

The following specification has been developed by:

*AutoGate, Inc.
7306 Driver Road
PO Box 50
Berlin Heights, Ohio 44814
419.588.2796
1.800.944.GATE (4283)
www.autogate.com*

to assist Architects and Designers in the specification of Vertical Pivot Lift (VPL) gates; electrically operated vehicle gates that lift by pivoting vertically at the gate operator. VPL style of operation has advantages over traditional slide or swing gates in the speed of operation and the ability to operate free of road and fence related obstructions (e.g. snow, ice, curbs, slopes and plant growth). The operator is controlled using low voltage DC power with battery backup allowing operation in the event of utility company power failure. In addition the system is able to be operated in a stand alone mode utilizing solar power cells to maintain battery charge. The gate is furnished as a complete assembly with framing and operator. Pickets or mesh fabric which matches the adjacent fence line are provided by AutoGate.

The section has been developed and formatted in accordance with the principals embodied in the Construction Specifications Institute's Manual of Practice and is intended for use in conjunction with Contract Conditions, Bidding Conditions and General Requirements developed in accordance with CSI guidelines.

Notes to the specifier are included in the boxes. Options that must be selected by the specifier are shown in brackets []. Inapplicable clauses shall be deleted.

SECTION 32 3100 (02829) VERTICAL PIVOT LIFT GATES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Vertically pivoting low voltage electrically operated vehicle access gate.
 - a. Fully welded gate frame.
 - b. Gate operator of a vertical lift type, for opening and closing the gate.
 - c. Security fence panels of [chain link fabric] [vertical pickets] [wire mesh] [matching the contiguous fence line].
 - d. Receiving yoke.

Coordinate the following with other sections of the specifications to avoid duplication and conflicts.

2. Concrete and earthwork for operator and yoke pads.
3. [Push Button Gate Controls.]
4. [Mechanical] [and] [or] [Photoelectric] external secondary entrapment protection devices.

B. Products Not Furnished or Installed under This Section:

1. Electrical power service to the gate operator.
2. Line Fencing.
3. [Bollards and guardrails to protect operator.]
4. [Loop Detector control systems.]
5. [Passive anti ram barriers.]
6. [Automatic gate control systems.]
7. [Solar powered battery re-chargers.]

1.2 RELATED SECTIONS

- A. Section [____] - Line fencing.
- B. Section [____] - Earthwork for Foundations.
- C. Section [____] - Cast-In-Place Concrete.
- D. Section [____] - Electrical power and distribution.

If reference standards are required to be listed for Federal or other projects, refer to The Shield Anti Ram specification available on the AutoGate Website.

1.3 PERFORMANCE REQUIREMENTS

- A. Gate Dimensions[Each]:
 - 1. Width - [16 feet] [_____ feet] [As indicated].
 - 2. Height - Operator Pad surface to top of gate [6 feet] [4 feet] [_____ feet]. [As indicated.]
- B. Structural Performance: Engineer, fabricate, and install gate systems to withstand gate dead loads and wind live loads of 75 mph.

Contact AutoGate for recommended details and loading for special gate designs and sizes. 75 MPH is AutoGate's wind loading for standard style and sized gates.

For gates that require Wind Ratings in excess of the standard AutoGate wind bracing specify Masted Wind Bracing in PART 2. Masted Wind Bracing is typically rated up to and often in excess of 100 MPH winds depending on factors such as gate materials and total square footage of surface area subject to wind load.

1.4 SUBMITTALS

- A. Product Data: Submit sufficient manufacturer's data to indicate compliance with these specifications. Mark data to indicate:
 - 1. Details of material and construction.
 - 2. Recommended installation requirements to properly accommodate the proposed Gate and accessories.
- B. Shop Drawings: Submit shop drawings for fabrication and installation of ornamental metal work. Include plans, elevations and detail sections. Indicate materials, methods, finishes and types of joinery, fasteners, anchorages and accessory items. Provide setting diagrams and templates for anchorages, sleeves, and bolts installed by others.

1.5 QUALITY ASSURANCE

- A. Standards: Comply with requirements of building authorities having jurisdiction in Project location.
 - 1. Operation Control Systems:

- a. UL 325 - Standard for Safety for Door, Drapery, Gate, Louver, and Window Operators and Systems.
- b. ASTM F2200 - Standard Specification for Automated Vehicular Gate Construction.
- 2. Electrical Components, Devices, and Accessories: NFPA 70, Article 100.

