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FEDERAL WAGE SYSTEM JOB GRADING STANDARD FOR CRANE OPERATING, 5725

Workforce Compensation and Performance Service

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CRANE OPERATING, 5725

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WORK COVERED

This standard covers nonsupervisory work involved in the operation of cranes to lift, transport, and position materials; to dig and move earth or other materials; to drive pilings; or to destroy obsolete structures. Cranes use attachments such as hooks, clamshell buckets, orangepeel buckets, dragline buckets, magnets, pile-drivers, demolition hammers, and other special material handling devices.

TITLES

Jobs graded by this standard are to be titled *Crane Operator*.

GRADE LEVELS

This standard does not describe all possible levels at which jobs may be established. If jobs differ substantially from the skills, knowledge, and other work requirements described in the grade levels of the standard, they may warrant grading either above or below these grades.

NOTE TO USERS

In this standard we use the terms "bridge crane" and "boom crane" to distinguish between the two categories of cranes now known by various specialized titles such as bridge crane, gantry crane, hammerhead crane, locomotive crane, portal crane, automotive crane, dock crane, and floating crane. Bridge cranes, as used in this standard, refer to those cranes which have no booms and a constant maximum lifting capacity. Boom cranes, as used in this standard, refer to those cranes which have booms and varying maximum lifting capacities depending upon the length, angle, and position of the boom.

5725-7 CRANE OPERATOR, GRADE 7 5725-7

General: Operate bridge cranes to lift, transport, and position materials in open areas of shops, warehouses, or outside storage facilities. Work areas contain some ground level obstacles such as equipment, stacked supplies, and partitioned bins, but there is considerable room to maneuver the load over and around these obstacles. The bridge crane is fitted with attachments such as hook, magnet, clamshell bucket, or special material handling devices, and is typically used to:

- move and stack bulk supplies such as crates, lumber, or sheet metal on loading docks;

- segregate and move scrap metal for salvage operations; or

- load and unload coal, sand, gravel or other loose material into bins, hoppers, or railroad cars.

Skill and Knowledge: Grade 7 bridge crane operators must be skilled in operating the levers and brake pedal to control the movement of the bridge along the rails, to move the hoisting trolley back and forth, and to raise and lower the hoist line with the load. Good eye, hand, and foot coordination is required to watch the clearance of the load with ground level objects while making necessary control changes to move the load safely from one point to another. They must know how the crane responds to control changes and be skilled in regulating the various movements of the crane and load. They know to avoid quick drops, jerks, or other sudden moves which may cause the cables to break and the load to fall. They must know and be able to follow hand or other signals given by ground personnel.

Responsibility: The grade 7 bridge crane operator receives their work assignments through oral or written instructions. Within the assigned work area, loads are moved based upon preestablished loading and unloading points or by direction of ground personnel. They check the crane controls and movements for proper functioning before beginning work and reports any defects to the supervisor. They assure that loads do not exceed the overall rated lifting capacity of the crane and that they are properly secured and balanced before lifting. They continually watch for excessive load swing, slippage of the load, crane malfunction or other conditions which may cause damage to the load or impair the safety of others. They observe standard safety rules and regulations and reports any unsafe conditions to their supervisor. Their work is spot checked for compliance with standard operating practices.

Physical Effort: To operate the bridge crane grade 7 operators push, pull, and depress the various hand and foot controls, requiring continuous reaching, bending, and moving of hands, arms, feet, and legs. At the same time, they must bend and twist their bodies to observe the load and its clearance over and around other objects. They work in a standing position and must keep their balance during starting and stopping motions of the crane.

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Working Conditions: Grade 7 bridge crane operators work indoors or outdoors in a partially enclosed crane cab. Ventilation is adequate, but heat may be uncomfortable while working indoors and near the ceiling. They are exposed to the possibility of cuts, bruises, and broken bones from falls while climbing to and from the control cab. They are exposed to possible unpleasant noise, dust, dirt, or fumes from the work area.

