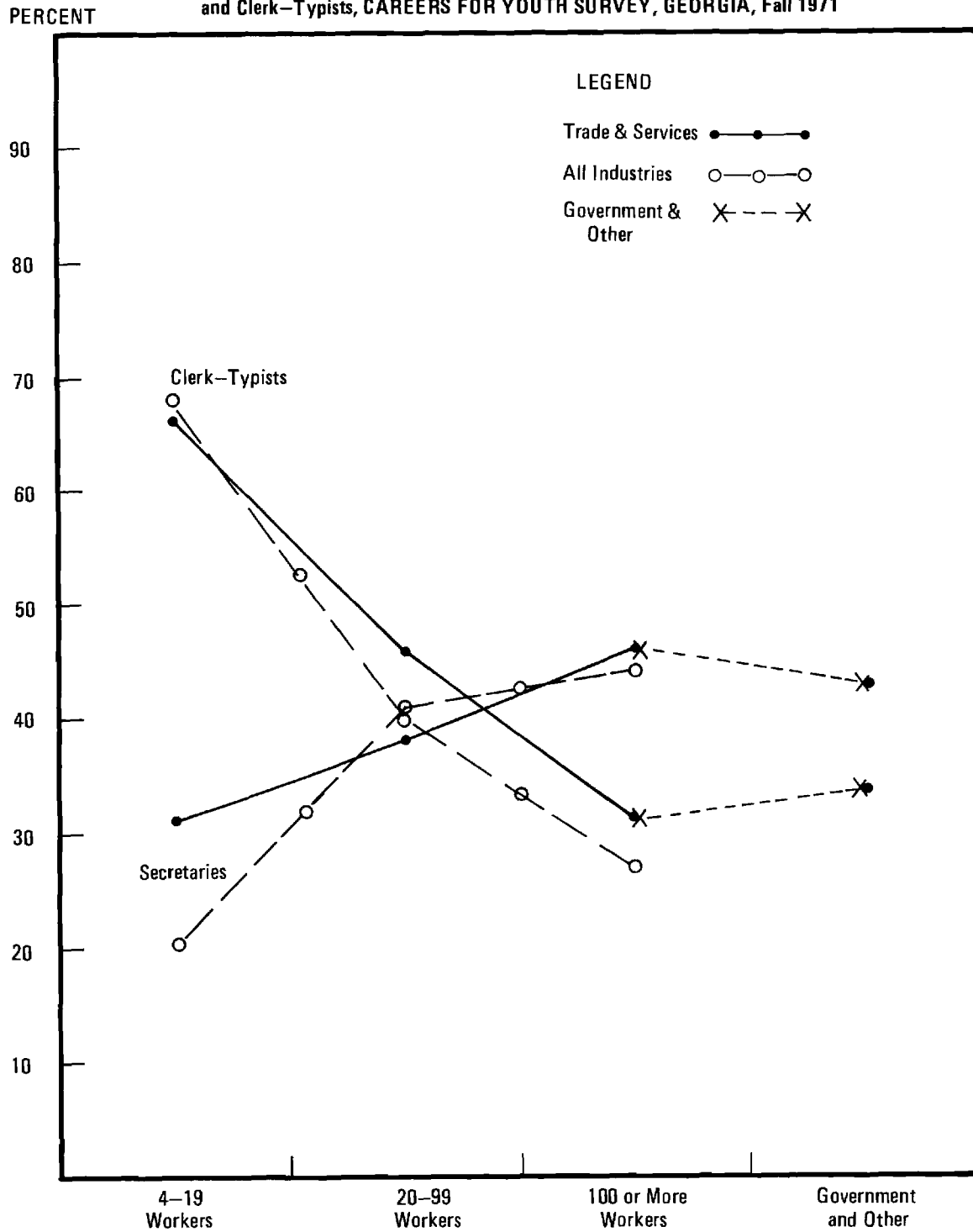
The clerk-typist is generalized in a variety of office functions which favors the small firms which do not engage in as much formal correspondence relatively as the larger concerns.

Chart 1 indicates how secretaries rise with company size and correspondingly how clerk-typists decline.

From the standpoint of the Career Ladder analysis, attention should be directed to three other categories of secretarial help given in Table 11. These are typist, stenographer, and administrative secretary. Typist is the beginning point for a career in this type of work, who must have the basic skills of typing and filing, with emphasis on spelling, punctuation, etc. But in order to rise above typist to clerk-typist, expert knowledge must be acquired in systematic filing, number work, and office procedures. By the same token the stenographic skills are essential for one to become a secretary to some company executive who will have a great volume of formal correspondence to conduct. She will also make appointments and take messages over the telephone. In the larger companies top executives need a secretary not only with secretarial skills but also with the ability to keep an appointments calendar with important executives, first with lower level officers but most importantly with outside executives and public leaders. She protects the busy executive from a mass of minor appointments which should be referred to lower level personnel in the company but makes appointments for him of great significance to his office and for conduct of company business with other companies and in the interest of public relations. The administrative secretary must know the company organization, its officers, and their major duties in order that she can make proper referrals in the interest of the company's expanding volume of business, which is related to the ability of someone to direct inquiries to persons who can give prompt and efficient service. The properly trained and experienced administrative secretary, or

Chart 1

Relationship of Size of Company and Industry Type to the Proportions of Total Secretarial Staff Represented by Secretaries and Clerk-Typists, CAREERS FOR YOUTH SURVEY, GEORGIA, Fall 1971



executive secretary as some refer to them, is a key cog in the operation of the complex bigness of any type of business, industry or government.

Effect of Data Processing Equipment on
Office Accounting Personnel

One of the most important developments in technology which American industry has accepted in the last two decades has been computers. These fast data processing machines have given industry and business not only a means by which to process quickly and efficiently massive amounts of data but they have also given a scope and flexibility in management decision-making which have become an accepted fact in the decade of the 1960's. That computers affect greatly the accounting and bookkeeping functions have always been assumed. In order to test the impact on accounting, bookkeepers, and supporting staff, the sample of firms in this Careers survey were tabulated according to size and industry type for three accounting-bookkeeping jobs and the three data processing jobs. The accounting-bookkeeping jobs were:

Job

Accounting Clerk
Bookkeeper
Bookkeeper Machine Operator

Data Processing Jobs

Programmer
Digital-Computer Operator
Key-punch Operator

The results are presented in Table 12. The data are presented by expressing each job and job category as a percentage of the total of all six jobs, in order to isolate any displacement effects or change in job structure. It is very clear from the data that utilization of the new computer technology is a combined function of size of company and type of industry. In terms of size of company it may be noted from the table that use of computer personnel is

Table 12

Relationship of Size of Establishment and Industry Type to the Relative
Use of Accounting, Bookkeeping, and Data Processing Services,
CAREERS FOR YOUTH SURVEY, Georgia, Fall 1971

Category	Total Employment Six Job Types	Percentage of Total Employment							
		Accounting and Bookkeeping				Data Processing			
		Bkkg.		Total Three Jobs	Key Punch Operator	Digital		Total Three Jobs	
		Acct. Clerk	Machine Operator			Computer Operator	Programmer Business		
<u>Companies with 4-19 Workers</u>									
Construction	207	8	--	92	100	--	--	--	--
Manufacturing	1,085	--	--	100	100	--	--	--	--
Transportation & Communication	8	62	--	38	100	--	--	--	--
Trade & Service	8,184	8	8	83	99	1	--	--	1
Subtotal	9,484	7	7	85	99	1	--	--	1
<u>Companies with 20-99 Workers</u>									
Construction	713	28	9	63	100	--	--	--	--
Manufacturing	2,118	25	9	60	94	3	3	--	6
Transportation & Communications	567	38	11	45	94	4	--	1	6
Trade & Service	7,460	24	13	51	87	8	3	2	13
Subtotal	10,858	25	12	53	90	6	3	1	10
<u>Companies with 100 or More Workers</u>									
Construction	1,305	52	5	15	72	19	6	3	28

Table 12

Relationship of Size of Establishment and Industry Type to the Relative
 Use of Accounting, Bookkeeping, and Data Processing Services,
CAREERS FOR YOUTH SURVEY, Georgia, Fall 1971
 (continued)

Category	Total Employment Six Job Types	Percentage of Total Employment							
		Accounting and Bookkeeping				Data Processing			
		Bkkg.		Total Three Jobs	Key Punch Operator	Digital		Total Three Jobs	
		Acct. Clerk	Machine Operator			Bkbp.	Computer Operator		Programmer Business
<u>Companies with 100 or More Workers (contd.)</u>									
Manufacturing	3,004	40	7	18	66	22	9	4	34
Transportation & Communication	1,461	73	1	3	76	12	7	4	24
Trade & Services	5,491	44	3	18	66	20	8	6	34
Subtotal	11,261	48	4	16	68	19	8	5	32
<u>Government and Other</u>									
Federal	2,385	--	1	16	17	45	18	20	83
State and Local	1,407	--	6	48	54	31	8	7	46
School & Educational Services	1,263	--	7	53	60	11	12	16	40
Non-Profit	185	--	--	3	3	58	9	30	97
Subtotal	5,240	--	4	33	37	33	14	16	63
AGGREGATE TOTAL	36,843	24	7	47	78	13	5	4	22

practically nil in companies of small size, i.e., those with 19 workers or less. If the comparison is made in terms of the next two company sizes, it is seen that the relative employment of computer jobs is three times as great in companies with 100 or more workers as in companies with from 20-99 employees. On the other hand accounting-bookkeeping personnel show a parallel decline from 90 percent of the six job totals in establishments with 20-99 workers to 68 percent for establishments of 100 or more workers, a relative loss of 22 percent for the largest size group.

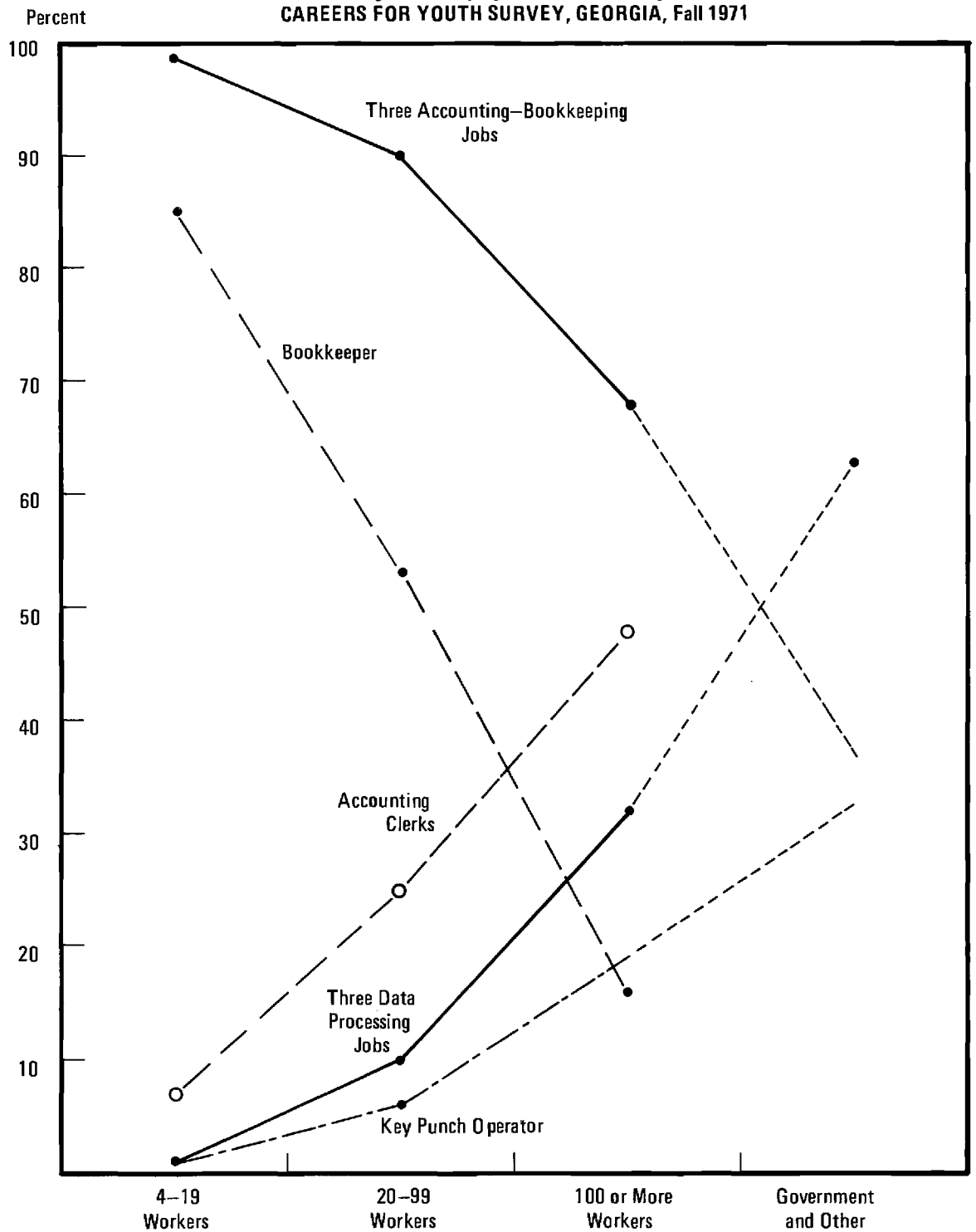
Proceeding with the comparison to compare factors with industry type, the data show that trade and services led all industry groups in every industry size in relative use of computer personnel. Construction was lowest. Yet government and others as a group led all industry groups in emphasizing computers. The reason for such a large lead in the relative employment of computer personnel (and, of course, computers) is due to the nature of business which it serves. Most notable of all in this category is the federal government¹⁸ which has 83 percent of the six jobs concentrated in the three computer jobs. Here as elsewhere in the category a great volume of financial transactions and all sorts of paper work are involved, creating a mountainous but ever growing demand for record keeping and data processing.

The dramatic manner in which computers and their accompanying personnel displace accounting-bookkeeping personnel, particularly bookkeepers, is demonstrated by Chart 2.

Note the sharp decline of bookkeepers with size of establishment, contrariwise government and other have a reverse movement up to 33 percent compared to

¹⁸Non-profit is higher, but the size of total employment does not support its significance.

Chart 2
Relationship of Size of Company to Relative Use of
Accounting-Bookkeeping and Data Processing Services,
CAREERS FOR YOUTH SURVEY, GEORGIA, Fall 1971



16 percent for the 100 and over group and an equally dramatic rise in key-punch operators and programmers. Yet this group reports no accounting clerks, so great is the emphasis on data processing jobs.

Certain important inferences can be drawn from the chart relative to skills. An accounting clerk can be a high school graduate with commercial courses, featuring bookkeeping. Programmers are generally two-year technical school graduates, although top programmers would be college graduates with a major in mathematics or engineering. On the other hand the key-punch operator is a much less trained clerical worker than a bookkeeper. Consequently, the new technology based on computers has had two major consequences: (a) produced a significant restructuring of jobs and (b) reduced the skill level and complexity of jobs by the new jobs that have been introduced. In this sense the development is favorable for the unskilled classes in society. A key-punch operator is undoubtedly trained more readily than a bookkeeper, provided there are personal aptitudes for preciseness and routineness.

WORK SKILLS AND WORK ATTITUDES EXPECTED OF EMPLOYEES IN ENTRY LEVEL JOBS DURING FIRST SIX MONTHS ON JOB

An important aspect of this study has been determination by interviews with employers their hiring practices and what they expect of new employees, especially during the first six months of employment. This varies a great deal with the type of work and we will reflect these differences through summaries for the major categories of job clusters.

Construction and Drafting

The construction enterprises are vital to a developing economy. Business leaders and contractors in this industry not only build new facilities to meet the technological requirements of the times but they renovate, rebuild, and in a variety of ways update facilities. Contractors and their managerial staff must have imagination and the ability to be innovative in line with current demands of technology. The worker who provides the link between management, who conceives, contracts, and builds such facilities, is actually executing the plans and putting the raw materials in place. He must like outdoor work that not only requires brawn but also intelligence and imagination.

Table 13 summarizes the skills requirements and work attitudes which employers require of entry level jobs in this industry during the first six months of employment. Not much emphasis is given to training in terms of specific skills but a great deal of emphasis is put on attitudes, seriousness of purpose, applications to the requirements of the job, and energy in learning. There is listed below in summary form the skills and work attitude requirements. Data in Appendix C, Table I, provide information on skills and work attitudes for second level jobs and outlines alternate lines of advance.

TABLE 13

Construction and Drafting Careers

Skills and Work Attitudes Expected by Employer of Worker In
Entry Level Job During First Six Months on the Job

Occupational Category and Specific Entry Level Jobs	Skills Expected by Employer of Worker in Entry Level Job During First Six Months on the Job	Work Attitudes Employer Expects Worker to Show or Develop in First Six Months on the Job
Bricklayer, Helper	Be able to spread mortar and lay brick to line; be able to lay block in foundations; and he should know how to set up scaffolding.	Be willing to handle mortar or block for brick masons and show a willingness to work hard for maximum production.
Laborer, Carpenter	Ability to support, supply and help carpenter; knowledge of the names of tools and their use; and ability to read measuring tape and rule.	Aggressive and eager; willing to improve and desire to get the job done correctly.
Cement Mason, Helper	Ability to edge concrete between form and pavement and place in rough grade for cement finisher; know the tools of the trade and have the energy to get these and other things needed at location ready for the cement finishing.	Ambitious, eager to learn and with enthusiasm for this type of work; initiative to go ahead and do job without waiting to be told; accepts responsibility for getting tools to job and picking up and returning them to storage or transport directly to next job.
Draftsman, Trainee	Must know basic drafting techniques: trace floor plans for background work; draw repetitive details; know photo techniques to make detailed drawings; and have exposure to blue line printing.	Possess healthy curiosity and attentive to what is happening in work area; must be willing to try to do lots of different things; have regular work habits and be dependable; and have flexibility and willingness to put in extra hours at times when work load builds up.

TABLE 13

Construction and Drafting Careers

Skills and Work Attitudes Expected by Employer of Worker In
Entry Level Job During First Six Months on the Job
(Continued)

Occupational Category and Specific Entry Level Jobs	Skills Expected by Employer of Worker in Entry Level Job During First Six Months on the Job	Work Attitudes Employer Expects Worker to Show or Develop in First Six Months on the Job
Residential Wiring, Helper	Be able to install switches and receptacles with understanding knowledge; able to distinguish one type of wire from another, understanding approximately 50 percent of wiring plan.	Show interest in work; work well with others; and respect his superiors.
Plumber, Helper	Be able to completely rough plum a house with understanding knowledge; know the different types of pipe.	Be on job on time; respect orders given to him by superiors.

Summary of Skills and Work Attitudes for Entry Level Job
in Construction Careers

SKILLS:

1. Knowledge of tools of trade, skills in their use and purpose.
2. Blueprint reading.
3. The interrelationships between all the crafts in construction.
4. Common terms and concepts used on the job by workers and supervisors to improve communication.
5. Raw materials and equipment and their purpose.

WORK ATTITUDES:

1. Dependable, reliable, and responsible.
2. Honest application of effort to the requirements of the job.
3. Aggressive interest in job and willing to learn.
4. Respect for peers and supervisors.
5. Keep busy at job assigned or related work without having to be told.
6. Cooperative and ability to work with others in his craft.

Transportation, Metal Working and Electro-Mechanical

This job cluster category cuts across the board in almost every variety of work skills. While the construction industry initiates at the growth points in the economy factories, streets and roads, housing, and other buildings, the types of workers in this job cluster category keeps the economy moving, particularly in the case of the transportation occupations. The metal working occupations, which include metal fabrication, welding, and machine shop, are in general a part of the productive process. Metal products must be fabricated to fit a contractor's plans. The welder both repairs and assists in the production process particularly where he is a part of the production line, as in so many auto assembly plants. This type of worker also makes an important contribution

in sheet metal fabrication of ductwork and related fabricated products which mechanical contractors employ in large scale air conditioning and heating contracts on large commercial buildings. Air conditioning mechanics, commercial, install compressors, boilers, and heating units, and perform maintenance work. Related to this type of work are also the building maintenance mechanics who must keep the heating, air conditioning, electricity, and plumbing, etc., operative. See Table 14 for summary of skills and work attitudes required.

Transportation

Two jobs have been explored in detail. These are the automotive service mechanic and/or truck mechanic, and the diesel mechanic. The first type of skilled worker does repair and maintenance and a great variety of repairs on automobiles and keeps the nation's 100 million or so automobiles operative so that workers can get to work on time and business operations can stay at a fairly normal level of operations. Mechanical aptitude and seriousness of purpose are important. The other mechanic is the diesel mechanic who has the responsibility of keeping the nation's power busses, ships, trucks, railroad trains, and construction machinery operative, so essential to a healthy growing economy. The skills and work attitudes are summarized as follows: (See Table 14 for more details)

Summary of Skills and Work Attitudes for Entry Level Jobs In Transportation (Auto & Diesel Mechanics)

SKILLS:

1. Basic knowledge of hand tools and their use.
2. Knowledge of automobile or diesel motor and vehicle component parts and functions.
3. General automotive maintenance skills; electrical systems, oil changing, muffler-tailpipe replacement, brake shoe replacement; and tire changing, wipers, and fan belts.

WORK ATTITUDES:

1. Willingness to learn, cooperative spirit, enjoy work, and quality-minded.
2. For diesels, may have to make road calls to do minor repairs.

Metal Working

In the metal working category, jobs included machine shop work, sheet metal fabrication, and welding. The machinists operate machines which shape, grind, or drill metal plates, pipes and bars and castings, and the metal working pieces often require surfaces milled to extremely close tolerances, for the product must fit into a manufactured product or production tool somewhere in the economy. The sheet metal worker is one of the most skilled craftsmen in the economy, as he must perform so many varied and skilled jobs in a great variety and complexity of metal fabrication work. Sheet metal work is performed both indoors and outdoors and physical fitness is important. Working with an experienced journeyman or through Formal Apprenticeship, he works on the fabrication of such things as ducts or gutters for air conditioning and on a contract, helps to erect the ductwork and metal siding. The welder joins metal parts together by application of heat or pressure to form a permanent bond between the two pieces joined. Industry is very dependent on the welding process for manufacturing of automobiles, ships, storage tanks, bridges, and structures which in one form or another use welding as a means of bonding.

Skills and work attitudes are provided in brief form in the following summary: (See Table 14 for more details)

Skills and Work Attitudes for Entry Level Jobs in Metal Working

SKILLS:

1. Familiar with the gauges of metals and also with the various types of metals.
2. Knowledge of the manufacturing practices of cutting and forming capabilities of metals.
3. Ability to observe and apply safety rules is first essential in welding.
4. Distinguish between different types of welds, as well as different types of welding practices involved.
5. For machinist, working knowledge of blueprints, decimal equivalents, and use of machinist scale. Some knowledge of feeds and speeds. Know drill sizes, how to use V-block and any jigs and fixtures that might be used with a drill press.

WORK ATTITUDES:

1. Interest in work, regularity of attendance, ability to work safely.
2. Able in case of welders to comprehend technical nature of job and work with fellow workers to complete job with all involved in mind, including company's need for efficiency.
3. In case of machinist, sincere desire to see that work is well done and must be patient in applying self to learn skills for job.

Electro-Mechanical Career Categories

This category of jobs includes nine major craftsmen. The air conditioning mechanic, domestic, installs, repairs, and services the small air conditioning units in private homes, and small businesses or industrial establishments, while the air conditioning mechanic, commercial, works with and has the responsibility for the installation, repair and servicing of air conditioning units rated in excess of 25 tons cooling capacity, in department stores, office buildings, and other large establishments. The air conditioning service mechanic has matured and becomes so expert on air conditioning and heating systems in large commercial establishments that he specializes in making complete maintenance repairs and

conducts yearly shutdown inspections in expert fashion. Major duties are as follows: Maintain and repair centrifugal air conditioning machines and equipment; and for the large commercial air conditioning and heating units under service contracts, he does a once-a-year shutdown to check all clearances, change oil and oil filters, removes big condenser ends from big chillers, checks and changes chiller tubes if necessary; and calibrates all temperature and pressure controls. Air conditioning and heating, mechanical contractors, perform contracts on large commercial construction jobs to install the heating and air conditioning which requires sheet metal mechanics and plumbers and pipefitters to perform the complex installations of ductwork and piping to fit the air conditioning equipment, such as compressors, etc. The electrician, commercial, tends to specialize in the electrical work for large commercial and industrial establishments. His main jobs include wiring, pulling conduit, pulling cable, installing switches and fuse junction boxes, hooking up major appliances such as air conditioning and heating equipment, installation of high voltage switch gear, service work, etc. The electrical appliance serviceman does a variety of repair jobs on household appliances, such as ranges, washers, dryers, window air conditioners, and refrigerators. The building maintenance mechanic performs a variety of repair and maintenance jobs in factory, buildings, or institutions in order to keep building heated in winter and cooled in summer, keep electrical and plumbing systems working, buildings painted, and necessary carpentry repairs made.

The radio and TV repairman keeps modern day entertainment and news media type of equipment in order by doing a variety of repair work where equipment is located or by transporting it to repair shop for major repairs. Some of the typical repair jobs include replacement of picture tubes, tuning, color circuit adjustments, etc. The refrigeration mechanic installs and repairs refrigeration

equipment to engineering specifications, using knowledge of refrigeration theory, structural layout, and functions and design of the components of refrigeration equipment. He is also responsible for maintenance of ice-making equipment, lift equipment, and packaging equipment.

Summary of skills and work attitudes required for entry level jobs are outlined in abbreviated form below. (See Table 14 for details.) See also Appendix C, Table II, which provides information on skills and work attitudes for second level jobs and outlines alternate lines of advance for this whole broad category of careers.

Summary of Skills and Work Attitudes for Entry Level Jobs
in Electro-Mechanical Careers

SKILLS:

1. Know tools and their use and metal working tools required for this type of work.
2. Know duct joints and what is required to put them together.
3. For electrician, know fundamentals of electricity, including sizes of circuits and meanings, colors of wire and consistency. Know sizes of conduits of wires and understand different size pole switches. Recognize and use correctly all the tools applicable to commercial electrical wiring jobs.
4. Radio & TV repairman have ability to change picture tubes and other minor repair jobs in home. Assist inside repairman on major repairs, involving TV tuning, color circuits, etc.
5. Electrical appliance serviceman needs to have a knowledge of tools of trade and limited experience with them; know dangers of different types of work and apply safety precautions.
6. Refrigeration mechanic must know tools of trade, what each is for, and ability to make limited use of each; be acquainted with major components of refrigeration system.
7. For building maintenance mechanic, knowledge of hand tools and their proper use on all jobs in building maintenance; ability to take samples for water analysis; and put chemicals in boilers for air conditioning and heating of building.

WORK ATTITUDES:

1. Reliable, dependable, and anticipate mechanic's need for tools and have them ready.
2. For air conditioning mechanic, commercial, willingness to work and learn; dependable and comes to work on time.
3. The air conditioning service mechanic must have common sense and practical judgment; and willingness to work long hours on a special or crisis job; and know the importance of customer satisfaction.
4. The electrician in the entry job must be punctual, show interest and enjoyment in this type of work; and have the ability to grasp, understand, and learn from doing the job with an electrician.
5. Radio and TV repairman as beginner, must be conscientious, efficient, and honest in work; intelligent and have tenacity to learn skills of trade; and is conscious of need to gain customer satisfaction.
6. Electrical appliance serviceman shows intense interest in job and serious application to learn repair work. Conscientious worker who is anxious to do a good job.
7. Refrigeration mechanic is interested in work and applies himself seriously to gain knowledge of repair techniques. Pleasant attitude, good personality, and interested in satisfying the customer.
8. The maintenance mechanic, building, in entry level job as helper, must be dependable, punctual, and show interest in work; and ability to work with other people.

Table 14

Transportation, Metal Working, and Electro-Mechanical Careers

Skills and Work Attitudes Expected by Employer of Worker in
Entry Level Job During First Six Months on the Job

Occupational Category and Specific Entry Level Job	Skills Expected by Employer of Worker in Entry Level Job During First Six Months on the Job	Work Attitudes Employer Expects Worker to Show or Develop in First Six Months on the Job
Automobile Mechanic, Helper	Basic knowledge of hand tools and their use and basic knowledge of automobile components; muffler-tailpipe replacement; brake shoe replacement.	Willingness to learn; cooperative spirit; enjoy work; company loyalty and quality minded.
Diesel Mechanic, Helper	General automotive maintenance skills, such as electrical systems, tire changing, wipers, fan belts, oil lubrication, etc.	Willingness to work in any type of entry level job which develops, such as cleaning grease pits, tire changing, or other rather "dirty" jobs; may have to make road calls to do repairs of minor nature.
Metal Fabricating Shop, Helper	Be familiar with gauges of metal and also the various types of metals; knowledge of the manufacturing practices of cutting; and know the forming capabilities of metal.	Interest in work, regularity of attendance; ability to work safely; willing to put in extra time to advance to upper level jobs.
Welder, Helper	Ability to observe and apply safety rules is first essential skill; ability to distinguish between different types of welds, as well as welding practices involved.	Must be able to comprehend technical needs of job and work with fellow workers to complete job with all involved in mind, including the company's need for efficiency.

Table 14

Transportation, Metal Working, and Electro-Mechanical Careers

Skills and Work Attitudes Expected by Employer of Worker in
Entry Level Job During First Six Months on the Job
(Continued)

Occupational Category and Specific Entry Level Job	Skills Expected by Employer of Worker in Entry Level Job During First Six Months on the Job	Work Attitudes Employer Expects Worker to Show or Develop in First Six Months on the Job
Drill Press Operator	Working knowledge of any type of blueprint, decimal equivalents, and use of machinist scale; some knowledge of feeds and speeds; know all drill sizes, how to use a V-block and any jigs and fixtures that might be used with a drill press; advantageous to know hardness of metals and drills.	Sincere desire to see that his work is well done and must be very patient; be observant and really want to work; generally, would be in a 4-year Joint Apprenticeship Training Program.
Air Conditioning Mechanic, Domestic, Helper	Ability to use properly all hand tools and metal working tools required for this type of work; in placing a home air-conditioner, must be able to use chain saw and circular saw for cutting openings in house; know how to cut metal and be able to do job mechanic tells him to do.	Reliable, dependable, and ability to anticipate mechanic's moves and have tools there ready for him.
Air Conditioning Mechanic, Commercial, Helper	Be familiar with different types of duct joints and what is required to put them together; know and be familiar with tools and equipment which will be needed and have them ready for mechanic.	Willingness to work and learn; dependable and comes to work on time.

Table 14

Transportation, Metal Working, and Electro-Mechanical Careers

Skills and Work Attitudes Expected by Employer of Worker in
Entry Level Job During First Six Months on the Job
(Continued)

Occupational Category and Specific Entry Level Job	Skills Expected by Employer of Worker in Entry Level Job During First Six Months on the Job	Work Attitudes Employer Expects Worker to Show or Develop in First Six Months on the Job
Air Conditioning Service Mechanic, Helper	Assists air conditioning service mechanic to replace parts and other repair work; helps with manual labor until he learns about the hand tools of the trade, voltmeters, and how to do a job under the direction of the service mechanic.	Must have common sense and practical judgment; be willing to work and accept supervision and often must work long hours on a special or crisis job; must have ability to learn and be willing to attend special schools one or so evenings per week; know the importance of customer satisfaction.
Electrician, Helper (Commercial)	Know the fundamentals of electricity: sizes of circuits and meanings, colors of wire and be consistent; know sizes of conduits of wires; understand meanings of single pole switch, 2-pole, 3-pole and 4-pole switches and understand basic circuitry of electrical circuits; recognize and use correctly screwdrivers, wire cutters and wire skinners, hack saws to saw conduit; know how to use tape and how tape varies with different connections.	Be punctual and concerned with electrician type work; does he really enjoy this type of work; must have the ability to grasp, understand, and learn from doing the job with electrician.

Table 14

Transportation, Metal Working, and Electro-Mechanical Careers

Skills and Work Attitudes Expected by Employer of Worker in
Entry Level Job During First Six Months on the Job
(Continued)

Occupational Category and Specific Entry Level Job	Skills Expected by Employer of Worker in Entry Level Job During First Six Months on the Job	Work Attitudes Employer Expects Worker to Show or Develop in First Six Months on the Job
Electrical Appliance Service Mechanic, Helper or Trainee	Knowledge of tools commonly used and limited experience with them; course in basic electricity would be highly desirable; knows dangers of different types of work and be conscious of need for safety precautions; work with service mechanics and learn from him through different types of work performed; responds to service mechanic's need for tools and other help.	Interested in work and applies himself seriously to gain knowledge of repair techniques; physically capable of doing this type of work; pleasant attitude, good personality, and interested in satisfying the customer.
Radio & TV Repairman, Helper	Ability to change picture tubes and other repair jobs in home; assists inside repairman on major problems of TV tuning, color circuits; changes picture tubes and repairs portables.	Conscientious, efficient, and honest in work; intelligent and has the tenacity to learn skills for Radio & TV repair service; must apply himself seriously in order to get the job done quickly and correctly; has the ability to communicate with customers and satisfy them.

Table 14

Transportation, Metal Working, and Electro-Mechanical Careers

Skills and Work Attitudes Expected by Employer of Worker in
Entry Level Job During First Six Months on the Job
(Continued)

Occupational Category and Specific Entry Level Job	Skills Expected by Employer of Worker in Entry Level Job During First Six Months on the Job	Work Attitudes Employer Expects Worker to Show or Develop in First Six Months on the Job
Refrigeration Mechanic, Trainee	Knows tools of trade, what each is for, and ability to make limited use of each tool; acquainted with major components of refrigeration system; assists refrigeration mechanic and anticipates his need for tools or equipment; learns skills of trade by working with refrigeration mechanic, who explains, shows, and tries out trainee on various minor repair jobs initially; then lets him try them out on his own.	Shows intense interest in job and serious application to learn repair skills; conscientious worker who desires to do a good job.

Agriculture and Nature Related Occupations

This job cluster cuts across the board in terms of skills and work attitudes. There are a few common elements which tend to bind all the categories together. These are love for the outdoors, recreation enjoyment, extrovert behavior patterns, showing up in sportsmen and hunting instincts, and the ability to concentrate on the needs of plants and how plants, flowers and forest products relate to industry and life in the cities.

The agricultural power aspects of the cluster have more relationships to transportation than do most of the other types of jobs in this broad category. The emphasis is on large, heavy, complex, and powerful equipment which is used in production operations by relatively few individuals to feed a great nation of over 200 million persons. All of this has grown out of the fantastic applications of technology from basic scientific investigations related to plants and animals plus the technology related to motive power in transportation to give an unbelievable yearly gain in productivity of 5.5 percent, displacing over 2.5 million workers from agriculture in the decade 1960-70.¹⁹

Ornamental Horticulture constitutes a category of work areas that appeal to the decorative and sentimental aspects of a people. While most of the shrubs and plants are produced in farm areas or in greenhouses in outlying areas near the city, persons in this work concentrate on beautifying the landscape and environment of residential, industrial, commercial, and public facilities. The work consists not only of design layout on shrubs, grass sod, flowers, and evergreens to enhance the beauty and the attractiveness of terrain but also the

¹⁹Economic Report of the President, Transmitted to the Congress, February, 1971, United States Government Printing Office, 1971, page 293.

maintenance and upkeep of landscape arrangements relative to beautification of the environment. One must be an expert in designing to fit the terrain and soil characteristics of any given area. He must also know the requirements of plants in terms of fertilizers and their susceptibility to disease and insect infestation. Retail outlets which handle stocks of plants, fertilizers, sprays, etc., cater to the individual demands of homeowners and others who perform the maintenance and upkeep of their own yards and terrain features. But retailers must be knowledgeable in passing on expert information to their customers.

Florists which occur in this category are still more removed from the agricultural areas although purchase of flowers are also made from such sources. But there is a strong trend toward artificial flowers for decorative forms in many commercial establishments. The heart of this business is the floral designer who must be able to identify the type of floral arrangement the customer desires and proceeds to design it.

The third area in agriculture and nature related occupations concerns conservation, recreation and wildlife. Conservation ties in directly with the public concern and the U. S. Department of Agriculture's responsibility to maintain the fertility of the soil and prevent erosion and flooding. Recreation and wildlife involve activities by federal, state, and local governments to set aside parks and preserves for recreation and offering people the opportunity to spend time in the great outdoors. Wildlife concerns fishing and hunting and appeals to the instincts of the sportsman or hunter. Persons interested in outdoor work and helping people to gain recreation from nature's resources and wildlife should find appeals in the sorts of jobs offered.

A final area of work and one of growing importance in the national economy is the nation's forests, mostly privately owned, often by large pulpwood

manufacturers. One category of this work concerns the maintenance of proper growth conditions in the forests, reporting on growth rates of timber, and the need for replantings. Technical skills are required in the identification of disease and decay, measurement of growth rates and determination of volume of marketable timber. Expertise is required on some of the instruments for surveying and also in using the compass. The other end of this work concerns receipt and handling of pulpwood and saw timber as it is delivered to woodyards either at pulpwood mills or sawmills. There is some technical equipment which must be mastered, as the pulpwood loaders, and the techniques of how to load railroad cars and awareness of safety precautions. The receipt of the wood must be determined in volume by technical devices and volume determined for outgoing rail shipments. Other activities concern the paperwork in reporting arrivals, shipments, and inventory. The characteristics of these jobs in some respects resemble those in stock control of a big retail or industrial company but the work is outdoors and is somewhat more strenuous in work details, and more subject to dangers from large elements of wood and some of the equipment.

Summary of skills and work attitudes required for entry level jobs are outlined in abbreviated form below: (See Table 15 for details). Data in Appendix C, Table III, provide information on skills and work attitudes for second level jobs and outlines alternate lines of advance.

