

## Dual Mast Style (DM Series) Completion Instructions

- 1) Fill-in all necessary **YELLOW HIGHLIGHTED** areas of this document.
- 1) Select only one (1) of the **GREEN HIGHLIGHTED** sections that are separated by “or” and remember to remove the “or” between them.
- 2) Clear all highlighted areas by selecting all text and clicking on the Highlight Color->No Color.
- 3) Delete this front cover instruction sheet.
- 4) IF you need assistance in preparing this document, contact Custom Industrial Products, Inc. at 321-728-3355 or email [sales@customindprod.com](mailto:sales@customindprod.com).

## **PART 1: GENERAL**

### **1.01: OVERVIEW**

- A. Design and manufacturing of one (1) Dual Mast Style (DM Series) Vertical Reciprocating Conveyor (VRC) including mechanical drive unit, operator controls, safety gates and enclosures as shown on project drawings and as specified herein.

### **1.02: REFERENCES**

- A. ANSI – American National Standards Institute (ANSI B20.1)
- B. ASME – American Society of Mechanical Engineers (ASME B20.1)
- C. AWS – American Welding Society
- D. NEMA – National Electrical Manufacturer’s Association

### **1.03: SUBMITTALS**

- A. Product Data: Submit latest edition of DM Series VRC datasheet and general drawings with the proposal.
- B. Customer Drawings: Submit Customer Engineering Drawings for customer approval within two (2) weeks after receipt of an order to include plans, elevations, sections of the VRC, and recommended pit dimensions if applicable.
- C. Closeout Submittals provided with VRC Equipment:
  - 1. Electrical Schematics Drawing including control panel layout.
  - 2. Mechanical Installation Manual and Electrical Installation Guide.
  - 3. Control Panel troubleshooting guide.
  - 4. Owner’s Manual including replacement parts list, operating instructions, maintenance schedule, and service and troubleshooting guidelines.

### **1.04: QUALITY ASSURANCE**

- A. Manufacturer must have a minimum of five (5) years experience in the manufacturing of vertical reciprocating conveyors.
- B. CIP Vertical Reciprocating Conveyors (VRC), when properly installed, must comply with ANSI/ASME B20.1 Safety Standards for Conveyors and Related Equipment.
- C. The use of a CIP Authorized Installer is recommended.

### **1.05: WARRANTY**



- A. The manufacturer shall warrant the VRC against manufacturing defects from date of installation or 30 days after shipment, whichever is less, as outlined below:
1. Electric Motor and Cyclo-Drive Reducer – two (2) years.
  2. Electrical Components – ninety (90) days.
  3. Mechanical Components – one (1) year.

## **PART 2: PRODUCTS**

### **2.01: MANUFACTURER**

- A. Dual Mast Style VRC (DM Series) manufactured by Custom Industrial Products, Inc., 7862 Ellis Road, Melbourne, FL 32904; Phone: 800-699-2212, Fax: 321-728-3352, Email: sales@customindprod.com, Website: www.customindprod.com

### **2.02: VRC MECHANICAL SPECIFICATIONS**

- A. Load Capacity: The VRC shall be rated at a live load capacity of [REDACTED] lbs.
- B. Operating Speed: The VRC shall have a vertical lifting speed of 20 - 25 feet per minute when loaded to maximum capacity.
- C. Vertical Travel Height: The VRC shall have a vertical lifting height (lowest finished floor to uppermost finished floor) of [REDACTED] inches with a total of [REDACTED] landings (including lowest level).
- D. Lift Carriage: The VRC carriage shall be a minimum of [REDACTED] inches wide x [REDACTED] inches deep x [REDACTED] inches load height with a steel deck plate and 48" or Full Load Height platform side panels on all non-operating ends and safety chains with snap hooks on all operating ends.
- E. Soft-Start / Soft-Stop: The VRC shall be equipped with a Variable Frequency Drive which provides smooth acceleration and deceleration.
- F. Mounting: The VRC shall be pit mounted or surface mounted.
- G. Vertical Masts: The VRC shall have two (2) structural grade steel masts on opposite sides of the carriage.
- H. Deflection Under Load: No portion of the VRC shall exhibit permanent deflection when loaded to full capacity.
- I. Lifting Means: The drive system shall transmit lifting forces through chains/sprockets to the side plates of the carriage. The electrical drive motors shall be 100% duty cycle coupled with Cyclo-Drive gear reducers with a shock load rating of 500%. Planetary or helical gear reducers are not allowed.
- J. Safety Brakes and Devices: The Carriage shall be equipped with broken/slack chain brakes that prevent the carriage from descending if tension is lost on any chain. Slack chain switches are required to disable motor power in the event a chain becomes slack.



- K. Security Enclosures: Guarding is required on all non-operating sides of the VRC to meet ASME B20.1 Safety Standards. Gates are required on all operating sides of the VRC at each level of operation. Each gate must be equipped with an electrical and mechanical locking device to prevent opening of the gate unless the carriage is present and to prevent operation unless all gates are closed. Enclosures shall be supplied as follows:

Shaftway Package – electrical and mechanical locking devices for customer supplied doors.

