



11 12 00 Parking Control Equipment

11 12 33 Parking Gates

11 12 33.13 Lift Arm Parking Gates

34 52 00 Vehicle Fare Collection

34 52 33 Vehicle Fare Gates

34 71 00 Roadway Construction

34 71 13.19 Vehicle Traffic Barriers

34 75 00 Roadway Equipment

34 75 13.13 Active Vehicle Barriers

34 48 00 Bridge Signaling and Control Equipment

34 48 16 Operating Bridge Control Equipment

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PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Toll Gates. Toll HiSpeed
- B. Toll Gates. Toll Pro
- C. Toll Gates. Toll
- D. High Speed Parking Gates in high housing Parking Pro M
- E. High Speed Parking Gates Parking Pro
- F. General Purpose Access Vehicle Gates in high housing up to 20 feet Access Pro H
- G. General Purpose Access Vehicle Gates up to 20 feet Access Pro L
- H. Wide Lane Vehicle Gates. Access XL
- I. Wide Lane Vehicle Gates. Access XXL

1.2 RELATED SECTIONS (CSI schedule)

- A. Section 31 23 00 - Excavation and Fill.
- B. Section 33 06 40.13 – Storm Drainage.
- C. Section 03 10 00 – Concrete Forming and Accessories.
- D. Section 32 31 00 - Fences and Gates

E. Section 03 30 00 – Cast-In-Place Concrete.

F. Section 28 13 00 - Access Control.

G. Section 26 05 00 - Common Work Results for Electrical

1.3 REFERENCES

A. ANSI/UL 325 - Door, Drapery, Gate, Louver, and Window Operators and Systems.

B. CAN/CSA-C22.2 No. 247-1992 - Operators and Systems of Doors, Gates, Draperies and Louvres.

1.4 DESIGN / PERFORMANCE REQUIREMENTS

A. Gates conform to the following UL Classifications.

1. Meets ANSI/UL 325, UL Category FDDR - Door, Drapery, Gate, Louver and Window Operators and Systems Certified.
2. Meets CAN/CSA-C22.2 No. 247-1992, UL Category FDDR7 - Door, Drapery, Gate, Louver and Window Operators and Systems (Certified for Canada).
3. Boom fixture designed to withstand winds of up to a maximum of force 10 on the Beaufort scale (10.44 Lb/sqft; 500 N/m²).

1.5 SUBMITTALS

- A. **Submit under provisions of Section 01 32 19.**

- B. **Product Data: Manufacturer's data sheets on each product to be used, including:**
 - 1. **Preparation instructions and recommendations.**
 - 2. **Storage and handling requirements and recommendations.**
 - 3. **Operation, installation, and maintenance manuals including wiring diagrams.**

- C. **Shop Drawings: Submit shop drawings showing layout, profiles, and product components, including anchorage, edge conditions, and accessories. Include risers, layouts, and special wiring diagrams.**

- D. **Manufacturer's Certificates: Certify products meet or exceed specified requirements.**

- E. **Closeout Submittals: Provide manufacturer's maintenance instructions that include recommendations for periodic checking and periodic cleaning and maintenance of all components.**

1.6 QUALITY ASSURANCE

- A. **Manufacturer Qualifications: Manufacturer with minimum of 10 years experience systems specified.**

- B. **Installer Qualifications: Factory authorized Installer specifically trained in gate operation systems of the type found within this section with documented maintenance and repair service availability for emergency conditions.**

- C. **Provide quarterly maintenance for one year following Substantial Completion of the Project.**

- D. **Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.**
 - 1. **Finish areas designated by Architect.**
 - 2. **Do not proceed with remaining work until workmanship, color, and sheen are approved by Architect.**
 - 3. **Refinish mock-up area as required to produce acceptable work.**

1.7 DELIVERY, STORAGE, AND HANDLING

- A. **Store products in manufacturer's unopened packaging with labels intact until ready for installation.**
- B. **Schedule delivery of parking control equipment so that spaces are sufficiently complete that operators can be installed upon delivery.**

1.8 SEQUENCING

- A. **Ensure that locating templates and other information required for installation of products of this section are furnished to affected trades in time to prevent interruption of construction progress.**
- B. **Ensure that products of this section are supplied to affected trades in time to prevent interruption of construction progress.**

1.9 PROJECT CONDITIONS

- A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

1.10 WARRANTY

- A. Manufacturer's standard two years or 2 million cycles warranty for vehicle gates.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturer: Magnetic AutoControl; 3160 Murrell Rd., Rockledge, FL 32955. Phone: (321) 635-8585. Fax: (321) 635-9449. Web Site: www.ac-magnetic.com/usa. Email: info@magnetic-usa.com,
- B. Substitutions: Not permitted.
- C. Requests for substitutions will be considered in accordance with provisions of Section 00 26 00.

2.2 VEHICLE GATES

- A. Toll HiSpeed, High Speed Barrier Gate:
 - 1. Maximum Arm Length 10 Feet.
 - 2. 0.6 or 0.86 or 1.2 Seconds, Adjustable Open / Close Time.

3. Ambient Temperature range minus 30 degrees C to plus 55 degrees C (minus 22 degrees F to 131 degrees F).
4. Wind force 10 Bft (Beaufort).
5. Arm Location:
 - a. Left hand.
 - b. Right hand.
6. Gate Arm: Extruded aluminum shop finished with white powder coat with red reflective tape strips.
 - a. 10 foot round swing-away MicroBoom arm.
 - b. 10 foot round foam covered swing-away MicroBoom arm.
 - c. Trim to length indicated.
7. Nominal operating power: 85 to 264VAC, 50 or 60 Hz, 320 Watts.
8. Housing: 1115 mm (43.9 inches) tall, 315 mm (12.4 inches) wide, 360 mm (14.2 inches) deep and 875 mm (34.44 inches) height to center of arm. Control units mounted to zinc plated sheet steel panel. All components are accessible through maintenance door and removable top cover. All programing is done by removing the hood while standing up.
 - a. Aluminum extruded housing frame chromitized and powder coated.
 - b. Provided with one lockable service door to provide access to the power switch, controller, receptacle, and control wiring for service.
 - c. Front panel is removable without hand tools, and rear panel requires 3mm Allen wrench for removal to perform maintenance.
 - d. Housing fits onto frame pieces to form a weather tight (IP54) enclosure.
 - e. Lock is secured with a double cam to secure the hood and the front access panel. Keyway is shuttered to prevent moisture from freezing the lock mechanism.
 - f. Stainless steel base frame.
 - g. Color: Front and rear access panels similar to RAL7021 (black grey)
 - h. Color: Similar to RAL 2000 Orange. (RC0**0*

- i. Color: Similar to RAL 9010 White. (RC0**4*)
 - j. Color: Custom color as selected by the Architect.
9. Flange Type:
- a. Round swing away Flange.
 - b. Flange for swing-away foam covered boom.
 - c. Wood boom flange (boom by others 1" x 3" dimension in flange).
 - d. Swing away with Automatic Return for foam covered boom.
10. Drive Unit: MHTM Microdrive, 100 percent duty cycle, spring-balanced, brushless, DC servo motor and lever system. Lever system locks the barrier arm in both end positions. In case of power outage, the barrier can easily be moved by hand. Drive system provides a MTBF in excess of 2 million cycles operation. Microdrive with combined motor control and gearing tested for 10 million cycles.
11. Controller: MGC-PRO integrated 24VDC controller with 8 digital inputs, 4 digital outputs, and 6 relay outputs. Controller capable of selectable reduced opening or closing speed.
- a. Plug in module Dual channel vehicle loop detector.
 - b. Digital inputs: input voltage 24VDC plus or minus 10 percent; Input current less than 10 mA per input; Max line length without over voltage module 100 feet
 - c. Digital Outputs: Open collector; switching voltage 34VDC plus or minus 10 percent; Max. Switching current 100 mA; Max line length without over voltage module is 100 feet.
 - d. Output relays: 3 normally open contact (isolated) and 3 change over contacts NO/NC (isolated); Maximum switching voltage 30 VAC/VDC; Switching current 10mA to 1 Amp; life time 5 million cycles minimum (rated at 36,000 cycles per hour)
 - e. Most I/O parameters are adjustable. I/O functions are re-assignable in the field.
 - f. Graphics Display 128 by 65 pixels. Language display selectable English, Spanish, French, Portuguese, German, Italian

