

## STATE OF SOUTH DAKOTA CLASS SPECIFICATION

**Class Title: Fabrication Technician**

**Class Code: 40848**

**Pay Grade: GG**

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### **A. Purpose:**

Designs and fabricates equipment and modifications to equipment, tools, etc., to provide adequate resources at reasonable costs.

### **B. Distinguishing Feature:**

Fabrication Technicians build, modify, or repair machines, equipment, parts, and tools by operating all types of welders, grinders, milling machines, turning lathes, and other similar fabrication and machining equipment.

### **C. Functions:**

*(These are examples only; any one position may not include all of the listed examples nor do the listed examples include all functions which may be found in positions of this class.)*

1. Fabricates mechanical, electrical, and electronic equipment to meet the needs of special projects.
  - a. Designs and draws equipment and components.
  - b. Constructs prototypes of new or modified pieces of equipment, and tests and recommends modifications.
  - c. Builds and reconstructs equipment.
  - d. Provides technical assistance to ensure appropriate use of equipment and apparatus.
    - i. Assembles apparatus for teaching and demonstrations.
    - ii. Assists and teaches students and staff proper use and safety procedures for laboratory equipment.
2. Performs welding repairs on a wide variety of wheeled and construction equipment to maintain them in working condition.
  - a. Assesses the type of problem and determines the necessary scope of repairs.
  - b. Selects appropriate welding methods and materials and makes repairs.
3. Prepares new equipment in accordance with department requirements and following equipment schematics to get it ready for road use.
  - a. Assembles or fabricates necessary parts to attach peripheral equipment.
  - b. Fabricates and installs hydraulic lines, hitch plates, ladders, box vibrators, light brackets, mud flaps, and other similar attachments.
  - c. Attaches snow plows, sanders, under-body scrapers.
  - d. Attaches safety equipment such as lights, flags, guards, etc.
  - e. Operates equipment to ensure attachments work together and safely.
4. Maintains an inventory of applicable tools, equipment, and materials to ensure prompt and efficient response to repair and fabrication needs.
  - a. Determines, recommends, and procures equipment, materials, and tools.
  - b. Troubleshoots equipment to determine necessary repairs and maintenance.
  - c. Repairs and maintains shop tools and diagnostic equipment.
  - d. Evaluates equipment to determine appropriate preventive maintenance schedules.

- e. Keeps inventory records.
- 5. Operates a combination vehicle to transport equipment to and from job sites.
  - a. Loads equipment onto trailers.
  - b. Ties down loads.
  - c. Attaches appropriate flags and warnings.
- 6. Performs other work as assigned.

**D. Reporting Relationships:**

Reports to an Equipment Shop Foreman or a Program Manager. Does not supervise.

**E. Challenges and Problems:**

Challenged to fabricate equipment and parts. This is challenging because processes often begin with concepts or ideas with no specific plans and it is up to incumbents to visualize, design, and construct necessary items. Further challenged to identify key stress points in equipment breakdowns, make appropriate welds without creating further stress points, and ensure welds meet tolerances for effective equipment operation.

Problems include improving old or improperly manufactured equipment, obtaining parts for outdated equipment, performing repairs within limited time and with limited resources, and working with poor schematics and assembly instructions.

**F. Decision-making Authority:**

Decisions include appropriate methods of fabrication to achieve desired results; selection of suitable equipment, materials, and tools; how to most effectively repair or design equipment; scope of repairs and reinforcements; priority of assigned work; and recommendations for alternative designs and repairs.

Decisions referred include approval of purchases over a fixed amount, when to contract repairs to vendors, whether repairs are cost effective, and work assignments.

**G. Contact with Others:**

Daily contact with staff to exchange information on projects; weekly contact with vendors to obtain necessary materials and equipment; and occasional contact with the public to provide technical expertise or services.

**H. Working Conditions:**

Works in an equipment shop with limited floor and overhead space; is subject to fumes from exhausts and welding; is exposed to burns and chemicals; lifts and carries heavy items routinely; works in confined spaces in, around, and under equipment and vehicles; works outdoors in all types of weather and conditions; and drives a truck in inclement weather.

## **I. Knowledge, Skills, and Abilities:**

Knowledge of:

- welding technology and a variety of welders;
- machining tools such as grinders, drills, milling machines, turning lathes;
- metallurgical science;
- mechanical principles involving tolerance, stress, strain, friction, and vibration;
- methods and practices of fabrication;
- applicable laboratory tools;
- on the job safety practices and procedures.

Ability to:

- use welding tools and techniques;
- operate and maintain electronic and mechanical instruments;
- use machining equipment and methods;
- read blueprints and visualize them in three dimensions;
- prepare designs and drawings;
- review and comprehend technical handbooks;
- operate combination vehicles such as tractors and trailers;
- establish and maintain working relationships with coworkers, customers, and vendors.