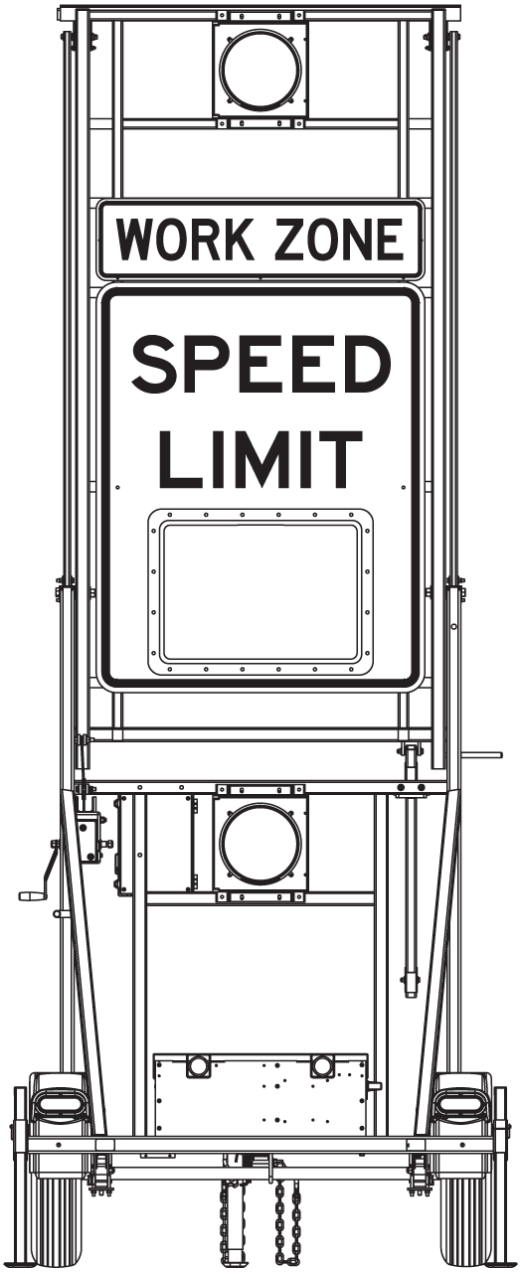
VARIABLE SPEED LIMIT TRAILER

MODEL WVSL
PRODUCT SPECIFICATIONS | FEBRUARY 2026



1. SYSTEM

1.1. Description

A digital speed limit sign, also known as a variable speed limit sign (VSL), presents a dynamically changeable speed limit to motorists. The Wanco VSL Trailer adds portability, eliminating the need for permanent wiring and infrastructure. Onboard power is provided by batteries that are charged by an automated solar-based charging system.

The changeable speed limit is presented on a sign that mimics the look of a regulatory speed limit sign. An LED display panel substitutes for static speed limit numbers. Additionally, a regulatory "WORK ZONE" sign is mounted above the speed limit sign, and two caution beacons are mounted above and below the signs.

When deployed on highways and other high-speed arterials as part of an active traffic management (ATM) system, the displayed speed can be changed remotely or at the sign.

1.2. Model

WVSL digital speed-limit trailer with flashing beacons

1.3. Temperature limits

Operating	–40 to 165°F (–40 to 74°C)
Storage	–40 to 185°F (–40°C to 85°C)

1.4. Standards

Compliant in accordance with:

MUTCD, December 2023	§2A.15, Mounting Height; §2B.21, Speed Limit Sign (R2-1); §4S.04, Speed Limit Sign Beacon; §6G.08, Work Zone Plaques
ITE Standard, June 2007	§5.82, Nighttime Dimming; §6.4.3, Environmental Tests; §6.4.6.3, Electronic Noise
NTCIP Version 2	
FCC	Title 47, Part 15 (47 CFR 15)

2. FEATURES

2.1. Setup

- Portable system is easy to transport and deploy
- Large regulatory speed limit sign has changeable speed numbers
- Folding frame, with speed limit and work zone signs attached, rises from horizontal (travel position) to vertical (deployed)
- Heavy-duty hand-winch with safety brake raises folding frame
- Single locking device holds folding frame in place while operating and during transport
- Stabilizer legs raise tires off the ground to provide stability in high wind

2.2. Operation

- Large regulatory speed limit sign with electronic speed display
- Electronic display features high-output bright white LEDs
- Visors and shades over LEDs produce superior visibility
- Electronic display has automatic dimming
- Remote and local control
- Selectable speed limit

- Full-color touchscreen controller with high-resolution display
- Controller at eye-level for comfort and ease of use
- Weather-resistant control box accepts user-supplied padlock
- Ballasted deck provides stability in high winds
- See-through design puts road workers in view
- Meets MUTCD