Summary of Skills and Work Attitudes Required For
Entry Level Jobs in Agriculture and Nature Related Careers

SKILLS:

1. Farm equipment mechanic, know basic electricity; and abilities to change plugs and parts in condenser, adjust valve, do minor tune-up and adjust brakes and clutch on tractor.
2. Soil Conservation Aid 3 learn where and how to cut right-of-way without so much supervision.
3. Landscape laborer, know how to set out plants relative to size and depth of holes and differences in treatment for plants in different types of containers. Know how to lay sod, seed lawns, fertilizer requirements, and use of equipment for lawn maintenance.
4. Floral designer trainee, know floral make-up work; how to prepare corsages and make vase arrangements.
5. Nursery worker, know care of plants, watering and spraying, corrective action for disease symptoms and insect infestations, drainage influence and exposure requirements.
6. Woodyard laborer, know how to prepare wood for shipment and assist loader operator to level wood on trucks or cars, and how to handle himself on truck or car without falling.
7. Forestry technician, timber cruise, map work and drafting, simple land survey with crew; experience in the techniques of measuring standing timber and detecting disease. On part-time basis gain experiences as compassman and related experience in surveying.
8. Wildlife Biologic Aide I, knowledge of the habitat and characteristics of wildlife, general knowledge of biology and chemistry, and skill in using the technical equipment involved in wildlife management.
9. Recreation Center leader, ability to instruct, lead, and direct various age groups in a variety of recreation programs and social activities.

WORK ATTITUDES:

1. Farm equipment mechanic trainee, punctual and dependable, interest in this type of work and willingness to apply himself to learn. Mechanically inclined and able to follow instructions.
2. Soil Conservation Aid 3, dependable and at work on time; show aggressiveness in gaining familiarity with program to determine if he wants this type of work.
3. Landscape laborer, enthusiasm for this type of work, take pride in work and not mind using heavy equipment, responsible and able to go ahead, leaving job cleaned up and neat.

4. Floral designer trainee, congenial, compatible with other employees. Be on time and show promptness and faithfulness in work.
5. Nursery worker, punctual and dependable on work schedules; good natured and have ability to deal with the public.
6. Woodyard laborer, constant attendance at work; responsible and shows consistency and real effort at work. Learns all possible about whole operation and applies himself to learn duties of next level job.
7. Forestry technician, enthusiasm for challenge; humility tempered with aggressiveness; and respect for supervisors and subordinates.
8. Wildlife Biologic Aide I, ability to follow oral and written instructions, prepare simple reports; work long hours outdoors, and communicate effectively.
9. Recreation Center Leader, understand and follow oral and written instruction of supervisory personnel and ability to develop enthusiasm in youth and adults for recreation activities.

Table 15

Careers for Youth in Agriculture and Nature Related Work

Skills and Work Attitudes Expected by Employer of Worker in
Entry Level Job During First Six Months on the Job

Occupational Category and Specific Entry Level Job	Skills Expected by Employer of Worker in Entry Level Job During First Six Months on the Job	Work Attitudes Employer Expects Worker to Show or Develop in First Six Months on the Job
Farm Equipment Mechanic, Trainee	Know basic electricity; be able to change plugs & parts in condenser; adjust valves in engine and do minor tune up. Adjust brakes on tractor and also clutch.	Mechanically inclined and have ability to follow instructions and remember how to go it alone next time. Have interest in this type of work; willingness to apply himself to learn; be punctual and dependable.
Soil Conservation Service Aid 3	Improvement in ability to cut right-of-way without so much instructions or supervision. Knows where and how to cut right-of-way himself.	Dependable and at work on time. Shows aggressiveness in gaining familiarity with program to determine if he likes this type of work and whether he feels program is progressive and he wants to be a part of it.
Landscape, Laborer	Know how to set out plants relative to proper size and depth of holes for different plants. Must use right approach for different types of plants and containers. If in container or burlap, must know differences and requirements for proper planting. Know how to lay sod, seed lawns, and differences in fertilizer requirements. Know equipment and how to use it for lawn maintenance.	Take pride in work and not mind using heavy equipment (mattocks and shovels to dig). See what needs to be done and go ahead. Clean up all loose dirt and trimmings before leaving job. And have enthusiasm about this type of work and not mind hard work.

Table 15

Careers for Youth in Agriculture and Nature Related Work

Skills and Work Attitudes Expected by Employer of Worker in
Entry Level Job During First Six Months on the Job
(Continued)

Occupational Category and Specific Entry Level Job	Skills Expected by Employer of Worker in Entry Level Job During First Six Months on the Job	Work Attitudes Employer Expects Worker to Show or Develop in First Six Months on the Job
Floral Designer, Trainee	Know floral make-up work; how to prepare corsages and make vase arrangements.	Congenial and compatible with other employees. Be on time, show promptness and faithfulness in work.
Nursery Worker	Know care of plants, watering and spraying needed. Recognize disease symptoms or insect infestation; take corrective action, and if necessary bring to attention of management. Know drainage influence on plants and location of plants for exposure requirements.	Punctual and dependable as to work schedules; good natured with ability to deal with the public.
Woodyard Supply, Laborer	Prepare wood for shipment and assist Loader Operator. Level wood on trucks and cars. Must know how to handle himself on truck or car without falling. Knowledge of using tools in safety and in most efficient manner. Attends safety meetings to reinforce in mind and give emphasis to its importance.	Constant attendance at work, responsible, and shows consistency and real effort at work. Applies himself earnestly to learn duties of next job as well as learning all possible about whole operation.

Table 15

Careers for Youth in Agriculture and Nature Related Work

Skills and Work Attitudes Expected by Employer of Worker in
Entry Level Job During First Six Months on the Job
(Continued)

Occupational Category and Specific Entry Level Job	Skills Expected by Employer of Worker in Entry Level Job During First Six Months on the Job	Work Attitudes Employer Expects Worker to Show or Develop in First Six Months on the Job
Forestry Technician	Timber cruise, map work: Drafting, simple land survey, and routine supervision of small crew. Must have acquired experience in the techniques of measuring standing timber and detecting diseases; and on a part-time basis gain experience as a compassman, also some related experience in surveying. If Aide is H. S. Graduate, will train over 2 years and then can get more responsible job.	Enthusiasm for challenge; humility tempered with aggressiveness; and respect for supervisors and subordinates.
Wildlife Biologic Aide I	Knowledge of the habitat and characteristics of wildlife and of general biology and chemistry. Skill in using the technical equipment involved in wildlife management.	Ability to follow oral and written instructions; prepare simple reports; work long hours outdoors, and communicate effectively. Can qualify under State Merit System by graduation from high school with courses in Biology and Chemistry, or courses dealing with animal care.
Recreation Center Leader	Knowledge of Department policies as applied to Recreation Centers; know rules and regulations	Understand and follow oral and written instructions and ability to develop enthusiasm in youth

Table 15

Careers for Youth in Agriculture and Nature Related Work

Skills and Work Attitudes Expected by Employer of Worker in
Entry Level Job During First Six Months on the Job
(Continued)

Occupational Category and Specific Entry Level Job	Skills Expected by Employer of Worker in Entry Level Job During First Six Months on the Job	Work Attitudes Employer Expects Worker to Show or Develop in First Six Months on the Job
Recreation Center Leader (continued)	governing the more common athletic games; ability to lead and instruct groups in various kinds of recrea- tion and social activities; some knowledge of first aid practices and techniques.	and adults for recreation activities.

Service to People in Hotels and Motels, Restaurants,
Dietary Service in Hospitals and Day Care Centers for Children

Service to people careers is primarily people-oriented either face to face contact or responding to wishes, orders, or other means of communication to the personal needs of individuals for food, entertainment, dietary service in hospitals or through programs of child care and pre-school training found in Day Care Centers which are growing rapidly in popularity. In order to make a success, one must be sensitive to people, responding directly to the needs of persons for service or help openly expressed or implied by actions and suggestive moves. In the food service business customers or better patrons come in voluntarily for food service, drinks and relaxation, or a combination. The greeting of these customers by customer service personnel, first by the hostess and then by the waiter or waitress who takes the order for food and drink, is the exterior form of the service. But the inward form of service occurs by the manner of greetings, the courtesy extended in seating, the tone of voice and enthusiasm as the order is taken and served. It is also implied by the manner in which the waiter or waitress watches customers as they dine and respond to each wish even before openly spoken. The secret of success of customer food service resides in the ability of the serving person to anticipate customer demands, be there ready on motion or spoken wish to serve enthusiastically and bid the departing guest "au revoir" in such a tone and manner that not only the serving person but also the establishment is long remembered.

Food preparation simply reflects behind the scene efforts to satisfy the customer out front which makes management happy and prosperous, and the customer service personnel also happy because demands of customers for tasty food, served in an attractive, decorative style, has brought compliments from the customer, "tips" to the waitress, happy departure in tone and voice, and

a return for more such service at the first opportunity with friends.

A second type of customer food service occurs in hospitals where the patient's diet considers the medical needs of the patient, and in this sense may be considered contributory to the recovery of the patient. The dietary personnel, headed by the Dietitian, a college graduate with specialization in food and nutrition, determine the diets that are in the interest of the patient's progress in medical treatment. Food must be served which meet the nutritional requirements of the patient. This means choice of foods in terms of diet needs of patients, and served at proper temperature, tasty and attractive. Cooks and others in food preparation respond to the menus written out for patients by the diet clerks upon instructions from the Dietitian, and become a part of the food service team that contributes to patient care through food service. The cafeteria at the hospital also serves food which appeals to employees and the general public, and it is kept clean and dispenses wholesome and appetizing food to meet these desires.

Day Care services are provided directly to pre-school age children, some under two years of age. The work involves the techniques of showing, illustrating and guiding children into doing things and learning about the world in which we live. The curiosity aroused is fundamental to the learning process. The essential characteristics for success in this type of service to people (small children) are love for children, conscientious worker, and energy in learning new techniques for teaching children the needed attributes of skills, motivation and coordination; and the ability to understand and communicate with parents of the children.

Summary of skills and work attitudes required for entry level jobs in these areas of work are outlined in abbreviated form on the next page: (See Table 16

for details.) Data in Appendix C, Table IV, provide information on skills and work attitudes for second level jobs and outlines alternate lines of advance.

Summary of Skills and Work Attitudes Required For
Entry Level Job in Service to People Careers in
Hotels & Motels, Restaurants, Dietary Service in Hospitals
and Day Care Centers for Children

SKILLS:

1. Participates in minor food preparation: opens cans of frozen vegetables and puts in pans, breaks eggs, lays bacon, watches frying, cooks cereals and cleans up after cook.
2. Ability to handle china and glassware and act on what needs to be done. Keep tables cleared and acts promptly to set up tables for customers.
3. Sets up and serves patient trays and helps dismantle and store after meals. Takes diet from diet clerk or dietitian and sets up on special trays specified.
4. Assists teacher to set lunches and get snacks, and clean up; helps with children in sensory development, language readiness, and development of motor skills and hand coordination.

WORK ATTITUDES:

1. Have basic desire and interest to be associated with cooking and likes to deal with food; thinks highly of potentials of this line of work.
2. Seriousness of purpose; neat and attractive in appearance; and friendly attitude towards customers in food service.
3. Willingness to do assigned work to best of ability and does all work in an acceptable and attractive manner in dietary food service in hospitals.
4. Shows love for children and is conscientious in all work assignments in Day Care Centers.

Table 16

Careers for Youth in Service to People

Skills and Work Attitudes Expected by Employer of Worker in
Entry Level Job During First Six Months on the Job

Occupational Category and Specific Entry Level Job	Skills Expected by Employer of Worker in Entry Level Job During First Six Months on the Job	Work Attitudes Employer Expects Worker to Show or Develop in First Six Months on the Job
Cook's Helper in Hotels & Motels	Must know how to take orders and cook vegetables, having responsibility to have vegetables ready at required time. Assists with trimming of meats. Front line and rear line experience in order, if need arises, to substitute in food preparation.	Have a basic desire and interest to be associated with cooking and likes to deal with food. Ready and able to do anything required in kitchen work. Attitude: "Show me how; I'm listening"! He thinks highly of potentials of this line of work.
Busboy or Busgirl in Hotels & Motels	Ability to handle china and glassware and act on what needs to be done; keep tables cleared and acts promptly to set up table for customers.	Have open mind; take directions from hostess and be punctual; show enthusiasm and be cooperative.
Cook's Helper in Restaurants	Close attention to Cook in all that he does in order to learn food preparation and cooking of each item in a variety of menus. In six months must be able to cook vegetables and meats and change with menus.	Serious and dependable; accepts corrections from Cook or Chef in right spirit. If attentive and right attitude, correction on a technique will be sufficient and will not have to be repeated; must keep self and apron clean, wearing hat at all times. He shifts stools and cleans place; must not play around with other workers.

Table 16

Careers for Youth in Service to People

Skills and Work Attitudes Expected by Employer of Worker in
Entry Level Job During First Six Months on the Job
(Continued)

Occupational Category and Specific Entry Level Job	Skills Expected by Employer of Worker in Entry Level Job During First Six Months on the Job	Work Attitudes Employer Expects Worker to Show or Develop in First Six Months on the Job
Busboy or Busgirl in Restaurants	Know how to set up side stands with glasses, etc., carry trays and glasses properly, showing confidence; learn where everything goes -- plates, glasses, etc.; keep side stands set up during service. After customer has left, clean table and reset. Keep floors picked up.	Show confidence in self and ability to carry trays without breaking dishes; seriousness of purpose and not play around; neat and attractive in appearance and friendly attitude toward customers.
Cook's Helper in Hospitals	Minor food preparation, such as breaking eggs, laying bacon and watch frying; cook cereals and clean up behind cook. He will gradually work into more cooking skills, such as making of sauces required in casseroles of which so much is used in gravies. Also open cans and cans of frozen vegetables and put in pans.	Regular attendance at work and personal cleanliness. Have interest and aptitude for food preparation. Get ideas on own and go ahead without being told. Pick up things where needed in order to keep things clean and orderly.

Table 16

Careers for Youth in Service to People

Skills and Work Attitudes Expected by Employer of Worker in
Entry Level Job During First Six Months on the Job
(Continued)

Occupational Category and Specific Entry Level Job	Skills Expected by Employer of Worker in Entry Level Job During First Six Months on the Job	Work Attitudes Employer Expects Worker to Show or Develop in First Six Months on the Job
Dietary Aide	Set up and serve patient trays and helps dismantle and store them after meal, some minor food preparation as pouring juices. Take diet from diet clerk or dietitian and sets up on special type of tray specified, such as low sodium, diabetic, low fat. Prepares minor measurements, such as milk shakes for in-between meals. Picks up menus from patient rooms.	Willingness to do assigned job to best of ability and does all work in an acceptable and attractive manner. Care and cleanliness of all equipment and good working relationships with other employees; ability to move from one job to another without being told.
Teacher's Aide	Assist teacher to clean up, set lunch, and get snacks; pay attention and take as many pointers on teaching and managing children from teacher as possible. Also help teachers with Sensory Development, language development or readiness, and development of motor skills and hand coordination.	Show love for children and be conscientious.

Office, Sales and Stock Control, and Data Processing

The heart of business enterprise revolves around information flow on financial transactions and the inflow and outflow of goods and services which give rise to monetary inflows. Bookkeepers keep accurate records of financial transactions. The general clerical staff receive telephone messages, direct visitors and provide information for company officers. They file correspondence and a variety of documents in systematic fashion to enable ready reference. Secretarial work is a means of communicating in formal fashion by officers and managers of the business to each other, employees, and with other business leaders and the public.

The existence of a business depends upon serving the public through manufacturing a product, distribution of products, and creating and selling a service. This involves accumulation of stock and salesmanship. The salesman acts to bring the producer and the buyer together, and in retailing to sell stock accumulated against anticipated demand to the final consumer. The salesperson in retailing goods or services determines the specific needs and desires of buyers of products for final use, communicates with them in terms of actual wants, the ability to buy, and makes the final sale, often with some special arrangement for financing. Sales in retail establishments or in other types of businesses deplete stock; and therefore, maintenance of stock in line with current and anticipated consumer demand, taking into account the flow of new products from technology, is the prime function of stock control personnel. This requires very close working relationships between sales personnel and stock control personnel.

Much of the record keeping to keep track of business transactions, providing at regular intervals the financial status and the net position on stock inventory, was once the sole prerogative of accounting clerks, bookkeepers,

accountants, and general clerks. But rapid growth of business in volume and complexity caused application of technology to the problem and data processing equipment was the result. This new type of equipment affords a most rapid method of accumulating and analyzing a massive volume of all sorts of financial and statistical data for managerial decision making. The spectacular success of this method of giving management quick access to needed data in support of the decision making process has given rise to a multitude of fascinating new careers in data processing, the entry level job of which is key-punch operator.

Summary of skills and work attitudes required for entry level jobs in these areas of work are outlined in abbreviated form below: (See Table 17 for details.) Data in Appendix C, Table V, provide information on skills and work attitudes for second level jobs and outlines alternate lines of advance.

Summary of Skills and Work Attitudes for Entry Level Job:
Office, Selling, Stock Control, and
Data Processing Careers

SKILLS:

1. Typists and secretarial, ability to type, use adding machine, practical mathematics, spelling; and ability to handle mechanical aspects of job.
2. Key-punch operator, show accuracy in punching both numeric and alphabetic cards.
3. Stock control clerk must learn product nomenclature and store's parts; familiar with "in" and "out" paperwork; learn storage practices and procedures; and know practical math.
4. Sales clerk must understand merchandise -- its producer, performance, and quality. Intelligent in reading, writing, and basic math; ability to fill out documents.
5. Sales trainee, ability to answer telephone and fill order to satisfaction of customer or solicit business by telephone.

WORK ATTITUDES:

1. Ability to grasp and follow instructions, and general cooperative spirit, initiative, accuracy, and good attendance at work and promptness.

2. In sales work, be able to communicate with customers, identify needs, and gain enthusiasm from product or service.
3. In stock control work, possess initiative and desire to learn; be honest and accurate; have pride in upkeep of place and sensitive to safety precautions.

Table 17

Careers for Youth in Office, Selling, Stock Control, and Data Processing

Skills and Work Attitudes Expected by Employer of Worker in
Entry Level Job During First Six Months on the Job

Occupational Category and Specific Entry Level Job	Skills Expected by Employer of Worker in Entry Level Job During First Six Months on the Job	Work Attitudes Employer Expects Worker to Show or Develop in First Six Months on the Job
Billing Clerk	Good typing ability; practical mathematics; knowledge of office system for billing department; ability to handle all mechanical aspects of job.	Eager to learn, punctual, desire to do a good job; patience.
Clerk, General	Ability to type, use an adding machine, and basic understanding of math; good spelling.	Cooperativeness; eagerness to learn; understands the difference between the business and the academic world; good attendance and promptness; accuracy and speed in performing duties.
Clerk-Typist	45 wpm minimum typing speed with high degree of accuracy. Aptitude for math, spelling, and filing.	Ability to grasp and follow instructions, general cooperative spirit, initiative, accuracy, good attendance and promptness.
Sales Trainee	Answer telephone, soliciting orders by telephone; take orders from telephone calls, fill orders and follow up to assure customer satisfaction; learn product lines or nature of services and how they benefit customers; learn the importance of customer relations.	Ability to communicate with customers; ascertain or identify needs; make sales and gain customer satisfaction.

Table 17

Careers for Youth in Office, Selling, Stock Control, and Data Processing

Skills and Work Attitudes Expected by Employer of Worker in
Entry Level Job During First Six Months on the Job
(Continued)

Occupational Category and Specific Entry Level Job	Skills Expected by Employer of Worker in Entry Level Job During First Six Months on the Job	Work Attitudes Employer Expects Worker to Show or Develop in First Six Months on the Job
Sales Clerk	Understand merchandise, its performance and quality; know store areas; intelligent in reading, writing, and basic mathematical functions; fill out documents; be able to handle money; keep up stock.	Sensitive with customers and ability to verbalize with them and determine needs; have a pleasant and congenial appearance; project a good image of self and store in order to establish good customer relations.
Stock Clerk	Learn product nomenclature and store's parts; become familiar with "in" and "out" paperwork; learn storage practices and procedures; know practical math--fractions, multiple sales discounts.	Desire to learn; show initiative; and be honest and accurate; have desire and ability to communicate with many people daily; pride in housekeeping and safety.
Key-Punch Operator	Speed and accuracy in punching both numeric and alphabetic cards. As speed and accuracy of Key-Punch Operator increases over time, advances in grade levels up to Senior Key-Punch Operator, and a final step would be Supervisor of Key-Punch Operators in a large organization.	Dependable, reliable, and ability to get along with other workers.

JOINT APPRENTICESHIP TRAINING PROGRAMS

The Joint Apprenticeship Training Program is a joint effort on the part of the U. S. Department of Labor, trade unions, and contractors. This report includes only bricklayers, carpenters, cement masons, electricians, plumbers or pipefitters, and sheet metal workers. Such programs operate in the major cities of Georgia: Albany, Atlanta, Augusta, Columbus, Macon, Rome and Savannah.

Basic Requirements for Admittance to the Program

Without exception youth must be high school graduates or have passed the Equivalency Test. The age requirement is 18 except bricklayers and cement masons where the minimum age drops to 17; cement masons only require a fifth grade education in the Atlanta Area at least. The upper range in the entry level age varies from 24 to 26 years plus as much as an additional four years for military service. For instance, the age limit is 18-24 but the upper limit is raised to 28 years for veterans and may be high as 30 years in the case of sheet metal mechanics which is an advantage worth considering if a youth has military service in his record.

In addition to the high school and age requirements, certain aptitude tests and mental capacity tests must be passed for most programs. The bricklayer apprentice must pass the pre-apprenticeship program of 12 weeks, intensive schooling and laboratory practice using the tools of the trade. Plumbers also have a 6-months probationary period. For carpentry, he must pass the carpenter's aptitude test in manual dexterity, and comprehension and general knowledge. The electrician apprentice program requires a passing grade on the GATB test (finger dexterity, manual and visual conception). The apprentice plumber

is required to pass the GATB test of the Georgia Department of Labor. The sheet metal apprentice takes a short metal aptitude test at the Georgia Employment Service, and must pass the math test.

Admittance to a Joint Apprenticeship Program

The first consideration is the matter of whether such a program is available to youth in a nearby city or in some larger city at a more distant point. Counselor is source on this. Inquire as to availability. A second important consideration is that, even after meeting the criteria, the number who can be admitted to the program bears a relationship to the number of Journeymen already in cooperating contractors' employment. The usual ratio is one apprenticeship to 4 journeymen, but for carpenters, it is 1 to 3. This means that if a contractor has 100 Journeyman Carpenters, for instance, the limit is 33 apprentices, and these slots may be already filled for it is a four year program for carpenters. And the trainees or apprentices would be at every level of training from the first 6 months to the last 6 months or at the end of the program from 42 to 48 months duration of training. Once a youth is chosen for an Apprenticeship program, he automatically becomes a member of the Trade Union which is in the 3-way cooperative Joint Apprenticeship Program.

The ratio of apprenticeships to Journeyman is as follows for the other crafts given: bricklayers, 1 to 4; cement masons, 1 to 5; electricians, 1 to 4; sheet metal mechanics, 1 to 4; and plumbers or pipefitters, 1 to 3.

Work Attitudes

Essential to success in an apprenticeship training program is matter of work attitudes. These are shown by the apprentice's willingness to work, study,

attend classes in the apprenticeship night school; desire to learn journeyman's skill on the job; show serious application to job; have desire to achieve and show proper conduct.

Nature of Training

Classroom instruction is combined with on-the-job work with a Journeyman. The training period varies from 3 years in the case of bricklayers and cement masons to 5 years for plumber or pipefitter Apprentices. Carpenters, electricians, and sheet metal Apprentices have a 4 year apprenticeship period. Classroom instruction is usually held once weekly for the entire apprenticeship period, and the meeting time varies from 3 hours per session in the case of bricklayer Apprentices to from 5 hours to 7½ hours weekly for sheet metal Apprentices. Carpenters and electrician Apprentices meet 4 hours weekly during the 4 year period. But plumbers or pipefitters meet for 2-three hour periods weekly during the regular 9 months school session for five years.

Instruction in the classroom provides the theory and on-the-job work provides the specific skills which each Journeyman must apply expertly.

Basic Skills

Bricklayers-brick, block, and tile work, masonry, fill breach, read blueprints, estimating, and how to keep walls straight.

Carpenter-Carpentry skills, cutting and fitting on a straight line, wood-working, blueprint reading, how to set up and use a transit, and shop math.

Cement mason-how to mix mortar, math, blueprint reading, how to line and finish surface of cement; and must know lengths, areas, and volumes.

Electrician-set-up, lay-out and put whole installation in, including residential, commercial, and industrial buildings. Skills include general lighting

and receptacles, motors, and switch gears.

Plumber or pipefitter-cutting and fitting, welding (acetylene and arc), fine wiring, and heliarc welding, heating and hot water set-ups, air-conditioning, pneumatic controls, basic electricity. Codes relative to heating and plumbing must be passed for city or county to gain certification. The plumbing skills are cutting and fitting, solder, water supply and equipment; building and hot water supply, valves and drainage, sewers and drains serving the public, and also service and maintenance.

Sheet metal mechanic-sheet metal lay-out, balancing systems, sheet metal math, welding for sheet metal, hand processing and machine processing, and blueprint reading.

Promotion Requirements

Expert in skills required, high quality work, serious attitude about the job, and interests of the employer, ability to follow instructions and work with others. Supervisory positions require ability to manage others and to coordinate the activities of the different craft skills required on the job.

Availability of Joint Apprenticeship Training Programs in Georgia

Mr. William I. Elrod, Georgia State Supervisor, Bureau of Apprenticeship and Training, U. S. Department of Labor, Atlanta, Georgia, has kindly provided data on locations of such programs and the registration of apprentices as of January 1, 1972. Table 18 indicates that for the six Craft Skills in which we have special interest, programs are active in most of the major cities of Georgia, which show a January 1 total registration of 2,369 apprentices. However, the significance looms not so large when it is recognized that most

of these Craft Programs require 4 years and thus the annual output would hardly average 1/4 of the registrations since there is considerable attrition to the programs, especially in the first six months. Thus it is doubtful that the annual output would be more than 500, with largest being for carpenters and electricians where the need is especially great. Even so, undoubtedly a considerable proportion of these are already included under training output reflected by figures given by employers in the questionnaire response.

While only 63 percent of the respondents to the Questionnaire reported some type of training programs, the composite for apprenticeship training programs was 15 percent, representing a weighted average for the state of 5 percent relative to all employers. However, even here the data tend to be concentrated in the larger firms. The conclusion is that while the Formal Joint Apprenticeship programs are available in the state and are of significance and interest, their impact so far as programs that are expected to develop in the Comprehensive High Schools are minimal and should not have a significant impact on the planning. There are two reasons for this conclusion. First, the appeal of the Apprenticeship programs is primarily to High School youth who graduated without vocational training and to the returning Veteran. Second, the size of output relative to demand as estimated from the questionnaires is relatively small and would have to grow in great size and consequence to affect seriously the types of programs that are under development for the Comprehensive High Schools.

TABLE 18

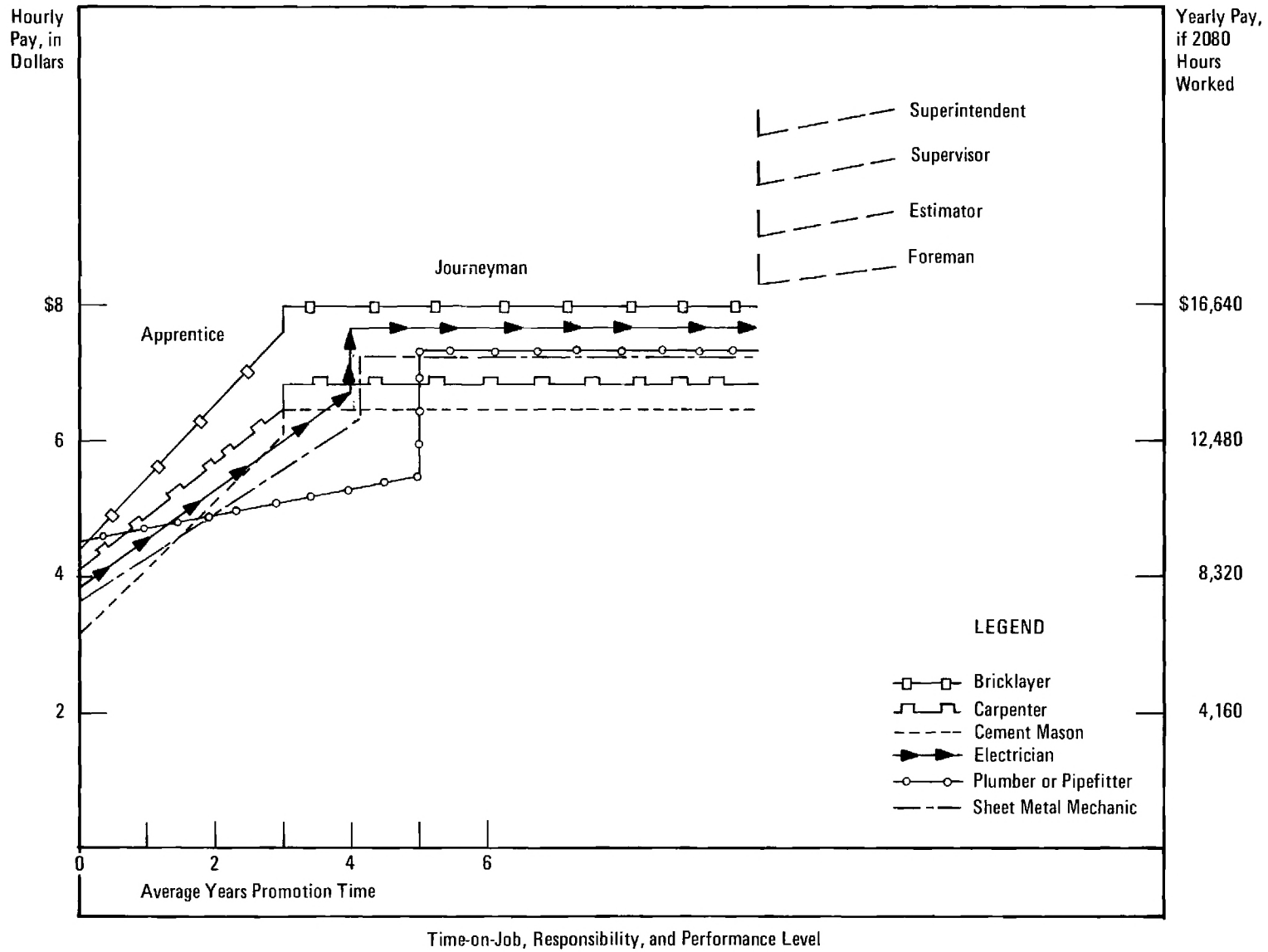
Apprenticeship Training Programs In Georgia Cities

Cities With Existing Programs Are Checked (✓)

City	Formal Apprenticeship Programs In					
	Bricklayers	Carpenters	Cement Masons	Electricians	Plumbers or Pipefitters	Sheet Metal
Albany		✓		✓	✓	
Atlanta	✓	✓	✓	✓	✓	✓
Augusta	✓	✓	✓	✓	✓	✓
Columbus	✓	✓	✓	✓	✓	✓
Macon	✓	✓		✓	✓	
Rome	✓				✓	
Savannah	✓	✓	✓	✓	✓	✓
Total Number of Registered Apprentices, as of Jan. 1, 1972	182	847	17	547	531	245
Apprentice Training Period In Years	3	4	3	4	5	4

Chart 3 which follows provides a comparison of entry level pay for Apprentices and Journeymen for the six classes of Joint Apprenticeship Training programs provided in Table 18. The rise in pay during the apprenticeship period, varying from three to five years, represents the six months increment provided at the end of each 6-month training interval.

Chart 3
CAREER LADDER FROM JOINT APPRENTICESHIP TRAINING PROGRAMS
FOR SPECIFIED CRAFTSMEN IN ATLANTA AREA, 1972



JOB OPPORTUNITIES AND TRAINING NEEDS FOR ENTRY LEVEL JOBS

The discussion on training programs for the broad categories of jobs in the economy have outlined skills and job attitudes for entry level jobs. Broadly speaking, the biggest emphasis has been on:

1. Familiarity with tools of the trade or with special but limited skills required in a few of the service jobs, as for instance, cook's helper.
2. Background information on the work environment.
3. Work attitudes: punctual to work, serious applications to the duties of the job, voluntarily helping or going it alone on work that needs to be done in the work area, ability to work with others, and intense interest in applying self to learn skills and working relationships on the job.

Table 19 presents a summary of most of these entry level jobs by broad career categories. It is noted that the 32 entry level jobs listed, with specific data, accounted for 107,491 jobs in the period of the study and almost 1/12 of the universe sampled. Total job openings yearly are 13,949 or 13 percent of annual needs and this is due to the fact that initial training is not complex. But even so, 9,827 jobs are reported as open for training programs. In the electro-mechanical trades, companies meet nearly 2/3 of training requirements for these entry positions. In marketing and distribution, companies train 36 percent of needs; and in agriculture and related nature occupations, 35 percent. The lowest training ratio is in data processing where only 19 percent of training needs are met by companies. In the remaining areas, company ratios of training average close to 25 percent or near the composite ratio for all jobs included

in the study. The conclusion is that real opportunities exist to establish a broadly based program in high school for these 10,000 or more entry level jobs yearly, in such a way that high school youth would be very competitive in getting jobs, with high expectations for rapid gains in pay levels. Also, reasonably quick promotions could be expected from the worker's seriousness of purpose and interest and energy in learning skills for higher level jobs, and learning work attitudes strongly emphasized in the high school programs.

Table 19

Entry Level Jobs: Analysis of Current Employment, Average Yearly Job Openings 1971-76,
Company Training Output, and Net Training Requirements Yearly for Period,
1971-76, CAREERS FOR YOUTH SURVEY, Georgia, Fall 1971

Entry Level Job	Current Employment	Yearly Job Openings 1971-76	Number Trained Yearly by Companies	Net Training Requirements Yearly, 1971-76	Ratio of Yearly Job Demand Trained by Companies
<u>CONSTRUCTION</u>					
100 Bricklayer, Helper	2,891	591	215	376	
104 Carpenter, Helper	8,427	1,513	309	1,204	
110 Cement Mason, Helper	1,162	283	95	188	
118 Plumber, Helper	788	140	28	112	
Subtotal	13,268	2,527	647	1,880	26
<u>TRANSPORTATION</u>					
145 Automobile Mechanic, Helper	3,033	557	153	404	
155 Diesel Mechanic, Helper	462	56	17	39	
Subtotal	3,495	613	170	443	
161 Draftsman, Helper	80	24	6	18	25
<u>METAL WORKING OCCUPATIONS</u>					
189 Metal Fabricating Shop, Helper	1,501	274	75	199	
193 Welder, Helper	716	166	54	112	
200 Machine Shop, Laborer	2,011	190	27	163	
Subtotal	4,228	630	156	474	25

Table 19

Entry Level Jobs: Analysis of Current Employment, Average Yearly Job Openings 1971-76,
 Company Training Output, and Net Training Requirements Yearly for Period,
 1971-76, CAREERS FOR YOUTH SURVEY, Georgia, Fall 1971
 (Continued)

Entry Level Job	Current Employment	Yearly Job Openings 1971-76	Number Trained Yearly by Companies	Net Training Requirements Yearly, 1971-76	Ratio of Yearly Job Demand Trained by Companies
<u>ELECTRO-MECHANICAL</u>					
220 Electrical-Appliance Serviceman, Helper	44	6	4	2	
224 Radio & TV Service, Helper ^a	--	--	--	--	
227 Furnace Installer & Repairman, Helper	22	22	--	22	
229 Air Conditioning Mechanic, Domestic, Helper	184	32	17	15	
230 Air Conditioning Mechanic, Commercial, Helper	502	168	55	113	
234 Electrician, Helper	2,554	430	319	111	
240 Maintenance Man Building, Helper	1,064	104	76	28	
Subtotal	4,370	762	471	291	62
<u>MARKETING AND DISTRIBUTION</u>					
280 Stock Clerk	22,467	2,355	787	1,568	
284 Sales Clerk	6,285	556	273	283	
285 Sales Attendant	971	56	--	56	
Subtotal	29,723	2,967	1,060	1,907	36

Table 19

Entry Level Jobs: Analysis of Current Employment, Average Yearly Job Openings 1971-76,
Company Training Output, and Net Training Requirements Yearly for Period,
1971-76, CAREERS FOR YOUTH SURVEY, Georgia, Fall 1971
(Continued)

Entry Level Job	Current Employment	Yearly Job Openings 1971-76	Number Trained Yearly by Companies	Net Training Requirements Yearly, 1971-76	Ratio of Yearly Job Demand Trained by Companies
<u>AGRICULTURE & RELATED NATURE OCCUPATIONS</u>					
310 Farm Equipment Mechanic, Trainee	82	13	3	10	
Floral Designer, Trainee ^a	--	--	--	--	
336 Landscape, Laborer	959	204	57	147	
338 Nursery Worker	660	56	43	13	
353 Soil Conservation Service Aide 3	97	20	6	14	
358 Recreation Center Leader	406	54	17	37	
367 Wildlife Biologic Aide I	43	8	--	8	
Woodyard Laborer ^b	--	--	--	--	
381 Forestry Technician ^b	95	7	--	7	
Subtotal	2,342	362	126	236	35
<u>OFFICE OCCUPATIONS</u>					
411 Billing Clerk	4,541	685	191	494	
415 Clerk, General	19,038	1,500	497	1,003	
425 Typist	3,703	671	131	540	
Subtotal	27,282	2,856	819	2,037	29

Table 19

Entry Level Jobs: Analysis of Current Employment, Average Yearly Job Openings, 1971-76,
Company Training Output, and Net Training Requirements Yearly for Period,
1971-76, CAREERS FOR YOUTH SURVEY, Georgia, Fall 1971
(Continued)

Entry Level Job	Current Employment	Yearly Job Openings 1971-76	Number Trained Yearly by Companies	Net Training Requirements Yearly, 1971-76	Ratio of Yearly Job Demand Trained by Companies
<u>DATA PROCESSING</u>					
451 Key punch Operator	4,695	809	168	641	
453 Digital Computer Operator	1,856	280	38	242	
Subtotal	6,551	1,089	206	883	19
<u>SERVICE TO PEOPLE</u>					
170 Cook, Helper	6,873	720	246	474	
176 Busboy or girl	5,603	668	119	549	
265 Dietary Aide	994	52	20	32	
400 Assistant Teacher or Aide	2,682	679	76	603	
Subtotal	16,152	2,119	461	1,658	22
TOTAL FOR ALL ENTRY LEVEL JOBS	107,491	13,949	4,122	9,827	30

^aData are not available, inadequately reported, or sample size not significant.

^bSample size for these categories was not significant.

