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| Specification Section 32 31 00**TYM-200-SW FORTRESS HEAVY DUTY SWING GATE SYSTEM (CHAIN LINK)** | Standard_Swing | Tymetal-T-Orange |

1. GENERAL:
	1. SECTION INCLUDES:
		1. The work in this section shall include furnishing all labor, materials, equipment and appliances necessary to complete all Heavy Duty Swing Gate Systems required for this project in strict accordance with this specification section and drawings. The gate and operator shall be specifically designed to complement each other as a system and be provided by a single manufacturer. Components (operator from one source and gate panel from another) assembled at the job site to form a system will not be approved.
	2. REFERENCES:
		1. Underwriters Laboratory Gate Operator Requirements (UL 325). See 3.01 B.
		2. ASTM F 2200 Standard Specification for Automated Vehicular Gate Construction. See 3.01 B.
		3. American Welding Society AWS D1.2 Structural Welding Code. See 1.03 C.1.
	3. SUBMITTALS:
		1. Product Data:
			1. Provide manufacturer’s catalog cuts with printed specifications and installation instructions.
			2. Deliver two copies of operation and maintenance data covering the installed products. Manual to include parts list showing manufacturer’s names and part numbers for the gate operator.
		2. Shop Drawings:
			1. Supply shop drawings showing the relationship of operating systems with gate components, including details of all major components.
			2. Include complete details of gate construction, gate height ane post spacing dimensions.
		3. Certifications:
			1. Gate in compliance with ASTM F 2200, Standard Specification for Automated Vehicular Gate Construction per section 1.02 B.
			2. The gate operator shall be in compliance with UL 325 as evidenced by UL listing label attached to gate operator. See 1.02 A
			3. Gate manufacturer shall provide independent certification as to the use of a documented Welding Procedure Specification and Procedure Qualification Record to insure conformance to the AWS D1.2 welding code. Upon request, Individual Certificates of Welder Qualification documenting successful completion of the requirements of the AWS D1.2 code shall also be provided. See 1.02 C.
2. PRODUCTS:
	1. HEAVY DUTY SWING GATE SYSTEM MANUFACTURER:
		1. The swing gate system shall be manufactured by Tymetal Corp., 678 Wilbur Avenue, Greenwich, NY 12834 – (800) 328-4283.
		2. Approved Substitution: All other systems must be submitted to the design team in accordance with substitution requirements as set forth in the general provisions of the specification manual for approval prior to the bid date. Products submitted after the bid date will not be approved.
	2. TYM-200-SW GATE OPERATOR DETAILS:
		1. Model TYM-200-SW swing gate operator shall open and close swing gates, providing convenience and security. This model is adapted to function with most accessories including: radio controls, single and three button control stations, digital keypads, sensing loops. The TYM-200-SW is available in 115/208/230 Volt AC single phase or 208/230/460 Volt AC three phase power. Control voltage in each case is 24 Volt DC.
	3. DESIGN CRITERIA:
		1. Features include and integral APeX Controller. Operation shall be by means of 1 horsepower single or three phase C-faced instant reversing motor, transferring power to a heavy duty right angle oil bath gear reducer. Power is transferred from the gear reducer to a heavy duty 3 inch diameter torque limiter and #40 plate sprocket. From the torque limiter, power transfers to the 1-1/8 inch output drive shaft with solid cast aluminum arm crank and harmonic action articulating swing gate arm attached to the gate.
		2. The Articulating arm shall cycle the gate through to a 90 degree opening in approximately 13-15 seconds using manufacturer recommended installation. By use of an articulating arm design, the gate will start moving slowly, gradually increase in speed, the slow down again as it approaches full open.
	4. COMPONENTS:
		1. Standard mechanical components shall included as a minimum:
			1. 14 Gauge weather-resistant galvannealed steel cabinet.
			2. Gasketed cabinet door which is removable and lockable.
			3. 1 – inch solid steel output drive shaft.
			4. Heavy-duty right angle oil bath C-face gear reducer.
			5. Heavy-duty pillow block bearings with grease fittings for easy maintenance.
			6. Heavy-duty 3 inch diameter torque limiter.
			7. Dual C-face 6 foot pound brake.
			8. All welled interior steel framework.
			9. Steel articulating style gate arm with manual disconnect pin, which is lockable.
			10. Powder coat finish.
		2. Standard electrical components shall include as a minimum:
			1. 1 HP motor with thermal overload protection in 115 and 230 VAC single phase or 230 or 460 VAC three phase.
			2. APeX Solid state logic controller featuring 15 diagnostic L.E.D. indicators and auto-close timer (1 second to 9 minutes)
			3. Inherent, adjustable motor over-current sensing to detect obstructions, with separate adjustments for opening and closing directions.
			4. Controller housed in zinc plated control box.
			5. Power On/Off switch. In 115 VAC units, 115 VAC duplex outlets included.
			6. Contacts for opening, closing and reversing accessories, as well as contact and non-contact obstruction sensing devices. 24 VDC available on terminal strip to power accessory devices.
