

## Technical Specifications

03220 – Variable Message Boards

<p>Specification Requirements  <b>2 &amp; 3 Line Message Sign; Truck Mounted</b>  Contractor(s): <b>LiteSys Inc. and National Barricade Spokane – Wanco</b></p>
<b>I. General:</b>
The intent of this specification is to describe the requirements for a 2 or 3-line vehicle mounted changeable character matrix message sign with high intensity amber-yellow LED's and mounting kit.
1. The sign and the controller shall meet SAE J1455 which requires the board not to interfere with radio frequencies. This will include 700, 800 MHZ, frequencies as well as CB radios.
<b>II. Displays:</b>
1. Shall be capable of displaying (two or three) lines of amber-yellow colored text consisting of at least eight 10 or 12-inch high characters.
2. Shall be capable of displaying a full screen view of standard highway symbols arrows, chevrons, and 4 corner warning lights.
3. Shall be capable of displaying one line of amber colored text consisting of four characters, for example STOP.
4. All sign messages shall be displayed using LED's. No moving parts in the displays. The message displayed on the sign shall be clearly legible, to the driving public, from a distance equal to or greater than 650 feet for day and night conditions using 10 or 12 inch characters.
5. Shall be capable of linking 3 or more messages for a sequence display.
<b>III. Sign Construction:</b>
1. The message sign cabinet shall be constructed of a lightweight material aluminum.
2. The display side of the message sign shall have a clear, scratch and UV resistant polycarbonate window.
3. The dimensions of the sign shall be the manufacturers standard.
4. Sign shall have a sealing gasket between the window and the cabinet that seals out the weather elements and minimizes window vibration shock.
5. Enclosure shall be thermostatically controlled to prevent damage and failure due to overheating. Vents and fan(s) to be sealed to keep out weather elements.
6. The state of WA will accept a sign without thermostatic controls however, the sign must have the ability to operate in temperatures of -20 degrees F to +110 degrees F without damage to the sign or the enclosure. This must be annotated in the manufacturer's sales literature.
7. Shall include the manufacturer's standard mounting hardware and actuator.
8. The actuator shall be capable of moving the sign to a vertical (deployed) position and to the horizontal (stowed or travel) position from inside the vehicle cab.
<b>IV. Controller:</b>
1. Shall be the manufacturer's standard controller.
2. The controller shall contain 50 or more of the manufacturer's standard pre-programmed messages.
3. The controller shall provide space for 40 or more user designed display messages.
<b>V. Exterior Finish:</b>
1. There shall be no welding scale, roughness, sharp corners, or rust stains on the unit.
2. The sign cabinet, mounting kit hardware and actuator shall be powder coated with the manufacturer's standard colors.

**VI. Publications:**

1. The unit shall be delivered with all manuals, (operator, service, parts) as a PDF download, or thumb drive on request.

Specification Requirements  
**Full Matrix – Small Size**  
**Changeable Message Sign; Trailer Mounted**  
**Contractor(s): National Barricade Spokane – Wanco and Ver-Mac**

**I. General:**

The intent of this specification is to describe the requirements for a trailer mounted, self-contained, full matrix changeable message sign with amber LEDs.

1. The sign and the controller shall meet SAE J1455 which requires the board not to interfere with radio frequencies. This will include 700, 800 MHZ, frequencies as well as CB radios.

**II. Displays:**

1. Sign to be equipped with an automatic dimming system.
2. Shall be capable of displaying three lines of amber colored text consisting of 8 or more characters per line using various character sizes.
3. Shall be capable of displaying MUTCD part VI work zone graphics and arrow board functions.
4. Shall be capable of displaying one line of amber colored text consisting of four characters, for example STOP.
5. The message displayed on the sign shall be clearly legible, to the driving public, from a distance equal to or greater than 1000 feet for day and night conditions using the manufacturer’s standard sized characters on three lines.
6. Shall be capable of linking 3 or more messages for a sequence display.

