

~~64~~. VOCATIONAL TRAINING AND OCCUPA-
TIONAL ACTIVITIES

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SMALL WORK PROJECTS

MEN - WOMEN

YOUTH

SUMMARY OF YOUTH WORK PROGRAMS IN THE U.S.

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Section 9. Gardening WPA personnel may be assigned to operate fruit and vegetable gardens, or to provide supervision in gardening for a Community Gardening Program or technical assistance in gardening for other WPA projects having gardening activities, in accordance with the provisions of Operating Procedure No. G-1, subject to the limitations of the applicable project approval. Regulations applicable to all types of garden projects are set forth in subsections A and B of this section. Regulations relating to community gardening programs and to technical assistance for other WPA Projects are found in subsections C and D.

A. Personnel Supervisory personnel for gardening projects shall be selected in accordance with the requirements set forth in Operating Procedure No. E-9, section 44 and Appendix B, section 5. General duties performed by all supervisors shall be in accordance with those given in job descriptions in Operating Procedure No. E-9, Appendix B, section 5. Specific duties shall be planned administratively by the State Director of Community Service Programs. Where possible, competent technical supervision should be furnished by the sponsor.

Project wage employees and supervisory personnel shall be prepared through induction and/or in-service training for the specific duties to which they are assigned.

B. Disposition of Products. The products of WPA gardening projects shall be distributed free to public institutions caring for the needy or to the needy in their homes, or for use on WPA school lunch, household workers' training, housekeeping aid, or nursery school projects, or camps for needy children. No Federal funds shall be expended under a gardening project for distribution of the produce.

It shall be the responsibility of the sponsor to determine whether families to which the produce of gardening projects is distributed are needy and unable to secure such produce from other sources. Where considered desirable, the sponsor may be required to prepare a plan of distribution for approval by the State Director of Community Service Programs.

The transfer of produce to the sponsor or to other WPA projects shall be effected in accordance with the provisions of sections 22, 23, 28, and 45 of Operating Procedure No. G-3.

C. Community Gardening Program. Where supervision is furnished for a community gardening program, the Work Projects Administration will employ a project wage employee as supervisor who shall be responsible to the sponsor for the operation of the garden program and to the Work Projects Administration for its technical adequacy. A ration of one WPA employee acting as supervisor to not less than 1,950 nor more than 3,000 man-hours per month of community participation shall be maintained. The WPA employee shall not engage in the actual work of production.

Before a WPA employee may be supplied to a community garden, the sponsor shall submit a plan indicating adequacy of available land and equipment, estimated number of persons who will participate, estimated amount of work to be performed, and the duration of time for which the employee will be needed.

All contracts and agreements between the sponsor and the participants shall be made by the sponsor. Copies of such contracts and agreements shall be furnished to the WPA supervisor before the individual starts work at the community gardening center.

D. Technical Assistance for Other WPA Projects. Where technical assistance in gardening is requested for the other WPA projects, qualified personnel from the gardening project may perform such services. During that service they will be administratively responsible to the supervisor of the project on which they are giving assistance, but will be technically responsible to the supervisor of the gardening project and will remain charged to that project.

Section 6. Mattress and Comforter Projects

A. Objectives and General Policies Mattress and comforter projects have the threefold objectives of (1) giving employment to needy women and men, (2) utilizing cotton surpluses in the manufacture of mattresses and comforters, and (3) producing mattresses and comforters for free distribution to needy families.

The principles stated in section 5 pertaining to sewing projects shall be observed in the operation of mattress and comforter projects. A close and cooperative relationship with the Surplus Marketing Administration through the State Public Welfare agency shall be maintained at all times.

B. Project Organization

1. Types of Units Units to make mattresses and comforters may operate as (1) units of a consolidated State-wide sewing project provided they are not merely incidental work on a sewing project, (2) units of a State-wide mattress and comforter project, and (3) units operating under local projects.
2. Qualifications and Selection of Personnel The supervisors of mattress and comforter projects should be persons with industrial experience whenever possible. They should have a thorough knowledge of the processes involved in the production of these articles. Executive and administrative ability with specific knowledge of the aims and objectives of the program is essential.

When a mattress and/or comforter project is operated as a unit of the State-wide sewing project, the operation shall be under the jurisdiction of the State supervisor of sewing projects.

A registered or graduate nurse should be assigned to projects employing approximately 100 employees and a person qualified to administer first aid shall be assigned.

Employees of the mattress or comforter projects must demonstrate, at the minimum, an elementary understanding of and ability to perform satisfactorily the tasks assigned. Two consecutive pay periods shall normally be deemed sufficient time in which to determine a new employee's ability to perform such tasks.

Experienced personnel shall be employed to insure safe and efficient project operation as provided on page 2.5.016 of the Manual of Rules and Regulations.

3. Relationship and Responsibility of Other Groups Since mattress and comforter projects normally operate as units of a State-wide sewing project and have the same sponsor, section 5, item 4, pertaining to sewing projects shall apply.

The sponsor shall pay for the cost of ginning cotton, and cotton secured through the Surplus Marketing Administration shall not be used to pay for ginning.

Sponsors should contribute all-other-than-labor costs, with the exception of necessary items relative to WPA supervision and administration, and Supply Fund overhead.

C. Facilities

1. Space Mattress and comforter projects should be established at locations where the necessary skills are available and with a view to proximity of the supplementary commercial facilities that are required, such as ginning plants.

Space should be sufficient to provide for proper placement of equipment to allow for efficient operation. A separate section of fireproof construction shall be provided for the storage and handling of picked and ginned cotton.

Work processes that cause an appreciable amount of dust shall be adequately housed apart from the other activities, and persons engaged in such work shall be required to wear respirators of an approved type.

Safe and adequate lighting, either natural or artificial, shall be provided. Proper ventilation shall be maintained. Adequate and proper toilet and lavatory facilities for women and men must be provided. Such facilities should be easily accessible, well ventilated, and lighted.

The provisions of WPA Safety Bulletins with respect to location, housing, equipment, fire protection, and the storage and handling of materials shall be observed. A copy of such bulletins shall be posted in a conspicuous place at each project location.

2. Equipment Since substantially all of the materials for mattress and comforter projects are supplied from surplus commodities, the sponsor is expected to furnish all the equipment used in the manufacture of mattresses and comforters. Federal funds may not be used for the purchase of equipment without special justification forwarded to and approved by the Assistant Commissioner, Division of Community Service Programs, Washington, D. C.

The general items of equipment required are: Picking or garnetting machines, blowers, scales, floor trucks, approved-type sewing machines, equipment parts and maintenance, masks or respirators, tufting and roll edge needles, and other findings.

The physical layout of all equipment shall be planned for the proper flow of materials without loss of time and for the greatest ease in the physical handling of all operations.

3. Materials Cotton, mattress ticking, and comforter prints are supplied by the Surplus Marketing Administration. Additional materials required should be purchased by the sponsor. Surplus Marketing Administration restrictions on these materials, as outlined in section 5 pertaining to sewing projects, shall be followed.

D. Plan of Operation-Mattresses and comforters should be manufactured according to the technique outlined in Sewing, Mattress, and Comforter Circular No. 1 of the WPA Technical Series.

Processing methods shall be in accordance with established standards for the operation of these projects as set forth below. The facilities of the State-wide sewing project may be utilized to cut and sew ticking and comforter covering. Raw cotton shall not be hand corded. Imperial edging shall not be used in the process of mattress production. As a fire precaution, not more than one full bale of cotton is permitted in the processing room at one time.

Minimum standards for quantity production shall be:

1. 1.5 mattresses (full size) per worker per 6-hour day, which is equivalent to 4 hours per mattress per worker.
2. Six comforters per worker per 6-hour day if provided the cotton is garnetted and adequate equipment is available.
3. Three comforters per worker per 6-hour day if machine-fluffed cotton and hand quilting frames are used.

All phases of operation shall be included in this calculation of man-hours production.

Each article processed shall bear a label "WPA - Not to be sold." Rest periods as outlined in section 5, subsection E, pertaining to the operation of the sewing project, shall also apply to all persons engaged in processing activities.

E. Disposition of Product Products of the mattress and comforter project made in whole or in part from surplus commodities may be distributed only to needy families. Products of the mattress and comforter project made entirely from materials furnished by the sponsor may be distributed to needy families and to public institutions.

The finished products should be carefully handled, wrapped in heavy paper, and tied, ready for shipment.

With properly planned production, only those articles will be made which are required by the sponsor for distribution. Completed mattresses and comforters should not be allowed to accumulate on a unit in large quantities. They should be turned over at specified intervals to the sponsor or other accredited distribution agency. Receipts, as stated in the Manual of Rules and Regulations, pages 2.10.053-2.10.054, shall be obtained for all articles released from mattress and comforter projects. No Federal funds shall be expended for distribution of the completed articles.

It shall be the responsibility of the sponsor and authorized distributing agency to determine that families to which articles are distributed are needy and unable to secure such articles from other sources. The sponsor may be required to prepare a plan of distribution, stating the basis of eligibility of families to receive such articles for approval by the State Director of Community Service Programs.

Scraps should be utilized or disposed of according to the instructions as set forth in section 5.

PART I - WHAT IS THE WPA HOUSEKEEPING AIDE PROJECT?

In many homes there are times when the mother or homemaker is sick and not able to do the housework and care for the children. This may mean that the husband or other wage earner must stay at home from work or the children from school. Sometimes it is necessary for the mother to go to the hospital and there is no one to leave with the children. Aged and blind persons are often in need of help in keeping their homes clean and orderly. In many such homes the family cannot afford to pay for outside help.

The WPA Housekeeping Aide Project helps these families by giving free housekeeping service. This service is usually given in homes where there is sickness or where there is no mother. The work that housekeeping aides do in these homes is a very important service. When the mother is sick, she can get well sooner if she does not have the care of the house and the children. Because of the housekeeping aide service which is given in these homes, children have a better chance to go to school, or the home is held together while the mother is in the hospital.

The families who receive the service are referred to the Project Office by the Department of Welfare, Visiting Nurse Association, hospitals, and other similar agencies. The supervisor decides which aide to send into the house.

The Housekeeping Aide Project is a very important one. The service helps many families to have better health.

The Housekeeping Aide Project helps families all over the United States.

PART II - THE HOUSEKEEPING AIDE

Section 1. Attitude

The success of the service the housekeeping aide gives in the home will depend upon the attitude she has toward her job. The aide should always remember that the service is important to the families. To do the best job possible the housekeeping aide must:

- Be interested in the service that is being given.
- Be businesslike in doing the work. Never gossip.
- Be able to make the best use of what is found in the homes to work with.
- Be cheerful and patient with sick persons.
- Be willing to work with children and adults in the homes.
- Be kind and patient in dealing with children.
- Never try to settle family disputes.

The aide must report to work on time and do each job well. The aide should follow instructions carefully, so that the best service possible is given.

B. Industrial Sewing

(1) Minimum Work Stations and Equipment Requirements

a. Work Stations

An industrial sewing shop shall have a minimum of thirty work stations.

(1) Determination of Number of Stations

The number of work stations on smaller projects (from twenty-four to forty machines) shall be the number of machines plus approximately one-fourth of that number; for example, on a project having thirty machines the total number of work stations will be thirty-eight.

The number of work stations on larger projects (more than forty machines) shall be the number of machines plus approximately one-third of that number; for example, on a project having forty-two machines the total number of work stations will be fifty-six.

(11) Ratio of Pressers, Finishers, Inspectors and Floor Girls to Operators:

Shops for 24 to 40 machines

For every 12 operators - 1 presser
For every 15 operators - 1 finisher
For every 15 operators - 1 inspector
For every 25 operators - 1 floor girl

Shops for 41 machines and up

For every 9 operators - 1 presser
For every 10 operators - 1 finisher
For every 12 operators - 1 inspector
For every 20 operators - 1 floor girl

b. Equipment

- (1) Sewing Machines** - The types of machines to be used in any given shop will be determined by the various articles to be produced and by the kinds of machines used by the sewing industry in the city or area in which the project is located. No domestic or professional machines shall be used.

The shop shall be equipped with single needle plain stitchers ranging from slow to fast speeds and shall have, in addition, such special machines as are necessary to make a balanced unit which can fabricate articles from light and medium heavy materials or from medium heavy and heavy materials.

The ratio between plain stitchers and special machines will vary with the size of the shop - the smaller shop requiring a proportionately larger number of the latter. A 30-machine shop will have approximately 10 special machines and 20 plain stitchers. A 60-machine shop will have approximately 15 special machines and 45 plain stitchers.

Normally each machine will be mounted on an individual table and be supplied with an individual motor. Thread stands shall be included in the tables. Each machine when it is purchased shall be equipped with a light and shall have the necessary accessories: oil can, 2 screw drivers, extra needles, 5 bobbins, 1 gauge.

(11) Auxiliary Machine Equipment

- (a) Cutting Machines - Two to four cutting machines are required. Both round and straight knife machines should be included, all with sharpening device attached. Sizes should be both 5" and 7" blades.
- (b) Pressing Equipment - Unless the building is equipped with live steam, a boiler will be required for the pressing equipment. This shall be large enough to supply all pressing machines and irons. 2 to 8 pressing machines are required. These will be oval machines with both head and buck steam heated. 2 steam electric irons of from 6½ to 7 lbs. each will be required and some electric irons may be used. Heavier irons such as those weighing 15 lbs. shall be equipped with pulley and cord.
- (c) Motors - Normally, sewing machines shall be equipped with individual motors. To obtain the most efficient operation of machines, the motors must be adequate. With the exception of special machines which need 1/3 horsepower motors, machines rated up to 2,000 R.P.M. on individual stands can use 1/4 horsepower motors, but above 2,000 R.P.M. maximum speeds will not be obtained with 1/4 horsepower motors. For example a 31-15 machine is rated at 2,200 R.P.M. but will not run faster than 1725 R.P.M. with a 1/4 horsepower motor. Therefore, machines rated from

2,000 to 3,500 R.P.M. on individual stands require $\frac{1}{3}$ horsepower motors. Machines rated from 3,500 to 5,000 R.P.M. on individual stands shall be equipped with $\frac{1}{2}$ horsepower motors.