Include the following for Chain Link Fences or include other infill panels fence standards as applicable

- B. [Chain link Fencing Standards:
 - 1. Fencing and Gates: Chain Link Fence Manufacturer's Institute "Specifications for Fence-Posts, Gates and Accessories". Install in accordance with ASTM F567.]
- C. Manufacturer Qualifications: Minimum three (3) years documented experience producing systems specified in this section.
- D. Installer Qualifications: An experienced installer who has completed fences and gates similar in material, design, and extent to those indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Store components to avoid damage from moisture, abrasion, and other construction activities. Carefully store materials off the ground to provide proper protection against oxidation caused by ground contact.

1.7 PROJECT CONDITIONS

- A. Field Measurements: Take measurements and generate dimensions where Gate and Operator are to be located. Indicate specific location of gate with regard to existing roadways, proposed roadways, curb locations grade changes and elevations. Indicate specific location of Gate Operator and its respective concrete foundation, include surrounding landscaping and buildings.

1.8 COORDINATION AND SEQUENCING

- A. Coordinate gate installation with line fencing and paving. Gate and Operator can be installed independent of paving providing the Operator concrete foundation is in place, including electrical control conduits. Upon completion of installation place the Gate in an open position and maintain vertically clear of traffic and surrounding fence line installation.
- B. Operators are designed for 120 volt 15 amp primary service and 24 Volt DC battery back-up (batteries are field supplied and installed). Installer is to coordinate electrical service with electrical design and electrical trades. Service connection is supplied via underground conduit and preferably with a GFCI circuit breaker. Connection is made into a 4" x 4" handy box inside the Operator. Within the box wire GFCI Duplex Receptacle "HOT" off of the main breaker. Receptacle may be used for loads under 15 Amps such as hand tools and the like.

1.9 WARRANTY

- A. Standard Warranty: Provide manufacturer's standard three (3) year warranty against defective materials and workmanship after Date of Substantial Completion.
- B. Extended Warranty: Provide an extended manufacturer's warranty for the entire warranty period covering defective materials and workmanship for the following additional extended period beyond the initial one year warranty
 - 1. [One] [Two] [Three] [Four] Additional years

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURER

- A. Acceptable Products: AutoGate, Inc. Berlin Heights, Ohio VPL Vertical Pivot Lift Gate .

AutoGate offers custom gate configurations as required to meet any fence line design. If not indicated on the drawings, or as an option, select from the following standard AutoGate styles. Refer to AutoGate website or literature for design details.

- 1. Style 100 - Cornhusker post and rail.
 - 1. Style 200 - Barracuda Barrier.
 - 1. Style 300 - Chainlink mesh and diagonal bracing.
 - 1. Style 400 - Catawba vertical picket concave/convex sloped rail.
 - 1. Style 500 - Buckeye vertical spear picket through single horizontal top rail.
 - 1. Style 600 - Congress vertical picket with convex top rail.
 - 1. Style 700 - Saratoga vertical spear pickets through ornamental top rail.
 - 1. Style 800 - Prestigious vertical spear picket through double convex top rail.
 - 1. Style 900 - Ohioan vertical spear picket and double top rail.]
- B. Requests for substitutions will be considered in accordance with provisions of [the contract and bid conditions] [Section [_____]] of Division 01].

2.2 GATE CONSTRUCTION

- A. Materials:
 - 1. Aluminum Assembly Framing:
 - a. Plate, Shapes and Bar: ASTM B221, alloy 6061-T6 or 6063-T6.
 - b. Extrusions: Alloy and temper 6063-T6 except formed elbows shall be 6063-T4:
 - c. Round Aluminum Pipe: Standard weight, extruded structural aluminum pipe, alloy 6063-T6, mill finish, complying with ASTM B429.
 - d. Provide lock washer or other locking device at all bolted connections.