SUGGESTIONS FOR ADDITIONAL RESEARCH

Supportive Research

In order to obtain the full value from the findings of the preceding research materials, there must be developed curricula and instructional approaches in the public schools to enable youth to choose a career and prepare for it in the world of work. In support of any method of instruction prepared for Career Education in order to capitalize on the findings from this study, public education will need the fullest sort of cooperation from business and industrial leaders, and cooperative inputs of high significance from the Georgia Training and Employment Service of the Georgia Department of Labor. There are, therefore, a great need for three supportive types of research studies.

1. In the ninth grade, it is suggested that students explore the nature and environment of one or more specific jobs in an actual work situation with specially selected individual workers. Research is needed here to determine what companies would be willing to cooperate, criteria used by company personnel officers and supervisors of workers to identify workers who would be uniquely suited in terms of patience, empathy, and a liking for youth to allow 1-3 ninth graders observe him in his job on a specified day from 3-4 p.m. What kind of job should the worker be doing, types of tools and equipment used, nature of danger, if any, to having 1-3 15-year olds in close proximity? Will the worker mind having these observing youth ask a few questions and explain what he is doing, how he used the tools or equipment? Will having 1-3 youth nearby add to the danger of injury to the worker and to the youth? If so, will companies be willing to take precautions through setting up a temporary barrier to reduce

danger? How much will time with 1-3 youth reduce efficiency of this worker during one hour?

In addition to determining this information through interviews with personnel officials of companies, the study would have to concentrate also on determining if any extra insurance costs would be involved and the extent to which companies would be willing to bear this along with the loss of efficiency from the worker or a number of workers in the plant spending part or all of one hour helping 1-3 youth explore a work situation. If companies are not in a position to bear these two additional costs, what would be required in terms of federal and state funding to absorb these on the spot additional costs in factories or businesses as a part of a most valuable aspect of Career Education? Bussing youth to the places of work at 3 p.m. and picking them up at 4 p.m. would also have to be considered, as well as the time of a number of instructors or school administrative personnel who would be needed to schedule and administer such a program for ninth graders in Career Education.

2. The second area of research required to implement Career Education as conceived from studies in this report specifies work-study for eleventh graders during one quarter of the regular school year which would be easier if school sessions were enlarged to the quarter system over the entire 12 months of the year. The problem is somewhat similar to the one outlined in number 1 above, but is less complicated. The questions which need to be answered concern identification of companies and types of work that 11th graders could gain employment in, on either a part-time or full-time basis, for one quarter. It is obvious that a full-time basis in specified jobs for the entire 12 months with rotation of students in specific jobs would be more adaptable to companies because the arrangement could be made permanent and developed on a systematic

basis. Detailed field investigations with a cross section of companies would be required in order to generate information and gain commitments on the part of top management to participate in such programs on a regular basis. Cooperation on the part of the Georgia Training and Employment service would be invaluable, particularly if personnel specializing in local placement activities can be involved. Youth working in such jobs would require orientation and assignment to a mature worker as a "Buddy". The time of the mature worker could be regarded as a company contribution or as an extra expense that might have to be financed. Youth in work programs, even though under 18 years of age, would not require a work permit so long as they are under the supervision of a school administered work-study program. If companies object over the cost of using youth for three months in a work-study program because of added costs, then these expenses would have to be estimated and reimbursement arranged through federal and state appropriations. On the other hand many companies may be willing to participate in order to identify high quality workers for future employment in which the lower turnover rates would be sufficient to absorb the extra costs. Endorsement and promotion of the idea of work-study programs for high school youth in Career Education by the Chambers of Commerce and prominent business leaders would probably be sufficient to remove this barrier, especially when associated with the lower costs of recruiting high quality workers, with which all companies have a problem and consequently may be willing to cooperate in order to gain this advantage. This information we do not have, but it is most pertinent to a program of Career Education.

Research to obtain all the facts and to gain commitments of companies for specific work-study programs will require intensive field interviews by an expert in this sort of thing with the cooperation of local placement personnel from Georgia Training and Employment service.

3. After a youth has completed studies for a career area and graduated from high school, we must avoid accepting the idea that the process of training is completed and he is "out on his own now". The first order of business is job placement, maintaining counseling contacts, and then further training in some special programs, or in the Area Vocational-Technical schools, to remedy any deficiencies which may appear in skills or work attitude training. The questions which need to be answered through intensive interviews in a cooperative arrangement with the Georgia Training and Employment service are:

- a. Extent of job placement in companies which have participated in the work-study programs.
- b. Ability to place graduates from specific career areas of training in other companies through informal and formal contacts.
- c. Performance level of these graduates in the first full-time job. This will require regular contacts with personnel officers in companies and immediate supervisors of these youth in order to determine their reaction to the quality of work and degree of satisfaction with work attitudes.
- d. Independent contacts with the career trained workers at regular intervals for first six months in order to determine his reactions to the job and how he or she is meeting the skills and work attitude requirements.
- e. Determination by counselor from putting together information in parts c and d of need for supplementary training or simple counseling otherwise.

The nature of the study in order to outline the problems and how they may be handled in terms of job placement, performance level, and need for supplemental training will involve interviews directly with personnel directors in companies, supervisor of worker, and worker himself for an experimental period of time, say for placement of graduates in the first six months of the program. The objective will be to obtain the facts, analyze them, and reach conclusions which may have a bearing on some aspects of the training curricula.

The need, however, for monitoring of career area trained youth during the first six months by placement personnel and school counselors would appear to be a permanent and fundamental aspect of Career Education. The public schools

will need to employ their own placement officers but these should work in very close cooperation with the Georgia Training and Employment service because of its network of field offices which blanket the State of Georgia.

Basic Research

1. Jobs in Environmental Control: The growing interest on the part of private citizens in air pollution, water pollution, and dangers from insecticides and chemicals employed in various phases of the production process, has created a wide range of new jobs related to a cleaner environment. Because of the great interest on part of the public, the job market should be excellent for trained personnel for a variety of jobs in this rapidly developing sector of the economy. Many of the jobs uncovered during exploration of the current study are technicians, engineers, and scientists. There will be openings, however, for aides, trainees of several types, and a number of different kinds of jobs in waste collection and disposal which graduates from properly designed Career Education programs could fill from high school.

A study of this sort should first follow through the exploratory stages in order to spell out thoroughly the types of jobs at every level which exist in this type of work. Identification of the types of employers engaging in any sort of environmental or pollution control work will have to be determined through exploratory mailed inquiries. And finally, a questionnaire or questionnaires will have to be designed in order to determine the size of the job market and training needs. Further information will be needed on specific skills and work attitudes which will be needed for high school graduates in Career Education to qualify for an entry level or higher job. This type of information which will also involve tracing out a number of typical Career Ladders will involve intensive field interviews with company personnel directors and the immediate supervisors of this type of work.

2. Jobs in the Public Sector: Growth in population and fast growth of cities of great size have given rise to problems associated with police work, administration of justice, and a variety of personal services to the disadvantaged inhabitants of decaying downtown areas. There are also employment opportunities for office type jobs in most public service agencies. This problem, in order to be researched properly, will require exploratory research on job types, job specifications, employer characteristics, and trial mailings of a questionnaire. There will arise a problem in determining the exact universe to be surveyed since most of the public service agencies are not required to report under the Unemployment Insurance laws. Contacts will need to be made with the various associations which represent these agencies in order to get membership lists. In addition to mailed questionnaires to obtain data on job openings and training requirements, it will be necessary to make personal contacts in the different agencies to determine career ladder information and also to determine skills and work attitude requirements.

In addition to checking out career opportunities, it would seem feasible also to at least trace out the career ladder with supplementary information for youth who may be interested in employment in the FBI or even in the Armed Forces. Real opportunities exist for good pay and promotion opportunities. Youth just simply has not had access on a widespread basis to adequate information on entry level requirements, career ladders, and pay range information. Data on jobs in these lines of activities would seem to be required in order to properly supplement information on jobs in public service activities.

CONCLUSIONS

There is crescendo of stories from the news media and complaints from the public over the aimlessness of youth, and many associate the problems of crime, drug abuse, the rising rate of illegitimacy of births to these modern day characteristics of youth. Your author argues that it has developed out of the fact that youth do not know where they are, where they are going, what they should do, and are hopelessly lost in the deep, dark woods of confusion brought about by lack of goals for life. In this difficulty of youth, who will determine this nation's future, as adults we all share in the blame. Typically, children are treated as things and "little Johnny" or "little Jane" are ignored and just left sitting in the corner like a chair or some other object, completely ignoring the fact that the child is alive; has aspirations; is curious and wants to find out about things; is interested in what mother and father are doing and why; is curious about the world outside, including animals and birds, trees and shrubs, and the sun, moon and stars. But we just let them sit and look at television which has some fairly good, but unrealistic programs, and many of these programs portray attitudes and actions which get into the subconscious of small children and cause unrealistic behavior attitudes and patterns. And education must also share the blame. Programs of study are created by the teachers and curricula experts which is the style or in demand as preparatory courses for college. And Johnny and Jane are told by mother and father, "Go on to school and take those courses; they will be good for you!" And on and on until graduation if there is enough stability in the family and Johnny and Jane are obedient and

have the determination to stick it out which 50 percent²⁰ of the pupils in Georgia do not. At graduation Johnny or Jane walk across the stage and get a diploma, certifying that he or she has graduated from high school. But so far as the job market is concerned, it is a blank piece of paper, or better described as a "blank wall" because there is no door through which Johnny or Jane can walk to get a job without a lot of difficulty, or perhaps not until after post-high school courses in a craft or clerical skills.

As indicated previously, half of the high school students in the United States are being offered academic courses which are irrelevant, general educational pap!²¹ How the failure to move rapidly to relevant Career Education has dumfounded and made youth feel like that "lost puppy in the deep woods" has been brought home to your author in the course of this research for this report. During December 1971, in speaking to three classes of high school seniors about our Careers for Youth Survey, I posed the question: "Now that you are seniors and will be graduating in a few months I want you to tell me what you plan to do when you graduate?" I got a fear-filled stare and silence! In connection with a senior class which I give at Georgia Tech on Career Analysis, I thought I would pose the same question. "You are seniors and will be graduating soon, what do you plan to do?" And I was floored with astonishment when I got a listless stare. All must agree that this is probably typical of high school youth in Georgia, and to some extent also of college students.

I find it all so pathetic and tragic, and I feel a sense of failure for the adults of every age that we have let this happen. The onus is on all working

²⁰Goals for Education in Georgia, Division of Planning, and Evaluation, Georgia Department of Education, 1970, p. 21.

²¹Sidney P. Marland, Jr., op. cit.

adults, business leaders, political leaders, educators and all the rest of us because we have not taken more interest in Career Guidance for our youth and also through failure to provide a great variety of exploratory experiences. Furthermore, we have not gotten ourselves sufficiently involved in the educational process: (a) to keep it relevant, and (b) to provide the greatly enlarged funding which will be needed in order to shift to a fully developed program of Career Education which will fit a youth upon graduation from high school either to take a job with already acquired work skills and work attitudes or pursue his education to a further stage via the college route.

The lack of information on careers, and what one can do with his life in a particular area has been one of the factors. This study will provide a partial remedy for this lack of information through the five published brochures on 48 Career Ladders traced out from entry level positions, showing each step up the ladder in pictures, accompanied by legends describing the job functions. Data are also provided on how to get into one of these career areas, skills and work attitudes required, and pay ranges. We should have many more such illustrations which should prove a great stimulus to discussion among youth on world of work opportunities, for in the words of the old Chinese proverb: "A picture is worth a thousand words."

In terms of significance for employment opportunities, the career areas studied (183 specific jobs), based on a randomized sample selection of Georgia employers, indicate 50,706 job openings yearly, 1971-76, which include 24,900 job openings yearly related to growth of the Georgia economy plus 25,806 job openings yearly from replacements of workers who retire, die or withdraw from the work force permanently for any reason. Company training programs project an output of 13,151 yearly which will meet only 1/4 of the training requirements

for the job market in Georgia over the next five years. The other 37,555 job demands which need trained workers will be up to public education, involving 174 specific jobs. However, the study identified 75 jobs with 1,000 or over workers at work on the survey date. Net job training needs for this group of highly significant jobs will be 33,594 yearly or 89 percent of total requirements. In the event public education initially wants to concentrate on the less complex entry level jobs, only 32 job titles would be involved with a total yearly training requirement of 9,827 youth for specific entry level jobs. The training programs could be simply structured by, concentrating on the following broad areas of training:

1. Familiarity with tools of trade or special skills required for service workers.
2. Background information on work environment.
3. Communication skills, including 3-R's and concepts and terms used on the job.
4. Work attitudes: punctual to work, serious applications to the duties of the job; voluntarily helping or going it alone on work that needs to be done in the work area; ability to work with others; and intense interest in applying self to learn skills and working relationships on the job.

In order to emphasize the seriousness of the problems of education, job placement, training the disadvantaged, the drop-out problem, the need for adult education, I quote from a previously cited report, "Goals for Education in Georgia", as follows:

Among the persistent social and economic problems that confront the state and lead Georgia's citizens to look toward the education enterprise for solutions are the following:

At least 20,000 children and youth drop out from the public schools of Georgia each year.

Approximately 380,000 workers are on the job fewer than 26 weeks per year.

Unemployment figures show 52,700 unemployed workers.

Special help is needed for 100,000 adult handicapped persons.

Special education services are needed for 186,000 children and youth from birth to age 21.

Research on educational attainment of persons over 25 shows 66,000 with no formal education; 280,000 with from one to four years of school completed; 600,000 with from five to eight years of schooling, totaling just under 1,000,000 who have completed only eight or fewer years of formal education.

Approximately 70,000 children each year fail to be promoted to the next higher grade.

Fifty percent of the children starting in the first grade, 40 percent entering the fifth grade and 37 percent entering the ninth grade fail either to graduate or to graduate at the end of twelve years of schooling.²²

This shows succinctly the problems of training and educating people. Career Education as conceived by the experts and data provided in this report showing job demands and specific training needs of considerable proportions will help solve the drop-out problem and those failing to be promoted to the next higher grade. Interest is enlarged when things are happening and children are occupied in making things happen, all of which raises the learning ability. Youth remember a small fraction of what they hear but 90 percent of what they do. This is illustrated by citation of an actual instance. "A second grade teacher tells about one student from a very poor family who was unable to read. While participating in a construction project he dictated the following story for the teacher to write and have him read back: 'My hammer is strong and lots of fun. We bang it on wood but stay away from the kids. Sometimes the nails go in straight, but most of the time they don't. Miss ---- don't mind.' The teacher says the boy could read the words he had dictated and was so excited over his ability

²²Loc. cit.

that he wanted to reread them every day."²³

Career Education will not only provide youth with marketable skills upon graduation from the program, but will improve the learning process through getting students involved in doing things which are related to what is being taught. This should reduce substantially the drop-out rate from school at every level, reduce unemployment rates, particularly among youth, and provide a more prosperous economy, and a healthier and more desirable community life from the standpoint of the numerous problems we are having with youth today, which relate directly to crime, drug abuse, etc.

This revolutionary change in the concept and methods of education will be opposed for a time by the academicians at every level of education. The shift in the job market to youth who have gone through Career Education could affect the demand for college graduates for a limited period, and perhaps shift the emphasis in some college curricula toward courses relevant to career areas for college graduates. The drastic change in public education from academic to Career Education in terms of equipment, curricula, and teaching methods will require re-orientation of the present teaching staff, and this can surely be accomplished with minor adjustments in some cases in a reasonable period of time. But the big problem will be in gaining the rather substantial increase in funding for equipment, career exploration programs, work-study programs, and job placement and counseling. The needed public support and financing can only be obtained through the active sponsorship and participation of industrialists, business leaders, and political leaders in Career Education programs.

²³Dr. Gene Bottoms, Career Development Education Kindergarten Through Post Secondary and Adult Levels, Division of Adult and Vocational Education, Georgia Department of Education, 1971, pp. 8-9.

Programs actively promoted in order to persuade Chambers of Commerce and a great variety of Trade Associations to include a "Goals for Youth" project in their program activities would seem to be the starting point to gain enthusiastic support of the leaders at every level in our society for this re-orientation of education that will in the end make them the prime beneficiaries from a more efficient, responsive, and dedicated work force.

APPENDIX A

Table I: Current Employment, Replacement Requirements Yearly, Number in Training to Enter a Position or Update a Skill, and Number Completing Training or Promoted Yearly 1

Table II: Current Employment; Projected Employment 1 Year, 3 Years, and 5 Years; Job Openings Total for Period 1971-76; and Net Training Requirements Total for Period 1971-76 13

TABLE I

Current Employment Related to Replacement Requirements Yearly, Number in Training,
And Number Completing Training or Promoted Yearly, Careers For Youth Survey,
Georgia, Fall 1971

Career Cluster And Job Title	Current Employment Fall 1971	Replacement Requirements Yearly	Number in Training To:		Number Completing Training or Promoted Yearly
			Enter a Position	Update A Skill	
<u>CONSTRUCTION</u>					
100 Bricklayer, Helper	2,891	272	515	358	215
101 Bricklayer	4,075	433	193	441	207
104 Laborer, Carpentry	8,427	708	738	449	309
105 Carpenter, Rough	4,451	285	255	212	105
106 Carpenter-Labor Foreman	2,156	136	125	103	56
107 Carpenter	6,117	358	340	326	181
110 Cement Mason, Helper	1,162	94	105	133	95
111 Cement Mason	1,224	122	44	65	51
118 Plumber, Helper	788	68	113	50	28
120 Pipefitter or Plumber	2,897	124	84	171	64
Subtotal	34,187	2,600	2,512	2,308	1,311
<u>TRANSPORTATION</u>					
145 Automobile-Mechanic, Helper	3,033	206	273	310	153
146 Automobile-Accessories Installer	929	90	4	68	47
147 Automobile-Body Repairman	2,761	192	56	141	111
148 Automobile-Air Conditioning Installer	579	44	9	28	22
149 Transmission Mechanic	938	54	86	97	54
150 Automobile-Service Mechanic I	3,141	207	120	290	183
151 Automobile Mechanic	5,657	286	204	897	353
152 Mechanic, Industrial Truck	1,181	72	103	130	72
153 Truck Mechanic	2,479	159	25	65	31

TABLE I

Current Employment Related to Replacement Requirements Yearly, Number in Training,
And Number Completing Training or Promoted Yearly, Careers For Youth Survey,
Georgia, Fall 1971
(Continued)

Career Cluster And Job Title	Current Employment Fall 1971	Replacement Requirements Yearly	Number in Training To:		Number Completing Training or Promoted Yearly
			Enter a Position	Update A Skill	
<u>TRANSPORTATION (Contd.)</u>					
155 Diesel Mechanic, Helper	462	23	60	60	17
156 Diesel Mechanic	2,284	133	42	383	92
157 Electric-Motor Repairman	156	3	--	--	--
158 Gasoline-Engine Repairman	21	--	--	--	--
Subtotal	23,622	1,469	982	2,469	1,135
<u>DRAFTING</u>					
160 Drafting Clerk	123	12	21	30	15
161 Draftsman, Helper	80	7	10	25	6
162 Tracer	80	18	23	10	7
163 Draftsman, Architectural	772	32	74	105	36
164 Draftsman, Electrical	243	29	49	38	29
165 Draftsman, Mechanical	759	37	117	151	47
Subtotal	2,056	135	294	359	140
<u>FOOD SERVICE</u>					
170 Cook, Helper	6,873	393	361	344	246
172 Baker, Bread	484	11	40	10	4
173 Cook	10,245	523	341	704	227
174 Chef	1,066	36	82	62	72
175 Executive Chef	312	1	66	47	55

TABLE I

Current Employment Related to Replacement Requirements Yearly, Number in Training,
And Number Completing Training or Promoted Yearly, Careers For Youth Survey,
Georgia, Fall 1971
(Continued)

Career Cluster And Job Title	Current Employment Fall 1971	Replacement Requirements Yearly	Number in Training		Number Completing Training or Promoted Yearly
			To: Enter a Position	Update A Skill	
<u>FOOD SERVICE (Contd.)</u>					
176 Bus Boy or Girl	5,603	358	192	168	119
177 Waiter or Waitress	16,619	767	409	957	186
178 Hostess	1,222	76	38	63	36
179 Waiter, Head	451	8	2	21	1
181 Hotel Clerk	744	35	46	85	29
Subtotal	43,619	2,208	1,577	2,461	975
<u>METAL WORKING</u>					
189 Metal-Fabricating Shop, Helper	1,501	135	198	255	75
190 Shear Operator	520	27	60	59	28
191 Sheet Metal Worker	4,589	280	286	198	155
192 Sheet Metal Lay-Out Man	572	20	19	38	19
193 Welder, Helper	716	51	30	138	54
194 Welder, Arc	2,419	114	103	329	80
195 Welder, Gas Shielded Heliarc	1,288	38	32	20	11
196 Welding Machine Operator, Gas	238	1	4	38	2
197 Welder, Spot I	1,105	36	24	7	18
198 Welder Fitter	188	7	--	82	8
199 Welder, Combination	1,741	83	83	86	55
200 Laborer, General (Machine Shop)	2,011	38	36	95	27
201 Milling Machine Operator, Production	512	25	7	7	4
202 Drill Press Operator, Production	433	18	2	4	1

TABLE I

Current Employment Related to Replacement Requirements Yearly, Number in Training,
And Number Completing Training or Promoted Yearly, Careers For Youth Survey,
Georgia, Fall 1971
(Continued)

Career Cluster And Job Title	Current Employment Fall 1971	Replacement Requirements Yearly	Number in Training To:		Number Completing Training or Promoted Yearly
			Enter a Position	Update A Skill	
<u>METAL WORKING (Contd.)</u>					
203 Grinder Set-Up Operator, Surface	215	17	--	2	1
204 Cut-Off Saw Operator, Metal	275	10	7	26	4
205 Engine Lathe Set-Up Operator	728	34	13	42	6
Subtotal	19,053	934	904	1,426	548
<u>ELECTRO-MECHANICAL</u>					
219 Gas Appliance Serviceman	402	23	--	44	--
220 Electrical Appliance Serviceman, Helper	44	5	--	28	4
221 Electrical Appliance Service Set-Up	276	13	60	49	6
222 Electrical Appliance Repairman	345	12	--	17	1
223 Electrical Appliance Serviceman	901	92	286	474	124
224 Radio & TV Service, Helper	--	--	--	--	--
225 TV & Radio Service & Repair	433	8	32	14	19
226 Office Machine Serviceman	--	--	--	--	--
227 Furnace Installer & Repairman, Helper	22	--	22	--	--
228 Furnace Installer & Repairman	383	16	26	60	4
229 Air-Conditioning-Mechanic, Helper (Domestic)	184	10	80	77	17
230 Air-Conditioning-Mechanic, Helper (Commercial)	502	24	147	201	55

TABLE I

Current Employment Related to Replacement Requirements Yearly, Number in Training,
And Number Completing Training or Promoted Yearly, Careers For Youth Survey,
Georgia, Fall 1971
(Continued)

Career Cluster And Job Title	Current Employment Fall 1971	Replacement Requirements Yearly	Number in Training To:		Number Completing Training or Promoted Yearly
			Enter a Position	Update A Skill	
<u>ELECTRO-MECHANICAL (Contd.)</u>					
231 Air-Conditioning Mechanic (Domestic)	659	23	118	261	76
232 Air-Conditioning Mechanic (Commercial)	1,627	66	127	323	73
233 Refrigeration Mechanic	336	20	28	34	10
234 Electrician, Helper	2,554	144	579	567	319
235 Electrical Repairman	309	22	15	15	9
236 Electrician	9,080	292	218	620	151
240 Maintenance Man, Helper	1,064	90	9	68	76
241 Maintenance Man, Building	5,369	237	21	90	40
242 Maintenance Man, Factory or Mill	7,390	280	236	572	182
243 Maintenance Mechanic II	1,060	49	109	69	27
245 Loom Fixer	2,480	252	188	58	125
246 Vending Machine Repairman	42	--	--	--	--
Subtotal	35,461	1,678	2,301	3,641	1,316
<u>DIETARY SERVICE IN HOSPITALS</u>					
264 Diet Clerk	167	6	20	3	3
265 Dietary Aide	994	31	18	46	20
266 Dietatic Intern	10	5	30	--	3
267 Dietitian	188	12	20	--	--
Subtotal	1,360	54	88	49	26

TABLE I

Current Employment Related to Replacement Requirements Yearly, Number in Training
And Number Completing Training or Promoted Yearly, Careers For Youth Survey,
Georgia, Fall 1971
(Continued)

Career Cluster And Job Title	Current Employment Fall 1971	Replacement Requirements Yearly	Number in Training To:		Number Completing Training or Promoted Yearly
			Enter a Position	Update A Skill	
<u>MARKETING & DISTRIBUTION</u>					
280 Stock Clerk	22,467	1,434	2,021	1,413	787
281 Stock Supervisor	3,590	92	229	133	95
282 Buyer, Assistant	1,199	55	245	97	80
283 Buyer II	5,763	211	416	344	245
284 Sales Clerk	6,285	300	161	579	273
285 Sales Attendant	971	53	--	13	--
286 Salesperson, General	36,710	1,761	1,467	1,675	723
287 Cashier II	13,360	966	714	517	282
288 Telephone Solicitor	1,408	147	71	26	38
289 Solicitor	2,854	149	15	454	73
290 Salesman-Driver	3,694	218	157	181	84
Subtotal	98,301	5,386	5,496	5,432	2,680
291 Salesperson, TV & Appliances	318	16	1	181	3
292 Salesperson, Furniture	280	8	5	4	2
293 Salesman, Food Products	2,995	66	22	76	31
294 Salesperson, Womens' Garments	3,195	87	97	36	35
295 Salesperson, Men's & Boys' Clothing	2,329	77	44	45	47
296 Salesman, Office Machines	878	96	79	5	26
297 Salesman, Automobile	3,017	195	83	207	75
298 Salesman, Building Construction Equipment & Supplies	1,414	74	31	22	15

TABLE I

Current Employment Related to Replacement Requirements Yearly, Number in Training
And Number Completing Training or Promoted Yearly, Careers For Youth Survey,
Georgia, Fall 1971
(Continued)

Career Cluster And Job Title	Current Employment Fall 1971	Replacement Requirements Yearly	Number in Training To:		Number Completing Training or Promoted Yearly
			Enter a Position	Update A Skill	
<u>MARKETING & DISTRIBUTION (Contd.)</u>					
299 Salesman, Gas & Electrical Appliances	144	5	--	76	--
Subtotal	14,570	624	362	652	234
300 Salesman, Lawn & Garden Equip.	11	--	--	--	--
301 Salesman, Poultry Equipment & Supplies	--	--	--	--	--
302 Salesman, Cattle & Poultry Feed Supplements	--	--	--	--	--
303 Salesman, Farm & Garden Equipment & Supplies	364	46	27	63	46
304 Salesman, Dairy Supplies	6	--	--	--	--
305 Salesman, Livestock	--	--	--	--	--
306 Salesman, Grain & Feed Products	--	--	--	--	--
307 Salesman, Veternarian Supplies	22	--	11	--	--
Subtotal	403	46	38	63	46
315 Parts Man or Salesman	6,567	412	482	559	296
<u>AGRICULTURE-POWER AND MECHANICS</u>					
310 Greaser	82	8	6	--	3
311 Farm Equipment Mechanic II	200	11	11	47	17

TABLE I

Current Employment Related to Replacement Requirements Yearly, Number in Training
And Number Completing Training or Promoted Yearly, Careers For Youth Survey,
Georgia, Fall 1971
(Continued)

Career Cluster And Job Title	Current Employment Fall 1971	Replacement Requirements Yearly	Number in Training To:		Number Completing Training or Promoted Yearly
			Enter a Position	Update A Skill	
<u>AGRICULTURE-POWER AND MECHANICS (Contd.)</u>					
312 Salesman, Tractor & Farm Implements	285	13	16	26	13
313 Farm Machinery Set-Up Man	261	29	13	23	15
314 Farm Equipment Mechanic I	503	47	28	78	28
Subtotal	1,331	108	74	174	76
<u>ORNAMENTAL HORTICULTURE</u>					
330 Deliveryman	565	23	25	15	6
333 Salesperson, Flowers	659	31	25	36	16
334 Flower Grower	61	5	18	25	10
335 Floral Designer	1,004	29	44	33	31
336 Landscape Laborer	959	39	89	60	57
337 Landscape Gardener	300	14	43	--	8
338 Nursery Worker	660	13	--	114	43
339 Salesman, Lawn & Garden Equipment & Supplies	775	21	25	128	23
340 Nurseryman	173	--	--	28	1
Subtotal	5,157	175	269	439	195
<u>CONSERVATION, RECREATION & WILDLIFE</u>					
350 Map Clerk	--	--	--	--	--

TABLE I

Current Employment Related to Replacement Requirements Yearly, Number in Training
And Number Completing Training or Promoted Yearly, Careers For Youth Survey,
Georgia, Fall 1971
(Continued)

Career Cluster And Job Title	Current Employment Fall 1971	Replacement Requirements Yearly	Number in Training To:		Number Completing Training or Promoted Yearly
			Enter a Position	Update A Skill	
<u>CONSERVATION, RECREATION & WILDLIFE (Contd.)</u>					
351 Agricultural Aide	--	--	--	--	--
352 Farm Checker	--	--	--	--	--
353 Soil Conservation Aid	97	11	--	--	6
355 Park Worker	769	37	--	29	7
356 Park Ranger	59	5	4	1	3
357 Recreation Facility Attendant	111	4	5	3	2
358 Recreation Leader	406	14	7	107	17
359 Recreation Supervisor	158	29	5	79	17
365 Refuge Manager	32	8	8	32	--
366 Wildlife Ranger	156	5	36	156	36
367 Wildlife Biologic Aide	43	2	13	43	--
Subtotal	1,831	115	78	450	88
<u>FORESTRY</u>					
380 Log Scaler	75	1	16	--	4
381 Forestry Technician	95	3	--	--	--
382 Fire Warden	86	--	--	--	--
383 Timber Buyer	39	1	1	--	1
384 Woodyard Manager	102	3	4	--	1
385 Forester	222	8	1	--	--
386 Chocker Setter	29	--	--	--	--
387 Truck Driver	48	1	--	--	--
388 Skidder Operator	28	--	--	--	--

TABLE I

Current Employment Related to Replacement Requirements Yearly, Number in Training
And Number Completing Training or Promoted Yearly, Careers For Youth Survey,
Georgia, Fall 1971
(Continued)

Career Cluster And Job Title	Current Employment Fall 1971	Replacement Requirements Yearly	Number in Training To:		Number Completing Training or Promoted Yearly
			Enter a Position	Update A Skill	
<u>FORESTRY (Contd.)</u>					
389 Loader Operator	32	--	--	--	--
390 Harvesting Equipment Mechanic	18	--	--	--	--
391 Salesman, Harvesting Equipment	2	--	--	--	--
392 Wood Producer	30	--	--	--	--
Subtotal	806	17	22	--	6
<u>PERSONAL SERVICES</u>					
A. Day Care Center					
400 Assistant Teacher or Aide	2,682	113	4,460	474	76
401 Head Teacher	1,197	29	--	129	14
B. Housekeeping Services					
402 Maid	2,815	250	75	174	12
403 Housekeeper	354	12	16	47	14
404 Visiting Homemaker	43	--	--	--	--
Subtotal	7,091	404	4,551	824	116
<u>OFFICE</u>					
410 Accounting Clerk	8,764	786	277	278	442
411 Billing Clerk II	4,541	551	339	187	191
412 Bookkeeping Machine Operator	2,604	143	53	58	21
413 Bookkeeper	17,413	794	405	763	534
414 Supervisor, Machine Records	609	9	30	32	19
Subtotal	33,931	2,283	1,104	1,318	1,207

TABLE I

Current Employment Related to Replacement Requirements Yearly, Number in Training
And Number Completing Training or Promoted Yearly, Careers For Youth Survey,
Georgia, Fall 1971
(Continued)

Career Cluster And Job Title	Current Employment Fall 1971	Replacement Requirements Yearly	Number in Training To:		Number Completing Training or Promoted Yearly
			Enter a Position	Update A Skill	
<u>OFFICE (Contd.)</u>					
415 Clerk, General	19,038	1,055	877	1,129	497
416 Telephone Operator	10,073	623	334	531	91
417 File Clerk	3,735	287	199	179	181
418 Receptionist	2,252	82	117	105	55
419 Personnel Clerk	1,991	85	107	98	90
Subtotal	37,089	2,132	1,634	2,042	914
425 Typist	3,703	367	103	38	131
426 Clerk-Typist	18,796	1,335	325	991	660
427 Stenographer	4,931	522	172	237	125
428 Secretary	18,312	1,222	263	475	324
429 Administrative Secretary	2,743	150	29	42	36
Subtotal	48,485	3,596	892	1,785	1,276
<u>OTHER CLERICAL</u>					
435 Checking Clerk	762	50	43	131	35
436 Cashier, Currency Exchange	3,948	498	516	346	203
439 Insurance Checker	97	12	--	8	--
440 Insurance Clerk I	282	9	11	9	5
441 Real Estate Clerk	328	14	63	47	23
Subtotal	5,417	583	633	541	266

TABLE I

Current Employment Related to Replacement Requirements Yearly, Number in Training
And Number Completing Training or Promoted Yearly, Careers For Youth Survey,
Georgia, Fall 1971
(Continued)

Career Cluster And Job Title	Current Employment Fall 1971	Replacement Requirements Yearly	Number in Training To:		Number Completing Training or Promoted Yearly
			Enter a Position	Update A Skill	
<u>DATA PROCESSING</u>					
450 Sorting Machine Operator	342	22	14	7	6
451 Key Punch Operator	4,695	514	98	224	168
452 Verifier Operator	669	40	39	35	18
453 Digital Computer Operator	1,856	143	50	59	38
454 Programmer, Detail	813	50	30	37	20
455 Programmer, Business	1,521	78	50	28	51
Subtotal	9,896	847	281	290	301
AGGREGATE TOTAL	430,233	25,806	24,576	27,282	13,151

Table II

Current Employment Related to Projected Employment by Years, Net Job Openings
For Period 1971-76, and Net Training Requirements for Period 1971-76,
Careers for Youth Survey, Georgia, Fall 1971

Career Cluster And Job Title	Current Employment Fall 1971	Projected Employment			Job Openings ^b Total For Period 1971-76 ^d	Net Training Requirements ^c Total For Period 1971-76 ^d
		1 Year	3 Years	5 Years ^a		
<u>CONSTRUCTION</u>						
100 Bricklayer, Helper	2,891	3,492	3,978	4,487	2,955	1,880
101 Bricklayer	4,075	4,937	6,111	7,287	5,375	4,340
104 Laborer, Carpentry	8,427	9,392	10,897	12,454	7,565	6,020
105 Carpenter, Rough	4,451	4,928	5,966	7,016	3,990	3,465
106 Carpenter, Labor Foreman	2,156	2,389	2,798	3,220	1,745	1,465
107 Carpenter	6,117	7,312	8,166	9,079	4,750	3,845
110 Cement Mason, Helper	1,162	1,472	1,787	2,105	1,415	940
111 Cement Mason	1,224	1,467	1,807	2,148	1,535	1,280
118 Plumber, Helper	788	919	1,029	1,147	700	560
120 Plumber or Pipefitter	2,897	3,182	3,562	3,967	1,690	1,370
Subtotal	34,187	39,490	46,102	52,911	31,720	25,165
<u>TRANSPORTATION</u>						
145 Automobile-Mechanic, Helper	3,033	3,534	4,155	4,790	2,785	2,020
146 Automobile-Accessories Installer	929	1,042	1,198	1,360	880	645
147 Automobile-Body Repairman	2,761	3,217	3,784	4,366	2,565	2,010
148 Automotive Air-Conditioner Installer	579	718	802	891	530	420
149 Transmission Mechanic	938	1,080	1,287	1,498	830	560
150 Automobile-Service Mechanic I	3,141	3,598	4,146	4,714	2,610	1,695

Table II

Current Employment Related to Projected Employment by Years, Net Job Openings
For Period 1971-76, and Net Training Requirements for Period 1971-76,
Careers for Youth Survey, Georgia, Fall 1971
(Continued)

	Career Cluster And Job Title	Current Employment Fall 1972	Projected Employment			Job Openings ^b Total For Period 1971-76 ^d	Net Training Requirements ^c Total For Period 1971-76 ^d
			1 Year	3 Years	5 Years ^a		
151	Automobile Mechanic	5,657	6,206	7,225	8,276	4,050	2,285
152	Mechanic, Industrial Truck	1,181	1,254	1,517	1,784	965	605
153	Truck Mechanic	2,479	2,725	3,024	3,347	1,665	1,510
155	Diesel Mechanic, Helper	462	456	542	629	280	195
156	Diesel Mechanic	2,284	2,564	2,846	3,151	1,530	1,070
157	Electric-Motor Repairman	156	148	143	139	--	--
158	Gasoline-Engine Repairman	21	21	21	22	--	--
	Subtotal	23,622	26,564	30,689	34,970	18,690	13,015
<u>DRAFTING</u>							
160	Drafting Clerk	123	124	143	163	100	20
161	Draftsman, Helper	80	90	127	163	120	90
162	Tracer	80	86	131	174	185	150
163	Draftsman, Architectural	772	831	907	990	380	200
164	Draftsman, Electrical	243	265	301	337	240	95
165	Draftsman, Mechanical	759	808	912	1,022	450	215
	Subtotal	2,056	2,204	2,520	2,851	1,475	770
<u>FOOD SERVICE</u>							
170	Cook, Helper	6,873	7,122	7,815	8,508	3,600	2,370
172	Baker, Bread	484	527	623	718	290	270
173	Cook	10,245	11,004	12,072	13,140	5,510	4,375

Table II

Current Employment Related to Projected Employment by Years, Net Job Openings
For Period 1971-76, and Net Training Requirements for Period 1971-76,
Careers for Youth Survey, Georgia, Fall 1971
(Continued)

Career Cluster And Job Title	Current Employment Fall 1971	Projected Employment			Job Openings ^b Total For Period 1971-76 ^d	Net Training Requirements ^c Total For Period 1971-76 ^d
		1 Year	3 Years	5 Years ^a		
174 Chef	1,066	1,100	1,229	1,357	470	110
175 Executive Chef	312	359	392	425	120	-165
176 Busboy or Busgirl	5,603	5,915	6,533	7,151	3,340	2,745
177 Waiter or Waitress	16,619	17,884	19,388	20,892	8,110	7,180
178 Hostess	1,222	1,272	1,415	1,558	715	535
179 Waiter, Head	451	476	485	494	85	80
181 Hotel Clerk	744	765	813	862	295	150
Subtotal	43,619	46,424	50,765	55,106	22,535	17,650