- g. 5 slots for plug in modules.
- h. Service mode – allows raising and lowering of gate via integrated push buttons

12. Safety Device: Provide with the following device.

- a. Photoelectric beams.
 - 1) Single-beam safety light barrier consists of a transmitter and a receiver. Light barrier is specifically designed for outdoor use with integrated heating, to ensure proper function even under the most adverse of weather conditions.
- b. Safety loop.
 - 1) Current consumption: 50 mA
 - 2) Number of loop detectors: 2
 - 3) Inductance range: 70 to 500 μ H
 - 4) Number of induction loop sensitivity levels: 10
 - 5) Response sensitivity induction loop selectable: 0.01 to 2.0 percent

13. Features:

- a. Low power consumption
- b. Direct drive operation
- c. Modular construction.
- d. IP 54 rated enclosure
- e. Built-in position sensors with no limit switches providing arm position status and self-learning control to optimize braking and eliminate boom arm bouncing, sagging, or rotating out of position.
- f. Programmable controller for common lane configurations.
- g. Most Input and output parameters can be easily changed.
- h. Input and output functions are re-assignable in the field.
- i. Control electronics can be reached and programmed from the top.

- j. MTBF greater than 2,000,000 cycles.
- k. Tested to ten million cycles.

14. Optional Equipment:

- a. Dual channel vehicle loop detector.
- b. Contact for release of barrier arm.
- c. Additional heater for extremely cold environments.
- d. Ethernet module that allows for complete gate status, control query of can bus protocol and reconfiguration from a remote location.
- e. RS485 module.
- f. Inductive limit switch set.
- g. Key switch permanent open / momentary closed.
- h. Key switch momentary open / momentary closed.
- i. Key switches can be keyed alike or keyed differently.
- j. Mounting plate for customer specific ad-ons.
- k. Service module.
- l. Plug in Radio receiver module 433 MHz.
- m. One, two and four button radio transmitters.
- n. Desk panel for one, two, three or four gates.
- o. Hood mount Xenon flashing orange light.
- p. Hood mount LED flashing orange light.
- q. Hood mount permanent on red light (configurable lead time).
- r. Mast or pole mounting kit for traffic lights or AVI readers.
- s. Hood contact switch
- t. Counting module

B. Toll Pro, High Speed Barrier Gate:

1. **Maximum Arm Length 10 Feet.**
2. **0.9 or 1.3 or 1.8 Seconds, Adjustable Open / Close Time.**
3. **Ambient Temperature range minus 30 degrees C to plus 55 degrees C (minus 22 degrees F to 135 degrees F).**
4. **Wind force 10 Bft (Beaufort).**
5. **Arm Location:**
 - a. **Left hand.**
 - b. **Right hand.**
6. **Gate Arm: Extruded aluminum shop finished with white powder coat with red reflective tape strips.**
 - a. **8 foot octagonal MicroBoom arm with slide-in foam on bottom.**
 - b. **8 foot octagonal swing-away arm with slide-in foam on bottom.**
 - c. **10 foot round swing-away MicroBoom arm.**
 - d. **10 foot round foam covered swing-away MicroBoom arm.**
 - e. **Trim to length indicated.**
7. **Nominal operating power: 85 to 264VAC, 50 or 60 Hz, 95 Watts.**
8. **Housing: 1115 mm (43.9 inches) tall, 315 mm (12.4 inches) wide, 360 mm (14.2 inches) deep and 875 mm (34.44 inches) height to center of arm. Control units mounted to zinc plated sheet steel panel. All components are accessible through maintenance door and removable top cover. All programming is done by removing the hood while standing up.**
 - a. **Aluminum extruded housing frame chromatinized and powder coated.**
 - b. **Provided with one lockable service door to provide access to the power switch, controller, receptacle and control wiring for service.**
 - c. **Front panel is removable without hand tools, and rear panel requires 3mm Allen wrench for removal to perform maintenance.**

- d. Housing fits onto frame pieces to form a weather tight (IP54) enclosure.
 - e. Lock is secured with a double cam to secure the hood and the front access panel. Keyway is shuttered to prevent moisture from freezing the lock mechanism.
 - f. Stainless steel base frame.
 - g. Color: Front and rear access panels similar to RAL7021 (black grey)
 - h. Color: Similar to RAL 2000 Orange. (RC0**0*
 - i. Color: Similar to RAL 9010 White. (RC0**4*)
 - j. Color: Custom color as selected by the Architect.
9. Flange Type:
- a. Round boom swing away flange.
 - b. Flange for swing-away foam covered boom.
 - c. Octagonal Boom fixed flange
 - d. Octagonal Boom swing-away flange.
 - e. Wood boom flange (boom by others 1" x 3" dimension in flange).
 - f. Swing away with Automatic Return for foam covered boom.
10. Drive Unit: MHTM Microdrive, 100 percent duty cycle, spring-balanced, brushless, DC servo motor and lever system. Lever system locks the barrier arm in both end positions. In case of power outage, the barrier can easily be moved by hand. Drive system provides a MTBF in excess of 2 million cycles operation. Microdrive with combined motor control and gearing tested for 10 million cycles.
11. Controller: MGC-PRO integrated 24VDC controller with 8 digital inputs, 4 digital outputs, and 6 relay outputs. Controller capable of selectable reduced opening or closing speed. .
- a. Plug in module Dual channel vehicle loop detector.
 - b. Digital inputs: input voltage 24VDC plus or minus 10 percent; Input current less than 10 mA per input; Max line length without over voltage module 100 feet

- c. **Digital Outputs: Open collector; switching voltage 34VDC plus or minus 10 percent; Max. Switching current 100 mA; Max line length without over voltage module is 100 feet.**
 - d. **Output relays: 3 normally open contact (isolated) and 3 change over contacts NO/NC (isolated); Maximum switching voltage 30 VAC/VDC; Switching current 10mA to 1 Amp; life time 5 million cycles minimum (rated at 36,000 cycles per hour)**
 - e. **Most I/O parameters are adjustable. I/O functions are re-assignable in the field.**
 - f. **Graphics Display 128 by 65 pixels. Language display selectable English, Spanish, French, Portuguese, German, Italian**
 - g. **5 slots for plug in modules.**
 - h. **Service mode – allows raising and lowering of gate via integrated push buttons**
12. **Safety Device: Provide with the following device.**
- a. **Photoelectric beams.**
 - 1) **Single-beam safety light barrier consists of a transmitter and a receiver. Light barrier is specifically designed for outdoor use with integrated heating, to ensure proper function even under the most adverse of weather conditions.**
 - b. **Safety loop.**
 - 1) **Current consumption: 50 mA**
 - 2) **Number of loop detectors: 2**
 - 3) **Inductance range: 70 to 500 μ H**
 - 4) **Number of induction loop sensitivity levels: 10**
 - 5) **Response sensitivity induction loop selectable: 0.01 to 2.0 percent**
13. **Features:**
- a. **Low power consumption**
 - b. **Direct drive operation**

- c. Modular construction.
- d. IP 54 rated enclosure
- e. Built-in position sensors with no limit switches providing arm position status and self-learning control to optimize braking and eliminate boom arm bouncing, sagging, or rotating out of position.
- f. Programmable controller for common lane configurations.
- g. Most Input and output parameters can be easily changed.
- h. Input and output functions are re-assignable in the field.
- i. Control electronics can be reached and programmed from the top.
- j. Convenience Receptacle.
- k. MTBF greater than 2,000,000 cycles.
- l. Tested to ten million cycles.

14. Optional Equipment:

- a. Dual channel vehicle loop detector.
- b. Contact for release of barrier arm.
- c. Additional heater for extremely cold environments.
- d. Ethernet module that allows for complete gate status, control query of can bus protocol and reconfiguration from a remote location.
- e. RS485 module.
- f. Inductive limit switch set.
- g. Key switch permanent open / push momentary closed.
- h. Key switch momentary open / momentary closed.
- i. Key switches can be keyed alike or keyed differently.
- j. Mounting plate for customer specific ad-ons.
- k. Service module.
- l. Plug in Radio receiver module 433 MHz.

