SECTION 111319 - STATIONARY LOADING DOCK EQUIPMENT

Revise this Section by deleting and inserting text to meet Project-specific requirements.

Verify that Section titles referenced in this Section are correct for this Project's Specifications; Section titles may have changed.

1. GENERAL
	* + 1. SUMMARY
				1. Section Includes:

Recessed loading dock levelers.

Edge-of-dock loading dock levelers.

Top-of-dock loading dock levelers.

Vertical-storing loading dock levelers.

Truck levelers.

Stationary loading dock lifts (scissor lifts).

Truck restraints.

Light communication systems.

* + - 1. DEFINITIONS

Retain terms that remain after this Section has been edited for a project.

Definitions in this article are from MH 30.1 and specifically apply to dock levelers.

* + - * 1. Operating Range: Maximum amount of travel above and below the loading dock level.
				2. Working Range: Recommended amount of travel above and below the loading dock level for which loading and unloading operations can take place.
			1. COORDINATION

Retain applicable requirements in this article to suit Project.

* + - * 1. 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.
				2. Coordinate installation of cast-in-place items. Furnish setting drawings and templates.

Retain "Electrical System Roughing-in" paragraph below for electrically operated dock levelers, truck restraints, dock lifts, or truck levelers.

* + - * 1. Electrical System Roughing-in: Coordinate layout and installation of loading dock equipment with connections to power supplies and interlocked equipment.

Delete the sentence below if no electrical work contract

Power supply and connections to be provided by the Electrical Work Contract.

* + - 1. PREINSTALLATION MEETINGS

Retain "Preinstallation Conference" paragraph below if Work of this Section is extensive or complex enough to justify a conference.

* + - * 1. Preinstallation Conference: Conduct conference at Project site.

Inspect and discuss electrical roughing-in, equipment bases, and other preparatory work specified elsewhere.

Review sequence of operation for each type of loading dock equipment.

Review coordination of interlocked equipment specified in this Section and elsewhere.

Review required testing, inspecting, and certifying procedures.

If needed, insert list of conference participants.

* + - 1. SUBMITTALS
				1. Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.
				2. Manufacturer’s installation instructions shall be provided along with product data.
				3. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).
				4. Submittals Package: Provide all submittals, except closeout submittals, as a single submittal package.
				5. Product Data: For each type of product.

Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for stationary loading dock equipment.

Include rated capacities, operating characteristics, electrical characteristics, and furnished specialties and accessories.

* + - * 1. Shop Drawings: For stationary loading dock equipment.

Include plans, elevations, sections, and attachment details.

Include details of equipment assemblies. Indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of anchors and each field connection.

Retain subparagraph below if equipment includes wiring.

Include diagrams for power, signal, and control wiring.

Coordinate "Qualification Data" paragraph below with "Quality Assurance" Article.

* + - * 1. Qualification Data: For Installer.

Retain "Welding Certificates" paragraph below if retaining "Welding Qualifications" paragraph in "Quality Assurance" Article.

* + - * 1. Welding Certificates.

Retain "Product Test Reports" paragraph below if including dock levelers.

* + - * 1. Product Test Reports: For each dock leveler, for tests performed by manufacturer and witnessed by a qualified testing agency.

Indicate compliance of dock levelers with requirements in MH 30.1 for determining rated capacity based on comprehensive testing within last two years of current products.

Submittal Form: According to MH 30.1.

* + - * 1. Sample Warranty: For manufacturer's special warranty.
			1. CLOSEOUT SUBMITTALS
				1. Operation and Maintenance Data: For stationary loading dock equipment to include in operation and maintenance manuals.
			2. QUALITY ASSURANCE
				1. Installer Qualifications: An authorized representative who is trained and approved by manufacturer.
				2. Service Availability: A fully equipped service organization capable of guaranteeing response time within 24 hours to service calls shall be available to service the completed Work.

Retain "Welding Qualifications" paragraph below if shop or field welding is required. If retaining, also retain "Welding certificates" paragraph in "Informational Submittals" Article.

Pit type dock levelers are welded in place. Laminated type dock bumpers should be welded in place when possible.

* + - * 1. Welding Qualifications: Qualify procedures and personnel according to the following:

Retain applicable subparagraphs below. Pit-type dock levelers are welded in place. Laminated-type dock bumpers may be welded in place.

AWS D1.1, "Structural Welding Code - Steel."

AWS D1.3, "Structural Welding Code - Sheet Steel."

* + - 1. FIELD CONDITIONS
				1. Field Measurements: Verify actual dimensions of construction contiguous with stationary loading dock equipment, including [recessed pit dimensions] [slopes of driveways] [and] [heights of loading docks], by field measurements before fabrication.

Use article below to obtain the best quality dock leveler for heavily used docks or docks in a critical area. Coordinate warranty with leveler capacity. To get full 10 year warranty, design must comply with manufacturer’s leveler selection guide for ratio of maximum gross load to leveler capacity. (as a rule of thumb, maximum gross load for a gasoline powered, 4 wheel, sit-down fork lift truck may be figured as the heaviest pallet load times 2.75). If article below is required, include “00812 - Supplementary Conditions - Warranty Extension” in the table of contents and prepare that document.

* + - 1. WARRANTY

"Manufacturer's Special Warranty" paragraph below is an example for dock levelers. Revise to suit Project. Different warranties are available for other pieces of equipment.

* + - * 1. Manufacturer's Special Warranty: The one year period required by Paragraph 9.8 of the General Conditions is extended to 10 years for the dock leveler structures (including deck platform, lip section, rear hinge, and front hinge) and power source. Refer to Supplementary Conditions. Manufacturer agrees to repair or replace dock levelers that fail in materials or workmanship within specified warranty period.

Failures include, but are not limited to, the following:

Structural failures including cracked or broken structural support members, load-bearing welds, and front and rear hinges.

Faulty operation of operators, control system, or hardware.

Deck plate failures including cracked plate or permanent deformation in excess of 1/4 inch between deck supports.

Hydraulic system failures including failure of hydraulic seals and cylinders.

Verify available warranties and warranty periods for units and components.

Warranty Period for Structural Assembly: 10 years from date of Substantial Completion.

Warranty Period for Hydraulic System: Five years from date of Substantial Completion.

Warranty shall be for unlimited usage of leveler for the specified rated capacity over the term of the warranty.

1. PRODUCTS

Manufacturers and products listed in SpecAgent and MasterWorks Paragraph Builder are neither recommended nor endorsed by the AIA or Deltek. Before inserting names, verify that manufacturers and products listed there comply with requirements retained or revised in descriptions and are both available and suitable for the intended applications.

Dock leveler deck platform size (width and length) should be shown on the drawings. Laminated type dock bumpers should be shown on each side of dock levelers for protection.

* + - 1. RECESSED LOADING DOCK LEVELERS **<Insert drawing designation>**

Copy this article and re-edit for each product.

Insert drawing designation. Use these designations on Drawings to identify each product.

Indicate nominal sizes of recessed dock levelers on Drawings and note whether length dimension includes lip extension.

* + - * 1. General: Recessed, hinged-lip-type dock levelers designed for permanent installation in 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.

Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

Blue Giant Equipment Corporation.

Pentalift Equipment Corporation.

Rotary Products Inc.

Approved equivalent

* + - * 1. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

Verify that manufacturers have determined rated capacity according to MH 30.1. Retain option in "Standard" paragraph below if structural testing is not required or is unavailable. CS 202 and ASME MH 14.1 are withdrawn standards; however, many manufacturers continue to reference them. See the Evaluations.

* + - * 1. Standard: Comply with MH 30.1.

Insert load in "Rated Capacity" paragraph below to suit Project. Capacity of recessed dock levelers typically varies from 20,000 to 60,000 lb usually in 5000-lb increments for most manufacturers. Capacities ranging from 80,000 to 120,000 lb are available from a few manufacturers. Verify, with manufacturers, available capacity for type of operation retained.