METAL WORKING

189 Metal-Fabricating Shop, Helper	1,501	1,720	1,951	2,194	1,370	995
190 Shear Operator	520	532	581	634	250	110
191 Sheet Metal Worker	4,589	5,170	6,044	6,943	3,755	2,980
192 Sheet Metal Lay-out Man	572	632	733	837	365	270
193 Welder, Helper	716	937	1,112	1,289	830	560
194 Welder, Arc	2,419	2,602	2,728	2,886	1,035	635
195 Welder, Gas-Shielded Heliarc	1,288	1,369	1,422	1,495	395	340
196 Welding Machine Operator, Gas	238	344	405	467	235	225
197 Welder, Spot I	1,105	1,088	1,137	1,200	275	185
198 Welder, Fitter	188	227	221	220	65	25
199 Welder, Combination	1,741	1,920	2,128	2,354	1,030	755
200 Laborer, General (Machine Shop)	2,011	2,091	2,426	2,773	950	815

Table II

Current Employment Related to Projected Employment by Years, Net Job Openings
For Period 1971-76, and Net Training Requirements for Period 1971-76,
Careers for Youth Survey, Georgia, Fall 1971
(Continued)

Career Cluster And Job Title	Current Employment Fall 1971	Projected Employment			Job Openings ^b Total For Period 1971-76 ^d	Net Training Requirements ^c Total For Period 1971-76 ^d
		1 Year	3 Years	5 Years ^a		
201 Milling Machine Operator, Production	512	585	674	766	380	360
202 Drill Press Operator, Production	433	504	590	677	335	330
203 Grinder Set-up Operator, Surface	215	240	270	301	170	175
204 Cut-Off Saw Operator, Metal	275	332	355	382	155	135
205 Engine Lathe Set-Up Operator	728	812	877	951	380	350
Subtotal	19,053	21,105	23,652	26,369	11,975	9,245
<u>ELECTRO-MECHANICAL</u>						
219 Gas Appliance Serviceman	402	402	439	479	190	190
220 Electrical Appliance Serviceman, Helper	44	44	46	49	30	10
221 Electrical Appliance Service Set-up	276	284	360	436	225	195
222 Electrical Appliance Repairman	345	351	388	429	145	140
223 Electrical Appliance Serviceman	901	892	966	1,050	610	-10
224 Radio & TV, Helper	--	--	--	--	--	--
225 TV & Radio Service & Repairman	433	506	595	686	290	195

Table II

Current Employment Related to Projected Employment by Years, Net Job Openings
For Period 1971-76, and Net Training Requirements for Period 1971-76,
Careers for Youth Survey, Georgia, Fall 1971
(Continued)

Career Cluster And Job Title	Current Employment Fall 1971	Projected Employment			Job Openings ^b Total For Period 1971-76 ^d	Net Training Requirements ^c Total For Period 1971-76 ^d
		1 Year	3 Years	5 Years ^a		
226 Office Machine Serviceman	--	--	--	--	--	--
227 Furnace Installer & Repairman, Helper	22	43	88	130	110	110
228 Furnace Installer & Repairman	383	427	477	531	230	210
229 Air-Conditioning Mechanic, Helper (Domestic)	184	207	250	295	160	75
230 Air-Conditioning Mechanic, Helper (Commercial)	502	732	979	1,222	840	565
231 Air-Conditioning Mechanic (Domestic)	659	729	889	1,051	505	125
232 Air-Conditioning Mechanic (Commercial)	1,627	1,843	2,304	2,766	1,470	1,105
233 Refrigeration Mechanic	336	372	428	485	250	200
234 Electrician, Helper	2,554	3,113	3,538	3,985	2,150	555
235 Electrical Repairman	309	352	416	482	285	240
236 Electrician	9,080	9,923	10,830	11,836	4,215	3,460
240 Maintenance Man, Helper	1,064	1,076	1,098	1,136	520	140
241 Maintenance Man, Building	5,369	5,443	6,151	6,900	2,715	2,515
242 Maintenance Man, Factory or Mill	7,390	7,343	7,645	8,043	2,055	1,145
243 Maintenance Mechanic II	1,060	1,125	1,169	1,230	415	280
245 Loom Fixer	2,480	2,423	2,373	2,365	1,145	520
246 Vending-Machine Repairman	42	40	38	37	5	5
Subtotal	35,461	37,667	41,468	45,621	18,560	11,970

Table II

Current Employment Related to Projected Employment by Years, Net Job Openings
For Period 1971-76, and Net Training Requirements for Period 1971-76,
Careers for Youth Survey, Georgia, Fall 1971
(Continued)

Career Cluster And Job Title	Current Employment Fall 1971	Projected Employment			Job Openings ^b Total For Period 1971-76 ^d	Net Training Requirements ^c Total For Period 1971-76 ^d
		1 Year	3 Years	5 Years ^a		
<u>DIETARY SERVICE IN HOSPITALS</u>						
264 Diet Clerk	167	173	164	159	20	5
265 Dietary Aide	994	1,002	1,044	1,099	260	160
266 Dietetic Intern	10	19	27	35	50	35
267 Dietitian	188	191	240	288	160	160
Subtotal	1,360	1,386	1,476	1,582	490	360
<u>MARKETING AND DISTRIBUTION</u>						
280 Stock Clerk	22,467	23,064	24,947	27,072	11,775	7,840
281 Stock Supervisor	3,590	3,546	3,721	3,942	810	335
282 Buyer, Assistant	1,199	1,177	1,222	1,281	355	-45
283 Buyer II	5,763	5,557	5,641	5,808	1,100	-125
284 Sales Clerk	6,285	6,498	6,996	7,563	2,780	1,415
285 Sales Attendant	971	955	964	988	280	280
286 Salesperson, General	36,710	37,126	39,424	42,160	14,255	10,640
287 Cashier II	13,360	13,804	15,136	16,599	8,070	6,660
288 Telephone Solicitor	1,408	1,454	1,618	1,794	1,120	930
289 Solicitor	2,854	2,809	2,913	3,054	945	580
290 Salesman-Driver	3,694	3,764	4,120	4,513	1,910	1,490
Subtotal	98,301	99,754	106,702	114,774	43,400	30,000
291 Salesperson, TV & Appliances	318	327	336	350	110	95

Table II

Current Employment Related to Projected Employment by Years, Net Job Openings
For Period 1971-76, and Net Training Requirements for Period 1971-76,
Careers for Youth Survey, Georgia, Fall 1971
(Continued)

	Career Cluster And Job Title	Current Employment Fall 1971	Projected Employment			Job Openings ^b Total For Period 1971-76 ^d	Net Training Requirements ^c Total For Period 1971-76 ^d
			1 Year	3 Years	5 Years ^a		
292	Salesperson, Furniture	280	289	330	371	130	120
293	Salesman, Food Products	2,995	3,009	3,070	3,175	510	355
294	Salesperson, Womens' Garments	3,195	3,259	3,477	3,731	970	795
295	Salesperson, Men's & Boys' Clothing	2,329	2,362	2,509	2,686	740	505
296	Salesman, Office Machines	878	943	1,088	1,239	840	710
297	Salesman, Automobile	3,017	3,300	3,887	4,487	2,445	2,070
298	Salesman, Building Construction Equipment and Supplies	1,414	1,571	1,844	2,125	1,080	1,005
299	Salesman, Gas & Electric Appliances	144	146	144	145	25	25
	Subtotal	14,570	15,206	16,685	18,309	6,850	5,680
300	Salesman, Lawn & Garden Equipment	11	20	20	20	10	10
301	Salesman, Poultry Equipment & Supplies	--	--	--	--	--	--
302	Salesman, Cattle & Poultry Feed Supplements	--	--	--	--	--	--
303	Salesman, Farm & Garden Equipment & Supplies	364	364	387	411	275	40
304	Salesman, Dairy Supplies	6	6	6	6	--	--
305	Salesman, Livestock	--	--	--	--	--	--

Table II

Current Employment Related to Projected Employment by Years, Net Job Openings
For Period 1971-76, and Net Training Requirements for Period 1971-76,
Careers for Youth Survey, Georgia, Fall 1971
(Continued)

Career Cluster And Job Title	Current Employment Fall 1971	Projected Employment			Job Openings ^b Total For Period 1971-76 ^d	Net Training Requirements ^c Total For Period 1971-76 ^d
		1 Year	3 Years	5 Years ^a		
306 Salesman, Grain & Feed Products	--	--	2	--	--	--
307 Salesman, Veternarian Supplies	22	22	33	43	20	20
Subtotal	403	412	448	480	305	70
315 Partsman or Salesman	6,567	7,280	8,280	9,330	4,825	3,345
<u>AGRICULTURE-POWER & MECHANICS</u>						
310 Greaser	82	93	98	106	65	50
311 Farm Equipment Mechanic II	200	234	260	288	145	60
312 Salesman, Tractor & Farm Implements	285	294	330	369	150	85
313 Farm Machinery Set-up Man	261	305	360	416	300	225
314 Farm Equipment Mechanic I	503	611	706	806	540	400
Subtotal	1,331	1,537	1,754	1,985	1,200	820
<u>ORNAMENTAL HORTICULTURE</u>						
330 Deliveryman	565	589	675	765	315	285
333 Salesperson, Flowers	659	708	816	930	425	345
334 Flower Grower	61	65	74	84	50	--
335 Floral Designer	1,004	1,072	1,250	1,432	575	420

Table II

Current Employment Related to Projected Employment by Years, Net Job Openings
For Period 1971-76, and Net Training Requirements for Period 1971-76,
Careers for Youth Survey, Georgia, Fall 1971
(Continued)

Career Cluster And Job Title	Current Employment Fall 1971	Projected Employment			Job Openings ^b Total For Period 1971-76 ^d	Net Training Requirements ^c Total For Period 1971-76 ^d
		1 Year	3 Years	5 Years ^a		
336 Landscape Laborer	959	1,194	1,490	1,786	1,020	735
337 Landscape Gardener	300	422	500	580	350	310
338 Nursery Worker	660	694	781	873	280	65
339 Salesman, Lawn & Garden Equipment & Supplies	775	908	1,175	1,439	770	660
340 Nurseryman	173	165	174	185	10	5
21 Subtotal	5,157	5,817	6,937	8,076	3,795	2,825
<u>CONSERVATION, RECREATION & WILDLIFE</u>						
350 Map Clerk	--	--	--	--	--	--
351 Agricultural Aide	--	--	--	--	--	--
352 Farm Checker	--	--	--	--	--	--
353 Soil Conservation Aid	97	107	125	143	100	70
355 Park Worker	769	841	969	1,097	515	480
356 Park Ranger	59	68	112	156	120	105
357 Recreation Facility Attendant	111	134	184	233	140	130
358 Recreation Center Leader	406	459	533	607	270	185
359 Recreation Supervisor	158	190	250	311	300	215
365 Refuge Manager	32	42	51	60	70	70
366 Wildlife Ranger	156	164	176	188	55	-125
367 Wildlife Biologic Aide	43	43	58	73	40	40
Subtotal	1,831	2,048	2,458	2,868	1,610	1,170

Table II

Current Employment Related to Projected Employment by Years, Net Job Openings
For Period 1971-76, and Net Training Requirements for Period 1971-76,
Careers for Youth Survey, Georgia, Fall 1971
(Continued)

Career Cluster And Job Title	Current Employment Fall 1971	Projected Employment			Job Openings ^b Total For Period 1971-76 ^d	Net Training Requirements ^c Total For Period 1971-76 ^d
		1 Year	3 Years	5 Years ^a		
<u>FORESTRY</u>						
380 Log Scaler	75	61	63	66	-5	-25
381 Forestry Technician	95	99	107	115	35	35
382 Fire Warden	86	82	73	63	-20	-20
383 Timber Buyer	39	42	45	47	15	10
384 Woodyard Manager	102	104	111	117	30	25
385 Forester	222	229	241	252	70	70
386 Chocker Setter	29	29	29	29	--	--
387 Truck Driver	48	64	89	114	70	70
388 Skidder Operator	28	28	28	28	--	--
389 Loader Operator	32	33	34	35	5	5
390 Harvesting Equipment Mechanic	18	18	19	20	--	--
391 Salesman, Harvesting Equipment	2	2	2	2	--	--
392 Wood Producer	30	37	48	59	20	20
Subtotal	806	828	889	947	220	190
<u>PERSONAL SERVICES</u>						
A. Day Care Centers						
400 Assistant Teacher or Aide	2,682	3,197	4,366	5,510	3,395	3,015
401 Head Teacher	1,197	1,366	1,981	2,577	1,525	1,455
B. Housekeeping Services						
402 Maid	2,815	2,831	2,899	3,007	1,440	1,380
403 Housekeeper	354	343	342	347	55	-15
404 Visiting Homemaker	43	82	116	150	105	105
Subtotal	7,091	7,818	9,705	11,593	6,520	5,940

Table II

Current Employment Related to Projected Employment by Years, Net Job Openings
For Period 1971-76, and Net Training Requirements for Period 1971-76,
Careers for Youth Survey, Georgia, Fall 1971
(Continued)

Career Cluster And Job Title		Current Employment Fall 1971	Projected Employment			Job Openings ^b Total For Period 1971-76 ^d	Net Training Requirements ^c Total For Period 1971-76 ^d
			1 Year	3 Years	5 Years ^a		
<u>OFFICE</u>							
410	Accounting Clerk	8,764	8,935	9,367	10,055	5,220	3,010
411	Billing Clerk II	4,541	4,580	4,832	5,213	3,425	2,470
412	Bookkeeping Machine Operator	2,604	2,509	2,545	2,657	770	665
413	Bookkeeper	17,413	17,897	18,591	19,808	6,365	3,695
414	Supervisor, Machine Records	609	647	651	676	110	15
	Subtotal	33,931	34,568	35,985	38,410	15,890	9,855
415	Clerk, General	19,038	19,363	19,992	21,264	7,500	5,015
416	Telephone Operator	10,073	10,124	10,294	10,810	3,850	3,395
417	File Clerk	3,735	3,931	4,222	4,632	2,330	1,425
418	Receptionist	2,252	2,459	2,680	2,973	1,130	855
419	Personnel Clerk	1,991	1,997	2,103	2,272	705	255
	Subtotal	37,089	37,874	39,291	41,952	15,515	10,945
425	Typist	3,703	4,047	4,635	5,224	3,355	2,700
426	Clerk-Typist	18,796	20,262	23,311	26,359	14,240	10,945
427	Stenographer	4,931	5,285	5,979	6,674	4,355	3,730
428	Secretary	18,312	19,285	21,247	23,210	11,010	9,390
429	Administrative Secretary	2,743	2,913	3,234	3,555	1,560	1,380
	Subtotal	48,485	51,792	58,406	65,022	34,520	28,145

Table II

Current Employment Related to Projected Employment by Years, Net Job Openings
For Period 1971-76, and Net Training Requirements for Period 1971-76,
Careers for Youth Survey, Georgia, Fall 1971
(Continued)

Career Cluster And Job Title	Current Employment Fall 1971	Projected Employment			Job Openings ^b Total For Period 1971-76 ^d	Net Training Requirements ^c Total For Period 1971-76 ^d
		1 Year	3 Years	5 Years ^a		
<u>OTHER CLERICAL</u>						
435 Checking Clerk	762	782	902	1,022	510	335
436 Cashier, Currency Exchange	3,948	4,397	5,301	6,205	4,745	3,730
439 Insurance Checker	97	97	114	130	95	95
440 Insurance Clerk I	282	334	357	379	140	115
441 Real Estate Clerk	328	367	435	503	245	130
Subtotal	5,417	5,978	7,109	8,241	5,735	4,405
<u>DATA PROCESSING</u>						
450 Sorting Machine Operator	342	398	472	546	315	285
451 Key-Punch Operator	4,695	4,927	5,548	6,169	4,045	3,205
452 Verifier Operator	669	721	875	1,029	560	470
453 Digital Computer Operator	1,856	1,968	2,256	2,543	1,400	1,210
454 Programmer, Detail	813	830	939	1,047	485	385
455 Programmer, Business	1,521	1,609	1,818	2,026	895	640
Subtotal	9,896	10,453	11,907	13,360	7,700	6,195
AGGREGATE TOTAL	430,233	456,205	503,228	554,757	253,530	187,760

^aBased on Projections of company reports of current, expected total employment for 1, 3, and 5 years.

^bEquals net growth in employment plus yearly replacement demand for workers converted to 5-year basis.

^cNet training requirements equals Total Job Openings minus number of workers completing training or promoted yearly adjusted to 5-year basis.

^dDivide by 5 to derive average Job Openings Yearly and average Net Training Requirements Yearly as per

APPENDIX B

JOB DEFINITIONS FOR JOB TITLES INCLUDED IN "CAREERS FOR YOUTH SURVEY"

	Explanatory Note Relative to Job Definitions	1
I.	Construction	2
II.	Transportation Occupations	3
III.	Drafting Occupations	4
IV.	Food Service Occupations	5
V.	Metal Working Occupations	6
VI.	Electro-Mechanical	8
VII.	Diet Service in Hospitals	11
VIII.	Marketing and Distribution Occupations	11
IX.	Agriculture-Power and Equipment	14
X.	Ornamental Horticulture	14
XI.	Conservation, Recreation & Wildlife Occupations	15
XII.	Forestry Occupations	16
XIII.	Personal Services	17
XIV.	Office Occupations	18
XV.	Data Processing	19

EXPLANATORY NOTE RELATIVE TO JOB DEFINITIONS

The pages which follow provide Job Titles and abbreviated summaries of job functions for 183 specific jobs. In order to explain the method of presentation, I introduce a job from the first page which follows:

101^a BRICKLAYER (const.) 861.381^b Lays building materials, such as brick, structural tile, and concrete cinder, glass, gypsum, and terra cotta block (except stone) to construct or repair walls, partitions, arches, sewers, and other structures.

^aThe marginal number 101 to the left of the Job Title, BRICKLAYER, designates the 3-digit coding system used in the computer analysis.

^bThe 6-digit number (861.381) and the abbreviated summary of job functions are taken directly from the U. S. Department of Labor, Dictionary of Occupational Titles, 1965, Volume I, Definitions of Titles, third edition. For explanation of first three digits, see Volume II, pp. v-vii and 3-24. The last three numbers after the decimal show the relationship of the worker in that specific job to data, people, and things. An explanation of the sequence of numbers from 0 to 8 and term applied to each number for these three categories which is of such great significance to job requirements can be located in Volume II, Appendix A, pp. 649-650.

SPECIAL NOTE: The few job titles with 6-digit numbers omitted have been developed independently of the Dictionary of Occupational Titles by conferring with experts in the Vocational Education Division, Georgia State Department of Education. These experts not only provided the job titles in popular use but also the summary statement of job functions.

CAREERS FOR YOUTH SURVEY

Job Definitions

I. CONSTRUCTION OCCUPATIONS

A. Brick Masons

- 100 BRICKLAYER HELPER (const.) 861.887. Assists Bricklayer or Stonemason to build structures.
- 101 BRICKLAYER (const.) 861.381. Lays building materials, such as brick, structural tile, and concrete cinder, glass, gypsum, and terra cotta block (except stone) to construct or repair walls, partitions, arches, sewers, and other structures.

B. Carpentry

- 104 LABORER, CARPENTRY (const.) 860.887. Assists Carpenter to build wooden structures performing any combination of duties.
- 105 CARPENTER, ROUGH (const.) 860.781. Builds rough wooden structures, such as concrete forms, scaffolds, tunnel and sewer supports, and temporary frame shelters, according to sketches or oral instructions.
- 106 CARPENTER-LABOR FOREMAN (const.) 860.137. Supervises and Coordinates activities of workers engaged in supplying materials to workers who construct, erect, install, and repair wooden structures and fixtures.
- 107 CARPENTER (const.) 860.381. Constructs, erects, installs, and repairs structures and fixtures of wood, plywood, and wallboard, using carpenter's handtools and power tools, and conforming to local building codes.

C. Cement Mason

- 110 CEMENT-MASON HELPER (const.) 844.887. Assists Cement Mason to smooth and finish exposed surfaces to concrete by performing finishing tasks, such as floating freshly laid concrete and edging concrete slabs.
- 111 CEMENT MASON (const.) 844.884. Smooths and finishes surfaces of poured concrete floors, walls, sidewalls, or curbs to specified textures, using handtools, including floats, trowels, and screens.

D. Residential Wiring

- 234 ELECTRICIAN HELPER (any ind.) 829.887. Assists Electrician to install and repair electrical wiring, fixtures, and equipment, performing any combination of tasks.

236 ELECTRICIAN (any ind.) 824.281. wireman. Plans layout and installs and repairs wiring, electrical fixtures, apparatus, and control equipment.

E. Plumbing

118 PLUMBER HELPER (const.) 862.884. Performs a variety of duties in assembling and installing pipeline systems and parts.

120 PIPEFITTER OR PLUMBER (const.) 862.381. Lays out, fabricates, assembles, installs, and maintains piping and piping systems, fixtures, and equipment for steam, hot water, heating, cooling, lubricating, and industrial processing systems, on basis of knowledge of system operation and study of building plans or working drawings.

II. TRANSPORTATION OCCUPATIONS

A. Automobile

145 AUTOMOBILE-MECHANIC HELPER (auto, ser.) 620.884. Assists Automobile Mechanic to repair automobiles, buses, trucks, and other automotive vehicles.

146 AUTOMOBILE-ACCESSORIES INSTALLER (auto. ser.). Installs automobile accessories, such as heaters, radios, antennas, safety seat belts, seat covers, or special clamps, and mirrors.

147 AUTOMOBILE-BODY REPAIRMAN (auto. ser.) 807.281. Repairs damaged bodies and body parts of automotive vehicles, such as automobiles and light trucks.

148 AUTOMOTIVE AIR-CONDITIONER INSTALLER (auto. ser.) 620.281. Air-Conditioning Mechanic. Installs and repairs automotive air-conditioning units.

149 TRANSMISSION MECHANIC (auto. ser.) 620.281. Repairs manual and automatic transmissions in automobiles, buses, trucks, and other automotive vehicles.

150 AUTOMOBILE-SERVICE MECHANIC (auto. ser.) 620.381. Performs minor repair and tuneup of motor vehicles: Replaces and adjusts fuel, electrical, and cooling system components, such as carburetor, fuel and water pumps, distributor, voltage regulator, coil, and generator, using handtools.

151 AUTOMOBILE MECHANIC (auto. ser.) 620.281. Repairs and overhauls automobiles, buses, trucks and other automobile vehicles.

152 MECHANIC, INDUSTRIAL TRUCK (any ind.) 620.281. Repairs and maintains electric, diesel, and gasoline industrial trucks, following manuals, and using handtools, power tools, and knowledge of electrical, power transmission, brake, and other automotive systems.

- 153 TRUCK MECHANIC (auto. ser.). Same as AUTOMOBILE MECHANIC.
- 315 PARTSMAN OR SALESMAN. Keeps records of parts on hand and replenishes stock. Sells to customers and dispenses to mechanics. Maintains Technical literature and mechanics' handbooks.

B. Diesel Engines

- 155 DIESEL-MECHANIC HELPER (any ind.) 625.884. Assists DIESEL MECHANIC in overhauling and maintaining diesel motors used to operate trucks, generators, and other equipment. Disassembles motor and cleans parts. Obtains parts from stock and hands tools to mechanic. Assists in reassembly, and cleans tools and working area.
- 156 DIESEL MECHANIC (any ind.) 625.281. Repairs and maintains diesel engines used to power machines, such as buses, ships, trucks, railroad trains, electric generators, and construction machinery, using handtools, precision-measuring instruments, and metalworking tools.

C. Small Motors

- 157 ELECTRIC-MOTOR REPAIRMAN (elec. equip.) 721.281. Repairs fractional-horsepower electric motors, using handtools, coil winding machine, and testing equipment.
- 158 GASOLINE-ENGINE REPAIRMAN (any ind.) 625.281. Repairs fractional-horse power gasoline engines used to power boats, lawn-mowers, brushsaws, garden tractors, and similar machines, using handtools.

III. DRAFTING OCCUPATIONS

- 160 DRAFTING CLERK (clerical) 249.281. Draws and letters charts, schedules, and graphs illustrating specified data, such as wage trends, absenteeism, labor turnover, and employment needs, using drafting instruments, such as ruling and lettering pens, T-squares, and straightedge.
- 161 DRAFTSMAN'S HELPER. Works at drawing board. Makes minor changes in existing drawings under direction of draftsman. Assists draftsman to locate various specifications and otherwise helps with materials, paper, etc. Also runs copying machine; and files and retrieves drawings. All other duties as assigned by the draftsman.
- 162 TRACER (any ind.) 017.281. Copies plans and drawings prepared by Draftsman I by tracing them with ink and pencil on transparent paper or cloth spread over drawings, using triangle, T-square, compass, pens, and other drafting instruments.

- 163 DRAFTSMAN, ARCHITECTURAL (profess. & kin.) 001.281. Plans artistic architectural and structural features of any class of buildings and like structures.
- 164 DRAFTSMAN, ELECTRICAL (profess. & kin.) 003.281. Prepares electrical equipment working drawings and wiring diagrams used by construction crews and repairman who erect, install, and repair electrical equipment and wiring in powerplants, industrial establishments, commercial or domestic buildings, or electrical distribution systems.
- 165 DRAFTSMAN, MECHANICAL (profess. & kin.) 007.281. Performs duties of Draftsman, specializing in drafting detailed working drawings of machinery and mechanical devices, indicating dimensions and tolerances, fasteners and joining requirements, and other engineering data.

IV. FOOD SERVICE OCCUPATIONS

A. Food Preparation

- 170 COOK, HELPER I. 317.887. Assists workers engaged in preparing foods for hotels, restaurants, or ready-to-serve packages.
- 172 BAKER, BREAD. 313.781. Prepares bread rolls, muffins, and biscuits according to recipe.
- 173 COOK (Hotel and Restaurant) 313.381. Prepares, seasons, and cooks soups, meats, vegetables, desserts, and other foodstuffs for consumption in hotels and restaurants.
- 174 CHEF (Hotel & Restaurant) 313.131. Supervises, coordinates, and participates in activities of cooks and other kitchen personnel engaged in preparing and cooking foods in hotel, restaurant, cafeteria, or other establishment.
- 175 EXECUTIVE CHEF (Hotel and Restaurant) 313.168. Chef de cuisin; chef, head; manager, food production. Supervises and coordinates activities of chefs, cooks, and other kitchen workers engaged in preparing and cooking foods in large hotels or restaurants to insure an efficient and profitable food service.

B. Food Service

- 176 BUSBOY OR BUSGIRL (Hotel & Restaurant) 311.878. Clean up helper, dish-carrier; waiter assistant.
- 177 WAITER OR WAITRESS (Hotel and Restaurant) 311.878. Serves food to patrons at counters and tables of coffeeshops, lunch rooms and other dining establishments where food service is informal.

- 178 HOSTESS, RESTAURANT OR COFFEE SHOP (hotel & rest.) 310.868. Welcomes patrons, seats them at tables or in lounge, and insures quality and rapidity of facilities and service. Schedules dining reservations. Directs Waiters, Informal, and Busboys to insure courteous and rapid service.
- 179 WAITER, HEAD (hotel & rest.) 311.138. Supervises and coordinates activities of dining room employees. Engages in providing rapid and courteous service to diners. Greets guests and escorts them to tables. Schedules dining reservations. Arranges parties for patrons. Adjusts complaints regarding food or service. Hires and trains dining room employees. Notifies payroll department regarding work schedules and time records.

C. Office

- 287 CASHIER (clerical) II 211.368. Receives cash from customers or employees in payment for goods or services and records amounts received.
- 181 HOTEL CLERK (hotel & rest.) 242.368. Accommodates hotel patrons by performing any combination of the following duties: Registers and assigns rooms to guests. Issues room key and escort instructions to BELLMAN. Date-stamps, sorts, and racks incoming mail and messages. Transmits and receives messages, using equipment, such as telegraph, telephone, teletype, and switchboard. Answers inquiries pertaining to hotel services and registration of guests. Keeps records of rooms occupied and guests' accounts. Presents statements to departing guests and collects payment. Makes and confirms reservations.
- 413 BOOKKEEPER (clerical) I 210.388. Keeps records of financial transactions of establishment and verifies and enters details of transactions as they occur or in chronological order in account and cash journals from items, such as sales slips, invoices, check stubs, inventory records, and requisitions.
- 416 TELEPHONE OPERATOR (clerical) 235.862. Operates cord or cordless switchboard to relay incoming, outgoing, and interoffice calls.
- 428 SECRETARY (clerical) 201.368. Schedules appointments, gives information to callers, takes dictation, and otherwise relieves officials of clerical work and minor administrative and business detail.

V. METAL WORKING OCCUPATIONS

A. Metal Fabricating

- 189 METAL FABRICATING-SHOP HELPER (any ind.) 804.886. Assists worker engaged in fabrication of structural sheet metal products.
- 190 SHEAR OPERATOR (any ind.) I. 615.782. Sets up and operates power shear to cut such metal objects as plates, sheets, billets or bars to specified dimensions.

- 191 SHEET-METAL WORKER (any ind.) 804.281. Fabricates, assembles, installs, and repairs sheet metal products and equipment, such as control boxes, drainpipes, ventilators, and furnace casings, according to job order or blueprints.
- 192 SHEET METAL LAY-OUT MAN (any ind.) 809.281. Lays out reference points for fabricating and assembling into sheet metal products.

B. Welding

- 193 WELDER, HELPER (welding) 819.887. Assists in all the tasks in welding, brazing, and flame and arc cutting activities.
- 194 WELDER, ARC (welding) 810.884. Welds metal parts together, as specified by layout, diagram, work order, or oral instructions, using electric arc welding equipment.
- 195 WELDER, GAS-SHIELDED HELIARC (Welding). 810.884. Welds metal, using equipment which introduces shield of inert or noncombustible gas, such as helium, argon, carbon dioxide, or nitrogen, around electric arc between electrode and workpiece to prevent oxidation.
- 196 WELDING-MACHINE OPERATOR, GAS (Oxyacetylene) (welding) 811.782. Sets up and operates gas-welding machine to weld metal parts, according to work order, blueprints, layout, and operating charts.
- 197 WELDER, SPOT (welding) I. 810.782. Sets up and operates spotwelding machine to weld (fuse) together two or more overlapping metal parts, according to blueprints, work order, or oral instructions.
- 198 WELDER-FITTER (welding) 819.381. Positions, fits and welds fabricated, cast, and forged components to assemble structural forms, such as machinery frames, tanks, pressure vessels, furnace shells, and building characteristics of metal.
- 199 WELDER, COMBINATION (welding) 812.884. Welds metal parts together, according to layouts, blueprints, or work orders, using both gas welding (WELDER, GAS) or brazing (BRAZER-ASSEMBLER) and any combination of arc welding processes (WELDER, ARC: WELDER, ATOMIC: WELDER, GAS-SHIELDED ARC; WELDER, HAND, SUBMERGED ARC).

C. Machine Shop

- 200 LABORER, GENERAL (mach. shop) 609.884. Performs combination of duties in machine shop. Shovels metal chips into separator for magnetic separation of ferrous metal from brass. Files burrs from metal parts, such as gears and valves, and washes parts in solvent to remove oil, dirt, and metal chips. Lap-fits assemblies, such as ball-and-socket joints and valves, by spreading lapping compound (emery grease) on parts and grinding mating surfaces of parts together.

- 201 MILLING-MACHINE OPERATOR, PRODUCTION (mach. shop) 605.885. Tends one or more previously set up milling machines to mill surfaces of metal workpieces to specifications on production basis.
- 202 DRILL-PRESS OPERATOR, PRODUCTION (mach. shop) 606.782. Operates previously set-up drilling machines, such as single-or multiple-spindle drill presses to drill, ream, countersink, spot-face, or tap holes in metal or nonmetal workpieces to specifications on production basis.
- 203 GRINDER SET-UP OPERATOR, SURFACE (mach. shop) 603.782. Set up and operates one or more surface grinding machines with horizontal or vertical spindle and reciprocating or rotating table to grind flat or contoured surfaces of metal workpieces to blueprint specifications, following tooling instructions and standard charts, and applying knowledge of grinding procedures.
- 204 CUT-OFF-SAW OPERATOR, METAL (mach. shop) 607.782. Sets up and operates metal-sawing machines, such as hacksaw, bandsaw, circular saw, friction saw, and rubber-disk saw, to cut metal stock to dimensions.
- 205 ENGINE-LATHE SET-UP OPERATOR (Mach. shop) 609.380. Sets up and operates engine lathes to perform machining operations, such as turning, boring, threading, and facing on metal or nonmetallic workpiece according to specifications, tooling instructions, standard charts, and knowledge of machining procedures.

VI. ELECTRO-MECHANICAL

A. Household Appliance Service

- 219 GAS-APPLIANCE SERVICEMAN (any ind.) 637.281. Installs and repairs gas meters, regulators, ranges, heaters, and refrigerators in customer's establishment, using manometer, voltmeter, handtools, and pipe-threading tools.
- 220 ELECTRICAL-APPLIANCE-SERVICEMAN HELPER (any ind.) 827.887. Assists ELECTRICAL-APPLIANCE SERVICEMAN in installing, servicing, and repairing electrical household appliances.
- 221 ELECTRICAL-APPLIANCE-SET-UP MAN (any ind.) 827.884. Assembles and tests electrical appliances, such as ranges, refrigerators, and washing machines, to prepare them for delivery and installation, using handtools and test lamp.
- 222 ELECTRICAL-APPLIANCE REPAIRMAN (any ind.) 723.381. Repairs electrical appliances, such as toasters, cookers, percolators, lamps, and irons, using handtools and electrical testing instruments.

233 ELECTRICAL-APPLIANCE SERVICEMAN (any ind.) 827.281. Installs, services, and repairs stoves, refrigerators, dishwashing machines, and other electrical household appliances, using handtools and test meters and following wiring diagrams and manufacturer's specifications.

B. Radio & TV Service

224 RADIO AND TV SERVICE, HELPER. Assists radio and TV Repairman; locates and replaces parts under direction of Repairman. Picks up and delivers sets; demonstrates sets for customer. Installs Automobile and TV antennae, and installs a variety of electronic components, including radios for automobiles, tape players, and high fidelity systems.

225 TELEVISION AND RADIO SERVICE-AND-REPAIRMAN (any ind.) 720.281. Repairs and adjusts radios and television receivers, using handtools and electronic testing instruments.

C. Office Machines

226 OFFICE-MACHINE SERVICEMAN (any ind.) 633.281. Repairs and services office machines, such as adding, accounting, and calculating machines, and typewriters, using handtools, power tools, micrometers, and welding equipment.

D. Air Conditioning and Refrigeration and Heat

227 FURNACE INSTALLER-AND-REPAIRMAN, HELPER, HOT AIR (any ind.) 869.887. Assists FURNACE INSTALLER-AND-REPAIRMAN, HOT AIR, in installing and repairing hot-air furnaces.

228 FURNACE INSTALLER-AND-REPAIRMAN, HOT AIR (any ind.) 869.281. Installs and repairs hot-air furnaces, stoves and similar equipment in accordance with diagrams and other specifications, using handtools and pipe-threading tools.

229 AIR-CONDITIONING-MECHANIC HELPER, DOMESTIC (any ind.) 637.887. Assists Air-Conditioning Mechanic, Domestic to repair, service, or install domestic window mounted air-conditioning units.

230 AIR-CONDITIONING-MECHANIC HELPER COMMERCIAL (any ind.) 637.884. Heating-and-air-conditioning-mechanic helper. Assists workers engaged in installing, repairing, and servicing industrial, commercial, and domestic air-conditioning and combination air-conditioning and heating systems.

231 AIR-CONDITIONING MECHANIC, DOMESTIC (any ind.) 637.281. Services and repairs domestic air-conditioning units, usually ranging from 1/2 to 2 tons capacity, in private residences and small business establishments.

- 232 AIR-CONDITIONING MECHANIC, COMMERCIAL (any ind.) 637.281. Installs, services, and repairs commercial air-conditioning units, usually rated in excess of 100 tons cooling capacity, and in department stores, office buildings, and other large commercial establishments, utilizing knowledge of refrigeration theory, pipe fitting, and structural layout.
- 233 REFRIGERATION MECHANIC (any ind.) 637.281. Installs and repairs industrial and commercial refrigerating and cooling systems according to blueprints and engineering specifications, using knowledge of refrigeration, structural layout, and function and design of components.
- E. Electrical Construction and Maintenance
- 234 ELECTRICIAN HELPER (any ind.) 829.887. Assist Electrician to install and repair electrical wiring, fixtures, and equipment, performing any combination of tasks.
- 235 ELECTRICAL REPAIRMAN (any ind.) 829.887. Assists Electrician to install and repair electrical wiring, fixtures, and equipment, such as motors, transformers, wiring, switches, and alarm systems.
- 236 ELECTRICIAN (any ind.) 824.281. Plans layout and installs and repairs wiring, electrical fixtures, apparatus, and control equipment.
- F. Maintenance Mechanics
- 240 MAINTENANCE-MAN HELPER, FACTORY OR MILL (any ind.) 899.884. Assists MAINTENANCE MAN, FACTORY OR MILL in repairing and maintaining machinery, plumbing, physical structure, and electrical wiring and fixtures of commercial and industrial establishments.
- 241 MAINTENANCE MAN, BUILDING 899.381. Repairs and maintains physical structures of commercial and industrial establishments, such as factories, office buildings, apartment houses, and logging and mining constructions, using handtools and power tools.
- 242 MAINTENANCE MAN, FACTORY OR MILL 899.281. Repairs and maintains machinery, plumbing, physical structure, and electric wiring fixtures of commercial and industrial establishments in accordance with blueprints, manuals, and building codes, using handtools and carpenter's, electrician's, and plumber's tools.
- 243 MAINTENANCE MECHANIC II 638.281. Repairs and maintains, in accordance with diagrams, sketches, operations manuals and manufactures specifications, machinery and mechanical equipment, such as cranes, pumps, engines, motors, pneumatic tools, conveyer systems, production machines, and automotive and construction equipment, using handtools, power tools and precision-measuring and testing instruments.