5725-9 CRANE OPERATOR, GRADE 9 5725-9

At the grade 9 level there are two kinds of crane operation described: bridge crane and boom crane. While both involve similar kinds of work, the type of crane operated and the work situations are different. For these reasons, and for convenience of presentation, they are described separately.

BRIDGE CRANE OPERATION

General: Operate bridge cranes in confined shop areas where maneuverability is restricted and accuracy is critical. Loads are moved over and into production areas containing equipment, machinery, supplies, and personnel, requiring extreme care and accuracy to maneuver the load safely. They make precise load placements where alignment is difficult and exact positioning is critical. The bridge crane at this level is typically used to:

- precision set parts and sub-assemblies for equipment assembly operations;
- position and remove castings, forgings, or other items for machining operations; or
- move and position lathes, boring mills, balancing machines, or other large machine tools on production floor.

Skill and Knowledge: Grade 9 bridge crane operators must be more skilled in operating the controls than the grade 7 operator, because they must make precise moves while maneuvering loads over and into production areas with limited clearances. They must have a thorough knowledge of the crane's response to control changes and be skilled in making precise movements. Greater eye, hand, and foot coordination is required than at the grade 7 level, because grade 9 level operators must complete quick and exact control changes while making difficult load alignment and clearance judgments. Grade 9 operators must be skilled in reacting quickly to hand or other signals from ground level personnel since the work frequently requires the load being outside the operator's line of vision. In addition, some operators at this level work closely with another crane operator while moving exceptionally large or heavy objects, requiring skill in coordinating and anticipating the movements of the other operator.

Responsibility: In addition to the responsibilities of the grade 7 bridge crane operator; grade 9 operators must be alert to the needs of the production area below and plan load movements to coincide with the workflow. Because work areas are congested, they must carefully plan the movements of the crane to prevent damage to the load, machinery, or injury to personnel.

Physical Effort: Except for making more frequent control changes, the physical effort is substantially the same as that described at the grade 7 level.

Working Conditions: The working conditions are essentially the same as those at the grade 7 level, with the exception that the work at the grade 9 level is usually done indoors.

BOOM CRANE OPERATION

General: Operate boom cranes at various outdoor locations where maneuverability is not a major problem and accuracy is not critical. Worksites may contain some obstacles such as trees, walls, and equipment, but there is considerable room to maneuver over and around these objects. The crane normally is operated with standard boom lengths and angles, and with loads that are well within the lifting capacity of the crane. The boom crane is fitted with attachments such as hook, clamshell bucket, orangepeel bucket, magnet, piledriver, demolition hammer, or dragline bucket, and is typically used to:

- load and unload crates, lumber, or equipment at worksites or outdoor storage areas;

- load and unload sand, coal, gravel, or other loose material at loading docks;

- segregate and move scrap metal into trucks, bins, or railroad cars within a salvage yard; or

- dig trenches in a sanitary fill area.

Skill and Knowledge: The boom crane operators must compensate for changes in the lifting capacity of the crane caused by variations in the angle of the boom, length of the boom, position of the revolving frame and the slope of the terrain. Before making each lift, grade 9 boom crane operators must determine the weight of the load to be lifted; and, if unknown, they must estimate the weight based on a general knowledge of weights of various materials. They then must determine what moves the crane will need to make in order to complete the move, and assure that the lifting capacity will not be exceeded

They must be skilled in the use of clutches, levers, brakes, and accelerator to raise and lower the boom, to position the revolving frame, to raise and lower the hoist line with the load, and to move the mobile base. Because boom cranes have a large number of controls, considerable eye, hand, and foot coordination is required to produce the desired movements while watching the load and its clearance with other objects. Some operators at this level must understand the use of outriggers or railroad switching and signaling systems.

