

SECTION 92

TEMPORARY TRAFFIC CONTROL

92.1 DESCRIPTION

A. General: This work consists of furnishing, installing, and maintaining required temporary traffic control devices in accordance with the current edition of the Federal Manual on Uniform Traffic Control Devices (MUTCD).

B. Related Work:

Section 90	Roadway Signs and Delineators
Section 91	Pavement Marking
Section 93	Traffic Signals and Roadway Lighting
Section 203	Submittals

92.2 MATERIALS

Traffic and traffic control devices shall conform to and be maintained in accordance with the requirements of Part 6 of the MUTCD. Pavement Markings used for Temporary Traffic Control shall be per section 91.

Traffic control devices are categorized by their intended use and certification requirements.

- Category I traffic control devices are lightweight devices which may be self-certified by the manufacturer including, but not limited to; cones, drums, and delineators.
- Category II traffic control devices are other lightweight devices which must be certified by individual crash testing including, but not limited to; portable signs and barricades.
- Category III traffic control devices are fixed or other massive devices which must be certified by individual crash testing including, but not limited to; breakaway sign supports, concrete barriers, concrete barrier end protection, crash cushions, truck mounted attenuators, and longitudinal barriers.
- Category IV traffic control devices are trailer mounted devices which are not required to be individually crash tested including, but not limited to; portable changeable message signs, arrow boards, portable temporary traffic signals, and work area lighting.

Category I, II, and III traffic control devices shall meet the crashworthy requirements of AASHTO Manual for Assessing Safety Hardware (MASH). Category IV traffic control devices shall be delineated with retroreflective traffic control devices.

The Contractor shall provide documentation for all traffic control devices used when requested by the Engineer or as indicated in project documents. The documentation shall show the traffic control devices used meet the applicable MASH requirements.

Temporary traffic control devices, including signs, drums, cones, tubular markers, barricades, vertical panels, and direction indicator barricades shall be reflectorized with sheeting applied to a satisfactory backing. All fluorescent orange background material on traffic control signs, all temporary delineators, and all temporary STOP (R1-1), YIELD (R1-2), DO NOT ENTER (R5-1), and WRONG WAY (R5-1a) signs will conform to the requirements of ASTM D4956 Type IX or XI. All other traffic control signs and background colors will conform to the requirements of ASTM D4956 Type IV. For barricades, vertical panels, and direction indicator barricades; the reflective sheeting shall meet or exceed the standards of Type IV as defined by ASTM D4956. Round surfaced temporary traffic control devices including, but not limited to; drums, cones, and tubular markers shall be reflectorized with reflectorized sheeting meeting or exceeding the standards of Type IV as defined by ASTM D4956. All orange colored material shall be fluorescent.

A. Fabrication:

1. **Background Color:** Shall be as specified in Part 6 of the MUTCD.
2. **Legend:** Message and borders shall be non-removable copy of the color specified in Part 6 of the MUTCD. The non-removable copy may be screened processed or direct applied. Mounting holes will not be drilled or punched in any part of the non-removable copy.
 - a) **Screened Process:** Message borders shall be processed on reflective sheeting using mechanical equipment, materials, and operational methods and procedures as prescribed by the manufacturer. Processing shall be accomplished by the direct or reverse screen method using opaque or transparent processing material. Screening may be accomplished either before or after application of the sheeting to the base panels. Free hand painting will not be permitted on any part of the finished sign face.
 - b) **Direct Applied:** Cut out message and borders shall be reflective sheeting or opaque lettering film applied directly to clean, dust free, reflective sheeting background. Message and borders shall be in accordance with the operational methods and procedures prescribed by the sheeting manufacturer. The finished letters, numerals, symbols, and borders shall be cut with smooth, regular outline, and free from ragged or torn edges.

B. Traffic Control Device Standards:

1. **Warning Lights:** Shall be portable with lens directed enclosed lights. The lens of the unit shall not be less than seven (7) inches in diameter and shall be amber in color. They may be used in either the steady burn or flashing mode. Warning lights shall be in accordance with the requirements of Equipment and Materials Standards of the Institute of Transportation Engineers (ITE) Publication No. ST 017, Purchase Specification for Flashing and Steady-Burn Warning Lights. The lights shall be certified by the manufacturer.

The use of the warning lights shall be in accordance with Part 6 of the MUTCD.