- m. One, two and four button radio transmitters.
- n. Desk panel for one, two, three or four gates.
- o. 30MA very bright LED boom lights.
- p. LED boom light blink module.
- q. Red and green strip light that change color with boom position.
- r. Hood mount Xenon flashing orange light.
- s. Hood mount LED flashing orange light.
- t. Hood mount permanent on red light (configurable lead time).
- u. Mast or pole mounting kit for traffic lights or AVI readers.
- v. Battery back up
- w. Hood contact switch
- x. Counting module

C. Toll, High Speed Barrier Gate:

1. Maximum Arm Length 12 Feet.
2. 1.3 or 1.9 or 2.6 Seconds, Adjustable Close Time.
3. Ambient Temperature range minus 30 degrees C to plus 55 degrees C (minus 22 degrees F to 135 degrees F).
4. Wind force 10 Bft (Beaufort).
5. Arm Location:
 - a. Left hand.
 - b. Right hand.
6. Gate Arm: Extruded aluminum shop finished with white powder coat with red reflective tape strips.

- a. 10 foot octagonal swing-away MicroBoom arm with slide-in foam on bottom.
 - b. 12 foot octagonal swing-away MicroBoom arm with slide-in foam on bottom.
 - c. 10 foot round swing-away MicroBoom arm.
 - d. 10 foot round foam covered swing-away MicroBoom arm.
 - e. Trim to length indicated.
7. Nominal operating power: 85 to 264VAC, 50 or 60 Hz, 55 Watts.
8. Housing: 1115 mm (43.9 inches) tall, 315 mm (12.4 inches) wide, 360 mm (14.2 inches) deep and 875 mm (34.44 inches) height to center of arm. Control units mounted to zinc plated sheet steel panel. All components are accessible through maintenance door and removable top cover. All programming is done by removing the hood while standing up.
- a. Aluminum extruded housing frame chromatinized and powder coated.
 - b. Provided with one lockable service door to provide access to the power switch, controller, receptacle and control wiring for service.
 - c. Front panel is removable without hand tools, and rear panel requires 3mm Allen wrench for removal to perform maintenance.
 - d. Housing fits onto frame pieces to form a weather tight (IP54) enclosure.
 - e. Lock is secured with a double cam to secure the hood and the front access panel. Keyway is shuttered to prevent moisture from freezing the lock mechanism.
 - f. Stainless steel base frame.
 - g. Color: Front and rear access panels similar to RAL7021 (black grey)
 - h. Color: Similar to RAL 2000 Orange. (RC0**0*)
 - i. Color: Similar to RAL 9010 White. (RC0**4*)
 - j. Color: Custom color as selected by the Architect.
9. Flange Type:
- a. Round boom swing away flange.

- b. Flange for swing-away foam covered boom.
 - c. Octagon Swing Away flange.
 - d. Wood boom flange (boom by others 1" x 3" dimension in flange).
 - e. Swing away with Automatic Return for foam covered boom.
10. Drive Unit: MHTM Microdrive, 100 percent duty cycle, spring-balanced, brushless, DC servo motor and lever system. Lever system locks the barrier arm in both end positions. In case of power outage, the barrier can easily be moved by hand. Drive system provides a MTBF in excess of 2 million cycles operation. Microdrive with combined motor control and gearing tested for 10 million cycles.
11. Controller: MGC integrated 24VDC controller with 8 digital inputs, 4 digital outputs, and 6 relay outputs. Controller capable of selectable reduced closing speed
- a. Plug in module Dual channel vehicle loop detector.
 - b. Digital inputs: input voltage 24VDC plus or minus 10 percent; Input current less than 10 mA per input; Max line length without over voltage module 100 feet
 - c. Digital Outputs: Open collector; switching voltage 34VDC plus or minus 10 percent; Max. Switching current 100 mA; Max line length without over voltage module is 100 feet.
 - d. Output relays: 3 normally open contact (isolated) and 3 change over contacts NO/NC (isolated); Maximum switching voltage 30 VAC/VDC; Switching current 10mA to 1 Amp; life time 5 million cycles minimum (rated at 36,000 cycles per hour)
 - e. Some I/O parameters are adjustable.
 - f. Graphics Display 128 by 65 pixels. Language display selectable English, Spanish, French, Portuguese, German, Italian
 - g. 5 slots for plug in modules.
 - h. Service mode – allows raising and lowering of gate via integrated push buttons
12. Safety Device: Provide with the following device.

- a. Photoelectric beams.
 - 1) Single-beam safety light barrier consists of a transmitter and a receiver. Light barrier is specifically designed for outdoor use with integrated heating, to ensure proper function even under the most adverse of weather conditions.
- b. Safety loop.
 - 1) Current consumption: 50 mA
 - 2) Number of loop detectors: 2
 - 3) Inductance range: 70 to 500 μ H
 - 4) Number of induction loop sensitivity levels: 10
 - 5) Response sensitivity induction loop selectable: 0.01 to 2.0 percent

13. Features:

- a. Low power consumption
- b. Direct drive operation
- c. Modular construction.
- d. IP 54 rated enclosure
- e. Built-in position sensors with no limit switches providing arm position status and self-learning control to optimize braking and eliminate boom arm bouncing, sagging, or rotating out of position.
- f. Programmable controller for common lane configurations.
- g. Some Input and output parameters can be easily changed.
- h. Control electronics can be reached and programmed from the top.
- i. Convenience Receptacle.
- j. MTBF greater than 2,000,000 cycles.
- k. Tested to ten million cycles.

14. Optional Equipment:

- a. Dual channel vehicle loop detector.

- b. Contact for release of barrier arm.
- c. Additional heater for extremely cold environments.
- d. Ethernet module that allows for complete gate status, control query of can bus protocol and reconfiguration from a remote location.
- e. RS485 module.
- f. Inductive limit switch set.
- g. Key switch permanent open / push momentary closed.
- h. Key switch momentary open / momentary closed.
- i. Key switches can be keyed alike or keyed differently.
- j. Mounting plate for customer specific ad-ons.
- k. Service module.
- l. Plug in Radio receiver module 433 MHz.
- m. One, two and four button radio transmitters.
- n. Desk panel for one, two, three or four gates.
- o. 30MA very bright LED boom lights.
- p. LED boom light blink module.
- q. Red and green strip light that change color with boom position.
- r. Hood mount Xenon flashing orange light.
- s. Hood mount LED flashing orange light.
- t. Hood mount permanent on red light (configurable lead time).
- u. Mast or pole mounting kit for traffic lights or AVI readers.
- v. Battery back up
- w. Hood contact switch
- x. Counting module

D. Parking Pro-M Barrier Gate:

1. **Maximum Arm Length 12 Feet.**
2. **Open Time 1.3 or 1.9 or 2.6 seconds, Adjustable Open / Close Time.**
3. **Ambient Temperature range minus 30 degrees C to plus 55 degrees C (minus 22 degrees F to 131 degrees F).**
4. **Wind force 10 Bft (Beaufort).**
5. **Arm Location:**
 - a. **Left hand.**
 - b. **Right hand.**
6. **Gate Arm: Extruded aluminum shop finished with white powder coat with red reflective tape labels.**
 - a. **10 foot MicroBoom octagonal arm with slide in foam on bottom.**
 - b. **10 foot MicroBoom articulating octagonal arm with slide in foam on bottom, and bottom of forcing lever.**
 - c. **12 foot MicroBoom octagonal arm with slide in foam on bottom.**
 - d. **12 foot MicroBoom articulated booms with foam on bottom of boom and forcing lever.**
 - e. **10 foot round swing-away MicroBoom arm.**
 - f. **10 foot round foam covered swing-away MicroBoom arm.**
 - g. **Trim to length indicated.**
7. **Nominal operating power: 85 to 264VAC, 50 or 60 Hz, 95 Watts.**
8. **Housing: 1115 mm (43.9 inches) tall, 315mm (12.40 inches) wide, 369mm (14.17 inches) deep and 875mm (34.44 inches) height to center of arm. Control units mounted to zinc plated sheet steel panel. All components are accessible through maintenance door and removable top cover. All programming is done by removing the hood while standing up.**
 - a. **Aluminum extruded housing frame chromated and powder coated.**