* + - * 1. Rated Capacity: Capable of supporting total gross load of **[20,000] [25,000] [30,000] [45,000]** lb without permanent deflection or distortion.
				2. Platform: Not less than **[3/16-] [1/4-] [3/8-]** inch- thick, nonskid steel plate.

Standard platform sizes vary from 6 to 7 feet in width and from 6 to 12 feet in length in many capacities.

Platform Width: **[72 inches] [78 inches] [84 inches] [As indicated on Drawings]** .

Platform Length:**[72 inches] [96 inches] [120 inches] [As indicated on Drawings]** .

Retain second option in "Frame" subparagraph below for clean-pit framing used in the food industry. Clean pits are designed for easy wash down. Verify availability with manufacturers.

Frame: **[Manufacturer's standard] [Clean-pit type, designed to support leveler at sides of pit, with no supports at front of pit floor]**.

Toe Guards: Equip open sides of dock leveler over range indicated with steel toe guards.

Coordinate range of toe guards in "Toe-Guard Range" subparagraph below with manufacturers and products retained. First option is a requirement contained in MH 30.1. Hydraulic dock levelers are equipped with operating-range toe guards. Mechanical dock levelers typically come standard with working-range toe guards; operating-range toe guards are optional.

Toe-Guard Range: Entire upper **[operating] [working]** range.

* + - * 1. Hinged Lip: Not less than **[1/2-] [5/8-] [3/4-] [1-]** inch- thick, nonskid steel plate.

Hinge: Full-width, piano-type hinge with heavy-wall hinge tube**[ and grease fittings]**, with gussets on lip and ramp for support.

"Safety Barrier Lip" subparagraph below may be revised to include impact-resistance criteria if information is available from manufacturer.

Safety Barrier Lip: Designed to protect material-handling equipment from an accidental fall from loading platform edge of the dock leveler when the leveler is not in use.

* + - * 1. Function: Dock levelers shall compensate for differences in height between truck bed and loading platform.

Vertical Travel: Operating range above platform level of sufficient height to enable lip to extend and clear truck bed before contact with the following minimum working range:

Above Adjoining Platform: **[12 inches] [18 inches] [As indicated on Drawings]**.

Below Adjoining Platform: **[12 inches] [14 inches] [As indicated on Drawings]**.

Retain one of or both "Automatic Vertical Compensation" and "Automatic Lateral Compensation" subparagraphs below. Verify availability with manufacturers.

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.

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 over width of ramp.

Revise "Lip Operation" subparagraph below if a specific operation is required. Various manufacturers provide different mechanisms for operating lip.

Lip Operation: Manufacturer's standard mechanism, which 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.

First option in "Length of Lip Extension" subparagraph below is standard. Third option may be needed for refrigerated or other special trucks with steps on back of tailgate.

Length of Lip Extension: Not less than 12 inches**[16 inches] [18 inches] [20 inches] [dimension indicated on Drawings]** measured from ramp edge.

Retain "Automatic Ramp Return" subparagraph below for hydraulic levelers.

Automatic Ramp Return: Automatic return of unloaded ramp, from raised or lowered positions to stored position, level with platform, as truck departs.

Interlocks in "Interlock" subparagraph below provide connected, coordinated, and sequenced operation for automatic-powered loading dock equipment.

Interlock: Leveler does not operate while [overhead door is in closed position] [leveler night lock is engaged] [truck restraint is not engaged] [inflatable dock seal is not inflated] [and] [inflatable dock shelter is not inflated].

Retain "Mechanical Operating System," "Hydraulic Operating System," "Electric Operating System," or "Air-Bag Operating System" paragraph below. See the Evaluations.

Mechanical operated systems are the lowest cost but require the most maintenance. Only use in low-frequency use designs.

* + - * 1. Mechanical Operating System: Manual control; counterbalance and spring operation. Spring-operated raising and walk-down lowering of unloaded ramp. Equip leveler with an upward-biased-spring counterbalancing mechanism controlled by a hold-down device. Ramp raises to top limit of operating range by operating recessed control handle in ramp to disengage hold-down device. Ramp lowers below platform level with lip retracted by operating auxiliary, recessed control handle to release support legs.

Free-Fall Protection: Manufacturer's standard protection system to limit free fall of loaded ramps with front edge supported by truck bed.

Hydraulic operated systems requires little maintenance and offer the most features. Suitable for high use designs.

* + - * 1. Hydraulic Operating System: Electric control from a remote-control station; fully hydraulic operation. Electric-powered hydraulic raising and hydraulic lowering of ramp. Equip leveler with a packaged unit including a unitized, totally enclosed, nonventilated electric motor, pump, manifold reservoir, and valve assembly of proper size, type, and operation for capacity of leveler indicated. Include means for lowering ramp below platform level with lip retracted behind dock bumpers. Provide a hydraulic velocity fuse connected to main hydraulic cylinder to limit loaded ramp's free fall to not more than 3 inches.

Retain "Remote-Control Station" or "Remote-Control Station with Emergency Stop" subparagraph below and revise if additional control functions are required. Type 4 boxes are "watertight and dust tight - indoor and outdoor." Type 12 boxes are "industrial use, dust tight, and drip tight - indoor."

Remote-Control Station: **[Weatherproof single] [Single]**-button station of the constant-pressure type, enclosed in NEMA ICS 6, **[Type 4] [Type 12]** box. Ramp raises by depressing and holding button; ramp lowers at a controlled rate by releasing button.

Remote-Control Station with Emergency Stop: **[Weatherproof multibutton] [Multibutton]** control station with an UP button of the constant-pressure type and an emergency STOP button of the momentary-contact type, enclosed in NEMA ICS 6, **[Type 4] [Type 12]** box. Ramp raises by depressing and holding UP button; ramp lowers at a controlled rate by releasing UP button. Ramp movement stops, regardless of position of ramp or lip, by depressing STOP button. Normal operation resumes by engaging a manual reset button or by pulling out STOP button.

Retain "Dual-Panel Control Station" or "Master Panel" subparagraph below with either remote-control station subparagraph above, or delete if not required.

Dual-Panel Control Station: Remote-control station for operating side-by-side dock levelers.

Revise "Master Panel" subparagraph below if no truck restraints. Verify availability with manufacturers.

Master Panel: Control panel with integral fused disconnecting means for operating dock leveler, dock door, and truck restraints.

Lip operation in "Independent Lip Operation" subparagraph below is not available from all manufacturers; verify availability before specifying.

Independent Lip Operation: Electric-powered hydraulic raising and hydraulic lowering of lip, controlled independent of raising and lowering of ramp.

Operating system in "Electric Operating System" paragraph below is available from McGuire and Serco. Verify availability with other manufacturers.

Electric operated systems are for low- and moderate-frequency use.

* + - * 1. Electric Operating System: Electric control from a remote-control station; motorized operation. Electric activation for raising of ramp and automatic extending of lip. Equip leveler with a packaged unit including a unitized electric motor and shaft assembly of proper size, type, and operation for capacity of leveler indicated. Include means for lowering ramp below platform level with lip retracted behind dock bumpers.

Retain "Remote-Control Station" or "Remote-Control Station with Emergency Stop" subparagraph below and revise if additional control functions are required. Type 4 boxes are "watertight and dust tight - indoor and outdoor." Type 12 boxes are "industrial use, dust tight, and drip tight - indoor."

Remote-Control Station: **[Weatherproof single] [Single]**-button station of the constant-pressure type, enclosed in NEMA ICS 6, **[Type 4] [Type 12]** box. Ramp raises by depressing and holding button; ramp lowers at a controlled rate by releasing button.

Remote-Control Station with Emergency Stop: **[Weatherproof multibutton] [Multibutton]** control station with an UP button of the constant-pressure type and an emergency STOP button of the momentary-contact type, enclosed in NEMA ICS 6, **[Type 4] [Type 12]** box. Ramp raises by depressing and holding UP button; ramp lowers at a controlled rate by releasing UP button. Ramp movement stops, regardless of position of ramp or lip, by depressing STOP button. Normal operation resumes by engaging a manual reset button or by pulling out STOP button.