- (d) Cloth Spreaders - While not required, it is advantageous to have a cloth spreader when large quantities of materials are laid out at one time. The experience in the use of this machine will be of value to those youths who are receiving training as cutters.
 - (e) Marking Machines - The marking equipment may be either a thread marker or a drilling machine.
- (111) Other Equipment -

- (a) Cutting Tables - There is a definite relationship between cutting production and the length of the cutting table used. In order to do volume cutting, industry uses "markers". Markers are stenciled or marked patterns consisting of four different sizes so interlocked that it is possible to cut several sizes at one time and at the same time save on yardage.

To calculate the approximate length of the cutting table, the size of the average marker must be known. Since four sizes constitute a marker and an average garment takes about $2\frac{1}{2}$ yards, the length of the average marker would be nine yards or 27 feet. Leaving $\frac{1}{2}$ foot clearance on both ends for bolting the material, the table shall be at least 30 feet long and preferably longer. It shall be from 34" to 35" high. It shall be 72" wide so that the material can be laid up from both sides and there is a little space between the lays and also at the edges of the table.

A small project needs only one cutting table but larger projects need two or more.

- (b) Chairs - There shall be at least one chair to every worker in the shop. The type of chair used should be conducive to the greatest possible comfort in working. Posture chairs are recommended as they lessen fatigue and are therefore conducive to better workmanship and greater production.
- (c) Assorting Tables - Assorting tables shall be 35" high. The length and width are not fixed but a good working surface is needed. 144" long, by 48" wide is a good size.

- (d) Inspecting Tables-Inspecting tables should preferably have a 4" pitch, starting at a height of 29" at the front of the table and rising to 33" at the back. The number needed will depend on the size of the shop.
 - (e) Feed Tables - A small table of the same height as the machines shall be placed at the end of each bank of machines, to hold the material which is to be fabricated there.
 - (f) Work Boxes for Each Operator - Each operator shall have a work box or a bench for the work which is to be through the machine. The boxes shall be 22½" long, 24½" wide and 14½" deep. They shall be erected on legs so that the overall height will be 23" or 24". If benches are used, they shall be 25" long, 15" wide and 17" high.
- (iv) Small Tools, Machine Parts and Supplies
- (a) Shears - Each shop shall have several pair of large shears of various sizes such as 13", 10", etc., some straight for cutting and others curved for trimming. Each operator shall be provided with the 5" size for thread cutting and inspectors and finishers shall be supplied with them also. All scissors shall be kept in the storeroom in a separate cabinet or in the mechanic's cabinet. They shall be checked out to the workers at the beginning of the shift and shall be returned by the worker at the end of the shift.
 - (b) Tape Measures - Each operator shall be supplied with a tape measure and there shall be some provided also for other workers, such as finishers and inspectors, who may need them.
 - (c) Machine Attachments and Supplies - Extra attachments for machines, required specific work to be done, several reserve packages of each size of needle used, one dozen knives of each size for bottom-hole machines and 200 yards of belting always shall be on hand. These articles as well as screw drivers, oil cans, etc., shall not be kept in the individual machine drawers but shall be charged to the mechanic, who will issue or install them as needed and see that they are returned.

(2) Shop Layout

See representative shop plans in appendix B as follows: 1. A regular rectangular space. 2. An irregularly shaped space. 3. A shop located on two floors (two plans).

- a. An industrial sewing shop required at least 4000 sq. feet of floor space which shall be increased in proportion to increases in machinery and equipment.
- b. Storage space - There shall be three storerooms - one for NYA stock and incoming sponsors' materials, another for cut garments and a third for finished work. The incoming storeroom shall have a storage cabinet for findings, buttons, etc., as well as a cabinet for the mechanic's supplies. Besides three storerooms, there shall be storage cabinets or bins for the work of the different shifts in order that each shift may store its own unfinished work.
- c. All machines with the exception of some of the special machines shall be arranged in double lines facing each other, with a trough or table between. The plain stitcher banks of machines shall be placed nearest the cutting and assorting tables, followed by the special machines which are in the line set-up, and the individual special machines placed at the back of the room or at the end of the particular line, wherever they fit best into the manufacturing process.
- d. All plant layouts shall be planned with the following objectives:
 - (1) Using the available space to the best advantage. This means placing such equipment as needs the best light near the windows, as follows: pressing equipment, cutting tables and inspecting tables. The other equipment shall be so placed that it is not too crowded for efficient work and that sufficient aisle space is left.
 - (11) Reducing safety hazards. (See paragraph 3 following.)
 - (111) Arranging the equipment and facilities so that there will be an orderly flow of work from the receipt of the new material to the shipping of the finished garment, thus assuring the greatest possible productivity. The work should be as follows:
 - (a) Incoming material stockroom
 - (b) Cutting department

- (c) Assorting and marking space
- (d) Cut garment storage space (for two to three weeks' supply of cut garments)
- (e) Feed work tables for routing of garments to machines, arranged at both ends of each group of machines, as follows:

Individual parts to be worked on one line
or as many lines as needed

Joining or assembly of garments on one or
more lines

Work on special machines

- (f) Incomplete bundles storage space - There shall be a storage space to house the incomplete bundles of each shift in order to prevent needless confusion.
- (g) Hand finishing space
- (h) Inspecting and cleaning facilities
- (i) Pressing tables
- (j) Inspecting (double check) space
- (k) Packing Space
- (l) Finished garment storage space

(3) Safety

To insure safe working conditions precautions shall be taken so that:

- a. The shop complies with all state and local safety regulations and with such safety regulations issued by the National Youth Administration as are applicable to machines used on industrial sewing projects.
- b. There is no exposed wiring. All wiring shall be inspected by the local or state building inspector.
- c. Lighting is adequate but not so bright as to produce a glare and cause eye strain. Fluorescent lighting is satisfactory. The lights shall be spaced approximately 7½ feet from the floor and 8 feet apart. This will prevent high-lights and shadows.
- d. Each machine is equipped with a needle guard.

- e. All moving parts of the machine below the table are provided with guards to prevent clothing from catching in them.

(4) Organization of Work

a. Cutting

Each project shall have a qualified cutter (larger Projects will require two) with two to three boys assigned to assist in this operation. Markers (see (1) b, iii, above subsection B, this part on Equipment Cutting tables) shall be used, and all bundles shall have work tickets designating lot number, size and quantity. For efficient operation, bundles shall contain approximately 18 garments, preferably all of one color to eliminate the frequent changing of thread and effect increase in output. A three weeks' supply of cut garments shall be on hand at all times so that there is the assurance that the machines will never be without work.

b. Operating

After the garments have been cut and properly tagged, the work flow chart as outlined above shall be followed. However, before a garment goes into production, it shall be the function of the project supervisor to analyze the garment, and determine the various operations to be performed. These and the number of stitches per inch per operation shall be listed on a production record sheet. All machines with the exception of some of the special machines shall be arranged in double lines facing each other, with a trough or table between. The first bank or banks of machines shall be used for training beginners and for making individual parts of garments, and the next bank for assembling the garments which may then be routed to the special machines.

c. Finishing

Such hand finishing as is required shall be performed at this time and thread ends cut off.

d. Inspecting

The work shall be carefully inspected for defective stitching, raw edges, and any other defects. Careful inspection and rejection of unsatisfactory work at this point will minimize later rejections and will train the operators in better workmanship.

e. Pressing

Proper pressing brings out the quality of the garment. It is suggested that a pressing job specification for each style of garment be furnished the supervisor in charge of the pressing. The following are a few general pressing directions: Tucks and pleats, shall not be pressed. Pinked and serged seams shall be opened. French seams shall not be pressed. Sleeves, cuffs and collars on light materials and the bottom of sleeves on woolen garments shall be pressed by hand. Sleeves of woolen garments, such as coats, mackinaws, etc. shall be pressed by machine. The bodies of all types of garments shall be pressed by machine.

f. Inspecting

The garment shall be inspected once more to assure that no faults have been overlooked and that it is in perfect condition for delivery.

g. Maintenance

In order to maintain production, it is essential that the machines be constantly serviced to minimize machine breakdown. Each shop shall have an expert sewing machine mechanic or repairman in charge of this work.

(5) Supervision

Each shop shall be in charge of an occupationally qualified shop supervising foreman. (See Section 1 Subsection D of this part.) The cutting, marking, assorting, and assembling shall be in direct charge of the cutting foreman. All other activities shall be in charge of foreladies or foreman. It is important that they are assigned to have specific charge of the various banks of machines, the special machines, the finishing, the inspecting and pressing.

(6) Production

A plan must be made to insure a supply of materials and outlet for the finished products in volume sufficient to provide full and continuous operation of the shop. Adequate material supplies should be evidenced by co-operating agencies' commitments or planned NYA expenditures for material.

There is a wide variety of types of products that may be made. It is recommended, however, that as much work as possible be done for the armed forces. This may include the making of any new articles, such as tents, knapsacks, barrack bags, bakers and cooks uniforms, and sheets and pillow cases; the alteration and repair of garments; the repair of tents; and other similar items. It is also suggested that units make sufficient flags for all NYA resident and non-resident work locations, and for public agencies.

Drapery and upholstery work shall not be done on an industrial sewing project since the quantity of any one type of article for which the National Youth Administration receives such orders is so small that it does not lend itself to line production. The making of hospital supplies, such as bandages, swabs, and other items which do not require sewing is not an approved activity for these projects.

(October 26, 1942)

Squaring shears (power and hand)
Brake
Bar folder
Slip roll
Combination punch
Drill press

(2) Related Training should include:

Mathematics
Blueprint Reading and Sketching

C. Specialized Training.

Except when training to meet the requirements of a specific industry, training of each youth should be spread over the operations and related work listed as follows:

(1) Shop Work - 75% of time

a. Fabrication

Layout
Shearing, trimming, filing
Drilling
Banding and forming
Bumping
Shrinking and stretching
Inspecting

b. Riveting

Layout
Drilling
Reaming
Predimpling
Riveting (hand and pneumatic)
Bucking
Replacing rivets
Primary assembly
Inspecting

(2) Related Training - 25% of time

- a. Mathematics
- b. Blueprint Reading and Sketching
- c. Aviation Fundamentals
- d. Elements of Metal Work

Section 4. Industrial Sewing. The following principles are set forth for training youth in industrial sewing shops:

A. General Principles.

- (1) Each youth should be assigned for a brief period of from 2 to 6 days, preferably when first reporting for work, to finishing, pressing and inspecting.
- (2) Each youth should be given a fundamental training period of from 12 to 20 hours on the single needle plain stitching machine.
- (3) At the conclusion of the fundamental training period, the youth should be assigned to production work.
- (4) Only one youth shall be assigned to a work station.
- (5) The work of the shop shall be so organized that each youth can complete a full training plan.
- (6) During the entire training period emphasis shall be placed on the development of good work habits, careful workmanship, and ultimately on speed.
- (7) Such related training as construction of garments, safety, and care of equipment should be given concurrently with shop training.
- (8) When the production work assigned to a shop does not require the use of all types of special machines, special jobs should be devised in order to give the youth the necessary training on such of these machines as are used by the local war industries.

B. Fundamental Training.

Fundamental training should be given on a single-needle, plain stitching machine and should consist of the following:

- (1) Safety and posture in operating the machine.
- (2) Starting and stopping; control of machine at various speeds.
- (3) Care and oiling of the machine.
- (4) Stitching: Backstitching for finishing; plain seams, straight and bias; parallel lines; plain hems.
- (5) Simple line production job training.

If at the end of this period the youth gives clear indication that she will not become a good operator, the foreman shall request the transfer or termination of the youth.

C. Advanced Training.

- (1) A youth shall start with the simplest operations performed on the single needle plain stitching machine, such as plain sewing; pocket hemming, etc., and progress to the more difficult operations. Work shall be continued on this machine from four to six weeks until such time as the machine can be operated efficiently and at a relatively high speed.
- (2) From the single needle plain stitching machine the youth shall progress to operations on the double needle flat bed, feed off the arm, serger, baster, overedger, button sewer, and other special machines, and shall work on each at least one week until proficient in the operation of the particular machine.