- b. Provided with one lockable service door to provide access to the power switch, controller, receptacle and control wiring for service.
 - c. Front panel is removable without hand tools, and rear panel requires 3mm Allen wrench for removal to perform maintenance.
 - d. Housing fits onto frame pieces to form a weather tight (IP54) enclosure.
 - e. Lock is secured with a double cam to secure the hood and the front access panel. Keyway is shuttered to prevent moisture from freezing the lock mechanism.
 - f. Stainless steel base frame.
 - g. Color: Front and rear access panels similar to RAL7021 (black grey)
 - h. Color: Similar to RAL 2000 Orange. (RC0**0*)
 - i. Color: Similar to RAL 9010 White. (RC0**4*)
 - j. Color: Similar to RAL 9006 Light Gray. (RC0**2*)
 - k. Color: Similar to RAL 9007 Dark Gray. (RC0**1*)
 - l. Color: Custom color as selected by the Architect.
9. Flange Type:
- a. Octagon Flange.
 - b. Octagon break-away
 - c. Octagon swing away Flange. Octagonal swing away flange.
 - d. Round swing-away flange. (only for 10 foot round boom)
 - e. Flange for swing-away foam covered boom.
 - f. Wood boom flange (boom by others 1" x 3" dimension in flange).
10. Drive Unit: MHTM Microdrive, 100 percent duty cycle, spring-balanced, brushless, DC servo motor and lever system. Lever system locks the barrier arm in both end positions. In case of power outage, the barrier can easily be moved by hand. Drive system provides a MTBF in excess of 2 million cycles operation. Microdrive with combined motor control and gearing tested for 10 million cycles.

11. Controller: MGC-PRO integrated 24VDC controller with 8 digital inputs, 4 digital outputs, and 6 relay outputs. Controller capable of selectable reduced closing speed. Easy to program lane configurations and operation parameters via push buttons and LCD display. All inputs and outputs can be reconfigured in the field or via Ethernet module. Controller capable of selectable reduced opening or closing speed.
 - a. Plug in module Dual channel vehicle loop detector.
 - b. Digital inputs: input voltage 24VDC plus or minus 10 percent; Input current less than 10 mA per input; Max line length without over voltage module 100 feet
 - c. Digital Outputs: Open collector; switching voltage 34VDC plus or minus 10 percent; Max. Switching current 100 mA; Max line length without over voltage module is 100 feet.
 - d. Output relays: 3 normally open contact (isolated) and 3 change over contacts NO/NC (isolated); Maximum switching voltage 30 VAC/VDC; Switching current 10mA to 1 Amp; life time 5 million cycles minimum (rated at 36,000 cycles per hour)
 - e. Most I/O parameters are adjustable. I/O functions are re-assignable in the field.
 - f. Graphics Display 128 by 65 pixels. Language display selectable English, Spanish, French, Portuguese, German, Italian
 - g. 5 slots for plug in modules.
 - h. Service mode – allows raising and lowering of gate via integrated push buttons
12. Safety Device: Provide with the following device.
 - a. Photoelectric beams.
 - 1) Single-beam safety light barrier consists of a transmitter and a receiver. Light barrier is specifically designed for outdoor use with integrated heating, to ensure proper function even under the most adverse of weather conditions.
 - b. Safety loop.
 - 1) Current consumption: 50 mA

- 2) Number of loop detectors: 2
- 3) Inductance range: 70 to 500 μ H
- 4) Number of induction loop sensitivity levels: 10
- 5) Response sensitivity induction loop selectable: 0.01 to 2.0 percent

13. Features:

- a. Low power consumption
- b. Direct drive operation
- c. Modular construction.
- d. IP 54 rated enclosure
- e. Built-in position sensors with no limit switches providing arm position status and self-learning control to optimize braking and eliminate boom arm bouncing, sagging, or rotating out of position.
- f. Programmable controller for common lane configurations.
- g. Most Input and output parameters can be easily changed.
- h. Input and output functions are re-assignable in the field.
- i. Control electronics can be reached and programmed from the top.
- j. Convenience Receptacle.
- k. MTBF greater than 2,000,000 cycles.
- l. Tested to ten million cycles.

14. Optional Equipment:

- a. Dual channel vehicle loop detector.
- b. Contact for release of barrier arm.
- c. Additional heater for extremely cold environments.
- d. Ethernet module that allows for complete gate status, control query of can bus protocol and reconfiguration from a remote location
- e. RS485 module

- f. Inductive limit switch set.
- g. Key switch permanent open / push momentary closed.
- h. Key switch momentary open / momentary closed.
- i. Key switches can be keyed alike or keyed differently.
- j. Mounting plate for customer specific ad-ons.
- k. Service module.
- l. Plug in Radio receiver module 433 MHz.
- m. One, two and four button radio transmitters.
- n. Desk panel for one, two, three or four gates.
- o. 30MA very bright LED boom lights
- p. LED boom light blink module
- q. Red & green strip light that change color with boom position
- r. Hood mount Xenon flashing orange light
- s. Hood mount LED flashing orange light
- t. Hood mount permanent on red light (configurable lead time)
- u. Mast or pole mounting kit for traffic lights or AVI readers.
- v. Support pillar
- w. Support pillar with electro-mechanical arm lock and control unit
- x. Battery back up
- y. Skirt with over climb protection (requires octagon boom and fixed octagon flange).
- z. Skirt (requires octagon boom and fixed octagon flange).
- aa. Hood contact switch
- bb. Counting module

E. Parking-Pro Barrier Gate:

- 1. Maximum Arm Length 12 Feet.**
- 2. 1.3 or 1.9 or 2.5 seconds, Adjustable Open / Close time.**
- 3. Ambient Temperature range minus 30 degrees C to plus 55 degrees C (minus 22 degrees F to 131 degrees F).**
- 4. Wind force 10 Bft (Beaufort).**
- 5. Arm Location:**
 - a. Left hand.**
 - b. Right hand.**
- 6. Gate Arm: Extruded aluminum shop finished with white powder coat with red reflective tape labels.**
 - a. 10 foot VarioBoom octagonal arm with slide in foam on bottom.**
 - b. 10 foot VarioBoom articulating octagonal arm with slide in foam on bottom, and bottom of forcing lever.**
 - c. 12 foot VarioBoom octagonal arm with slide in foam on bottom.**
 - d. 12 foot VarioBoom articulated booms with slide in foam on bottom, and bottom of forcing lever.**
 - e. Trim to length indicated.**
- 7. Nominal operating power: 85 to 264VAC, 50 or 60 Hz, 95 Watts.**
- 8. Housing: 915 mm (36 inches) tall, 315mm (12.4 inches) wide, 369mm (14.2 inches) deep and 875mm (34.44 inches) height to center of arm. Control units mounted to zinc plated sheet steel panel. All components are accessible through maintenance door and removable top cover. All programing is done by removing the hood while standing up.**
 - a. Aluminum extruded housing frame chromitized and powder coated.**
 - b. Provided with one lockable service door to provide access to the power switch, controller, receptacle and control wiring for service.**

- c. Front panel is removable without hand tools, and rear panel requires 3mm Allen wrench for removal to perform maintenance.
 - d. Housing fits onto frame pieces to form a weather tight (IP54) enclosure.
 - e. Lock is secured with a double cam to secure the hood and the front access panel. Keyway is shuttered to prevent moisture from freezing the lock mechanism.
 - f. Stainless steel base frame.
 - g. Color: Front and rear access panels similar to RAL7021 (black grey)
 - h. Color: Similar to RAL 2000 Orange. (RC0**0*)
 - i. Color: Similar to RAL 9010 White. (RC0**4*)
 - j. Color: Similar to RAL 9006 Light Gray. (RC0**2*)
 - k. Color: Similar to RAL 9007 Dark Gray. (RC0**1*)
 - l. Color: Custom color as selected by the Architect.
9. Flange Type:
- a. Octagon Flange
 - b. Octagon break-away
10. Drive Unit: MHTM Microdrive, 100 percent duty cycle, spring-balanced, brushless, DC servo motor and lever system. Lever system locks the barrier arm in both end positions. In case of power outage, the barrier can easily be moved by hand. Drive system provides a MTBF in excess of 2 million cycles operation. Microdrive with combined motor control and gearing tested for 10 million cycles.
11. Controller: MGC Pro integrated 24VDC controller with 8 digital inputs, 4 digital outputs, and 6 relay outputs. Controller capable of selectable reduced closing speed. Easy to program lane configurations and operation parameters via push buttons and LCD display. All inputs and outputs can be reconfigured in the field or via Ethernet module. Controller capable of selectable reduced opening or closing speed.
- a. Plug in module Dual channel vehicle loop detector.

