

SECTION 11160 - LOADING DOCK EQUIPMENT**PART 1 - GENERAL****1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Dock bumpers.
 - 2. Vertical dock levelers.
 - 3. Trailer restraints
 - 4. Dock shelters.
 - 5. Combination control box.
- B. Related Sections include the following:
 - 1. Division 3 Section "Cast-in-Place Concrete" for concrete work for recessed loading dock equipment.
 - 2. Division 5 Section "Metal Fabrications" for curb angles at edges of recessed pits and loading dock platform edge channels.
 - 3. Division 13 Sections for overhead doors electrically interlocked to dock levelers.
 - 4. Division 16 Sections for electrical wiring and connections for loading dock equipment.

1.3 DEFINITIONS

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

1.4 SUBMITTALS

- A. Product Data: Include construction details, material descriptions, rated capacities, operating characteristics, furnished specialties, accessories, dimensions of individual components and profiles, and finishes.
- B. Shop Drawings: Show fabrication and installation details. Include plans, elevations, sections, details, and attachments to other work.
 - 1. For installed products indicated to comply with design loads, include structural analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
 - 2. Wiring Diagrams: Power, signal, and control wiring.
- C. Samples for Initial Selection: For each type of dock seal and shelter fabric indicated.

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- D. Delete paragraph above if colors and other characteristics are preselected and specified or scheduled. Retain paragraph below with or without above.
- E. Samples for Verification: For dock seals and shelters, in manufacturer's standard sizes.
- F. Coordinate paragraph below with qualification requirements in Division 1 Section "Quality Requirements" and as supplemented in "Quality Assurance" Article.
- G. Qualification Data: For Installer, professional engineer.
- H. Product Test Reports: Based on evaluation of tests performed by manufacturer and supervised and verified by a qualified independent professional engineer, indicate compliance of dock levelers with requirements of MH 30.1 for determining rated capacity, which is based on comprehensive testing within the last two years of current products.
 - 1. Submittal Form: According to MH 30.1, Appendix A.
- I. Maintenance Data: For loading dock equipment to include in maintenance manuals.
- J. Warranties: Special warranties specified in this Section.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: Manufacturer's authorized representative who is trained and approved for installation of units required for this Project.
 - 1. Maintenance Proximity: Not more than two hours' normal travel time from Installer's place of business to Project site.
- B. Source Limitations: Obtain each type of loading dock equipment through one source from a single manufacturer.
- C. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Management and Coordination."

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Store and handle dock seals shelters seals and shelters in a manner to avoid significant or permanent damage to fabric or frame.
 - 1. Comply with manufacturer's written instructions for minimum and maximum temperature requirements for storage.

1.7 PROJECT CONDITIONS

- A. Field Measurements: Indicate measurements on Shop Drawings.

1.8 COORDINATION

- A. Coordinate installation of anchorages for loading dock equipment. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.
- B. Recessed Loading Dock Equipment: Coordinate size and location of pits to ensure proper clearances and operation of equipment.

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1. Concrete, reinforcement, and formwork requirements are specified in Division 3 Section "Cast-in-Place Concrete."
- C. Electrical Requirements: Coordinate wiring requirements and current characteristics of loading dock equipment with building electrical system. See Division 16 Sections.

1.9 WARRANTY

- A. Special Warranty for Dock Levelers: Manufacturer's standard form in which manufacturer agrees to repair or replace dock-leveler components that fail in materials or workmanship within specified warranty period.
 1. Failures include, but are not limited to, the following:
 - a) Structural failures including cracked or broken structural support members and load-bearing welds.
 - b) Deck plate failures including cracked plate or permanent deformation in excess of 1/4 inch between deck supports.
 - c) Hydraulic system failures including failure of hydraulic seals and cylinders.
 - d) Faulty operation of operators, control system, or hardware.
 2. Warranty Period for Structural Assembly: Ten years from date of Substantial Completion.
 3. Warranty Period for Hydraulic System: Five years from date of Substantial Completion.
 4. Warranty shall be for unlimited usage of the leveler for the specified rated capacity over the term of the warranty.