			7. Adjustable limits with precision snap-action type limit switches to control gate position.
			8. Paired operation / master slave or stand alone capable with dip switch selection. Three wire twisted pair shielded cable required for paired operation.
		3. Optional accessories, contact, non-contact, and control devices.
			1. Control devices include pushbuttons, radio controls, keypad, card readers, key switches.
			2. Contact and non-contact devices include photoelectric sensors, vehicle detectors, proximity sensors, and contact devices.
				1. UL325 requires that should there be a space greater than 4” between the lowest point of grade and the bottom of the gate frame, Safety Edges are required on both sides of the gate frame on the leading edge of the gate panel. (See 3.01 B).
			3. Accessories include flashing strobe lights, cycle counters, and intercom systems.
	5. GATE CONSTRUCTION DETAILS:
		1. Gate Frame:
			1. The gate frame shall be fabricated from 6063-T6 aluminum alloy extrusions. The top member shall be a 3" x 5" (76mm x 127mm) aluminum structural channel/tube extrusion weighing not less than 3.0 lb/lf (4.4kg/m). The bottom member shall be a 2” x 5" (51mm x 127mm) aluminum structural tube weighing not less than 2.0 lb/lf (2.9kg/m).
			2. Vertical Members:
				1. Chain Link: The vertical members at the ends of the opening portion of the frame shall be "P" shaped in cross section with a nominal base dimension of no less than 2” x 2” (51mm x 51mm) and weighing not less than 1.6 lb/lf (2.3kg/m). The intermediate vertical members shall alternate between 2” x 2” (51mm x 51mm) and 1” x 2” (25mm x 51mm) in cross section weighing not less than 1.1 lb/lf (1.6kg/m) and 0.82 lb/lf (1.2kg/m) respectively. The spacing for the vertical intermediates shall be less than 50% of the gate frame height.
				2. All welds on the gate frame shall conform to Welding Procedure Specification and Procedure Qualification Record to insure conformance to the AWS D1.2 Structural Welding Code. All individual welders shall be certified to AWS D1.2 welding code. See 1.03 C.1.
			3. Each gate leaf shall be provided with a minimum of two pivoting hinges to allow proper operation, and shall be connected to the gate side of the hinge by means of two through-bolts.
		2. Diagonal Bracing:
			1. Diagonal "X" bracing of 3/16" or 1/4” diameter stainless or galvanized steel cable shall be installed throughout the gate to provide additional vertical adjustment.
		3. Posts:
			1. Gate hanger posts shall be sized in accordance with gate dimensions as specified by the manufacturer. Height of the post and depth of footing shall be as specified by the engineer.
		4. The gate shall be completed by installation of approved filler as specified.
			1. Chain Link: 2” x 2” x 9 gauge aluminized steel chain link fabric shall extend the entire length of the gate. Gate filler shall be secured at each end of the gate frame by standard fence industry tension bars and tied at each vertical member with standard fence industry ties.
		5. Finish:
			1. Gate to be mill finish aluminum or color coated with polyester powder as specified. If powder coated, the gate and all accessories shall be pretreated chemically by sand blasting or other acceptable method to ensure proper coating adherence. Gate posts (to be supplied by others) shall be galvanized or coated as specified by the design team.
3. EXECUTION:
	1. INSTALLATION:
		1. Excavate, place concrete and install specified sized posts as detailed, and in accordance with approved shop drawings. Install hinges on gate frame and gateposts. Make final adjustments to maintain alignment of gate leaves. Install equipment of this section in strict accordance with the company’s printed instructions unless otherwise shown on the contract drawings.
		2. The gate and installation shall comply with UL 325 Gate Operator Requirements and ASTM F 2200, Standard Specification for Automated Vehicular Gate Construction. See 1.02 A and 1.02 B, respectively.
			1. To be UL 325 compliant automated swing gates shall be installed no more than 4” above grade. If installed greater than 4” above grade reversing edges shall be installed on each side (leading edge) of the bottom horizontal gate frame member.
	2. SYSTEM VALIDATION:
		1. The complete system shall be adjusted to assure it is performing properly.
		2. The system shall be operated for a sufficient period of time to determine that the system is in proper working order.
		3. For operated gate systems - test and explain safety features:

### Each system feature and device is a separate component of the gate system.

### Read and follow all instructions for each component.

### Ensure that all instructions for mechanical components, safety devices and the gate operator are available for everyone who will be using the gate system.

### The warning signs shipped with the gate operator must be installed in prominent position on both sides of the gate.

### Ensure the owner is clear with regard to the safety points concerning the basic operational guidelines of the safety features of the gate operator system. These safety points are listed in the gate operator manual and must be read prior to system use.

**Note: Tymetal Corp. reserves the right to modify and/or make changes as deemed necessary without previous notice.**