

CEC2000

OVERHEAD ELECTRIC CHAIN HOISTS ENGINEERING SPECIFICATIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the contract, including General and Supplementary Conditions apply to work of this section.

1.2 DESCRIPTION OF WORK

- A. This section includes furnishing and installing, unless otherwise noted herein, the overhead hoisting equipment, controls, trolleys and supporting monorails in accordance with the drawings and specifications for the operation shown on the drawings and specified herein.
- B. All work performed under this section shall comply and be in accordance with trade approved practices and manufacturer's recommendations, including Safety Standards ASME / ANSI B30.16 "Overhead Hoists (Underhung)".

1.3 QUALITY ASSURANCE

- A. Standards - The overhead electric chain hoists shall conform to the following standards:
 - 1. Hoist Manufacturer's Institute (HMI)
 - 2. American National Standards Institute (ANSI)
 - 3. National Electrical Code (NEC)
 - 4. American Society of Mechanical Engineers (ASME)
 - 5. Comply with CSA Standards (when necessary to do so)
 - 6. Lifetime warranty against defective material and workmanship

1.4 SUBMITTALS

- B. Submittals shall be in accordance with the General Requirements and shall consist of, as a minimum, the following information.
 - 1. Descriptive literature, bulletins or other data supportive of the hoisting equipment's capability of fulfilling the requirements of this specification.
 - 2. Complete list of equipment with the manufacturer's name and model numbers.
 - 3. General arrangement and dimensional drawings.

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PART 2 - PRODUCTS

2.1 HOISTS - GENERAL

- A. Electric Hoists - All electric hoists shall be as indicated on the drawings or as specified herein. All hoist motors, shall comply with the requirements as indicated in section 2.3 - Electrical Equipment.
- B. The hoist shall be manufactured by Coffing Hoists, or an approved equal.

2.2 MECHANICAL

- A. The hoist shall be equipped with alloy steel load chain, heat treated for optimum strength and wear resistance, sized for the specified load. The lower hook block shall be of the swivel type. All hooks shall have a spring operated latch kit which is notched, in order to allow a positive engagement with the hook tip.
- B. The hoist shall be equipped with a chain end stop assembly as an added feature to reduce the possibility of chain running out of hoist. A chain guide shall be provided to resist chain jamming and to maintain chain alignment with the load sheave. Double and triple reeved units shall have the bottom blocks equipped with grease fittings.
- C. All hoist gearing shall be helical and spur type, precision machined of alloy steel and operating in an oil bath for longer, quieter, performance. The first stage minimum must be helical gearing.
- D. All bearings shall be heavy duty, anti-friction type. All gears shall operate in an oil bath in sealed housings providing positive splash lubrication for gears and bearings. The load sheave or liftwheel shall have a minimum of five pockets.
- E. The hoist motor brake shall be of the heavy duty, three post type, magnetically operated, multiple disc, direct acting, AC type. Brake shall be spring activated and equally effective in both directions of motor rotation. It shall be of sufficient size to stop and hold the rated capacity of the hoist. The brake shall automatically set when current is not flowing to the motor.
- F. A mechanical load brake shall be provided in addition to the hoist motor brake. The mechanical load brake shall be of the Weston type and multiple disc, to control load lowering and prevent drift.

CEC2000**2.2 MECHANICAL (cont'd)**

- G. The hoist shall be equipped with a factory calibrated, non-adjustable, friction type, overload clutch that protects the hoist, overhead support structure and hoist operator from damaging overloads, chain jamming and reverse phasing.
- H. Adjustable upper and lower limit switches shall be included as standard equipment with the hoist. The limit switch traveling nuts shall be of brass and the shaft shall be of stainless steel to prevent corrosion and to insure long life.
- I. The hoist's top suspension(s) shall be designed for easy replacement with the removal of socket head cap screws, eliminating the need to disassemble the housings.
- J. The hoist shall be equipped with chain container unless otherwise noted in the specifications or drawings.