* + - * 1. Air-Bag Operating System: Electric control from a remote-control station; pneumatic operation. High-volume, low-pressure lifting of ramp. Equip leveler with a packaged unit including a PVC-coated, reinforced polyester lifting bag and two-stage, single-speed electric fan of proper size, type, and operation for capacity of leveler indicated. Include dock-leveler supports controlled by release chain for lowering ramp below platform level without extending lip.

In "Remote-Control Station" subparagraph below, Type 4 boxes are "watertight and dust tight - indoor and outdoor."

Remote-Control Station: **[Weatherproof single] [Single]**-button station of the constant-pressure type, enclosed in NEMA ICS 6, **[Type 4]** box. Ramp raises by depressing and holding button; ramp lowers at a controlled rate by releasing button.

Construction of supports in "Construction" paragraph below varies between mechanical and hydraulic units and for different rated capacities. Support construction is one of the most critical elements in determining capacity and durability. Verify with manufacturers and revise to suit Project.

* + - * 1. Construction: Fabricate dock-leveler frame, platform supports, and lip supports from structural- or formed-steel shapes. Weld platform and hinged lip to supports. 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.

Cross-Traffic Support: 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.

Maintenance Strut: Integral strut to positively support ramp in up position during maintenance of dock leveler.

Retain "Integral Molded-Rubber Dock Bumpers" or "Integral Laminated-Tread Dock Bumpers" paragraph below if bumpers are integral part of dock leveler and are not specified in Section 111313 "Loading Dock Bumpers."

* + - * 1. Integral Molded-Rubber Dock Bumpers: Fabricated from **[4-] [6-]** inch- thick, heavy molded-rubber compound reinforced with nylon, rayon, or polyester cord; with Shore A durometer hardness of 80, plus or minus 5, when tested according to ASTM D2240. Provide two dock bumpers for each recessed dock leveler, attached to face of loading dock with expansion bolts.
				2. Integral Laminated-Tread Dock Bumpers: Fabricated from **[4-1/2-] [6-]** inch- thick, multiple, uniformly thick plies cut from fabric-reinforced rubber tires. 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.
				3. Materials:

Steel Plates, Shapes, and Bars: ASTM A36.

Rolled-Steel Floor Plate: ASTM A786, rolled from steel plate complying with ASTM A572, Grade 55.

Steel Tubing: ASTM A500, cold formed.

Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.

Manufacturer's standard finishes are typically prime-paint or baked-on finishes. Verify, with manufacturers, availability of hot-dip galvanized and spray zinc metallized finishes. Some manufacturers do not recommend hot-dip galvanizing due to the potential for steel to warp and instead offer spray zinc metallizing. Some manufacturers offer hot-dip galvanizing only on levelers with certain capacities because they use thicker steel, which is less likely to warp, and offer spray zinc metallizing on lower-capacity levelers that use thinner steel. If hot-dip galvanized, most manufacturers do not recommend applying a finish over the galvanizing. If an additional finish is required, verify with manufacturers that they can provide it and insert requirements in "Dock-Leveler Finish" paragraph below.

* + - * 1. Dock-Leveler Finish: **[Manufacturer's standard prime-paint or baked-on factory finish] [Hot-dip galvanized] [Spray zinc metallized]**.

Toe Guards: Baked-on factory finish.

* + - * 1. Accessories:

Retain "Curb Angles" subparagraph below if curb angles are required to be furnished and installed by equipment Installer and are not specified in Section 055000 "Metal Fabrications."

Curb Angles: 3-by-3-by-1/4-inch galvanized-steel curb angles for edge of recessed leveler pit, with 1/2-inch- diameter by 6-inch- long concrete anchors welded to angle at 6 inches o.c.

Retain "Self-Forming Pan" subparagraph below if required. See the Evaluations.

Self-Forming Pan: Manufacturer's standard prefabricated, self-forming**[ spray zinc metallized]** steel form system for poured-in-place construction of concrete pit.

Retain "Night Locks" subparagraph below if buildings are susceptible to theft; night locks are standard with some manufacturers.

Night Locks: Manufacturer's standard means to prevent extending lip and lowering ramp when overhead doors are locked.

Side and rear weatherseals.

Foam insulation under dock-leveler platform.

**[Abrasive skid-resistant] [Smooth]** surface.

Edge-of-dock levelers are generally designed where a narrow range of truck heights are expected or designed to be added to a facility that did not previously have the convenience of recessed dock levelers.

* + - 1. EDGE-OF-DOCK LOADING DOCK LEVELERS **<Insert drawing designation>**

Copy this article and re-edit for each product.

Insert drawing designation. Use these designations on Drawings to identify each product.

* + - * 1. General: Surface-mounted, hinged-lip-type, edge-of-dock levelers designed for permanent installation on face of loading dock platform; of type, function, operation, capacity, size, and construction indicated; and complete with controls, safety devices, and accessories required.

Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

Blue Giant Equipment Corporation.

Pentalift Equipment Corporation.

Rotary Products Inc.

Approved equivalent.

* + - * 1. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

Verify that manufacturers have determined rated capacity according to MH 30.1. Retain option in "Standard" paragraph below if structural testing is not required or is unavailable. CS 202 and ASME MH 14.1 are withdrawn standards; however, many manufacturers continue to reference them. See the Evaluations.

* + - * 1. Standard: Comply with MH 30.1.

Insert load in "Rated Capacity" paragraph below to suit Project. Capacity of edge-of-dock levelers varies from 20,000 to 30,000 lb in 5000-lb increments for most manufacturers. Verify available capacity with manufacturers.

* + - * 1. Rated Capacity: Capable of supporting total gross load of **[20,000] [25,000] [30,000]** lb without permanent deflection or distortion.
				2. Platform Ramp Width: **[66 inches] [72 inches] [78 inches] [84 inches] [As indicated on Drawings]** .
				3. Hinged Lip: Not less than **[3/8-] [7/16-] [1/2-]** inch- thick, nonskid steel tread plate.

Hinge: Full-width, piano-type hinge with heavy-wall hinge tube**[ and grease fittings]**, with gussets on lip and ramp for support.

* + - * 1. Function: Dock levelers shall compensate for differences in height between truck bed and loading platform.

Vertical Travel: Operating range above platform level of sufficient height to enable lip to extend and clear truck bed before contact with the following minimum working range:

Above Adjoining Platform: **[5 inches] [6 inches] [As indicated on Drawings]**.

Below Adjoining Platform: **[5 inches] [As indicated on Drawings]**.

Retain one of or both "Automatic Vertical Compensation" or "Automatic Lateral Compensation" subparagraph below. Second subparagraph is not available from all manufacturers; verify availability. See the Evaluations.

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.

Automatic Lateral Compensation: Tilting of ramp with lip extended and resting on truck bed shall compensate automatically for canted truck beds of up to 3 inches over width of ramp.

Revise "Lip Operation" subparagraph below if a specific operation is required. Various manufacturers provide different mechanisms for operating lip.

Lip Operation: Manufacturer's standard mechanism, which 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.

First option in "Length of Lip Extension" subparagraph below is standard.

Length of Lip Extension: Not less than 12 inches from face of dock bumpers and not less than **[15 inches] [17 inches] [dimension indicated on Drawings]** measured from ramp edge.

Retain "Automatic Ramp Return" subparagraph below for hydraulic levelers.

Automatic Ramp Return: Automatic return of unloaded ramp, from raised or lowered positions to stored position, level with platform, as truck departs. Leveler shall be capable of retracting to stored position while truck is at loading dock.

Retain "Mechanical Operating System" or "Hydraulic Operating System" paragraph below. See the Evaluations.

* + - * 1. Mechanical Operating System: Manual control; counterbalance and spring operation. Spring-operated raising and walk-down lowering of unloaded ramp. Equip leveler with a torsion-spring counterbalancing mechanism controlled by a hold-down device.

Retain "Lever Handle" or "Removable Lifting Handle" subparagraph below. Verify availability with manufacturers.

Lever Handle: Self-storing lever handle for raising unloaded ramp with minimal lifting force by pulling lever back to extend lip and pushing lever forward to lower ramp and lip.