There is no required order of progression from one machine to another, but at the end of the training period, each youth shall have had training in as many of the following operations as are required by local industry:

a. Single Needle Machines

- Plain Stitching
- Plain Joining
- Hemming
- Binding
- Lap Seaming
- French Seaming
- Collar Making
- Collar Setting
- Cuff Making
- Cuff Setting
- Pocket Making
- Pocket Setting
- Sleeve Setting
- Placket Making
- Shirt Front Making

b. Double Needle Machines

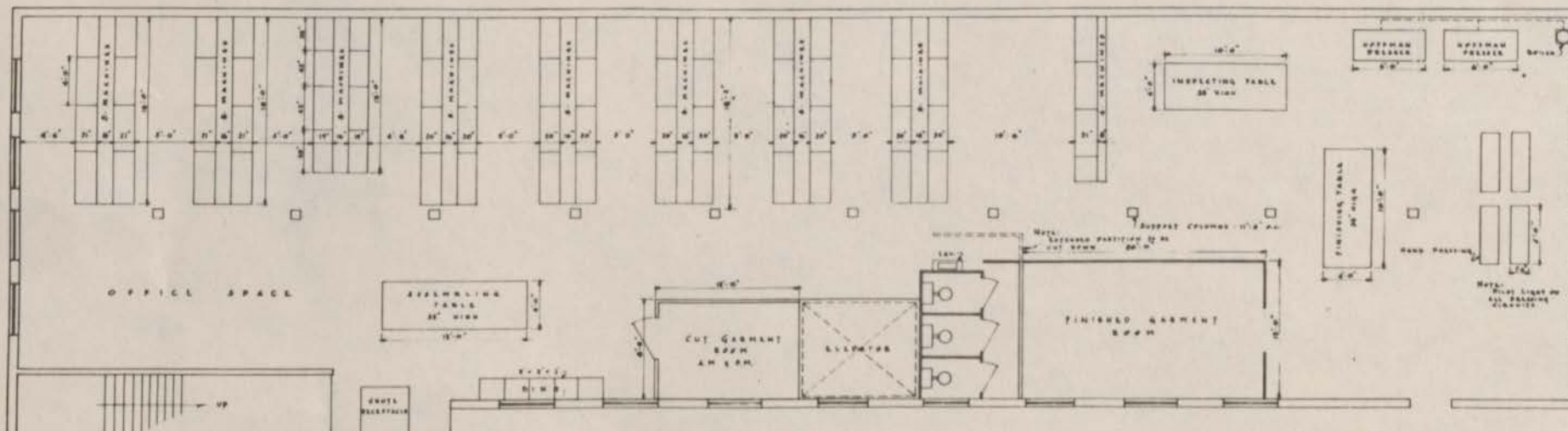
- Flatbed Plain Stitching
- Flatbed Plain Joining
- Off-Arm Feller Joining

c. Special Machines

Serging or Overlocking
Zigzagging
Basting
Blind-Stitching
Center Frontmaking
Button Staying
Button Sewing
Buttonholing
Bartacking
Embroidering

c. Special Equipment and Special Operations

Marker Making
Cloth Spreading
Cutting
Assorting
Ticketing
Steam Pressing
Hand Pressing
Finishing
Inspecting
Packing
Crimmeting
Button and Snap Fastening
Belt Turning
Tie Turning
Collar Turning



PLAN 3A

NATIONAL YOUTH ADMINISTRATION
WASHINGTON, D. C.

TYPICAL SEWING
SHOP LAYOUT

TYPE	REF. NO.
LOCATION	CLUB, B.O.
DESIGNED BY	S.S.
CONSTRUCTED BY	SHARP
APPROVED BY	SHEET NO. 1 OF 1

Section 2. Operating Standards by Types of Activity.

A. The Machine Shop

- (1). Machine Requirements and Work Stations - The number of work stations at any work unit shall be based on the number of machines and the facilities available, together with consideration of duties other than those involved in actual machine operation which are to be performed in the shop. Each machine shop shall have a minimum of fifteen work stations, determined in accordance with the following standards:

- a. Machine Work Stations - Each of the following or similar machines shall constitute one work station: lathe, turret lathe, screw machine, bolt threader, milling machine, vertical miller, universal miller, boring mill, key-seating machine, shaper, bench shaper, planer, heavy duty drill press, multiple spindle drill press, tapping machine, radial drill press, cylindrical grinder, surface grinder, universal tool and cutter grinder, punch press, profiler, do-all saw, contour saw and heat treating furnace.

In no case, for the purpose of determining the number of work stations, shall two youths on any work shift be assigned to one machine, regardless of the character or size of the shop.

Such items of equipment as the buffer and disc grinder, power press, metal-cutting band saw, filing machine and gas furnace shall be considered work stations only when each is continuously occupied by one person.

The sensitive drill press, tool grinder, portable grinder, drill grinder, arbor press, screw press, nibbler, band saw welder, hack saw and etcher shall not be classified as work stations.

- b. Other Work Stations - In addition to actual machine operation, other shop duties must be considered in counting work stations. For example, youth assignments as inspectors, and as bench workers (particularly assembly work, chipping and filing), are also classified as work stations. Such stations shall be included in the total number of work stations in the ratio of one to every three machine work stations in the shop. Thus, for 24 machine work stations there shall be

8 additional work stations, making a total of 32 work stations for the shop.

- (2) Tool Requirements - In addition to the major equipment requirements, machine shops shall have a suitable stock of hand and auxiliary tools. These are listed below, in some cases by name only, and in others, by name and size. It shall be the responsibility of the shop superintendent or supervising foreman to determine the number, sizes and shapes required in the operation of the machine shop over which he has jurisdiction. Tools which can be made in NYA shops are indicated by an asterisk.

Tool sets, consisting of

1 6" combination square, complete

1 6" flexible steel rule

* 1 Center punch

* 1 4" hermaphrodite caliper

* 1 4" outside caliper

* 1 4" inside caliper

* 1 4" divider

Rules, steel, spring tempered, 64th" and 32nd" graduations, lengths 6" and 12"

Straight edges, steel

Tapes, steel

Gages, thread

Gages, center

Gages, depth

Gages, telescoping - ranges 1/2" to 3/4", 3/4" to 1-1/4", 1-1/4" to 2-1/8"

Gages, screw pitch

Gages, thickness

* Gages, surface toolmaker

* Gages, surface, universal, with 9" and 12" spindles - 3" bases

Gages, tap and drill, hardened

Gages, drill and steel wire, hardened

* Gages, plug, male

* Gages, ring, female

Gages, drill point

Combination sets, with square, center, and protractor heads

* Squares, steel

Micrometer caliper sets with black enameled frame

Calipers, inside micrometer, measure from 2" to 8"

Calipers, outside, solid nut, sizes 3", 6", 8", 12"

Calipers, inside, solid nut, sizes 3", 6", 8", 12"

Calipers, outside, lock joint, sizes 4", 6", 8"

Calipers, inside, lock joint, sizes 4", 6", 8"

Calipers, hermaphrodite, lock joint, sizes 4", 6"

Dividers, spring, solid nut, sizes 2 1/2", 4", 6", 8", 12"

V-blocks and clamps

Twist drills

Reamers

Countersinks

Milling cutters

Mandrels

Taps, hand, standard, sizes 3/16" to 1"

Taps, hand, SAE, sizes 3/16" to 1"

Dies, hand, standard, sizes 3/16" to 1"

Dies, hand, SAE, sizes 3/16" to 1"

Wrenches, tap & reamer, adjustable

Wrenches, standard

Wrenches, Stillson, sizes 6" to 10"

* Scribers

* Surface plates

* Parallels

* Angle plates

* T-bolts

* Hold-down clamps

* Drill jigs (where repetition is in quantity)

1 Tool post grinder

1 Emery wheel dressing tool

* Hammers, machinist

* Screw drivers

Hack saw frames, hand, adjustable

Hack saw blades

Steel letters and figures, Roman face

File

* Scrapers

* Chisels

Tool holders and knurling tools

Tool bits

* Lathe dogs

* Clamps, machinist

Drill chucks

Pliers

Vises, machinist

Vises, machine

- (3) Shop Layout - The machine shop shall be divided into five sections - lathe section, rough-cutting tools section, fine-cutting tools section, grinding tools section, and bench and assembly section. If the shop is a single operating unit, space shall be allowed for a tool and stock room, also, which generally is placed in a part of the shop where there is the least machine work activity. In a multiple unit shop, each unit shall have a tool and stock room. See Appendix B.

- a. Machine - Machines normally shall be placed along the walls, so that the best possible natural light may be utilized. However, there shall be a minimum of 2' of space between the wall and the end of the longest piece of equipment placed adjacent thereto. Where possible, space should be left at the end of each section for installation of additional machines as required.

Because of the important function of lathes, these machines should have priority on the natural light, and should be located on the north side of the shop if this is possible and providing there are windows on this side. Lathes shall be grouped together, according to size, and set at an angle of 60 degrees to the source of light, at a distance of 6' from each other, measured from center to center. All head stocks shall be arranged toward and in a straight line parallel to a line through the middle of the shop. See sketch in Appendix A for proper alignment.

Rough-cutting machines, such as shapers and planers, and finish-cutting machines (milling machines and the like) follow in sequence in the machine shop. Individual machines in these categories shall be placed 8' from each other, measured from center to center.

The grinding equipment section, consisting of surface grinders, cylindrical grinders, and other precision grinders, shall be segregated, if possible, from the other machine tool sections. This is necessary because of the fine abrasive and metal dust which is generated in the grinding process, and which may prove destructive to the bearings and working surfaces of equipment placed near grinding machines.

- b. Benches - Bench and assembly stations should be placed in the open space in the central part of the shop. A desirable arrangement is one in which the bench and assembly work is done on either side of a central aisle extending the length of the shop. This aisle should be not less than 6' in width.

There shall be only two anchored work benches in the machine shop. One shall be located at the end of the lathe section where the shortest lathes are grouped. One sensitive drill, one light tool grinder and one arbor press also should be located in this area. The other anchored bench should be located so as to be readily accessible to either the milling machine or the shapers.

All other benches shall be of the portable type, size 5' by 2½', each provided with one machinist's vise. All benches, whether anchored or portable, shall have a standard height of 34" from the floor.

- c. Floor Mats - Machine operators, continually standing on concrete floors, are subjected to unnecessary fatigue which can be obviated by providing wooden

grill mats on which to stand. They should be provided for all who can use them advantageously.

- d. Anchoring of Machines - In all cases, machines shall be properly anchored. When machines are brought into the shop, and their final location is indecisive, such machines shall be bolted to wooden skids until such time as they are permanently located. Such skids should be made of heavy type planking.

When arranging machinery permanently on a shop floor, the machine shall be properly levelled and plumbed, and then anchored.

In shops with wooden floors, machines shall be anchored by means of lag screws.

In shops with concrete floors, all machines shall be grouted to the floor. In addition, anchor bolts with expansion shields shall be used for those machines which are either top-heavy or which have intermittent motion, such as drill presses, slotters and shapers. It is not necessary to bolt to concrete floors lathes with motor attached to the frame.

To grout a machine properly to the floor, lay a strip of inch-wide sheet metal on its edge at a distance of one inch from the base of the machine, following generally the shape of the machine base. Pack clay around the outside of the sheet metal to prevent the grouting mixture from flowing out. Pour the grouting mixture into the enclosed space until it reaches the top of the sheet metal. When the mixture has hardened, remove the sheet metal and clay. This makes a substantial base and prevents oil and grease from accumulating under the machine.

- e. Lighting - The following minimum requirements, expressed in terms of foot candles, should prevail:

Machine Shop

- | | |
|---|----------------|
| (i) Rough bench and machine work | 10 F. C. |
| (ii) Medium bench and machine work,
ordinary automatic machine, rough
grinding, medium buffing and
polishing | 20 F. C. |
| (iii) Fine bench and machine work | 50 - 100 F. C. |

(iv) Extra fine bench and machine work (fine instrument) 100 or more F. C.

(4) Care of Machines - Unless machinery is kept in good condition, production will suffer, machines will be worn out too rapidly, and operation of the machines will be hazardous to the workers. (See Sec. 1, Subsection E, of this Part.)

(5) Shop Safety - In addition to state and local laws that are applicable to given situations, the following safety practices for NYA machine shops represent minimum requirements:

a. First Aid - An individual qualified to administer first aid treatment (having either a Red Cross or a Bureau of Mines certificate) shall be on duty during all work unit operating hours. This person may serve more than one work unit if the units are within the same building. A doctor's services shall be available at all times. His name, address, and telephone number shall be plainly posted near the unit telephone.

b. Mechanical Safeguards - The purpose of mechanical safeguarding is to eliminate as far as possible the mechanical causes of accidents from the work environment. It shall be the responsibility of the shop foreman to see that specified guards are provided, that their use is explained to the workers, and that they are kept in a good state of repair and used at all times.

(1) Materials and Construction of Safeguards - Where guards, railings or toe boards are required, they shall be constructed of materials shown in the following specifications, or of materials equivalent for effective safeguarding. Much of this material is available or can be fabricated in the shop.

(a) Uprights - The uprights used for support should be of angle iron $1" \times 1" \times 1/8"$ to $1\frac{1}{2}" \times 1\frac{1}{2}" \times 3/16"$, iron pipe $3/4"$ to $1\frac{1}{2}"$ inside diameter or construction of equivalent strength, the sizes varying between the above limits according to height and size of the guard and its location with respect to size of aisles and possibilities of danger from moving equipment.

(b) Grille Materials - The materials and dimensions specified below are applicable to all guards except overhead, belts, ropes,

cables or chain guards more than 7'
above the floor or platform.

TABLE OF STANDARD MATERIALS AND DIMENSIONS FOR GUARDS

Material	Clearance from Moving Part at All Points	Largest Mesh or Opening Allowable	Minimum Gauge (U.S. Stand) of Thickness	Min. Height of Guard from Floor or Platform Level
Woven Wire	Under 4" 4" - 15"	1/2" 2"	No. 16 No. 12	6' - 0" 5' - 0"
Expanded Metal	Under 4" 4" - 15"	1/2" 2"	No. 18 No. 13	6' - 0" 5' - 0"
Perforated Metal	Under 4" 4" - 15"	1/2" 2"	No. 20 No. 14	6' - 0" 5' - 0"
Sheet Metal	Under 4" 4" - 15"	:: ::	No. 22 No. 22	6' - 0" 5' - 0"
Wood or Metal Strip Crossed	Under 4" 4" - 15"	1/2" 2"	Metal No. 16 Wood 3/4" Metal No. 16 Wood 3/4"	6' - 0" 5' - 0"
Wood or Metal Strip Not Crossed	Under 4" 4" - 15"	1/2" width 1" width	Metal No. 16 Wood 3/4" Metal No. 16	6' - 0" 5' - 0"
Std. Rail	Min. 15" Max. 20"			

Note: A wood guard, unless very carefully constructed, is not substantial. Moreover, wood guards are a decided fire hazard, especially when they become saturated with oil and are located near inflammable material.