1.10 MAINTENANCE SERVICE

- A. Initial Maintenance Service: Beginning at Substantial Completion, provide 12 months' full maintenance by skilled employees of loading dock equipment Installer. Include quarterly 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 same as those used in the manufacture and installation of original equipment.
 1. Perform maintenance, including emergency callback service, during normal working hours.
 2. Usually retain subparagraph above and delete subparagraph below. Below adds appreciable cost.
 3. Include 24-hour-per-day, 7-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 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. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:

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1. The design for each type of loading dock equipment is based on the product named. Subject to compliance with requirements, provide the named product or product of equal quality as manufactured by Kelly.

2.2 MATERIALS

- A. Steel Plates, Shapes, and Bars: ASTM 36/A 36M.
- B. Rolled-Steel Floor Plate: ASTM A 786/A 786M, rolled from steel plate complying with ASTM A 572/A 572M, Grade 55.
- C. Steel Tubing: ASTM A 500, cold formed.
- D. Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.
- E. Wood: DOC PS 20 dimension lumber, select structural grade, kiln dried.
- F. Pressure-Treated Wood: DOC PS 20 dimension lumber, select structural grade, kiln dried, and pressure treated with waterborne preservatives to comply with AWPA C2.

2.3 DOCK BUMPERS

- A. Basis-of-Design Product: Rite-Hite, 11" wide x 24" high x 4" deep, steel face bumpers or approved equal.
- B. Steel-Face, Laminated-Tread Bumpers: Fabricated from multiple, uniformly thick plies cut from fabric-reinforced rubber tires and with 3/8-inch steel face plate of same size as rubber surface. Laminate plies under pressure on not less than two 3/4-inch diameter, steel supporting rods that are welded at one end to 1/4-inch-thick, structural-steel end angle and secured with a nut and angle at the other end. Fabricate angles with predrilled anchor holes and sized to provide not less than 1 inch of tread plies extending beyond the face of closure angles. Weld face plate to two steel support brackets, which shall extend back to and engage 3/4-inch-diameter support rods in elongated holes, allowing steel face to float on impact.
- C. Anchorage Devices: Hot-dip galvanized steel anchor bolts, nuts, washers, bolts, sleeves, cast-in-place plates, and other anchorage devices as required to fasten bumpers securely in place and to suit installation type indicated.

2.4 VERTICAL-STORING HYDRAULIC DOCK LEVELERS

- A. General: Recessed, hinged-lip-type, vertical-storing dock levelers designed for permanent installation in shallow concrete pits preformed in the edge of loading platform; of type, function, operation, capacity, size, and construction indicated; and complete with controls, safety devices, and accessories required.
 1. Model HD VHL as manufactured by Rite-Hite Inc.
- B. Quality Standard: MH 30.1, "Safety, Performance and Testing of Dock Leveling Devices.", except for rated capacity.
- C. Rated Capacity: Capable of supporting total gross load indicated without permanent deflection or distortion, as determined by actual tests according to MH 30.1.

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1. Vertical hydraulic dock levelers shall be 6'-0" wide by 8'-0" long with a minimum 15" lip extension beyond bumpers, and with operational range of 12" above and below dock level. Lip shall be 20" length to access Reefer Trailers. Equip with 20" high x 4" deep dock bumpers for welding to angles. Bumpers to be tire laminated, not molded. Where yard jockeys are used, steel-faced bumpers shall be used. Steel Faced bumpers shall be installed so that the inside treads are vertical to building wall. Vertical leveler shall be equipped with VHL LEVELER SEAL.
2. Levelers shall be equipped with non-adjustable emergency stop velocity safety system for both ramp and lip to limit free fall to 3".
3. Levelers to have power-up/ power-down feature, allowing operator full control of the leveler at all times.
4. Levelers shall have hydraulic cylinders for both the ramp and the lip.
5. Automatic night locks to be integral part of manufacturer's standard dock levelers.
6. Ramp shall store vertically over center and be held in place mechanically and hydraulically.
7. Oil reservoir shall be equipped with a drain plug, magnet block, and dip stick.
8. Levelers shall have maintenance strut which supports both the lip and the ramp.
9. Lip hinge shall have grease zerks fittings for easy maintenance.
10. Levelers shall have ramp flex of 4" to compensate for unlevel trailer beds. Rear hinges shall be fixed and shall not raise above floor level.
11. Positive-acting emergency stop of leveler in any position shall be possible by releasing the "lower" button.
12. Dock leveler control box: All individual components, as well as the complete box unit, shall be UL-approved. Control Box specification.