2. **Channelizing Devices:** Channelizing devices, including cones, barricades, tubular markers, vertical panels, directional indicator barricades, and drums shall conform to the requirements of Part 6 of the MUTCD. Drums shall be of a two-part construction with breakaway bases. Cones shall be a minimum of 42 inches in height.
3. **Temporary Sign Supports:** Construction sign supports shall meet the crashworthy requirements of AASHTO Manual for Assessing Safety Hardware (MASH) and shall conform to the height requirements of the MUTCD. Temporary sign support shall be allowed up to 72 hours, or as directed by the Engineer.
4. **Pilot Car:** Shall be a passenger car, multipurpose passenger vehicle, or pickup truck.
5. **Temporary Pavement Marking Tape:** Types I and II, shall conform to the requirements of ASTM D4592. The film, without adhesive, shall have a minimum thickness of 39 mils.
6. **Temporary Raised Pavement Markers:** Shall consist of a yellow or white plastic body providing a horizontal width and length of approximately four (4) inches in both dimensions and approximately 3/4 inch high.

The adhesive shall be resistant to the effects of weather and capable of retaining the marker in position during the time it is required to function.

The markers shall consist of a methyl methacrylate, polycarbonate, polystyrene, or suitably compounded acrylonitrile butadiene (ABS) shell fitted with retroreflective lenses. The exterior surface shall be smooth.

The marker reflector shall have a minimum coefficient of (retroreflected) luminous intensity conforming to Table 1.

7. **Flexible Vertical Markers (Tabs):** Shall consist of a yellow or white plastic body providing a horizontal width of approximately four (4) inches and approximately two (2) inches high.

A strip of retroreflective tape 1/4 inch minimum width shall be bonded horizontally along the top of the vertical area.

The adhesive shall be resistant to the effects of weather and capable of retaining the marker in position during the time it is required to function.

The marker reflector shall have a minimum coefficient of (retroreflected) luminous intensity conforming to Table 1.

Table 1
Minimum Coefficient of (Retroreflected) Luminous Intensity in
Millicandelas per lux or (Candelas per footcandle)

Observation Angle in Radians (Degrees)	Entrance Angle in Radians (Degrees)	Luminous Intensity for Each Color in Millicandelas per lux (Candelas per footcandle)		
		White	Yellow	Red
0.0035 (0.2°)	0.0 (0°)	279 (3.0)	167 (1.8)	70 (0.75)
0.0035 (0.2°)	0.349 (20°)	112 (1.2)	67 (0.72)	28 (0.3)

Note: The retroreflective tape shall be acrylic backed metalized polycarbonate microprism film, molded methyl methacrylate, or approved equal.

92.2 CONSTRUCTION REQUIREMENTS

A. General: The Contractor shall furnish, install, and maintain required traffic control devices and pavement marking material.

1. All traffic control devices shall be kept in proper position, clean, and legible at all times. Damaged devices shall be replaced within 24 hours, or as directed by the Engineer.
2. Non-applicable traffic control devices shall be completely covered or removed during periods of inactivity.
3. Traffic control devices shall be immediately removed or covered when the need for such devices no longer exists. When devices are no longer needed, they should be stored off the project or as close to the right-of-way line as possible.
4. Vehicles and equipment shall be stored outside the roadway and clear zone and as near as possible to the right-of-way line. Contractor's employees should mobilize at a location off the right-of-way and arrive at the work site in a minimum number of vehicles necessary to perform the work.
5. Traffic approaching the project from intersecting roadways, streets, and approaches must be adequately accommodated. Major intersections and large commercial entrances may require additional signing, flaggers, temporary signals, and channelizing devices on a temporary basis until work activities pass these areas.
6. Unless otherwise stated, hours of darkness are defined as 1/2 hour after sunset until 1/2 hour before sunrise.

B. Apparel: All workers within the right of way who are exposed either to traffic (vehicles using the highway for purposes of travel) or to construction equipment

within the work area shall wear high-visibility safety apparel intended to provide conspicuity during both daytime and nighttime usage, and meeting the Performance Class 2 or 3 requirements of the ANSI/ISEA 107 publication entitled “American National Standard for High- Visibility Safety Apparel and Headwear” or equivalent revisions.

Workers shall wear a vest, shirt, or jacket as an outer garment with a background color of fluorescent yellow-green, fluorescent orange-red, or fluorescent red. The retro-reflectorized portion of the material shall be orange, yellow, white, yellow-green, or silver.