Removable Lifting Handle: For raising unloaded ramp by lifting action.

* + - * 1. Hydraulic Operating System: Electric control from a remote-control station; fully hydraulic operation. Electric-powered hydraulic raising and hydraulic lowering of ramp. Equip leveler with a packaged unit including a unitized, totally enclosed, nonventilated electric motor, pump, manifold reservoir, and valve assembly of proper size, type, and operation for capacity of leveler indicated. Provide a hydraulic velocity fuse connected to main hydraulic cylinder to limit loaded ramp's free fall to not more than 3 inches.

In "Remote-Control Station" subparagraph below, Type 4 boxes are "watertight and dust tight - indoor and outdoor." Type 12 boxes are "industrial use, dust tight, and drip tight - indoor."

Remote-Control Station: **[Weatherproof single] [Single]**-button station of the constant-pressure type, enclosed in NEMA ICS 6, **[Type 4] [Type 12]** box. Ramp and lip raise to vertical position and extend to truck bed by depressing and holding button.

Construction of supports in "Construction" paragraph below varies between mechanical and hydraulic units and for different rated capacities. Support construction is one of the most critical elements in determining capacity and durability. Verify with manufacturers and revise to suit Project.

* + - * 1. Construction: Fabricate dock-leveler frame, platform supports, and lip supports from structural- and formed-steel shapes. Weld platform and hinged lip to supports. 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.

Cross-Traffic Support: 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.

Maintenance Strut: Integral strut to positively support ramp in up position during maintenance of dock leveler.

Retain "Integral Molded-Rubber Dock Bumpers" or "Integral Laminated-Tread Dock Bumpers" paragraph below.

* + - * 1. Integral Molded-Rubber Dock Bumpers: Fabricated from **[4-] [6-]** inch- thick, heavy molded-rubber compound reinforced with nylon, rayon, or polyester cord; with Shore A durometer hardness of 80, plus or minus 5, when tested according to ASTM D2240. Provide two dock bumpers for each recessed dock leveler, attached to face of loading dock with expansion bolts.
				2. Integral Laminated-Tread Dock Bumper: Fabricated from **[4-1/2-] [6-]** inch- thick, multiple, uniformly thick plies cut from fabric-reinforced rubber tires. 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.
				3. Materials:

Steel Plates, Shapes, and Bars: ASTM A36.

Rolled-Steel Floor Plate: ASTM A786, rolled from steel plate complying with ASTM A572, Grade 55.

Steel Tubing: ASTM A500, cold formed.

Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.

Manufacturer's standard finishes are typically prime-paint or baked-on finishes. Verify, with manufacturers, availability of hot-dip galvanized and spray zinc metallized finishes. Some manufacturers do not recommend hot-dip galvanizing due to the potential for steel to warp and instead offer spray zinc metallizing. Some manufacturers offer hot-dip galvanizing only on levelers with certain capacities because they use thicker steel, which is less likely to warp, and offer spray zinc metallizing on lower-capacity levelers that use thinner steel. If hot-dip galvanized, most manufacturers do not recommend applying a finish over the galvanizing. If an additional finish is required, verify with manufacturers that they can provide it and insert requirements in "Dock-Leveler Finish" paragraph below.

* + - * 1. Dock-Leveler Finish: **[Manufacturer's standard prime-paint or baked-on factory finish] [Hot-dip galvanized] [Spray zinc metallized]**.
				2. Accessories:

Self-forming pan.

Cast-in-place design.

Run-off guards.

Ramp approach plate.

**[Interlock to truck restraint] [Key switch]**.

* + - 1. TOP-OF-DOCK LOADING DOCK LEVELERS **<Insert drawing designation>**

Copy this article and re-edit for each product.

Insert drawing designation. Use these designations on Drawings to identify each product.

* + - * 1. General: Surface-mounted, hinged-lip-type, top-of-dock levelers designed for permanent installation on top edge of loading dock platform without concrete pit; of type, function, operation, capacity, size, and construction indicated; and complete with controls, safety devices, and accessories required.

Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

Beacon Industries, Inc.

DLM; A Division of Systems Inc.

Rotary Products Inc.

Approved equivalent.

* + - * 1. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

Verify that manufacturers have determined rated capacity according to MH 30.1. Retain option in "Standard" paragraph below if structural testing is not required or is unavailable. CS 202 and ASME MH 14.1 are withdrawn standards; however, many manufacturers continue to reference them. See the Evaluations.

* + - * 1. Standard: Comply with MH 30.1.

Insert load in "Rated Capacity" paragraph below to suit Project. Capacity of top-of-dock levelers varies from 20,000 to 25,000 lb. Verify available capacity with manufacturers.

* + - * 1. Rated Capacity: Capable of supporting total gross load of **[20,000] [25,000]** lb without permanent deflection or distortion.
				2. Platform Width: **[72 inches] [As indicated on Drawings]**.

Options in "Hinged Lip" paragraph below vary for different rated capacities; verify with manufacturers.

* + - * 1. Hinged Lip: Not less than **[3/8-] [7/16-]** inch- thick, nonskid steel plate.

Hinge: Full-width, piano-type hinge with heavy-wall hinge tube**[ and grease fittings]**, with gussets on lip and ramp for support.

* + - * 1. Function: Dock levelers shall compensate for differences in height between truck bed and loading platform.

Vertical Travel: Operating range above platform level of sufficient height to enable lip to extend and clear truck bed before contact with a minimum working range of **[10]** inches above and **[4]** inches below adjoining platform level.

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.

Lip Operation: Manufacturer's standard mechanism, which 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.

Length of Lip Extension: Not less than 12 inches from face of dock bumpers and not less than **[15 inches] [dimension indicated on Drawings]** measured from ramp edge.

Retain "Automatic Ramp Return" subparagraph below for hydraulic levelers.

Automatic Ramp Return: Automatic return of unloaded ramp, from raised or lowered positions to stored position, level with platform, as truck departs. Leveler shall be capable of retracting to stored position while truck is at loading dock.

Retain "Mechanical Operating System" or "Hydraulic Operating System" paragraph below. See the Evaluations.

* + - * 1. Mechanical Operating System: Manual control; counterbalance and spring operation. Spring-operated raising and walk-down lowering of unloaded ramp. Equip leveler with a torsion-spring counterbalancing mechanism controlled by a hold-down device.

Removable Lifting Hook: For raising unloaded ramp by lifting action and pushing forward to lower ramp and lip.

* + - * 1. Hydraulic Operating System: Electric control from a remote-control station, fully hydraulic operation. Electric-powered hydraulic raising and hydraulic lowering of ramp. Equip leveler with a packaged unit including a unitized, totally enclosed, nonventilated electric motor, pump, manifold reservoir, and valve assembly of proper size, type, and operation for capacity of leveler indicated.

In "Remote-Control Station" subparagraph below, Type 12 boxes are "industrial use, dust tight, and drip tight - indoor."

Remote-Control Station: **[Weatherproof single] [Single]**-button station of the constant-pressure type, enclosed in NEMA ICS 6, **[Type 12]** box. Ramp and lip raise to vertical position and extend to truck bed by depressing and holding button.

Construction of supports in "Construction" paragraph below varies between mechanical and hydraulic units and for different rated capacities. Support construction is one of the most critical elements in determining capacity and durability. Verify with manufacturers and revise to suit Project.

* + - * 1. Construction: Fabricate dock-leveler frame, platform supports, and lip supports from structural- and formed-steel shapes. Weld platform and hinged lip to supports. 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.

Retain "Integral Molded-Rubber Dock Bumpers" or "Integral Laminated-Tread Dock Bumpers" paragraph below.

* + - * 1. Integral Molded-Rubber Dock Bumpers: Fabricated from **[4-] [6-]** inch- thick, heavy molded-rubber compound reinforced with nylon, rayon, or polyester cord; with Shore A durometer hardness of 80, plus or minus 5, when tested according to ASTM D2240. Provide two dock bumpers for each recessed dock leveler, attached to face of loading dock with expansion bolts.
				2. Integral Laminated-Tread Dock Bumpers: Fabricated from **[4-1/2-] [6-]** inch- thick, multiple, uniformly thick plies cut from fabric-reinforced rubber tires. 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.
				3. Materials:

Steel Plates, Shapes, and Bars: ASTM A36.