The grille material should be fastened to supports by one of the following methods:

If angle iron supports are used, grille material may be attached by means of 3/4" x 1/8" flat iron fastened to the angle with 3/16" bolts or rivets, placed at intervals of not more than ten inches, by wooden strips 1" x 1", fastened to the angles by means of

3/16" bolts; or by some other method providing equivalent strength.

Piping should be clamped, or held securely by heavy wire.

Perforated or solid sheet metal may be bolted or riveted directly to the angle, or may be spot welded.

- (c) Railings - Railings shall be not less than 42" in height and shall be provided with an intermediate rail between the top rail and the floor, except where panels are fitted with substantial expanded metal or wire mesh, and shall be constructed in a permanent and substantial manner, smooth and free from protruding nails, bolts and splinters. Posts and uprights shall be spaced not more than 8' apart. If the railing is constructed of pipe, the pipe shall be not less than 1½" inside diameter. If constructed of structural metals or bars their section shall be at least equal in strength to that of 1½" x 1½" x 3/16" angles. If constructed of wood, the posts shall be not less than 2" x 4" or its equivalent section. Top railings shall be not less than 2" x 4", or 1" x 4" provided another board of not less than 1" x 4" is securely nailed to the sides of the posts and to the top rail. Center railings shall be not less than 1" x 4".
- (d) Toe Boards - Standard toe boards shall be at least 3" high, preferably 6" high, of wood, metal or other substantial material or of metal grille not exceeding 1" mesh.
- (ii) Location of Safeguards - All dangerous moving parts of machines or power transmission equipment located so as to permit any person to come in contact with them shall be effectively guarded. (See chapter XI) Requirements for the use of safeguards applicable to specific parts of mechanical power transmission apparatus or points of operation are set forth in detail in the Safe Practices Pamphlets of the National Safety Council, Inc.
- c. Electrical Safeguards - (In addition to the material included here, reference should be made to Safe Practices Pamphlet No. 29, Electric Equipment in Industrial Plants). All electrical equipment shall be rigidly mounted. All motor frames and conduits shall be effectively grounded. Live parts of motors or other electrical apparatus shall be enclosed by metal guards.

Switches - The main shop switch shall be equipped with a warning light, and shall be locked when the switch has been pulled. No objects which might obstruct its immediate visibility or accessibility shall be placed or stored in the vicinity of the main switch.

Knife switches are permissible for use only on single-phase and 3-phase current up to, but not including, one-quarter ($1/4$) horse-power provided they are enclosed, fused, in accordance with the provisions of the Underwriters' Laboratories, Inc. Three-phase electric current of one-quarter ($1/4$) horsepower or more shall be controlled by an automatic, low-voltage safety switch.

Overload - To eliminate a frequent cause of fires or accidents, care shall be taken that the rated capacity of the circuit does not become overloaded. Each size of conductor has a certain safe current-carrying capacity. If in doubt as to the rated capacity of the circuit, a licensed electrician shall be consulted immediately.

Fuses - Extreme care shall be used when replacing fuses. Not only is the correct size and type of fuse important to prevent damage to electrical equipment, but accidents such as electric shock and flash burns will be avoided when fuses are replaced properly. Before attempting to remove a burned out fuse, the worker shall make sure that the circuit in question is open, providing the fuse is protected by a switch. Insulated fuse pullers shall be used when pulling or replacing fuses and the worker exercising extreme caution shall stand on an insulating substance to prevent possible grounding, and keep his free hand behind his back so that it will not touch some grounded object. If the fuse is not protected with a switch, the supply end of the fuse shall be removed first, and replaced last. Burned out fuses shall be replaced with others of the same type and capacity unless specific orders for the change have been issued by a qualified authority.

Portable Electric Tools - Portable electric tools shall be grounded effectively by using (1) a three-conductor cord (four-conductor for 3-phase circuit) with a multi-contact polarized plug and receptacle, or (2) a grounding conductor in the cord, by connecting the grounding conductor to the nearest suitable metallic path to the ground.

Maintenance of portable electric tools is extremely important, and frequent inspections shall include examination of motor, cords, insulation, switches, and plugs. Such tools shall be thoroughly cleaned and tested carefully for short circuits and broken or defective parts. Worn brushes shall be replaced, and gear cases cleaned and relubricated.

d. Personal Protective Equipment

See part II, section 1, subsection E (18) page 11 and following pages.

e. Coolants

Coolants and all liquid compounds used on machines, such as wet grinders and milling machines, shall be drained from the reservoir of the machine at least once a month. The reservoir shall be thoroughly cleaned, the liquid strained to remove all foreign substance, and disinfectant sufficient to sterilize the solution added before the liquid is returned to the reservoir.

(October 26, 1942) (Revised May 13, 1943)

Part III. Training Standards for Specific NYA Work Training Activities

Section 1. Machine Shop. The following principles are set forth as a guide for youth training in machine shops:

A. General Principles.

- (1) Youth should be initially assigned to a 46-hour fundamental training period consisting of 16 hours of fundamental bench work experience and 30 hours of fundamental drill press work experience.
- (2) At the conclusion of the fundamental training period, each youth shall be assigned to a specific work station for the remaining time of his specialized training.
- (3) Thirty hours of related training should be arranged, such as blueprint reading, technical mathematics, and technical science, to parallel the shop work; additional related training shall be given in accordance with the needs of industry.
- (4) Only one individual shall be assigned to a work station.
- (5) Provision shall be made for each youth in the shop to work at all times from a blueprint or working drawing and from a plan for doing the job.
- (6) Special attention shall be given to the training of each youth in the safe way of doing the job and in the formation of correct work habits, such training to conform with standards established in part II, chapter VIII, "Project Operations" and chapter XI, "Safety".

B. Fundamental Training.

The fundamental work experience of each youth in the machine shop should consist of training in the following operations:

(1) Bench Work

Layout
Filing
Chipping
Drilling
Sawing

(March 4, 1943)

(2) Drill Press

Layout
Drilling
Reaming
Countersinking
Tapping
Drilling to proof line

Foremen shall observe closely the work of each youth as he pursues his fundamental training. Such observations will aid in assigning the youth to specialized training.

C. Specialized Training

If a youth, within a two-week trial period of specialized training, gives clear indication that he is not fitted for the work or that he cannot be brought up to an acceptable standard, the Work Unit Supervising Foreman shall recommend his transfer or his termination from the National Youth Administration.

Except when training to meet the requirements of a specific industry, the specialized shop training of each youth should be spread over the following operations for each specialized field and the percentage of time devoted to each should approximate that indicated.

TIME IN PERCENT

(1) LATHE. 100

a. Turning between centers	25
b. Chuck turning	44
c. Face plate turning	31

Each of the major operations above consists of several minor operations. The relation of each minor operation to its major operation in per cent of time follows:

<u>Turning between centers</u>	<u>PERCENT OF TIME</u>
--------------------------------	------------------------

Rough turning	45
Finish turning	15
Shoulder turning	5
Facing	4
Knurling	2
Radii turning	4
Taper turning	5
Threading	17
Tool post grinding	2
Cutting off or Parting	1
	<u>100</u>

(March 4, 1943)

<u>Chuck turning</u>	<u>PERCENT OF TIME</u>
Rough turning	25
Finish turning	8
Facing	6
Internal boring	15
Internal threading	10
Grinding	3
Taper turning	8
Radius turning	1
Recessing	5
Drilling	7
Reaming	4
Tapping	3
Shoulder turning	3
Cutting off or Parting	2
	<u>100</u>

<u>Face plate turning</u>	<u>PERCENT OF TIME</u>
Rough turning	31
Finish turning	12
Facing	8
Internal boring	15
Taper turning	3
Radius turning	7
Recessing	2
Drilling	8
Reaming	3
Shoulder turning	3
Balancing	2
	<u>100</u>

TIME IN PERCENT

(2) MILLING MACHINE 100

- a. Plain milling 15
- b. Step milling 30
- c. Bevel milling 30
- d. End milling 25

Each major operation above consists of two minor operations, namely, rough milling and finish milling. Seventy-five per cent of the time should be devoted to rough milling.

(3) SHAPER AND PLANER TIME IN PERCENT
100

- a. Shaper 75
- b. Planer 25

Plain shaping or planing . .	75
Step shaping or planing. . .	12½
Bevel shaping or planing . .	12½

The time of each youth should be divided between the shaper and planer on an approximate basis of 75% and 25%, respectively. The time for each major operation above should be divided approximately as follows:

TIME IN PERCENT

Roughing	75
Finishing	20
Parting	5

TIME IN PERCENT

(4) DRILL PRESS 100

a. Drilling	75
b. Countersinking.	10
c. Counterboring	5
d. Reaming	5
e. Tapping	5

TIME IN PERCENT

(5) GRINDER 100

a. Surface grinding	25
b. Cylindrical grinding	75

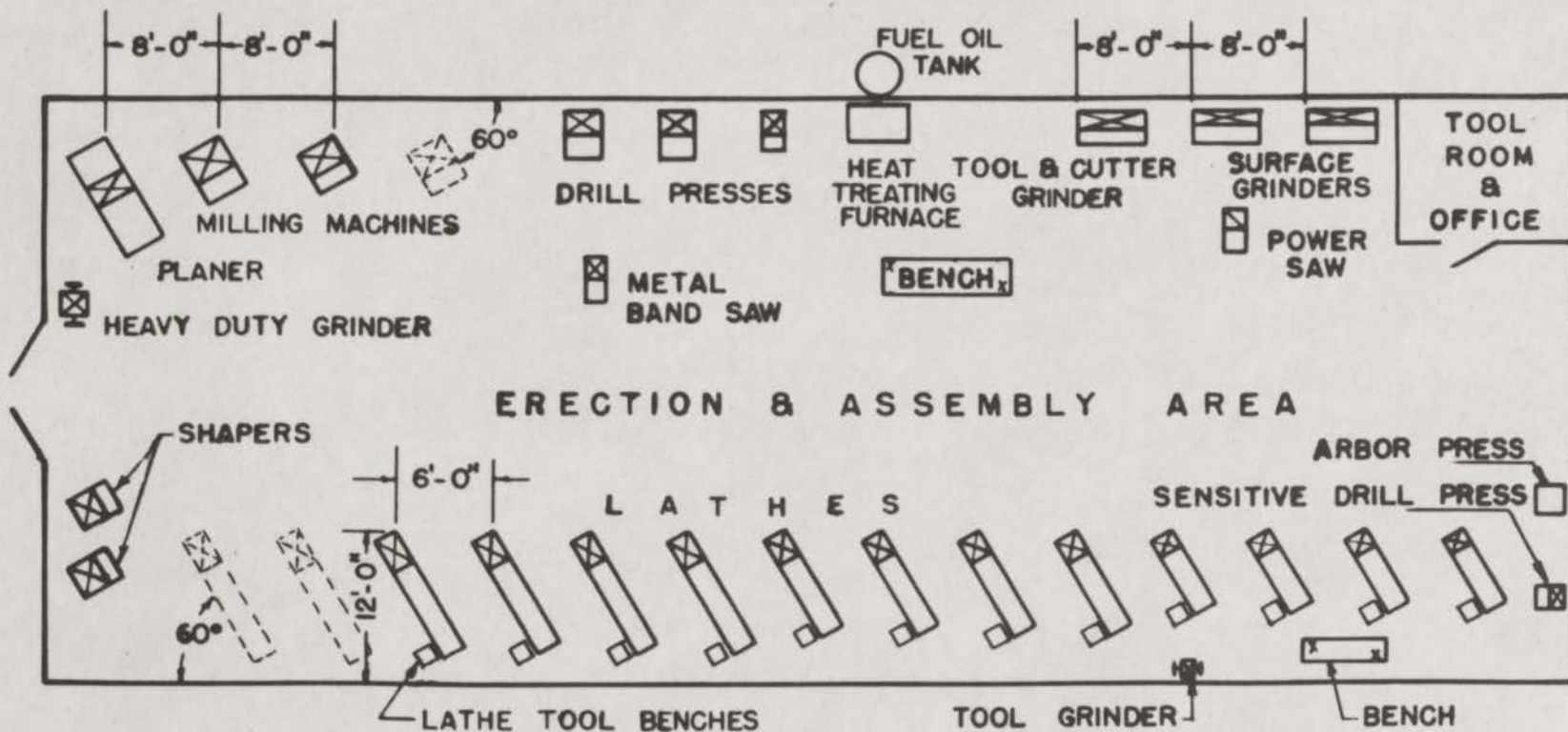
The total surface grinding time should be divided equally between rough and finish grinding. Instructions should be given in both wet and dry grinding.

The total time on the cylindrical grinder should be divided between internal and external grinding on an approximate basis of 25% and 75% respectively.

Section 2. Welding. The following principles are set forth as a guide for youth training in welding shops:

A. General Principles.

- (1) Each youth should be given brief fundamental shop training followed by training in the several positions and type jobs.
- (2) Related training should be given concurrently with and parallel to the shop work, the related training to approximately 1/8 of the total training time.