2.3. Power system

- Battery powered and solar charging
- Energy-efficient operation results in long run times
- Solar panel charges batteries automatically without intervention
- Charging system shuts down when batteries are fully charged, preventing damage
- Unique system allows battery charging with solar panel or shore power
- Battery box can be locked to prevent unauthorized access

2.4. Maintenance

- Individual display modules are replaceable
- Standard trailer tires
- Heavy-duty bolt-on fenders can be replaced if damaged
- Durable powder-coat finish resists the elements

2.5. Application

Common applications include:

- Highways and other high-speed arterials
- Frequently congested areas
- Integration with existing ATM systems
- Areas with managed lanes and other ATM implementations
- Roadwork zones

3. SPEED DISPLAY

3.1. Description

Two electronic display modules behind a see-through enclosure cover present the speed limit using a matrix of lighted LEDs

3.2. Enclosure

3.2.1. Description

Weather-resistant enclosure contains display modules and related electronics

Enclosure is bolted to regulatory sign

Transparent polycarbonate resin thermoplastic cover allows clear view to speed display

Cover is bolted to a black backing plate and is fully removable for access to interior

3.2.2. Size

29" x 20" x 3.8" (737 x 508 x 97 mm)

3.2.3. Height

When deployed, 89" (2.26 m) from ground to bottom of electronic display

3.3. Electronic display

3.3.1. Description

Display comprised of two interchangeable, side-by-side, electronic modules. Each module has a matrix of LEDs installed on its face, which light up to show one character of the configured speed.

3.3.2.	Speed limit	Display panel continuously presents user-selected speed limit as white numbers on a black background
		One or two digits, selectable from 5 to 95 in increments of 5
		One font, 5 x 7 pixels, 6" x 18" (16 x 47 cm), W x H
3.3.3.	Display modules	Wiring behind display modules has quick-connect electrical connectors for easy servicing
		Each module can be exchanged in less than two minutes
	Size	11.5" (29.2cm) wide by 18.0"(45.7cm) high, nominal
	Material	FR4 glass-reinforced epoxy laminate, double-sided, black solder mask with white silkscreen
		Board thickness, 0.094" (2.388mm)
		Copper size, 1 oz (28.4g)
	Coating	5-mil, military-spec, low-VOC, silicone conformal coating (Dow Corning 1-2577) provides long-term protection against moisture and other atmospheric contaminants, resists corrosion and shorts due to high humidity
		Rated to 95% relative humidity
3.3.4.	LEDs	
	Technology	AlInGaP II (aluminum indium gallium phosphide) technology, T-1¾ size, through-hole auto-insertion
	Color	White
	Current	100 mA peak-pulsed forward current
3.3.5.	Pixels	
	Description	Four LEDs form a “pixel”
	Pixel size	1.25" x 1.25" (32 x 32 mm)
	Pixel pitch	71 mm, horizontal and vertical
3.3.6.	Lenses and visors	Each pixel has a snap-in optical lens over the LEDs, enhancing the brightness and angularity of each pixel while reducing power consumption.
		A polycarbonate visor shades each row of pixels to eliminate glare caused by direct sun exposure. The sunshades snap onto the display module without tools. The lenses snap into the sunshades.
		These enhancements enable the speed display to conserve power and operate with high efficiency.
3.3.7.	Viewing angle	Total viewing area with optical lenses, 25.0 to 48.8 degrees

3.3.8.	Brightness	Factory preset for optimal visibility and power consumption
3.3.9.	Auto dimming	A photocell detects ambient light; the system automatically adjusts the brightness of the LEDs accordingly, dimming display brightness in darkness, increasing to full brightness in daylight
		Photocell is mounted on the bottom of the control box
		Auto dimming is unaffected by temporary light sources such as vehicle headlights

4. REGULATORY SIGNS

4.1. Speed Limit

4.1.1.	Description	Speed limit sign mimics the appearance of standard R2-1 regulatory sign
4.1.2.	Sign size	48" x 60" (122 x 152cm), W x H
4.1.3.	Material	Aluminum sheet, 0.080" (2mm) thick, with white high-intensity reflective coating
4.1.4.	Location	Mounted to folding frame

4.2. Work Zone

4.2.1.	Description	Standard G20-H5bP regulatory “WORK ZONE” sign
4.2.2.	Size	48" × 12" (121.9 x 30.5cm) W x H
4.2.3.	Material	Aluminum sheet, 0.080" (2mm) thick, with fluorescent orange high-intensity reflective coating
4.2.4.	Location	Mounted to folding frame above speed limit sign