G. Other Mechanics

- 245 LOOM FIXER (asbestos Prod.; narrow fabrics: textile) 683.280. Sets up, adjusts, and repairs looms to weave cloth of specified quality and design, using knowledge of loom function and weaving, diagrams, and manuals: Inspects loom or woven cloth to determine adjustments or repairs needed.
- 246 VENDING-MACHINE REPAIRMAN (bus. ser.; coin mach.) 639.381. Installs and repairs vending machines, using handtools and power tools.

VII. DIET SERVICE IN HOSPITALS

- 264 DIET CLERK (medical ser.) 079.588. Compiles dietary information for use of kitchen personnel in preparation of foods for hospital patients.
- 265 DIETARY AIDE (medical ser.) 319.138. Trains and supervises employees engaged in serving food in hospitals and nursing homes, and in maintaining cleanliness of food service areas and equipment.
- 266 DIETETIC INTERN (prof. & kin.) 077.168. Performs duties in planning and directing food service programs for specified length of time to gain practical experience, immediately following graduation from a university, as an additional qualification for employment as a DIETITIAN.
- 267 DIETITIAN (prof. & kin.) 077.168. Plans and directs food service programs in hospitals, schools, restaurants, and other public and private institutions.

VIII. MARKETING AND DISTRIBUTION OCCUPATIONS

A. Purchasing

- 280 STOCK CLERK (clerical) 223.387. Receives, stores, and issues equipment, material, supplies, merchandise, foodstuffs, or tools, and compiles stock records in storeroom, warehouse, or storage yard.
- 281 STOCK SUPERVISOR (ret. tr.) 223.138. Supervises and coordinates activities of workers engaged in handling merchandise in stockroom or warehouse of retail store.
- 282 BUYER, ASSISTANT (ret. tr.) 162.158. Performs a variety of duties in connection with purchase and sale of merchandise to aid Buyer (ret. tr.; whole, tr.).
- 283 BUYER (ret. tr.; whole, tr.) II. 162.158. Purchases merchandise for resale: Selects and order merchandise from showings of manufacturing representatives, basing selection on nature of clientele, demand for specific merchandise, and experience as buyer. Authorizes payment of invoices or return of merchandise.

B. Selling

- 284 SALES CLERK (ret. tr.) 290.478. Receives payment for merchandise, such as bakery goods, magazines, groceries, books, and tobacco selected by customer.
- 285 SALES ATTENDANT (ret. tr.) 290.468. Aids customer in locating merchandise in self-service store.
- 286 SALESPERSON, GENERAL (ret. tr.; whole. tr.) 289.458. Sells variety of commodities in sales establishment, performing duties as described under SALESPERSON.
- 287 CASHIER (clerical) II. 211.468. Receives cash from customers or employees in payment for goods or services and records amounts received.
- 288 TELEPHONE SOLICITOR (any ind.). 293.358. Solicits orders for merchandise or services over the telephone.
- 289 SOLICITOR (any ind.). Solicits business for establishment by calling door-to-door, following lead from management, other workers, or from listing in city and telephone directories.
- 290 SALESMAN-DRIVER 292.358. Drives truck over established route to deliver, sell and display products or render services.

C. Sales Specialties

- 291 SALESPERSON, TELEVISION AND APPLIANCES (ret. tr.) 278.358. Sells radios, television sets, and other household appliances to customers, performing duties as described under SALESPERSON (ret. tr.; whole.).
- 292 SALESPERSON, FURNITURE (ret. tr.) 274.358. Sells furniture, beds, and mattresses in department stores and furniture stores, performing duties as described under SALESPERSON (ret. tr.; whole.).
- 293 SALESMAN, FOOD PRODUCTS (whole. tr.) 262.358. Sells food products, such as bakery products, confection, canned goods, coffee, tea, spices, poultry, meats and seafood, to retail food stores, wholesale grocers, restaurants, hotels or institutions.
- 294 SALESPERSON, WOMEN'S GARMENTS (ret. tr.; whole. tr.) 263.458. Salesperson, ladies' wear. Sells women's clothing, such as coats, suits, formal gowns, and dresses.
- 295 SALESPERSON, MEN'S AND BOYS' CLOTHING (ret. tr.; whole. tr.) 263.458. Sells men's and boys' outer garments, such as suits, trousers, and coats.

- 296 SALESMAN, OFFICE MACHINES (ret. tr.; whole. tr.) 281.358. Sells office machines, such as typewriters and adding, calculating, and duplicating machines.
- 297 SALESMAN, AUTOMOBILE (ret. tr.) 280.358. Sells new or used automobiles on premises of automobile agency, compiling information on various car models and credit terms to achieve sale.
- 298 SALESMAN, BUILDING AND CONSTRUCTION EQUIPMENT AND SUPPLIES (whole. tr.) 276.358. Sells building materials, equipment, and supplies, such as heating or air-conditioning equipment, building insulation, bricks or lumber, plumbing fixtures, and roofing, utilizing knowledge of building construction and ability to read blueprints.
- 299 SALESMAN, GAS-OR-ELECTRIC APPLIANCES (light, heat, & power) 278.358. Demonstrates and sells gas or electric appliances such as refrigerators, ranges, or lighting equipment, on display floor or by visiting customers at home.

D. Agricultural Sales

- 300 SALESPERSON, LAWN AND GARDEN EQUIPMENT AND SUPPLIES (ret. tr.; whole. tr.) 277.358. Sells lawn and garden plant supplies, and equipment, in nursery, greenhouse, or department store.
- 301 SALESMAN, POULTRY EQUIPMENT AND SUPPLIES (ret. tr.; whole. tr.) 277.358. Sells poultry equipment and supplies, such as brooders, coolers, feeders, graders and washers.
- 302 SALESMAN, CATTLE-AND-POULTRY FOOD SUPPLEMENTS (ret. tr.) 277.358. Sells poultry and livestock feed supplements to farmers.
- 303 SALESMAN, FARM AND GARDEN EQUIPMENT AND SUPPLIES (whole. tr.) 277.358. Sells farm and garden machinery, equipment, and supplies, such as tractors, feed, fertilizer, seed, insecticide, and farm and garden implements.
- 304 SALESMAN, DAIRY SUPPLIES (whole. tr.) 277.358. Sells dairy supplies, such as cheese wrappings, rennet, filters, cheese coloring, and test indicators.
- 305 SALESMAN, LIVESTOCK (whole. tr.) 261.258. Sells cattle, horses, hogs, and other livestock on commission to packing houses, farmers, or other purchasers.
- 306 SALESMAN, GRAIN-AND-FEED PRODUCTS (whole. tr.) 262.358. Sells grain and feed-mill products, such as flour, feed, meal, and cereals.
- 307 SALESMAN, VETERINARIAN SUPPLIES (whole. tr.) 282.358. Sells veterinarian supplies, such as medical supplies and equipment, and packaged food, performing duties as described under SALESMAN (ret. tr.; whole. tr.).

IX. AGRICULTURE-POWER AND EQUIPMENT

- 310 GREASER (agric.) 624.884. Lubricates and greases tractors and other powered farm machinery and attachments, fills gasoline tanks and radiators, changes and inflates tires, repairs tubes, couples attachments, such as cultivators and stalk cutter to tractors, and adjusts attachments to till soil at prescribed depth or to operate otherwise in an efficient manner.
- 311 FARM EQUIPMENT MECHANIC II (agric.) 624.381. Services, adjusts, and makes minor repairs on farm vehicles, machinery, and equipment, such as tractors, trucks, automobiles, harvesters, combines, silo fillers, plows, and similar equipment, using hand tools.
- 312 SALESMAN, TRACTOR AND FARM IMPLEMENTS (ret. tr.; whole. tr.) 277.358. Sells tractors and farm implements, such as mowers, plows, wagons, milking machines, and corn and cotton drills.
- 313 FARM-MACHINERY SET-UP MAN (whole. tr.) 624.381. Erects and assembles farm machinery for use in field.
- 314 FARM-EQUIPMENT MECHANIC (agric.) I. 624.281. Maintains, repairs, and overhauls farm machinery, equipment, and vehicles, such as tractors, harvesters, pumps, tilling equipment, trucks, and other mechanized, electrically powered, or motor-driven equipment, on farms or in farm-equipment repair shops.
- 315 PARTSMAN OR SALESMAN. Keeps records of parts on hand and replenishes stock. Sells to customers and dispenses to mechanics. Maintains technical literature and mechanics' handbooks.

X. ORNAMENTAL HORTICULTURE

A. Florists

- 330 DELIVERYMAN. Picks up orders of flowers, loads in delivery truck, and delivers to customer, obtaining a receipt for delivery. When not making actual delivery of flower orders helps around floral shop. Also packs flowers for delivery.
- 333 SALESPERSON, FLOWERS. 260.458. Sells natural and artificial flowers, potted plants, floral pieces, and accessories. Advises customer regarding type of flowers, floral arrangements, and decorations desirable for specific occasions, utilizing knowledge of social and religious customs.
- 334 FLOWER GROWER 406.181. Grows shrubs, rootstocks, cut flowers or flowering bulbs.
- 335 FLORAL DESIGNER 142.081. Designs and fashions floral pieces and decorations, by using natural and artificial flowers and foliage. Acts as salesperson in small floral shop.

B. Landscaping

- 336 LABORER, LANDSCAPE. 407.887. Digs holes and trenches with pick and shovel. Plants and waters sod and shrubbery. Mixes and pours cement for garden borders and mows lawns. Places stone and plants flowers in garden areas. Hauls topsoil in wheel barrow and spreads and levels topsoil, using rake.
- 337 LANDSCAPE GARDENER. 407.181. Plans and executes small scale landscaping operations and maintains grounds and landscape of private and business residences.

C. Nursery and Greenhouse

- 338 NURSERY WORKER 406.887. Plants, cultivates, and harvests trees, shrubs, and ornamental flowering plants in nursery.
- 339 SALESPERSON, LAWN AND GARDEN EQUIPMENT AND SUPPLIES (ret. tr.; whole. tr.) 277.358. Sells lawn and garden plants supplies, and equipment, in nursery, greenhouse, or department store.
- 340 NURSERYMAN. 406.168. Manages nursery to grow trees, shrubs, and ornamental flowering plants.

XI. CONSERVATION, RECREATION & WILDLIFE OCCUPATIONS

A. Conservation

- 350 MAP CLERK (agric). 249.588. Draws sketch of fields to be sprayed by AIRPLANE PILOT, making use of symbols to indicate locations of types of crops and landmarks, such as kilns, greenhouses, and trees.
- 351 AGRICULTURE AIDE (agric.) 421.384. Cultivates crops and attends to animals according to specific instructions of research workers to carry out experiments in agronomy, animal husbandry, or some other branch of agriculture.
- 352 FARM CHECKER (gov. ser.) 249.368. Interviews farmers and prepares reports to provide information used in crop control and soil bank program.
- 353 CONSERVATION AID. Assists and advises farmers in good practices of soil conservation, including crop rotation, erosion control, soil management and land building practices.

B. Recreation

1. Parks

- 355 PARK WORKER (gov. ser.) 407.887. Keeps grounds of city, state, or national park clean and repairs buildings and equipment.
- 356 PARK RANGER. Performs a variety of tasks in the operation and maintenance of a state park, including park maintenance work, meeting the public, collecting fees, patrolling park for detection of fires and enforcing regulations.

2. Recreation

- 357 RECREATION-FACILITY ATTENDANT (amuse. & rec.) 341.368. Schedules use of recreation facilities, such as golf courses, tennis courts, and softball and sandlot diamonds, in accordance with private club or public park rules.
- 358 RECREATION LEADER (profess. & kin.) 195.228. Conducts recreation activities with assigned groups in public department or voluntary agency.
- 359 RECREATION SUPERVISOR (profess. & kin.) 187.118. Supervises paid and volunteer recreation service personnel in public department, voluntary agency, or similar type facility, such as community centers or swimming pools.

C. Wildlife

- 365 REFUGE MANAGER. Manages all refuge areas, both State and Federal.
- 366 WILDLIFE RANGER. Patrols refuge and writes tickets for violations of fish, game and boating regulations.
- 367 WILDLIFE BIOLOGIC AIDE. Assists in game management and fishery management. In game management helps in game counts; bands birds and clips deer; plotting and sowing seed for birds.

XII. FORESTRY OCCUPATIONS

A. General Forestry

- 380 LOG SCALER (logging; paper & pulp; sawmill) 941.488. Estimates marketable lumber content of logs: Measures log, using scale stick, Scribner decimal scale, or other measuring devices. Estimates loss of board footage caused by sawing waste and defects, and rejects log containing excessive amount of unsound lumber. May grade and mark logs for use as veneer.
- 381 FORESTRY TECHNICIAN (Forester Aide) 441.384. Works alone or as member of crew to inventory, protect, and reforest timber; and observes, measures, and records forest data, such as tree species, volume of merchantable timber, forest topographical features, and tree seedling mortality.
- 382 FIRE WARDEN (forestry) 441.168. Supervises and coordinates activities of workers engaged in forest fire prevention and control.
- 383 TIMBER BUYER. Locate, inventory, and negotiate for tracts of lumber.
- 384 WOODYARD MANAGER. Manages the wood concentration yard when wood is bought from the producers.

385 FORESTER (profess. & kin.) 040.081. Manages and develops forest lands and their resources for economic and recreational purposes.

B. Harvesting Forest Products

386 CHOCKER SETTER. After logs are felled hooks cable around log to be skidded to concentration point; also clears underbrush.

387 TRUCK DRIVER. Helps load; makes delivery and positions truck for unloading and hooks cables. Also may have some responsibility in maintaining the truck. Makes decision on route for loaded truck.

388 SKIDDER OPERATOR. Operates skidder to skid wood from point of severance to another selected point where it is processed.

389 LOADER OPERATOR. Loads wood on truck to be hauled to the mill by hydraulic loader; also helps hydraulic loader.

390 HARVESTING EQUIPMENT MECHANIC. Repairs all trucks, skidders, hydraulic loaders, and establishes maintenance schedules for each piece of equipment; advises when to trade.

391 SALESMAN, HARVESTING EQUIPMENT. Sells pre-haulers, skidders, hydraulic loaders, chain saws and hydraulic shears.

392 WOOD PRODUCER. Buys tracts of timber, cuts trees, processes woods, and delivers to woodyard or pulp business.

XIII. PERSONAL SERVICES

A. Day Care Center

400 ASSISTANT TEACHER OR AIDE. Attends to personal needs of children while in school or receive specialized academic and physical training.

401 HEAD TEACHER. Organizes and leads activities of pre-kindergarten children in Day Care Centers operated for working mothers, and employers arranging for services in behalf of its workers.

B. Housekeeping Services

402 MAID (any ind.) 323.887. Cleans rooms and halls in such establishments as hotels, motels, restaurants, depots, beauty parlors, dormitories, etc. performing any combination of duties as assigned by HOUSEKEEPER.

403 HOUSEKEEPER (any ind.) (hotel & rest.; medical ser.) 321.138. Supervises work activities of cleaning personnel to insure clean orderly, attractive rooms in hotel, hospitals, and similar establishments.

- 404 VISITING HOMEMAKER. Assists the mother or wife in performing the duties of the home in order to keep the family life as normal as possible when the family is overburdened by illness or the stress of a family emergency.

XIV. OFFICE OCCUPATIONS

A. Bookkeeping

- 410 ACCOUNTING CLERK (clerical) 219.488. Performs variety of routine calculating, posting, and typing duties to accomplish accounting.
- 411 BILLING CLERK (clerical) II. 219.388. Prepares invoices and bills of lading.
- 412 BOOKKEEPING-MACHINE OPERATOR (clerical) I. 215.388. Records complete set of records of financial transactions of establishment in same manner as BOOKKEEPER I, using bookkeeping machine to sort documents to be posted, such as checks and debit and credit items.
- 413 BOOKKEEPER (clerical) I. 210.388. Keeps records of financial transactions of establishment and verifies and enters details of transactions as they occur or in chronological order in stubs, inventory records, and requisitions.
- 414 SUPERVISOR, MACHINE-RECORDS UNIT (clerical) 213.138. Supervises and coordinates activities of workers engaged in keeping records and tabulating reports, using punch-cards and office machines, such as tabulating, key-punch, and sorting machines.

B. Clerical

- 415 CLERK, GENERAL (clerical) 209.388. Performs any combination of filing and similar clerical tasks not requiring knowledge of systems or procedures.
- 416 TELEPHONE OPERATOR (clerical) 235.862. Operates cord or cordless switchboard to relay incoming, outgoing, and interoffice calls.
- 417 FILE CLERK (clerical) I. 206.388. Files correspondence, cards, invoices, receipts, and other records in alphabetical or numerical order, or according to subject matter, phonetic spelling, or other system and reads incoming material and sorts according to file system.
- 418 RECEPTIONIST (clerical) 237.368. Receives clients or customers coming into establishment, ascertains their wants, and directs them.
- 419 PERSONNEL CLERK (clerical) 205.368. Records data for each employee, such as address, weekly earnings, absences, amount of sales or production, supervisory reports on ability, and date of and reason for termination.

C. Secretarial

- 425 TYPIST (clerical) 203.588. Types letters, reports, stencils, forms, addresses, or other straight-copy material from rough draft or corrected copy.
- 426 CLERK-TYPIST (clerical) 209.388. Performs general clerical work requiring use of typewriter and compiles and types reports, bills, application forms, shipping tickets, and other matter from clerical records.
- 427 STENOGRAPHER (clerical) 202.388. Takes dictation in shorthand of correspondence, reports, and other matter, and transcribes dictated material, using typewriter.
- 428 SECRETARY (clerical) 201.368. Schedules appointments, gives information to callers, takes dictation, and otherwise relieves officials of clerical work and minor administrative and business detail.
- 429 ADMINISTRATIVE SECRETARY (any ind.) 169.168. Keeps official corporation records and executes administrative policies determined by or in conjunction with other officials.

D. Other Clerical

- 435 CHECKING CLERK (banking) 209.688. Verifies accuracy of bank records by performing a variety of duties, such as verifies accuracy of entries on customer-asset cards against incoming and outgoing security lists.
- 436 CASHIER, CURRENCY EXCHANGE (bus. ser.) 211.468. Cashes checks, prepares money orders, and receives payment on bills, such as gas, light, and telephone, and accepts payments and issues receipts for such items as license plates.
- 439 INSURANCE CHECKER (insurance) 219.488. Verifies accuracy of insurance company records by performing a variety of duties such as comparing computations on premiums paid, interest, and dividends due with same data on other records.
- 440 INSURANCE CLERK (banking) I. 219.388. Examines life insurance policies held as security for commercial or personal credit loans and keeps records of bank-owned insurance and fire insurance on commodity loans.
- 441 REAL-ESTATE CLERK (clerical) 291.388. Performs a variety of clerical duties concerned with rental, sale, and management of real estate.

XV. DATA PROCESSING

- 450 SORTING-MACHINE OPERATOR (clerical) 213.885. Card-sorting machine operator; sorter-machine operator.

- 451 KEY-PUNCH OPERATOR (clerical) 213.582. Operates alphabetic and numeric key-punch machine, similar in operation to electric typewriter, to transcribe data from source material onto punch cards and produce pre-punched data.
- 452 VERIFIER OPERATOR (clerical) 213.588. Verifies accuracy of data punched on tabulating cards, using key-board type machine that rejects incorrectly punched cards.
- 453 DIGITAL-COMPUTER OPERATOR (clerical) 213.382. Monitors and controls electronic digital computer to process business, scientific engineering or other data, according to operating instructions.
- 454 PROGRAMMER, DETAIL (clerical) 219.388. Selects symbols from coding system peculiar to make or model of digital computer and applies them to successive steps of completed program for conversion to machine processable instructions.
- 455 PROGRAMMER, BUSINESS (profess. & kin.) 020.188. Digital-computer programmer. Converts symbolic statement of business problems to detailed logical flow charts for coding into computer language and solution by means of automatic data-processing equipment.

APPENDIX C

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BROCHURE I

CONSTRUCTION AND DRAFTING

CAREERS

Skills and Work Attitudes Required for Entry Level Jobs
and Second Level Jobs

Alternate Lines of Advance

BRICKLAYER

1. BRICKLAYER HELPER
 - a. Skills Expected in First Six Months on the Job:

Expect worker to be able to spread mortar and lay brick to line; be able to lay block in foundations; and he should know how to set up scaffolding.
 - b. Work Attitudes Expected to Show in First Six Months

Be willing to handle mortar or block for Brick masons and show a willingness to work hard for maximum production.
2. BRICKLAYER
 - a. Skills Expected in First Six Months in Higher Level Job:

Ability to lay up corners, using levels and hand rulers; able to read blueprints and be proficient in all the basic skills expected of Bricklayers.
 - b. Work Attitudes Expected in First Six Months:

Exhibit willingness to lay as many brick or block as they are capable. (They should not let the number of brick or block they lay be the measure of a day's work but should do their very best at all times). Also proper respect for other crafts is very desirable.
3. ALTERNATE LINES OF ADVANCE:
 - a. Masonry Foreman
 - b. General Superintendent

Broad Attributes of Skills and Work Attitudes Required for Advances along these lines:

Ability to read blueprints, layout work, schedule work and materials for entire masonry operation; and display willingness to cooperate with other trades.

CARPENTER

1. LABORER, CARPENTER
 - a. Skills Expected in First Six Months on the Job:

Ability to support, supply and help Carpenter;
knowledge of the names of tools and their use;
and ability to read measuring tape and rule.
 - b. Work Attitudes Expected to Show in First Six Months:

Aggressive and eager; willing to improve and desire
to get the job done correctly.

2. CARPENTER, ROUGH
 - a. Skills Expected in First Six Months in Higher
Level Job:

Proficiency with tape, rule, square, and saw;
speed in framing walls, joists, rafters, etc.;
and ability to layout job and read blueprints.
 - b. Work Attitudes Expected in First Six Months:

Must have ability to cooperate and work with
others to get the job done efficiently and
correctly.

3. ALTERNATE LINES OF
ADVANCE
 - a. Carpenter
Foreman
 - b. Working
Superintendent

Broad Attributes of Skills and Work Attitudes Required
for Advances along these lines:

Ability to layout job from plans; schedule labor
and materials ahead of time to keep job moving
smoothly; and ability to motivate others to do
their work correctly and efficiently.

CEMENT MASON

1. CEMENT MASON, HELPER

a. Skills Expected in First Six Months on Job:

Ability to edge concrete between form and pavement and placed in rough grade for Cement Finisher. He must know the tools of the trade and have the energy to get these and other things needed to location ready for the cement finishing.

b. Work Attitudes Expected to Show in First Six Months:

Ambitious, eager to learn and with enthusiasm for this type of work. Initiative to go ahead and do job without waiting to be told. Accepts responsibility for getting tools to job and picking up and returning them to storage or transport directly to next job when work is complete on present job.

2. CEMENT MASON, FINISHER

a. Skills Expected in First Six Months in Higher Level Job:

Ability to take freshly placed concrete in rough grade and finish grading it. Float off excess concrete and finish to grade by employing applicable type: broom, burlap, and belted finish on a bridge. All his finish work must be finished to the specifications for the job.

b. Work Attitudes Expected in First Six Months:

Take pride in work; and ambitious and eager to try something new to improve finishing methods and improve quality of the finish work of the job.

3. ALTERNATE LINES OF ADVANCE

Broad Attributes of Skills and Work Attitudes Required for Advances along these lines:

a. Assistant Foreman

Ability to produce a finished product and take responsibility for volume and quality of work.

b. Foreman

Ability to organize work crew, assemble tools and materials required for jobs, and shows competence in planning ahead. Takes responsibility for keeping up with tools and equipment, etc. Has the ability to think for himself without being told and to work with others in getting job done.

DRAFTSMAN

1. DRAFTSMAN
TRAINEE

a. Skills Expected in First Six Months on the Job:

Must know basic drafting techniques: Trace floor plans for background work; draw repetitive details; know photo techniques to make detailed drawings; and have exposure to blue line printing.

b. Work Attitudes Expected to Show in First Six Months:

Possess healthy curiosity and attentive to what is happening in work area; must be willing to try to do lots of different things; have regular work habits and be dependable; and have flexibility and willingness to put in extra hours at times when work load builds up.

2. DRAFTSMAN

a. Skills Expected in First Six Months in Higher Level Job:

Be able to take rough sketches of equipment layout, ductwork, and piping; and produce detailed drawings.

b. Work Attitudes Expected in First Six Months:

Same work attitudes as Trainee but reflect more responsibility. Study instructions and raise questions in right sort of way in order to get details straight in order to keep errors and delays out of drawings.

3. ALTERNATE LINES OF
ADVANCE

Broad Attributes of Skills and Work Attitudes Required for Advance along these lines:

a. Draftsman
Designer

b. Designer

Have mental energy, accuracy, and tenacity to stick with drawing details until the project is finished; stay with it until all this work is wrapped up. Must also have the ability to calculate loads, and using charts develop capacity data to determine size of piping, etc. The Designer takes the project from the beginning and develops it showing the kind of mechanical system, etc. Persons in all these advanced positions must exhibit the ability to work with people outside the firm.

RESIDENTIAL WIRING

1. ELECTRICIAN, HELPER
 - a. Skills Expected in First Six Months on the Job:

Be able to install switches and receptables with understanding knowledge. Able to distinguish one type of wire from another, understanding approximately 50 percent of wiring plan.
 - b. Work Attitudes Expected to Show in First Six Months

Show interest in work; work well with others and respect his superiors.
2. ELECTRICIAN
 - a. Skills Expected in First Six Months in Higher Level Job:

Ability to plan a wiring plan and rough wire a house completely and then be able to do all the trim work completely.
 - b. Work Skills Expected in First Six Months:

Show an increase in interest and a sincere sense of responsibility; ability to work well with others.
3. ALTERNATE LINES OF ADVANCE
 - a. Electrical Foreman

Broad Attributes of Skills and Work Attitudes Required for Advance along these lines:

Show great sense of responsibility; have complete knowledge of wiring plans; and an understanding knowledge of wiring codes.

PLUMBER OR PIPEFITTER

1. PLUMBER, HELPER

a. Skills Expected in First Six Months on the Job:

Be able to completely rough plum a house with understanding knowledge; know the different types of pipe.

b. Work Attitudes Expected to Show in First Six Months:

Be on job on time; respect orders given to him by superiors.

2. PLUMBER OR
PIPEFITTER

a. Skills Expected in First Six Months in Higher Level Job:

Be able to rough and trim the plumbing of a house on his own.

b. Work Attitudes Expected in First Six Months:

Show sense of responsibility, keen interest in work, and begin to show leadership in putting the job together, working with others and motivating them.

3. ALTERNATE LINES OF
ADVANCE

Broad Attributes of Skills and Work Attitudes Required for Advance along these lines:

a. Plumber Foreman

Read blueprints; able to bid and quote prices; and show the personal qualities of responsibility and leadership.

BROCHURE II

TRANSPORTATION, METAL WORKING, AND

ELECTRO-MECHANICAL CAREERS

Skills and Work Attitudes Required for Entry Level Jobs
and Second Level Jobs

Alternate Lines of Advance

AUTOMOBILE MECHANIC

1. AUTOMOBILE MECHANIC, HELPER

a. Skills Expected in First Six Months on the Job:

Basic knowledge of hand tools and their use and basic knowledge of automobile components; muffler-tailpipe replacement; brake shoe replacement.

b. Work Attitudes Expected to Show in First Six Months:

Willingness to learn, cooperative spirit, enjoy work, company loyalty, and quality minded.

2. AUTOMOBILE MECHANIC

a. Skills Expected First Six Months in Higher Level Job:

Basic internal engine repair-teardown, diagnosis, replacement and repair of parts; parts identification.

b. Work Attitudes Expected in First Six Months:

Enjoys work, friendly, and looks forward to moving into more complicated repairs.

3. AUTOMOBILE MECHANIC SPECIALISTS

a. Skills Expected in First Six Months in Higher Level Job:

Transmission, body repairs, major tune-up, etc.

The specialist must have basic knowledge of repair procedures and diagnostic knowledge of his particular field of specialization.

4. ALTERNATIVE LINES OF ADVANCE INTO SUPERVISORY POSITIONS:

Broad Attributes of Skills and Work Attitudes Required for Advance along these lines:

a. Shop Foreman

b. Service Writer

c. Body-Shop Manager

d. Service Manager

Basic mechanical knowledge; ability to analyze and diagnose mechanical problems; able to have empathy with workers and motivate them; have good customer relations.

DIESEL MECHANICS

1. DIESEL MECHANIC, HELPER

a. Skills Expected in First Six Months on Job:

General automotive maintenance skills, such as electrical systems, tire changing, wipers, fan belts, oil lubrication, etc.

b. Work Attitudes Expected to Show in First Six Months:

Willingness to work in any type entry level job which develops, such as cleaning grease pits, tire changing, or other rather "dirty" jobs. May have to make road calls to do repairs of minor nature.

2. DIESEL MECHANIC

a. Skills Expected in First Six Months in Higher Level Job:

Competent knowledge of diesel engine repair and/or rebuilding, such as differentials, transmissions, vacuum and air brakes, diesel injection system, etc.

b. Work Attitudes Expected in First Six Months:

Willingness to work in "maintenance garage condition and make road calls to perform repair maintenance, sometimes during inclement weather; must measure up to time limits set repair work and have pride in work.

3. ALTERNATE LINES OF ADVANCE

Broad Attributes of Skills and Work Attitudes Required for Advances along these lines:

a. Shop Foreman

b. Field Shop Supervisor

Expert knowledge of maintenance procedures, budgets, supervisory skills, and planning skills. Stimulate workers and foremen to do quality work and performance efficiency. Maintain good customer relations.

METAL FABRICATING

1. METAL FABRICATING, SHOP HELPER

a. Skills Expected in First Six Months on Job:

Familiar with gauges of metals and also the various types of metals; knowledge of the manufacturing practices of cutting and forming capabilities of metals.

b. Work Attitudes Expected to show up in First Six Months:

Interest in work, regularity of attendance, ability to work safely, willing to put in extra time to advance to upper level jobs.

2. SHEAR OPERATOR

a. Skills Expected in First Six Months in Higher Level Job:

Know gauges and measurements sufficiently to operate Shear and assist others without close supervision of foreman. Know metals which shear easily versus those hard to shear. Be able to read accurately a scale, rule, and similar measuring devices.

b. Work Attitudes Expected in First Six Months:

Show interest in listening, observing, and then in performing the operations. Have a "Go-getter" attitude toward helping self-company.

3. ALTERNATE LINES OF ADVANCE

Broad Attributes of Skills and Work Attitudes for Advances along these lines:

a. Pattern Cutter

Ability to read blueprints; improvements in skill, ability, and productivity. Good attendance record; safe work record. Ability to work with fellow workers.

b. Layout Work

c. Metal Working Machine Operator

WELDER

1. WELDER, HELPER

a. Skills Expected in First Six Months on the Job:

Ability to observe and apply safety rules is first essential skill. Ability to distinguish between different types of welds, as well as welding practices involved.

b. Work Attitudes Expected in First Six Months:

Must be able to comprehend technical needs of job and work with fellow workers to complete job with all involved in mind, including the company's need for efficiency.

2. WELDER ARC

a. Skills Expected in First Six Months in Higher Level Job:

Familiarity with available welding machines and capability and differences in welding requirements of different metals. Know the best and proper welding techniques to apply, considering the characteristics of different metals. Should be able to read blueprints.

b. Work Attitudes Expected in First Six Months:

Ability to help others and self gain promotion. Show energy in learning and getting each job done, observing all safety precautions.

3. ALTERNATE LINES OF ADVANCE

Broad Attributes of Skills and Work Attitudes Required for Advances along these lines:

a. Job Foreman

b. Shop Foreman

c. Warehouse Manager

First priority in thinking, planning, and working of company's interest in efficiency, importance of worker's safety, and significance and effect of every move in the shop and on the job to the advancement of worker and his workers.

MACHINIST

1. DRILL PRESS OPERATOR

a. Skills Expected in First Six Months on the Job:

Working knowledge of any type of blueprint, decimal equivalents, and use of machinist scale. Some knowledge of feeds and speeds. Know all drill sizes, how to use a V-block and any jigs and fixtures that might be used with a drill press. Advantageous to know hardness of metals and drills.

b. Work Attitudes Expected in First Six Months:

Sincere desire to see that his work is well done and must be very patient; be observant and really want to work. Generally, would be in a 4-year Joint Apprenticeship Training Program.

2. MACHINIST

a. Skills Expected in First Six Months in Higher Level Job:

Highly competent knowledge of metallurgy, different types of welding and their techniques, and ability to use the required shop mathematics.

b. Work Attitudes Expected in First Six Months:

Sincere desire to work in expert fashion and satisfy contract. Highly interested in work and patient in performing the details of each job.

3. ALTERNATE LINES OF ADVANCE:

Broad Attributes of Skills and Work Attitudes Required to Advance along these lines:

a. Tool & Die Maker

The typical line of advance would require the ability to manage workers and get the job done on time and in a satisfactory manner. In all his work and attitudes must show dedication to the interests and objectives of the company.

b. Leadman

c. Foreman

AIR CONDITIONING MECHANIC, DOMESTIC

1. AIR CONDITIONING
MECHANIC, DOMESTIC,
HELPER

a. Skills Expected in First Six Months on the Job:

Ability to use properly all hand tools and metal working tools required for this type of work. In placing a home air-conditioner, must be able to use chain saw and circular saw for cutting openings in house. Know how to cut metal and be able to do job mechanic tells him to do.

b. Work Attitudes Expected in First Six Months:

Reliable, dependable, and ability to anticipate mechanic's moves and have tools there ready for him.

2. AIR CONDITIONING
MECHANIC, DOMESTIC

a. Skills Expected in First Six Months in Higher Level Job:

Outline job to him from plans and he must be able to do complete job, if no unusual problems. Must be able to cut metal and know proper use of tools. Know local building codes and observe them in completing a job.

b. Work Attitudes Expected in First Six Months:

Conscientious and reliable; be on time and ready to go according to schedule. Have serious interest in work and show pride in doing a good job. Customer is always right and so Mechanic and his Helper must try real hard to please him.

3. ALTERNATE LINES OF
ADVANCE

Broad Attributes of Skills and Work Attitudes Required to Advance along these lines:

a. Service
Mechanic

Know the Air Conditioning mechanical trades and also local building codes. Ability to deal with the customer and must be able to supervise and get along with Helpers and Mechanics on the job.

b. Assistant
Foreman on the
Job

c. Foreman of the
Job

AIR CONDITIONING MECHANIC, COMMERCIAL

1. AIR CONDITIONING
MECHANIC, COMMERCIAL,
HELPER

a. Skills Expected in First Six Months on the Job:

Be familiar with different types of duct joints and what is required to put them together. Know and be familiar with tools and equipment which will be needed and have them ready for mechanic.

b. Work Attitudes Expected in First Six Months in Higher Level Job:

Willingness to work and learn. Dependable and comes to work on time.

2. AIR CONDITIONING
MECHANIC,
COMMERCIAL

a. Skills Expected in First Six Months in Higher Level Job:

Be able to read and interpret plans and have experience to follow plans in mechanical details to complete the installation to specifications; and put air conditioning ducts and condenser coils in place. From plans ability to measure up and order materials required for job.

b. Work Attitudes Expected in First Six Months:

Ability to communicate and get along with Helpers and other Mechanics on the Job, and direct them in the technical details of the job. He must also be able to communicate with and get along with other Skilled Crafts doing other aspects of the job.

3. ALTERNATE LINES OF
ADVANCE

Broad Attributes of Skills and Work Attitudes Required for Advances along these lines:

a. Foreman

b. Superintendent
of Installation

Advances along these lines involve basically human relations. Must employ and direct workers, and job must be completed in such a fashion as to satisfy the customer.

AIR CONDITIONING SERVICE MECHANIC

1. AIR CONDITIONING SERVICE MECHANIC, HELPER

a. Skills Expected in First Six Months on the Job:

Assist Air Conditioning Service Mechanic to replace parts and other repair work. He mostly helps with manual labor until he learns about the hand tools of the trade, voltmeters, and how to do a job under the direction of the Service Mechanic.

b. Work Attitudes Expected in First Six Months:

Must have common sense and practical judgment; be willing to work and accept supervision and often must work long hours on a special or crisis job. He must have ability to learn and be willing to attend special schools one or so evenings per week. Know the importance of customer satisfaction.

2. AIR CONDITIONING SERVICE MECHANIC

a. Skills Expected in First Six Months in Higher Level Job:

Specific skills to do "Service Call Jobs" include: Recognize shorted-out circuit trouble, ability to read wiring diagrams and use meters properly, and be able to read charging charts. Must have ability with these skills to go out on a service call, diagnose job troubles, and repair in short order, gaining complete customer satisfaction.

b. Work Attitudes Expected in First Six Months:

Be able to think on feet and have practical judgment, and not afraid of work that gets dirty at times. Be able to work safely.

3. ALTERNATE LINES OF ADVANCE

Broad Attributes of Skills and Work Attitudes Required to Advance along these lines:

a. Foreman

Patience to take the time to learn to be a real good Service Mechanic, and have the ability and patience also to train Helpers and supervise others. Either of these positions requires that the man be an expert Air Conditioning Service Mechanic so that if a mechanic gets in trouble on a job, the Foreman or the Supervisor can drive to the job, help diagnose the difficulty, and instruct Service Mechanic how to repair the job on the spot with his assistance. Basically, both positions require that the man be oriented in wanting to help and be of service to people.

b. Supervisor of Service Mechanics

ELECTRICIAN, COMMERCIAL

1. ELECTRICIAN, HELPER

a. Skills Expected in First Six Months on the Job:

Know fundamentals of electricity: Sizes of circuits and meanings, colors of wire and be consistent; know sizes of conduits of wires. Understands meaning of single pole switch, 2-pole, 3-pole, and 4-pole switches; and understands basic circuitry of electrical circuits. Recognize and use correctly screwdrivers, wire cutters and wire skinners; hack saws to saw conduit. Know how to use tape and how type of tape varies with different connections.

b. Work Attitudes Expected in First Six Months:

Be punctual and concerned with electrician type work; does he really enjoy this type of work. Must have the ability to grasp, understand, and learn from doing the job with Electrician.

2. ELECTRICIAN

a. Skills Expected in First Six Months in Higher Level Job:

Fully understands how to apply the fundamentals of electricity and make practical applications on different jobs. Knows how to put up conduit and pull wires; install switches and receptables. Also how to install light switches, panel boards, and branch circuiting. Can do control wiring for motors.

b. Work Attitudes Expected in First Six Months:

Ability to work alone on job without supervision. Work is orderly and shows precision; and does not look sloppy. He shows promptness in arriving at job and reliability in his work. He is able to gain cooperation from, and give directions to Helpers and Apprentices.