Rolled-Steel Floor Plate: ASTM A786, rolled from steel plate complying with ASTM A572, Grade 55.

Steel Tubing: ASTM A500, cold formed.

Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.

Manufacturer's standard finishes are typically prime-paint or baked-on finishes. Verify, with manufacturers, availability of hot-dip galvanized and spray zinc metallized finishes. Some manufacturers do not recommend hot-dip galvanizing due to the potential for steel to warp and instead offer spray zinc metallizing. Some manufacturers offer hot-dip galvanizing only on levelers with certain capacities because they use thicker steel, which is less likely to warp, and offer spray zinc metallizing on lower-capacity levelers that use thinner steel. If hot-dip galvanized, most manufacturers do not recommend applying a finish over the galvanizing. If an additional finish is required, verify with manufacturers that they can provide it and insert requirements in "Dock-Leveler Finish" paragraph below.

* + - * 1. Dock-Leveler Finish: **[Manufacturer's standard prime-paint or baked-on factory finish] [Hot-dip galvanized] [Spray zinc metallized]**.
			1. VERTICAL-STORING LOADING DOCK LEVELERS **<Insert drawing designation>**

Copy this article and re-edit for each product.

Insert drawing designation. Use these designations on Drawings to identify each product.

* + - * 1. 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.

Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

Blue Giant Equipment Corporation.

McGuire; A Division of Systems, Inc.

Pentalift Equipment Corporation.

Approved equivalent.

* + - * 1. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

Verify that manufacturers have determined rated capacity according to MH 30.1. Retain option in "Standard" paragraph below if structural testing is not required or is unavailable. CS 202 and ASME MH 14.1 are withdrawn standards; however, many manufacturers continue to reference them. See the Evaluations.

* + - * 1. Standard: Comply with MH 30.1.

Insert load in "Rated Capacity" paragraph below to suit Project. Capacity of vertical-storing dock levelers varies from 20,000 to 60,000 lb in 5000-lb increments for most manufacturers. Verify available capacity with manufacturers.

* + - * 1. Rated Capacity: Capable of supporting total gross load of **[40,000] [45,000] [50,000]** lb without permanent deflection or distortion.
				2. Platform: Not less than **[3/16-] [1/4-]** inch- thick, nonskid steel plate.

Standard platform sizes vary from 5 to 7 feet in width and from 5 to 8 feet in length in many capacities.

Platform Width: **[72 inches] [84 inches] [As indicated on Drawings]**.

Platform Length: **[60 inches] [72 inches] [96 inches] [As indicated on Drawings]**.

* + - * 1. Hinged Lip: Not less than **[1/2-] [5/8-]** inch- thick, nonskid steel plate.

Hinge: Full-width, piano-type hinge with heavy-wall hinge tube**[ and grease fittings]**, with gussets on lip and ramp for support.

* + - * 1. Function: Dock levelers shall compensate for differences in height between truck bed and loading platform.

Vertical Travel: Operating range above platform level of sufficient height to enable lip to extend and clear truck bed before contact with the following minimum working range:

Above Adjoining Platform: **[6 inches] [10 inches] [12 inches] [As indicated on Drawings]**.

Below Adjoining Platform: **[6 inches] [As indicated on Drawings]**.

Retain one of or both "Automatic Vertical Compensation" and "Automatic Lateral Compensation" subparagraphs below. Verify availability with manufacturers.

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.

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 over width of ramp.

Various manufacturers provide different mechanisms for operating lip. Revise "Lip Operation" subparagraph below if a specific operation is required.

Lip Operation: 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.

First option in "Length of Lip Extension" subparagraph below is standard.

Length of Lip Extension: Not less than 12 inches**[16 inches] [18 inches] [20 inches] [dimension indicated on Drawings]** measured from ramp edge.

* + - * 1. Hydraulic Operating System: Electric control from a remote-control station; fully hydraulic operation. Electric-powered hydraulic raising and hydraulic lowering of ramp. Equip leveler with a packaged unit including a unitized, totally enclosed, nonventilated electric motor, pump, manifold reservoir, and valve assembly of proper size, type, and operation for capacity of leveler indicated. Provide a hydraulic velocity fuse connected to main hydraulic cylinder to limit loaded ramp's free fall to not more than 3 inches. Provide mechanical lock that prevents leveler from lowering without hydraulic pressure.

Retain "Remote-Control Station" or "Remote-Control Station with Emergency Stop" subparagraph below and revise if additional control functions are required. Type 12 boxes are "industrial use, dust tight, and drip tight - indoor."

Remote-Control Station: **[Weatherproof single] [Single]**-button station of the constant-pressure type, enclosed in NEMA ICS 6, **[Type 12]** box. Ramp lowers at a controlled rate.

Remote-Control Station with Emergency Stop: **[Weatherproof multibutton] [Multibutton]** control station with an UP button of the constant-pressure type and an emergency STOP button of the momentary-contact type, enclosed in NEMA ICS 6, **[Type 12]** box. Ramp raises by depressing and holding UP button; ramp lowers at a controlled rate by releasing UP button. Ramp movement stops, regardless of position of ramp or lip, by depressing STOP button. Normal operation resumes by engaging a manual reset button or by pulling out STOP button.

Retain "Master Panel" subparagraph below with either remote-control station subparagraph above, or delete if not required. Revise if no truck restraints. Verify availability with manufacturers.

Master Panel: Control panel with integral fused disconnecting means for operating dock leveler, dock door, and truck restraints.

Lip operation in "Independent Lip Operation" subparagraph below is not available from all manufacturers; verify availability before specifying.

Independent Lip Operation: Electric-powered hydraulic raising and lowering of lip, controlled independent of raising and lowering of ramp.

Construction of supports in "Construction" paragraph below varies for different rated capacities. Support construction is one of the most critical elements in determining capacity and durability. Verify with manufacturers and revise to suit Project.

* + - * 1. Construction: Fabricate dock-leveler frame, platform supports,**[ run-off guards,]** and lip supports from structural- or formed-steel shapes. Weld platform and hinged lip to supports. 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.

Retain "Integral Molded-Rubber Dock Bumpers" or "Integral Laminated-Tread Dock Bumpers" paragraph below. Laminated-tread dock bumpers have better impact absorption than molded-rubber dock bumpers.

* + - * 1. Integral Molded-Rubber Dock Bumpers: Fabricated from **[4-] [6-]** inch- thick, heavy molded-rubber compound reinforced with nylon, rayon, or polyester cord; with Shore A durometer hardness of 80, plus or minus 5, when tested according to ASTM D2240. Provide two dock bumpers for each recessed dock leveler, attached to face of loading dock with expansion bolts.
				2. Integral Laminated-Tread Dock Bumpers: Fabricated from **[4-1/2-] [6-]** inch- thick, multiple, uniformly thick plies cut from fabric-reinforced rubber tires. 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.
				3. Materials:

Steel Plates, Shapes, and Bars: ASTM A36.

Rolled-Steel Floor Plate: ASTM A786, rolled from steel plate complying with ASTM A572, Grade 55.

Steel Tubing: ASTM A500, cold formed.

Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.

Manufacturer's standard finishes are typically prime-paint or baked-on finishes. Verify, with manufacturers, availability of hot-dip galvanized and spray zinc metallized finishes. Some manufacturers do not recommend hot-dip galvanizing due to the potential for steel to warp and instead offer spray zinc metallizing. Some manufacturers offer hot-dip galvanizing only on levelers with certain capacities because they use thicker steel, which is less likely to warp, and offer spray zinc metallizing on lower-capacity levelers that use thinner steel. If hot-dip galvanized, most manufacturers do not recommend applying a finish over the galvanizing. If an additional finish is required, verify with manufacturers that they can provide it and insert requirements in "Dock-Leveler Finish" paragraph below.

