

D. O. T. D.  
SPECIFICATIONS FOR  
WARNING GATE

**SAP Material Master Number 11085  
(Stock No. 14-20-7350)**

**APPLICATIONS:** The warning gate shall be designed for use as a warning, traffic control and access control gate. The gate shall be explicitly designed for traffic control on movable bridges, HOV and reversible lanes and similar applications.

**HOUSING:** The operating mechanism and main control components shall be contained in a weatherproof housing. The housing shall be constructed of .188" (4.8mm) carbon steel, hot dip galvanized after fabrication. Exterior surfaces shall be painted aluminum. All fasteners shall be corrosion resistant.

Housing design shall allow for easy removal of the arm shaft assembly as a unit, including bearings and main arm crank, for ease of service. Arm assembly mounting design shall be fully gasketed and shaft openings shall incorporate O-ring seals.

Front and rear access doors shall be mounted on full cross bronze straps. Hinges shall be of the slip-off type and shall have stainless steel pins. Door handles, two per door, shall use a vise action to compress a neoprene bulb-type gasket to seal the door openings. A padlockable strap shall be provided suitable for heavy duty standard padlocks or shackleless padlocks.

**MOUNTING:** The gate shall be fixed to a suitable foundation using a minimum of four 3/4" (20mm) diameter anchor bolts. The gate housing base shall provide four 1.00" (25mm) holes on a 20 1/4" (514mm) square pattern. Mounting holes in standard base shall be slotted to allow for a 19 1/2" x 20 1/4" (495mm x 514mm) mounting pattern.

**ARM BASE:** The arm base shall be designed with a shear pin mechanism to minimize damage to the gate and vehicle in the event of a collision. In the event of an impact, the shear pin shall break, allowing the arm to swing approximately 75 to 80 degrees. At the full open position, a spring-loaded latch shall engage, preventing the arm from swinging back into traffic. Arm shall be easily reset by manually releasing the latch, rotating the arm back into position and replacing the shear pin.

**ARM MOUNTING CHANNELS:** A pair of carbon steel channels, hot dip galvanized, painted aluminum, shall be rigidly affixed to the ends of the main arm shaft. The channels and a steel cross member shall provide a sturdy mount for the arm, arm base assembly and counterweights.

**COUNTERWEIGHTS:** At the rear end of the side arm channels, hot dip galvanized counterweights shall be mounted to balance the arm. Counterweights shall be sectional and shall permit at least 10% adjustment.

**ARM SHAFT:** The main arm shaft shall be of 2" (51mm) diameter AISI 4150 with a minimum tensile strength of 140,000 psi. The shaft shall be mounted in heavy duty relubricable ball bearings.

**OPERATING MECHANISM:** The warning arm shall pivot in the vertical plane via a mechanical 4-bar linkage. The linkage shall utilize cranks keyed to the main arm shaft and transmission shaft and an adjustable connecting rod between a pair of self-aligning spherical rod ends. The connecting rod shall be of 1" (25mm) diameter AISI 4150. The linkage shall be driven by a fully enclosed, double reduction, worm gear speed reducer. Gear ratio used shall produce an operation time of 11 seconds.

The velocity of the arm shall follow a sinusoidal pattern to provide smooth operation. The arm shall begin and end its full motion path with zero velocity and accelerate smoothly to maximum velocity at mid-travel.

**MOTOR:** The motor shall be 1 HP, 3 Phase, 220V to handle exceptionally heavy applications. The motor shall be a C-face design and shall be mounted directly to the transmission. The motor shall be instantly reversing and overload protected.

**BRAKING MECHANISM:** The motor shall be equipped with a solenoid-release, automatic brake. The brake shall have a manual release lever to permit manual operation of the gate during emergencies or setup.

**HANDCRANK:** A hand crank shall be provided with each gate to facilitate manual operation of the gate.

**LIMIT SWITCH:** The gate limit switch assembly shall be a self-contained unit. The assembly shall provide 8 independent SPDT control switches. Switches shall be rated for 15 amps at 480 VAC. Switches shall be controlled by individually adjustable cams. The limit switch assembly design shall permit adjustment of all cams with the gate in any position. The limit switch assembly shall have a removable cover to help prevent accidental contact with switch terminals. Shaft, cams, bushings and housing pieces shall be of non-ferrous corrosion resistant materials.

**SAFETY SWITCHES, TERMINAL BLOCKS AND WIRING:** A manual disconnect switch shall be provided, pre-wired at the factory to break the main motor leads, to protect personnel during service. A hand crank safety switch shall be provided to prevent powered actuation of the gate during manual operation. Control components and terminal blocks shall be mounted inside an electrical enclosure mounted facing the roadway side access opening. Pressure-type, modular terminal blocks shall be fully labeled and clearly coded to wiring diagrams. All control wiring shall be clearly coded to wiring diagrams and shall terminate at the terminal block. Connections to screw-type terminals shall have lugs. Conductors shall be #16 AWG stranded, minimum. Wiring shall be run in conduit where practical.

**WARRANTY:** A manufacturer's standard warranty of not less than 1 year shall cover the gate and related equipment against defective material and components. Manufacturer shall furnish replacement parts for a minimum of 10 years. Replacement parts for standard components shall normally be available within 1 working day. Lamps, fuses and other components designed for a life less than 1 year shall be covered for the rated life of the component or the warranty period of the component manufacturer.

**GENERAL:** Warning Gate shall be B&B Roadway Model VW-4 with rigid wishbone arm adapter, or approved equal.