

SECTION 32 31 27

STEEL GATES
04/08

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

ASTM INTERNATIONAL (ASTM)

ASTM F 883 (2004) Padlocks

MILITARY SPECIFICATIONS (MIL)

MIL-S-46163 (1993) Sealing, Lubricating, and Wicking Compunds: Thread Locking, Anaerobic, Single Component

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. Submitted the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Provide shop drawings for fencing system including picket fencing, swing gates, rolling gates, and rolling gates track and operating systems. Provide all details of design, materials, fabrication and installation. Include fence layout drawings.

SD-05 Design Data

gate operating system
Rolling gates
wheel assemblies and spindles

SD-08 Manufacturer's Instructions

Padlocks
Rolling gates
wheel assemblies and spindles
Gate operating system

Provide complete design data including calculations to confirm conformance with specified design criteria.

1.3 DESIGN

Provide all design as required for the swing gates and rolling gates as

indicated. Design drawings and calculations shall be prepared under the direction of a civil engineer licensed in the State of California and shall bear his stamp and signature. Designs for swing gate hinges, rolling gate wheel assemblies and rolling gate operators shall meet the design criteria indicated as well as all additional requirements that may be necessary to provide suitable and adequate operating assemblies.

PART 2 PRODUCTS

2.1 GENERAL

Except as modified herein, materials and details of fabrication shall conform to applicable provisions of Section 03 30 00.00 20, Cast-In-Place Concrete, Section 05 50 00, Metal Miscellaneous and Fabrications, Section 09 90 00.00 40, Painting and Coating.

2.1.1 Rolling Gates

Rolling Gates shall be single and multiple module rolling gate assemblies composed of steel tubes, bars, plates and shapes as shown. The various sub assemblies of each module shall be hot dipped galvanized after all welding and fabrication. Bolts and washers for assembly of sub assemblies and interconnection of modules shall be stainless steel

2.1.1.1 Wheel Assemblies and Spindles

Wheels, spindles and connection of spindles to axle support beams shall meet the requirements of the details shown and the following:

- a. Wheels shall be of a suitable steel allow providing a minimum Brinnell hardness of 160. The style shall be single flange, straight face. The treads shall be of 6 inches (nominal) diameter with a 3-3/8 inch (nominal) face. The flanges shall have a minimum width of 3/8 inch and shall be 1-1/8 inches deep. The hubs shall have a minimum length (along the shaft) of 3-3/4 inches and a diameter suitable for the bearings and seals and shall be machined for the bearing races and seals. The hubs shall be fitted with two tapered roller bearings and an inner grease seal. Minimum nominal internal bore sizes of the bearings shall be 1-3/8 inch for the inner bearings and 27/32 inches for the outer bearings. The grease seal shall be of a design that safely releases excess pressure and prevents the entry of dust and moisture. The wheel hubs shall be drilled for external lubrication and provided with grease fittings. The outer faces shall be fitted with dust caps or equivalent approved components to prevent the entry of dust and moisture.
- b. Spindles shall be of C-1040 steel. The axle shall be 2 inches square. Outer ends shall be suitable machined and fitted with washers, castellated nuts, and cotter pins. Minimum total length shall be 11 inches.

2.1.1.2 Rolling Gate Track System

Rolling gates shall be supported on a track system composed of dual steel rails anchored to a concrete grade beam and extending to the limits of travel as shown. Rails shall be A.S.C.E. 40 pound rail with bolted rail splice joints. Anchor bolts, base bars and rail clamp bars shall be galvanized steel as shown.