- 1) Steel Assembly Framing:
 - a) High strength steel pipe triple coated in accordance with ASTM F1043 Group IC; SS40 as manufactured by Allied Tube & Conduit.
 - 1) External coatings per ASTM F1043 Type B; internal coatings per ASTM F1043 Type D.
 - 2) Post welding treatments: All welded joints to be coated ZRC or equivalent zinc rich coating.
 - b) Steel Tubes: ASTM A500 Cold-Formed Welded Pipe and Structural Tubing Hot-Dipped, Zinc-Coated.
 - 1) External coating weldable Epoxy powder coat primer (Epoxy Z Kote by Atlas Tubing).
 - c) Steel Shapes plates and bars: ASTM A36.
2. Threaded Fasteners:
 - a. All exterior screws, bolts, nut and washers shall be 300 Series non-magnetic stainless steel.
 - b. Provide lock washers or other locking devices such as deformed thread lock or nylon locking nuts at all bolted connections.

Include any applicable requirements for fencing material if not included in the line fence specification or simply reference the applicable section of the specifications.

3. Infill panels: Refer to Section ____.

B. Fabrication:

1. Fabricate perimeter frames of gates from [aluminum] [steel] tubing. Assemble gate frames by welding at corners. Infill gate frames with panels to match adjacent fence panels.
2. Configuration: Size and space members in compliance with applicable codes. All gate framing members shall be unspliced single pipe or tube length.
3. Bracing:
 - a. Provide diagonal welded pipe gate trusses to prevent sag.
 - b. Wind Bracing: Required for gates between 16' or more in length and up to 20' in length. Provide 3/16 aircraft coated cable anchored to the operator and at 2/3 the length of the gate.
 - c. [Masted Wind Bracing: Required for gates over 20' or more in length or more than 7' in height.
 - 1) Provide continuous tube elements which attach to the operator and extend a minimum of 2/3 the length of the gate. Wind bracing is also secured to the bottom of the gate with strut plates.]
4. Fully assemble gate leaves in the manufacturer's shop with no joints splices or bolted sections. Open tube ends or sections are not acceptable.
5. Welding: Make exposed joints butt tight, flush, and hairline. Continuously seal joined members by continuous welds.

C. Fabricated frame and infill fabrics: Epoxy coating or plain to match fence line color.

D. [Barbed wire assemblies: Extend gate post and vertical frame members 12 inches above top of chain-link fabric.]

E. Provide components required for receiving yoke anchorage of gate ends. Fabricate anchors and related components of material and finish matching gate frame.

2.3 GATE OPERATORS

- A. Provide gate operator system, including gate operator, field supplied manufacturer specified batteries, external contact sensing equipment [and] [or] external non-contact sensing equipment.
1. Gate Speed: Fully open to fully closed and fully closed to open not less than 12 seconds.
 2. Frequency of Use: Continuous duty.

In case of power failure battery system using 2 - class 24 deep cycle 12 volt batteries will operate gates for up to 24 hours and then reset operator to normal operation when power resumes. Note AutoGate does not provide batteries; batteries are to be supplied by the Subcontractor installing the gate.

3. Battery Powered Back Up DC Drive System: Operator to run on 24 Volt DC current stand-by battery system with built-in battery maintainer "over-charge" protection.
 - a. Field supplied: Provide two (2) 12v batteries, complying with gate operator manufacturer's requirements.
 - b. Power supply to batteries: 120VAC (15 amp) .
4. Gate Operator Enclosure: Fabricate operator enclosure from steel tubing and sheet metal. Continuous seal weld all frames seams with welds ground smooth. Screwed frames are not acceptable.

All AutoGate operator enclosures are fabricated from galvanealed steel and continuously seal welded prior to finishing to prevent rusting. Select finished color from the standard Sherwin Williams colors as listed or provide specifics on special colors and paint manufacturers as selected

- a. Frame: 2" Sq., 11 Ga. (.120) Steel Tubing
- b. Skins: 18 Ga. Galvanneal Sheet
- c. Mounting Pads: 3" wide x 3/8" thick flat bar.
- d. Finish: Sherwin Williams Polane® color [Black] [White] [Brown] [Green] [Gray] [Custom color_____]
5. Mechanical Gate Operator Drive: 24 VDC 1/3 HP high torque gear motor and DBL reduction DBL "V" belt design.
6. Control Circuitry: Solid state coated control board in NEMA 4x weatherproof electrical enclosure. Sealed proximity switches ensure weather and moisture-proof integrity. (Boards tested to -40° F).
 - a. Control Wiring: 16 & 18 Ga. single conductor. Copper w/electrolytic copper compression terminals tin-plated for maximum corrosion prevention.

Reference appropriate Class in the following paragraph

Class I Residential A vehicular gate operator (or system) intended for use in a home of one to four single family dwellings, or garage or parking area associated therewith.