☒ - POWER HEADS OF MACHINES

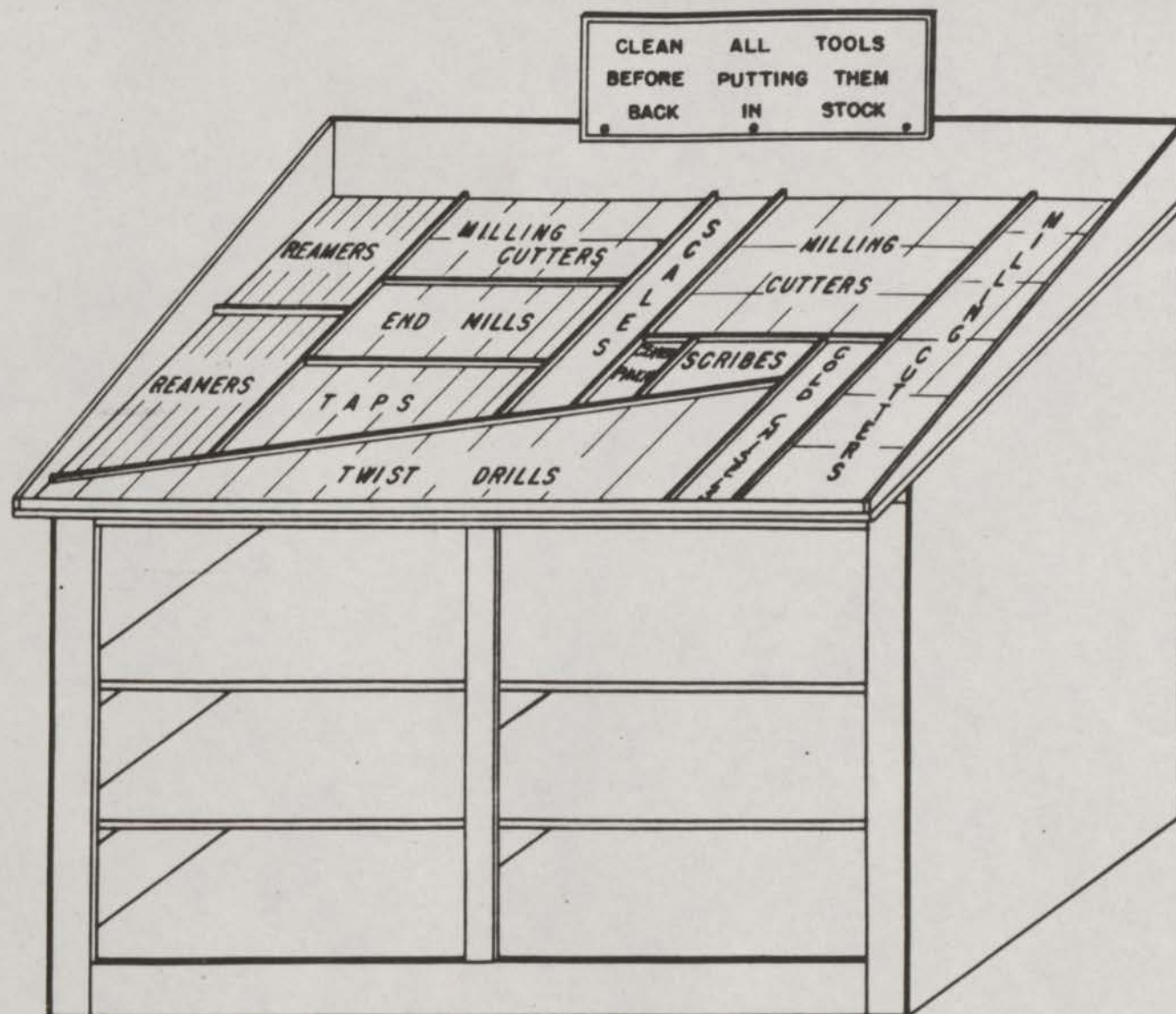
--- - FUTURE ADDITIONS

x - BENCH VISES

TYPE "A"

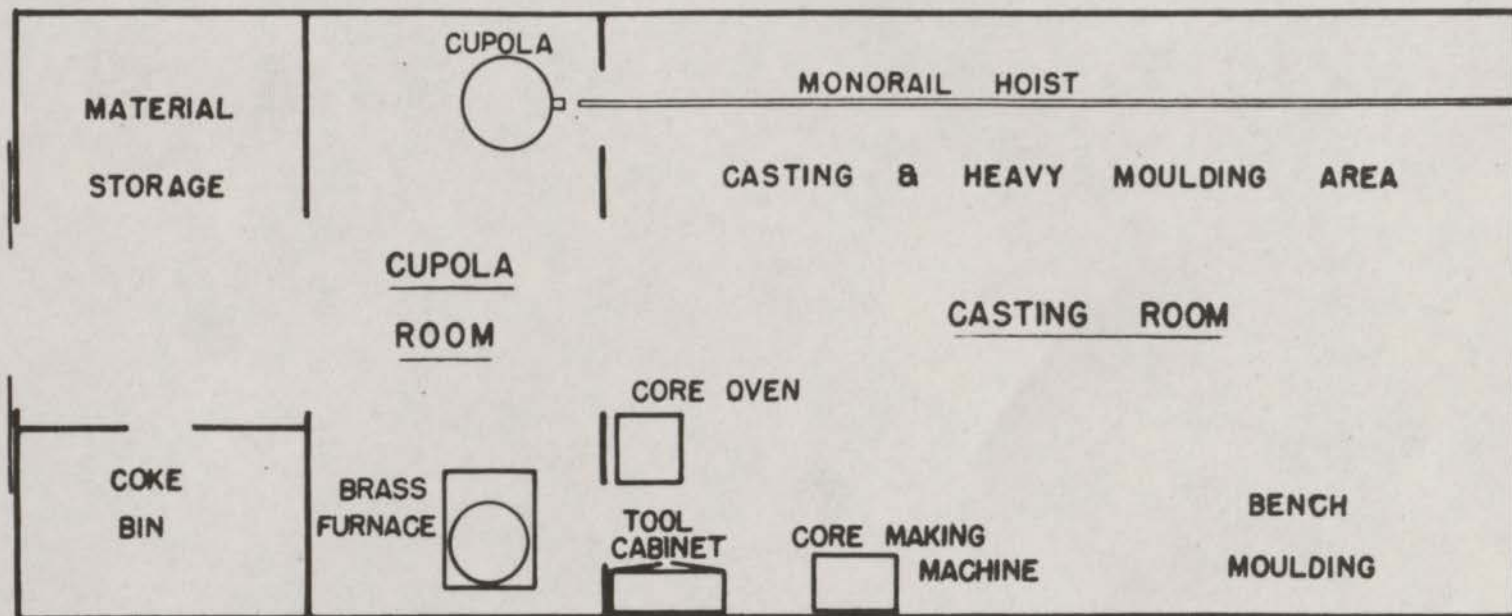
NATIONAL YOUTH ADMINISTRATION
WASHINGTON - D.C.

TYPICAL MACHINE SHOP
LAYOUT



NATIONAL YOUTH ADMINISTRATION
WASHINGTON - D.C.

TOOL BENCH



NATIONAL YOUTH ADMINISTRATION
WASHINGTON - D.C.

STANDARD FOUNDRY LAYOUT

D. Foundries

(1) Minimum Work Stations and Equipment Requirements

a. Work Stations

- (i) Determination of Work Stations - A foundry shall have a minimum of 15 work stations.

The number of work stations will depend on the amount of floor space assigned to the molding process. Seventy-five square feet of molding space shall be considered one work station. Although provision must be made in the shop layout for the space required for the cupola, the non-ferrous furnace, the runway, and for storage, this space is not included in estimating the number of work stations.

- (ii) Ratio of Other Workers to Molders - A shop with 15 work stations will employ 11 molders (both bench and floor), 2 core makers, 1 cupola tender, and 1 helper.

As the size of the shop is increased, the number of molders and core makers will be increased and a helper will be added. The cupola can serve the larger group through more frequent firings. Therefore, a shop with 30 work stations will have 22 molders, 5 core makers, 1 cupola tender, and 2 helpers.

- b. Equipment - The equipment consists of two general types those items which are used by the whole shop and those items which each molder must have to make up a complete set for his work each day.

(i) Equipment for general use:

- 1 Iron-melting furnace, cupola type of not less than $1\frac{1}{2}$ to 2 tons per hour capacity, with blower
- 1 Chain hoist, spur geared, $\frac{1}{2}$ ton capacity, 25 ft. lift
- 1 Hoist, $\frac{1}{2}$ ton capacity, preferable electric, 19 ft. lift, plain trolley type
- 1 Core baking oven, portable shelf type, four door, coke fired, baking space 42" wide, 32" deep, 50" high door opening
- 2 Core benches
- 1 Coal box for core oven
- 1 Brass furnace, coke fired for crucibles No. 100
- 2 Crucible tongs with chain and ring for crane lift
 - 1 for No. 100 crucible and 1 for No. 250
- 1 Cupola ladle on crane or on wheels

- 6 crucibles, graphite No. 25
- 6 Crucibles, graphite No. 100
- 1 Crucible shank, swivel end for No. 100 crucible
- 1 Crucible shank, single end for No. 25 crucible
- 1 Tumbling barrel
- 1 Double wheel pedestal grinder with suitable guard
- 1 Oil or gas torch for lighting cupola
- 2 Wheelbarrows or trucks
- 3 Molding benches
- 2 or 3 Tap out rods
- 2 Or 3 Stop off sticks
- 3 Or 4 Sprinkling cans
- Flasks - wooden, iron, and snap
- 1 Core-making machine, capacity 3/8" to 3" is desirable.

- (11) Equipment needed by each molder - Each molder will need one of each of the items of equipment listed below unless otherwise stated. In the case of the hand ladle and draw pin, it will be necessary to have in addition 1/3 and 1/2 respectively, of the total number in the shop. For example, if there are 15 youth in the shop, 20 ladles will be required.

- *Hand ladle
- *Hand rammer
- Finishing trowel
- Parohing tool - date knife or flute
- Bend brush
- Shovel
- Lifters - 1 each 1/4" and 3/8"
- *Draw pin - draw spike
- Sprue pick - gate puller
- *Mallet - 3" x 2" wood with leather facing
- Draw hooks, core hooks, pattern lifters - 2 for each molder
- Wood screws - 2 for each molder
- *Gate cutter
- Sponge bulb
- *Raping spike or bar
- Vent wire
- Bellows
- *Riddle - 1 No. 4 for each worker and 6 No. 6 in addition

- (2) Shop Lay-Out - The lay-out for the NYA standard foundry is shown in Appendix B. The principles according to which the shop was laid out are given below. These shall be carefully studied and followed out in the drawing up of foundry floor plans. The items of equipment and the storage space shall be so placed that there will be a flow of supplies and materials from the entrance of the building to the finished castings.

(*) Items that can be made in NYA shops.

- a. Storerooms - The storerooms for coke and sand shall be placed near the entrance door to obviate unnecessary transportation of these supplies. The coke supply shall be accessible to the cupola. There shall be a concrete gangway, 8' wide, between the entrance and the molding floors for the transportation of the sand to both the bench and floor molders.

The tool cabinet shall be placed near the molding floor to simplify the distribution of tools to the molders.

- b. Cupola - The cupola shall be so placed that the pouring spot will be accessible to the molding floor.

c. Non-ferrous Furnace

- (i) Location of non-ferrous furnace - The non-ferrous furnace shall be placed in the same housing as the cupola and the storerooms, thus leaving the balance of the shop space for the molding floor.

Location of the core-making machine - If provided, the core-making machine, as well as the core oven, shall be placed in the least used corner of the shop.

- d. Molding Floor - The molding floor is apportioned between the floor molders and the bench molders. That part of the floor which is under the trolley of the hoist is used by the floor molders for heavy work. The other part of the floor is used by the bench molders and by floor molders on lighter work. This whole space shall be partitioned off from the cupola and non-ferrous furnace with doorways, giving easy access to the molding shop as shown in the floor plan.

- (3) Safety - The foundry industry has a high accident frequency. The handling of materials results in cuts; bruises; crushed fingers, hands, legs, and feet. Burns are very common. Broken bones, hernias, strains, and eye injuries are frequent. In their safety practices, NYA foundries shall comply with state laws.

a. Safety hazards - The principal safety hazards are:

- (i)
- (i) Molten metal and metal splashes
- (ii) Metal fumes
- (iii) Heat
- (iv) Carbon monoxide
- (v) Falling objects
- (vi) Overhead transportation hoisting machinery
- (vii) Explosions
- (viii) Rough surfaces
- (ix) Defective hand tools

b. First Aid - Every foundry shall have first aid equipment

c. Safeguards

- (i) Gangways and Aisles - Gangways and aisles shall be kept in uniformly smooth condition, free of undue dampness and clear of all obstructions.
- (ii) Position of Crucible in Non-ferrous Furnace - The crucible shall be set in the non-ferrous furnace so it will be below the draft hole in order that fumes will be carried off.
- (iii) Minimum Temperature - A minimum temperature of 55° Fahrenheit shall be maintained in all sections where employees work.
- (iv) Inspection - There shall be daily inspection of all equipment prior to its use.
- (v) Conditions of Tools - All tools shall be kept clean and properly dressed.
- (vi) Removing Crucibles from Furnace - When the combined weight of a crucible containing molten metal and the crucible tongs exceeds one hundred (100) pounds, the crucible shall be removed from the furnace by not less than two (2) men, or by mechanical means. When the combined weight exceeds three hundred (300) pounds three (3) or more men or a mechanical device shall be employed.
- (vii) Skimmers - All skimmers for the brass furnace shall be graphite covered.
- (viii) Defective Equipment - Defective equipment shall be repaired immediately or discarded.
- (ix) Safety Clothing and Equipment
See part II, section 1, subsection E(18), page 11 and following pages.

d. Female Workers - The American Standard Safety Code for the protection of Industrial Workers in Foundries provides in the absence of existing state laws and regulations as follows:

- (i) Examination - No female should be employed in a foundry unless upon examination by a physician it has been determined that she is of normal size health and weight for her age.
- (ii) Lifting - No female employed in a foundry should lift any heavy object unless she uses mechanical means by which her physical effort is limited to her natural physical ability to lift safely. This is often limited to 25 pounds.
- (iii) Handling Hot cores - No female employed in a foundry should be permitted to handle cores which have a temperature of more than 110 degrees Fahrenheit.
- (iv) Gases - Exposure to gases, fumes and smoke is especially regulated by some State Industrial Codes.