- b. Digital inputs: input voltage 24VDC plus or minus 10 percent; Input current less than 10 mA per input; Max line length without over voltage module 100 feet
- c. Digital Outputs: Open collector; switching voltage 34VDC plus or minus 10 percent; Max. Switching current 100 mA; Max line length without over voltage module is 100 feet.
- d. Output relays: 3 normally open contact (isolated) and 3 change over contacts NO/NC (isolated); Maximum switching voltage 30 VAC/VDC; Switching current 10mA to 1 Amp; life time 5 million cycles minimum (rated at 36,000 cycles per hour)
- e. Most I/O parameters are adjustable. I/O functions are re-assignable in the field.
- f. Graphics Display 128 by 65 pixels. Language display selectable English, Spanish, French, Portuguese, German, Italian
- g. 5 slots for plug in modules.
- h. Service mode – allows raising and lowering of gate via integrated push buttons

12. Safety Device: Provide with the following device.

- a. Photoelectric beams.
 - 1) Single-beam safety light barrier consists of a transmitter and a receiver. Light barrier is specifically designed for outdoor use with integrated heating, to ensure proper function even under the most adverse of weather conditions.
- b. Safety loop.
 - 1) Current consumption: 50 mA
 - 2) Number of loop detectors: 2
 - 3) Inductance range: 70 to 500 μ H
 - 4) Number of induction loop sensitivity levels: 10
 - 5) Response sensitivity induction loop selectable: 0.01 to 2.0 percent

13. Features:

- a. Low power consumption
- b. Direct drive operation
- c. Modular construction.
- d. IP 54 rated enclosure
- e. Built-in position sensors with no limit switches providing arm position status and self-learning control to optimize braking and eliminate boom arm bouncing, sagging, or rotating out of position.
- f. Programmable controller for common lane configurations.
- g. Most Input and output parameters can be easily changed.
- h. Input and output functions are re-assignable in the field.
- i. Control electronics can be reached and programmed from the top.
- j. Convenience Receptacle.
- k. MTBF greater than 2,000,000 cycles.
- l. Tested to ten million cycles.

14. Optional Equipment:

- a. Dual channel vehicle loop detector.
- b. Contact for release of barrier arm.
- c. Additional heater for extremely cold environments.
- d. Ethernet module that allows for complete gate status, control query of can bus protocol and reconfiguration from a remote location
- e. RS485 module Inductive limit switch set.
- f. Key switch permanent open / push momentary closed.
- g. Key switch momentary open / momentary closed.
- h. Key switches can be keyed alike or keyed differently.
- i. Mounting plate for customer specific ad-ons.
- j. Service module.

- k. Plug in Radio receiver module 433 MHz.
- l. One, two and four button radio transmitters.
- m. Desk panel for one, two, three or four gates.
- n. 30MA very bright LED boom lights.
- o. LED boom light blink module.
- p. Red & green strip light that change color with boom position.
- q. Hood mount Xenon flashing orange light.
- r. Hood mount LED flashing orange light.
- s. Hood mount permanent on red light (configurable lead time).
- t. Mast or pole mounting kit for traffic lights or AVI readers.
- u. Battery back up
- v. Support pillar.
- w. Support pillar with electro-mechanical arm lock and control unit.
- x. Pendulum support.
- y. Extension set for boom up to 12 feet. (12 extended booms need a pendulum support)
- z. Inlay sign for Extension set (750mm long)
- aa. Hood contact switch
- bb. Counting module

F. Access-Pro-H Barrier Gate:

1. Maximum Arm Length 20 Feet.
2. 4, 6 or 8 seconds, Adjustable. Open / Close Time
3. Ambient Temperature range minus 30 degrees C to plus 55 degrees C (minus 22 degrees F to 131 degrees F).
4. Wind force 10 Bft (Beaufort).

5. Arm Location:
 - a. Left hand.
 - b. Right hand.
6. Gate Arm: Extruded aluminum shop finished with white powder coat with red reflective tape labels.
 - a. 10 foot MicroBoom octagonal arm with slide in foam on bottom.
 - b. 10 foot MicroBoom articulating octagonal arm with slide in foam on bottom, and bottom of forcing lever.
 - c. 12 foot MicroBoom octagonal arm with slide in foam on bottom.
 - d. 12 foot MicroBoom articulated octagonal arm with slide in foam on bottom, and bottom of forcing lever.
 - e. 15 foot MicroBoom octagonal with slide in foam on the bottom
 - f. 15 foot MicroBoom articulating octagonal arm with slide in foam on bottom, and bottom of forcing lever.
 - g. 20 foot MicroBoom octagonal with slide in foam on bottom. (requires pendulum support or support pillar).
 - h. Trim to length indicated.
7. Nominal operating power: 85 to 264VAC, 50 or 60 Hz, 25 Watts.
8. Housing: 1115 mm (43.9 inches) tall, 315mm (12.4 inches) wide, 369mm (14.2 inches) deep and 875mm (34.44 inches) height to center of arm. Control units mounted to zinc plated sheet steel panel. All components are accessible through maintenance door and removable top cover. All programming is done by removing the hood while standing up.
 - a. Aluminum extruded housing frame chromatinized and powder coated.
 - b. Provided with one lockable service door to provide access to the power switch, controller, receptacle and control wiring for service.
 - c. Front panel is removable without hand tools, and rear panel requires 3mm Allen wrench for removal to perform maintenance.
 - d. Housing fits onto frame pieces to form a weather tight (IP54) enclosure.

- e. Lock is secured with a double cam to secure the hood and the front access panel. Keyway is shuttered to prevent moisture from freezing the lock mechanism.
 - f. Stainless steel base frame.
 - g. Color: Front and rear access panels similar to RAL7021 (black grey)
 - h. Color: Similar to RAL 2000 Orange. (RC0**0*)
 - i. Color: Similar to RAL 9010 White. (RC0**4*)
 - j. Color: Similar to RAL 9006 Light Gray. (RC0**2*)
 - k. Color: Similar to RAL 9007 Dark Gray. (RC0**1*)
 - l. Color: Custom color as selected by the Architect.
9. Flange Type:
- a. Octagon Flange.
10. Drive Unit: MHTM Microdrive, 100 percent duty cycle, spring-balanced, brushless, DC servo motor and lever system. Lever system locks the barrier arm in both end positions. In case of power outage, the barrier can easily be moved by hand. Drive system provides a MTBF in excess of 2 million cycles operation. Microdrive with combined motor control and gearing tested for 10 million cycles.
11. Controller: MGC Pro integrated 24VDC controller with 8 digital inputs, 4 digital outputs, and 6 relay outputs. Controller capable of selectable reduced closing speed. Easy to program lane configurations and operation parameters via push buttons and LCD display. All inputs and outputs can be reconfigured in the field or via Ethernet module. Controller capable of selectable reduced opening or closing speed.
- a. Plug in module Dual channel vehicle loop detector.
 - b. Digital inputs: input voltage 24VDC plus or minus 10 percent; Input current less than 10 mA per input; Max line length without over voltage module 100 feet
 - c. Digital Outputs: Open collector; switching voltage 34VDC plus or minus 10 percent; Max. Switching current 100 mA; Max line length without over voltage module is 100 feet.