Responsibility: Grade 9 boom crane operators follow oral or written instructions indicating the crane to be operated, location of the work, general nature of the work to be done, and any problems which may be encountered. Within the assigned work area, the operators plan the positioning of the crane to provide for maximum freedom of movement and the greatest possible lifting capacity. They make visual and operational checks of all moving parts prior to start of work and reports any defects to his supervisor. Grade 9 operators assure that the boom crane is well within its lifting capacity during position changes and that all moves are safely carried out.

They may recommend changes in boom length, rigging, and attachments to the supervisor if they feel the situation warrants such a change. Their work is spot checked for compliance with standard operating practices.

Physical Effort: Grade 9 boom crane operators exert heavy effort in pushing, pulling, and depressing the various levers, clutches, and brakes. They are subject to strain caused by vibrations of the crane, and from the jerking and jolting motions while lifting and moving loads. They occasionally move objects weighing up to 23 kilograms (50 pounds), e.g., lifting hooks and cables, changing rigging, setting outriggers, etc.

Working Conditions: Grade 9 boom crane operators work outdoors in a partially enclosed crane cab in all types of weather. They exposed to unpleasant noise, heat, and fumes produced by the engine. They are exposed to the possibility of injury caused by swinging loads or from the crane overturning.

5725-11 CRANE OPERATOR, GRADE 11 5725-11

General: Operate boom cranes at various outdoor locations where maneuverability is restricted and accuracy is critical. Work is typically done near obstructions which restrict not only the load movement, but also the movement of the boom. Many work areas do not permit positioning the crane near the work to be done. To reach the load, extreme boom lengths or angles must be used, greatly reducing the lifting capacity of the crane and further restricting the maneuverability. They make precise load placements where exact movements must be made to position the load accurately and safely. Many situations involve moving such large, heavy, or awkward loads that the crane is near or at its lifting capacity, with the operator having to rely on "feel" alone. The boom crane at this level is typically used to:

- load and unload equipment and supplies on board ships where masts, antenna, or other obstructions are in the way;

- precision set objects such as guns into mounts, sonar equipment onto ships, or wings on to aircraft;

- dig and move earth or rock close to buildings, walls, or under ground obstructions; or

- destroy obsolete brick and stone structures near high-voltage power lines or other structures.

Skill and Knowledge: In addition to the skill and knowledge required of grade 9 boom crane operators, grade 11 operators must be skilled in operating cranes at all boom lengths, angles, and positions. They must be skilled in making rapid lifting capacity judgments during continual position changes. They must be skilled in operating near or at the crane's lifting capacity and within extremely congested areas. They must be skilled in producing exact movements while precision setting loads onto or into other objects, e.g., positioning and holding a hull section of a ship while it is welded into place. Grade 11 operators must be skilled in simultaneously operating the crane's controls, making difficult clearance judgments while watching the moving load and boom, and compensating for variations in the crane's lifting capacity during position changes. This demands intense concentration, unusual alertness, and an exceptional degree of visual and physical coordination.

Responsibility: Because the work is typically done near obstructions, grade 11 boom crane operators have greater responsibility for determining the positioning of the crane than grade 9 operators. They must consider such factors as the safest routing of the load, clearances along the route, position changes needed to complete the move, and the effect of these changes on the crane's lifting capacity. These determinations are critical at this level due to the greater possibility of exceeding the crane's lifting capacity, injuring personnel, and damaging the load, crane, and obstructions while making position changes.

5725-11 **5725-11**

Physical Effort: Grade 11 operators have to make continual control changes to maneuver the crane and load around obstructions, to stay within the lifting capacity, and to position the load at the desired location. This is more strenuous than the physical effort of grade 9 boom crane operators, who remain in a set position for a longer period of time.

Working Conditions: The working conditions are essentially the same as those of grade 9 boom crane operators, with the exception that grade 11 operators are exposed to a greater possibility of injury from overturning because they must frequently work near or at the crane's lifting capacity.