Class II - Commercial/General Access Vehicular Gate Operator: A vehicular gate operator (or system) intended for use in a commercial location or building such as a multi-family housing unit (five or more single family units, hotel, garages, retail store or other building servicing the general public.

Class III - Industrial /Limited Access Vehicular Gate Operator: A vehicular gate operator (or system) intended for use in an industrial location or building such as a factory or loading dock area or other locations not intended to service the general public.

Class IV - Restricted Access Vehicular Gate Operator A vehicular gate operator (or system) intended for use in a guarded industrial location or building such as an airport security area or other restricted access location not servicing the general public, in which unauthorized access is prevented via supervisions by security personnel.

- B. Gate Operator System shall conform to UL 325 [Class I] [Class II] [Class III] [Class IV] as determined in accordance with ASTM F2200.
1. Type A Entrapment Sensing Device - Operator shall have inherent motor current sensors as part of the gate operator system. Type A shall be constructed such that it may not be removed or bypassed.
 2. Operator shall have provision for connection of Control System and for connection of [or supplied with] Secondary Entrapment Sensing Device specified hereinafter.
- C. Secondary Entrapment Sensing Device: Provide the following external secondary entrapment protection devices as appropriate for the specific site conditions to protect against all potential entrapment zones.

The same type of device shall not be utilized for both the primary and the secondary entrapment protection means. Use of a single device to cover both the opening and closing directions is in accordance with the requirement; however a single device is not required to cover both directions. A combination of one Type B1 for one direction and one Type B2 for the other direction is the equivalent of one device for the purpose of complying with the requirements of either the primary or secondary entrapment protection means.

1. Photo Beams Type B1 - Non-contact sensor (photoelectric sensor or the equivalent); Acceptable Products:
 - a. EMX Industries Model#: IRB-325 Transmitter / receiver type
 - b. Allen Bradley Model#: 60-2728 Retro-reflective type
 - c. Omron / MMTc Model#: E3K-R10K4-NR Retro-reflective type
 2. Safety Edges (Contact Edges) Type B2 - Contact sensor (edge device or the equivalent) Acceptable Product:
 - a. Miller Edge Model -MU-22, MG-020, ME-123, MC-22, ME-113, ME-120, ME-020
 - b. Tape Switch Model IL, 107-RS, 107-LS, 121-BP, 101-B1, 102-A&B, 102-BHP, 101-BMT,101-B
 3. Provide adjustable timer (adjustable from 0 – 60 seconds) for gate closure.
 4. Provide maximum run timer.
- D. Operator Options:
1. Provide surge and spike protection.
 2. Provide power plug for solar panel connection.
 3. Provide siren.

2.4 CONTROL SYSTEMS

Include basic three position control system unless more sophisticated controls are specified in a separate section. Any dry contact type operator system is compatible with AutoGate controls

- A. Operation control system: Remote-control stations, safety devices, and weatherproof enclosures; coordinate electrical requirements with building electrical system.
1. Control Station (located remotely from gate): Momentary-contact [Two Position (Open/close)] [Three position (Open, stop, close)]. Provide key switch to lock out open and close buttons.

Or

1. Gate Operation control systems are specified under Section __ ____.
 1. Card Reader: Functions only when authorized card is presented.
 1. Digital Keypad Entry Unit: Multiple-[programmable,]code
 1. Radio Control: Digital system consisting of code-compatible universal receiver for each gate,
 1. Telephone Entry System.
 1. Vehicle Loop Detector.
 1. Vehicle Presence Detector.
- B. Provide emergency stop button in an outdoor weathertight enclosure.

2.5 ACCESSORIES

- A. Provide [audible] [and] [or] [visible] warning device to signal both directions when the gate is opening and closing.
- B. Provide warning signs on each side of gate.
- C. Options:
1. Gearmotor Heater: Provide thermostatically controlled electric heat tape to maintain critical components operational.
 2. Operator Cabinet Heater: Provide an insulated Operator Cabinet and include a thermostatically controlled electric space heater with integral circulating fan.
 3. Ventilation: Provide adjustable humidistat and fan to provide supplemental ventilation of operator enclosure.

2.6 SETTING MATERIAL

- A. Ready-mixed concrete complying with ASTM C94: Normal-weight concrete[air entrained] 3000-psi 28 days compressive strength, 3-inch slump, and aggregate.
1. Portland cement: ASTM C150, Type I.
 2. Aggregates: ASTM C33, 1-inch maximum size.