2.1.1.3 Gate Operating System

Rolling gates shall be driven by an electrically powered operating system that will provide gate travel from the closed position to the fully open position or to any partially open position desired. Operating features shall include the following:

- a. Operating shall be by hand operation of a push button station that is located within the respective adjacent Guardhouse.
- b. System shall be interlocked with automatic limit switches at the limits of travel.
- c. Ends of gate shall include an automatic sensing device causing interruption of travel at physical contact with an obstruction in the travel path.
- d. Travel speed shall be within the range of 0.15 meters per second to 0.30 meters per second.
- e. Positive braking shall be provided such that interruption of power caused by limit switches, automatic sensing devices or operator push button will cause the gate to come to an immediate full stop.
- f. Motor operator and associated gears, drive wheels and operating rail assembly shall be suitable to provide proper operation for the rolling gates shown and shall include all necessary gearing, mechanical devices and appurtenances. Available electrical power at the gate site will be at 480V and sufficient for a 5 hours power motor as shown on the drawings.
- g. Provide a free wheeling mode of operation for use in event of power failure, allowing gate to be moveable by truck or other means.

2.2 MATERIALS

2.2.1 Concrete

Concrete shall meet the requirements for 28 day minimum strength of 25 MPa.

2.2.2 Stainless

Stainless steel bolts and pins shall meet the requirements for Type 316.

2.2.3 Grout

Grout for grouting rolling gate track rails shall meet the requirements for non-shrink type grout.

2.3 PADLOCKS

Meet the requirements of [ASTM F 883](#). Provide for swing gate openings. Coordinate with gate latching devices and pad eyes for proper fit and function. Provide padlocks that are keyed alike with 2 keys for each padlock.

2.4 THREAD COMPOUND

Thread compound shall conform to MIL-S-46163

PART 3 EXECUTION

3.1 INSTALLATIONS

Prior to fabrication, make complete layout drawings showing sizes and locations of gate openings and locations of all fence posts. Layout work so that completed fence shall include only sections of the length indicated, except that, special closure sections shall be provided as needed to fit project requirements.

3.1.1 Posts

Provide concrete footings and install fence and gate posts into concrete footings as indicated. Provide all means as required to insure that posts are plumb and spaced within tolerances allowed by fence section lengths. Setting posts in grout in performed openings in footings is acceptable.

3.1.2 Rolling Gate Track

Provide concrete grade beams and install track rails into concrete grade beams as shown. Locate rails in the horizontal alignment shown within plus or minus 6 mm inch except that track gage shall meet the dimension shown plus or minus 3 mm. Track vertical alignment shall be level at the elevation shown plus or minus 3 mm.

3.1.3 Rolling Gates

Install Rolling Gates on gate tracks and install electric power operating system as indicated. Perform all work and adjustments as necessary to provide properly operating rolling gates. Demonstrate performance of specified criteria for push button operation, limit switches, automatic sensing devices, travel speed and positive breaking.

3.1.4 Bolted Joints

After all fence and gate components are installed and found to be in proper alignment and operating condition, bolts in bolted connections shall be treated with thread compound, properly tightened and bolt ends peened as indicated. Application of thread compound shall conform to the manufacturer's instructions and these requirements. Prior to coating, threads of bolts, studs, rods and nuts shall be cleaned of surface contamination, included oils. After cleaning, threads of bolts, rods and nuts shall be coated with the thread compound. The time between coating and completion of final tightening of nuts shall not exceed the "fixture" or "handling strength" cure times estimated by the manufacturer nor fifteen (15) minutes. Peening, where required, shall not be done until the thread compound has cured to its functional strength, as estimated by the manufacturer.

3.2 FINISHING

Gate assemblies shall be galvanized as indicated and provided with a paint finish.

3.2.1 Paint Finish

Surface preparation and painting shall meet the requirements for painting galvanized steel specified under Section 09 90 00.00 40, PAINTING AND COATING, except as follows:

Pretreatment and prime coat shall be shop applied.

A second coat shall be applied and may be shop applied or field applied.

A third coat shall be applied in the field after all installation and adjustments are complete. Prior to application of the third coat, provide touch up painting of all abrasions and provide a first and second coat of paint to all previously unpainted parts and bolts.

Paint finish color shall be dark brown, color no. 10118 FED-STD-595.

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