**III. Sign Construction:**

1. The message sign cabinet shall be constructed of a lightweight material, aluminum.
2. The display side of the message sign shall have a clear, scratch, and UV resistant polycarbonate window.
3. The dimensions of the display panel shall be equal to or less than:  
 82” in width and 49” in height, (for small size)  
 105” in width and 66” in height, (for mid-size)  
 145” in width and 83” in height, (for large size).
4. The sign shall have a sealing gasket between the window and the cabinet that seals out the weather elements and minimizes window vibration shock.
5. The sign enclosure shall be thermostatically controlled to prevent damage and failure due to overheating. Vents and fan(s) to be sealed to keep out weather elements.
6. Must have the ability to operate in temperatures of -20 degrees F to +110 degrees F without damage to the sign or the enclosure. This must be annotated in the manufacturer’s sales literature.
7. The sign shall be deployed by a powered lift system or a manually operated lift mechanism. Vendors are encouraged to provide option pricing for a power lift system if a manual system is being bid.  
  
 Lift mechanism:  
 National Barricade Spokane – manually operated lift  
 Ver-Mac – manually operated lift mechanism with optional pricing for a power lift
8. The sign shall follow MUTCD 6F60, paragraph 26. The mounting of portable changeable message signs on a trailer, a large truck, or a service patrol truck shall be such that the bottom of the message sign shall be a minimum of 7 feet above the roadway in urban areas and 5 feet above the roadway in rural areas when it is in the operating mode.
9. Sign stow height, as measured from the ground to the top edge of the sign, shall be equal to or less than: 98” for small size, or 114” for mid and large size.
10. Sign shall have a deep cycle battery array capable of operating the sign for 168 hours or more without sunlight.

11. Battery re-charges shall be accomplished with a 160-watt solar panel array that automatically points upward.
12. Shall be equipped with AC power battery charging system.
<b>IV. Control Center:</b>
1. Controller shall be NTCIP compliant located in a lockable enclosure.
2. Controller shall have a high resolution LCD screen or approved equal.
3. Shall have a remote control capabilities, i.e. WIFI or cellular.
4. Shall contain at least 100 of the manufacturer’s pre-programmed messages.
5. Shall provide space for at least 100 user designed display messages.
6. The board shall have the ability to link 3 or more messages from the manufacturer’s pre-programmed or stored messages.
<b>V. Trailer:</b>
1. Trailer shall be designed to transport the sign.
2. The sign trailer’s axle, suspension, wheels and tires, and highway lighting shall conform to the Federal Motor Vehicle Safety Standards (FMVSS).
3. Hitch shall have a lockable 2-5/16 inch ball with a 3 inch inner diameter pintle combination coupler with safety chains.
4. Trailer shall be equipped with electric brakes if required by FMVSS.
5. Shall have adjustable leveling or stabilizer jacks on all four corners or equivalent.
6. The draw bar shall be equipped with a wheel type, height adjustable folding jack.
7. Battery enclosure(s) shall be constructed of non-corrosive material, ventilated and lockable.
<b>VI. Exterior Finish:</b>
1. There shall be no welding scale, roughness, sharp corners, or rust stains on the unit.
2. The sign display cabinet shall be painted with a black powder coat.
3. Trailer and pedestal shall be primed then painted with the manufacturer’s standard painting process and color.
<b>VIII. Publications:</b>
1. The unit shall be delivered with all manuals, (operator, service, parts) as a PDF download, or thumb drive on request.

