

## SECTION 11160 - LOADING DOCK EQUIPMENT

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. This Section includes the following:
  - 1. Dock bumpers.
  - 2. Dock levelers.
  - 3. Truck restraints.
- B. *Include in the Base Bid dock bumpers, leveler, and restraint as specified for one truck bay. Vendor shall provide shop drawings and details as needed to incorporate these items into the concrete loading dock construction. [Add7-17]***

#### 1.2 DEFINITIONS

- A. Operating Range: Maximum amount of travel above and below the dock level.
- B. Working Range: Recommended amount of travel above and below the dock level for which loading and unloading operations can take place.

#### 1.3 SUBMITTALS

- A. Product Data: Include rated capacities, furnished specialties, accessories, details of construction relative to materials, dimensions of individual components, profiles, and finishes.
- B. Shop Drawings: Show details of fabrication and installation. Include plans, elevations, sections, details, and attachments to other work.
  - 1. Provide templates for anchors and bolts anchored to permanent construction.
  - 2. Wiring Diagrams: Detail wiring for power, signal, and control systems and differentiate between manufacturer-installed and field-installed wiring.
- C. Maintenance Data: For loading dock equipment to include in the maintenance manuals specified in Division 1. Include name, address, and telephone number of manufacturer's nearest authorized service representative.
- D. Warranties: Special warranties specified in this Section.

#### 1.4 QUALITY ASSURANCE

- A. Installer Qualifications: Engage an experienced installer who is an authorized representative of loading dock equipment manufacturer for both installation and maintenance of the type of units required for this Project.
- B. Source Limitations: Obtain each loading dock equipment component, including dock bumpers, levelers, lifts, and seals, as a complete unit from one source and by a single manufacturer.
- C. Dock-Leveler Standard: Comply with MH 30.1, "Safety, Performance and Testing of Dock Leveling Devices."
- D. Preinstallation Conference: Conduct conference at Project site to comply with requirements of Division 1 Section "Project Meetings."

#### 1.5 COORDINATION

- A. Recessed Dock Levelers: Coordinate size and location of pits to ensure proper clearances and operation of equipment. Concrete, reinforcement, and formwork requirements are specified in Division 3 Section "Cast-in-Place Concrete."

- B. Coordinate delivery of built-in anchoring devices to Project site to avoid delaying progress.

## 1.6 WARRANTY

- A. General Warranty: The special warranty specified in this Article shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by the Contractor under requirements of the Contract Documents.
- B. Dock-Leveler Warranty: Submit a written warranty, executed by manufacturer, agreeing to repair or replace dock-leveler components that fail in materials or workmanship within the specified warranty period. Failures include, but are not limited to, the following:
  - 1. Structural failures, including cracked or broken structural support members and load-bearing welds.
  - 2. Deck plate failures, including cracked plate or permanent deformation in excess of 1/4 inch (6 mm) between deck supports.
  - 3. Hydraulic system failures, including failure of hydraulic seals and cylinders.
  - 4. Faulty operation of operators, control system, or hardware.
- C. Warranty Period: Two years from date of Substantial Completion.
  - 1. Warranty shall be for unlimited usage of the leveler for the specified rated capacity over the term of the warranty.

## 1.7 MAINTENANCE SERVICE

- A. Initial Maintenance Service: Beginning at Substantial Completion, provide 12 months' full maintenance by skilled employees of dock equipment Installer. Include monthly preventive maintenance, repair or replacement of worn or defective components, lubrication, cleaning, and adjusting as required for proper equipment operation at rated speed and capacity. Provide parts and supplies as used in the manufacture and installation of original equipment.
  - 1. Perform maintenance, including emergency callback service, during normal working hours.
  - 2. Include 24-hour-per-day, seven-day-per-week emergency callback service.
- B. Continuing Maintenance Service: Provide a continuing maintenance proposal from Installer to Owner, in the form of a standard yearly (or other period) maintenance agreement, starting on date initial maintenance service is concluded. State services, obligations, conditions, and terms for agreement period and for future renewal options.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - 1. Dock Bumpers:
    - a. Chase-Duras Industries.
    - b. Durable Corporation.
    - c. Kelley Dock Systems.
    - d. Pawling Corporation; Standard Products Division.
  - 2. Recessed Dock Levelers:
    - a. Kelley Dock Systems.
    - b. Rite-Hite Corporation.
    - c. W.B. McGuire Co., Inc.; Division of Overhead Door Corporation.
  - 3. Truck Restraints:
    - a. Kelley Dock Systems.
    - b. Rite-Hite Corporation.
    - c. W.B. McGuire Co., Inc.; Division of Overhead Door Corporation.

### 2.2 DOCK BUMPERS

- A. Laminated-Tread Bumpers: Provide units of size indicated, fabricated from multiple plies cut from fabric-reinforced rubber tires to a uniform thickness of 4-1/2 inches (114 mm). Laminate plies under pressure on 3/4-inch- (19-mm-) diameter, steel supporting rods that are welded and bolted to 1/4-inch- (6-mm-) thick, structural-steel angle closures with predrilled anchor holes. Size angles to provide not less than 1 inch (25 mm) of tread plies extending beyond the face of closure angles.
- B. Anchorage Devices: Provide anchor bolts, nuts, washers, bolts, sleeves, cast-in-place plate, and other anchorage devices as required to fasten bumpers securely in place and to suit installation type indicated. Hot-dip galvanize anchorage components.