3. ALTERNATIVE LINES OF ADVANCE

Broad Attributes of Skills and Work Attitudes Required to Advance along these lines:

a. Foreman

Knows how to read and use plans and calculate cost of all skilled workers on job; has reliability and ability to instruct so as to get job done on schedule and to specifications; has concern for fellow workers yet is stern. The Superintendent must have the ability to plan ahead and manage but stays calm under pressure. He must have full understanding of materials, tools and procedures for job; and must shop around for best prices on materials.

b. Superintendent

ELECTRIC APPLIANCE SERVICEMAN

1. ELECTRICAL APPLIANCE SERVICE MECHANIC, HELPER OR TRAINEE

a. Skills Expected in First Six Months on the Job:

Knowledge of tools commonly used and limited experience with them. Course in basic electricity would be highly desirable. Know dangers of different types of work and be conscious of need for safety precautions. Work with Service Mechanic and learn from him through different types of work performed; responds to Service Mechanic's need for tools and other help.

b. Work Attitudes Expected to Show in First Six Months

Interested in work and applies himself seriously to gain knowledge of repair techniques; physically capable of doing this type of work. Pleasant attitude, good personality, and interested in satisfying the customer.

2. ELECTRICAL SERVICE MECHANIC, INSIDE

a. Skills Expected First Six Months in Higher Level Job:

Ability to apply basic repair skills commonly required for inside repairs: Install compressors, wiring as needed, gas up, replace motors, change tubes in washer, pull transmission and repair or overhaul.

b. Work Attitudes Expected in First Six Months:

Conscientious worker in order to complete repair job quickly and efficiently in interest of company. Treat customer right in order to keep down complaint and get repeat business.

3. ALTERNATE LINES OF ADVANCE

Broad Attributes of Skills and Work Attitudes Required for Advance along these lines:

a. Electrical Appliance Service Mechanic, Outside

Master Service Mechanic on all Electrical Appliances Electrician, salesman, parts inventory adequate and up-to-date. Have ability to diagnose any mechanical difficulties on appliances. Assume responsibility for scheduling work assignments and planning program of On-the-Job training for newly hired Trainees, as well as lower level mechanics. Emphasis on good public relations with customer and include this in training of employees.

b. Service Manager

RADIO AND TV REPAIRMAN

1. RADIO & TV REPAIRMAN, HELPER

a. Skills Expected in First Six Months on the Job:

Ability to change picture tubes and other repair jobs in home. Assists Inside Repairman on major problems of TV tuning, color circuits. He changes picture tubes and repairs portables.

b. Work Attitudes Expected in First Six Months:

Conscientious, efficient, and honest in work. Intelligent and has the tenacity to learn skills for Radio & TV repair service. He must apply himself seriously in order to get the job done quickly and correctly. He has the ability to communicate with customers and satisfy them.

2. RADIO & TV REPAIRMAN, OUTSIDE

a. Skills Expected in First Six Months in Higher Level Job:

Must be able to diagnose trouble and decide if repairs are to be made in home or transported to shop for major repairs there. He must be able to adjust circuits and replace tubes; and make other minor repairs in home.

b. Work Attitudes Expected in First Six Months:

Reliable and conscientious work. Gives customer accurate diagnosis of problem and estimate cost of job on spot for repairs in order to enable customer to reach dependable decision. It is very important that the Repairman create a good impression of himself and his organization in the customer's home.

3. ALTERNATE LINES OF ADVANCE

Broad Attributes of Skills and Work Attitudes Required to Advance along these lines:

a. Radio & TV Repairman, Inside

The Radio & TV Repairman, Inside, is expert in diagnosing and making major repairs on radios & TVs. He is an expert in checking out: Horizontal output tube of TVs, alignment, video circuits, vertical circuits, and voltage compliance with regulations. In the supervisory position, concentrates on parts inventory in order to have adequate supply of updated parts at lowest cost. He must have the ability to motivate workers and sets a good example by being a self-starter.

b. Supervisor

MAINTENANCE MECHANIC, BUILDING

1. MAINTENANCE MECHANIC,
BUILDING, HELPER

a. Skills Expected in First Six Months on the Job:

Knowledge of hand tools and their proper use on all jobs in building maintenance; ability to take samples of water for analysis; and put chemicals in boilers for air conditioning and heating of the building.

b. Work Attitudes Expected in First Six Months:

Dependable, punctual, and interested in work; ability to work with other people.

2. MAINTENANCE
MECHANIC,
BUILDING

a. Skills Expected in First Six Months in Higher Level Job:

Know how to use instruments to determine air balance and how to calibrate thermostats. Ability to repair pumps, fans, electric motors, blow down boiler to remove sludge; and repair air conditioning units and control tower fans which cool water. He must also be able to do a variety of plumbing work: Install piping, clean drains, replace valves, spigots, and hot water heater controls.

b. Work Attitudes Expected in First Six Months:

Dependable, punctual, and interested in work; and must have the ability to get along with people, especially tenants in the building.

3. ALTERNATE LINES OF
ADVANCE

Broad Attributes of Skills and Work Attitudes Required to Advance along this line:

a. Building
Supervisor
of Maintenance
Mechanics

Plans ahead, schedules work assignments, and has the ability to manage other workers. He has to be a "Trouble-shooter" in technical matters when mechanics get stalled on a problem. Public relations problems involve pleasing management, and also keeping tenants happy who rent space in building.

REFRIGERATION MECHANIC

1. REFRIGERATION MECHANIC, TRAINEE

a. Skills Expected in First Six Months on the Job:

Knows tools of trade, what each is for, and ability to make limited use of each tool; acquainted with major components of refrigeration system. Assists refrigeration mechanic and anticipates his need for tools or equipment. Learns skills of trade by working with Refrigeration Mechanic, who explains, shows, and tries out trainee on various minor repair jobs initially; then lets him try them out on his own.

b. Work Attitudes Expected to Show in First Six Months:

Show intense interest in job and serious application to learn repair skills. Conscientious worker who desires to do a good job.

2. REFRIGERATION MECHANIC

a. Skills Expected in First Six Months in Higher Level Job:

Ability to adjust valves or replace Compressor of Ice Turbo Machine, replace tops on Ice Turbo Makers; maintains and repairs ice making and ice packing equipment, and ice storage bins.

b. Work Attitudes Expected in First Six Months:

Ability to do first class repair job. Earnest desire to learn and has ability to do work with other mechanics and takes time and shows patience in helping Trainee learn repair skills.

3. ALTERNATE LINES OF ADVANCE

Broad Attributes of Skills and Work Attitudes to Advance along this line:

a. Refrigeration Maintenance Engineer

Has demonstrated and proven top level mechanical ability; gives technical advice and help on all major repair problems when called on by Refrigeration Mechanics. He has capability of repairing, replacing, constructing, and overhauling all major pieces of equipment. And he knows the importance of continuous inspection of operating equipment to detect developing mechanical trouble at earliest possible moment in order to prevent major shut-down. He practices preventive maintenance in order to keep company operating at top capacity all times possible.

BROCHURE III

AGRICULTURE AND NATURE RELATED CAREERS

Skills and Work Attitudes Required for Entry Level Jobs
and Second Level Jobs

Alternate Lines of Advance

FARM EQUIPMENT MECHANIC

1. FARM EQUIPMENT MECHANIC, TRAINEE

a. Skills Expected in First Six Months on Job:

Know basic electricity. Be able to change plugs and parts in condenser; adjust valves in engine and do minor tune up. Adjust brakes on tractor and also clutch.

b. Work Attitudes Expected to Show in First Six Months:

Mechanically inclined and have ability to follow instructions and remember how to go it alone next time. Have interest in this type of work; willingness to apply himself to learn; be punctual and dependable.

2. FARM EQUIPMENT SET-UP MAN

a. Skills Expected in First Six Months in Higher Level Job:

Ability to read and understand a set-up manual in order to use right parts. Know how to use basic tools for set-up, including power wrench and socket wrench. Have basic knowledge of lubricants and oil levels, and have the ability to match parts and bolts.

b. Work Attitudes Expected in First Six Months:

Must be highly dependable, orderly and well organized, and thorough and complete in putting parts or attachments onto equipment.

3. ALTERNATE LINES OF ADVANCE

Broad Attributes of Skills and Work Attitudes Required for Advance along this line:

a. Tractor & Equipment Mechanic

Mechanically inclined, dependable, punctual, thorough and orderly, and have pride in doing a complete job. Sales person must have a special flair to sell self and equipment; know how to determine and fill customer's needs; be persuasive.

b. Delivery of Equipment in Field to Customer

c. Salesman, Farm Equipment & Tractors

d. Salesman of Parts

SOIL CONSERVATION AID

1. SOIL CONSERVATION
SERVICE AID 3

a. Skills Expected in First Six Months on Job:

Improvement in ability to cut right-of-way without so much instructions or supervision. Knows where and how to cut right-of-way himself.

b. Work Attitudes Expected to Show in First Six Months:

Dependable and at work on time. Shows aggressiveness in gaining familiarity with program to determine if he likes this type of work and whether he feels program is progressive and he wants to be a part of it.

2. SOIL CONSERVATION
SERVICE AID 4

a. Skills Expected in First Six Months in Higher Level Job:

If worker is alert and applies himself, he will gain promotion to Aid 4 in one year. He must know the techniques of being a rodman and this means good judgment in where to place rod on terrain. He also begins to judge distances in linear feet.

b. Work Attitudes Expected in First Six Months:

Show serious purpose in studying publications and manuals. Gets to work on time and is ready and willing to follow through without supervision. If does not understand, will quickly ask for explanation in order to avoid errors in performance.

3. ALTERNATE LINES OF
ADVANCE

Only to
Conservation
Technical Grades
5-7

Broad Attributes of Skills and Work Attitudes Required for Advance along these lines:

Must qualify under U. S. Civil Service rules and regulations.

LANDSCAPING

1. LANDSCAPE LABORER

a. Skills Expected in First Six Months on Job:

Know how to set out plants relative to proper size and depth of holes for different plants; must use right approach for different types of plants and containers. If in container or in burlap, must know differences and requirements for proper planting. Know how to lay sod, seed lawns, and differences in fertilizer requirements. Know equipment and how to use it for lawn maintenance.

b. Work Attitudes Expected to Show in First Six Months:

Take pride in work and not mind using heavy equipment (mattocks and shovels to dig). See what needs to be done and go ahead. Clean up all loose dirt and trimmings before leaving a job. And have enthusiasm about this type of work and not mind hard work.

2. LANDSCAPE GARDENER

a. Skills Expected in First Six Months in Higher Level Job:

Know all about proper planting techniques for different shrubbery and decorative trees. Ability to identify shrubbery and trees and proper methods in planting them. Identify disease or insect infestation from way leaves look and take proper steps to remedy the difficulty.

b. Work Attitudes Expected in First Six Months:

Must take pride in work and like this type of outdoor hard work. Enjoy working with lawns, shrubbery, and trees; gets enthusiastic from what is accomplished.

3. ALTERNATE LINES OF ADVANCE

Broad Attributes of Skills and Work Attitudes Required for Advance along these lines:

a. Crew Chief

b. Supervisor of lawn Maintenance

c. Landscape Foreman or Supervisor

Ability to read blueprints, know landscape terms, i.e., "What does six feet from Center" mean and similar landscaping terms. Learn from doing job how to get results and gain pride in work. Ability to organize work and get job done. Gets along well with Landscape Laborers and others involved. Has technical ability to follow plans to finest details and please customer.

FLORAL DESIGN

1. FLORAL DESIGNER, TRAINEE

a. Skills Expected in First Six Months on Job:

Know floral make-up work; how to prepare corsages and make vase arrangements.

b. Work Attitudes Expected to Show in First Six Months:

Congenial and compatible with other employees. Be on time, show promptness and faithfulness in work.

2. FLORAL DESIGNER

a. Skills Expected in First Six Months in Higher Level Job:

Be able to make church decorations, bridal bouquets, and all types of funeral arrangements.

b. Work Attitudes Expected in First Six Months:

Dedicated to the floral business and faithfulness and promptness in all work.

3. ALTERNATE LINES OF ADVANCE

Broad Attributes of Skills and Work Attitudes Required for Advance along these lines:

a. Salesperson, Flowers

Knowledge of bookkeeping, buying, congenial with rest of employees, able to reflect public relations in all work, and be dedicated to the floral business. Determine customer needs and see that they are satisfied.

b. Assistant Manager

NURSERY WORKER

1. NURSERY WORKER

a. Skills Expected in First Six Months on Job:

Know care of plants, watering and spraying needed. Recognize disease symptoms or insect infestation, take corrective action, and if necessary bring to attention of management. Know drainage influence on plants and location of plants for exposure requirements.

b. Work Attitudes Expected to Show in First Six Months:

Punctual and dependable as to work schedules; good natured with ability to deal with the public.

2. SALESMAN, NURSERY STOCK

a. Skills Expected in First Six Months in Higher Level Job:

Have good knowledge of plants and their requirements. Ability to give customer advice on how to set out plants and care for them. Know proper time to seed; and when to use fertilizer -- amount and kind. Must recognize disease or insect symptoms in order to avoid trouble with customers.

b. Work Attitudes Expected in First Six Months:

Ability to identify customer needs for materials or plants, and information that goes along with the purchase, all in the interest of creating customer satisfaction.

3. ALTERNATE LINES OF ADVANCE

Broad Attributes of Skills and Work Attitudes Required for Advance along these lines:

a. Assistant Manager

b. Manager

Expert in characteristics and requirements of plants, seeding and fertilizer. Demonstrate serious energy at work; and be exacting in following up orders to subordinate workers. Must have the ability to demonstrate good public relations and good customer relations.

WOODYARD SUPPLY FOR PULP MILLS

1. LABORER

a. Skills Expected in First Six Months on Job:

Prepare wood for shipment and assist Loader Operator. Level wood on trucks and cars. Must know how to handle himself on truck or car without falling. Knowledge of using tools in safety and in most efficient manner. Attends safety meetings to reinforce in mind and give emphasis to its importance.

b. Work Attitudes Expected to Show in First Six Months:

Constant attendance at work, responsible, and shows consistency and real effort at work. Applies himself earnestly to learn duties of next job as well as learning all possible about whole operation.

2. LOADER OPERATOR

a. Skills Expected in First Six Months in Higher Level Job:

Ability to operate loader efficiently and without danger to himself. Must fill out simple reports on receipts and shipments, as well as maintenance reports on loader and equipment. Read car numbers and know number of truck loads needed. Know mechanical requirements of loader and perform maintenance. Know and practice safety rules.

b. Work Attitudes Expected in First Six Months:

Interest in loading car safely and correctly. Possess attitude towards loader as if he owned it. Observes work of foreman and assists where possible because may need to substitute for him in his absence. Know first aid. And must be a dependable, reliable, and willing worker.

3. ALTERNATE LINES OF ADVANCE

Broad Attributes of Skills and Work Attitudes Required for Advance along these lines:

a. Foreman

b. Woodyard Manager

Must be high school graduate or equivalent and be able to do simple clerical calculations, accurately and analytically. Ability to manage people and get along with them. Good public relations man because deals with wood suppliers, wood harvesters, and also woodland owners. Company buys on basis of his calculations of wood volume and he must be able to measure and calculate this accurately; must be a man of integrity.

FORESTRY

1. FORESTRY TECHNICIAN

a. Skills Expected in First Six Months on Job:

Timber cruise, map work, drafting, simple land survey, and routine supervision of small crew. Must have acquired experience in the techniques of measuring standing timber and detecting diseases; and on a part-time basis gain experience as a compassman; also some related experience in surveying. If Aide is high school graduate, will train over 2 years and then can get more responsible jobs.

b. Work Attitudes Expected to Show in First Six Months:

Enthusiasm for challenge; humility tempered with aggressiveness; and respect for supervisors and subordinates.

2. FORESTER

a. Skills Expected in First Six Months in Higher Level Job:

College graduate in Forestry. In first six months on job he must show following skills or technical competencies: land and timber evaluation, timber stand classifications, forestry economics; and work plan and practice supervision.

b. Work Attitudes Expected in First Six Months:

Enthusiasm for challenge, competitive desire for advancement; and respect for subordinates and superiors. Show eagerness to accept new assignments and demonstrate overt signs of self-improvements.

3. ALTERNATE LINES OF ADVANCE:

Broad Attributes of Skills and Work Attitudes Required for Advance along these lines:

- a. Area Forester
- b. Unit Process Forester
- c. Staff Forester
- d. Land & Timber or Processing Manager

Concept of business in total. Concept of the industry; high degree of proficiency in assigned work; maturity in judgments; high degree of respect from and for associates.

RECREATION LEADER

1. RECREATION
LEADER

a. Skills Expected in First Six Months on Job:

Knowledge of Department policies as apply to Recreation Centers; know rules and regulations governing the more common athletic games; ability to lead and instruct groups in various kinds of recreation and social activities; some knowledge of first aid practices and techniques.

b. Work Attitudes Expected to Show in First Six Months:

Understand and follow oral and written instructions and ability to develop enthusiasm in youth and adults for recreation activities.

2. RECREATION
CENTER DIRECTOR

a. Skills Expected in First Six Months in Higher Level Job:

Ability to adhere to program standards and objectives outlined by superiors; knowledge of the rules and regulations governing various competitive athletic events; know manual arts and crafts, dramatics, music and rhythmic; considerable knowledge of first aid methods and safety precautions to be observed in recreation work.

b. Work Attitudes Expected in First Six Months:

Ability to train and supervise subordinates in recreation work; maintain and solve disciplinary problems effectively. Ability to work with groups of all age levels in recreational activities and athletic contests. Maintain good working relations with adults and youth.

3. ALTERNATE LINES OF
ADVANCE

Broad Attributes of Skills and Work Attitudes Required for Advance along these lines:

a. Recreation
Supervisor

Philosophy and objectives of public recreation and the psychology of special age groups. Develop and administer a broad range of recreation programs for all Recreation Centers in System. Ability to work with Center Directors and communicate desires of public for recreation programs. Must be public relations oriented.

WILDLIFE BIOLOGIC AIDE

1. WILDLIFE BIOLOGIC
AIDE I

a. Skills Expected in First Six Months on Job:

Knowledge of the habitat and characteristics of wildlife and of general biology and chemistry. Skill in using the technical equipment involved in wildlife management.

b. Work Attitudes Expected to Show in First Six Months:

Ability to follow oral and written instructions; prepare simple reports; work long hours outdoors, and communicate effectively. Can qualify under State Merit System by graduation from high school with courses in Biology and Chemistry, or courses dealing with animal care.

2. WILDLIFE BIOLOGIC
AIDE II

a. Skills Expected in First Six Months in Higher Level Job:

Knowledge of the life histories and cycles of game and/or fish. Have skills in wildlife and/or fish identification. Skilled in the use of various instruments connected with wildlife and/or fish research and handling.

b. Work Attitudes Expected in First Six Months:

Ability to work with others, communicate effectively, and exercise competent judgment; can qualify after one year of full-time paid employment of a sub-professional nature in work related to game and/or fish management.

3. ALTERNATE LINES
OF ADVANCE

Broad Attributes of Skills and Work Attitudes Required for Advance along these lines:

a. Wildlife
Biologic
Aide III

In order to qualify for Wildlife Biologic Aide III, considerable knowledge of fish and/or game management practices and techniques. Must have more advanced skills in areas required by Aide II.

b. Refuge
Manager I

Requires a total of four years experience in lower level Wildlife Biologic Aide II. In order to become Refuge Manager I, one can move directly from Wildlife Biologic Aide II at same pay level if one can pass physical requirements: physical exam; five feet, eight inches tall; weigh 130 pounds or more; and be between 21-41 years of age. Attitudes: Devoted to work, interested in environment and conservation; likes animals; and is a sportsman.

BROCHURE IV

CAREERS FOR YOUTH IN SERVICE TO PEOPLE

Skills and Work Attitudes Required for Entry Level Jobs
and Second Level Jobs

Alternate Lines of Advance

FOOD PREPARATION IN HOTELS & MOTELS

1. COOK'S HELPER
 - a. Skills Expected in First Six Months on Job:

Must know how to take orders and cook vegetables, having responsibility to have vegetables ready at required time. Assists with trimming of meats. Front line and rear line experience in order, if need arises, to substitute in food preparation.
 - b. Work Attitudes Expected to Show in First Six Months:

Have a basic desire and interest to be associated with cooking and likes to deal with food. Ready and able to do anything required in kitchen work; attitude: "Show me how; I'm listening!" He thinks highly of potentials of this line of work.
2. COOK
 - a. Skills Expected in First Six Months in Higher Level Job:

Initially, the cook is trained first as a breakfast cook in the first stages of his career: in the frying of fats, french toast, all types of eggs & bacon, applying simple knowledge of heat. The expert shows speed in preparation of breakfast foods. In more advanced stage, prepares different kinds of sauces, cooks simple dishes, adding mushroom sauces, red wine, etc., as required. Later with experience is able to deviate and prepare food of various natures without assistance.
 - b. Work Attitudes Expected in First Six Months:

Take command of kitchen in directing food preparation work and kitchen functions. Takes pride in industry and understands how food affects people in a most intimate sort of way.
3. ALTERNATE LINES OF ADVANCE

Broad Attributes of Skills and Work Attitudes Required for Advance along these lines:

 - a. Sous Chef

Knows how to make various kinds of salads; decoration of foods; artistic in layout of plate and decoration of dining layout. Preparation of bakery items and how to handle; understands cutting of meats correctly.
 - b. Chef

Conscious of timing so different items not be spoiled when served. The attitude required is being able to issue orders to subordinates and follow-up. Be an example in work, enthusiasm, responsibility, and cooperativeness to all.
 - c. Executive Chef

CUSTOMER FOOD SERVICE IN HOTELS & MOTELS

1. BUSBOY OR BUSGIRL
 - a. Skills Expected in First Six Months on Job:

Ability to handle china and glassware and act on what needs to be done; keep tables cleared and act promptly to set up table for customers.
 - b. Work Attitudes Expected to Show in First Six Months:

Have open mind; take direction from hostess and be punctual. Show enthusiasm and be cooperative.

2. WAITER OR WAITRESS
 - a. Skills Expected in First Six Months in Higher Level Job:

Knowledge of menus and proper service methods; be well organized in taking orders from guests or customers and service of orders to tables. Show finesse in serving wine. Pleasant and responsive to customers.
 - b. Work Attitudes Expected in First Six Months:

Neat in appearance, courteous and pleasant personality; Ability to adapt to system of service required in different hotels or motels; and willingness to adjust to nature and type of dining room and customer service required.

3. ALTERNATE LINES OF ADVANCE
 - a. Maitre'd
 - b. Hostess
 - c. Cashier
 - d. Assistant Food & Beverage Director

Broad Attributes of Skills and Work Attitudes Required for Advance along these lines:

Knowledge of accounting, cost controls, food and beverages, business leadership, good employee relations, and purchasing skills. Neat in appearance and well groomed, courteous; and a pleasing out-going personality.

FOOD PREPARATION IN RESTAURANTS

1. COOK'S HELPER

a. Skills Expected in First Six Months on Job:

Close attention to Cook in all that he does in order to learn food preparation and cooking of each item in a variety of menus. In six months must be able to cook vegetables and meats and change with menus.

b. Work Attitudes Expected to Show in First Six Months:

Serious and dependable. Accept corrections from Cook or Chef in right spirit. If attentive and right attitude, correction on a technique will be sufficient and will not have to be repeated. Must keep self and apron clean, wearing hat at all times. He shifts stools and cleans place. Must not play around with other workers.

2. COOK

a. Skills Expected in First Six Months in Higher Level Job:

Must be able to prepare in final state a variety of vegetables, meats, and sauces that are required, i.e., roast prime beef and round, pot roast, duck; and sauce for all these items. Cook vegetables and bake fish and fry. Stuff various dishes of seafood and also the sauces.

b. Work Attitudes Expected in First Six Months:

Understands persons who accepts work, instructs, and shows patience with Cook's Helper. He is energetic in learning. Gets cook book on vitamins which shows ways to prepare various foods and reads and studies in order to apply these techniques.

3. ALTERNATE LINES OF ADVANCE

Broad Attributes of Skills and Work Attitudes Required for Advance along these lines:

a. Chef

b. Executive Chef

Keeps people working together and finds other alternatives for learning; willingness to work and do everything. Must accept fact of need for energetic work and learning; and apply these procedures with energy even though sometimes it is dull.

CUSTOMER FOOD SERVICE IN RESTAURANTS

1. BUSBOY OR BUSGIRL
 - a. Skills Expected in First Six Months on Job:

Know how to set up side stands with glasses, etc., carry trays and glasses properly, showing confidence. Learn where everything goes: plates, glasses, etc. Keep side stands set up during service. After customer has left, clean table and reset. Keep floors picked up.
 - b. Work Attitudes Expected to Show in First Six Months:

Show confidence in self and ability to carry trays without breaking dishes. Seriousness of purpose and not play around. Neat and attractive in appearance and friendly attitude toward customers.
2. WAITER OR WAITRESS
 - a. Skills Expected in First Six Months in Higher Level Job:

Give serious attention to assigned station and take care of it. Take orders and serve food as customer or customers ordered it without asking for a repeat of order. This means learning a seating and a food sign language. Give close attention, ask if there is a "dessert or a drink now". Pick up plates and glasses promptly after use.
 - b. Work Attitudes Expected in First Six Months:

It is of greatest importance how the Waiter or Waitress approaches the customer, "Say good evening and what can I do for you". Must always put customer first, knowing that he or she is paying your salary in large part through tips. It is a matter of general attitude with the public and the ability to communicate in real fashion with customers. She likes them and they return this general good feeling for the waitress.
3. ALTERNATE LINES OF ADVANCE

Broad Attributes of Skills and Work Attitudes Required for Advance along these lines:

 - a. Hostess

Show great interest in what they are doing, asking lots of questions about the restaurant business.
 - b. Head Waiter

Must have real abilities to handle people and get along with fellow employees; show great attributes of common sense and be practical. Person really wants to make a career in the restaurant business and applies himself or herself to learn something new at every opportunity.
 - c. Management Trainee

FOOD PREPARATION SERVICE IN HOSPITALS

1. COOK'S HELPER

a. Skills Expected in First Six Months on the Job:

Minor food preparation, such as breaking eggs, laying bacon and watch frying. Cook cereals and clean up behind cook. He will gradually work into more cooking skills, such as making of sauces required in casseroles of which so much is used in gravies. Also open cans of frozen vegetables and put in pans.

b. Work Attitudes Expected to Show in First Six Months:

Regular attendance at work and personal cleanliness. Have interest and aptitude for food preparation. Get ideas on own and go ahead without being told. Pick up things where needed in order to keep things clean and orderly.

2. COOK

a. Skills Expected in First Six Months in Higher Level Job:

Collect patient menus and count food items in order to get out quantities needed. Assign work to helpers. Do remainder of required cooking, baking, etc., and coordinate all activities in order to get prepared so can serve patients at right time and in proper temperature. Major skills are frying, baking, roasting, saute, broiling. Must have ability to use all types of equipment in kitchen, such as steamer, broiler, charbroiler, and operate ranges, deep fat fryers, etc.

b. Work Attitudes Expected in First Six Months:

Treat job as if own and he is directly responsible for everything. Keep close tab on inventory in order to keep from spoiling; ability to work with other cooks and helpers and stimulate to efficient service, clean, excellent preparation, and arrangement and decoration of food for trays.

3. ALTERNATE LINES OF ADVANCE

Broad Attributes of Skills and Work Attitudes Required for Advance along these lines:

a. Head Cook or Chef

Work with Director planning menus to some extent to see that cooks are familiar with methods of preparation of all menus. Keep track of inventory of food stuffs to be sure all needed items are available, and offering suggestions as to use of supplies. Command respect and is a leader so others will follow, which comes from manner in which job is done. Honesty and conduct is above reproach. Have a togetherness with all cooks and personnel so all work is for good of patients.

b. Supervisor (Shift)

DIETARY SERVICE IN HOSPITALS

1. DIETARY AIDE

a. Skills Expected in First Six Months on the Job:

Set up and serve patient trays and helps dismantle and store them after meal; some minor food preparation as pouring juices. Take diet from diet clerk or dietitian and sets up on special type of tray specified such as low sodium, diabetic low fat. Prepares minor measurements, such as milk shakes for in-between meals. Picks up menus from patient rooms.

b. Work Attitudes Expected to Show in First Six Months:

Willingness to do assigned job to best of ability and does all work in an acceptable and attractive manner. Care and cleanliness of all equipment and good working relationships with other employees; ability to move from one job to another without being told.

2. DIET CLERK

a. Skills Expected in First Six Months in Higher Level Job:

Be sure other clerks get direct diet information; works with Therapeutic Dietitian for any changes she brings from the floor. Be sure these items are transmitted to cooks and Food Supervisor in order to be prepared when specified for patients.

b. Work Attitudes Expected in First Six Months:

Good memory and telephone manner and detailed in her work; be sure information received and transmitted over telephone is accurate and understood by others on line.

3. ALTERNATE LINES OF ADVANCE

Broad Attributes of Skills and Work Attitudes Required for Advance along these lines:

a. Registered Dietitian

In order to move to this position, worker would have to earn a college degree with specialization in food and nutrition. Then must set up program under ADA rules and work under a Registered Dietitian for 3 years to become a Registered Dietitian. Another alternative exists in some hospitals for Dietetic Intern. In this program with same college training could become a Registered Dietitian in one year.

CHILD CARE

1. TEACHER'S AIDE

a. Skills Expected in First Six Months on Job:

Assist teacher to clean up, set lunch, and get snacks; pay attention and take as many pointers on teaching and managing children from teacher as possible. Also help teachers with Sensory Development, language development or readiness, and development of motor skills, and hand coordination.

b. Work Attitudes Expected to Show in First Six Months:

Show love for children and be conscientious.

2. TEACHER

a. Skills Expected in First Six Months in Higher Level Job:

Work with and/or instruct children in reading readiness, art, music, and be aware of each child socially.

b. Work Attitudes Expected in First Six Months:

As with Aide, show love for children and be conscientious. Must be well read in areas of child development and keep up with the "times" in learning things, methods, and approaches.

3. ALTERNATE LINES OF ADVANCE

Broad Attributes of Skills and Work Attitudes Required for Advance along these lines:

a. Head Teacher

b. Director of Center

Ability to be pleasant with parents and communicate with them relative to child. Must know what age level groups are capable of. In parent conferences, be able to evaluate child and determine what he or she is capable of. Communicate with children and above all show love for children.

BROCHURE V

CAREERS FOR YOUTH IN OFFICE, SELLING,
STOCK CONTROL AND DATA PROCESSING

Skills and Work Attitudes Required for Entry Level Jobs
and Second Level Jobs

Alternate Lines of Advance

BOOKKEEPING

1. BILLING CLERK
 - a. Skills Expected in First Six Months on the Job:

Good typing ability; practical mathematics; knowledge of office systems for billing department; ability to handle all mechanical aspects of job.
 - b. Work Attitudes Expected to Show in First Six Months:

Eager to learn, punctual, desire to do a good job; patience.

2. ACCOUNTING CLERK
 - a. Skills Expected in First Six Months in Higher Level Job:

Know basic accounting techniques; some knowledge of bookkeeping; accuracy in finished work.
 - b. Work Attitudes Expected in First Six Months:

Loyalty to company; eager to learn; ability to work with other people; complete work on time.

3. ALTERNATE LINES OF ADVANCE
 - a. Accounting
 - b. Payroll
 - c. Supervisor

Broad Attributes of Skills and Work Attitudes Required for Advance along these lines:

Ability to concentrate and organize work; must be able to see the overall picture, not just concentrate on their own job; train others.

GENERAL CLERICAL

1. CLERK, GENERAL

a. Skills Expected in First Six Months on Job:

Ability to type, use an adding machine, and basic understanding of math; good spelling.

b. Work Attitudes Expected to Show in First Six Months:

Cooperativeness; eagerness to learn; understand the difference between the business and the academic world; good attendance and promptness; accuracy and speed in performing duties.

2. ALTERNATE LINES OF
ADVANCE

Broad Attributes of Skills and Work Attitudes Required
for Advance along these lines:

a. Teller in
Banking

Teller in banking: Continue education through trade school, college and the American Institute of Banking. Must have an inquiring mind, loyalty and accuracy; have attractive appearance and be neat.

b. Clerk-Typist
in General
Business

Clerk-typist in general business: Typing with high degree of accuracy.

SECRETARIAL

1. CLERK-TYPIST
 - a. Skills Expected in First Six Months on the Job:

45 wpm minimum typing speed with high degree of accuracy. Aptitude for math, spelling, and filing.
 - b. Work Attitudes Expected to Show in First Six Months:

Ability to grasp and follow instructions; general cooperative spirit, initiative, accuracy, good attendance, and promptness.

2. STENOGRAPHER
 - a. Skills Expected in First Six Months in Higher Level Job:

60 wpm minimum typing speed with high degree of accuracy; good aptitude for math, filing and spelling; ability to transcribe from dictating equipment or take shorthand at rate of 75 wpm.
 - b. Work Attitudes Expected in First Six Months:

Ability to grasp and follow instructions; general cooperative spirit, initiative, good attendance, and promptness, accuracy, and speed in performing duties.

3. ALTERNATE LINES OF ADVANCE
 - Broad Attributes of Skills and Work Attitudes for Advance along these lines:
 - a. Secretary
 - b. Customer Service Representative

In addition to attributes listed for Stenographer, the worker should have basic secretarial skills, ability to meet the public, solve problems, and make decisions.

SELLING GENERAL PRODUCTS OR SERVICES

1. SALES TRAINEE
 - a. Skills Expected in First Six Months on Job:

Answer telephone or solicit orders by telephone; take orders from telephone calls; fill orders and follow up to assure customer satisfaction; learn product lines or nature of services and how they benefit customers. Learn the importance of customer relations.
 - b. Work Attitudes Expected to Show in First Six Month

Ability to communicate with customers, ascertain or identify needs, make sales and gain customer satisfaction.
2. SALESPERSON,
GENERAL
 - a. Skills Expected in First Six Months in Higher Level Job:

Ability to locate customers and sell technical products; arrange for financing often; provide technical information on product or service.
 - b. Work Attitudes Expected in First Six Months:

Aggressive in locating potential customers through travel or other methods of communication. Energy, self-confidence, imagination, and ability to communicate. Must have poise and be at ease often in dealing with uncommunicative customers.
3. ALTERNATE LINES OF
ADVANCE

Broad Attributes of Skills and Work Attitudes for Advance along these lines:

 - a. Head of
Sales Staff

Practices good public relations; ability to obtain repeat business; reputation stands high among customers. Possess supervisory, managerial, and financial skills.
 - b. District
Sales
Representative

RETAIL SELLING

1. SALES CLERK

a. Skills Expected in First Six Months on the Job:

Understand merchandise, its producer, performance and quality; know store areas; intelligent in reading, writing and basic mathematical functions; fill out documents; be able to handle money; keep up stock.

b. Work Attitudes Expected to Show in First Six Months:

Sensitive with customers and ability to verbalize with them and determine needs. Have a pleasant and congenial appearance; project a good image of self and store in order to establish good customer relations.

2. SALESPERSON IN SPECIALTY OR A DEPARTMENT

a. Skills Expected in First Six Months in Higher Level Job:

Use NCR Register; ability to determine customer's style appeal, and fit customer in terms of likes and size; handles various transactions connected with sale; keeps watch on inventory and keeps merchandise straight.

b. Work Attitudes Expected in First Six Months:

Makes good impression on customer from business-like dress and appearance. Ability to communicate with customer about merchandise and emphasizes strongly customer services in pleasant manner, based on company policies. If customer wants the unusual, will take time to get it.

3. ALTERNATE LINES OF ADVANCE

Broad Attributes of Skills and Work Attitudes Required for Advance along these lines:

a. Salesperson Big Ticket Items

Through knowledge of merchandise; use call customer techniques; handle various large dollar transactions, including sales contracts. Responsible for handling and care of all stock in department and for disposition of unsaleable merchandise; work with buyers on plans and matters pertinent to his area. To move to head of sales or sales manager, must be really outstanding in sales performance, leadership ability, communication with customer; and must have supervisory skills.

b. Head of Sales

c. Sales Manager

STOCK CONTROL

1. STOCK CLERK

a. Skills Expected in First Six Months on Job:

Learn product nomenclature and store's parts; become familiar with "in" and "out" paperwork; learn storage practices and procedures; know practical math -- fractions, multiple sales discounts.

b. Work Attitudes Expected in First Six Months:

Desire to learn; show initiative; and be honest and accurate. Have desire and ability to communicate with many people daily. Pride in housekeeping and safety.

2. STOCK SUPERVISOR

a. Skills Expected in First Six Months in Higher Level Job:

Become very knowledgeable of product, operating supplies, and techniques for maintaining control of both materials and labor. Establish and maintain good working relationship with maintenance and accounting departments on systems and procedures.

b. Work Attitudes Expected in First Six Months:

Possess supervisory skills. Be innovative, cooperative with others, and insistent on following directions.

3. ALTERNATE LINES OF ADVANCE

Broad Attributes of Skills and Work Attitudes Required for Advance along these lines:

a. Materials Expediter

Good scheduling and work planning; skill in handling transportation and logistic problems (Space, time, money, people, and equipment).

b. Purchasing Agent

DATA PROCESSING

1. KEY PUNCH OPERATOR a. Skills Expected in First Six Months on Job:

Speed and accuracy in punching both numeric and alphabetic cards. As speed and accuracy of Key Punch Operator increases over time, advances in grade levels up to Senior Key Punch Operator, and a final step would be Supervisor of Key Punch Operators in a large organization.

b. Work Attitudes Expected in First Six Months:

Dependable, reliable, and ability to get along with other workers.

2. DIGITAL COMPUTER OPERATOR

a. Skills Expected in First Six Months in Higher Level Job:

Manual dexterity in handling tapes and forms for computer. Aptitude for electronic workings of computer in order to be able to trace through what a master program is doing with supplemental programs.

b. Work Attitudes Expected in First Six Months:

Desire, interest, and ability to learn the work as a Digital Computer Operator; and assume responsibility for a more complex job.

3. ALTERNATE LINES OF ADVANCE

Broad Attributes of Skills and Work Attitudes Required for Advances along these lines:

a. Computer Programmer

Logical aptitude in setting up computer program designed by Systems Analyst who writes it in parts and provides it for Programmer, who must take parts of systems analysis and convert to program. Must be able to read manuals and learn messages that go in and out of computer. Be able to think quickly and arrive at decisions.