* + - * 1. Dock-Leveler Finish: **[Manufacturer's standard prime-paint or baked-on factory finish] [Hot-dip galvanized] [Spray zinc metallized]**.
				2. Accessories:

Interlocks provide connected, coordinated, and sequenced operation for automatic-powered loading dock equipment.

Interlock: Leveler does not operate while **[overhead door is in closed position] [and] [truck restraint is not engaged]**.

Retain "Curb Angles" subparagraph below if curb angles are required to be furnished and installed by equipment Installer and are not specified in Section 055000 "Metal Fabrications."

Curb Angles: 3-by-3-by-1/4-inch galvanized-steel curb angles for edge of recessed leveler pit, with 1/2-inch- diameter by 6-inch- long concrete anchors welded to angle at 6 inches o.c.

* + - 1. TRUCK LEVELERS **<Insert drawing designation>**

Copy this article and re-edit for each product.

Insert drawing designation. Use these designations on Drawings to identify each product.

* + - * 1. General: Two-cylinder, hydraulic ramp designed to raise and lower end of truck at loading dock. Equip leveler with a packaged unit including a unitized electric motor, pump, manifold reservoir, and valve assembly of proper size, type, and operation for capacity indicated. Provide manufacturer's standard means for limiting loaded ramp's free fall.

Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

Beacon Industries, Inc.

Pentalift Equipment Corporation.

Rite-Hite Corporation.

Approved equivalent.

* + - * 1. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

Insert load in "Rated Capacity" paragraph below to suit Project. Capacity of truck levelers varies from 50,000 to 65,000 lb in 5000-lb increments for most manufacturers. Verify available capacity with manufacturers.

* + - * 1. Rated Capacity: Capable of supporting total gross load of **[50,000] [55,000] [60,000] [65,000]** lb without permanent deflection or distortion.
				2. Travel Speed: Leveler raises and lowers at 3 fpm, measured at traveling end.

Retain "Surface-Mounted Units," "Shallow-Pit-Mounted Units," or "Full-Pit-Mounted Units" paragraph below.

* + - * 1. Surface-Mounted Units: Designed for mounting on surface of concrete driveway.
				2. Shallow-Pit-Mounted Units: Designed for mounting in sloping shallow pit; capable of 18 inches of vertical travel above and below level of driveway.
				3. Full-Pit-Mounted Units: Designed for installation in a fully recessed pit, with top of platform in stored position flush with driveway.

Provide removable plate for access to pit for service.

* + - * 1. Hydraulic Operating System: Electric control from a remote-control station; fully hydraulic operation. Self-contained, electric-powered hydraulic raising and hydraulic lowering of lift.

Revise "Remote-Control Station" subparagraph below to suit Project. Type 12 boxes are "industrial use, dust tight, and drip tight - indoor."

Remote-Control Station: Weatherproof, multibutton control station of the constant-pressure type with UP and DOWN push buttons. Controller shall consist of magnetic motor starter with three-pole adjustable overloads and 24-V control transformer with 4-A, fused secondary prewired to terminal strips and enclosed in NEMA ICS 6, **[Type 12]** box.

Upper-Travel-Limit Switch: Equip unit with manufacturer's standard, adjustable, upper-travel-limit switch.

Supports in "Construction" paragraph below are one of the most critical elements in determining capacity and durability. Verify with manufacturers and revise to suit Project.

* + - * 1. Construction: Fabricate truck leveler from structural- and formed-steel shapes; fabricate platform from nonskid steel plate. Construct platform with notch at loading dock end to provide clearance for truck restraint.

Revise "Cylinders" subparagraph below to suit Project. Before revising, verify standard cylinder type with manufacturers.

Cylinders: Equip truck leveler with not less than two heavy-duty, high-pressure, hydraulic, ram-type cylinders. Rams shall be manufacturer's standard, either direct-displacement plunger or rod-and-piston type with positive internal stops. Cylinder rods shall be chrome plated and polished.

* + - * 1. Materials:

Steel Plates, Shapes, and Bars: ASTM A36.

Rolled-Steel Floor Plate: ASTM A786, rolled from steel plate complying with ASTM A572, Grade 55.

Steel Tubing: ASTM A500, cold formed.

Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.

Manufacturer's standard finishes are typically prime-paint or baked-on finishes. Most manufacturers do not recommend applying a finish over the galvanizing. If an additional finish is required, verify with manufacturers that they can provide it and insert requirements in "Truck-Leveler Finish" paragraph below.

* + - * 1. Truck-Leveler Finish: **[Manufacturer's standard prime-paint or baked-on factory finish] [Hot-dip galvanized]**.
			1. STATIONARY LOADING DOCK LIFTS **<Insert drawing designation>**

Copy this article and re-edit for each product.

Insert drawing designation. Use these designations on Drawings to identify each product.

* + - * 1. General: Stationary, scissors-type, single-leg, hydraulic dock lift of capacity, size, and construction indicated; complete with controls, safety devices, and accessories required.

Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

[Advance Lifts, Inc](http://www.specagent.com/Lookup?uid=123457133622).

Blue Giant Equipment Corporation.

Pentalift Equipment Corporation.

Approved equivalent.

* + - * 1. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

Verify that manufacturers have determined rated capacity according to MH 29.1. See the Evaluations.

* + - * 1. Standard: MH 29.1.

"Rated Capacity" paragraph below is an example only. Rated capacities of dock lifts vary from typically 3000 to 30,000 lb depending on manufacturer and product.

* + - * 1. Rated Capacity: Lifting capacity of not less than **[8000 lb] [load indicated on Drawings]** with axle loads of **[6500 lb at ends and 5000 lb at sides] [magnitudes indicated on Drawings]**.

Nonskid, safety-tread deck plate is standard and smooth-surface deck plate is optional with most manufacturers. Hot-dip galvanizing is an option with most manufacturers; however, manufacturers warn that hot-dip galvanizing the deck plate may cause it to warp.

* + - * 1. Platform: **[Nonskid, safety-tread] [Smooth-surface]** heavy**[ hot-dip galvanized-]** steel deck plate.

Standard platform sizes vary in width from 4 to 8 feet and from 6 to 12 feet in length in many capacities. See the Evaluations.

Platform Size: **[72 inches long by 72 inches wide] [96 inches long by 72 inches wide] [120 inches long by 72 inches wide] [As indicated on Drawings]**.

MH 29.1 requires one or more options in "Platform Guarding" subparagraph below "or other sufficient means" to protect individual from potential shear of pinch points created by lift motion and adjacent construction for pit-mounted lifts. Revise below to include additional requirements if lift rise exceeds 5 feet.

Platform Guarding: **[Bevel toe guards] [Toe sensor] [Indicator bar] [Skirts] [Enclosure]** to comply with requirements in MH 29.1.

Most manufacturers use steel pipe for guard rails. Square aluminum sections are also available from some manufacturers. Hot-dip galvanizing is an option with some manufacturers.

**[Removable] [Fixed]** Guard Rails: Provide **[steel] [hot-dip galvanized-steel] [aluminum]** guard rails on two sides of platform with a single, removable chain across each end. Provide guard rails not less than 39 inches high with midrail and 4-inch- high, kick plate at bottom.**[ Mount rail sockets flush with platform surface.]**

Most manufacturers provide nonskid, safety-tread steel plate. Hot-dip galvanizing is an option with some manufacturers.

* + - * 1. Bridge: **[Nonskid, safety-tread steel] [Nonskid, safety-tread, hot-dip galvanized-steel] [High-tensile aluminum]** plate.

Revise "Hinged Bridge" subparagraph below to suit Project. Bridge may be located at ends or on sides depending on configuration. More than one bridge is possible if situation warrants. Split-lip bridge plates are optional feature with some manufacturers.

Hinged Bridge: Hinged, throw-over bridge bolted to full-length, heavy-duty, piano-type hinge welded to toe guard at end of platform. Provide bridge complete with heavy-duty lifting chains. Chamfer edge of bridge to minimize obstructing wheels of material-handling vehicles.

Revise "Size" subparagraph below to suit Project. If using split-plate bridge, indicate size of each section.