<p>Specification Requirements  <b>Full Matrix – Mid-Size</b>  <b>Changeable Message Sign; Trailer Mounted</b>  <b>Company(s): National Barricade Spokane – Wanco</b>  <b>and Ver-Mac</b></p>
<b>I. General:</b>
The intent of this specification is to describe the requirements for a trailer mounted, self-contained, full matrix changeable message sign with amber LEDs.
1. The sign and the controller shall meet SAE J1455 which requires the board not to interfere with radio frequencies. This will include 700, 800 MHZ, frequencies as well as CB radios.
<b>II. Displays:</b>
1. Sign to be equipped with an automatic dimming system.
2. Shall be capable of displaying three lines of amber colored text consisting of 8 or more characters per line using various character sizes.
3. Shall be capable of displaying MUTCD part VI work zone graphics and arrow board functions.
4. Shall be capable of displaying one line of amber colored text consisting of four characters, for example STOP.
5. The message displayed on the sign shall be clearly legible, to the driving public, from a distance equal to or greater than 1000 feet for day and night conditions using the manufacturer’s standard sized

characters on three lines.
6. Shall be capable of linking 3 or more messages for a sequence display.
<b>III. Sign Construction:</b>
1. The message sign cabinet shall be constructed of a lightweight material aluminum.
2. The display side of the message sign shall have a clear, scratch, and UV resistant polycarbonate window.
3. The dimensions of the display panel shall be equal to or less than: 82" in width and 49" in height, (for small size) 105" in width and 66" in height, (for mid-size) 145" in width and 83" in height, (for large size).
4. The sign shall have a sealing gasket between the window and the cabinet that seals out the weather elements and minimizes window vibration shock.
5. The sign enclosure shall be thermostatically controlled to prevent damage and failure due to overheating. Vents and fan(s) to be sealed to keep out weather elements.
6. Must have the ability to operate in temperatures of -20 degrees F to +110 degrees F without damage to the sign or the enclosure. This must be annotated in the manufacturer's sales literature.
7. The sign shall be deployed by a powered lift system or a manually operated lift mechanism. Vendors are encouraged to provide option pricing for a power lift system if a manual system is being bid.  Lift mechanism: National Barricade Seattle – powered lift Ver-Mac – manually operated lift mechanism with optional pricing for a power lift
8. The sign shall follow MUTCD 6F60, paragraph 26. The mounting of portable changeable message signs on a trailer, a large truck, or a service patrol truck shall be such that the bottom of the message sign shall be a minimum of 7 feet above the roadway in urban areas and 5 feet above the roadway in rural areas when it is in the operating mode.
9. Sign stow height, as measured from the ground to the top edge of the sign, shall be equal to or less than: 98" for small size, or 114" for mid and large size.
10. Sign shall have a deep cycle battery array capable of operating the sign for 168 hours or more without sunlight.
11. Battery re-charges shall be accomplished with a 160-watt solar panel array that automatically points upward.
12. Shall be equipped with AC power battery charging system.
<b>IV. Control Center:</b>
1. Controller shall be NTCIP compliant located in a lockable enclosure.
2. Controller shall have a high resolution LCD screen or approved equal.
3. Shall have a remote control capabilities, i.e. WIFI or cellular.
4. Shall contain at least 100 of the manufacturer's pre-programmed messages.
5. Shall provide space for at least 100 user designed display messages.
6. The board shall have the ability to link 3 or more messages from the manufacturer's pre-programmed or stored messages.
<b>V. Trailer:</b>
1. Trailer shall be designed to transport the sign.
2. The sign trailer's axle, suspension, wheels and tires, and highway lighting shall conform to the Federal Motor Vehicle Safety Standards (FMVSS).
3. Hitch shall have a lockable 2-5/16 inch ball with a 3 inch inner diameter pintle combination coupler with safety chains.
4. Trailer shall be equipped with electric brakes if required by FMVSS.
5. Shall have adjustable leveling or stabilizer jacks on all four corners or equivalent.
6. The draw bar shall be equipped with a wheel type, height adjustable folding jack.
7. Battery enclosure(s) shall be constructed of non-corrosive material, ventilated and lockable.
<b>VI. Exterior Finish:</b>
1. There shall be no welding scale, roughness, sharp corners, or rust stains on the unit.

2. The sign display cabinet shall be painted with a black powder coat.
3. Trailer and pedestal shall be primed then painted with the manufacturer’s standard painting process and color.
<b>VIII. Publications:</b>
1. The unit shall be delivered with all manuals, (operator, service, parts) as a PDF download, or thumb drive on request.

