

MAXSTOP

Welded Wire Security Fence

NUCLEAR POWER PLANTS
SECURITY GATES SPECIFICATIONS
Section 080108 - 11

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SECTION 080108 - 11

SECURITY GATES SPECIFICATIONS

PART 1 SECURITY GATES GENERAL:

1.1 SECTION INCLUDES:

- A. Vehicle and Pedestrian Sliding Gate Operator Systems: The work in this section consists of furnishing all labor, materials, equipment and appliances necessary to complete all motorized sliding gate(s) and pedestrian gate(s) required for this project in strict accordance with this section of specifications and drawings.

1.2 REFERENCES:

- A. Current UL standards / requirements: Gate operators shall be manufactured to UL requirements and shall be listed as an approved product by the UL testing laboratory. All operators shall be furnished with UL Labels.

1.3 SUBMITTAL:

A. Product Data:

1. Provide manufacturer's catalog cuts with printed specifications and installation instructions.
2. Furnish detailed sequence of operation (description of system).
3. Deliver two (2) copies of operation and maintenance data covering the installed products to the director's representative. Include name, address and telephone number of the nearest fully equipped service organization.

B. Shop Drawings:

1. Supply Shop Drawings showing the relationship of operating systems with other work. Include details of all major components. Include parts list showing manufacturer's names and part numbers for the complete installation.
2. Include complete details of gate construction, gate height, post spacing dimensions, unit weights of track, supporting frame, and concrete footing details.

PART 2 PRODUCTS

2.1 MANUFACTURER:

- A. The sliding gate operator system(s) shall be manufactured by:
 1. The Tymetal Corp., 2566 State Rt. 40 Greenwich, NY 12834.

2.2 SYSTEM DIMENSIONS FOR SINGLE SLIDING GATE:

- A. Gate: Each gate shall have a clear gate opening height and the clear gate opening width as shown in the detail drawings.

2.3 SYSTEM FUNCTION:

- A. General Description: System(s) are designed to operate overhead or cantilever sliding gate panels.
- B. Operation: When device is in the closed position, it shall be impossible to move the Gate to the open position except by electrical or mechanical operations provided.
- C. Locking: Keyless locking to be accomplished by means of a three point mechanically activated locking column when overhead Gate systems are employed.
- D. Rate of Travel: Gate shall have the ability to achieve a maximum gate speed of 2 feet per second and shall be equipped with soft-start and soft-stop function to prevent shock load to the gate panel and gate operator.

2.4 GATE OPERATOR MOTOR:

- A. Motors: Motors shall be 1 HP [208 VAC, 3 Phase; 230 VAC, 3 Phase; 208 VAC, Single Phase; or 230 VAC Single Phase] as produced by a nationally recognized manufacturer. (Note to Specifier: the 208/230v, 3 phase motors are preferred by Tymetal.)
- B. AC Drive: The variable frequency drive unit shall allow for programmable speeds and programmable soft-start and soft-stop features.
- C. Overload Protection: Motors shall be protected against overload, either by thermal or a current sensing overload device.
- D. Gear (Box) Reducer: The self-enclosed gear-head gearbox shall be manufactured as a single unit, and shall consist of a hardened steel machine cut worm and mating bronze gear running in oil bath. Oil shall be #634 specialty oil with a fluid pour point of -44 degrees F. The gearbox shall perform the following functions:
 - 1. Adjustable Clutching Device
 - 2. Manual disconnect by crank handle.
- E. Gearbox Heater: A 110-Volt electrical service shall provide power to the thermostat controlling the internal gearbox heater.
- F. Controller: Houses all of the required gate logic components, including limit switches, all within a NEMA 4 enclosure. Controls are specified in detail in specification section 2.09
- G. Main Power Disconnect Switch and Wiring Compartment: When this switch is in the OFF position, the main power is disconnected from the Variable Speed Drive, Motor Control Board and power transformer(s).
- H. Speed: The gate operator speed shall be fully programmable to achieve gate speeds of 1.5 feet per second to 2.2 feet per second.
- I. Manual Operation: Crank handle located in the motor box shall provide a two step engagement procedure for manual operation. Open motor box, fold out handle located at ground level, and crank gate opened or closed.

- J. Control Circuit: The 24 VAC and operator controller shall be UL listed.
- K. Control Wiring: All exterior control wiring shall be supplied by the electrical contractor.
- L. Limits: The operator shall be equipped with an integral limit system that provides accurate settings to control the open and close positions of the gate and shall not be affected by manual operation or motor removal.
- M. Audio Alarm shall have a dual function:
 - 1. The first function shall be as a warning prior to gate movement. When a command is recognized by the motor control board, this alarm shall be activated (3) seconds before the motor is energized and the Gate begins to move. This shall be continuously activated while the gate is in motion.
 - 2. The second function shall be as an entrapment notification alarm (for class III). This alarm shall sound as a result of a second activation of the external primary entrapment prevention device before an end limit (open stop close) is reached. The pulsing rate of the alarm in the entrapment mode shall be faster than the pulsing rate when in the warning mode prior to gate movement.
- N. Transformer: Operators shall have a 75 VA transformer to provide Class II power.