- C. Flagging:** Standards for flaggers and flagging practices shall conform to Part 6 of the MUTCD and the flagger manual.

Flagger workstations shall be illuminated during hours of darkness. Flagger workstations shall be illuminated with a minimum of 108 lux (10 foot candles) of illumination. The Contractor shall perform a drive-through after dark to check for glare from the driver’s perspective and make adjustments as necessary to eliminate or reduce the glare to the satisfaction of the Engineer.

Flaggers shall be equipped with a STOP/SLOW sign for the control of traffic. The sign should be mounted on a staff from five (5) to seven (7) feet long, from the bottom of the sign to the ground. All flagging devices and the use of such devices shall comply with Part 6 of the MUTCD, unless otherwise specified.

- D. Pilot Car:** Pilot cars and pilot car practices shall conform to Part 6 of the MUTCD.

E. Traffic Control, Miscellaneous:

- 1. Channelizing Devices:** Shall be reasonably plumb to the pavement, safely and neatly ballasted as needed, clearly visible, and legible.

Additional requirements for the use of specific channelizing devices are as follows:

- a) **Cones:** Minimum cone height shall be 28-inches and reflectorized.
- b) **Barricades:**
 - 1) **Type 1 Barricades:** Shall not be used in roadway.
 - 2) **Type 2 Barricades:** Shall not be used in roadway.
 - 3) **Type 3 Barricades:** Minimum width 72-inches.
- c) **Tubular Markers:** Shall not be used in lane closure tapers.
- d) **Vertical Panels:** No additional requirements.

- e) **Direction Indicator Barricades:** No additional requirements.
 - f) **Drums:** No additional requirements.
2. **Delineators:** Shall conform to Section 90.
 3. **Warning Lights:** When used in conjunction with signs, barriers, and channelizing devices; the warning light shall conform to Part 6 of the MUTCD.

Vehicles and equipment working in traffic or alongside traffic shall be equipped with a flashing amber light visible from all directions at a minimum distance of 1/2 mile. The amber light shall be mounted on the uppermost part of the Contractor's vehicle. Lights must flash at 75 ± 15 flashes per minute. Vehicle flasher/hazard lights are not acceptable.

4. **Shadow Vehicles:** Shall conform to Part 6 of the MUTCD. Shadow vehicles shall be used as specified in the plans and for brooming operations unless otherwise directed. Shadow vehicles shall be a four-wheel motor vehicle with a flashing amber light. No separate payment will be made for shadow vehicles and any signs, warning lights, or other items associated with the shadow vehicles.
5. **Inspection:** The Contractor shall constantly monitor and maintain all traffic control items. The Contractor is responsible for adjustments of traffic control items when traffic conditions change.

The Contractor shall make weekly inspections after dark to verify the overall traffic control system is adequate and all devices are legible at night. This includes detour route signing. The weekly inspections shall begin when the first traffic control sign or device is put into operation and end when the last traffic control sign or device is removed from operation.

The Contractor shall designate an employee whose primary responsibility is the maintenance of traffic and traffic control devices, 24 hours a day, seven (7) days a week. The person so designated must have training and experience in the field of construction traffic control and be knowledgeable about the MUTCD. The employee selected must be approved by the Engineer. The name, phone number, and location of the person(s) shall be provided to the City.

If directed to by the Engineer, said designated person shall submit a weekly written report. The reports shall document the daytime and weekly night time inspections.

- F. **Traffic Control Signs:** Shall conform to Part 6 of the MUTCD and as specified in the plans.

G. Temporary Traffic Control Signal: Shall generally consist of all necessary materials and appurtenances needed to control road user movements at an intersection, bridge, or other site.

1. **General:** The Contractor shall furnish, operate, and maintain the temporary traffic control signal. The temporary traffic control signal shall reliably and continuously control traffic for all approaches at the specified location. The temporary traffic control signal system shall meet the requirements of the MUTCD, national and local electrical codes, and these specifications.

Existing signal equipment at the site may be salvaged for use in the temporary traffic control signal. Existing traffic signal equipment used on the project shall be salvaged or returned to original use as indicated in the plans. All materials furnished by the Contractor shall remain the property of the Contractor upon completion of the project.

Signal timing shall be per plans and specifications or as directed by the Engineer. Prior to operating a temporary signal contact City Traffic Operations for inspection and coordination.

The temporary traffic control signal shall display pedestrian indications if the pedestrian indications previously existed, or if it is anticipated pedestrians will utilize the temporary traffic control signalized intersection.

