

**DIVISION 41 – MATERIAL PROCESSING & HANDLING EQUIPMENT  
SECTION 41 22 13 – CRANES**

**PART 1 – GENERAL**

1.01 SCOPE

- A. Davit Crane.
- B. Davit Crane Base.

1.02 RELATED SECTIONS

- A. Section 01 33 00 – Submittal Procedures.
- B. Section 01 78 23 – Operation and Maintenance Data.
- C. Section 33 32 00 – Wastewater Utility Pumping Stations

1.03 SUBMITTALS

- A. Submit under provisions of Section 01 33 00 “Submittal Procedures.”
- B. Submittals shall also consist of the following:
  - 1. Descriptive literature, bulletins, or other data supportive of the crane equipment’s capability of fulfilling the requirements of this specification.
  - 2. Complete list of equipment with the Manufacturer’s name and model numbers.
  - 3. Operation and Maintenance Data: As defined in Section 01 78 23 “Operation and Maintenance Data.”
  - 4. Submit assembly instruction when shipping equipment.
  - 5. Submit certified test results of load tests for cranes.

1.04 QUALIFICATION

- A. Manufacturer shall have a minimum five (5) years experience producing substantially similar equipment.

1.05 QUALITY ASSURANCE

- A. Verify hook and lifting heights for each application to assure each system is completely operational over range intended.
- B. Manufacturer shall be registered ISO 9001:2000 compliant with an independent certification agency approved by the International Organization for Standardization.

**PART 2 – PRODUCTS**

2.01 DAVIT CRANE

- A. Design Factor: Designed for an ultimate design factor greater than 3:1 for all components including the lifting winch and base.
- B. Lift Capacity: Davit Crane shall have a variable lift capacity based on boom length, to vary between 1,000 pounds lift capacity with the boom in the shortest length and 500 pounds with the boom fully extended.
- C. Hook Reach: Boom shall telescope up to 4 different lengths allowing a maximum hook reach of at least 66 inches measured from mast center to hook center.
- D. Hook Height: Hook height shall be adjustable by moving the boom up or down between 5 degrees above horizontal and 45 degrees from vertical, with a minimum of 44 inches between the lowest position and the highest position with the boom fully extended.
- E. Boom Angle: Boom angle shall be adjustable at all times, with a hand operated screw jack acting to raise or lower the boom between horizontal and 45 degrees from vertical.
- F. Boom Sheave: Wire rope shall pass over a sheave at the end of the boom. Sheave shall have a bronze bearing.
- G. Clearance: Minimum height of the boom shall be 42 inches between mounting surface and the underside of the boom in all base configurations.
- H. Rotation: Mast and boom shall rotate 360 degrees in the base on pin bearing and bearing sleeve, with a rotational handle attached to mast to facilitate rotation.
- I. Fastening Pins: Davit crane components shall be fastened together using stainless steel clevis style pins, secured with lynch pins with lanyards fastening the lynch pins to primary structural components.
- J. Portability: Davit crane shall break down into portable components with no single component weighing more than 100 pounds. Carrying handles shall be welded to mast and boom.
- K. Winch Location: Lifting winches shall be located such that the center point of the drive shaft is behind the centerline of the mast.
- L. Nametag: davit crane shall be labeled with a non-corrosive metal identification plate labeled or imprinted with the manufacturer's name, model number, serial number, capacity rating, and other essential information.
- M. Manufacturer:
  - 1. Thern, Inc.
  - 2. Or approved equal.

2.02 DAVIT CRANE BASE

- A. Interface: Davit crane base shall allow for removal of the mast.
- B. Bearings: Davit crane base shall have a pin bearing to support the end of the mast and a Nylatron GSM bearing sleeve to support the mast at the top of the base.

2.03 DAVIT CRANE AND BASE FINISH

- A. Material: Davit crane boom, mast and base shall be fabricated from steel meeting ASTM standards.
- B. Finish: Davit crane boom, mast and base shall be hot-dipped galvanized.

2.04 LIFTING WINCH

- A. Lifting Winch: Winch shall have machine cut gears, an adjustable handle that mounts securely to the drive shaft, bronze and radial ball bearings, and a positive load holding Weston style brake able to stop and hold the load automatically if the winch handle is released.
- B. Cable Anchor: Lifting winch shall include a quick disconnect feature allowing quick attachment and detachment of wire rope equipped with a swaged ball anchor.
- C. Finish: lifting winch shall have a zinc and iridescent dichromate plated corrosion resistant finish.

2.05 WIRE ROPE

- A. Wire Rope: Wire rope construction shall be 7 x 19 type 304 stainless steel cable.
- B. Hooks: Latch type hooks shall be used and shall be swivel type to allow 360 degree rotation under all load conditions. Hooks shall be heat treated drop forged type 304/316 stainless steel.

**PART 3 – EXECUTION**

3.01 INSTALLATION

- A. Install davit crane complete with all necessary hardware, according to Shop Drawings, manufacturer's written instructions, and as specified.
- B. Verify sufficient hook coverage for each application to ensure each system is capable of lifting all equipment intended.

**END OF SECTION**