

**HORIZONTAL SWIFTGATE HSG-22CW**  
**HORIZONTAL SWIFTGATE HSG-40CW**

**1. Description:**

This work shall consist of furnishing and installing new remotely controlled Horizontal Swing Gates, including Gate Power and Communications Enclosure Cabinets, and Gate Control Backplate Assemblies as detailed on the Contract Plans.

**2. Materials:**

Horizontal Swing Gates shall consist of a warning gate with several components that are a part of the swing gate or swing gate system. Horizontal Swing Gates shall be Versilis Inc. HSG-22CW and/or HSG-40CW.

The warning gate shall be successfully crash tested according to the requirements of MASH 2016 (Tests # 3-71 and 3-72). The gate shall be designed according to AASHTO 2013 Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals, and all interim revisions and errata. The anchorage design shall be in accordance with AASHTO 2013 Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals and all interim revisions and errata and shall address at a minimum the bolt diameter, bolt circle, bolt strength, bolt embedment, and any other element requested by the Engineer for review of the anchorage design.

**3. Arm Assembly:**

The warning gate arm will vary in length according to the plans. The arm shall be constructed of aluminum tubing and polyethylene arrow-shaped posts. Guy wires shall be furnished as appropriate for the gate arm's length. The front side of the gate arm, facing traffic, shall be covered with either Type 4 high-intensity retroreflective sheeting alternating red and white and angled at a 45-degree angle, or as specified in the project plans. The reflective sheeting surface shall cover a minimum of 120 in<sup>2</sup> per linear foot. Each gate arm will have a chevron panel installed at the end of the gate arm. The chevron will be at least 1000 in<sup>2</sup> in area, be made of flexible polycarbonate, and be covered with Type 4 high-intensity reflective sheeting on the front side (facing traffic). The panel shall consist of a white arrow with a red panel. The chevron panel shall include a flashing LED arrow that is configurable in intensity and flashing pattern. Any other sign panel or lighting requirement should be discussed with the product manufacturer.

**4. Housing:**

The housing shall consist of a galvanized steel structure with removable aluminum panels. The housing shall include a built-in anchoring plate that is pre-drilled for anchor bolts.

**5. Gate Mechanism:**

The warning gate shall be driven by a permanent magnet 12V DC electrical motor in an IP65 enclosure with a worm-type gearbox with self-locking integrated brake. Speed reduction and overload protection with variable frequency electronic drive. A hand crank manual override shall be provided to allow for manual operation in case of emergencies.

## **6. Gate Power and Communications Enclosure Cabinets:**

The Power and Communications Enclosure Cabinet shall be installed with the Horizontal Swing Gate as shown on the plans. The cabinet dimensions shall be manufactured to the standard dimensions or as shown on the plans, or within the tolerances approved by the Engineer. Cabinet components shall be installed as shown in the plans.

The power section of the Power and Communication Enclosure Cabinet shall contain a main breaker, a surge protection device, and an AC to DC converter. The converter shall convert the incoming source voltage and phase as specified on the plans to 24V DC for the operation of the gate. The communication section of the Power and Communication Enclosure Cabinet shall include the necessary media converters for communications between the gates and the gate commander.

## **7. Control Unit:**

Each Gate Power and Communications Enclosure Cabinet shall be equipped with a Control Unit. The Control Unit shall be equipped with a battery charger, actuator controller, light control device, and a communication port all specifically designed for the Horizontal Swing Gate. The battery charger shall be capable of being connected to a solar panel or a DC power supply. The battery charger input shall be 24V DC. Power consumption shall be limited to 1A at 120V AC.

The actuator controller shall deploy or retract the actuator while looking at the limit switch to stop the action. The actuator controller shall provide a security to limit the actuator activation time if limit switches are not reached due to malfunction or obstacle. A limiter device shall be part of the actuator controller in place to prevent damage.

The light control device shall be able to control up to 2 sets of lights (L1 and L2). The light controller shall be able to synchronize the lights with those of other modules and turn them on all at the same time or sequence them with a delay. The selectable lighting patterns shall be the following:

- L1 ON, L1 OFF, L1 50%ON-50%OFF
- L2 ON, L2 OFF, L2 50%ON-50%OFF
- Alternate L1-L2 (50%L1-50%L2)
- Alternate L1-L2 (25%L1-25%L2)

The communication port shall be used to communicate with the Horizontal Swing Gate and LED Sign Control Units. The communication port shall be an RS-232 interface which shall be connected to a fiber optic or RS-485 converter. The gate control unit shall also provide power for the converter. Power to the control unit will be supplied by the battery.

## **8. Gate Control Backplate Assemblies:**

Commander Unit(s) shall be installed to control and operate groups of Horizontal Swing Gates. Commander Unit(s) shall be installed on back-plate mount panel(s) and shall include the necessary media converters for gate commander communications to the gates. Each backplate (s) shall have 6 pushbuttons for local operation of the gates. The buttons shall initiate deploying and retracting each group of gates. A pushbutton shall be provided for emergency stopping of the gates. A switch shall be included to alternate between local (pushbutton) and remote (traffic management center) control of the gates. Provide all necessary power supplies to power the equipment. The back plate(s) with commander unit(s) shall be installed as shown in the contract documents.

The commander unit shall be equipped with a sequencer, an Ethernet port, 8 digital inputs, 8 outputs, an SD card slot, and a communication port. The Commander Unit shall be able to control a maximum of 31 Horizontal Swing Gates which can be separated into 3 groups. The sequencer shall control and monitor these groups. The

sequencer shall utilize the communication port to control and monitor the Horizontal Swing Gates. The sequencer shall be able to deploy/retract a group of gates simultaneously or progressively. Each group shall be capable of being configured independently.

The Ethernet port shall be used as an interface port for software applications. The commander unit shall be able to communicate through two protocols:

- HTTP protocol for Web user interface
- SNMPv1 protocol for NTCIP interface

The 8 inputs shall facilitate control commands to the commander unit. The 8 outputs shall facilitate feedback to other devices or control of other devices. The SD card shall function to log events and provide a Firmware or Configuration update. The communication port shall be used to send commands to the Horizontal Swing Gates. The communication port shall be an RS-232 interface and shall be interfaced with a fiber optic or RS-485 converter to provide a wired solution.

#### **9. Installation:**

The furnishing and installation of the Horizontal Swing Gate and associated components shall be in accordance with the requirements of these Specifications, the Contract Plans, and the manufacturer's recommendations. All anchoring assemblies shall be cast in place. All gate components shall be installed and all conduit, electrical, and communications connections made. Note that conduit, junction box, manhole, and electrical and communications cable connections between each gate assembly and the gate commander are provided through other contract items.

Conduit and wiring connections between the Gate Power and Communications Cabinet and Gate Enclosure and internal to these components shall be provided per manufacturer's recommendations and included with the Horizontal Swing Gate item.

The Horizontal Swing Gate and its components shall be installed at the locations shown on the plans.

#### **10. Warranty:**

A 1-year manufacturer's warranty covering defective material, components, and workmanship shall be provided beginning after shipping. An extended warranty shall be made available by the manufacturer. Replacement parts shall be provided within 60 calendar days of notification during the warranty period.