2.5 COMBINATION CONTROL BOX

- A. Combination control panel to be provided by the same manufacturer as the dock leveler, vehicle restraint, and dock seal. Combination control panel to have the following features: Dock Leveler to have 460 volt / 3 phase, Dok Lok 115 volt / 1 phase.
- B. Control panel to provide for a single connection for the entire system. If the voltage requirement of the restraint or seal are different than the dock leveler, manufacturer must provide an internal step down transformer.
- C. Control panel to provide the following electrical interlocks to provide the following sequence of operations as per the owner to provide both SAFETY AND ENVIRONMENTAL CONTROL.
 1. Dok Lok must be engaged to trailer before dock leveler can be activated.
 2. Overhead door must be opened before dock leveler.
 3. Dock Leveler can then be lowered into trailer.
 4. Dock Leveler must be returned to stored position.
 5. Overhead door must be lowered before Dok Lok can be stored.
 6. Dok Lok returned to stored position.

Control panel shall incorporate the additional components required to provide the desired interconnect and interlock package.

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Control panel to provide an integral rotary fused disconnect that allows compliance with OSHA lock out/tag out requirements and a protective guard to protect workers from accidental contact with incoming power.

Control panel to incorporate a selector switch allowing activation of the locally supplied dock light.

Control panel to incorporate and integral 15 Amp duplex outlet.

- D. The control panel shall be UL approved. Control Panel Shall be NEMA 4X, Fiberglass – Waterproof / Corrosive Resistant for direct washdown application.

2.6 TRUCK RESTRAINING DEVICE

- A. Truck Restraining Device shall be manufactured by the same manufacturer as the dock leveler. Truck restraint shall have the following features:
1. Vehicle restraints shall have a manufacturer's warranty that covers defects in materials or workmanship, including all material, labor, tax and freight for a period of 2 years from date of shipment.
 2. Zinc-plated steel housing, inside and outside.
 3. Touch pad control shall allow motor to run for 1.5 seconds only.
 4. Flashing red and green lights with sun visors on outside lights. Light box shall have maximum projection from wall of 3-3/4".
 5. Signs: Two (2) outside, reading "Back in or Pull Out On Green Only", one reading "Forward"; one "Backward"; one inside reading "Enter On Green Only".
 6. Visual flashing red light both inside and outside and audible alarm shall sound when abnormal hooking position exists or when no rear impact guard is present.
 7. Coded alarm override shall allow communication via the lighting system and an audible alarm when abnormal hooking position exists or no rear impact guard is present. Override will turn off audible alarm and leave outside light Red with inside lights simultaneously Red and Green, indicating abnormal condition. Touch pad shall not function until code is re-entered to turn override off.
 8. Off-ground mounting position with automatic adjustment of restraint housing to variable rear impact guard heights by trailer. Unit to adjust for rear impact guards from 12" to 30" above approach. No motors shall be required to position the restraint to reach proper engagement level for variable rear impact guard heights. Position of rotating hook shall therefore be in the same position in relation to variable rear impact guard heights prior to activation. Dok Lok Carriage to have 9" overall height.
 9. Large, rotating, yellow zinc dichromate steel hook for visibility.
 10. Hook arrangement shall be maintained throughout every phase of the loading/unloading process, including below dock endloading.
 11. All individual control box components, as well as complete control box, shall be UL-approved. Please see detail in Control Box specification.
- B. Installer shall examine the substrate and conditions under which truck restraints are to be installed and notify the Engineer and Contractor in writing of any conditions detrimental to the proper and timely completion of work. Do not proceed with the work until satisfactory conditions have been corrected in a manner acceptable to the installer.

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1. Adjust Units to operate smoothly.
- C. Truck restraining device manufacturer's representative shall install Truck Restraining Device in accordance with approved shop drawings and manufacturer's recommendations. Location of truck restraining device shall be indicated on drawings. Exact locations of signs, lights and control boxes for the truck restraining devices shall be approved by the Engineer.
1. Device shall be welded to an embedded steel plate per manufacturer's specifications or anchored to the dock face by a combination of up to 15 anchor bolts plus 22" of weld to the dock curb angle.
 2. All operator controls shall be mounted in a gasketed control panel.
- D. After installation is completed, a representative of the manufacturer shall examine the installation and require that all connections and adjustments necessary to assure proper operation of truck restraining devices be made. Before acceptance, a demonstration shall be conducted in the presence of the Owner's representative that dock leveler and truck restraining devices operate properly in every respect. In addition, a detailed user/operator training session shall be conducted at a time and place agreed upon by owner's representative.