5. BEACONS

5.1.	**Description**	Two beacons flash continuously in an alternating pattern (one is on while the other is off)
5.2.	**Flash rate**	60 times per minute
		50% duty cycle
5.3.	**Lamp**	Leotek model TSL-12Y-LX-IL6-B1-P3 signal lamp
		12-inch, yellow, LED
		10W power draw, 10 to 28 Vdc input
5.4.	**Signal head**	MoboTrex Eagle model SA101A1C11YYY00, SA-series polycarbonate signal housing with visor, 12-inch (30cm), yellow
5.5.	**Location**	Top beacon mounted to folding frame above regulatory signs
		Bottom beacon mounted to stationary frame below speed limit sign

6. LOCAL CONTROL SYSTEM

6.1.	**Description**	Self-contained onboard computer, comprised of a power control unit (PCU) and a display control unit (DCU), located inside control box
6.2.	**Control box**	
6.2.1.	Size	13.8" x 18.1" x 5.6" (350 x 460 x 142 mm), W x H x D
6.2.2.	Material	Fiberglas reinforced polycarbonate
6.2.3.	Door	Front-panel is a door, hinged on the left, which opens fully
6.2.4.	Latches	Two steel latches keep door closed
6.2.5.	Rating	Weather-resistant, comparable to IP67
6.2.6.	Security	Control box accepts a user-supplied padlock
6.3.	**Control panel**	
6.3.1.	Touchscreen	
	Display	Full color, backlit, 7-inch display
		Capacitive touch panel
		800 x 480 pixels, W x H
		Display automatically shuts off after 20 minutes of inactivity
	Interface	Menu-based structure, accessed with virtual buttons on the touchscreen display, provides access to all sign functions including programming messages
		Virtual keyboard appears when required for text entry
		Multi-level password protection restricts access
6.3.2.	LED indicators	Indicates the following status conditions:
		Solar charging system is charging batteries
		System power shutdown occurred
		Programmed schedule is active
		Power to optional radar device is on
6.3.3.	Data port	One USB port for software updates is located on the DCU

7. REMOTE CONTROL SYSTEM

7.1.	**Purpose**	Enables the variable speed limit display to be controlled from remote locations away from the sign, using an Internet-connected computer, tablet, or smartphone
7.2.	**Interface**	
7.2.1.	TMS	Can be integrated with existing DOT or other traffic management systems
7.2.2.	Wanco Fleet Manager	
	Description	Internet browser interface for managing remote controlled equipment; web-based application, no software installation
	Features	Add or remove equipment to/from groups for quick access, ideal for managing contractor rentals or entire projects Map GPS locations of entire fleet of signs simultaneously View sign health data such as battery and solar voltages, and alarms Mass broadcast capability
	Requirements	Modern standards-compliant browser with JavaScript enabled A platform (computer or mobile device) that supports such a browser Internet connection
7.3.	**Modem**	Compact industrial 4G LTE modem with GPS
7.4.	**Cellular plan**	
7.4.1.	Plan	Wanco Cellular Service
7.4.2.	Description	Cellular service through Wanco. No activation charges, monthly payments, or overage charges. Billed annually by Wanco.
7.4.3.	Carrier	Verizon

8. TRAILER

8.1.	**Frame**	
8.1.1.	Construction	All welded structural steel
8.1.2.	Uprights	Two uprights support regulatory-signs frame and electronic display; reinforced by structural steel gussets and cross braces
8.1.3.	Tie-downs	Two tie-down loops at the front corners of the trailer frame One tie-down loop centered at rear of trailer frame
8.1.4.	Finish	Oven-baked, safety-orange powder-coat finish to ensure durability and corrosion protection. Assemblies are bead-blasted and then run through a five-stage, high-pressure phosphate-wash prior to application of the finish coat.

