

## St. Louis County – Public Works Department

### FUNCTIONAL JOB ANALYSIS 4/28/14

**Job Title: Heavy Equipment Mechanic (Overall Requirements)**

| Job Function Demands   | Work Day Frequency  |   |   |  |   |
|--|---|---|---|--|---|
|  | Rarely<br><24 minutes   | Occasionally<br>1-33%<br>25 min. to 2.5 hours             | Frequently<br>34-66%<br>2.5 to 5.25 hours | Continuously<br>67-100%<br>5.25 to 8 hours               | Specific Requirements   |
|  | Note: The frequency is based on an 8 hour work day.   |   |   |  |   |
| <b>Lift-Carry</b>  |   | X<br>Up to 70 lbs.  | X<br>Up to 40 lbs.                        | X<br>Up to 30 lbs.                                       | For heavier items, may be able to ask for assistance.   |
| <b>Push-Pull</b>   | X<br>Up to 160 lbs. per person pulling blade from storage; or pulling own body weight up/down vertical ladder | X<br>Up to 55 lbs.  | X<br>Up to 40 lbs.                        | X<br>Up to 25 lbs.                                       | Sustained pushing down for welding tasks.   |
| <b>Hand/Finger Coordination</b>                              |   |   |   | High demand: fast paced, repetitious and/or high forces. |   |
| <b>Hand Grip</b>   | X<br>Up to 200 lbs. with both hands   | X<br>Up to 185 lbs. Removing/tightening bolts             | X<br>Up to 40 lbs.                        | X<br>Up to 30 lbs.                                       | Use of torque wrench, sledge hammering; air impact gun and hand tools.  |
| <b>Reaching Forward</b>                                      |   |   |   | X  |   |
| <b>Overhead</b>  |   | X<br>(reaching for door handles and/or do overhead repair |   |  | May require lifting over 62" above ground to door handles; remove and replace 4D or 8D battery                |
| <b>Sit (with positional changes)</b>                         |   | X   |   |  |   |
| <b>Standing/Walking</b>                                      |   |   |   | X  |   |
| <b>Balance</b>   |   |   |   | X  | While in awkward positions at times   |
| <b>Bend-Reach</b><br>(below fingertips, standing or sitting) |   |   | X   |  | 1. Sometimes sustained position for up to 30 minutes<br>2. Some parts may requiring reach up to 40" from self |

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| Squatting                                  |   |   | X  |  |   |
| Kneeling                                   |   | X   |  |  |   |
| Crawling<br>(sometimes can<br>use creeper) |   | X   |  |  | 16" clearance<br>underneath<br>selected trucks for<br>repair or blade<br>replacement for up<br>to 10 feet with<br>ramps |
| Climbing<br>stairs/ladders                 |   | X (up to 11 steps to<br>storage area; up to 9<br>steps on ladder with 1<br>hand and 3-pt.<br>contact) |  |  | 28" to first step<br>from ground on<br>selected<br>equipment; also<br>pulls up own body<br>weight on ladders.           |

**Note: At times, use of awkward body mechanics, including for a sustained period of time, based on limited space available and repair work that needs to be completed.**

#### PHYSICAL, ENVIRONMENTAL, AND MENTAL DEMANDS

**H = High Demand**

**M = Moderate Demand**

**L = Low Demand**

| PHYSICAL ENVIRONMENT     |                                 |          |  |          |                             |
|--------------------------|---------------------------------|----------|--|----------|-----------------------------|
| <b>H</b>                 | Noise                           | <b>M</b> | Fumes/Gases                                    | <b>L</b> | Chemicals                   |
| <b>M</b>                 | Heat/Cold ( <i>Fluctuates</i> ) | <b>L</b> | Tissue/Fluids                                  | <b>L</b> | Biohazard Material          |
| <b>L</b>                 | Infectious Disease              | <b>L</b> | Heights  | <b>H</b> | Dirt ( <i>Building</i> )    |
| <b>M</b>                 | Moving Machinery                |          | Radiation                                      |          | Lasers                      |
| <b>H</b>                 | Vibration                       | <b>L</b> | Wet/Humid Environment                          | <b>M</b> | Work Outside                |
| OTHER PHYSICAL FUNCTIONS |                                 |          |  |          |                             |
| <b>H</b>                 | Visual Acuity                   | <b>H</b> | Hearing  | <b>L</b> | Speaking                    |
| MENTAL DEMANDS           |                                 |          |  |          |                             |
| <b>L</b>                 | Frequent People Contact         | <b>H</b> | Frequent Interruptions                         | <b>M</b> | Multitasking                |
| <b>M</b>                 | Irregular Work Schedule         | <b>M</b> | Decision Making Skills<br>(Critical Judgments) | <b>M</b> | Frequent Deadlines          |
| <b>L</b>                 | Supervisory Skills              | <b>H</b> | Concentration<br>Requirements                  | <b>H</b> | Organizational Skills       |
| <b>M</b>                 | Detailed Work                   | <b>H</b> | Ability to Work<br>Independently               | <b>M</b> | Ability to Work With Others |

**Examples of specific job tasks can be found on the next page.**

**HEM**  
**St. Louis County – Public Works**  
**Examples of Job Tasks:**

1. Repair of Truck Box



Photo 1 Portable stairs are used to access portions of truck.  
Involves climbing, bending



Photo 2. May involve squatting, bending, overhead reaching with awkward body positioning in tight spaces



Photo 3. View Underside of truck box

## 2. Changing Cutting Edges on Plows



Photo 4. Placing plow on jack stands to change cutting edge.



Photo 5. Retrieving new cutting edge from storage. Cutting edges weigh 240 lbs. Lifting aids are available.

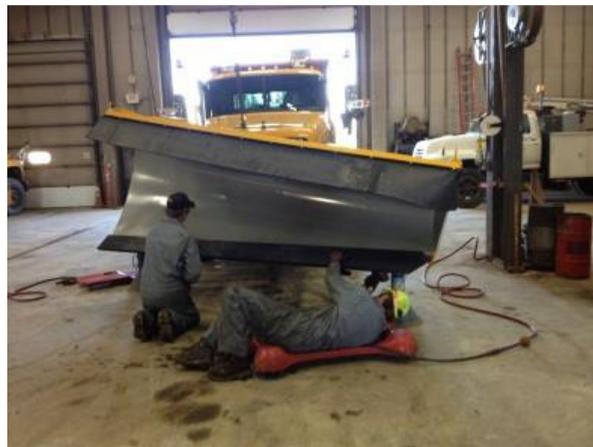


Photo 6. Using creepers and impact wrench to install new cutting edges.

### 3. Routine Maintenance and Repair Work on a Variety of Equipment



Photo 7. Welding, Cutting, Grinding to repair plow.



Photo 8. Accessing engine on Tandem Truck for routine maintenance.

## Routine Repair and Maintenance Continued



Photo 9. Changing a screen at a screening plant.



Photo 10. Routine maintenance on equipment. Kneeling and reaching forward.



Photo 11. Moving tires. Can weigh up to 70 lbs.

## 4. Changing Tires



Photo 12. Use of air operator bottle jack used to lift tire from the ground. Involves lowering body, kneeling, squatting



Photo 13. Kneeling and awkward positions.



Photo 14. Up to 160 lbs push pull for a 1 inch blade.



Photo 15. Use of impact wrench Involves pushing/pulling between 85-160 lbs. of force using air impact gun weighing about 30 lbs. and sledge hammer as needed Also, bending and in awkward positions at times.