- B. Reinforcing Bars: ASTM A615.
- C. Service and control conduit: Rigid Schedule 40 PVC embedded in concrete. All other conduit and wiring as specified in Division [26] [16].
- D. Expansion Bolts: Threaded or wedge type; galvanize ferrous castings, ASTM A47 malleable iron or ASTM A27 cast steel

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Installer's Examination: Examine conditions under which construction activities of this section are to be performed and insure all specified criteria is adhered to.
- B. Submit written notification to Architect and system manufacturer if such conditions are unacceptable.
- C. Beginning installation constitutes installer's acceptance of conditions.

3.2 ELECTRICAL SERVICE & CONTROLS

- A. Provide all power and control wiring required for the work in accordance with the applicable provisions of Division [26] [16] and NEC 70.
- B. Perform all trenching and backfilling associated with this Section. Conduit shall be direct buried except under areas of vehicular traffic where it shall be reinforced concrete encased.
- C. Grounding system: All equipment and branch circuits shall be grounded. Provide driven ground rod at service. Provide separate ground wire in all branch circuits.

3.3 PADS & RECEIVING YOKES

- A. Foundations: Construct pads and yoke bases as indicated on the drawings with top of concrete flat and level. Operator and yoke pad shall be at the same elevation.
- B. Excavation:
 - 1. Locate concrete foundations for operator base on firm, undisturbed soil.
 - 2. Yoke Excavation: Drill or hand-excavate holes.
- C. Vibrate or tamp concrete for consolidation. Finish top of foundations, smooth and even. Cure concrete 72 hours before place operator.
- D. Fasteners: Install operators and receiving yoke plates with expansion bolts provided by the Gate system manufacturer.

3.4 OPERATOR INSTALLATION

- A. Install units in accordance with the manufacturer's instructions.
 - 1. Operator Expansion Bolt Mounting: Anchor through base plates to concrete substrate.
 - 2. Install all loose shipped operator lower panels and guarding per manufacturer instructions.
- B. Secondary Entrapment Sensing Device: Installing contractor shall be responsible for providing external secondary entrapment protection devices as appropriate for the specific site conditions to protect against all potential entrapment zones. Proper operation of these safety devices shall be verified and training as to the operation and maintenance of these devices for the users and owners shall be documented.

3.5 GATE INSTALLATION

- A. Connect frame and operator in accordance with gate manufacturer's instruction.
- B. Install gate so that it is plumb and level when fully closed within the following tolerances:
 - 1. Maximum misalignment from true position: 1/4 inch (6.0 mm).
 - 2. Maximum misalignment between adjacent separated members: 1/8 inch (3.0 mm).

3.6 ADJUSTING

- A. Adjust and lubricate operating components for smooth, accurate operation free of binding and racking.

3.7 START-UP AND DEMONSTRATION

- A. Manufacturer's Service Representative: Provide at least 2 hours of manufacturer's representatives time for start-up and initial operation. Make a final check of each gate operation, with Owner's personnel present, immediately before date of substantial completion.
- B. Instruct Owner's personnel in proper use, operations, and daily maintenance of gate. Review emergency provisions, including procedures to be followed if gate does not close or open.
- C. Train Owner's personnel in normal procedures to be followed in checking for sources of damage to wind bracing, operational failures or malfunctions.
- D. Full Wind Rating and Derating: Full wind load rating is subject to the wind bracing remaining in excellent condition and not compromised. Periodic inspection is a must in order to maintain full wind load rating. Any dents, bends, nicks and loose bolts will affect the performance of the bracing must be corrected or repaired
- E. Determine that control systems and operating devices are functioning properly.
- F. [Adjust time clock for periods required and as directed.]

3.8 CLEANING AND PROTECTION

- A. Remove dust or other foreign matter from component surfaces; clean finishes in accordance with manufacturer's instructions.
Clean units in accordance with the manufacturer's instructions.
- B. Protection: After installation, protect installed work until project completion.
 - 1. Ensure that finishes and structure of installed systems are not damaged by subsequent construction activities.
 - 2. If minor damage to finishes occurs, repair damage in accordance with manufacturer's recommendations; provide replacement components if repaired finishes are unacceptable to Architect.

END OF SECTION 32 3140 (02829)