Size: **[18 inches long by 60 inches wide] [18 inches long by 72 inches wide] [As indicated on Drawings]**.

Locations: **[Ends] [Sides] [As indicated on Drawings]**.

* + - * 1. Function: Dock lifts shall compensate for differences in height between truck bed and loading platform.

Retain "Vertical Travel and Travel Speed" subparagraph below if requirements are indicated on Drawings. Otherwise, delete and retain "Vertical Travel" and "Travel Speed" subparagraphs below.

Vertical Travel and Travel Speed: As indicated on Drawings.

"Vertical Travel" subparagraph below is an example only. Maximum vertical travel distance varies from 50 to 80 inches for single-leg products depending on manufacturer and product. Lowered height is usually pit depth.

Vertical Travel: Maximum of 60 inches from a lowered height of 12 inches for a total raised height of 72inches.

Speed of travel up and down varies from 1 to 18 fpm depending on manufacturer, product, and rated capacity. Typical speeds are 8 to 12 fpm.

Travel Speed: Nominal raising speed of **[8] [10] [12]**fpm.

Various manufacturers provide different mechanisms for operating hinged, throw-over bridges. Most bridges are manually operated.

Hinged Throw-over Bridge Operation: **[Manual] [Spring assist] [Manual-assist bridge winch] [Automatic powered]**.

* + - * 1. Hydraulic Operating System: Self-contained, electric, hydraulic power unit for raising and lowering lift; of size, type, and operation needed for capacity of lift indicated; controlled from a remotely located push-button station.

Revise "Power Unit" subparagraph below to suit Project and manufacturer's standard products. Motor horsepower varies from 1 to 10 hp; 5 hp is the most common.

Power Unit: Consisting of continuous-duty motor, high-pressure gear pump, valve manifold, oil-line filters, and oil reservoir.

Equip manifold with relief valve, check valve, pressure-compensated flow-control valve, and solenoid valve and with provisions for lowering lift manually if power fails.

Equip reservoir, valve manifold, and pressure line with oil-line filters.

Revise "Cylinders" subparagraph below to suit Project. Before revising, verify standard cylinder type with manufacturers.

Cylinders: Equip lift with not less than two heavy-duty, high-pressure, hydraulic, ram-type cylinders. Rams shall be manufacturer's standard, either direct-displacement-plunger or rod-and-piston type with positive internal stops. Cylinder rods shall be chrome plated and polished.

Protection in "Rate of Descent Protection" subparagraph below is required by MH 29.1.

Rate of Descent Protection: Pressure-compensated flow control or hydraulic velocity fuse to limit down speed for each cylinder.

In "Remote-Control Station" subparagraph below, Type 12 boxes are "industrial use, dust tight, and drip tight - indoor."

Remote-Control Station: Multibutton control station of the constant-pressure type with UP and DOWN push buttons. Controller shall consist of magnetic motor starter with three-pole adjustable overloads and 24-V control transformer with 4-A, fused secondary prewired to terminal strips and enclosed in NEMA ICS 6, **[Type 12]** box.

Upper-Travel-Limit Switch: Equip unit with manufacturer's standard, adjustable, upper-travel-limit switch.

* + - * 1. Construction: Fabricate lift from structural-steel shapes rigidly welded and reinforced for maximum strength, safety, and stability. Design assembly to withstand deformation during both operating and stored phases of service. Provide mounting brackets and removable lifting eyes for ease of installation.

Scissors Mechanism: Fabricate leg members from heavy,**[ hot-dip galvanized-]** steel-formed tube or plate members to provide maximum strength and rigidity.

Scissors Configuration: **[Single leg] [Multiple width] [Multiple length]**.

Bearings: Pivot points with permanently lubricated antifriction bushings or sealed ball-bearings for minimum maintenance.

Requirements in "Maintenance Leg" subparagraph below are required by MH 29.1.

Maintenance Leg: Removable, safety maintenance leg or hinged, safety maintenance bars.

Mounting: **[Surface] [Pit]**.

* + - * 1. Materials:

Steel Plates, Shapes, and Bars: ASTM A36.

Rolled-Steel Floor Plate: ASTM A786, rolled from steel plate complying with ASTM A572, Grade 55.

Steel Tubing: ASTM A500, cold formed.

* + - * 1. Dock Lift Finish: Manufacturer's standard baked-on factory finish unless otherwise indicated.
			1. TRUCK RESTRAINTS **<Insert drawing designation>**

Copy this article and re-edit for each product.

Insert drawing designation. Use these designations on Drawings to identify each product.

Verify application with manufacturer, including coordinating operating range from face of loading dock with depth of dock bumpers. See the Evaluations.

* + - * 1. General: Manufacturer's standard 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.

Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

Blue Giant Equipment Corporation.

Pentalift Equipment Corporation.

Rotary Products Inc.

Approved equivalent.

* + - * 1. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

Verify that manufacturers have determined rated capacity according to MH 30.3. See the Evaluations.

* + - * 1. Standard: Comply with MH 30.3.

Restraining capacity of restraints varies from 20,000 to 55,000 lb. Verify available capacity with manufacturers.

* + - * 1. Rated Capacity: Capable of supporting total gross load of **[30,000] [32,000]** lb without permanent deflection or distortion.

Operating range of restraints typically varies from 12 to 30 inches. Verify available operating range with manufacturers.

* + - * 1. Operating Range: Capable of restraining rear-impact guards within a range from:

Vertical Range: Minimum of **[7 inches] [8 inches] [9 inches] [11 inches] [dimension indicated on Drawings]** to maximum of **[28 inches] [30 inches] [34 inches] [dimension indicated on Drawings]** above driveway.

Horizontal Range: Zero to **[10 inches] [12 inches] [15 inches] [dimension indicated on Drawings]** in front of dock bumpers.

Retain "Power Operating System" or "Mechanical Operating System" paragraph below.

* + - * 1. Power Operating System: Manufacturer's standard electromechanical or hydraulic unit.

In "Remote-Control Station" subparagraph below, Type 12 boxes are "industrial use, dust tight, and drip tight - indoor."

Remote-Control Station: Single-button station of the constant-pressure type, enclosed in NEMA ICS 6, **[Type 12]** box. Restraint is engaged by depressing and holding button; restraint is released by releasing button.

Interlock: Leveler does not operate while truck restraint is not engaged.

* + - * 1. Mechanical Operating System: Restraint operates by use of a lifting rod or hook to raise engagement device.

Option in "Rear-Impact-Guard Sensor" paragraph below is not available from all manufacturers; verify availability with manufacturers.

* + - * 1. Rear-Impact-Guard Sensor: Detects presence of rear-impact guard**[ and automatically returns to stored position if rear-impact guard is not engaged]**.

Caution signs are minimum safety equipment. Retain signs even if additional safety is provided by a light communication system.

* + - * 1. Caution Signs: Exterior, surface mounted; designed to inform both dock attendant and truck driver; with sign copy as follows. Provide one sign at each truck-restraint location.

Sign Copy in Forward and Reverse Text: **[Manufacturer's standard text permitting truck movement with green light]**.

Interior Sign Copy: **[Manufacturer's standard text permitting truck movement with green light]**.

Retain "Light Communication System" paragraph below if required; it is optional or unavailable with some products or restraints. Verify availability with manufacturers.

* + - * 1. Light Communication System: Red and green illuminated signal-light sets, with lens approximately 4 inches in diameter, designed to indicate status to both dock attendant and truck driver. Equip system with steel control panel located at interior of dock that **[includes illuminated lights indicating] [indicates]** status of exterior signal lights. Provide signal-light set and control panel at each location indicated for light communication system. Enclose exterior signal-light sets in steel or plastic housing with sunshade.

Manual Operation: System is activated by push button or switch located on **[interior] [truck-restraint]** control panel.

Automatic Operation: System is activated automatically by **[limit switch] [photoelectric sensor] [magnetic switch]** mounted on overhead door track. Provide on-off switch located on **[light communication system] [truck-restraint]** control panel.