### 2.3 RECESSED DOCK LEVELERS

- A. General: Provide recessed dock levelers of type, function, operation, capacity, size, and construction indicated, complete with controls, safety devices, and accessories required.
- B. Type: Provide recessed, hinged-lip-type dock levelers designed for permanent installation in concrete pits, preformed in the edge of loading platform.
- C. Function: Dock levelers shall compensate for differences in height between truck bed and loading platform in the following manner:
  - 1. Vertical Travel: Minimum working range shall be 12 inches (305 mm) above and 12 inches (305 mm) below adjoining platform level. Provide an operating range above platform level of sufficient height to enable lip to extend and clear truck bed before contact.
  - 2. Automatic Vertical Compensation: Floating travel of ramp with lip extended and resting on truck bed shall compensate automatically for upward or downward movement of truck bed during loading and unloading.
  - 3. Automatic Lateral Compensation: Tilting of ramp with lip extended and resting on truck bed shall compensate automatically for canted truck beds of up to 4 inches (100 mm) over width of ramp.
  - 4. Lip Operation: Provide manufacturer's standard mechanism that automatically extends and supports hinged lip on ramp edge with lip resting on truck bed over dock leveler's working range, allows lip to yield under impact of incoming truck, and automatically retracts lip when truck departs.
    - a. Length of Lip Extension: Not less than 16 inches (406 mm) from ramp edge and not less than 12 inches (305 mm) in front of dock bumpers.
    - b. Length of Lip Extension: Not less than 20 inches (508 mm) from ramp edge and not less than 16 inches (406 mm) in front of dock bumpers.
- D. Operation: Provide manufacturer's standard operating system as follows:
  - 1. Mechanical Operating System: Provide spring-operated raising and walk-down lowering of unloaded ramp. Equip units with an upward-biased-spring counterbalancing mechanism controlled by a hold-down device. Raise ramp to top limit of operating range by operating recessed control handle in ramp to disengage hold-down device. Lower ramp below platform level with lip retracted by operating auxiliary, recessed, control handle to release support legs.
- E. Rated Capacity: Provide dock levelers capable of supporting a total gross load indicated below without permanent deflection or distortion, as determined by actual tests complying with requirements of MH 30.1 for rated capacity.
  - 1. Total Load: Not less than 20,000 lb (9072 kg).
- F. Safety Devices: Provide manufacturer's standard and optional safety devices as follows:
  - 1. Toe Guards: Equip open sides of rising ramp over entire upper operating range with metal toe guards mounted flush with ramp edges and projecting below ramp.
  - 2. Toe Guards: Equip open sides of rising ramp over entire upper working range with metal toe guards mounted flush with ramp edges and projecting below ramp.
  - 3. Cross-Traffic Support: Provide manufacturer's standard method of supporting ramp at platform level in stored position with lip retracted. Provide a means to release supports to allow ramp to descend below platform level.
  - 4. Free-Fall Protection: Equip mechanical dock levelers with manufacturer's standard protection system to limit free fall of loaded ramps with front edge supported by truck bed.

5. Maintenance Strut: Provide an integral strut to positively support ramp in up position during maintenance of dock leveler.
6. Interlocks: Provide control interlocks between dock leveler and other dock equipment as follows:
  - a. Leveler to Overhead Door Interlock: Leveler will not operate while door is in closed position.
  - b. Leveler to Truck-Restraint Interlock: Leveler will not operate while truck restraint is not engaged.
- G. Construction: Fabricate dock-leveler frame from structural- and formed-steel shapes. Fabricate platform, including hinged lip, from nonskid steel plate. Fabricate entire assembly to withstand deformation during both operating and stored phases of service. Chamfer lip edge to minimize obstructing wheels of material-handling vehicles. Include two dock bumpers attached to frame.
  1. Curb Angles: Provide 3-by-3-by-1/4-inch (76-by-76-by-6-mm) galvanized steel curb angles for edge of recessed leveler pit, with 1/2-inch- (13-mm-) diameter by 6-inch- (152-mm-) long concrete anchors welded to angle at 6 inches (152 mm) o.c.
- H. Finish and Color: Manufacturer's standard paint applied to factory-assembled and -tested dock levelers before shipping. Paint toe guards yellow to comply with ANSI Z535.1, and paint remainder of surfaces in manufacturer's standard color.
- I. Accessories: Equip units with manufacturer's standard accessories as follows:

