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Brunel Energy, Inc.

Overhead and Gantry Cranes

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1. Purpose

- 1.1. Brunel Energy, Inc., hereinafter referred to as, “the Company,” has established a program compliant with OSHA 1910.179 Crane Overhead Gantry. All new overhead and gantry cranes constructed or installed on or after August 31, 1971, shall meet the design specifications of the American National Safety Code for Overhead and Gantry Cranes, ANSI B30-2.0-1967, which is incorporated by reference as specified in 1910.6.

2. Applicability

- 2.1. This policy applies to employees, subcontractors and/or visitor(s) of the Company. For the purposes of this policy, an employee shall be considered on the job whenever he/she is:
 - 2.1.1. On or in, any Company or client property, including parking areas; or
 - 2.1.2. On Company time even if off Company premises (including paid lunch, rest periods and periods of being on call).
- 2.2. As a condition of employment, Company employees are required to abide by additional governmental or customer policies and requirements that may be imposed at a worksite in addition to the requirements of these policies and procedures. Nothing set forth in this policy constitutes, construes, or interprets in any way as a contract of employment.

3. Definitions

- 3.1. **Overhead and gantry cranes** have a horizontal bridge across which a trolley and hoist travels. A gantry crane has one or more legs running on fixed ground rails, wheels, or other runway systems. Gantry cranes can be portable, with load capacities generally ranging from one to 30 tons, width spanning from eight to 100 feet, and heights from six to 60 feet. These qualities make them ideal for use in warehouses, loading docks, and vehicle maintenance facilities. This type of crane, having trolleys, and similar characteristics, also includes semi gantry, cantilever gantry, wall cranes, and storage building cranes.

4. Responsibilities

- 4.1. Manager(s) and HSE Supervisor(s):
 - 4.1.1. Managers are responsible for implementing, supporting, and enforcing the requirements of this policy in their locations. They shall also be responsible for the identification and assignment of specific responsibilities to overhead crane operators and must be aware of every lifting operation within their department and provide equipment and trained personnel capable of completing the lift in a safe and efficient manner in accordance with all applicable laws, regulations, standards, and policies, including:

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- 4.1.1.1. Ensuring that all operators are aware of all potential hazards associated with overhead crane operation and rigging and the procedures to follow to eliminate those hazards.
- 4.1.1.2. Ensuring that all operators and signal persons are well trained, experienced, and competent to operate the particular crane to which they are assigned.
- 4.1.1.3. Ensuring that a suitable and safe crane, all associated rigging equipment, rigging hardware, and competent personnel are assigned to the lift; and
- 4.1.1.4. Ensuring that an approved lifting plan is completed prior to any critical or engineered lifting operations.
- 4.2. Employee(s):
 - 4.2.1. Employees are responsible for safely operating and following all training and safety requirements of this policy in their locations.
 - 4.2.2. Only employees deemed competent through appropriate training and evaluation may operate overhead and gantry cranes.
- 4.3. Subcontractor(s):
 - 4.3.1. Subcontractors are responsible for safely operating and following all training safety requirements of this policy in their locations. Only subcontractors deemed competent through appropriate training may operate overhead and gantry cranes.

5. Requirements

- 5.1. Evaluation of the terrain
 - 5.1.1. The location and evaluating the terrain, what is around and overhead, what is the load bearing capacity of the site and what the hazards are in the area shall be taken into consideration.
- 5.2. Proper equipment of selection for the job
 - 5.2.1. Choosing the proper equipment is a factor in operating cranes safety. The crane should be matched to the job. Review the manufacturer's specifications and recommendations to determine if a crane can be used in a particular application.
- 5.3. Inspection
 - 5.3.1. Inspection procedures for cranes are divided into two general classifications based upon the intervals at which inspections are performed. Frequent Daily Inspections will be performed to ensure the equipment is functioning correctly. Periodic inspections are performed at 1-to-12-month intervals. *See Appendix A for checklists.*
 - 5.3.2. Running ropes shall be inspected at least once a month and certification record which includes the date of inspection, the signature of the person that performed the inspection and an identifier of the ropes which were inspected shall be kept on file where readily available to appointed personnel. Any deterioration, resulting in appreciable loss of

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original strength, shall be carefully observed and determination made as to whether further use of the rope would constitute a safety hazard and tagged out of use. See *Appendix B for Checklist*.

5.4. Testing

5.4.1. Prior to initial use all new and altered cranes shall be tested to ensure compliance with the following:

5.4.1.1. Hoisting and lowering

5.4.1.2. Trolley travel

5.4.1.3. Bridge travel

5.4.1.4. Limit switches, locking and safety devices.

5.4.1.5. The trip setting of hoist switches shall be determined by tests with an empty hook traveling increasing speeds up to the maximum speed. The actuating mechanism of the limit switch shall be located so that it will trip the switch, under all conditions, in sufficient time to prevent contact of the hook or hook block with any part of the trolley.