<p>Specification Requirements  <b>Full Matrix - Large Size</b>  <b>Changeable Message Sign; Trailer Mounted</b>  <b>Company(s): National Barricade Spokane – Wanco</b></p>
<b>I. General:</b>
The intent of this specification is to describe the requirements for a trailer mounted, self-contained, full matrix changeable message sign with amber LEDs.
1. The sign and the controller shall meet SAE J1455 which requires the board not to interfere with radio frequencies. This will include 700, 800 MHZ, frequencies as well as CB radios.
<b>II. Displays:</b>
1. Sign to be equipped with an automatic dimming system.
2. Shall be capable of displaying three lines of amber colored text consisting of 8 or more characters per line using various character sizes.
3. Shall be capable of displaying MUTCD part VI work zone graphics and arrow board functions.
4. Shall be capable of displaying one line of amber colored text consisting of four characters, for example STOP.
5. The message displayed on the sign shall be clearly legible, to the driving public, from a distance equal to or greater than 1000 feet for day and night conditions using the manufacturer’s standard sized characters on three lines.
6. Shall be capable of linking 3 or more messages for a sequence display.
<b>III. Sign Construction:</b>
1. The message sign cabinet shall be constructed of a lightweight material aluminum.
2. The display side of the message sign shall have a clear, scratch, and UV resistant polycarbonate window.
3. The dimensions of the display panel shall be equal to or less than: 82” in width and 49” in height, (for small size) 105” in width and 66” in height, (for mid-size) 145” in width and 83” in height, (for large size).
4. The sign shall have a sealing gasket between the window and the cabinet that seals out the weather elements and minimizes window vibration shock.
5. The sign enclosure shall be thermostatically controlled to prevent damage and failure due to overheating. Vents and fan(s) to be sealed to keep out weather elements.
6. Must have the ability to operate in temperatures of -20 degrees F to +110 degrees F without damage to the sign or the enclosure. This must be annotated in the manufacturer’s sales literature.
7. The sign shall be deployed by a powered lift system or a manually operated lift mechanism. Vendors are encouraged to provide option pricing for a power lift system if a manual system is being bid.
Lift mechanism: Powered Lift System
8. The sign shall follow MUTCD 6F60, paragraph 26. The mounting of portable changeable message signs on a trailer, a large truck, or a service patrol truck shall be such that the bottom of the message sign shall be a minimum of 7 feet above the roadway in urban areas and 5 feet above the roadway in rural areas when it is in the operating mode.

9. Sign stow height, as measured from the ground to the top edge of the sign, shall be equal to or less than: 98” for small size, or 114” for mid and large size.
10. Sign shall have a deep cycle battery array capable of operating the sign for 168 hours or more without sunlight.
11. Battery re-charges shall be accomplished with a 160-watt solar panel array that automatically points upward.
12. Shall be equipped with AC power battery charging system.
<b>IV. Control Center:</b>
1. Controller shall be NTCIP compliant located in a lockable enclosure.
2. Controller shall have a high resolution LCD screen or approved equal.
3. Shall have a remote control capabilities, i.e. WIFI or cellular.
4. Shall contain at least 100 of the manufacturer’s pre-programmed messages.
5. Shall provide space for at least 100 user designed display messages.
6. The board shall have the ability to link 3 or more messages from the manufacturer’s pre-programmed or stored messages.
<b>V. Trailer:</b>
1. Trailer shall be designed to transport the sign.
2. The sign trailer’s axle, suspension, wheels and tires, and highway lighting shall conform to the Federal Motor Vehicle Safety Standards (FMVSS).
3. Hitch shall have a lockable 2-5/16 inch ball with a 3 inch inner diameter pintle combination coupler with safety chains.
4. Trailer shall be equipped with electric brakes if required by FMVSS.
5. Shall have adjustable leveling or stabilizer jacks on all four corners or equivalent.
6. The draw bar shall be equipped with a wheel type, height adjustable folding jack.
7. Battery enclosure(s) shall be constructed of non-corrosive material, ventilated and lockable.
<b>VI. Exterior Finish:</b>
1. There shall be no welding scale, roughness, sharp corners, or rust stains on the unit.
2. The sign display cabinet shall be painted with a black powder coat.
3. Trailer and pedestal shall be primed then painted with the manufacturer’s standard painting process and color.
<b>VIII. Publications:</b>
1. The unit shall be delivered with all manuals, (operator, service, parts) as a PDF download, or thumb drive on request.