2.3 ELECTRICAL EQUIPMENT

- A. Motors shall be NEMA Standard design for hoist duty service. High torque, H4 duty class (on single speed motors) with class F insulation, rated on the basis of 40° C ambient temperature. Slow speed motor windings of two speed motors shall meet H3 duty service.
- B. Single phase hoist motors shall be dual voltage (115/230) as standard equipment. Three phase, single speed motors shall be dual voltage (230/460) as standard equipment. When required, optional 208 volt single speed and 575 volt single speed, single voltage motors shall be furnished at no additional cost. Optional single voltage, two speed motors shall be available when required for three phase applications.
- C. Push button controls for all electrified portions of the hoisting system shall be contained in one common push button control pendant. The standard push button pendant shall be manufactured of glass filled nylon for two and four function applications and rated Nema 3R. Special pendants and pendants for 6 or more functions shall be made from double insulated thermoplastic or equal material and rated Nema 4X.
- D. Connection wires on the control panels shall be numbered for ease of installation, maintenance and repair. Control transformer(s) shall provide low voltage control circuit(s) as standard equipment (24 volts) for operator safety.

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2.4 TROLLEYS

- A. Trolleys shall be lug mounted for maximum headroom and rigidity when possible. They shall be plain, geared, or motorized. Hook type versions may be used for specific applications when required.
- B. Trolleys shall have tapered, or flat tread wheels to match the beam or rail on to which they are installed. They shall have wrap around side plates to act as bumpers or safety lugs.
- C. Trolley wheels shall be made from cast iron and are to include permanently lubricated and shielded ball bearings for long life and low maintenance.
- D. Geared trolleys shall have an endless chain for horizontal travel that will extend to within three feet of the floor.
- E. Motorized trolleys shall have a single speed of 35 FPM unless otherwise specified. Trolleys voltages shall be equivalent to the hoist voltages specified in section 2.3 - Electrical Equipment.
- F. Motorized trolley brakes shall be specified for applications which require little or no drift.

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OVERHEAD ELECTRIC WIRE ROPE HOISTS ENGINEERING SPECIFICATIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the contract, including General and Supplementary Conditions apply to work of this section.

1.2 DESCRIPTION OF WORK

- A. This section includes furnishing and installing, unless otherwise noted herein, the overhead hoisting equipment, controls, trolleys and supporting monorails in accordance with the drawings and specifications for the operation shown on the drawings and specified herein.
- B. All work performed under this section shall comply and be in accordance with trade approved practices and manufacturer's recommendations, including Safety Standards ASME / ANSI B30.16 "Overhead Hoists (Underhung)".

1.3 QUALITY ASSURANCE

- A. Standards - The overhead electric wire rope hoists shall conform to the following standards:
 - 1. Hoist Manufacturer's Institute (HMI)
 - 2. American National Standards Institute (ANSI)
 - 3. National Electrical Code (NEC)
 - 4. American Society of Mechanical Engineers (ASME)
 - 5. Comply with CSA Standards (when necessary to do so)
 - 6. Lifetime warranty against defective material and workmanship

1.4 SUBMITTALS

- B. Submittals shall be in accordance with the General Requirements and shall consist of, as a minimum, the following information.
 - 1. Descriptive literature, bulletins or other data supportive of the hoisting equipment's capability of fulfilling the requirements of this specification.
 - 2. Complete list of equipment with the manufacturer's name and model numbers.
 - 3. General arrangement and dimensional drawings.

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PART 2 - PRODUCTS

2.1 HOISTS - GENERAL

- A. Electric Hoists - All electric hoists shall be as indicated on the drawings or as specified herein. All hoist motors, shall comply with the requirements as indicated in section 2.3 - Electrical Equipment.
- B. The hoist shall be manufactured by Coffing Hoists, or an approved equal.