5.4.1.6. Load test.

5.5. Preventative Maintenance

5.5.1. Preventative Maintenance, overhead and gantry cranes will be maintained and on a preventative maintenance schedule in accordance with the manufacturer's recommendations.

5.5.2. Prior to any adjustments and/or repairs that are made on a crane the following precautions shall be taken:

5.5.2.1. The crane to be repaired shall be run to a location where it will cause the least interference with other cranes and operations in the area.

5.5.2.2. All controllers shall be in the off position. Locks and tags shall be utilized.

5.5.2.3. The main or emergency switch shall be open and located in the open position.

5.5.2.4. Warning or "out of order" signs shall be placed on the crane, also on the floor beneath or on the hook where visible from the floor.

5.5.2.5. Where other cranes are in operation on the seam runway, rail stops, or other suitable manes shall be provided to prevent interference with the idle crane.

5.5.2.6. After adjustments and repairs have been made the crane shall not be operated until all guards have been re-installed, safety devices reactivated, and maintenance equipment removed.

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6. Procedure

- 6.1. Wind indicators and rail clamps. Outdoor storage bridges shall be provided with automatic rail clamps. A wind indicating device shall be provided which will give a visible or audible alarm to the bridge operator at a predetermined wind velocity. If the clamps act on the rail heads, any beads or weld flash on the rail heads shall be ground off.
- 6.2. Road load marking. The rated load of the crane shall be plainly marked on each side of the crane, and if the crane has more than one hoisting unit, each hoist shall have its rated load marked on it or its load blocked, and this marking shall be clearly legible from the ground floor.
- 6.3. A minimum clearance of 3 inches overhead and 2 inches laterally shall be provided and maintained between crane and obstructions in conformity with Crane Manufacturers Association of America.
- 6.4. Where passageways or walkway are provided obstructions shall not be placed so that safety of personnel will be jeopardized by movements of the crane.
- 6.5. Clearance between parallel cranes. If the runways of two cranes are parallel, and there are no intervening wall or structure, there shall be adequate clearance provided and maintained between the two bridges.

7. Training

- 7.1. The employer must provide each operator-in-training with sufficient training, through a combination of formal and practical instruction, to ensure that the operator in- training develops the skills, knowledge, and ability to recognize and avert risk necessary to operate the equipment safely for assigned work.
- 7.2. Operators will be trained in the operation, limitations, and emergency procedures for the cranes they operate. They also need to understand the load ratings and how to safely lift loads. Operator training.

8. Recordkeeping

- 8.1. Training records and crane certifications shall be maintained in the corporate office.

9. Appendix

- 9.1. Appendix A – Inspection Checklist
- 9.2. Appendix B - Running Rope inspection Checklist.

10. Reference

- 10.1. OSHA 1910.179

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Appendix A –Daily and Periodic Inspection Checklist

Company Name:	
Date:	Inspector:
Item	Comments
Operating mechanism are not interfering with proper operation	
Any deterioration or leakage in lines, tanks, valves, drain pumps, and other parts of air or hydraulic systems?	
Hooks do not any deformation or cracks (serial number or to other identifier of the hook or hooks inspected).	
Hoist chains including end connections for excessive wear, twist, distorted links interfering with proper function.	
All functional operating mechanics free from excessive wear of components.	
Rope reeving for noncompliance with manufacturers recommendations.	
Deformed, cracked, or corroded members	
Loose bolts or rivets	
Cracked or worn sheaves and drums	
Work cracked or distorted parts such pins, bearing, shafts or gears, rollers locking and clamping devices.	
Excessive wear on brake system parts, linings, pawls and rachets.	
Load, wind, and other indicators over their full range for significant inaccuracies.	
Gasoline, diesel, electric or other powerplants for improper performance or noncompliance with applicable safety requirements	
Excessive wear of chain drive sprockets and excessive chain stretch	
Electrical apparatus, for signs of pitting or deterioration of controller contractors, limit switches and pushbutton stations	

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Appendix B – Rope Inspection Checklist

Company Name:	
Date:	
Inspector:	
Item	Comments
Any reduction or rope diameter below nominal diameter due to loss of core support, internal or external corrosion, or wear outside wires.	
Any broken outside wires and the degree of destruction or concentration of such broken wires	
Worn outside wires	
Corroded or broken wires at end connections	
Severe kinking, crushing, cutting or un-stranding.	