Specification Requirements  
**Line Matrix – Small Size**  
**Changeable Message Sign; Trailer Mounted**  
**Company(s): National Barricade Spokane – Wanco, and Ver-Mac**

**I. General:**

The intent of this specification is to describe the requirements for a trailer mounted self-contained, line matrix changeable message sign with amber colored LEDs.

1. The sign and the controller shall meet SAE J1455 which requires the board not to interfere with radio frequencies. This will include 700, and 800 MHZ, frequencies as well as CB radios.

**II. Displays:**

1. Shall be equipped with an automatic dimming system.
2. Shall be capable of displaying three lines of amber colored text consisting of:  
8 or more (for small size)  
6 or more (for mid and large sizes)  
characters per line using various character sizes.
3. Shall be capable of displaying MUTCD part VI arrow board functions.
4. The message displayed on the sign shall be clearly legible, to the driving public, from a distance equal to or greater than 1000 feet for both day and night conditions using the manufacturers standard sized characters on three lines.
5. Shall be capable of displaying one line of amber colored text consisting four characters, for example STOP.
6. Shall be capable of linking 3 or more messages for a sequence display.

**III. Sign Construction:**

1. The message sign cabinet shall be constructed of a lightweight material aluminum.
2. The display side of the message sign shall have a clear, scratch and UV resistant polycarbonate window.
3. The dimensions of the display panel shall be equal to or less than:  
82" in width and 49" in height, (for small size)  
105" in width and 66" in height, (for mid-size)  
145" in width and 83" in height, (for large size).
4. The sign shall have a seal between the window and the cabinet that seal out the weather elements and minimizes window vibration shock.
5. The sign enclosure shall be thermostatically controlled to prevent damage and failure due to overheating. Vents and fan(s) to be sealed to keep out weather elements.
6. Must have the ability to operate in temperatures of -20 degrees F to +110 degrees F. This must be annotated in the manufacturer's specifications.
7. The sign shall be deployed by a powered lift system or a manually operated lift mechanism. Vendors are encouraged to provide option pricing for a power lift system if a manual system is being bid.  
  
Lift mechanism:  
National Barricade Spokane – manually operated lift  
Ver-Mac – manually operated lift mechanism with optional pricing for a power lift
8. The sign shall follow MUTCD 6F60, paragraph 26. The mounting of portable changeable message signs on a trailer, a large truck, or a service patrol truck shall be such that the bottom of the message sign shall be a minimum of 7 feet above the roadway in urban areas and 5 feet above the roadway in rural areas when it is in the operating mode.
9. Sign stow height shall be equal to or less than 108 inches measured from the ground to top edge of sign.
10. Sign shall have a deep cycle battery array capable of operating the sign for 168 hours or more without sunlight.
11. Battery re-charges shall be accomplished with a 160 watt solar panel array that automatically point upward.
12. Shall be equipped with AC power battery charging system.