APPENDIX D

METHODS OF ANALYSIS

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METHODS OF ANALYSIS

Basic Procedure

The basic statistics on selected jobs in the Georgia Survey relative to current use and future demands were obtained by a mailed questionnaire. The 183 occupational titles included were considered pertinent for the cluster approach in the Comprehensive High Schools. These were selected by consultation with various experts in the Georgia Department of Education. These occupations are classified into five broad classifications (clerical, service occupations, skilled, semi-skilled, and unskilled occupations). Since not all occupations would apply to each industry, the occupations most typical for the different industries were selected and entered into the questionnaire. This means that the questionnaires were tailored to fit characteristics of particular industries. Instructions for filling out the questionnaire and job definitions were printed separately and included with the questionnaire for each mailing. Mailing to companies selected to participate in the study included duplicate questionnaires (one for company files and one copy to be returned) plus instructions and job definitions. Each mailed package included also a covering letter which explained the objectives of the study and solicited the cooperation of company management in completing and returning the questionnaire. Follow-up to improve the response of firms in the study included letters, telephone calls, and finally personal interviews with some key firms when analysis of response ratios demonstrated a deficiency of the sample of firms in relation to the Universe. A large number of important business and public leaders were selected to endorse and sponsor the study by personal contacts and through letters of endorsement. These individuals publicized the study through trade association media and otherwise.

News stories in local papers were carried at major points in the state. Also a series of radio spot news announcements were made in October and November 1971.

The Computer Center of the Georgia Department of Labor and the Systems Analysis and Data Processing Section of the Georgia Department of Education rendered invaluable assistance in drawing the randomized samples. The Electronics Tabulation Service, Inc., an Atlanta area card punching and tabulating service outfit, punched the cards and verified them; and the data analysis was carried through on the Burroughs 5500 at Georgia Tech.

Sample Analysis

Sample Ratio

The basic method involved random selections of sample firms from a universe stratified by size of firms. The sampling ratios recommended by the U. S. Department of Labor, Bureau of Employment Security¹ are as follows:

<u>Size</u>	<u>Sample Ratio</u>
Firms of 4-19 workers	4 percent
Firms of 20-99 workers	20 percent
Firms of 100 workers or over	100 percent

For the first two size categories, the firms selected to receive mailed questionnaires were at least double these ratios in order to allow for non-response.

Sample Response

The data in Table I show the sample response according to industrial category. In terms of number of firms in the entire state the response ratio was only 5 percent, but in terms of number of questionnaires mailed, it was 16 percent. The firm test is not an adequate one, however, because many firms listed on the

¹See U. S. Department of Labor, Bureau of Employment Security, "Handbook on Employment Security Job Market Research Methods: Area Skill Survey," BES No. E-252, November, 1965, pp. 23-25.

Georgia Department ES-202 tapes for September 1970, the base period, were shown as multi-firms. Most of these reported from headquarters for the entire operations in the state. An illustration is one large concern which reported all 79 operations in the state under one set of summary figures. Another multi-unit retailing outfit with 400 units in the state also reported one set of summary figures. Consequently the 1,893 questionnaires received represented a far greater number of units in the ES-202 tapes.

A far better measure of the significance of the sample is shown by the ratios of employment of sample firms in September 1970 to the universe total employment for that same month. The total sampling ratio is 27 percent and this ratio varies from 11.6 percent for construction to 46.2 percent for transportation, communication, electric, gas and sanitary services (excluding railroads). It is believed these sampling ratios are fairly adequate but due to consolidation of many firms it will be impossible to give sub-summaries for the major cities in Georgia as was done in 1963.

Another interesting fact to note about the sample is that the comparable employment data for the Fall of 1971 compared to September 1970 show on the average 4.3 percent higher employment. This may be in part due to recovery of the economy in 1971 compared to the economic slump in 1970, but there are seasonal factors particularly in case of construction and retail sales that may partially offset this due to the fact questionnaire forms were mailed during period 24 October 1971 to end of March 1972.

Table I

Sample Analysis for Careers for Youth Survey in Georgia, Fall 1971

Employment Type By Industry	Number of Firms September, 1970			Employment September, 1970			Employment of Sample Firms, Fall 1971	
	Universe Count	Sample Count	Percent	Universe Employment	Sample Employment	Percent	Sample Employment	Percent Gain From September, 1971
<u>UI-Covered Employment</u>								
Manufacturing								
a. Durables	2,535	98	3.9	153,260	38,084	24.8	39,536	104.0
b. Nondurables	2,351	227	9.7	298,655	77,855	26.1	84,231	108.0
Subtotal	4,886	325	8.8	451,915	115,939	25.6	123,767	107.0
Construction	3,698	163	4.4	69,403	8,028	11.6	10,161	127.0
Transportation & Communication	1,420	65	4.6	88,737	40,957	46.2	47,618	116.0
Trade & Services	15,760	1,230	7.8	357,311	91,195	25.5	91,189	100.0
Subtotal	30,650	1,783	5.8	967,366	256,119	26.5	272,735	106.0
<u>Noncovered Employment</u>								
Federal Government	10	8	80.0	80,800	31,518	39.0	31,518	100.0
State & Local Government	407	24	5.9	231,000	55,562	24.1	55,562	100.0

Table I

Sample Analysis for Careers for Youth Survey in Georgia, Fall 1971
(Continued)

Employment Type By Industry	Number of Firms September, 1970			Employment September, 1970			Employment of Sample Firms, Fall 1971	
	Universe Count	Sample Count	Percent	Universe Employment	Sample Employment	Percent	Sample Employment	Percent Gain From September, 1971
All Other ^a	7,118	78	1.1	150,804	42,898	28.4	42,912	100.0
AGGREGATE TOTAL	38,185	1,893	5.0	1,429,997	386,097	27.0	402,727	104.3

^aThis category includes private hospitals, educational institutionals, religious organizations, and miscellaneous non-profit institutions but excluding railroads.

Industries Studied

The following is a list of the industries included wholly or in special categories in the Universe for study. Details on exact industry inclusions are given below under "Industry Control Codes for Computer Analysis".

<u>Major Category</u>	<u>SIC Code</u>	<u>Description</u>
UI-COVERED EMPLOYMENT		
Construction	15	General Contractors, Building
	16	General Contractors, Except Building
	17	Special Trade Contractors
Manufacturing- Durables	24	Lumber and Wood Products
	25	Furniture and Fixtures
	32	Stone, Clay, and Glass Products
	33	Primary Metal Products
	34	Fabricated Metal Products
	35	Machinery Except Electrical
	36	Electrical Machinery
	37	Transportation Equipment
	38	Instruments and Related Products
	39	Miscellaneous Manufacturing
Manufacturing- Nondurables	20	Food and Kindred Products
	21	Tobacco Manufacturers
	22	Textile Mill Products
	23	Apparel and Related Products
	26	Paper and Allied Products
	27	Printing and Publishing
	28	Chemicals and Allied Products
	29	Petroleum and Coal Products
	30	Rubber and Plastic Products, n.e.c.
	31	Leather and Leather Products
Transportation & Communication	41	Local Passenger Transportation
	42	Trucking and Warehousing
	45	Transportation by Air
	47	Transportation Services
	48	Communication
Trade and Services	49	Electric, Gas and Sanitary Service
	50	Wholesale Trade
	52	Building Materials
	53	General Merchandise
	54	Food
	55	Automotive Dealers

<u>Major Category</u>	<u>SIC Code</u>	<u>Description</u>
Trade and Services (Continued)	56	Apparel and Accessories
	57	Furniture and Household Furnishings
	58	Eating and Drinking Places
	59	Miscellaneous Retail Stores
	60	Banking
	61	Credit Agencies other than Banking
	62	Security and Commodity Brokers
	63	Insurance Carriers
	65	Real Estate
	70	Hotels and other Lodging Places (Food Service)
	72	Personal Services: (Laundries)
	73	Miscellaneous Business Services
	75	Automobile Repair (Services and Garages)
	76	Miscellaneous Repair Services (Electrical Repairs)
	80	Hospital Food Services
	89	Miscellaneous Services
GOVERNMENTAL AND OTHER		
Government	91	Federal
	92	State
	93	Local
Other	82	Educational Services
	86	Non-profit Institutions

The reader's attention should be directed to the fact that small establishments below four workers are not required to report under the UI laws. Some firms of this size, however, reported, representing those in a transitional stage to four workers or over or some others reported voluntarily.

Career Ladder and Related Information

A major objective of this survey was to determine career ladders from entry level position for 35 career areas. This required four types of information: (a) what are the specific jobs and their titles from entry level position to top positions under typical situations, (b) what are the major job functions and skills for each of these jobs, (c) what are the entry level requirements for a

job, training, usual promotion interval, work attitudes required, and requirements for promotion, (d) and pictures of workers in each position on the career ladder at work with usual tools, and with other workers in a team if this is usual. These data were obtained by personal interviews but five employers provided pictures and job functions voluntarily. Certain supplemental information was gotten by long telephone conversations via Watts line with information recorded in long hand.

Pay Range Information

In order to show data on expected level of pay for each job in the job ladder, including promotion interval, a questionnaire was mailed to a large number of respondents to the questionnaire, representing a cross section of the state's employers, large and small and also from large cities and small cities.

Job Skills Required in First Six Months

Condensed information on entry level jobs plus the second step up on the job ladder were obtained by a mailed questionnaire plus Watts line discussions on skills required in the first six months of employment, worker attitudes, and alternative lines of advance from these two points on the career ladder with condensed summaries of skills and work attitudes required for advances along the alternative lines available.

List of Questionnaires, Specially Tailored For The Industries Studied

CS - 01	Construction-Builders
CS - 02	Construction-Special Contractors ^a
CS - 03	Construction
CS - 04	Automobile Repair & Services
CS - 05	Automobile Sales & Services
CS - 06	Drafting Occupations

^aIncludes special trade contractors, such as plumbing, electrical work, masonry and stonework, and sheet metal work, including also heating and air conditioning.

CS - 07	Metal Working: Special
CS - 08	Metal Working
CS - 09	Food Services Restaurants and Eating Places
CS - 10	Food Service
CS - 11	Electro-Mechanical: Special
CS - 12	Electro-Mechanical
CS - 18	Tractors and Farm Equipment, Sales and Repair Service
CS - 19	Ornamental Horticulture
CS - 20	Conservation
CS - 21	Recreation and Parks
CS - 22	Wildlife
CS - 23	Pulp and Paper
CS - 24	Pulpwood Dealers
CS - 25	Day Care Centers
CS - 26	Manufacturing-Nondurables
CS - 27	Manufacturing-Durables
CS - 28	Transportation
CS - 29	Communications and Public Utilities
CS - 30	Trade
CS - 31	Wholesale Trade
CS - 32	Retail Trade
CS - 33	Finance, Insurance and Real Estate
CS - 34	Miscellaneous Services: Special
CS - 35	Miscellaneous Services
CS - 36	Federal, State and Local Government
CS - 37	Schools and Educational Services
CS - 38	Non-Profit Institutions
CS - 39	Food Service: Hospitals
CS - 40	Food Service: Hotels & Motels
CS - 41	Florists

Processing of Forms

Manual Editing and Coding

Manual editing is a vital part of the sample study involving data collection. The editing work assures the accuracy of all observations from the standpoint of completeness, concept visualized by the respondent, and mathematical reasonableness of the data reported. Good editorial work depends upon the criteria established for editing, use of competent editors, supervision of editors, necessary corrections of inaccurate data, and follow-up to obtain incomplete data and necessary supplemental data from the respondent. Criteria for editing questionnaires must be established by a survey expert, through detailed study

of a sample of returned questionnaires, and by testing additional questionnaires as received in order to protect the editing procedures. Personnel employed in editing must be trained to follow the editing criteria and must be given necessary supervision on checking of questionnaires and mail follow-up.

A universal problem in this sort of study is the multi-unit establishment. Despite instruction to the contrary, many of these establishments consolidated data for all units in one report. This does not affect sample inflation in the state but makes it impossible to develop sub-summaries for the large cities of Georgias as in the 1962-63 study.

The punched card control file provides the basic resource for checking off returned questionnaires and pursuing necessary follow-up, either on non-response or in connection with incomplete questionnaires. Specifically, the name and address control cards provide a means for controlling: (a) receipt and follow-up, (b) mailing of additional questionnaires, and (c) requests for additional information from employers on specific items.

The detailed edit on all units requires intensive analysis of each questionnaire by trained personnel to detect and correct mathematical errors, conceptual errors, and employer recording errors. All extensions in the questionnaire must be checked for accuracy. Conceptual errors arise because the employer failed to understand the questionnaire and instructions for completing it, did not bother to study the questionnaire or may not have contacted me about it. A typical error was reporting of expected increase in employment in lieu of total employment for the specified years in the future.

Employer recording errors were the most common deficiencies in questionnaires. For example, frequently, there was omission of employment for one of the years for which employment should have been forecast, both total employment and for specific jobs.

Conceptual Editing of Cards

Manual editing is the accepted procedure in handling mailed questionnaires in order to eliminate errors on interpretation. This method produces a certain uniformity in data, verifies extensions, and otherwise prepares the questionnaires for card punching. However, it was found necessary in this study to verify each punched card against the original questionnaire in order to assure accurate card punching. This was done against a print-out sheet for the three types of punched cards.

Computer Procedures

Inflation process. The inflation process in this report was a computer problem which through a program performed the inflation of the sample to universe by industry and by size of firm for industry groups. Computer programs performed the numerous multiplications and then consolidated them to obtain the required data in great detail for the different parts of the study.

Industry control codes. In order to facilitate the computer processing of data, industry column codes were assigned in sequence from 110 to 251, according to SIC codes. The following are the codes employed by corresponding industries. The CS or Career Survey questionnaire number permits identification of each computer code with the data source. The industry column codes permit summarization by occupation, by industry groups, and by manufacturing subgroups.

Industry Control Codes for Computer Analysis

<u>Industry Groups</u>	<u>CS</u>	<u>Industry Column Code</u>
Manufacturing		
a. Durables		
SIC 769	07	110
24	27	111
25, 39	27	112
32	27	114

<u>Industry Groups</u>	<u>CS</u>	<u>Industry Column Code</u>
SIC 33	07-08	115
34	07-08	116
35	07 & 27	117
36, 38	11-12, & 27	118
37	27	119
b. Nondurables		
SIC 20	26	121
22	26	122
23	26	123
261, 262, 263	23	124
264-269	26	125
27	26	126
28	26	127
21, 29, 30, 31	26	128
Construction		
SIC 15	01, 02, 03	131
16	01, 02, 03	132
17 (excl. 171, 173)	01, 02, 03	133
171, 173	12	134
171, 173 (under 20)	02	135
Transportation & Communication, Electric, Gas & Sanitary Services		
SIC 41	28	141
42	28	142
45	28	143
46	28	144
48	29	146
49	29	147
Trade and Services		
a. Wholesale Trade		
SIC 501	04, 05, & 27	151
502-4, 508 (excl. 5983)	30-31	152
506-507	11-12, 30, & 27	153
5083	18	154
b. Retail Trade		
SIC 52 (excl. 522, 524, & 5252)	30 & 32	161
522, 524	11, 12	162
5252	18	163
53, 54, 56	32	164
55, 75		165
57 (excl. 572, 573)	32	166

<u>Industry Groups</u>	<u>CS</u>	<u>Industry Column Code</u>
SIC 572, 573	11, 12	167
58	09, 10	168
59	32	169
5992	41	172
596	19	173
c. Finance, Insurance, & Real Estate		
SIC 60, 61, 62, 63, 65	33	171, 181
d. Miscellaneous Services		
SIC 701 Hotels	40	191
721 Laundries	34 & 35	182, 192
762 Electrical Repairs	11, 12	183, 193
806 Food in Hospital	39	184
8290 Day Care Centers	25	195
891 Drafting	06	196
892-3 Accounting	34, 35	187, 197, 199
731 Miscellaneous	34, 35	198
e. Other Miscellaneous		
SIC 5059 Pulpwood Dealers	24	200
Government, Non-profit & Others		
SIC 82 Schools & Educational Services	37	210
86 Non-Profit Institutions	38	220
91 Federal Government	36	230
Conservation	20	231
92 State Government	36	240
92 State Government Recreation	21	241
9250 Wildlife	22	243
93 Local Government	43	250
Local Government Parks	43	251

Sample of Questionnaires for Job Information

CAREERS FOR YOUTH SURVEY



CONSTRUCTION



GENERAL INSTRUCTIONS

Please answer all of the questions for this establishment as completely as possible. The information you furnish will be treated as **STRICTLY CONFIDENTIAL**. Mail the completed form in the enclosed self-addressed envelope. The **EMPLOYER'S** copy is for your use. If you have any questions, telephone Professor John L. Fulmer at Georgia Tech, 873 4211, Ext. 5352.

CS-03

1. Current employment, this establishment (Total) _____ Enter total number of workers of all kinds on payrolls of this plant, this date.
2. Estimate the total number of workers you expect will be working in this establishment.
 - a. One year from now _____
 - b. Three years from now _____Before making estimates for job needs take into account the growth prospects of **GEORGIA**, your industry and your company. Confer with appropriate officials.
3. List the most important hard-to-fill jobs in your company at the present time. (Job name or title)
State for each job listed the major reasons why you think you are encountering difficulties employing the number needed in each job.

a. _____	a. _____
b. _____	b. _____
c. _____	c. _____
d. _____	d. _____
e. _____	e. _____
f. _____	f. _____
g. _____	g. _____

COMPANY CRITERIA FOR EMPLOYING BROAD CLASSES OF WORKERS

What are your company's major criteria for employing the following
classes of workers? (Complete or enter a number as appropriate in
the space indicated.)

1. **UNSKILLED WORKERS:** Definition: The Unskilled group includes workers with little skill or training. They do casual labor types of jobs. Their work may not require training.
 - a. Age: minimum years _____ mandatory retirement age _____
 - b. Minimum years of schooling _____ grade _____
 - c. Years of previous experience _____ years _____
 - d. Special aptitude required _____
2. **SEMI-SKILLED WORKERS:** Definition: Semi-skilled workers are those given simple routine, mechanical-motion types of training, such as production line workers. Involves mechanical type-repetitive work, that may tend to be monotonous.
 - a. Age: minimum years _____ mandatory retirement age _____
 - b. Minimum years of schooling _____ grade _____
 - c. Years of previous experience _____ years _____
 - d. Vocational or trade school training _____ yes (1) _____ no (2) _____
 - e. Special aptitude desired _____
3. **SERVICE WORKERS:** Definition: Service workers provide a service by adding to the comfort and convenience of persons, protecting the property and lives of others, and otherwise fulfilling the personal requirements of persons. High emphasis on attitudes and ability to please the public.
 - a. Age: Minimum years _____ mandatory retirement age _____
 - b. Minimum years of schooling _____ grade _____
 - c. Years of previous experience _____ years _____
 - d. Vocational or trade school training _____ yes (1) _____ no (2) _____
 - e. Special aptitude required _____
4. **SKILLED WORKERS:** Definition: Skilled workers must have a comprehensive knowledge of processes involved in the work. They exercise consideration and judgment involving a high degree of manual dexterity, and often have extensive responsibility for valuable products or equipment.
 - a. Age: minimum years _____ mandatory retirement age _____
 - b. Minimum years of schooling _____ grade _____
 - c. Years of previous experience _____ years _____
 - d. Vocational or trade school training _____ yes (1) _____ no (2) _____
 - e. Completion of on-the-job training _____ yes (1) _____ no (2) _____
 - f. Apprenticeship training _____ yes (1) _____ no (2) _____ g. do you require a journeyman's rating _____ yes (1) _____
 - h. Special aptitude desired _____
5. **CLERICAL:** Definition: Clerical workers are concerned with preparation, transcribing, transferring, systematizing, or preserving written communications in offices, shops, etc. Both mental and manual processes are required.
 - a. Age: Minimum years _____ mandatory retirement age _____
 - b. Minimum years of schooling _____ grade _____
 - c. Years of previous experience _____ years _____
 - d. Post high-school vocational training _____
 - e. Special aptitude desired _____
6. Summarize below the type of formal company training regularly required. Definition: Formal training is defined here to include all planned types of training by the company management. Workers attend class or they are in a program of apprenticeship or on-the-job training with time regularly scheduled. The purpose is to impart skills or techniques to the workers, qualifying them for more responsible and important jobs. Check ☒ spaces appropriate.
 - a. No formal training _____ b. Orientation to the company _____
 - c. The "Buddy System" _____ d. On-the-job training _____
 - e. Job rotation _____ f. Apprenticeship _____
 - g. Adult education courses outside company _____
 - h. Unit classroom _____ i. Supervisor's special training course _____
 - j. University executive development courses _____
 - k. Other types: _____

WE ARE MOST GRATEFUL FOR YOUR HELP. In order to permit further contacts in this CAREERS FOR YOUTH SURVEY, please provide YOUR NAME _____
YOUR TITLE _____ YOUR TELEPHONE NUMBER _____

Occupation (2)	Current Employment (3)	Expected Total Employment		Workers Needed for Re- placement Next Year (6)	Number in Company Training to		Workers Com- pleting Company Training or Promoted in	
		In One Year (4)	In Three Years (5)		Enter a Position (7)	Update Skill (8)	One Yr. From Now (9)	Three Yrs. From Now (10)
I. CONSTRUCTION OCCUPATIONS	*****	*****	*****	*****	*****	*****	*****	*****
Bricklayer Helper								
Bricklayer								
Laborer, Carpenter								
Carpenter, Rough								
Carpenter-Labor Foreman								
Carpenter								
Cement Mason Helper								
Cement Mason								
Plumber Helper								
Pipefitter or Plumber								
Electrician Helper								
Electrician								
III. DRAFTING OCCUPATIONS								
Draftsman, Helper								
Draftsman, Architectural								
Draftsman, Electrical								

INSTRUCTIONS IN BRIEF

- Col. 2: Job functions of each job are given in JOB DEFINITIONS attached
- Col. 3: Enter number employed in this establishment as of last pay period
- Cols. 4 & 5: Project ahead number in Col. 3 based on your growth needs
- Col. 6: Number of workers who will retire, be promoted, or who will withdraw from labor force for any reason. Add number who died last year.
- Col. 7: Number being trained this date to enter a position above ENTRY LEVEL
- Col. 8: Number in "Ranked" position workers who are being trained to update a skill. Do not duplicate Col. 7
- Cols. 9 & 10: Workers in job who will complete company training or be promoted in 1 year or in three years
- NOTE: If a number is entered in Col. 3, it must be extended across all Columns 4-10, even if the number expected to be employed is ZERO

INSTRUCTIONS FOR COMPLETING THE COLUMNS IN QUESTIONNAIRE

Column 1, Job Code: The job code number reflects the Career Area and in ascending order the type of job. The Job Code Number is entered in Column 1 for your convenience in finding the job definitions which apply for this study. The procedure is to First find the Job Number in the Job Definitions provided.

Column 2, Occupation: Be sure to look up the definition for the occupation, as explained in 1. Compare to your company job specifications. Then reconcile differences: if they are not important, enter the number of jobs on your October payroll and then proceed to fill out all other columns. If the differences appear to be large, read again the decision rule given in first paragraph to the Job Definitions and proceed accordingly.

When the list is completed under each category, you should then consider if there are other important jobs under the categories which should be reported. If you think this is so, you have two alternatives. First, check through all the jobs listed to learn if any fit the job you have in mind. If so, enter job survey guide number and job title and proceed as before. If none fit your plant titles, proceed as follows: (a) list plant job title omitting the job code number, and (b) complete Columns 3-10 as before.

Column 3, Current Employment: Enter in this column the total number of jobs of this job type on your October payroll. If none, enter "0".

Column 4 and 5, Expected Employment one year from now and three years from now: This column requests that you look ahead for your job needs one year ahead and three years from now. Take into account probable expansions of plant capacity and the trends in the use of the job in question. Rough estimates will be acceptable, since all returns will be consolidated into one total. The high estimates will be offset by the low estimates.

Column 6, Workers needed for replacement in the next year. Replacement needs are workers needed to replace those who are promoted to another occupation and those who leave the labor force for reasons such as death, retirement, pregnancy, disability, or entry into the Armed Forces. If unable to estimate total for next year, enter figure for replacements occurring in the past twelve months. Do not include workers who leave to seek or accept other jobs, or workers separated from your establishment because of reduction in work force, inadequate performance on the job, or misconduct.

Columns 7 and 8, Number in company training to enter a position (Column 7). For each specific job enter the actual number, as of the date of the questionnaire, which are in some type of form of company training program, such as apprenticeship, on-the-job training of more than casual duration, special adult class in company unit classroom, local high school, or vocational-technical school. The purpose is to qualify for a job at the entry position.

Upgrade skills (Column 8). Enter here the number of workers of each job type already in a ranked position but who are in the process of up-dating a skill in a company training, adult education, special MDTA course or special course in a vocational-technical school. Caution: Do not duplicate with Column 7.

Columns 9 and 10, Workers completing company training or promoted into the specified occupations by one year from now and three years from now. Combine the number of workers expected to complete company training programs and the number of workers expected to be promoted into the occupation from other jobs in the company in the next year and three years and enter in the appropriate columns.

NOTE: Very Important Point!

Column 6, Workers needed for replacement in the next year. Replacement needs are workers needed to replace those who are promoted to another occupation and those who leave the labor force for reasons such as death, retirement, pregnancy, disability, or entry into the Armed Forces. If unable to estimate total for next year, enter figure for replacements occurring in the past twelve months. Do not include workers who leave to seek or accept other jobs, or workers separated from your establishment because of reduction in work force, inadequate performance on the job, or misconduct.

JOB DEFINITIONS

CONSTRUCTION

Column 2 designates a Job Title. In order to decide if a specific job in your business or establishment qualifies under any given job title, study the job functions. If they in a majority sense agree with the job functions of any given job you have which is similar, then check off the job title given in the questionnaire, and fill out all spaces in columns 3-10, or enter a "Zero" if this applies.

I. CONSTRUCTION OCCUPATIONS

- 100 BRICKLAYER HELPER (Const.) 861.887. Assists Bricklayer or Stonemason to building structures.
- 101 BRICKLAYER (Const.) 861.381. Lays building materials, such as brick, structural tile, and concrete cinder, glass, gypsum, and terra cotta block (except stone) to construct or repair walls, partitions, arches, sewers, and other structures.
- 104 LABORER, CARPENTER (Const.) 860.887. Assists Carpenter to build wooden structures performing any combination of duties.
- 105 CARPENTER, ROUGH (Const.) 860.781. Builds rough wooden structures, such as concrete forms, scaffolds, tunnel and sewer supports, and temporary frame shelters, according to sketches or oral instructions.
- 106 CARPENTER-LABOR FOREMAN (Const.) 860.137. Supervises and Coordinates activities of workers engaged in supplying materials to workers who construct, erect, install, and repair wooden structures and fixtures. Directs work crew to strip forms and dismantle temporary wooden structures. May supervise workers engaged in pouring concrete into wooden forms.
- 107 CARPENTER (Const.) 860.381. Constructs, erects, installs, and repairs structures and fixtures of wood, plywood, and wallboard, using carpenter's handtools and power tools, and conforming to local building codes.
- 110 CEMENT-MASON HELPER (Const.) 844.887. Assists Cement Mason to smooth and finish exposed surfaces of concrete by performing finishing tasks, such as floating freshly laid concrete and edging concrete slabs.
- 111 CEMENT MASON (Const.) 844.884. Smooths and finishes surfaces of poured concrete floors, walls, sidewalls, or curbs to specified textures, using handtools, including floats, trowels, and screens.
- 118 PLUMBER HELPER (Const.) 862.884. Performs the following duties in assembling and installing pipeline systems and parts: Assembles and installs air, gas, water, and sewer pipeline systems, fittings, and fixtures. Carries materials and equipment, cuts or drills openings in walls for pipes, melts lead in plumber's furnace.

- 120 PIPEFITTER OR PLUMBER (Const.) 862.381. Lays out, fabricates, assembles, installs, and maintains piping and piping systems, fixtures, and equipment for steam, hot water, heating, cooling, lubricating, and industrial processing systems, on basis of knowledge of system operation and study of building plans or working drawings.
- 234 ELECTRICIAN HELPER (Any Ind.) 829.887. Assists Electrician to install and repair electrical wiring, fixtures, and equipment.
- 236 ELECTRICIAN (Any Ind.) 824.281. Wireman. Plans layout and installs and repairs wiring, electrical fixtures, apparatus, and control equipment.

III. DRAFTING OCCUPATIONS

- 160 DRAFTSMAN'S HELPER. Works at drawing board. Makes minor changes in existing drawings under direction of draftsman. Assists draftsman to locate various specifications and otherwise helps with materials, paper, etc. Also runs copying machine; and files and retrieves drawings. All other duties as assigned by the draftsman.
- 163 DRAFTSMAN, ARCHITECTURAL (Profess. & Kin.) 001.281. Plans artistic architectural and structural features of any class of buildings and like structures.
- 164 DRAFTSMAN, ELECTRICAL (Profess. & Kin.) 003.281. Prepares electrical equipment working drawings and wiring diagrams used by construction crews and repairman who erect, install, and repair electrical equipment and wiring in powerplants, industrial establishments, commercial or domestic buildings, or electrical distribution systems.

II. TRANSPORTATION AND MECHANICS

- 151 AUTOMOBILE MECHANIC (Auto. Ser.) 620.281. Repairs and overhauls automobiles, buses, trucks and other automobile vehicles.
- 152 MECHANIC, INDUSTRIAL TRUCK (Any Ind.) 620.281. Repairs and maintains electric, diesel, and gasoline industrial trucks, following manuals, and using handtools, power tools, and knowledge of electrical, power transmission, brake, and other automotive systems.
- 153 TRUCK MECHANIC (Auto. Ser.). Same as AUTOMOBILE MECHANIC.
- 156 DIESEL MECHANIC (Any Ind.) 625.281. Repairs and maintains diesel engines used to power machines, such as buses, ships, trucks, railroad trains, electric generators, and construction machinery, using handtools, precision-measuring instruments, and metalworking tools.
- 228 FURNACE INSTALLER-AND-REPAIRMAN, HOT AIR (Any Ind.) 869.281. Installs and repairs hot-air furnaces, stoves and similar equipment in accordance with diagrams and other specifications, using handtools and pipe-threading tools.

- 231 AIR-CONDITIONING MECHANIC, DOMESTIC (Any Ind.) 637.281. Services and repairs domestic air-conditioning units, usually ranging from 1/2 to 2 tons capacity, in private residences and small business establishments.
- 232 AIR-CONDITIONING MECHANIC, COMMERCIAL (Any Ind.) 637.281. Installs, services, and repairs commercial air-conditioning units, usually rated in excess of 100 tons cooling capacity, in department stores, office buildings, and other large commercial establishments, utilizing knowledge of refrigeration theory, pipe fitting, and structural layout.
- 233 REFRIGERATION MECHANIC (Any Ind.) 637.281. Installs and repairs industrial and commercial refrigerating and cooling systems according to blueprints and engineering specifications, using knowledge of refrigeration, structural layout, and function and design of components.
- 243 MAINTENANCE MECHANIC II 638.281. Repairs and maintains, in accordance with diagrams, sketches, operations manuals and manufactures specifications, machinery and mechanical equipment, such as cranes, pumps, engines, motors pneumatic tools, conveyer systems, production machines, and automotive and construction equipment, using handtools, power tools and precision-measuring and testing instruments.

VIII. MARKETING AND DISTRIBUTION OCCUPATIONS

- 280 STOCK CLERK (Clerical) 223.387. Receives, stores, and issues equipment, material, supplies, merchandise, foodstuffs, or tools, and compiles stock records in storeroom, warehouse, or storage yard.
- 283 BUYER (Ret. Tr.; Whole. Tr.) II. 162.158. Purchases merchandise for resale: Selects and order merchandise from showings of manufacturing representatives, basing selection on nature of clientele, demand for specific merchandise, and experience as buyer. Authorizes payment of invoices or return of merchandise.
- 284 SALES CLERK (Ret. Tr.) 290.478. Receives payment for merchandise, such as bakery goods, magazines, groceries, books, and tobacco selected by customer.

XIV. OFFICE OCCUPATIONS

- 413 BOOKKEEPER (Clerical) I. 210.388. Keeps records of financial transactions of establishment and verifies and enters details of transactions as they occur or in chronological order in stubs, inventory records, and requisitions.
- 426 CLERK-TYPIST (Clerical) 209.388. Performs general clerical work requiring use of typewriter and compiles and types reports, bills, application forms, shipping tickets, and other matter from clerical records.
- 428 SECRETARY (Clerical) 201.368. Schedules appointments, gives information to callers, takes dictation, and otherwise relieves officials of clerical work and minor administrative and business detail.

CAREERS FOR YOUTH SURVEY

MANUFACTURING—DURABLES

GENERAL INSTRUCTIONS

Please answer all of the questions for this establishment as completely as possible. The information you furnish will be treated as **STRICTLY CONFIDENTIAL**. Mail the completed form in the enclosed self-addressed envelope. The **EMPLOYER'S** copy is for your use. If you have any questions, telephone Professor John L. Fulmer at Georgia Tech, 894-2622.

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1. Current employment, this establishment (Total) _____ Enter total number of workers of all kinds on payrolls of this plant, this date.
2. Estimate the total number of workers you expect will be working in this establishment.
 - a. One year from now _____ Before making estimates for job needs take into account the growth prospects of **GEORGIA**, your industry and your company. Confer with appropriate officials.
 - b. Three years from now _____
3. List the most important hard-to-fill jobs in your company at the present time. (Job name or title)
State for each job listed the major reasons why you think you are encountering difficulties employing the number needed in each job.
 - a. _____ a. _____
 - b. _____ b. _____
 - c. _____ c. _____
 - d. _____ d. _____
 - e. _____ e. _____
 - f. _____ f. _____
 - g. _____ g. _____

COMPANY CRITERIA FOR EMPLOYING BROAD CLASSES OF WORKERS

What are your company's major criteria for employing the following
classes of workers? (Complete or enter a number as appropriate in
the space indicated.)

1. **UNSKILLED WORKERS:** Definition: The Unskilled group includes workers with little skill or training. They do casual labor types of jobs. Their work may not require training.
 - a. Age: minimum years _____ mandatory retirement age _____
 - b. Minimum years of schooling _____ grade _____
 - c. Years of previous experience _____ years _____
 - d. Special aptitude required _____
2. **SEMI-SKILLED WORKERS:** Definition: Semi-skilled workers are those given simple routine, mechanical-motion types of training, such as production line workers. Involves mechanical type-repetitive work, that may tend to be monotonous.
 - a. Age: minimum years _____ mandatory retirement age _____
 - b. Minimum years of schooling _____ grade _____
 - c. Years of previous experience _____ years _____
 - d. Vocational or trade school training _____ yes (1) _____ no (2) _____
 - e. Special aptitude desired _____
3. **SERVICE WORKERS:** Definition: Service workers provide a service by adding to the comfort and convenience of persons, protecting the property and lives of others, and otherwise fulfilling the personal requirements of persons. High emphasis on attitudes and ability to please the public.
 - a. Age: Minimum years _____ mandatory retirement age _____
 - b. Minimum years of schooling _____ grade _____
 - c. Years of previous experience _____ years _____
 - d. Vocational or trade school training _____ yes (1) _____ no (2) _____
 - e. Special aptitude required _____
4. **SKILLED WORKERS:** Definition: Skilled workers must have a comprehensive knowledge of processes involved in the work. They exercise consideration and judgment involving a high degree of manual dexterity, and often have extensive responsibility for valuable products or equipment.
 - a. Age: minimum years _____ mandatory retirement age _____
 - b. Minimum years of schooling _____ grade _____
 - c. Years of previous experience _____ years _____
 - d. Vocational or trade school training _____ yes (1) _____ no (2) _____
 - e. Completion of on-the-job training _____ yes (1) _____ no (2) _____
 - f. Apprenticeship training _____ yes (1) _____ no (2) _____
 - g. do you require a journeyman's rating _____ yes (1) _____ no (2) _____
 - h. Special aptitude desired _____
5. **CLERICAL:** Definition: Clerical workers are concerned with preparation, transcribing, transferring, systematizing, or preserving written communications in offices, shops, etc. Both mental and manual processes are required.
 - a. Age: Minimum years _____ mandatory retirement _____
 - b. Minimum years of schooling _____ grade _____
 - c. Years of previous experience _____ years _____
 - d. Post high-school vocational training _____
 - e. Special aptitude desired _____
6. Summarize below the type of formal company training regularly required by the company management. Workers attend job training with time regularly scheduled. The purpose is to impart responsible and important jobs. Check ☒ spaces appropriate.
 - a. No formal training _____ b. Orientation to the company _____
 - c. The "Buddy System" _____ d. On-the-job training _____
 - e. Job rotation _____ f. Apprenticeship _____
 - g. Adult education courses outside company _____
 - h. Unit classroom _____ i. Supervisor's special training _____
 - j. University executive development courses _____
 - k. Other types: _____

WE ARE MOST GRATEFUL FOR YOUR HELP. In order to perform this
SURVEY, please provide YOUR NAME _____
YOUR TITLE _____ YOUR COMPANY _____

Job Code	Occupation	Current Employment	Expected Total Employment		Workers Needed for Re- placement Next Year	Number in Company Training to		Workers Completing Company Training or Promoted in	
			In One Year	In Three Years		Enter a Position	Update Skill	One Yr. From Now	Three Years From Now
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	I. CRAFTS & MECHANICS	*****	*****	*****	*****	*****	*****	*****	***
120	Pipefitter or Plumber								
145	Automobile-Mechanic Helper								
151	Automobile Mechanic								
152	Mechanic, Industrial Truck								
153	Diesel Mechanic, Helper								
156	Diesel Mechanic								
191	Sheet-Metal Worker								
193	Welder, Helper								
194	Welder, Arc								
199	Welder, Comb.								
221	Electrical-Appliance Ser. Set-up								
223	Electrical Appliance Serviceman								
225	TV & Radio Ser. & Repairman								
228	Furnace Installer & Repairman, Hot Air								
230	Air-Cond. Mech. Helper, Commercial								
232	Air-Conditioning Mechanic, Comm.								
234	Electrician Helper								
235	Electrical Repairman								
236	Electrician								
240	Maintenance Man, Helper								
242	Maintenance Man, Factory or Mill								
243	Maintenance Mechanic II								

INSTRUCTIONS IN BRIEF

- Col. 2: Job functions of each job are given in JOB DEFINITIONS attached
- Col. 3: Enter number employed in this establishment as of last pay period
- Cols. 4 & 5: Project ahead number in Col. 3 based on your growth needs
- Col. 6: Number of workers who will retire, be promoted, or who will withdraw from labor force for any reason. Add number who died last year.
- Col. 7: Number being trained this date to enter a position above ENTRY LEVEL
- Col. 8: Number in "Ranked" position workers who are being trained to update a skill. Do not duplicate Col. 7
- Cols. 9 & 10: Workers in job who will complete company training or be promoted in 1 year or in three years
- NOTE: If a number is entered in Col. 3, it must be extended across all Columns 4-10, even if the number expected to be employed is ZERO

Occupation (2)	Current Employment (3)	Expected Total Employment		Workers Needed For Re- placement Next Year (6)	Number in Company Training to		Workers Com- pleting Company Training or Promoted in	
		In One Year (4)	In Three Years (5)		Enter a Position (7)	Update Skill (8)	One Yr. From Now (9)	Three Yrs. From Now (10)
VIII. MARKETING AND DISTRIBUTION	*****	*****	*****	*****	*****	*****	*****	*****
Stock Supervisor								
Buyer II								
Salesperson, General								
Telephone Solicitor								
Salesman, Building & Construction								
Equipment and Supplies								
XIV. OFFICE OCCUPATIONS								
Accounting Clerk								
Billing Clerk								
Bookkeeping Machine Operator								
Bookkeeper								
Supervisor Machine Records								
Clerk, General								
Telephone Operator								
File Clerk								
Receptionist								
Personnel Clerk								
Typist								
Clerk-Typist								
Stenographer								
Secretary								
Administrative Secretary								
XV. DATA PROCESSING								
Sorting Machine Operator								
Key Punch Operator								
Verifier Operator								
Digital-Computer Operator								
Programmer, Detail								
Programmer, Business								

INSTRUCTIONS FOR COMPLETING THE COLUMNS IN QUESTIONNAIRE

Column 1, Job Code: The job code number reflects the Career Area and in ascending order the type of job. The Job Code Number is entered in Column 1 for your convenience in finding the job definitions which apply for this study. The procedure is to first find the Job Number in the Job Definitions provided.