Automatic Operation: System is activated automatically when device engages rear-impact guard. Provide on-off switch located on truck-restraint control panel.

Mounting: **[Wall] [Driveway] [Pit] [Pedestal]**.

Retain "Pedestal" subparagraph below if retaining "Pedestal" option in "Mounting" subparagraph above.

Pedestal: 4 by 4 inches60 inches Finish: **[Manufacturer's standard baked-on factory finish in yellow or orange] [Hot-dip galvanized]**.

* + - * 1. Alarm: **[Audible] [and] [visual]** system indicating that rear-impact guard is not engaged, with manual reset.
				2. Materials:

Steel Plates, Shapes, and Bars: ASTM A36.

Rolled-Steel Floor Plate: ASTM A786, rolled from steel plate complying with ASTM A572, Grade 55.

Steel Tubing: ASTM A500, cold formed.

Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.

Not all manufacturers offer hot-dip galvanizing; verify, with manufacturer, before retaining second option in "Truck-Restraint Finish" paragraph below.

* + - * 1. Truck-Restraint Finish: **[Manufacturer's standard electrodeposited zinc coating] [Hot-dip galvanized]**.
				2. Accessories: **[Interlock to dock leveler] [Key switch]**.
			1. LIGHT COMMUNICATION SYSTEMS

Retain this article if light communication systems are needed but are not included when specifying truck restraints.

* + - * 1. General: Communication system consisting of signal-light sets, caution signs, alarms, and controls for each location indicated.

Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

Beacon Industries, Inc.

Rite-Hite Corporation.

Serco; An Entrematic brand.

Approved equivalent.

* + - * 1. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
				2. Caution Signs: Surface mounted; designed to inform both dock attendant and truck driver; with sign copy as follows:

Exterior Sign Copy in Forward and Reverse Text: **[Manufacturer's standard text permitting truck movement with green light]**.

Interior Sign Copy: **[Manufacturer's standard text permitting truck movement with green light]**.

Mounting: **[Wall] [Pedestal]**

* + - * 1. Signal-Light Sets: Red and green illuminated signal-light sets, with lens approximately 4 inches in diameter, designed to indicate status to both dock attendant and truck driver. Equip system with steel control panel that **[includes illuminated lights indicating] [indicates]** status of exterior signal lights; locate control panel at interior of dock. Provide signal-light set and control panel at each location indicated for light communication system. Enclose signal lights in steel or plastic housing, with exterior signal-light sets equipped with sunshade.

Retain "Manual Operation" or "Automatic Operation" subparagraph below.

Manual Operation: Lights are activated by push button or switch located on **[interior signal-light enclosure] [control panel]**.

Automatic Operation: Lights are activated automatically by **[limit switch] [photoelectric sensor] [magnetic switch]** mounted on overhead door track. Provide on-off switch located on control panel.

Mounting: **[Wall] [Pedestal]**

* + - * 1. Materials:

Steel Plates, Shapes, and Bars: ASTM A36.

Rolled-Steel Floor Plate: ASTM A786, rolled from steel plate complying with ASTM A572, Grade 55.

Steel Tubing: ASTM A500, cold formed.

Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.

* + - 1. FINISH REQUIREMENTS
				1. Finish loading dock equipment after assembly and testing.

Retain "Hot-Dip Galvanizing" and "Spray Zinc Metallizing" paragraphs below if required.

* + - * 1. Hot-Dip Galvanizing: Comply with the following:

ASTM A123 for iron and steel loading dock equipment.

ASTM A153 or ASTM F2329 for iron and steel hardware for loading dock equipment.

* + - * 1. Spray Zinc Metallizing: ASTM B833.
				2. Electrodeposited Zinc Coatings: ASTM B633.
				3. Steel Prime Paint Finish: Clean, pretreat, and apply manufacturer's standard primer.
				4. Baked-on Factory Finish: Clean, pretreat, and apply manufacturer's standard two-coat, baked-on finish consisting of prime coat and thermosetting topcoat.

Color: **[Manufacturer's standard] [Match Director Representative's sample][As selected by the Director’s Representative from available manufacturer’s colors]**.

Toe Guards: Paint to comply with ANSI Z535.1.

1. EXECUTION
	* + 1. EXAMINATION
				1. Examine areas and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

Revise first two paragraphs below if electrically operated dock levelers, truck restraints, dock lifts, or truck levelers are not required.

* + - * 1. Examine roughing-in for electrical systems for loading dock equipment to verify actual locations of connections before equipment installation.
				2. 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.
				3. Proceed with installation only after unsatisfactory conditions have been corrected.
			1. PREPARATION

Retain first paragraph below if retaining curb angles in this Section.

* + - * 1. Set curb angles in concrete edges of dock-leveler recessed pits with tops flush with loading platform. Fit exposed connections together to form hairline joints.

Retain first paragraph below if retaining curb angles in this Section for shallow-pit- or full-pit-mounted truck levelers.

* + - * 1. Set curb angles in concrete edges of truck-leveler recessed pits with tops flush with driveway. Fit exposed connections together to form hairline joints.

Retain first paragraph below if required.

* + - * 1. Place self-forming pan system for **[recessed dock] [edge-of-dock]** levelers in proper relation to loading platform before pouring concrete.
				2. Clean recessed pits of debris.
			1. INSTALLATION, GENERAL
				1. Install loading dock equipment as required for a complete installation.

Delete the sentence below if there is a separate electrical work contract

Rough-in electrical connections.

Delete the sentence below if no electrical work contract

Power supply and connections to be provided by the Electrical Work Contract.

* + - 1. INSTALLATION OF RECESSED LOADING DOCK LEVELERS
				1. Attach dock levelers securely to loading dock platform, flush with adjacent loading dock surfaces and square to recessed pit.
			2. INSTALLATION OF EDGE-OF-DOCK LOADING DOCK LEVELERS
				1. Attach dock levelers to loading dock platform in a manner that complies with requirements indicated for arrangement and position relative to top of platform.

Weld anchor holes in contact with continuous embedded loading dock edge channel. Weld or bolt bumper blocks to face of loading dock.

* + - 1. INSTALLATION OF TOP-OF-DOCK LOADING DOCK LEVELERS
				1. Attach dock levelers to loading dock platform in a manner that complies with requirements indicated for arrangement and position relative to top of platform.

Weld anchor holes in contact with continuous embedded loading dock edge channel. Weld or bolt bumper blocks to face of loading dock.

* + - 1. INSTALLATION OF TRUCK LEVELERS
				1. Attach truck levelers securely to driveway construction with expansion anchors and bolts.
			2. INSTALLATION OF STATIONARY LOADING DOCK LIFTS
				1. Attach dock lifts securely to **[loading platform] [floor of recessed pit] [surface of driveway]**.
			3. INSTALLATION OF TRUCK RESTRAINTS
				1. Attach truck restraints in a manner that complies with requirements for arrangement and height required for device to engage vehicle rear-impact guard.**[ Interconnect control panel and signals with dock leveler.]**

Retain one of three subparagraphs below.

Wall-Mounted Units: **[Weld] [Anchor]**

Retain one of first two subparagraphs below to coordinate with option retained in "Wall-Mounted Units" subparagraph above.

Weld truck restraints to steel **[curb angle] [edge channel] [mounting plate]** embedded in loading dock edge.

Anchor truck restraints to face of loading dock with expansion anchors and bolts.

Driveway-Mounted Units: Anchor truck restraints to driveway with expansion anchors and bolts.

Pit-Mounted Units: Anchor truck restraints to concrete pit with expansion anchors and bolts.

* + - 1. ADJUSTING
				1. Adjust loading dock equipment to function smoothly and safely, and lubricate as recommended by manufacturer.
				2. Test dock levelers for vertical travel and adjust to maintain operating range indicated.
				3. After completing installation of exposed, factory-finished loading dock equipment, inspect exposed finishes and repair damaged finishes.
			2. DEMONSTRATION
				1. Engage a Company Field Advisor to train Facility’s maintenance personnel to adjust, operate, and maintain loading dock equipment.

END OF SECTION 111319