- d. Output relays: 3 normally open contact (isolated) and 3 change over contacts NO/NC (isolated); Maximum switching voltage 30 VAC/VDC; Switching current 10mA to 1 Amp; life time 5 million cycles minimum (rated at 36,000 cycles per hour)
- e. Most I/O parameters are adjustable. I/O functions are re-assignable in the field.
- f. Graphics Display 128 by 65 pixels. Language display selectable English, Spanish, French, Portuguese, German, Italian
- g. 5 slots for plug in modules.
- h. Service mode – allows raising and lowering of gate via integrated push buttons

12. Safety Device: Provide with the following device.

- a. Photoelectric beams.
 - 1) Single-beam safety light barrier consists of a transmitter and a receiver. Light barrier is specifically designed for outdoor use with integrated heating, to ensure proper function even under the most adverse of weather conditions.
- b. Safety loop.
 - 1) Current consumption: 50 mA
 - 2) Number of loop detectors: 2
 - 3) Inductance range: 70 to 500 μ H
 - 4) Number of induction loop sensitivity levels: 10
 - 5) Response sensitivity induction loop selectable: 0.01 to 2.0 percent

13. Features:

- a. Low power consumption
- b. Direct drive operation
- c. Modular construction.
- d. IP 54 rated enclosure

- e. Built-in position sensors with no limit switches providing arm position status and self-learning control to optimize braking and eliminate boom arm bouncing, sagging, or rotating out of position.
- f. Programmable controller for common lane configurations.
- g. Most Input and output parameters can be easily changed.
- h. Input and output functions are re-assignable in the field.
- i. Control electronics can be reached and programmed from the top.
- j. Convenience Receptacle.
- k. MTBF greater than 2,000,000 cycles.
- l. Tested to ten million cycles.

14. Optional Equipment:

- a. Dual channel vehicle loop detector.
- b. Contact for release of barrier arm.
- c. Additional heater for extremely cold environments.
- d. Ethernet module that allows for complete gate status, control query of can bus protocol and reconfiguration from a remote location
- e. RS485 module Inductive limit switch set.
- f. Key switch permanent open / push momentary closed.
- g. Key switch momentary open / momentary closed.
- h. Key switches can be keyed alike or keyed differently.
- i. Mounting plate for customer specific ad-ons.
- j. Service module.
- k. Plug in Radio receiver module 433 MHz.
- l. One, two and four button radio transmitters.
- m. Desk panel for one, two, three or four gates.
- n. 30MA very bright LED boom lights.

- o. LED boom light blink module.
- p. Red & green strip light that change color with boom position.
- q. Hood mount Xenon flashing orange light.
- r. Hood mount LED flashing orange light.
- s. Hood mount permanent on red light (configurable lead time).
- t. Mast or pole mounting kit for traffic lights or AVI readers.
- u. Battery back up
- v. Support pillar.
- w. Support pillar with electro-mechanical arm lock and control unit.
- x. Pendulum support.
- y. Skirt with over climb protection up to 15 feet (requires octagon boom and fixed octagon flange).
- z. Skirt up to 20 feet (requires octagon boom and fixed octagon flange).
- aa. Hood contact switch
- bb. Counting module

G. Access-Pro-L Barrier Gate:

1. Maximum Arm Length 20 Feet.
2. 4, 6, 8.0 seconds, Adjustable Open / Close Time.
3. Ambient Temperature range minus 30 degrees C to plus 55 degrees C (minus 22 degrees F to 131 degrees F).
4. Wind force 10 Bft (Beaufort).
5. Arm Location:
 - a. Left hand.
 - b. Right hand.

6. Gate Arm: Extruded aluminum shop finished with white powder coat with red reflective tape labels.
 - a. 10 foot VarioBoom octagonal arm with slide in foam on bottom.
 - b. 10 foot VarioBoom articulating octagonal arm with slide in foam on bottom, and bottom of forcing lever.
 - c. 12 foot VarioBoom octagonal arm with slide in foam on bottom.
 - d. 12 foot VarioBoom articulated booms with slide in foam on bottom, and bottom of forcing lever.
 - e. 15 foot VarioBoom octagonal with slide in foam on bottom.
 - f. 15 foot VarioBoom articulating octagonal arm with slide in foam on bottom, and bottom of forcing lever.
 - g. 20 foot VarioBoom octagonal with slide in foam on the bottom. (requires pendulum support or support pillar).
 - h. Trim to length indicated.
7. Nominal operating power: 85 to 264VAC, 50 or 60 Hz, 25 Watts.
8. Housing: 915 mm (36 inches) tall, 315mm (12.40 inches) wide, 369mm (14.17 inches) deep and 875mm (34.44 inches) height to center of arm. Control units mounted to zinc plated sheet steel panel. All components are accessible through maintenance door and removable top cover. All programing is done by removing the hood while standing up.
 - a. Aluminum extruded housing frame chromitized and powder coated.
 - b. Provided with one lockable service door to provide access to the power switch, controller, receptacle and control wiring for service.
 - c. Front panel is removable without hand tools, and rear panel requires 3mm Allen wrench for removal to perform maintenance.
 - d. Housing fits onto frame pieces to form a weather tight (IP54) enclosure.
 - e. Lock is secured with a double cam to secure the hood and the front access panel. Keyway is shuttered to prevent moisture from freezing the lock mechanism.
 - f. Stainless steel base frame.

- g. Color: Front and rear access panels similar to RAL7021 (black grey)
 - h. Color: Similar to RAL 2000 Orange. (RC0**0*
 - i. Color: Similar to RAL 9010 White. (RC0**4*)
 - j. Color: Similar to RAL 9006 Light Gray. (RC0**2*)
 - k. Color: Similar to RAL 9007 Dark Gray. (RC0**1*)
 - l. Color: Custom color as selected by the Architect.
9. Flange Type:
- a. Octagon Flange.
10. Drive Unit: MHTM Microdrive, 100 percent duty cycle, spring-balanced, brushless, DC servo motor and lever system. Lever system locks the barrier arm in both end positions. In case of power outage, the barrier can easily be moved by hand. Drive system provides a MTBF in excess of 2 million cycles operation. Microdrive with combined motor control and gearing tested for 10 million cycles.
11. Controller: MGC-Pro integrated 24VDC controller with 8 digital inputs, 4 digital outputs, and 6 relay outputs. Controller capable of selectable reduced closing speed. Easy to program lane configurations and operation parameters via push buttons and LCD display. All inputs and outputs can be reconfigured in the field or via Ethernet module. Controller capable of selectable reduced opening or closing speed.
- a. Plug in module Dual channel vehicle loop detector.
 - b. Digital inputs: input voltage 24VDC plus or minus 10 percent; Input current less than 10 mA per input; Max line length without over voltage module 100 feet
 - c. Digital Outputs: Open collector; switching voltage 34VDC plus or minus 10 percent; Max. Switching current 100 mA; Max line length without over voltage module is 100 feet.
 - d. Output relays: 3 normally open contact (isolated) and 3 change over contacts NO/NC (isolated); Maximum switching voltage 30 VAC/VDC; Switching current 10mA to 1 Amp; life time 5 million cycles minimum (rated at 36,000 cycles per hour)

- e. Most I/O parameters are adjustable. I/O functions are re-assignable in the field.
- f. Graphics Display 128 by 65 pixels. Language display selectable English, Spanish, French, Portuguese, German, Italian
- g. 5 slots for plug in modules.
- h. Service mode – allows raising and lowering of gate via integrated push buttons

12. Safety Device: Provide with the following device.

- a. Photoelectric beams.
 - 1) Single-beam safety light barrier consists of a transmitter and a receiver. Light barrier is specifically designed for outdoor use with integrated heating, to ensure proper function even under the most adverse of weather conditions.
- b. Safety loop.
 - 1) Current consumption: 50 mA
 - 2) Number of loop detectors: 2
 - 3) Inductance range: 70 to 500 μ H
 - 4) Number of induction loop sensitivity levels: 10
 - 5) Response sensitivity induction loop selectable: 0.01 to 2.0 percent

13. Features:

- a. Low power consumption
- b. Direct drive operation
- c. Modular construction.
- d. IP 54 rated enclosure
- e. Built-in position sensors with no limit switches providing arm position status and self-learning control to optimize braking and eliminate boom arm bouncing, sagging, or rotating out of position.
- f. Programmable controller for common lane configurations.