8.2.	**Deck**	Structural deck adds 370 lb (168 kg) to overall weight, creating a low center of gravity and improving stability
8.3.	**Fenders**	Round, full wheel coverage, bolted to trailer frame, removable and replaceable
8.4.	**Axle assembly**	Tubular, 2000 lb (907.2 kg) capacity, 5 on 4.5" B.C. idler hub
8.5.	**Springs**	Double-eye leaf springs, 1200 lb (544.3 kg) capacity for each spring
8.6.	**Tires**	ST205/75R15 radial tires, load rating C
8.7.	**Drawbar**	
8.7.1.	Construction	Telescopes inside receiver sleeve welded under trailer frame. Removable for shipping and for added theft protection if needed. Secures with two 1/2-inch diameter bolts.
8.7.2.	Material	3" (76.2 mm) square steel tubing, 3/16" (4.8 mm) wall
8.7.3.	Jack	Top-wind swivel, 2000 lb (907 kg) capacity, steel footpad, 10" (254 mm) total travel
8.7.4.	Tow hitch	Standard 2" ball coupler tow-hitch, SAE Class 2, 3500 lb (1588 kg) capacity, bolted to drawbar, removable and replaceable
8.7.5.	Tow chains	Two high-test proof coil chain assemblies attach with clevis slip hooks to tow vehicle Chains are attached with quick connectors to welded loops on drawbar
8.8.	**Stabilizer legs**	
8.8.1.	Description	Four stabilizers, mounted on corners of trailer frame, extend downward from front and rear of trailer at 50-degree angle, increasing length of footprint and adding stability when deployed
8.8.2.	Adjustment	Stabilizers slide up and down in sleeves, adjustable in 1-inch increments, held in place by a 3/8-inch wire lock pin. A lanyard ties each pin to the trailer frame.
8.8.3.	Material	Leg is a perforated 1¾" sq. steel tube, 12ga wall, zinc plated Footpad is 4" x 6" (102 x 152 mm) steel plate, zinc plated, all edges turned up
8.9.	**Wiring**	
8.9.1.	Description	Wiring to connect tow vehicle and trailer for trailer taillights is installed inside drawbar, with pigtails and connectors at both ends; no crimping required
8.9.2.	Trailer plug	A sealed, molded, 4-square connector plugs into harness under trailer
8.9.3.	Tow-vehicle plug	Two-piece assembly with 4-flat molded connector on harness plugs into tow vehicle Meets SAE J1239
8.9.4.	Protection	All trailer wiring encased in UV protective loom, and attached with P-clamp riveted to trailer frame; no exposed wires

8.10.	**Taillights**	Two oval-shaped, sealed, LED, combination stop, turn and taillights integrated with fenders
8.11.	**Reflectors**	Two red reflectors on rear trailer frame
8.12.	**License plate**	Lighted license plate holder is mounted under rear of trailer frame
8.13.	**Signs frame**	
8.13.1.	Function	Regulatory signs are mounted to a folding frame that pivots from horizontal (travel) position to vertical (deployed) position
8.13.2.	Construction	All welded square steel tubing
8.13.3.	Tilt-lock	
	Function	Locks signs frame in place, ensuring it cannot fall even if winch or cable were to fail. Slides up and down inside sleeve when winch is operated. Located off-center on upper crossbar between uprights. Sleeve is mounted to crossbar. Slide-bar is mounted to cross-bar on folding frame.
	Locking pin	One ⅜" (9.5 mm) wire lock pin holds slide bar and signs frame in deployed position. A lanyard ties the pin to the trailer frame.
	Material	Perforated 1¾" sq. steel tube, 12ga wall, zinc plated
8.13.4.	Winch assembly	
	Function	Hand-operated winch raises and lowers tower
	Capacity	1500 lb (680 kg)
	Brake	Safety friction-brake prevents signs frame from falling if operator loses grip on winch handle
	Cable	1/4" (6.35 mm) diameter galvanized aircraft cable
8.13.5.	Sight tube	A sight tube for aiming signs and beacons in desired direction is mounted to left upright
8.13.6.	Storage	When lowered for storage and transport, the signs frame (with regulatory signs attached) lies flat, parallel to the trailer length

9. POWER SYSTEM

9.1.	**Description**	Electronics powered by batteries, which are charged automatically with integrated solar charging system
9.2.	**Battery box**	
9.2.1.	Function	Holds batteries and remote charger
9.2.2.	Construction	Riveted all-steel construction All parts phosphate-washed and powder-coated prior to assembly Divider panel inside box separates batteries from electronics Latches keep cover closed and can accept user-supplied padlocks
9.2.3.	Mounting	Unobstructed location, centered over axle at rear of unit on structural deck
9.3.	**Batteries**	
9.3.1.	System	Four Group GC2 deep-cycle batteries, wired in parallel and series for a 12-volt system
9.3.2.	Voltage	6 Vdc each
9.3.3.	Weight	Approx. 60 lb (26 kg) each
9.3.4.	Capacity	430 Ah total capacity @ 12 Vdc
9.3.5.	Low-voltage disconnect (LVD)	To protect batteries from full discharge, the LVD system automatically shuts down power when battery voltage drops to preset level, and re-engages power when battery charge returns to optimum
9.4.	**Remote charger**	
9.4.1.	Function	Plugs into a standard commercial power source to recharge batteries if battery voltage drops due to lack of sun for automated solar charging system
9.4.2.	Type	12-volt battery charger
9.4.3.	Location	Inside battery box, mounted to divider panel on opposite side from batteries
9.4.4.	Output capacity	15A
9.4.5.	Output voltage	13.4Vdc @ full load 13.6Vdc standard float voltage 14.2Vdc with dual-voltage jack installed
9.4.6.	Input voltage	108 to 132Vac, standard three-prong plug
9.4.7.	Input frequency	60 Hz
9.4.8.	Protection	Automotive-style replaceable fuses