2.5 MOTOR HOUSING:

- A. Water Resistant Motor Box: Box shall be constructed of 10 gauge galvanized steel and is located at ground level for easy maintenance.
- B. Detention Hinges and Tamper Resistance Security Screws: Screws shall be furnished to secure operator enclosure components.
- C. Motor Box Lock: Motor box shall be locked with a five-(5) tumbler mechanical lock. Provide three (3) paracentric keys per key code.

2.6 SYSTEM COMPONENTS FOR OVERHEAD GATES:

- A. Track:
 - 1. For openings up to 24 ft. (7.3m), overhead track shall consist of two 8 in. (203 mm) structural steel channels joined together as shown on the drawings, weighing a minimum of 33 lbs/lf (49 kg/m).
 - 2. For openings up from 25 ft. – 30 ft. (7.6 – 9.1m), overhead track shall consist of two 10 in. (254mm) structural steel channels joined together as shown on the drawings, weighing a minimum of 37 lbs/lf (55kg/m).
- B. Trolley: Heavy-duty trolley wheels shall be milled from a single block of hardened stainless steel and use 2 sealed ball bearings per wheel, 6 wheels per trolley.
- C. Bottom Guides: The project detail drawings shall show the bottom guide selection required for the project. Bottom guides on plates: bottom guides shall be constructed of 3/8 in. x 2 ½ inch (9.525 mm x 63.5mm) flat steel, welded to a 1/4 in. x 5 in. x 10-1/2 inch (6 mm x 127 mm x 254 mm) steel plate, shall be lagged to the concrete footing.

- D. Vertical Support Posts: Consists of 2 sets (4 posts) support posts, and one motor box support post, of 4 in. O.D. (101.6 mm) SS 40 galvanized steel pipe weighing a minimum of 6.56 lbs/ft. (9.76 kg/m) in accordance with ASTM F 1043.
- E. Locking Column: The locking column is constructed of a W-4 “H” beam at 13 lbs/ft (101.6 mm x 19.3 kg/m) with a removable steel cover, secured with security screws.
- F. Locking Tangs: Three locking tangs shall be affixed to the leading edge of the gate panel to provide positive locking into the locking column.
- G. Locking Ports: Openings in the locking column shall be completely closed when the gate is in the open position.
- H. Drive Chain: Drive chain shall be #60 roller chain.
- I. Gate Guide Angle: Gate guide angle shall consist of a 2-1/2 in. x 1-1/2 in. x 1/4 in. (63.5 mm x 38 mm x 6.4 mm) steel angle attached to the bottom of the gate panel running its full length.

2.7 GATE PANEL:

- A. 20 Second Design Slide Gates: Gate panel shall be manufactured with standard materials for a 20 ft. wide clear opening with a 14 ft. clear height using a 3 ft. wide steel box frame configuration. (“PLUSS” Gate Design).
- B. High Speed Closing Walk Gates: Gate panel shall be manufactured with standard materials for a 5 ft. wide clear opening with a 7 ft. clear height using a 3 ft. wide steel box frame configuration. (Small “PLUSS” Design)
- C. 40 Second Delay Design: Gate panel shall be manufactured with standard materials for a 20 ft. wide clear opening with a 14 ft. clear height using a 6 ft. wide steel box frame configuration. (“PLUSS” Gate Design)

2.8 VEHICLE CANTILEVER SLIDING GATE PANELS: (ALUMINUM FRAME)

Note: Alternative Second Gate in Sallyports.

- A. General: The gate frame shall be fabricated from 6063-T6 aluminum alloy extrusions. The top member is a 3 in. x 5 in. aluminum structural channel/tube weighing not less than 3.0 lb/lf. This is also referred to as “large primary”. This member shall be “keyed” to interlock with the “keyed” track member. If fabricated as a single horizontal piece, the bottom member shall be a 2 in. x 5 in. aluminum structural tube weighing not less than 2.0 lb/lf. If fabricated in two horizontal pieces, the bottom member shall be a 5 in. aluminum structural channel weighing not less than 2.65 lb/lf. The two horizontal pieces or sections shall be spliced in the field.
- B. Splicing: A 1/4 in. x 5 in. x 24 in. galvanized steel splice plate shall be used to secure the two bottom channel members together utilizing eight (8) 3/8 in. x 1 1/2 in. plated carriage bolts with lock nuts. (Each top track will be spliced together in the same manner on both sides of the top primary.) The track is overlapped a minimum of 24 in. onto the opposing section in an alternating fashion, interlocked with the top primary member and vertically secured in place using six (6) 1/4 in. x 1/2 in. drive rivets and horizontally secured in place using six (6) 5/16 in. x 1-1/2 in. plated hex head cap screws. On one side, the track overlaps the front section. On the other side, the track overlaps the back section. The respective splice end vertical member shall be a 1 in. x 2 in. weighing not less than .82 lb/lf. The 1 in. x 2 in.

members will be joined in place utilizing 5/16 in. x 2-3/4 in. plated hex head cap screws (one for each ft of gate height).