2.7 DOCK SHELTER

- A. Shelter/Seal shall be manufactured by Frommelt or an approved substitute. Shelter/Seal shall be sized by manufacturer to meet specific application requirements.
1. Shelter/Seal shall be 12'-0" overall width by 10'-6" overall height by 28" projection.
 2. Range of truck heights to be serviced shall be from 11'-4" to 13'-6".
 3. Range of truck widths to be serviced shall be from 8'-0" to 8'-6".
 4. Side curtains shall provide full access to trailer and shall be removable. Removal shall require no tools.
 5. Side curtains shall be attached with Touch-N-Hold fastening and furnished with stay stiffeners in fabric panels.
 6. Top of side curtain shall have Z-support system.
 7. Head curtain shall be constructed with square steel tube front bar, spring steel stabilizers, and stay stiffeners, and have overlapping wear pleats on ends of head curtain face.
 8. Head curtain shall include stay stiffeners in curtain face to seal top of trailer.
 9. Height of head curtain shall be 6" below height of normal lowest truck to be serviced.
 10. Side frame shall be constructed of impactable foam.
 11. Side frame fabric shall be Durathon.
 12. Side curtain and head curtain fabric shall be Durathon
 13. Side and head curtains shall have a reinforcing layer of fabric on the interior side (facing the dock).
 14. Pyramid-shaped bottom pads shall seal the gap between the side curtain and the building wall.

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15. Side Frames shall not be constructed of rigid wood or steel framing. Sides shall not be constructed of moving spring loaded side frames.
16. Projection of unit shall be 28" to allow proper penetration of step ledge trucks with maximum step ledge of 16".

2.8 FINISHES, GENERAL

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Finish loading dock equipment after assembly and testing.
- C. Galvanizing: Hot-dip galvanize items as indicated to comply with applicable standard listed below:
 1. ASTM A 123/A 123M for iron and steel loading dock equipment.
 2. ASTM A 153/A 153M for iron and steel hardware for loading dock equipment.

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 loading dock equipment to verify actual locations of connections before equipment installation.
- C. Examine walls and floors of pits for suitable conditions where recessed loading dock equipment is to be installed. Pits shall be plumb and square and properly sloped for drainage from back to front of loading dock.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Coordinate size and location 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

- A. General: Install loading dock equipment, including motors pumps control stations wiring safety devices and accessories as required for a complete installation.
 1. Rough-in electrical connections according to requirements specified in Division 16.
- B. Dock Bumpers: Attach dock bumpers to face of loading dock in a manner that complies with requirements indicated for spacing, arrangement, and position relative to top of platform and anchorage.

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1. Welded Attachment: Plug-weld anchor holes in contact with steel inserts and fillet weld at other locations.
 2. 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-steel plates or angles are not provided, attach dock bumpers by drilling and anchoring with expansion anchors and bolts.
- C. Recessed Dock Levelers: Attach dock levelers securely to loading dock platform, flush with adjacent loading dock surfaces and square to recessed pit.
- D. Dock Seals: Attach dock-seal support frames securely to building structure in proper relation to openings, dock bumpers, and dock levelers to ensure compression of dock seals when trucks are positioned against dock bumpers.
- E. Dock Shelters: Attach dock shelters securely to building structure in proper relation to openings, dock bumpers, and dock levelers to ensure an effective seal of dock-shelter curtains with sides and top of truck body when trucks are positioned against dock bumpers.

3.4 ADJUSTING AND CLEANING

- A. Adjust loading dock equipment for proper, safe, efficient operation.
- B. Test dock levelers lifts dock levelers and lifts for vertical travel within operating range indicated.
- C. Restore marred, abraded surfaces to their original condition.

3.5 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain loading dock equipment. Refer to Division 1 Section "Closeout Procedures."

END OF SECTION 11160