## 2.4 TRUCK RESTRAINTS

- A. General: Provide manufacturer's standard mechanical device designed to engage truck's rear-impact guard and hold truck at loading dock. Restraint shall consist of an iron or steel restraining arm that raises until contacting rear-impact guard. Arm shall move vertically, automatically adjusting to varying height of truck due to loading and unloading operations.
- B. Automatic Operating System: Provide manufacturer's standard electrically or hydraulically powered restraint, activated by a remote-control station.
  1. Electrical Requirements: Coordinate wiring requirements and current characteristics with building electrical system. See Division 16 Sections.
  2. Remote-Control Station: Provide a single-button station of the constant-pressure type, enclosed in a NEMA ICS 6, Type 12 box. Engage restraint by holding the button depressed, and release restraint by releasing button.
  3. Rear-Impact-Guard Sensor: Provide sensor that detects presence of rear-impact guard.
    - a. Unit shall automatically return to stored position if rear-impact guard is not engaged.
- C. Operating Range: Restrain rear-impact guard within a range from 11 to 30 inches (279 to 762 mm) vertically above driveway, and from 0 to 12 inches (0 to 305 mm) horizontally in front of dock bumpers.
- D. Mounting: Provide manufacturer's standard mounting method as follows:
  1. Wall Mounted: Unit with mounting plate, designed for attachment to dock face by welding or bolting.
- E. Restraining Capacity: Not less than 30,000 lb (13 608 kg).
- F. Communication System: Provide manufacturer's standard system, as follows:
  1. Alarm: Audible and visual system indicating that rear-impact guard is not engaged.
- G. Interlocks: Interconnect truck restraint with dock leveler to permit simultaneous activation of leveler and truck restraint.
- H. Finish and Color: Manufacturer's standard paint applied to factory-assembled and -tested truck restraints before shipping. Paint surfaces in manufacturer's standard color.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine areas and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of loading dock equipment.
- B. Examine roughing-in for electrical systems for dock equipment to verify actual locations of connections before installation.
- C. Examine walls and floors of pits for suitable conditions where recessed dock equipment is to be installed. Pits shall be plumb and square, and properly sloped for drainage from back to front of dock.
- D. Proceed with installation of loading dock equipment only after unsatisfactory conditions have been corrected.

### 3.2 PREPARATION

- A. General: Coordinate installation of loading dock equipment indicated to be attached to or recessed into concrete or masonry, and furnish anchoring devices with templates, diagrams, and instructions for their installation.
- B. Clean recessed pits of debris.

### 3.3 INSTALLATION, GENERAL

- A. General: Comply with manufacturer's detailed written instructions for installing loading dock equipment.
  - 1. Install equipment, motor, pump, control stations and wiring, safety devices, and accessories as required for a complete installation.
- B. Electrical Connections: Rough-in electrical connections and provide circuiting as needed for functioning installation according to requirements in Division 16 whether indicated on electrical plans or not. Coordinate rough-in location and power requirements with manufacturers approved shop drawings.

### 3.4 DOCK-BUMPER INSTALLATION

- A. Attach dock bumpers to structure in a manner that complies with requirements indicated for spacing, arrangement, and position relative to top of platform and anchorage.
  - 1. Bolted Attachment: Attach dock bumpers to preset anchor bolts embedded in concrete or to cast-in-place inserts or threaded studs welded to embedded steel plates or angles. If preset anchor bolts, cast-in-place inserts, or threaded studs welded to embedded plates or angles are not provided, attach dock bumpers by drilling and anchoring with expansion anchors and bolts.

### 3.5 DOCK-LEVELER INSTALLATION

- A. Set curb angles in concrete with tops flush with platform. Fit exposed connections together to form hairline joints.
- B. Attach leveler securely to loading platform construction according to manufacturer's written instructions, flush with adjacent dock surfaces and square to recessed pit.
- C. Recessed Dock Levelers: Place self-forming pit system in proper relation to loading platform before pouring concrete.
  - 1. Weld anchor holes in contact with continuous embedded dock edge channel. Weld or bolt bumper blocks to dock face.

### 3.6 TRUCK-RESTRAINT INSTALLATION

- A. Attach truck restraints in a manner that complies with requirements for arrangement and height required for device to engage vehicle rear-impact guard.
  - 1. Weld restraint to steel dock curb angle embedded in dock edge.
- B. Interconnect control panel and signals according to manufacturer's written installation instructions.

3.7 ADJUSTING

- A. Adjust loading dock equipment for safe, efficient operation.
- B. Test dock levelers and lifts for vertical travel within operating range indicated.

3.8 CLEANING AND PROTECTING

- A. Restore marred, abraded surfaces to their original condition.
- B. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer, that ensure loading dock equipment is without damage or deterioration at the time of Substantial Completion.

3.9 DEMONSTRATION

- A. Startup Services: Engage a factory-authorized service representative to perform startup services and to train Owner's maintenance personnel as specified below:
  - 1. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
  - 2. Train Owner's maintenance personnel on procedures and schedules related to startup and shutdown, troubleshooting, servicing, and preventive maintenance.
  - 3. Review data in maintenance manuals. Refer to Division 1 Section "Contract Closeout."
  - 4. Review data in maintenance manuals. Refer to Division 1 Section "Operation and Maintenance Data."
  - 5. Schedule training with Owner, through Architect, with at least seven days' advance notice.

END OF SECTION 11160