2.2 MECHANICAL

- A. The hoist shall be equipped with a precision machined, steel drum incorporating a 20:1 drum to rope diameter ratio for smooth winding and longer rope life. The lower hook block shall be of the swivel type. All hooks shall have a spring operated latch kit which is notched, in order to allow a positive engagement with the hook tip. The hook tip shall have a factory pre-drilled hole which allows the latch to be secured in the closed position when required.
- B. Wire rope construction shall be 6 x 37 PFC for 1/4 inch diameter cable size and 7 Flex Extra Improved Plow Steel for 5/16 and 3/8 inch diameter cable sizes.
- C. All hoist gearing shall be helical and spur type, precision machined of alloy steel and operating in an oil bath for longer, quieter, performance. The first stage minimum must be helical gearing.
- D. All bearings shall be heavy duty, anti-friction type. All gears shall operate in an oil bath in sealed housings providing positive splash lubrication for gears and bearings.
- E. The hoist motor brake shall be of the heavy duty, three post type, magnetically operated, multiple disc, direct acting, AC type. Brake shall be spring activated and equally effective in both directions of motor rotation. It shall be of sufficient size to stop and hold the rated capacity of the hoist. The brake shall automatically set when current is not flowing to the motor.
- F. A mechanical load brake shall be provided in addition to the hoist motor brake. The mechanical load brake shall be of the Weston type and multiple disc, to control load lowering and prevent drift.

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2.2 **MECHANICAL** (cont'd)

- G. The hoist shall be equipped with a factory calibrated, non-adjustable, friction type, overload clutch that protects the hoist, overhead support structure and hoist operator from damaging overloads.
- H. Adjustable upper and lower limit switches shall be included as standard equipment with the hoist. The limit switch traveling nuts shall be of brass and the shaft shall be of stainless steel to prevent corrosion and to insure long life.
- I. For added safety, an upper paddle type limit switch shall be included as standard equipment in addition to the adjustable upper and lower limit switches on all cross mounted models.

2.3 **ELECTRICAL EQUIPMENT**

- A. Motors shall be NEMA Standard design for hoist duty service. High torque, H3 / H4 duty class with class B insulation, rated on the basis of 40° C ambient temperature.
- B. Single phase hoist motors shall be dual voltage (115/230) as standard equipment. Three phase, single speed motors shall be dual voltage (230/460) as standard equipment. When required, optional 208 volt single speed and 575 volt single speed, single voltage motors shall be furnished at no additional cost. Optional single voltage, two speed motors shall be available when required for three phase applications.
- C. Push button controls for all electrified portions of the hoisting system shall be contained in one common push button control pendant. The standard push button pendant shall be manufactured of glass filled nylon for two and four function applications and rated Nema 3R. Special pendants and pendants for 6 or more functions shall be made from double insulated thermoplastic or equal material and rated Nema 4X.
- D. Connection wires on the control panels shall be numbered for ease of installation, maintenance and repair. Control transformer(s) shall provide low voltage control circuit(s) as standard equipment (24 volts) for operator safety.

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2.4 TROLLEYS

- A. Trolleys shall be lug mounted for maximum headroom and rigidity. They shall be plain, geared, or motorized.
- B. Trolleys shall have tapered, or flat tread wheels to match the beam or rail on to which they are installed. Four wheel trolleys shall have wrap around side plates to act as bumpers or safety lugs. Applications which may require an additional two wheel trolley shall have bumpers installed as optional equipment, unless otherwise noted in the specifications or drawings.
- C. Trolley wheels shall be made from cast iron and are to include permanently lubricated and shielded ball bearings for long life and low maintenance.
- D. Geared trolleys shall have an endless chain for horizontal travel that will extend to within three feet of the floor.
- E. Motorized trolleys shall have a single speed of 35 FPM unless otherwise specified. Trolleys voltages shall be equivalent to the hoist voltages specified in section 2.3 - Electrical Equipment.
- F. Motorized trolley brakes shall be specified for applications which require little or no drift.