(4) Care and Maintenance of Equipment

a. General Equipment

- (i) Motor on the blower - The motor on the blower and, if electric, the crane motor on the hoist shall be oiled regularly.
- (ii) The cupola - The cupola shall be cleaned and conditioned for remelting after each heat. Periodically, when the lining is burned out, the cupola will have to be relined above the tyers and in the melting zone.
- (iii) Crucibles - The crucibles shall be cleaned out and turned upside down to cool off until the next time they are used.
- (iv) Flasks - The flasks shall be shaken out.
- (v) Ladles - The ladles shall be cleaned and relined as needed

b

b. Small Tools

- (i) Storing of Tools - All small tools shall be taken from and returned to the stock room every day.
- (ii) Check system - Tools checks are used to charge out the tools to the workers in accordance with prescribed procedures.
- (iii) Daytime Care of Small Tools - No small tools shall be allowed to lie on the floor. A place shall be provided for each one:
 - (a) Bench molders shall place rammers on the bench.
 - (b) Floor molders shall hang rammers on hooks placed on wall.
 - (c) Riddles shall be hung on the sides of the benches.
 - (d) Shovels shall be kept on the benches.

- (5) Rotation of Workers - All workers shall be rotated through the shop so that each one receives work experience in each type of operation.

- (6) Inspection - Each employee's work shall be inspected at each stage of the process: molding, core-making, and finished cast product.

H. Aircraft Sheet Metal Shop - Aircraft sheet metal shops will operate in conjunction with the already established general sheet metal shops. The General sheet metal shops selected to include an aircraft work unit must, however, lie within a radius of approximately 200 miles of aircraft manufacturing plants.

(1) Minimum Work Stations and Equipment

- a. Work stations - Each aircraft sheet metal shop shall have a minimum of 12 work stations, determined by the types of benches within the shop. The aircraft sheet metal shop shall have a layout bench, a general work bench, a forming bench, a hand riveting bench, and a jig fixture, each of which shall constitute two work stations. Each shop shall also be equipped with an open top bench and an inspection bench, each of which shall constitute one work station. The worker at the inspection bench will have charge of the tool crib and the issuing of tools. See floor plan drawing in Appendix B.

Equipment

- (i) Benches - Drawings prepared in the National Office, showing the dimensions of, and equipment for, each of the types of benches used in the aircraft sheet metal shop, will be forwarded to all aircraft sheet metal shop locations through Regional offices. The tops of all benches shall be 33" from the floor, with the exception of the riveting bench, which shall be 36" from the floor.
- (ii) Heat Treating Equipment - There shall be on the project, the necessary heat treating equipment consisting of a furnace, a quenching tank and an ice box.
- (iii) Shop Tools - Specified tools and equipment are required for each bench and shall be on hand in every approved shop.

The following is a list of the tools required and the number of each needed for a shop with the minimum 12 work stations:

- 6 - Steel Flex. Scales - 6"
- 6 - Calipers - Outside and Inside - 6"
- 1 - Steel Tape - 25'
- 6 - Steel Scales - 12"
- 2 - Thickness Gages -.008" to .040"
- 12 - Pencils - #2

*Complete list
missing
2 pages
out*

BUCKING BARS

- *1 - Bulb Angle Bar
- *1 - Beveled Bulb Angle Bar
- *1 - Beveled Bar
- *1 - Round Bar
- *1 - Foot Bar
- *1 - Toe Bar
- *2 - Barnisher Type A
Type B

RIVET HEAD STANDARDS

- *4 - Oval Head - $1\frac{3}{32}$ " , $1\frac{1}{8}$ " , $1\frac{3}{32}$ " , $1\frac{3}{16}$ "
- *4 - Countersink " " " "
- *1 - Bench Plate $\frac{3}{8}$ " - 12 " x 16 "
- *1 - Hand Squasher Sets - Jaws Only
- *4 - Brazier $\frac{3}{32}$ " - $\frac{1}{8}$ " - $\frac{5}{32}$ " - $\frac{3}{16}$ "
- *4 - Round " " " "
- *4 - Button " " " "
- *4 - Countersink " " " "

* Indicates may be made by the National Youth Administration. Drawings of tools, prepared in the National Office will be forwarded to all aircraft sheet metal shops through the Regional Offices.

- (2) Shop Lay-out - The benches, other equipment, and tool and stock room shall be so arranged that the movement of materials from one job to another will require the least possible handling. See typical floor plan in Appendix B.

- a. Space - An aircraft sheet metal shop shall have a minimum of 2,000 square feet of floor space.
- b. Tool and Stock Room - The tool and stock room shall be placed in a corner of the room or some other location which is least used and is easily accessible to all benches and other equipment. For detail on tool and stock room see drawing in Appendix B.
- c. Air Compressor - The air compressor shall be placed along the wall in such a position that it will not interfere with the movement of the workers and will be as nearly as possible equidistant from the various benches and the riveting jig.
- d. Heat Treating Equipment - The ice box, quenching tank and heat treating furnace shall be placed in this order along the wall near the door of the tool and stock room. The order in which they are placed is important because it follows the process of the heat treatment of rivets. They shall be near the tool room so that the rivets that are to be treated need be carried the least possible distance.

e. Benches and Other Equipment - The floor space is divided into two sections - one for small fabrication work and the other for large work inherent in final assembly.

(i) Benches and Riveting Jig for Small Fabrication- The inspection bench shall be placed as nearly as possible equidistant from all other benches. The riveting, lay-out, and primary assembly benches and the rivet jig shall be placed in the order and at the approximate distance, one from the other, and from the walls, as shown on the floor plan, in order to maintain a direct flow of work. The three benches may be portable the riveting jig shall be anchored to the floor using anchor bolts with expansion shields.

(ii) Benches and Space for Final Assembly - A free space must be left on the floor, sufficiently large to accommodate a fuselage, wing or structure jig that may be installed for structure and skin repair. The forming and the open-top bench which are used for the fabrication of parts for final assembly work shall of necessity be easily accessible to the structure on which this assembly will be done.

f. Electric and Airline Installations - Electric cables and all airline extensions shall be installed overhead and not on the floor. Outlets for individual benches and for the rivet jig shall be centered over the respective pieces of equipment. They shall be extended down sufficiently so that, after the connections with extensions for airguns, drills, etc., have been made, these tools still have enough leeway to reach all working surfaces of the respective bench.

(4) Safety- In addition to the housekeeping, sanitation and safety standards discussed under Section 1 of this part, "General Operating Standards for Shops," special safety practices must be observed in aircraft sheet metal shops. These include:

a. Precautions

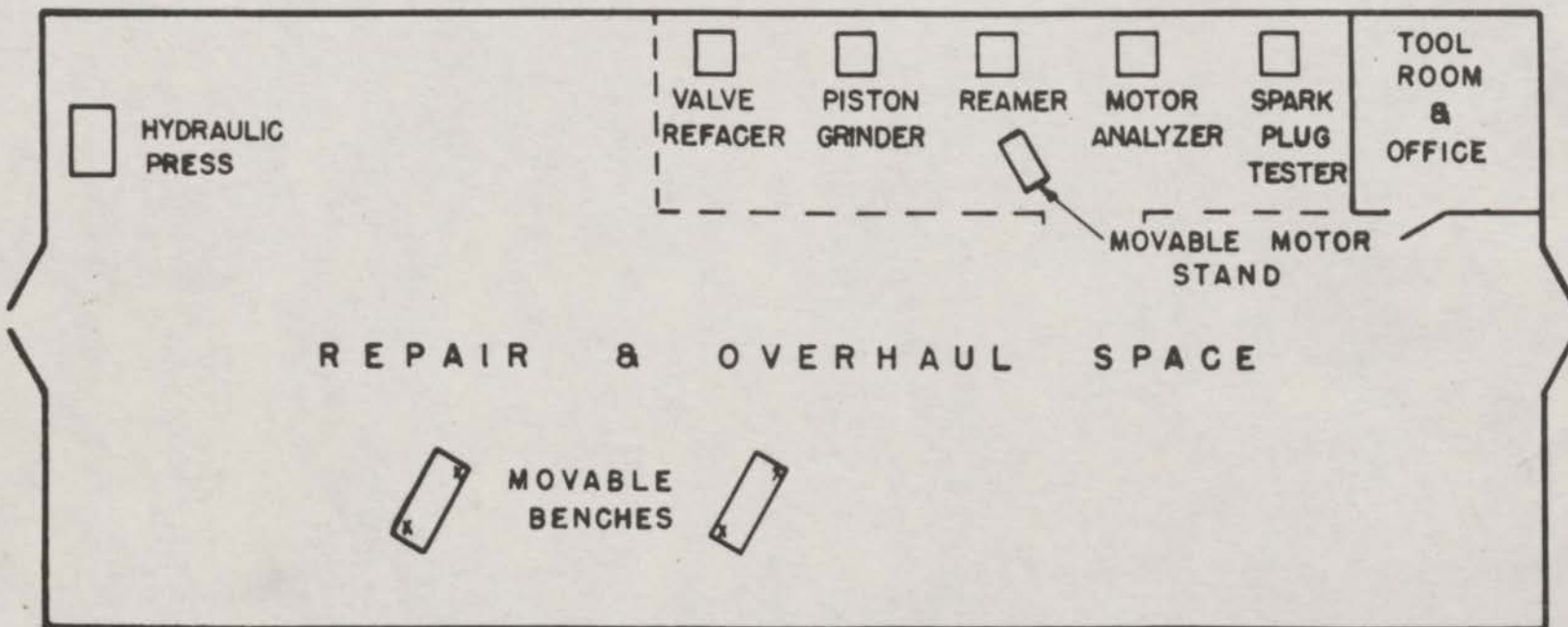
- (i) There shall be no smoking in the aircraft sheet metal shop at any time.
- (ii) Persons shall not run in the shop except in case of a serious emergency.
- (iii) Workers shall not climb on or enter airplanes at any time unless instructed to do so by the foreman.
- (iv) Gasoline shall never be used as a cleaning agent.
- (v) Before drilling into a plan, it shall be ascertained that no one is on the other side. A block of wood not the fingers or hand, shall be used to "back up" when drilling. This applies particularly to drilling on planes or parts.

Before using le
X XXXX

- (vi) Before using ladders, workers shall make sure that they have a firm footing, that the head is against a substantial bearing, that all rungs are sound, and that the rails are not split. An unsteady ladder shall never be used.
- (vii) In handling soldering irons, care shall always be taken that nearby employees will not be burned.
- (viii) When using the air hose to clean tables or machines, it shall be directed in such a way that particles do not fly in the worker's face or toward another person.
- (ix) Portable electric tools shall be effectively grounded by using (1) a three-conductor cord (four-conductor for 3-phase circuit) with a multi-contact polarized plug and receptable, or (2) a grounding conductor in the cord, by connecting the grounding conductor to the nearest suitable metallic path to the ground.
- (x) Any wing, fuselage, or structure jib shall be properly grounded to avoid the possibility of static electricity.

b. Personal Protective Equipment

See part II, section 1, subsection E (18) page 11 and following pages.



x - BENCH VISES

NATIONAL YOUTH ADMINISTRATION
WASHINGTON - D.C.

TYPICAL AUTO SHOP
LAYOUT

SCHOOL LUNCH PROJECT

More and more it is believed that in order to have a Nation of strong people it is necessary to provide for the proper nutrition of the children, particularly during the years when their bodies are growing rapidly. Besides being the important period to physically nourish the body, childhood is the time to develop good food habits which will carry on into adulthood. One of the best vehicles for assisting in carrying out these two functions is the school lunch program. Under proper conditions, children can be motivated to eat foods at school which they might otherwise reject at home. As they learn to eat well-planned meals at school they will gradually carry ideas home and thus the beginning is also made in teaching the parents what constitutes an adequate selection of food for good health.

Objectives of the School Lunch Program

- a. Wise use of food resources to meet at least 1/3 of the growing child's nutritive needs.
- b. Development of good food habits and enjoyment of food.
- c. Preparation and serving of food under safe and sanitary conditions so that there will be no endangering of health of children or workers.

Simple Menu

Something warm if possible, but this is not always necessary. It is more important to have a meal adequate nutritionally than to have it warm. As liberal use as possible of fruit, vegetables, eggs, fish, dry peas and beans, soybeans, meat, and milk (if from a safe source.) Cereal products should not displace any of the aforementioned but be used in addition to provide energy.

Supervision

Persons who are responsible for the organization and management of school lunch programs need basic information in nutrition and large quantity food preparation. Personal qualifications include ability to direct others, enthusiasm, initiative, good judgment, ability to meet emergencies, and a personality which makes it possible to establish and maintain harmonious working relations.

Number of Workers

As a minimum it takes one adult worker 5 to 6 hours per day with the help of 4 or 5 children one hour each to prepare and serve lunches to 25 children, and do the necessary cleaning. For more than 50 children the number of adults needed increases at the rate of one adult for every 40 to 50 children. This assumes that preparation is simple and "fancy" dishes are not included.

Training of Workers

Persons responsible for planning and operating of programs should receive advance training in meal planning, selection, preparation and serving of food suitable for children. Demonstration lectures with as much chance for individual participation as possible. These persons in turn should give training to the workers who actually prepare the food, serve and clean up afterwards. Methods to insure sanitation must be stressed. Women with very little previous experience, or skill can be used as workers provided they are given good supervision. Mature women who have children usually accept training readily if the approach to them is made in the interest and welfare of their children.