OR

Minimum Enclosures - enclosures extending 96" high at each level which consists of expanded metal panels which will reject a 2" diameter ball. Landing Gates, equipped with electrical and mechanical locking devices, to be supplied on all operating sides of the VRC at each level of operation. Security enclosures shall tie directly into the vertical mast for added structural support. They are powder-coated with a CIP slate gray finish. The gates shall be double-swing or roll-up in style.

OR

Full Enclosures - enclosures extending the full height of the lift which consists of expanded metal panels which will reject a 2" diameter ball. Landing Gates, equipped with electrical and mechanical locking devices, to be supplied on all operating sides of the VRC at each level of operation. Security enclosures shall tie directly into the vertical mast for added structural support. They are powder-coated with a CIP slate gray finish. The gates shall be double-swing or roll-up in style.

- L. Signage: Signs dictating "NO RIDERS" and maximum weight capacity shall be placed at every access point and visible from all operating ends of the carriage.
- M. Approach Ramp: If pit mounting is not specified, the manufacturer shall supply a steel fabricated approach ramp to be installed within ½" of the VRC carriage at the ground level.
- N. Power Requirements: The VRC shall be manufactured to operate on 230 or 460 volts / 3 phase / 60 hertz.
- O. Load Pattern: The pattern for loading and unloading the carriage at different levels must be a "C" configuration (loading/unloading from same side) or "Z" configuration (loading/unloading from opposite sides).

### 2.03: VRC ELECTRICAL SPECIFICATIONS

- A. Electric Motors:
1. The motors shall have a minimum duty cycle of 100%.
  2. The motors and Cyclo-Drive gear reducers must be able to withstand a shock load of at least 500%.
  3. Motor horsepower shall be sized to handle the carriage weight in addition to the rated live load and specified speed.
  4. Motors shall be designed for continuous duty at ambient temperatures of 32° to 102° Fahrenheit.
  5. Neither motor shall automatically restart when the overload device is reset.

B. Controls:

1. Each operating floor shall be equipped with a light-present momentary contact push-button control station with full call, send and mushroom style E-stop switches for manual control of lift operation.
  2. An internally pre-wired, NEMA 12 rated Intelitroll control panel shall be provided with appropriate transformer, overload relay, field wiring terminal block and breakers.
  3. Limit Switches: The VRC shall be equipped with a floor level switch at each level, upper level, and over travel limit switch to provide precise positioning of the carriage.
  4. Slack Chain Safety Switches: Switches shall be provided to monitor slack chain situations and disable power to the motor while engaging carriage safety brakes in the event of a slack or broken chain.
  5. The control voltage shall not exceed 24 volts.
- C. Power Source: Owner shall terminate high voltage operating power within 10 feet of the location designated for the VRC installation.

### 2.04: FINISHES

- A. All carbon steel surfaces shall be coated in CIP slate gray powder coat or equivalent.
- B. Prior to applying finish, all dirt, mill scale, oil and grease shall be removed from carbon steel surfaces by a combination of brushing, wiping and use of solvents.

## PART 3: EXECUTION

### 3.01: EXAMINATION

- A. Prior to commencing installation of the VRC, the installer shall visually examine the conditions under which the VRC is to be installed and notify the owner in writing of conditions detrimental to the proper and timely completion of the work.

### 3.02: INSTALLATION

- A. Installer must comply with manufacturer's detailed mechanical and electrical installation instructions for proper installation and to meet safety codes. All thresholds and extra installation materials needed must be supplied by the installer.

### 3.03: FIELD QUALITY CONTROL

- A. Inspection: Upon completion of installation, the VRC shall be inspected to verify that it meets all requirements set forth by CIP and Parts 1, 2 and 3 of this Section.
- B. Tests (if applicable):

1. Operating Load Test: The owner will provide a      pound test load and load the VRC at the lowest level. The loaded VRC carriage shall be conveyed to an upper floor level and returned to the lowest level to assure proper operation. If the VRC cannot lift or lower the load, the VRC shall fail the test.
2. Performance Test: This test is to be performed in conjunction with Test 1 above. During the demonstration of the lifting and lowering test, the owner shall measure the time required to lift and lower the capacity load. The owner will average times for lifting and lowering the load and calculate the average feet per minute travel speed. If the VRC does not lift the load within 10% of the specified speed, or if the lowering speed exceeds the lifting speed by more than 10%, the VRC shall fail the test.
3. Stationary Load Test: This test is to be performed in conjunction with Test 1 above. The loaded VRC carriage shall remain stationary at an upper level for a minimum of one (1) hour. After the one (1) hour period, the VRC will be inspected for deflection of the components or drift of the platform. If deformation or downward drift is evident, the VRC shall fail the test.

### **3.04: ADJUSTING AND CLEANUP**

- A. Installer shall touch up all scratches, abrasions, and other defects in the pre-finished surfaces with the same material color and type of finish or equivalent as used at time of fabrication.
- B. Installer will remove and dispose of all rubbish and debris caused by the work under this section.
- C. Verification that equipment is properly installed in accordance with manufacturer's guidelines and guarded to meet or exceed ANSI/ASME B20.1 Safety Standards for Conveyors.