**IV. Control Center:**

1. Controller shall be NTCIP compliant located in a secure enclosure.
2. Controller shall have a high resolution LCD screen or an approved equal.
3. Shall have a remote control capabilities, i.e. WIFI or Cellular.
4. Shall contain at least 100 or more of the manufacture’s pre-programmed messages.
5. Shall provide space for at least 100 or more user designed display messages.
6. The board shall have the ability to link 3 or more messages from the manufacturer’s preprogrammed messages or stored messages.
<b><u>V. Trailer:</u></b>
1. Trailer shall be designed to transport the sign.
2. The sign trailer’s axle, suspension, wheels and tires, and highway lighting shall to conform to the Federal Motor Vehicle Safety Standards (FMVSS).
3. Hitch shall have a lockable 2-5/16 inch ball with a three inch inner diameter pintle combination coupler with safety chains
4. Trailer shall be equipped with electric brakes if required by FMVSS.
5. Shall have adjustable leveling or stabilizer jacks on all four corners or equivalent.
6. The draw bar shall be equipped with a wheel type, adjustable height folding jack.
7. Battery enclosure(s) shall be constructed of non-corrosive material, ventilated and lockable.
<b><u>VI. Exterior Finish:</u></b>
1. There shall be no welding scale, roughness, sharp corners; or rust stains on the unit.
2. The sign display cabinet shall be painted with a black powder coat.
3. Trailer and pedestal shall be primed then painted with the manufacturer’s standard painting process and color.
<b><u>VIII. Publications:</u></b>
1. The unit shall be delivered with all manuals, (operator, service, parts) as a PDF download, or thumb drive on request.

<p>Specification Requirements  <b>Line Matrix – Mid-Size</b>  <b>Changeable Message Sign; Trailer Mounted</b>  <b>Company(s): National Barricade Spokane – Wanco and Ver-Mac</b></p>
<b><u>I. General:</u></b>
The intent of this specification is to describe the requirements for a trailer mounted self-contained, line matrix changeable message sign with amber colored LEDs.
2. The sign and the controller shall meet SAE J1455 which requires the board not to interfere with radio frequencies. This will include 700, and 800 MHZ, frequencies as well as CB radios.
<b><u>II. Displays:</u></b>
1. Shall be equipped with an automatic dimming system.
2. Shall be capable of displaying three lines of amber colored text consisting of: 8 or more (for small size) 6 or more (for mid and large sizes) characters per line using various character sizes.
3. Shall be capable of displaying MUTCD part VI arrow board functions.
4. The message displayed on the sign shall be clearly legible, to the driving public, from a distance equal to or greater than 1000 feet for both day and night conditions using the manufacturers standard sized characters on three lines.
5. Shall be capable of displaying one line of amber colored text consisting four characters, for example STOP.
6. Shall be capable of linking 3 or more messages for a sequence display.
<b><u>III. Sign Construction:</u></b>
1. The message sign cabinet shall be constructed of a lightweight material aluminum.

