



Sand & Gravel, Inc.

Job Demands Analysis

Company: Thelen Sand & Gravel, Inc.

Location: Maintenance Shop

Job Title: Maintenance / Welder

Classification: Regular Duty

Purpose of Activities:

The maintenance personal at Thelen Sand & Gravel, Inc. are responsible for the repair and fabrication of steel alloy and aluminum alloy parts, components of vehicles, equipment, trailers, etc. Work will be performed in the maintenance shop and out in the field.

Tools & Equipment:

- Gantry cranes & Jib cranes
- MIG, TIG, & Electrode welders, Plasma cutter, and Torches
- Steel & Aluminum templates
- Hand Tools – wrenches, screw drivers, sockets, chisels, punches, hammers, task light, cheaters, hammers, sledge hammers, tape measures, chains, come-along, pipe wrenches, pipe cutters, bolt cutters, hydraulic press.
- Air tools – ½ and ¾ inch impact gun's, chisels, die grinder, and sanders.
- Work benches with a vise
- Press, brake, drill press, cut off saw, grinders, fans, dies for press and brake
- Oxygen, propane bottles
- Step ladder, extension ladder, back board roller cart
- Forklift, floor jack, jack stand
- Steel storage racks in the shop, and outside the shop
- Mobile welding truck equipped with hand/power tools, welders, torches and cutters
- Steel plates (8' x 24'), rounds, bars, flat stock, and metal alloys of various shapes and sizes and weights. Some can be lifted while others will require a forklift or crane.
- Carts in the shop for moving or holding parts
- Protective clothing – welding gloves, welder's helmet, tinted goggles, steel-toed boots, ear plugs, grinding shields, respirators, air vacuums, and etc.

Usual Methods:

Field Work

- 1.) Receive work order from supervisor
- 2.) Walk to mobile welding truck, perform pre-trip inspection, load required tools and equipment on the truck. Drive to the work site.
- 3.) Determine exact nature of the work. Determine what parts, equipment and tools are required and length of time the work will take. Time at the work site may range from minutes to hours to several days or even weeks depending on the nature of the work.
- 4.) Unload tools, materials and equipment from the truck as required
- 5.) Make the repair in the field. Use tools, equipment and materials as required
- 6.) Return tools, equipment and unused material to the truck
- 7.) Clean the work site if necessary
- 8.) Drive to the shop or to the next work site

Shop Work:

- 1.) Receive work order from supervisor
- 2.) Clear work area in maintenance shop
- 3.) Gather required tools, equipment and materials in work area. Hand carts, forklift or jib crane may be required to maneuver tools, equipment and materials where they are required
- 4.) Walk to secondary storage area to select required material, cut material in storage area if required. Walk back to the maintenance shop. The forklift may be required to transport the piece between shops.
- 5.) Use hand, air, and power tools, cutting torch, plasma cutter and welder to make repair or to fabricate the required parts or components.
- 6.) Complete work on repair or fabrication
- 7.) Clean work area, as the work is performed
- 8.) Start next job

Activity Demand Variables:

- 1.) Walk, stand and kneel on concrete, steel and aluminum flooring
- 2.) Bend, stoop, crouch, kneel and crawl to repair and fabricate
- 3.) Reach below, at and above shoulder height to repair and fabricate
- 4.) Insert hands into confined areas to repair and fabricate
- 5.) Hand, power and air tool use is required
- 6.) Climb, stand and balance on ladders or inside man-baskets to perform repair or fabrication

STRENGTH

Physical Demands:	Frequency:	Listed Types:
1.) Lifting – Floor to Knuckle	Moderate	tools, equipment, steel
2.) Lifting – Knuckle to Waist	High	tools, equipment, steel
3.) Lifting – Waist to Shoulder	Moderate	tools, equipment, steel
4.) Lifting – Over Head	Low	tools, equipment, steel
5.) Carrying – With Handles	Low	tools
6.) Carrying – Without Handles	High	tools, equipment, steel
7.) Pushing – Upper Extremity	Moderate	tools, equipment, steel
8.) Pushing – Hip/Leg	Moderate	tools, equipment, steel
9.) Pulling – Upper Extremity	Moderate	tools, equipment, steel
10.) Pulling – Hip/Leg	Moderate	tools, equipment, steel
11.) Reach – Shoulder or Above	Moderate	tools, equipment, steel
12.) Reach – Sho. or Above Extnd	Low	tools, equipment, steel
13.) Reach – Below Shoulder	High	tools, equipment, steel
14.) Reach – Bel. Shoulder Extnd	Low	tools, equipment, steel
15.) Handling	High	tools, equipment, steel
16.) Gripping	High	tools, equipment, steel
17.) Fine Finger Movements	High	tools, equipment, steel

POSTURE + MOBILITY

Physical Demands:	Frequency:	Listed Types:
1.) Neck – Rotation	High	weld, tool use to fabricate
2.) Throwing	Moderate	scrap to recycling bins
3.) Sitting	Low	weld, tool use at low heights
4.) Standing	High	on concrete floor in shop
5.) Walking	High	in shop and out in the field
6.) Jumping	Low	down from vehicle
7.) Climbing – Arms and Legs	Moderate	ladders, bins, hoppers
8.) Climbing – Legs Only	Moderate	plant stairs
9.) Bending/Stooping	High	welding, tool use
10.) Crouching	Moderate	welding, tool use
11.) Kneeling	Low	welding, tool use
12.) Crawling	Low	welding, tool use
13.) Twisting	High	welding, tool use

14.) Balancing	Low	ladders, back of vehicles
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PERCEPTION

<u>Physical Demands:</u>	<u>Frequency:</u>	<u>Listed Types:</u>
1.) Hearing – Conversations	Moderate	welders, operators, foreman
2.) Hearing – Other Sounds	High	tools, heavy machinery
3.) Vision – Far	High	weld, tool use
4.) Vision – Near	High	weld, tool use
5.) Vision – Color	Low	flame on torch
6.) Vision – Depth	High	weld, tool use
7.) Feeling	High	weld, tool use
8.) Reading	Low	blue prints, paperwork
9.) Writing	Low	paperwork
10.) Speech	Moderate	welders, operators, foreman

WORK – ENVIROMENT

<u>Physical Demands:</u>	<u>Frequency:</u>	<u>Listed Types:</u>
1.) Inside Work	High	welding shop, heavy shop
2.) Outside Work	High	plant, equipment
3.) Hot Conditions > 25 deg C	Low	spring, summer, fall
4.) Cold Conditions < 10 deg C	Low	fall, winter, spring
5.) Humid	Low	wet weather conditions
6.) Dust	High	grinded alloy dust
7.) Vapor Fumes	High	fumes released while welding
8.) Proximity to Moving Objects	Moderate	cranes, heavy machinery
9.) Noise	High	welders, torch, power tools
10.) Sharp Tools	Moderate	cutters, grinders, knives
11.) Thermal Energy	High	welding, cutting
12.) Slippery Conditions	Moderate	dust, oil, water on floor
13.) Vibration	High	hand and power tools

14.) Chemical Irritants

High

welding fumes

15.) Congested Worksite

Moderate

performing tasks in confined
space