- g. Most Input and output parameters can be easily changed.
- h. Input and output functions are re-assignable in the field.
- i. Control electronics can be reached and programmed from the top.
- j. Convenience Receptacle.
- k. MTBF greater than 2,000,000 cycles.
- l. Tested to ten million cycles.

14. Optional Equipment:

- a. Dual channel vehicle loop detector.
- b. Contact for release of barrier arm.
- c. Additional heater for extremely cold environments.
- d. Ethernet module that allows for complete gate status, control query of can bus protocol and reconfiguration from a remote location
- e. RS485 module Inductive limit switch set.
- f. Key switch permanent open / push momentary closed.
- g. Key switch momentary open / momentary closed.
- h. Key switches can be keyed alike or keyed differently.
- i. Mounting plate for customer specific ad-ons.
- j. Service module.
- k. Plug in Radio receiver module 433 MHz.
- l. One, two and four button radio transmitters.
- m. Desk panel for one, two, three or four gates.
- n. 30MA very bright LED boom lights.
- o. LED boom light blink module.
- p. Red & green strip light that change color with boom position.
- q. Hood mount Xenon flashing orange light.

- r. Hood mount LED flashing orange light.
- s. Hood mount permanent on red light (configurable lead time).
- t. Mast or pole mounting kit for traffic lights or AVI readers.
- u. Battery back up
- v. Support pillar.
- w. Support pillar with electro-mechanical arm lock and control unit.
- x. Pendulum support.
- y. Skirt with over climb protection up to 15 feet (requires octagon boom and fixed octagon flange).
- z. Skirt up to 20 feet (requires octagon boom and fixed octagon flange).
- aa. Extension set for boom up to 15 feet.
- bb. Inlay sign for Extension set (750mm long)
- cc. Hood contact switch
- dd. Counting module

2.3 WIDE LANE VEHICLE GATES

H. Access-XL Barrier Gate:

1. Maximum Arm Length 28 Feet.
2. 6, 8 or 12 seconds, Adjustable Open / Close Time.
3. Ambient Temperature range minus 30 degrees C to plus 55 degrees C (minus 22 degrees F to 131 degrees F).
4. Wind force
 - a. Up to 20 feet (6 m) with support post: 12 Bft
 - b. Up to 20 feet (6 m) with pendulum support: 10 Bft
 - c. Up to 28 feet (8.5 m) with support post: 11 Bft

- d. Up to 28 feet (8.5 m) with pendulum support: 9 Bft
5. Arm Location:
- a. Left hand.
 - b. Right hand.
6. Gate Arm: Extruded aluminum shop finished with white powder coat with red reflective tape strips. Requires pendulum support or support pillar.
- a. 20 foot octagonal arm with slide in foam on bottom.
 - b. 28 foot octagonal arm with slide in foam on bottom.
 - c. Trim to length indicated with slide in foam on bottom.
7. Nominal operating power: 85 to 264VAC, 50 or 60 Hz, 17 Watts.
8. Housing: 1169mm (46 inches) tall, 315mm (12.40 inches) wide, 360mm (14.17 inches) deep and 875mm (34.44 inches) height to center of arm. Control units mounted to zinc plated sheet steel panel. All components are accessible through maintenance door and removable top cover. All programming is done by removing the hood while standing up.
- a. Aluminum extruded housing frame chromatinized and powder coated.
 - b. Provided with one lockable service door to provide access to the power switch, controller, receptacle and control wiring for service.
 - c. Front panel is removable without hand tools, and rear panel requires 3mm Allen wrench for removal to perform maintenance.
 - d. Housing fits over the frame to form a weather tight (IP54) enclosure.
 - e. Lock is secured with a double cam to secure the hood and the front access panel. Keyway is shuttered to prevent moisture from freezing the lock mechanism.
 - f. Stainless steel Interior frame.
 - g. Color: Front and rear access panels similar to RAL7021 (black grey)
 - h. Color: Similar to RAL 2000 Orange. (RC0**0*)
 - i. Color: Similar to RAL 9010 White. (RC0**4*)

- j. Color: Custom color as selected by the Architect.
9. Flange Type:
- a. MicroBoom XL Octagon Flange.
10. Drive Unit: MHTM Microdrive, 100 percent duty cycle, spring-balanced, brushless, DC servo motor and lever system. Lever system locks the barrier arm in both end positions. In case of power outage, the barrier can easily be moved by hand. Drive system provides a MTBF in excess of 2 million cycles operation. Microdrive with combined motor control and gearing tested for 5 million cycles.
11. Controller: MGC-Pro integrated 24VDC controller with 8 digital inputs, 4 digital outputs, and 6 relay outputs. Controller capable of selectable reduced closing speed. Easy to program lane configurations and operation parameters via push buttons and LCD display. All inputs and outputs can be reconfigured in the field or via Ethernet module. Controller capable of selectable reduced opening or closing speed.
- a. Plug in module Dual channel vehicle loop detector.
 - b. Digital inputs: input voltage 24VDC plus or minus 10 percent; Input current less than 10 mA per input; Max line length without over voltage module 100 feet
 - c. Digital Outputs: Open collector; switching voltage 34VDC plus or minus 10 percent; Max. Switching current 100 mA; Max line length without over voltage module is 100 feet.
 - d. Output relays: 3 normally open contact (isolated) and 3 change over contacts NO/NC (isolated); Maximum switching voltage 30 VAC/VDC; Switching current 10mA to 1 Amp; life time 5 million cycles minimum (rated at 36,000 cycles per hour)
 - e. Most I/O parameters are adjustable. I/O functions are re-assignable in the field.
 - f. Graphics Display 128 by 65 pixels. Language display selectable English, Spanish, French, Portuguese, German, Italian
 - g. 5 slots for plug in modules.
 - h. Service mode – allows raising and lowering of gate via integrated push buttons

12. Safety Device: Provide with the following device.

- a. Photoelectric beams.
 - 1) Single-beam safety light barrier consists of a transmitter and a receiver. Light barrier is specifically designed for outdoor use with integrated heating, to ensure proper function even under the most adverse of weather conditions.
- b. Safety loop.
 - 1) Current consumption: 50 mA
 - 2) Number of loop detectors: 2
 - 3) Inductance range: 70 to 500 μ H
 - 4) Number of induction loop sensitivity levels: 10
 - 5) Response sensitivity induction loop selectable: 0.01 to 2.0 percent

13. Features:

- a. Low power consumption
- b. Direct drive operation
- c. Modular construction.
- d. IP 54 rated enclosure
- e. Built-in position sensors with no limit switches providing arm position status and self-learning control to optimize braking and eliminate boom arm bouncing, sagging, or rotating out of position.
- f. Programmable controller for common lane configurations.
- g. Most Input and output parameters can be easily changed.
- h. Input and output functions are re-assignable in the field.
- i. Control electronics can be reached and programmed from the top.
- j. Convenience Receptacle.
- k. MTBF greater than 2,000,000 cycles.
- l. Tested to five million cycles.