Column 2, Occupation: Be sure to look up the definition for the occupation, as explained in 1. Compare to your company job specifications. Then reconcile differences if they are not important, enter the number of jobs on your October payroll and then proceed to fill out all other columns. If the differences appear to be large, read again the decision rule given in first paragraph to the Job Definitions and proceed accordingly.

When the list is completed under each category, you should then consider if there are other important jobs under the categories which should be reported. If you think this is so, you have two alternatives. First, check through all the jobs listed to learn if any fit the job you have in mind. If so, enter job survey guide number and job title and proceed as before. If none fit your plant titles, proceed as follows: (a) list plant job title omitting the job code number, and (b) complete Columns 3-10 as before.

Column 3, Current Employment: Enter in this column the total number of jobs of this job type on your October payroll. If none, enter "0".

Column 4 and 5, Expected Employment one year from now and three years from now: This column requests that you look ahead for your job needs one year ahead and three years from now. Take into account probable expansions of plant capacity and the trends in the use of the job in question. Rough estimates will be acceptable, since all returns will be consolidated into one total. The high estimates will be offset by the low estimates.

Column 6, Workers needed for replacement in the next year. Replacement needs are workers needed to replace those who are promoted to another occupation and those who leave the labor force for reasons such as death, retirement, pregnancy, disability, or entry into the Armed Forces. If unable to estimate total for next year, enter figure for replacements occurring in the past twelve months. Do not include workers who leave to seek or accept other jobs, or workers separated from your establishment because of reduction in work force, inadequate performance on the job, or misconduct.

Columns 7 and 8, Number in company training to enter a position (Column 7). For each specific job enter the actual number, as of the date of the questionnaire, which are in some type of form of company training program, such as apprenticeship, on-the-job training of more than casual duration, special adult class in company unit classroom, local high school, or vocational-technical school. The purpose is to qualify for a job at the entry position.

Upgrade skills (Column 8). Enter here the number of workers of each job type already in a ranked position but who are in the process of up-dating a skill in a company training, adult education, special MDTA course or special course in a vocational-technical school. Caution: Do not duplicate with Column 7.

Columns 9 and 10, Workers completing company training or promoted into the specified occupations by one year from now and three years from now. Combine the number of workers expected to complete company training programs and the number of workers expected to be promoted into the occupation from other jobs in the company in the next year and three years and enter in the appropriate columns.

NOTE: Very Important Point!

Column 6, Workers needed for replacement in the next year. Replacement needs are workers needed to replace those who are promoted to another occupation and those who leave the labor force for reasons such as death, retirement, pregnancy, disability, or entry into the Armed Forces. If unable to estimate total for next year, enter figure for replacements occurring in the past twelve months. Do not include workers who leave to seek or accept other jobs, or workers separated from your establishment because of reduction in work force, inadequate performance on the job, or misconduct.

JOB DEFINITIONS

MANUFACTURING-DURABLES

Column 2 designates a Job Title. In order to decide if a specific job in your business or establishment qualifies under any given job title, study the job functions. If they in a majority sense agree with the job functions of any given job you have which is similar, then check off the job title given in the questionnaire, and fill out all spaces in columns 3-10, or enter a "Zero" if this applies.

I. CRAFTS & MECHANICS

- 120 PIPEFITTER OR PLUMBER (const.) 862.381. Lays out, fabricates, assembles, installs, and maintains piping and piping systems, fixtures, and equipment for steam, hot water, heating, cooling, lubricating, and industrial processing systems, on basis of knowledge of system operation and study of building plans or working drawings.
- 145 AUTOMOBILE-MECHANIC HELPER (auto. ser.) 620.884. Assists Automobile Mechanic to repair automobiles, buses, trucks, and other automotive vehicles.
- 151 AUTOMOBILE MECHANIC (auto. ser.) 620.281. Repairs and overhauls automobiles, buses, trucks and other automobile vehicles.
- 152 MECHANIC, INDUSTRIAL TRUCK (any ind.) 620.281. Repairs and maintains electric, diesel, and gasoline industrial trucks, following manuals, and using handtools, power tools, and knowledge of electrical, power transmission, brake, and other automotive systems.
- 153 TRUCK MECHANIC (auto. ser.). Same as AUTOMOBILE MECHANIC.
- 155 DIESEL-MECHANIC HELPER (any ind.) 625.884. Assists DIESEL MECHANIC in overhauling and maintaining diesel motors used to operate trucks, generators, and other equipment. Disassembles motor and cleans parts. Obtains parts from stock and hands tools to mechanic. Assists in reassembly, and cleans tools and working area.
- 156 DIESEL MECHANIC (any ind.) 625.281. Repairs and maintains diesel engines used to power machines, such as buses, ships, trucks, railroad trains, electric generators, and construction machinery, using handtools, precision-measuring instruments, and metalworking tools.
- 191 SHEET-METAL WORKER (any ind.) 804.281. Fabricates, assembles, installs, and repairs sheet metal products and equipment, such as control boxes, drainpipes, ventilators, and furnace casings, according to job order or blueprints.
- 193 WELDER, HELPER (welding) 819.887. Assists in all the tasks in welding, brazing, and flame and arc cutting activities.

- 194 WELDER, ARC (welding) 810.884. Welds metal parts together, as specified by layout, diagram, work order, or oral instructions, using electric arc welding equipment.
- 199 WELDER, COMBINATION (welding) 812.884. Welds metal parts together, according to layouts, blueprints, or work orders, using both gas welding (Welder, Gas) or brazing (Brazer-Assembler) and any combination of arc welding processes (Welder, Arc Welder, Atomic; Welder, Gas-Shielded Arc; Welder, Hand, Submerged Arc).
- 221 ELECTRICAL APPLIANCE SERVICE SET-UP (any ind.) 827.884. Assembles and tests electrical appliances, such as ranges, refrigerators, and washing machines, to prepare them for delivery and installation, using handtools and test lamp.
- 223 ELECTRICAL APPLIANCE SERVICEMAN (any ind.) 827.281. Installs, services, and repairs stoves, refrigerators, dishwashing machines, and other electrical household appliances, using handtools and test meters and following wiring diagrams and manufacturer's specifications.
- 225 TELEVISION AND RADIO SERVICE AND REPAIRMAN (any ind.) 720.281. Repairs and adjusts radios and television receivers, using handtools and electronic testing instruments.
- 228 FURNACE INSTALLER AND REPAIRMAN, HOT AIR (any ind.) 869.281. Installs and repairs hot-air furnaces, stoves and similar equipment in accordance with diagrams and other specifications, using handtools and pipe-threading tools.
- 230 AIR-CONDITIONING-MECHANIC HELPER, COMMERCIAL (any ind.) 637.884. Heating and air-conditioning-mechanic helper. Assists workers engaged in installing, repairing, and servicing industrial, commercial, and domestic air-conditioning and combination air-conditioning and heating systems.
- 232 AIR-CONDITIONING MECHANIC, COMMERCIAL (any ind.) 637.281. Installs, services, and repairs commercial air-conditioning units, usually rated in excess of 100 tons cooling capacity, in department stores, office buildings, and other large commercial establishments, utilizing knowledge of refrigeration theory, pipe fitting, and structural layout.
- 234 ELECTRICIAN HELPER (any ind.) 829.887. Assists Electrician to install and repair electrical wiring, fixtures, and equipment, performing any combination of tasks.
- 235 ELECTRICAL REPAIRMAN (any ind.) 829.281. Repairs, maintains, and installs electrical systems and equipment, such as motors, transformers, wiring, switches, and alarm systems.
- 236 ELECTRICIAN (any ind.) 824.281. Plans layout and installs and repairs wiring, electrical fixtures, apparatus, and control equipment.

- 240 MAINTENANCE-MAN HELPER, FACTORY OR MILL (any ind.) 899.884. Assists MAINTENANCE MAN, FACTORY OR MILL in repairing and maintaining machinery, plumbing, physical structure, and electrical wiring and fixtures of commercial and industrial establishments.
- 242 MAINTENANCE MAN, FACTORY OR MILL 899.281. Repairs and maintains machinery, plumbing, physical structure, and electric wiring fixtures of commercial and industrial establishments in accordance with blueprints, manuals, and building codes, using handtools and carpenter's, electrician's, and plumber's tools.
- 243 MAINTENANCE MECHANIC II 638.281. Repairs and maintains, in accordance with diagrams, sketches, operations manuals and manufactures specifications, machinery and mechanical equipment, such as cranes, pumps, engines, motors, pneumatic tools, conveyer systems, production machines, and automotive and construction equipment, using handtools, power tools and precision-measuring and testing instruments.

VIII. MARKETING AND DISTRIBUTION

- 281 STOCK SUPERVISOR (ret. tr.) 223.138. Supervises and coordinates activities of workers engaged in handling merchandise in stockroom or warehouse of retail store.
- 283 BUYER II (ret. tr.; whole. tr.) 162.158. Purchases merchandise for resale: Selects and orders merchandise from showings of manufacturing representatives, basing selection on nature of clientele, demand for specific merchandise, and experience as buyer. Authorizes payment of invoices or return of merchandise.
- 286 SALESPERSON, GENERAL (ret. tr.; whole. tr.) 289.458. Sells variety of commodities in sales establishment, performing duties as described under SALESPERSON.
- 288 TELEPHONE SOLICITOR (any ind.). 293.358. Solicits orders for merchandise or services over the telephone.
- 298 SALESMAN, BUILDING AND CONSTRUCTION EQUIPMENT AND SUPPLIES (whole. tr.) 276.358. Sells building materials, equipment, and supplies, such as heating or air-conditioning equipment, building insulation, bricks or lumber, plumbing fixtures, and roofing, utilizing knowledge of building construction and ability to read blueprints.

XIV. OFFICE OCCUPATIONS

- 410 ACCOUNTING CLERK (Clerical) 219.488. Performs variety of routine calculating, posting, and typing duties to accomplish accounting.
- 411 BILLING CLERK (Clerical) II. 219.388. Prepares invoices and bills of lading: Computes amounts due from records, such as purchase orders, sales tickets, and charge slips, using adding or calculating machine. Types invoices, listing items sold, amounts due, credit terms, and date of shipment. Types bills of lading and lists weight and serial number of items sold, using specifications book.

- 412 BOOKKEEPING-MACHINE OPERATOR (Clerical) I. 215.388. Records complete set of records of financial transactions of establishment in same manner as BOOKKEEPER I, using bookkeeping machine to sort documents to be posted, such as checks and debit and credit items.
- 413 BOOKKEEPER (Clerical) I. 210.388. Keeps records of financial transactions of establishment and verifies and enters details of transactions as they occur or in chronological order in stubs, inventory records, and requisitions.
- 414 SUPERVISOR, MACHINE-RECORDS UNIT (Clerical) 213.138. Supervises and coordinates activities of workers engaged in keeping records and tabulating reports, using punch-cards and office machines, such as tabulating, key-punch, and sorting machines.
- 415 CLERK, GENERAL (Clerical) 209.388. Performs any combination of filing and similar clerical tasks not requiring knowledge of systems or procedures.
- 416 TELEPHONE OPERATOR (Clerical) 235.862. Operates cord or cordless switchboard to relay incoming, outgoing, and interoffice calls.
- 417 FILE CLERK (Clerical) I. 206.388. Files correspondence, cards, invoices, receipts, and other records in alphabetical or numerical order, or according to subject matter, phonetic spelling, or other system and reads incoming material and sorts according to file system.
- 418 RECEPTIONIST (Clerical) 237.368. Receives clients or customers coming into establishment, ascertains their wants, and directs them.
- 419 PERSONNEL CLERK (Clerical) 205.368. Records data for each employee, such as address, weekly earnings, absences, amount of sales or production, supervisory reports on ability, and date of and reason for termination.
- 425 TYPIST (Clerical) 203.588. Types letters, reports, stencils, forms, addresses, or other straight-copy material from rough draft or corrected copy.
- 426 CLERK-TYPIST (Clerical) 209.388. Performs general clerical work requiring use of typewriter and compiles and types reports, bills, application forms, shipping tickets, and other matter from clerical records.
- 427 STENOGRAPHER (Clerical) 202.388. Takes dictation in shorthand of correspondence, reports, and other matter, and transcribes dictated material, using typewriter.
- 428 SECRETARY (Clerical) 201.368. Schedules appointments, gives information to callers, takes dictation, and otherwise relieves officials of clerical work and minor administrative and business detail.

429 ADMINISTRATIVE SECRETARY (any ind.) 169.168. Keeps official corporation records and executes administrative policies determined by or in conjunction with other officials.

XV. DATA PROCESSING

450 SORTING-MACHINE OPERATOR (Clerical) 213.885. Card-sorting-machine operator; sorter-machine operator.

451 KEY-PUNCH OPERATOR (Clerical) 213.582. Operates alphabetic and numeric key-punch machine, similar in operation to electric typewriter, to transcribe data from source material onto punchcards and produce pre-punched data.

452 VERIFIER OPERATOR (Clerical) 213.588. Verifies accuracy of data punched on tabulating cards, using keyboard-type machine that rejects incorrectly punched cards.

453 DIGITAL-COMPUTER OPERATOR (Clerical) 213.382. Monitors and controls electronic digital computer to process business, scientific engineering, or other data, according to operating instructions.

454 PROGRAMMER, DETAIL (Clerical) 219.388. Selects symbols from coding system from coding system peculiar to make or model of digital computer and applies them to successive steps of completed program for conversion to machine processable instructions.

455 PROGRAMMER, BUSINESS (profess. & kin.) 020.188. Digital-computer programmer. Converts symbolic statement of business problems to detailed logical flow charts for coding into computer language and solution by means of automatic data-processing equipment.

CAREERS FOR YOUTH SURVEY

FINANCE, INSURANCE & REAL ESTATE

GENERAL INSTRUCTIONS

Please answer all of the questions for this establishment as completely as possible. The information you furnish will be treated as **STRICTLY CONFIDENTIAL**. Mail the completed form in the enclosed self-addressed envelope. The **EMPLOYER'S** copy is for your use. If you have any questions, telephone Professor John L. Fulmer at Georgia Tech, 873-4211, Ext. 5352.

CS-33

1. Current employment, this establishment (Total) _____ Enter total number of workers of all kinds on payrolls of this plant, this date.
2. Estimate the total number of workers you expect will be working in this establishment.
 - a. One year from now _____
 - b. Three years from now _____Before making estimates for job needs take into account the growth prospects of **GEORGIA**, your industry and your company. Confer with appropriate officials.
3. List the most important hard-to-fill jobs in your company at the present time. (Job name or title)

a. _____	a. _____
b. _____	b. _____
c. _____	c. _____
d. _____	d. _____
e. _____	e. _____
f. _____	f. _____
g. _____	g. _____

State for each job listed the major reasons why you think you are encountering difficulties employing the number needed in each job.

COMPANY CRITERIA FOR EMPLOYING BROAD CLASSES OF WORKERS

What are your company's major criteria for employing the following classes of workers? (Complete or enter a number as appropriate in the space indicated.)

1. **UNSKILLED WORKERS:** Definition: The Unskilled group includes workers with little skill or training. They do casual labor types of jobs. Their work may not require training.
 - a. Age: minimum years _____ mandatory retirement age _____
 - b. Minimum years of schooling _____ grade _____
 - c. Years of previous experience _____ years _____
 - d. Special aptitude required _____
2. **SEMI-SKILLED WORKERS:** Definition: Semi-skilled workers are those given simple routine, mechanical-motion types of training, such as production line workers. Involves mechanical type-repetitive work, that may tend to be monotonous.
 - a. Age: minimum years _____ mandatory retirement age _____
 - b. Minimum years of schooling _____ grade _____
 - c. Years of previous experience _____ years _____
 - d. Vocational or trade school training _____ yes (1) _____ no (2) _____
 - e. Special aptitude desired _____
3. **SERVICE WORKERS:** Definition: Service workers provide a service by adding to the comfort and convenience of persons, protecting the property and lives of others, and otherwise fulfilling the personal requirements of persons. High emphasis on attitudes and ability to please the public.
 - a. Age: Minimum years _____ mandatory retirement age _____
 - b. Minimum years of schooling _____ grade _____
 - c. Years of previous experience _____ years _____
 - d. Vocational or trade school training _____ yes (1) _____ no (2) _____
 - e. Special aptitude required _____
4. **SKILLED WORKERS:** Definition: Skilled workers must have a comprehensive knowledge of processes involved in the work. They exercise consideration and judgment involving a high degree of manual dexterity, and often have extensive responsibility for valuable products or equipment.
 - a. Age: minimum years _____ mandatory retirement age _____
 - b. Minimum years of schooling _____ grade _____
 - c. Years of previous experience _____ years _____
 - d. Vocational or trade school training _____ yes (1) _____ no (2) _____
 - e. Completion of on-the-job training _____ yes(1) _____ no (2) _____
 - f. Apprenticeship training _____ yes (1) _____ no (2) _____
 - g. do you require a journeyman's rating _____ yes (1) _____
 - h. Special aptitude desired _____
5. **CLERICAL:** Definition: Clerical workers are concerned with preparation, transcribing, transferring, systematizing, or preserving written communications in offices, shops, etc. Both mental and manual processes are required.
 - a. Age: Minimum years _____ mandatory retirement age _____
 - b. Minimum years of schooling _____ grade _____
 - c. Years of previous experience _____ years _____
 - d. Post high-school vocational training _____
 - e. Special aptitude desired _____
6. Summarize below the type of formal company training regularly required. Definition: Formal training is defined here to include all planned types of training by the company management. Workers attend class or they are in a program of apprenticeship or on-the-job training with time regularly scheduled. The purpose is to impart skills or techniques to the workers, qualifying them for more responsible and important jobs. Check (✓) spaces appropriate.
 - a. No formal training _____ b. Orientation to the company _____
 - c. The "Buddy System" _____ d. On-the-job training _____
 - e. Job rotation _____ f. Apprenticeship _____
 - g. Adult education courses outside company _____
 - h. Unit classroom _____ i. Supervisor's special training course _____
 - j. University executive development courses _____
 - k. Other types: _____

WE ARE MOST GRATEFUL FOR YOUR HELP. In order to permit further contacts in this CAREERS FOR YOUTH SURVEY, please provide YOUR NAME _____
 YOUR TITLE _____ YOUR TELEPHONE NUMBER _____

Occupation (2)	Current Employment (3)	Expected Total Employment		Workers Needed for Re- placement Next Year (6)	Number in Company Training to		Workers Com- pleting Company Training or Promoted in	
		In One Year (4)	In Three Years (5)		Enter a Position (7)	Update Skill (8)	One Yr. From Now (9)	Three Yrs. From Now (10)
I. CRAFTS AND MECHANICS	*****	*****	*****	*****	*****	*****	*****	*****
Automobile Mechanic								
Furnace Installer & Repairman, Hot Air								
Air-Cond. Mechanic, Domestic								
Air-Conditioning Mechanic, Comm.								
Electrician								
Maintenance Man, Building								
VIII. MARKETING & DISTRIBUTION								
Stock Clerk								
Telephone Solicitor								
Solicitor								
XIV. OFFICE OCCUPATIONS								
Accounting Clerk								
Billing Clerk II								
Bookkeeping Machine Operator								
Bookkeeper								
Supervisor, Machine Records								
Clerk, General								
Telephone Operator								
File Clerk								
Receptionist								

INSTRUCTIONS IN BRIEF

- Col. 2: Job functions of each job are given in JOB DEFINITIONS attached
- Col. 3: Enter number employed in this establishment as of last pay period
- Cols. 4 & 5: Project ahead number in Col. 3 based on your growth needs
- Col. 6: Number of workers who will retire, be promoted, or who will withdraw from labor force for any reason. Add number who died last year.
- Col. 7: Number being trained this date to enter a position above ENTRY LEVEL
- Col. 8: Number in "Ranked" position workers who are being trained to update a skill. Do not duplicate Col. 7
- Cols. 9 & 10: Workers in job who will complete company training or be promoted in 1 year or in three years
- NOTE: If a number is entered in Col. 3, it must be extended across all Columns 4-10, even if the number expected to be employed is ZERO

INSTRUCTIONS FOR COMPLETING THE COLUMNS IN QUESTIONNAIRE

Column 1, Job Code: The job code number reflects the Career Area and in ascending order the type of job. The Job Code Number is entered in Column 1 for your convenience in finding the job definitions which apply for this study. The procedure is to First find the Job Number in the Job Definitions provided.

Column 2, Occupation: Be sure to look up the definition for the occupation, as explained in 1. Compare to your company job specifications. Then reconcile differences: if they are not important, enter the number of jobs on your October payroll and then proceed to fill out all other columns. If the differences appear to be large, read again the decision rule given in first paragraph to the Job Definitions and proceed accordingly.

When the list is completed under each category, you should then consider if there are other important jobs under the categories which should be reported. If you think this is so, you have two alternatives. First, check through all the jobs listed to learn if any fit the job you have in mind. If so, enter job survey guide number and job title and proceed as before. If none fit your plant titles, proceed as follows: (a) list plant job title omitting the job code number, and (b) complete Columns 3-10 as before.

Column 3, Current Employment: Enter in this column the total number of jobs of this job type on your October payroll. If none, enter "0".

Column 4 and 5, Expected Employment one year from now and three years from now: This column requests that you look ahead for your job needs one year ahead and three years from now. Take into account probable expansions of plant capacity and the trends in the use of the job in question. Rough estimates will be acceptable, since all returns will be consolidated into one total. The high estimates will be offset by the low estimates.

Column 6, Workers needed for replacement in the next year. Replacement needs are workers needed to replace those who are promoted to another occupation and those who leave the labor force for reasons such as death, retirement, pregnancy, disability, or entry into the Armed Forces. If unable to estimate total for next year, enter figure for replacements occurring in the past twelve months. Do not include workers who leave to seek or accept other jobs, or workers separated from your establishment because of reduction in work force, inadequate performance on the job, or misconduct.

Columns 7 and 8, Number in company training to enter a position (Column 7). For each specific job enter the actual number, as of the date of the questionnaire, which are in some type of form of company training program, such as apprenticeship, on-the-job training of more than casual duration, special adult class in company unit classroom, local high school, or vocational-technical school. The purpose is to qualify for a job at the entry position.

Upgrade skills (Column 8). Enter here the number of workers of each job type already in a ranked position but who are in the process of up-dating a skill in a company training, adult education, special MDTA course or special course in a vocational-technical school. Caution: Do not duplicate with Column 7.

Columns 9 and 10, Workers completing company training or promoted into the specified occupations by one year from now and three years from now. Combine the number of workers expected to complete company training programs and the number of workers expected to be promoted into the occupation from other jobs in the company in the next year and three years and enter in the appropriate columns.

NOTE: Very Important Point!

Column 6, Workers needed for replacement in the next year. Replacement needs are workers needed to replace those who are promoted to another occupation and those who leave the labor force for reasons such as death, retirement, pregnancy, disability, or entry into the Armed Forces. If unable to estimate total for next year, enter figure for replacements occurring in the past twelve months. Do not include workers who leave to seek or accept other jobs, or workers separated from your establishment because of reduction in work force, inadequate performance on the job, or misconduct.

JOB DEFINITIONS

FINANCE, INSURANCE & REAL ESTATE

Column 2 designates a Job Title. In order to decide if a specific job in your business or establishment qualifies under any given job title, study the job functions. If they in a majority sense agree with the job functions of any given job you have which is similar, then check off the job title given in the questionnaire, and fill out all spaces in columns 3-10, or enter a "Zero" if this applies.

I. CRAFTS AND MECHANICS

- 151 AUTOMOBILE MECHANIC (auto. ser.) 620.281. Repairs and overhauls automobiles, buses, trucks and other automobile vehicles.
- 228 FURNACE INSTALLER AND REPAIRMAN, HOT AIR (any ind.) 869.281. Installs and repairs hot-air furnaces, stoves and similar equipment in accordance with diagrams and other specifications, using handtools and pipe-threading tools.
- 231 AIR-CONDITIONING MECHANIC, DOMESTIC (any ind.) 637.281. Services and repairs domestic air-conditioning units, usually ranging from 1/2 to 2 tons capacity, in private residences and small business establishments.
- 232 AIR-CONDITIONING MECHANIC, COMMERCIAL (any ind.) 637.281. Installs, services, and repairs commercial air-conditioning units, usually rated in excess of 100 tons cooling capacity, in department stores, office buildings, and other large commercial establishments, utilizing knowledge of refrigeration theory, pipe fitting, and structural layout.
- 236 ELECTRICIAN (any ind.) 824.281. Plans layout and installs and repairs wiring, electrical fixtures, apparatus, and control equipment.
- 241 MAINTENANCE MAN, BUILDING 899.381. Repairs and maintains physical structures of commercial and industrial establishments, such as factories, office buildings, apartment houses, and logging and mining constructions, using handtools and power tools.

VIII. MARKETING AND DISTRIBUTION

- 280 STOCK CLERK (Clerical) 223.387. Receives, stores, and issues equipment, material, supplies, merchandise, foodstuffs, or tools, and compiles stock records in storeroom, warehouse, or storage yard.
- 288 TELEPHONE SOLICITOR (any ind.) 293.358. Solicits orders for merchandise or services over the telephone.
- 289 SOLICITOR (any ind.). Solicits business for establishment by calling door to door, following lead from management, other workers, or from listings in city and telephone directories.

XIV. OFFICE OCCUPATIONS

- 410 ACCOUNTING CLERK (Clerical) 219.488. Performs variety of routine calculating, posting, and typing duties to accomplish accounting.
- 411 BILLING CLERK (Clerical) II. 219.388. Prepares invoices and bills of lading: Computes amounts due from records, such as purchase orders, sales tickets, and charge slips, using adding or calculating machine. Types invoices, listing items sold, amounts due, credit terms, and date of shipment. Types bills of lading and lists weight and serial number of items sold, using specifications book.
- 412 BOOKKEEPING MACHINE OPERATOR (Clerical) I. 215.388. Records complete set of records of financial transactions of establishment in same manner as BOOKKEEPER I, using bookkeeping machine to sort documents to be posted, such as checks and debit and credit items.
- 413 BOOKKEEPER (Clerical) I. 210.388. Keeps records of financial transactions of establishment and verifies and enters details of transactions as they occur or in chronological order in stubs, inventory records, and requisitions.
- 414 SUPERVISOR, MACHINE RECORDS UNIT (Clerical) 213.138. Supervises and coordinates activities of workers engaged in keeping records and tabulating reports, using punch-cards and office machines, such as tabulating, keypunch, and sorting machines.
- 415 CLERK, GENERAL (Clerical) 209.388. Performs any combination of filing and similar clerical tasks not requiring knowledge of systems or procedures.
- 416 TELEPHONE OPERATOR (Clerical) 235.862. Operates cord or cordless switchboard to relay incoming, outgoing, and interoffice calls.
- 417 FILE CLERK (Clerical) I. 206.388. Files correspondence, cards, invoices, receipts, and other records in alphabetical or numerical order, or according to subject matter, phonetic spelling, or other system and reads incoming material and sorts according to file system.
- 418 RECEPTIONIST (Clerical) 237.368. Receives clients or customers coming into establishment, ascertains their wants, and directs them.
- 419 PERSONNEL CLERK (Clerical) 205.368. Records data for each employee, such as address, weekly earnings, absences, amount of sales or production, supervisory reports on ability, and date of and reason for termination.
- 425 TYPIST (Clerical) 203.588. Types letters, reports, stencils, forms, addresses, or other straight-copy material from rough draft or corrected copy.

- 426 CLERK TYPIST (Clerical) 209.388. Performs general clerical work requiring use of typewriter and compiles and types reports, bills, application forms, shipping tickets, and other matter from clerical records.
- 427 STENOGRAPHER (Clerical) 202.388. Takes dictation in shorthand of correspondence, reports, and other matter, and transcribes dictated material, using typewriter.
- 428 SECRETARY (Clerical) 201.368. Schedules appointments, gives information to callers, takes dictation, and otherwise relieves officials of clerical work and minor administrative and business detail.
- 429 ADMINISTRATIVE SECRETARY (any ind.) 169.168. Keeps official corporation records and executes administrative policies determined by or in conjunction with other officials.
- 435 CHECKING CLERK (Banking). 209.688. Verifies accuracy of bank records by performing a variety of duties, such as verifies accuracy of entries on customer-asset cards against incoming and outgoing security lists. Compares trust debits and credits against proofsheets. Compares data, such as maturity dates and series numbers on stocks, bonds, and bond coupons, with duplicate tickets. Examines data on loan records for purposes such as insuring adequate insurance during loan period, notifying borrowers to renew loans prior to outlaw date, and insuring that details are in order prior to advancement of funds. Compares incoming remittances with lists of payment-due notices previously sent out.
- 436 CASHIER, CURRENCY EXCHANGE (bus. ser.) 211.468. Cashes checks, prepares money orders, and receives payment on bills, such as gas, light, and telephone, and accepts payments and issues receipts for such items as license plates.
- 287 CASHIER II (Clerical) 211.468. Receives cash from customers or employees in payment for goods or services and records amounts received.
- 280 STOCK CLERK (Clerical) 223.387. Receives, stores, and issues equipment, material, supplies, merchandise, foodstuffs, or tools, and compiles stock records in storeroom, warehouse, or storage yard.
- 439 INSURANCE CHECKER (insurance) 219.488. Verifies accuracy of insurance company records by performing a variety of duties such as comparing computations on premiums paid, interest, and dividends due with same data on other records.
- 440 INSURANCE CLERK I. (Banking) 219.388. Examines life insurance policies held as security for commercial or personal credit loans and keeps records of bankowned insurance and dire insurance on commodity loans.
- 441 REAL ESTATE CLERK (Clerical) 291.388. Performs a variety of clerical duties concerned with rental, sale, and management of real estate.

XV. DATA PROCESSING

- 450 SORTING MACHINE OPERATOR (Clerical) 213.885. Card-sorting-machine operator; sorter-machine operator.
- 451 KEY-PUNCH OPERATOR (Clerical) 213.582. Operates alphabetic and numeric key-punch machine, similar in operation to electric typewriter, to transcribe data from source material onto punchcards and produce pre-punched data.
- 452 VERIFIER OPERATOR (Clerical) 213.588. Verifies accuracy of data punched on tabulating cards, using keyboard-type machine that rejects incorrectly punched cards.
- 453 DIGITAL COMPUTER OPERATOR (Clerical) 213.382. Monitors and controls electronic digital computer to process business, scientific engineering, or other data, according to operating instructions.
- 454 PROGRAMMER, DETAIL (Clerical) 219.388. Selects symbols from coding system from coding system peculiar to make or model of digital computer and applies them to successive steps of completed program for conversion to machine processable instructions.
- 455 PROGRAMMER, BUSINESS (profess. & kin.) 020.188. Digital computer programmer. Converts symbolic statement of business problems to detailed logical flow charts for coding into computer language and solution by means of automatic data processing equipment.

Sample of Other Questionnaires Employed

CAREERS FOR YOUTH SURVEY

Georgia Institute of Technology
College of Industrial Management

State Department of Education
Vocational Educational Division

In order that we may obtain key data on certain aspects on CAREER LADDERS for Georgia's High School Youth, we are requesting a representative group of employers who responded to the QUESTIONNAIRE to provide us with estimates for selected ENTRY LEVEL JOBS on pay ranges and the approximate promotion interval for the following classes on jobs which you have already reported on wholly or in part. The Data you provide will be held in confidence and will be summarized in the report only in averages in order to preserve the anonymity of the source of data. Base your estimates on workers in these positions who have been in your employment for a lengthy period, and are considered "Typical Performing" employees for each job title.

CS _____

1. CAREER LADDER IN

JOB TITLE	Check (✓) if you employ in this position	Range in pay for this job position (Show as monthly or Hourly Rate)	Number of months required on average to move to NEXT job position you checke
1. _____	()	Pay _____	
_____		Range _____	(mos)
2. _____	()	Pay _____	
_____		Range _____	(mos)
3. _____	()	Pay _____	
_____		Range _____	(mos)
4. _____	()	Pay _____	
_____		Range _____	(mos)
5. _____	()	Pay _____	
_____		Range _____	(mos)
6. _____	()	Pay _____	
_____		Range _____	(mos)

LIST ADDITIONAL JOBS

You have in this CAREER LADDER

_____	()	Pay _____	(mos)
_____	()	Range _____	(mos)

Thank you!

NAME _____

TITLE _____

TELEPHONE NO. _____

II CAREER LADDER IN _____

JOB TITLE	Check (<input type="checkbox"/>) if you employ in this position	Range in pay for this job position (Show as monthly or Hourly Rate)	Number of months required on average to move to NEXT Job Position you checked
1. _____ _____	(<input type="checkbox"/>)	Pay _____ Range _____	_____ (mos)
2. _____ _____	(<input type="checkbox"/>)	Pay _____ Range _____	_____ (mos)
3. _____ _____	(<input type="checkbox"/>)	Pay _____ Range _____	_____ (mos)
4. _____ _____	(<input type="checkbox"/>)	Pay _____ Range _____	_____ (mos)
5. _____ _____	(<input type="checkbox"/>)	Pay _____ Range _____	_____ (mos)
6. _____ _____	(<input type="checkbox"/>)	Pay _____ Range _____	_____ (mos)

LIST ADDITIONAL JOBS
you have in this CAREER LADDER

_____	(<input type="checkbox"/>)	Pay _____	_____ (mos)
_____	(<input type="checkbox"/>)	Range _____	_____ (mos)

III. CAREER LADDER IN _____

1. _____ _____	(<input type="checkbox"/>)	Pay _____ Range _____	_____ (mos)
2. _____ _____	(<input type="checkbox"/>)	Pay _____ Range _____	_____ (mos)
3. _____ _____	(<input type="checkbox"/>)	Pay _____ Range _____	_____ (mos)

CAREERS FOR YOUTH SURVEY
Basic Data on Skills and Work Attitudes Requirements
of Employers

Your further cooperation is urgently needed in order to obtain data on Skills Requirements and Work Attitudes desired by Employers. Will you kindly fill in the applicable blank spaces below in abbreviated form, indicating the SKILLS and WORK ATTITUDES which you expect of workers in the ENTRY LEVEL JOBS shown plus one higher level job; also the possible alternate lines of advance and requirements. ALL DATA ARE CONFIDENTIAL and will be reported only in averages derived from several reports.

I. CAREER LADDER _____

1. ENTRY LEVEL JOB _____

a. SKILLS expected of worker in first 6 months on the job _____

b. WORK ATTITUDES expected of worker in first 6 months on the job _____

2. Second Step on this Career Ladder _____

a. SKILLS expected of worker in first 6 months on the job _____

b. WORK ATTITUDES expected of worker in first 6 months on the job _____

c. WORK ATTITUDES expected of worker in first 6 months on the job__

3. From this point or at some higher point on the Job Ladder, what are some alternate lines of advance for which the worker may be considered?

What are some of the broad attributes of skills or work attitudes that would be required for advances along these lines?

We are most grateful to you for helping us accumulate data to make Training Programs in the Comprehensive High Schools reflect the SKILLS AND WORK ATTITUDES desired by employers of workers in ENTRY LEVEL JOBS. This will produce more efficient and responsive workers for employers.

In order that I may contact you for any possible clarification relative to data provided, please fill in below the data needed for communication.

NAME _____

TITLE _____ TELEPHONE NO. _____

COMPANY _____

ADDRESS _____

CS _____

3

PICTURE ILLUSTRATIONS OF JOBS TO HELP HIGH SCHOOL YOUTH FIND
A PATHWAY INTO THE FUTURE

7

COMPANY _____

ATTN: _____

In order that we may compile and print a large number of brochures on Careers for Youth for deposit in the High School libraries of the State, I would appreciate your help in supplying pictures for the following JOB LADDERS or illustrative pictures of broad work scenes, showing materials or services and with or without workers. Your company name and address will be printed in the brochure in Bold Face Type as an acknowledgement of your contribution. Please provide black and white pictures with negatives (proof may be no more than 2 x 2)

I. JOB LADDER _____

a. Entry Level Job _____

What is worker doing in picture?

b. Second Level Job _____

What is worker doing in picture?

c. Third Level Job _____

What is worker doing in picture?

d. Fourth Level Job _____

What is worker doing in picture?

e. Fifth Level Job _____

What is worker doing in picture?

II. Broad scene picture, showing products or services, with or without workers.

a. Title for Picture _____

Brief description of what is happening in picture.