9.5. Solar

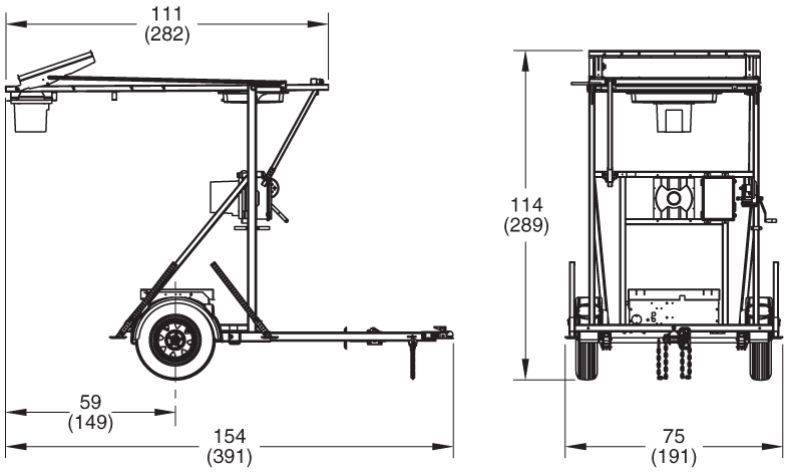
9.5.1.	Panels	One high-efficiency multi-crystal photovoltaic solar module
9.5.2.	Location	Behind signs, above signs frame. No shadowing effect on any traffic-facing component. Articulated supports ensure solar panel remains flat for continuous charging regardless of folding frame position.
9.5.3.	Power	130 W
9.5.4.	Current	6.25 A operating current (Imp) 6.6 A open short-circuit current (Isc)
9.5.5.	Voltage	20.84 Vdc max. voltage (Vmp) 24.7 Vdc open short-circuit voltage (Voc)
9.5.6.	Voltage regulation	Solar power input regulated by sign control system
9.5.7.	Security	Solar panel bolted to mounting frame with security screws

10. DIMENSIONS & WEIGHT

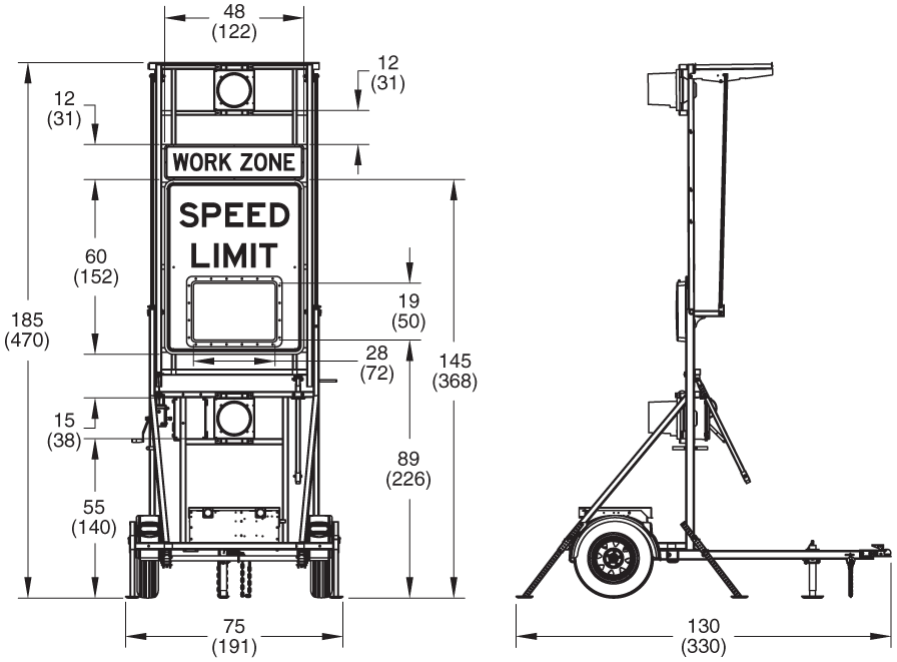
10.1. Dimensions

inches
(cm)

Travel position



Deployed



10.2. Weight

Approx. 1600 lb (726kg)