Facilities

A complete school lunch may be prepared in a very small space with a minimum of equipment if careful thought is given to the arrangement of the equipment within the available space. In a rural school it is often necessary to use part of a cloak room or an entry-way for the preparation of the noon meal. In some school districts a small lean-to has been constructed when there has been no other suitable room. This space needs to be large enough for one or two workers to move between cooking stove, cupboards and some type of counter top or work table. Light and ventilation should be adequate. Attention must be given to making the working space safe and free from hazards, such as broken floor boards.

Safe and convenient storage space should be provided for all equipment and supplies. The preferred type of storage space for food supplies is a separate room convenient to the kitchen. It should be dry, well ventilated, adequately lighted and kept at cool but not freezing temperature. Bins or racks raised several inches from the floor to provide for circulation of air may be used to store root vegetables and fruits in the kitchen. Canned foods should be kept in a cool dry place away from the stove. Flour, cereals, sugar and other staples are safe in tightly covered metal, glass, or stoneware containers.

Closed cupboards for dishes and utensils ease the cleaning problem. Pots and pans and many small utensils can be hung on hooks near the place where they are to be used.

Most of the small utensils that are needed for preparing the school lunch can be purchased very inexpensively.

Minimum Equipment for Serving 50 Children at School

Stove

Tables

Shelves or cupboard

Vessels for dish washing

Kettles for soup, stew or vegetable cooking - large enough to provide one cup servings for each child served - 15 qt. size preferably unless it is easier to obtain smaller sizes

Large spoons for stirring and serving
Knives for paring and cutting vegetables, fruit, and meat
Large bowls for mixing
Baking pans if baking is possible
Cups, quart measures, and spoons for measuring if baking is done
Strainer or collander
Pitcher
Can Opener
Garbage and refuse container
Broom
Scrub brush
Pail
Mop
1 dozen dish towels but preferable to let dishes drain
Bowl, cup and spoon for each child

Serving Space

A separate room, convenient to the kitchen, is desirable for serving the school lunch. If it is necessary to serve the lunch in the same room in which food is prepared, the space farthest from stove and sink should be used for that purpose. Sufficient space to provide for seating the children at tables is desirable, however, meals are often served in class rooms at the children's desks or study tables when no other space is available.

~~1250~~

Training Material - 11

Small Work Projects

- 11aa. NYA Application No. 29 - (6) State of Minnesota, Work Project Application
- 11bb. Tools Necessary to Operate St. Rosa School Construction Project
- 11cc. Photograph of Completed Project - St. Rosa School Building
- 11dd. School Lunch Project - Prepared by U.S. Department of Agriculture
- 11ee. Gardening - The Operation of Specific Professional & Service Projects -
Operating Procedures No. G5 - January 10, 1940 Works Progress Administration
- 11ff. Mattress and Comforter Projects - Same as Gardening (11e.)
- 11gg. Household Aides - Handbook of Working Instructions - Work Projects Adm.
- 11hh. Industrial Sewing - Handbook of NYA Procedures, Chapter VIII, Part II
- 11ii. Industrial Sewing Training - NYA Handbook of Procedures, Chapter IX, Part II
- 11jj. Typical Sewing Shop Layout - NYA
- 11kk. Machine Shop - NYA Handbook of Procedures, Part VIII, Part II
- 11ll. Training Machine Shop - NYA Handbook of Procedures, Chapt. IX, Part III
- 11mm. Typical Machine Shop Layout - Type "A" - NYA
- 11nn. Tool Bench - NYA
- 11oo. Standard Foundry
- 11pp. Foundry Layout - NYA
- 11qq. Typical Auto Shop Layout - NYA
- 11rr. Welfare Division - Greek Mission, UNRRA - Occupational Training & Self-Help
Projects
- 11ss. Final Report NYA, Fiscal Years 1936-43
- 11tt. Lunch at School-Dept. of Agriculture - War Food Administration
- 11uu. Handbook of Workers in School Lunch Programs - Dept. of Agriculture
- 11vv. Work Book for School Lunch Employees - FWA, Work Projects Adm.-Puerto Rico &
and the Virgin Islands

NATIONAL YOUTH ADMINISTRATION
WORK PROJECT APPLICATION

It is desired that the work project described in this application be placed in operation under the rules and regulations of the National Youth Administration. Approval of its prosecution is requested.

1. Co-sponsor: Stearns County, School District #204, St. Rosa, Minnesota
St. Rosa Stearns
(Street Address) (City) (County)

2. Cooperating Agency _____
(Street Address) (City) (County)

3. Description of Project and Character of Work: Construction of one-room type 3-C schoolhouse with full basement. Renovation, repair and re-painting of six-room, two-story frame house on school property to house the teacher. Repairs and re-painting of 2 small outbuildings, demolition of corn crib and abandoned concrete foundation and renovation of 40 school desks.

4. Location of Project School District #204 Stearns
(City) (County)

5. Summary of Estimated Costs by Source of Funds:

Line No.	Item	Federal Funds		Co-sponsor's Funds		Total	
		Dollars	Percent	Dollars	Percent	Dollars	Percent
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1.	Youth Labor	2199.00	78.4	xxx	xxx	2199.00	45.1
2.	Superintendence	375.00	13.4	281.00	13.6	656.00	13.5
3.	Subtotal -Labor	2574.00	91.8	281.00	13.6	2855.00	58.6
4.	Equipment	230.00	8.2	20.00	1.0	250.00	5.1
5.	Materials & Supplies			1769.00	85.4	1769.00	36.3
6.	Other Non-Labor	230.00	8.2	1789.00	86.4	2019.00	41.4
7.	Subtotal-Non-Labor	230.00	8.2	1789.00	86.4	2019.00	41.4
8.	Total Cost of Project	2804.00	100.0	2070.00	100.0	4874.00	100.0

(The space below (Items 6 and 7) shall be left blank by person preparing application.)

6. Work Project Approval: The work project (or supplement) as described in Item 3 above and subject to the conditions stated in this application is approved for operation provided that co-sponsor's contributions of \$2070.00 are received as the progress of work requires and that Federal funds authorized for such work shall not exceed \$2286.00.

Date: July 6, 1939
(Date)

/s/ C. B. Lund
(Signature of State Youth Administrator)

Date: _____

(Signature of Washington NYA Official when required)

7. Identifying Symbols: A work project account has been established subject to the Federal fund limitation herein provided. All accounting documents incurring obligations against this account shall show the following identifying symbols as required:

Official Project No. 780-71-4-6
Work Project No. 129
Type of Work Symbol 12

Program Class Symbol: 700
Location Symbol: 71-500-73

Date 7/5/39

/s/ Leo F. Stewart
(Signature of State Director of Finance and
Acting Statistics

8. Project can be started 5 days after approval and will require 3 months for completion.
9. Name of Supervisor Robert F. Upton Address Community Bldg., St. Cloud, Minn.
10. Does the co-sponsor have legal authority to engage in the work proposed over the area involved? (Yes or No) Yes
11. Will the proposed project displace or prevent the employment of persons who would otherwise be employed? (Yes or No) No
12. Present ownership of property upon which project is to be operated is:

Stearns County School District #204

(Federal, state, county, city, private, part-private and part-state owned, etc.)

If any work is to be performed on private property, state nature and extent of such work and describe documents, if any, to be obtained (e.g., deed of conveyance, lease, easement, right-of-way, license or permit.)

None

13. Have funds for the execution of this project, or any part thereof, ever been formally requested from another Federal agency? (Yes or No) No If "Yes," state circumstances.

14. Maintenance and operation of the completed project will be provided as follows:

Property will be maintained by the School District.

15. Are necessary plans and specifications attached: (Yes or No) No (Previously Submitted.)

16. Labor Analysis:

Line No.	Type of Labor	Average No. of Workers			Man-Hrs.	Hrs.		Rate	Labor
		Male	Female	Total		Per Mo.	Months		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1.	NYA - Total	51		51	6960	xxxx	153	xxxx	2574.12
2.	Youth Labor Subtotal	50		50	6600		150		2199.12
3.	Class-Unskilled	46		46	6072	44	138	14.52	2003.76
4.	Class-Intermediate	4		4	528	44	12	16.28	195.36
5.									
6.									
7.	NYA-Superintendence Subtotal	1		1	360	xxxx	3	xxxx	375.00
8.	Carpenter	1		1	360		3	125.00	375.00
9.									
10.									
11.									
12.									
13.	Co-sponsor - Total	1		1	432	xxxx	2	xxxx	280.80
14.	Carpenter	1		1	432	216	2	140.40	280.80
15.									
16.									
17.									
18.	Total Labor	52		52	7392	xxxx	155	xxxx	2854.92

17. Non- Labor Costs:

Line No.	Type of Non-Labor Cost	Federal	Amount Co-sponsor	Total
(1)	(2)	(3)	(4)	(5)
1.	Equipment - Subtotal	230.00	\$20.00	\$250.00
2.	Tools (List attached)	230.00		230.00
3.				
4.	Cement Mixer Renta l		20.00	20.00
5.				
6.				
7.				
8.	Materials & Supplies-Subtotal		1749.36	1749.36
9.	B uilding Materials		1749.36	1749.36
10.				
11.	(See original application)			
12.				
13.				
14.				
15.	Other Non-Labor - Subtotal			
16.				
17.				
18.				
19.				
20.				
21.				
22.	Total Non-Labor	230.00	1769.36	1999.36

18. Federal Non-Labor Cost per Man-Month: \$1.50

19. Proportion of total cost to be paid by co-sponsor

Labor: 9.8% Non-Labor: 88.5% Total 42.5%

20. Co-sponsor's Certificate and Agreement. The statements contained in this work project application have been checked by the undersigned and are true to the best of his knowledge and belief. It is agreed that the work proposed will be done in conformance with the rules and regulations of the National Youth Administration and in accordance with such plans and specifications as are attached hereto. It is certified that this project is for the use and benefit of the public and that the funds pledged by the co-sponsor will be made available as specified in this application and as required by project operations. In consideration of expenditures from Federal funds to be made on this project, it is agreed, if the proposed work is initiated, that the co-sponsor will finance such part of the entire cost thereof as is not supplied from Federal funds.

Co-sponsor Dist. 204 Address Freeport R. 2

By Co-sponsor's authorized agent:

John Bergmann
(Name-type or print)/s/ John BergmannDate June 30, 1939Title Treas. Dist. 204

11 b-b

TOOLS NECESSARY TO OPERATE
ST. ROSA SCHOOL CONSTRUCTION PROJECT

Axes, S. B.	1
Bars, Crow	4
Bars, Wrecking	4
Goggles, Spec.	4
Handles, Pick	4
Handles, Sledge	2
Hammers, Cla w	13
Hammers, Stone 14#	1
Hip Boots	0
Hoes, Grub	2
Picks	2
Rakes, Road	4
Saws, Hand CC	8
Saws, Hand Rip	1
Sledges, 14#	2
Sledges, 10#	2
Shovels, LHRP	10
Shovels, LHSP	2
Washing Plant F-186 Complete	1
with 1 padlock, key and 1 pipe wrench	
Wheelbarrows	8

Expendable

Carb. Bricks	2
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Other Equipment

Electric floor-sanding machine	1
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WORKS PROJECTS - CHINA

The following outline is based on the experience of the United States in operating a work program for the unemployed during the depression years. The various programs operated in the United States were based on the policy that Federal aid to the unemployed should be provided in the form of public employment. The reasons for the above policy are numerous. Foremost is the aversion to the maintaining in idleness of those willing and able to work, a position based on the view that the unemployed are physically better off if given useful work. In addition, the completed projects were viewed as important accomplishments. Moreover, the wages paid on a works program and the purchases of materials stimulate business activities.

I. Scope and Objective

A. Small projects, local in character

B. Objectives

(1) Community reconstruction; (2) Increase and develop individual skills; (3) Provide employment; (4) Creation of a basic employable group; (5) Improve agricultural methods; (6) Point toward industrial expansion; (7) Increase purchasing power

II. Principles and Standards

A. Project standards

(1) Definite community need; (2) Availability of labor; (3) Available facilities and materials; (4) Approved working conditions; (5) Salary in kind and in cash equal to the prevailing wage in the community for similar work; (6) Adequate supervision; (7) Diversity of work experience

III. Relation to other services

A. A close working relationship must necessarily be maintained with local, county, state and national government agencies. During the life of the public works program in the United States, the U.S. Employment Service Offices were not sufficiently staffed to adequately interview workers and place them on projects where their skills could best be utilized. As a result, WPA and NYA operated large personnel and placement departments.

B. Community Advisory Groups

(1) Business; (2) Welfare; (3) Religious; (4) Women's groups; (5) Local, province officials and the national government. (Note: Local groups should advise on community needs and training to be offered and assist in the transition of workers from government projects to normal employment.)

IV. Set up and Personnel

A. Central National Office

1. Purpose - (a) overall program planning and development; (b) administrative procedures and policies; (c) standard setting; (d) evaluation; (e) finance control

2. Division Set-up

- (a) Administration - overall policies and procedures; personnel
- (b) Operations - overall project planning; training programs for workers and foremen; continuous evaluation and safety.
- (c) Finance - Needless to say, the finance procedures for a work program can be prescribed only after the basic features of the program have been determined. Therefore, any statement about finance procedures must be general in character until the framework of the program has been established. Any sound finance system, however, would include such basic features as the following:

(i) Project authority and limitation - Each measurable unit of work, such as a construction project, a service project, a work shop, etc., would be set forth in a project application which contained the essential details of the activity and its estimated cost. Each project should be numbered and approved by proper authority indicating the total amount which constitutes the project limitation. Within an approved project, provision can be made to control cost by unit of work, by time period or by object of expense, such as personal services, equipment, etc. Project accounts should be established to control obligations and expenditures within the limits of the authorities granted.