14. Optional Equipment:

- a. Dual channel vehicle loop detector.
- b. Ethernet module that allows for complete gate status, control query of can bus protocol and reconfiguration from a remote location
- c. RS485 module Inductive limit switch set.
- d. Key switch permanent open / momentary closed.
- e. Key switch momentary open / momentary closed.
- f. Key switches can be keyed alike or keyed differently.
- g. Service module.
- h. Plug in Radio receiver module 433 MHz.
- i. One, two and four button radio transmitters.
- j. Desk panel for one, two, three or four gates.
- k. 30MA very bright LED boom lights.
- l. LED boom light blink module.
- m. Red & green strip light that change color with boom position.
- n. Hood mount Xenon flashing orange light.
- o. Hood mount LED flashing orange light.
- p. Hood mount permanent on red light (configurable lead time).
- q. Mast or pole mounting kit for traffic lights or AVI readers.
- r. Support pillar.
- s. Support pillar with electro-mechanical arm lock and control unit.
- t. Pendulum support.
- u. Skirt with over climb protection up to 20 feet (requires support with booms over 16 feet)
- v. Skirt up to 28 feet. (requires support with booms over 16 feet)
- w. Counting module

- I. **Access-XXL Barrier Gate:**
 1. **Maximum Arm Length 33 Feet.**
 2. **8, 12, 16 Seconds Adjustable Open / Close Time.**
 3. **Ambient Temperature range minus 30 degrees C to plus 55 degrees C (minus 22 degrees F to 131 degrees F).**
 4. **Wind force**
 - a. **Up to 20 feet (6 m) with support post: 12 Bft**
 - b. **Up to 20 feet (6 m) with pendulum support: 10 Bft**
 - c. **Up to 28 feet (8.5 m) with support post: 11 Bft**
 - d. **Up to 28 feet (8.5 m) with pendulum support: 9 Bft**
 - e. **Up to 33 feet (10 m) with support post: 10 Bft**
 - f. **Up to 33 feet (10 m) with pendulum support: 9 Bft**
 5. **Arm Location:**
 - a. **Left hand.**
 - b. **Right hand.**
 6. **Gate Arm: Extruded aluminum shop finished with white powder coat with red reflective tape strips. Requires pendulum support or support pillar.**
 - a. **20 foot octagonal arm with slide in foam on bottom.**
 - b. **28 foot octagonal arm with slide in foam on bottom.**
 - c. **33 foot octagonal arm with slide in foam on bottom.**
 - d. **Trim to length indicated.**
 7. **Nominal operating power: 85 to 264VAC, 50 or 60 Hz, 30 Watts.**
 8. **Housing: 1169mm (46 inches) tall, 315mm (12.40 inches) wide, 360mm (14.17 inches) deep and 875mm (34.44 inches) height to center of arm. Control units mounted to zinc plated sheet steel panel. All components are accessible**

through maintenance door and removable top cover. All programming is done by removing the hood while standing up.

- a. Aluminum extruded housing frame chromatinized and powder coated.
 - b. Provided with one lockable service door to provide access to the power switch, controller, receptacle and control wiring for service.
 - c. Front panel is removable without hand tools, and rear panel requires 3mm Allen wrench for removal to perform maintenance.
 - d. Housing fits over the frame to form a weather tight (IP54) enclosure.
 - e. Lock is secured with a double cam to secure the hood and the front access panel. Keyway is shuttered to prevent moisture from freezing the lock mechanism.
 - f. Stainless steel Interior frame.
 - g. Color: Front and rear access panels similar to RAL7021 (black grey)
 - h. Color: Similar to RAL 2000 Orange. (RC0**0*
 - i. Color: Similar to RAL 9010 White. (RC0**4*)
 - j. Color: Custom color as selected by the Architect.
9. Flange Type:
- a. MicroBoom XL Octagon Flange.
10. Drive Unit: MHTM Microdrive, 100 percent duty cycle, spring-balanced, brushless, DC servo motor and lever system. Lever system locks the barrier arm in both end positions. In case of power outage, the barrier can easily be moved by hand. Drive system provides a MTBF in excess of 2 million cycles operation. Microdrive with combined motor control and gearing tested for 5 million cycles.
11. Controller: MGC Pro integrated 24VDC controller with 8 digital inputs, 4 digital outputs, and 6 relay outputs. Controller capable of selectable reduced closing speed. Easy to program lane configurations and operation parameters via push buttons and LCD display. All inputs and outputs can be reconfigured in the field or via Ethernet module. Controller capable of selectable reduced opening or closing speed.
- a. Plug in module Dual channel vehicle loop detector.

- b. Digital inputs: input voltage 24VDC plus or minus 10 percent; Input current less than 10 mA per input; Max line length without over voltage module 100 feet
 - c. Digital Outputs: Open collector; switching voltage 34VDC plus or minus 10 percent; Max. Switching current 100 mA; Max line length without over voltage module is 100 feet.
 - d. Output relays: 3 normally open contact (isolated) and 3 change over contacts NO/NC (isolated); Maximum switching voltage 30 VAC/VDC; Switching current 10mA to 1 Amp; life time 5 million cycles minimum (rated at 36,000 cycles per hour)
 - e. Most I/O parameters are adjustable. I/O functions are re-assignable in the field.
 - f. Graphics Display 128 by 65 pixels. Language display selectable English, Spanish, French, Portuguese, German, Italian
 - g. 5 slots for plug in modules.
 - h. Service mode – allows raising and lowering of gate via integrated push buttons
12. Safety Device: Provide with the following device.
- a. Photoelectric beams.
 - 1) Single-beam safety light barrier consists of a transmitter and a receiver. Light barrier is specifically designed for outdoor use with integrated heating, to ensure proper function even under the most adverse of weather conditions.
 - b. Safety loop.
 - 1) Current consumption: 50 mA
 - 2) Number of loop detectors: 2
 - 3) Inductance range: 70 to 500 μ H
 - 4) Number of induction loop sensitivity levels: 10
 - 5) Response sensitivity induction loop selectable: 0.01 to 2.0 percent
13. Features:

- a. Low power consumption
- b. Direct drive operation
- c. Modular construction.
- d. IP 54 rated enclosure
- e. Built-in position sensors with no limit switches providing arm position status and self-learning control to optimize braking and eliminate boom arm bouncing, sagging, or rotating out of position.
- f. Programmable controller for common lane configurations.
- g. Most Input and output parameters can be easily changed.
- h. Input and output functions are re-assignable in the field.
- i. Control electronics can be reached and programmed from the top.
- j. Convenience Receptacle.
- k. MTBF greater than 2,000,000 cycles.
- l. Tested to five million cycles.

14. Optional Equipment:

- a. Dual channel vehicle loop detector.
- b. Ethernet module that allows for complete gate status, control query of can bus protocol and reconfiguration from a remote location
- c. RS485 module Inductive limit switch set.
- d. Key switch permanent open / push momentary closed.
- e. Key switch momentary open / momentary closed.
- f. Key switches can be keyed alike or keyed differently.
- g. Service module.
- h. Plug in Radio receiver module 433 MHz.
- i. One, two and four button radio transmitters.
- j. Desk panel for one, two, three or four gates.

- k. 30MA very bright LED boom lights.
- l. LED boom light blink module.
- m. Red & green strip light that change color with boom position.
- n. Hood mount Xenon flashing orange light.
- o. Hood mount LED flashing orange light.
- p. Hood mount permanent on red light (configurable lead time).
- q. Mast or pole mounting kit for traffic lights or AVI readers.
- r. Support pillar.
- s. Support pillar with electro-mechanical arm lock and control unit.
- t. Pendulum support.
- u. Skirt with over climb protection up to 20 feet (requires support with booms over 16 feet)
- v. Skirt up to 33 feet (requires support with booms over 16 feet)
- w. Counting module

PART 3 EXECUTION

3.1 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.
- B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

- A. Clean surfaces thoroughly prior to installation.

- B. Verify required drainage and electrical services required are in place as required for the installation.

- C. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 INSTALLATION

- A. Install in accordance with manufacturer's instructions.

- B. Mount directly to concrete pad, firmly secured, plumb and level.

- C. Set equipment level and secure and in the orientation required.

- D. Provide electric service wiring in accordance with Section 16155.

- E. Coordinate with interface with security access systems specified in Section 13700.

- F. Enclose all splices in easily accessible junction boxes or on terminal boards.

G. Tag and identify all cable runs in all junction boxes.

H. Test system and adjust to assure components and accessories are properly connected and in working order.

3.4 PROTECTION

A. Protect installed products until completion of project.

B. Touch-up, repair or replace damaged products before Substantial Completion.

3.5 MAINTENANCE

A. Maintain at three-month intervals during specified maintenance period, primarily checking rubber end stops on direct drive unit.

3.6 SCHEDULES

A. :

1.

2.

3.

B. :

1.

2.

3.

END OF SECTION