2. The display side of the message sign shall have a clear, scratch and UV resistant polycarbonate window.
3. The dimensions of the display panel shall be equal to or less than: 82" in width and 49" in height, (for small size) 105" in width and 66" in height, (for mid-size) 145" in width and 83" in height, (for large size).
4. The sign shall have a seal between the window and the cabinet that seal out the weather elements and minimizes window vibration shock.
5. The sign enclosure shall be thermostatically controlled to prevent damage and failure due to overheating. Vents and fan(s) to be sealed to keep out weather elements.
6. Must have the ability to operate in temperatures of -20 degrees F to +110 degrees F. This must be annotated in the manufacturer's specifications.
7. The sign shall be deployed by a powered lift system or a manually operated lift mechanism. Vendors are encouraged to provide option pricing for a power lift system if a manual system is being bid.  Lift mechanism: NatBarrSpok – manually operated lift Ver-Mac – manually operated lift mechanism with optional pricing for a power lift
8. The sign shall follow MUTCD 6F60, paragraph 26. The mounting of portable changeable message signs on a trailer, a large truck, or a service patrol truck shall be such that the bottom of the message sign shall be a minimum of 7 feet above the roadway in urban areas and 5 feet above the roadway in rural areas when it is in the operating mode.
9. Sign stow height shall be equal to or less than 108 inches measured from the ground to top edge of sign.
10. Sign shall have a deep cycle battery array capable of operating the sign for 168 hours or more without sunlight.
11. Battery re-charges shall be accomplished with a 160 watt solar panel array that automatically point upward.
12. Shall be equipped with AC power battery charging system.
<b>IV. Control Center:</b>
1. Controller shall be NTCIP compliant located in a secure enclosure.
2. Controller shall have a high resolution LCD screen or an approved equal.
3. Shall have a remote control capabilities, i.e. WIFI or Cellular.
4. Shall contain at least 100 or more of the manufacture's pre-programmed messages.
5. Shall provide space for at least 100 or more user designed display messages.
6. The board shall have the ability to link 3 or more messages from the manufacturer's preprogrammed messages or stored messages.
<b>V. Trailer:</b>
1. Trailer shall be designed to transport the sign.
2. The sign trailer's axle, suspension, wheels and tires, and highway lighting shall to conform to the Federal Motor Vehicle Safety Standards (FMVSS).
3. Hitch shall have a lockable 2-5/16 inch ball with a three inch inner diameter pintle combination coupler with safety chains
4. Trailer shall be equipped with electric brakes if required by FMVSS.
5. Shall have adjustable leveling or stabilizer jacks on all four corners or equivalent.
6. The draw bar shall be equipped with a wheel type, adjustable height folding jack.
7. Battery enclosure(s) shall be constructed of non-corrosive material, ventilated and lockable.
<b>VI. Exterior Finish:</b>
1. There shall be no welding scale, roughness, sharp corners; or rust stains on the unit.
2. The sign display cabinet shall be painted with a black powder coat.
3. Trailer and pedestal shall be primed then painted with the manufacturer's standard painting process and color.
<b>VIII. Publications:</b>

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| 1. The unit shall be delivered with all manuals, (operator, service, parts) as a PDF download, or thumb drive on request. |
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<p>Specification Requirements  <b>Line Matrix - Large Size</b>  <b>Changeable Message Sign; Trailer Mounted</b>  <b>Company(s): National Barricade Spokane – Wanco</b></p>
<b>I. General:</b>
The intent of this specification is to describe the requirements for a trailer mounted self-contained, line matrix changeable message sign with amber colored LEDs.
1. The sign and the controller shall meet SAE J1455 which requires the board not to interfere with radio frequencies. This will include 700, and 800 MHZ, frequencies as well as CB radios.
<b>II. Displays:</b>
1. Shall be equipped with an automatic dimming system.
2. Shall be capable of displaying three lines of amber colored text consisting of: 8 or more (for small size) 6 or more (for mid and large sizes) characters per line using various character sizes.
3. Shall be capable of displaying MUTCD part VI arrow board functions.
4. The message displayed on the sign shall be clearly legible, to the driving public, from a distance equal to or greater than 1000 feet for both day and night conditions using the manufacturers standard sized characters on three lines.
5. Shall be capable of displaying one line of amber colored text consisting four characters, for example STOP.
6. Shall be capable of linking 3 or more messages for a sequence display.
<b>III. Sign Construction:</b>
1. The message sign cabinet shall be constructed of a lightweight material aluminum.
2. The display side of the message sign shall have a clear, scratch and UV resistant polycarbonate window.
3. The dimensions of the display panel shall be equal to or less than: 82” in width and 49” in height, (for small size) 105” in width and 66” in height, (for mid-size) 145” in width and 83” in height, (for large size).
4. The sign shall have a seal between the window and the cabinet that seal out the weather elements and minimizes window vibration shock.
5. The sign enclosure shall be thermostatically controlled to prevent damage and failure due to overheating. Vents and fan(s) to be sealed to keep out weather elements.
6. Must have the ability to operate in temperatures of -20 degrees F to +110 degrees F. This must be annotated in the manufacturer’s specifications.
7. The sign shall be deployed by a powered lift system or a manually operated lift mechanism. Vendors are encouraged to provide option pricing for a power lift system if a manual system is being bid.  Lift mechanism: Power Lifted System
8. The sign shall follow MUTCD 6F60, paragraph 26. The mounting of portable changeable message signs on a trailer, a large truck, or a service patrol truck shall be such that the bottom of the message sign shall be a minimum of 7 feet above the roadway in urban areas and 5 feet above the roadway in rural areas when it is in the operating mode.
9. Sign stow height shall be equal to or less than 108 inches measured from the ground to top edge of sign.
10. Sign shall have a deep cycle battery array capable of operating the sign for 168 hours or more without