- C. 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 in. x 2 in. and weighing not less than 1.6 lb/lf. The intermediate vertical members shall alternate between 2 in. x 2 in. and 1 in. x 2 in. in cross section weighing not less than 1.1 lb/lf and .82 lb/lf respectively. The spacing for the vertical intermediates shall be no greater than half the height of the gate.
- D. The gate frame shall be fabricated in one or multiple sections depending on size requirements and/or constraints. The gate frame shall have two separate semi-enclosed “keyed” tracks, extruded from 6105-T5-aluminum alloy, weighing not less than 2.9 lb/lf. The track member is to be located on each side of the top primary member. When interlocked with and welded to the “keyed” top member, it forms a composite structure with the top of the gate frame. Welds shall be placed alternately along the top and side of the track at 9 in. centers with welds being a minimum of 2 in. long.
- E. The gate frame is to be supported from the tracks by four (4) swivel type, self-aligning, 4-wheeled, sealed lubricant, and ball-bearing truck assemblies. These are to be attached to double 4 in. O.D. support posts, the bottom of which shall be equipped with two pairs of 3 in. rubber guide wheels.
- F. Diagonal “X” bracing of 3/16 in. minimum diameter stainless steel aircraft cable shall be installed to brace the gate panels and to provide a ready means of vertical adjustment.
- G. The gate shall be completed by installation of approved filler as specified. It shall extend the entire length of the gate (including the opening and counterbalance) and shall be secured at the ends by standard fence industry tension bars and tied with standard fence industry ties at each vertical member.
- H. All openings shall be screened from the bottom of the gate to a minimum height of 48 in. above grade. The applied screening shall be of sufficient size to prevent a 2-1/4 in. diameter sphere from passing through openings anywhere in the gate.
- I. Double support posts shall be 4 in. O.D. galvanized steel with concrete footings as specified by the engineer.
- J. The gate and installation shall conform to ASTM F-1184 standards for aluminum cantilever slide gates, Type II, Class 2.
- K. Finish: Gate to be mill finish aluminum.

2.9 CONTROLS:

- A. Connections for External Entrapment Preventative Sensors:
 - 1. UL Class IV installations (Guarded Application – Constant Pressure): Constant pressure on the pushbutton control (with the gate in site) is required as a primary entrapment protection device to keep the gate in motion. When the pushbutton is released, the gate will stop. The secondary entrapment device shall be the inherent audio alarm.
- B. High Speed Walk Gate: Gates shall operate when facility is under attack. Security staff shall press button to close gate.

2.10 FINISH:

- A. Galvanizing: All exposed system parts shall be zinc galvanized or as otherwise specified.

2.11 VEHICLE CRASH GATE PERFORMANCE (OPTION WHEN INCORPORATED WITH THE “PLUS GATE”):

- A. General: The Fortified Impact Gate System is designed to deter potential threats by vehicles to personnel and real property. The potential threat can be defined as the mass of a vehicle to be deterred, the velocity that the vehicle will be traveling at the time of impact with the fortified gate and the allowable penetration into the protected space.
- B. Manufacturer: Tymetal, Fortified Impact Gate System (FIGS) is approved for this project. All other systems must be submitted to the design team in accordance with substitution requirements as set forth in the general provisions of the project manual for approval prior to bid date.
- C. Vehicle Crash Rating: Vehicle crash gate shall have a crash rating of K4 (15,000 bl. Vehicle @ 30 mph with penetration equal to or less than 3 feet for a Gate opening of 24 ft. in width) and shall have also passed the K12/L2 crash test (15,000 vehicle at 50 mph with penetration equal to or less than 20 feet). System shall meet the requirements of U.S. Department of State Specification SD-STD-02.01
- D. Certification: Manufacturer of the vehicle crash gate shall submit independent physical crash test results certifying the system meets the specified crash rating from the U.S. Department of State for the specified Gate opening width as show in the project details. Gate systems physically crash tested for smaller opening widths and factory self certified for larger gate openings will not be approved for this project

PART 3 EXECUTION

3.1 INSPECTION:

- A. Final Grades and Installation Conditions: Final grades and installation conditions shall be examined. Work shall not begin until all unsatisfactory conditions are corrected.

3.2 INSTALLATION:

- A. Equipment: Equipment in this section shall be installed in strict accordance with the company’s printed instructions unless otherwise shown on the contract drawings.

3.3 PRELIMINARY SYSTEM TEST:

- A. Preparation: The complete system shall be adjusted to assure that it is performing properly.
- B. Preliminary Test: The system shall be operated for a period of time long enough to determine whether the system is in suitable condition to conduct the acceptance test.
- C. Factory Representative: A factory representative from the gate operator manufacturer shall be provided to witness the test and any necessary adjustments, and train facility maintenance staff.

3.4 SYSTEM ACCEPTANCE TEST:

- A. Preparation: The director’s representative shall be notified at least three working days prior to the test so arrangements can be made to have a facility representative witness the test.
- B. Acceptance Test:

1. Test each system function step by step as summarized in section 2.09.
2. Supply all equipment necessary for system adjustment and testing.

END OF SECTION