(ii) Budgetary control of a work program - Normally, project authority is granted beyond the limitations of currently available funds in order to provide flexibility in operations. Therefore, it is essential that budgetary control accounts be established to limit operations to the extent required by currently available funds. Budgetary control accounts may be established upon a monthly or quarterly basis and usually provide for control of obligations by geographic subdivision and by organizational units. Budgetary control accounts represent the means of limiting expenditures from the several sources of funds to the amounts provided for the period.

(iii) Appropriation control of a work program - The amount of funds provided for the operation of a work program must be arrived at based upon the approved projects to be carried out during the time period or it may be based upon the average cost of providing a determined number of man-years of employment. Appropriation accounts must be established to control disbursement of funds from the appropriation and to control the rate of use of funds for various authorized purposes. The method of establishing appropriation accounts will depend upon the organization established to conduct the program and therefore the locations from from which actual disbursements are authorized. In a large work program, the central office usually limits its financial operations to the authorization of funds, the prescribing of the system of accounts, the obtaining of financial reports, the reconciliation of accounts, and the inspection of field financial operations. The level at which most detailed financial records should be maintained will depend upon the delegation of authority over program operations. In the main, financial authority must exist at the same level that authority is delegated to incur new obligations.

Numerous systems of accounts have been developed to carry out work programs in the United States which have the characteristics enumerated above, and such accounts could be examined for suggestions as to the finance arrangements to be established in any other area, to the extent that such systems were applicable.

No attempt will be made in this outline to break down finance responsibilities between the different levels of authority - project, regional and national.

(d) Procurement - The national procurement office would not necessarily be an active office from the standpoint of project operations but would be needed to secure national and international surpluses and to make them available to local projects.

B. Regional Office

The set up in the Regional Office would correspond in general to that of the National Office. At the Regional Level a technical staff should be available to advise with the project personnel and assist with technical planning.

C. Project Level

The division needed will correspond with those at National and Regional Level. However, with the direct operations at project level, technical and supervisory personnel will have to be added. For a successful program, complete authority should be vested in the local project office with certain controls maintained at the higher levels and an advisory and technical service maintained.

V. Project Procedures

A. Project Application - Essentials to be included with project applications are:

(1) Description of work to be done; (2) Number of workers to be employed; (3) Blueprints and working drawings and specifications; (4) Estimated costs; (5) Equipment need; (6) Materials needed -(Projects would be initiated at project level and submitted to district office for approval and to national office for information purpose only.)

B. Continuous Evaluation - A work program well operated tends toward continuous progress in quality and standards. There should be continuous evaluation from all levels to insure uniform progress.

C. Workers' Compensation

D. Safety Program

VI. Types of Projects

A. Service Projects

- (1) Nursery schools; (2) Nurses' Aids; (3) Feeding;
- (4) Writing.

B. Production and Distribution of Goods

- (1) Foods (preparation, preserving, canning); (2) Gardening;
- (3) Clothing; (4) Shoe repair; (5) Weaving; (6) Mattress making

C. Production Shops

- (1) Blacksmithing; (2) Repair of Farm Implements; (3) Manufacture of farm implements; (4) Manufacturing simple tools; (5) Manufacturing furniture; (6) Sheet metal shops; (7) Radio; (8) Photography; (9) Pottery

D. Construction

- (1) Village improvements; (2) Sanitation; (3) Housing (repair and conditioning and construction of homes and public buildings; (4) River improvement (small); (5) Road and bridge building and repair; (6) Irrigation and drainage; (7) Playgrounds; (8) Parks and landscaping; (9) Bath House; (10) Well digging

E. Agricultural

- (1) Poultry raising; (2) Farming; Soil conservation; forestry.

F. Public Welfare Projects

- (1) Health; (2) Control of Disease; (3) Immunization; (4) Recreation; (5) Eradication and control of disease bearers

G. Public Education

- (1) Adult education; (2) crafts; (3) arts; (4) research
- (5) pre-school; (6) handicapped

VII. Training

No attempt has been made to separate training and work projects because best results are secured when training is made an intricate part of the work program. Training instruction should be given by the same authority who is responsible for the project production and in all cases should be related directly to production. WE LEARN BY DOING.

VII. Projects for Women

The above is a very general work project outline. Many of the suggested projects would afford excellent working opportunities for both men and women but special consideration must be given to projects on which women are to be employed.

A. Women's Projects

- (1) Nature of work; (2) Length of work day; (3) Health hazards;
(4) Physical facilities

B. Types of projects - Projects that afford excellent working opportunities for women are:

- (1) Service projects - nursery schools; nurses' aides; feeding; writing
- (2) Production and Distribution of Goods - foods; clothing; weaving; mattress making
- (3) Production - radio; photography; pottery
- (4) Public Welfare Projects - health; immunization; recreation;
- (5) Public Education - adult education; crafts; arts; research; pre-school; handicapped

In preparing the outline for work projects no mention has been made of youth because it is felt that a separate work program should be established for youth workers. There are many reasons for this:

1. Youth problems are not comparable with problems of adults.
2. Unskilled youth labor would tend to slow down normal production speed of adult workers.
3. When young people are employed with adults, there is a tendency to exploit the youth labor to use them as helpers and few opportunities are given for a meaningful work experience.
4. Young people do not have entrenched work habits and attitudes and, therefore, require stronger and closer supervision.
5. Youth must never work for employment alone, and the prime judgment in determining the desirability of a youth work project should be the opportunity which the work affords in the development of the individual.
6. On youth projects, all work experience must be related to the training.
7. Wages paid youth will necessarily be project workers, because much time on youth projects and production will necessarily be less. If the work are considered from a production standpoint rather than an hourly wage, the youth's wage should be comparable with the salary paid to adult workers for similar production.

Youth compensation must be meaningful as an earning situation and must meet the essential requirements of the individual. (The outline as given is adaptable however to a youth work program.)

SUMMARY OF WORK PROJECTS FOR YOUTH IN THE UNITED STATES

Among the many problems to confront nations now at war, is the adjustment of the people in the normal pursuits of living.

Young people between the ages of 16 and 26 will make up the bulk of those who will have to find their way to normal membership in the social and economic structure of their country. Much can be done on the part of Governments to facilitate this transition. A nation faced with the problem of undertaking to plan for the rehabilitation, training and re-establishment of the people, especially young people, needs to make inquiry as to what exists in the way of educational facilities, what additions can be made to such institutions, what the industrial, commercial and agricultural disciplines can do within their respective frameworks and what lies ahead that can augment and add to the above-mentioned arrangements.

In respect to the adjustment of young people into adulthood and into gainful participations and future work arrangements of their country, the experience of the United States Government may be of some value.

In 1932, the United States found itself in the throes of a financial depression with from 12 to 15 million adults out of employment. In addition to the above, there were from seven to eight million young people who had never had employment and who were unable to secure employment. Many of these young people would normally have remained in school, but due to the scarcity of employment they were unable to earn their own way in school, and their families' finances were depleted to such an extent that it forced millions to leave school early. With 12 to 15 million adult experienced workers in the labor market, the inexperienced workers found themselves, as far as a job was concerned, the "forgotten generation".

In 1933, the United States Government moved to alleviate this condition and operated programs for young people until July 1943. In 1943, the War demands had created a situation where job opportunities far exceeded the number of available labor.

The work from 1933 to 1943 was a rather wide and inclusive development which might be termed a nation-wide experiment looking towards the development of a practical and working arrangement into which young people who found themselves out of school and unable to find employment could be usefully occupied and trained for the day when the opportunity would come for them to enter the going concerns of the nation's economy.

This was done mainly through the National Youth Administration and the Civilian Conservation Corps.

During the above-mentioned 10 year period, some six million young people were given employment and training as well as the opportunity to develop normal, healthy bodies.

In planning to meet the unemployment problem of youth, the aim was to find a way to provide work and training that would as nearly as possible, approximate that which historically had been afforded young people through private industry. It was not possible to look to the schools for this because our secondary schools had developed largely along academic lines. Even in a few places where vocational schools had been established, they had been organized along lines leaning towards the journeyman status and were professional in character requiring four years for completion. Furthermore, in many cases the work given was not of a practical nature and training was not definitely correlated with production work.

The Civilian Conservation Corps was organized in 1933 to give employment to young, unmarried men from 17 to 28 years of age and to war veterans on relief. Camps were built and the young men furnished shelter, food, medical care and working clothes. They were paid a small wage, the major portion of which was an allotment to their families. The worker received only a sufficient amount to cover incidentals.

The main objective of the Civilian Conservation Corps were the improvement of the nation's forests and parks; and their protection against fire and the ravages of insects and diseases; the control of soil erosion on valuable agriculture and timberland; the development of more adequate recreational areas; the prosecution of flood control operations; and the conservation of wild life.

The National Youth Administration was established in June 1943 by Executive Order. In the establishment of this agency, the President made clear that the organization was to work along lines different from those being pursued by the Civilian Conservation Corps.

1. NYA would give employment to young women as well as young men.
2. NYA would provide a diversity of work opportunities which would have definite training value.
3. Greater emphasis was to be placed on the development of the individual.
4. Work opportunities were to be provided for needy young people desiring to attend high school and college.

The work of the NYA divided itself into three main structures:

1. Work in connection with institutions of learning, such as high schools and colleges which enabled the young people to complete their school work.
2. Local work projects to provide work for young people living at home.
3. Resident center projects where young people lived in residences and had work in a variety of shops and farm projects.

High School and College Work Projects

Confronted with a situation in which every youth of school age who discontinued his education prematurely for economic causes became a competitor in an overcrowded labor market, it was determined to provide a work program for college and high school students.

The college and high school administrative staffs operated and supervised the program on which young people were employed. The school officials determined the eligibility of projects and selected the young people for employment. The materials required for project operation were furnished by the participating schools and the government paid only the salaries of the young people employed.

The young people in colleges were provided with an average monthly wage of \$15. The maximum salary for those in high school was \$6 per month.

Advantages

1. Greater democracy in education.
2. Increased students social responsibility
3. Work experience added practicability to the students' school experience and resulted in increased employability.
4. Goods and services were produced which added to the overall effectiveness of the participating schools in which the programs operated.

Disadvantages

Failure on the part of some institutions to do necessary planning and to provide adequate supervision.

(For complete details of School Projects, see Final Report of NYA, Fiscal Year 1936-43, pages 43-82.)

Local Projects

On the local projects where young people lived at home, many types of productive work activity were carried on. The first projects were small and simple and many times unfortunately had little training value. However, communities soon became aware of the value of worthwhile projects for their young people and to appreciate the inexperienced workers' ability under suitable supervision to perform difficult jobs. As a result, finer training projects of greater community value were made available. At one time, there were as many as 19,000 of these projects, employing and training 485,000 young people at a given time. They were located in practically every county in the United States. There was, on an average, one adult skilled supervisor provided for every 15 youth workers. This ratio varied according to types of project.

The projects ranged from leaf-raking and snow shovelling in the early days of the program (which had no training value and little to build morale) to difficult construction jobs.

(For a complete description of the Local Projects, see Final Report, National Youth Administration, Fiscal Years 1936-43)

Resident Shop Projects

Shortly after the NYA began to operate, the advantages of resident center projects became evident. Shop projects such as mechanical arts, machine shop, pottery, industrial sewing, foundries, etc. are costly and therefore it was necessary to limit the number of such shops.

Special aptitudes and interests of young people employed on local projects would be observed by supervisors and the young people counselled on where they might receive the desired specialized training ~~work~~. Only by establishing resident facilities in connection with the large shop projects was it possible to make this specialized training available to young people from small communities.

It was found that on resident projects young people gained much that was of value in addition to the specialized industrial training:

1. They learned to live with other people.
2. They learned to cook, launder, sew, garden, preserve foods, etc.
3. They learned to properly equip and maintain a home.
4. They learned democratic self-government.
5. Resident-center living had a definite carry-over value which resulted in noticeable raising of living standards.

Many old, obsolete and unused institutions were completely remodeled by youth labor and made suitable for resident projects. Many new centers, 600 in all, were constructed by youth labor. In addition to constructing and remodeling the buildings, the residences were completely equipped through the work efforts of the youth themselves. Beds, chests of drawers, mess hall furniture, lounge furniture, bed springs, mattresses, desks, chairs, sinks, stoves, radios, recreation facilities, and dishes were manufactured, blankets and drapes woven, all foods were produced and in short, the centers were self-sustaining.

All of the above articles were not produced in one center but each center produced only the articles for which it was best equipped and an exchange was made between centers. For example, an agricultural project would furnish the butter, cheese, meats and vegetables for the shop projects, while the shop projects would supply the agricultural projects with needed furniture, farm tools and equipment.

In addition to the equipping of their own residences and shops, goods were produced for public institutions. From 1941 to 1943, almost the entire production capacity of the shops was put into use to meet the requests of the Army and Navy.

(For detailed description of a Resident Project, see Final Report, NYA, Fiscal Years 1936-1943:

Weiser Resident Project, Weiser, Idaho - pages 184-185.

Quady-Passamaquody, Maine, pages 187-190.

South Charleston Resident Project, South Charleston, West Virginia, pages 190-194.)

Young people, if given the opportunity, can do much through their own efforts while securing training and work experience to aid materially to the rehabilitation of their worn-torn countries.

Perhaps the experience of the United States during the depression years may be of value to countries seeking ways in which their young people may be trained to help themselves and their efforts channelled into rehabilitation of their countries.

Out to Lehigh
5 April 1945

by. Voc. Training

Pamphlet ~~The planning~~

Partnership in The Service of
Youth —

Ans to L. Hiley
5 April 1945

64. Vocational
Training &
Occ. Activities

Pamphlet

The youth Service after the
War