sunlight.
11. Battery re-charges shall be accomplished with a 160 watt solar panel array that automatically point upward.
12. Shall be equipped with AC power battery charging system.
<b>IV. Control Center:</b>
1. Controller shall be NTCIP compliant located in a secure enclosure.
2. Controller shall have a high resolution LCD screen or an approved equal.
3. Shall have a remote control capabilities, i.e. WIFI or Cellular.
4. Shall contain at least 100 or more of the manufacture’s pre-programmed messages.
5. Shall provide space for at least 100 or more user designed display messages.
6. The board shall have the ability to link 3 or more messages from the manufacturer’s preprogrammed messages or stored messages.
<b>V. Trailer:</b>
1. Trailer shall be designed to transport the sign.
2. The sign trailer’s axle, suspension, wheels and tires, and highway lighting shall to conform to the Federal Motor Vehicle Safety Standards (FMVSS).
3. Hitch shall have a lockable 2-5/16 inch ball with a three inch inner diameter pintle combination coupler with safety chains
4. Trailer shall be equipped with electric brakes if required by FMVSS.
5. Shall have adjustable leveling or stabilizer jacks on all four corners or equivalent.
6. The draw bar shall be equipped with a wheel type, adjustable height folding jack.
7. Battery enclosure(s) shall be constructed of non-corrosive material, ventilated and lockable.
<b>VI. Exterior Finish:</b>
1. There shall be no welding scale, roughness, sharp corners; or rust stains on the unit.
2. The sign display cabinet shall be painted with a black powder coat.
3. Trailer and pedestal shall be primed then painted with the manufacturer’s standard painting process and color.
<b>VIII. Publications:</b>
1. The unit shall be delivered with all manuals, (operator, service, parts) as a PDF download, or thumb drive on request.

**Truck Mounted Arrow Board,  
3 feet by 6 feet**  
**Company(s) National Barricade Seattle – Wanco and Ver-Mac**

**I. General:**

1. The arrow board and the controller shall meet SAE J1455 which requires the board not to interfere with radio frequencies. This will include 700, and 800 MHZ, frequencies as well as CB radios.

**II. Board:**

1. Shall be equipped with at least 25 high intensity LED lights.
2. The arrows displayed on the sign shall be clearly legible to the driving public from a distance equal to or greater than 1000 feet for both day and night conditions.
3. The unit shall receive its power from the chassis.
4. The message sign cabinet shall be constructed of a lightweight material aluminum.
5. Shall have all mounting hardware needed for installation onto a pickup.

Mounting location:

National Barricade Seattle – Manual tilt, mounting includes uprights and crossbar for installation.

Ver-Mac – bed

6. Shall have a manual and automatic dimmer mode.
7. Shall have internal support brackets to prevent deformation or buckling of the board.
8. Operating voltage to be 12 VDC.
9. Shall have the following modes:
  - Sequential chevron right or left
  - Sequential stem arrow right or left
  - Sequential head arrow right or left
  - Single flashing arrow right or left
  - Double flashing arrow
  - Caution corners (four corner)
  - Caution Bar
  - Alternating diamond caution
  - i. Test (If applicable)

**III. Remote Control:**

1. Shall be a weather-tight enclosure with software and hardware necessary to operate the board.
2. Controller shall have a 35-foot control cable assembly.

**VIII. Publications:**

1. The unit shall be delivered with all manuals, (operator, service, parts) as a PDF download, or thumb drive on request.