In the event of system failure, the Contractor shall furnish necessary flaggers to safely control traffic until the temporary traffic control signal is operable. The cost of flaggers, signing, and lighting shall be incidental to the contract price for temporary traffic control signal.

The Contractor shall have a qualified individual responsible for setup and maintenance of the temporary traffic control signal. This person shall have received training on installation, setup, and maintenance of the system.

Traffic signal operation or maintenance work is required to be performed by the Contractor when project conditions dictate, lane closures change, traffic flow is impeded, a potential risk to the public exists, or when equipment breaks down or malfunctions. Equipment break downs or malfunctions require a high priority response and are to be reacted to within one hour of notification of the event.

2. **Temporary Traffic Control Signal Equipment:** Except as required in this section, all traffic signal equipment and materials will meet the requirements of Section 93.

a) **Short Term Temporary Traffic Control Signal:** Shall consist of signal heads mounted on span wire supports.

- b) Portable Temporary Traffic Control Signal:** Shall consist of signal heads, controller, and power supply, all mounted on a heavy duty trailer.

One of the signal heads shall be mounted a minimum of 17 feet and a maximum of 19 feet above the roadway surface on the mast arm. The other signal head shall be mounted at least eight (8) feet but not more than 15 feet above the roadway surface.

The signal heads shall have the ability to be rotated 180 degrees to face in either direction. The signal heads shall also have the ability to be rotated in the vertical or horizontal plane so as to have the optimum visibility to the motorist. Signals shall be located so as to meet the visibility requirements of the MUTCD.

The portable temporary traffic control signal shall be equipped with work zone safety lights located on the back side of the signal heads to alert construction workers of the status of the traffic signal.

- 3. Temporary Traffic Control Signal Support:** The support system, with traffic signal heads, shall be designed in accordance with the current edition of the AASHTO Standard Specifications for Highway Signs, Luminaires, and Traffic Signals. The design wind velocity shall be 90 mph. The Contractor shall complete tree trimming, as necessary.

- a) Short Term Temporary Traffic Control Signal:** The Contractor shall furnish and install span wire supports. Guy wire anchors shall be used as design requires. The Contractor shall determine the size of span support wire, span tether wire, pole type, and guy wire required.

Design and check design calculations for the span wire and support system (span wire, tether wire, poles, arms, connections, guy wires, and anchors, footings, anchor bolts, etc.) shall be signed and sealed by a Professional Engineer registered in the state of South Dakota and shall be submitted with shop drawings.

- b) Portable Temporary Traffic Control Signal:** Shall be designed to support the signal heads required.

Signal supports should be located as far as practical from the edge of the traveled way without adversely affecting the visibility of signal indications. Temporary signal trailers are not to be parked in areas or lanes open to traffic.

The Contractor shall adjust the traffic signals as necessary for the various phases of the work and traffic conditions to meet MUTCD criteria for sight distances, sight triangles, and lateral distances. This includes the relocation or realignment of traffic signal indications as project conditions require.

4. Power:

- a) **Short Term Temporary Traffic Control Signal:** The Contractor shall provide power to the temporary traffic control signal system. The monthly fee for power used by the short term temporary traffic control signal system shall be paid for by the Contractor.
- b) **Portable Temporary Traffic Control Signal:** The power source for the unit shall be one of the following: an engine generator unit, a solar powered unit, or a 110 volt AC power source. Solar powered units shall have a solar array charging system capable of operating without external charge for a minimum of 20 days during all seasons. The system shall monitor alternator or charging system and battery voltage. The master trailer (controller) shall monitor all functions of remote trailers and display all conditions. The remote trailers shall also provide the status of all functions for that particular remote trailer. If a low power condition occurs, the controller software shall automatically switch the trailer to a minimum power mode to preserve battery power. The Contractor shall be responsible for providing backup power if the main power source fails. The backup power supply shall be able to operate the traffic signals for a minimum of 48 hours.

5. Controller: Shall be capable of operating pre-timed, actuated, and by manual control.

- a) **Short Term Temporary Traffic Control Signal:** Shall operate from a controller at the site. The controller and the controller cabinet shall meet the requirements of Section 93 with the following deviations:
 - 1) Battery backup is not required.
 - 2) The controller cabinet shall be a NEMA Type M enclosure capable of pole mounting with cable conduit opening(s) in the center bottom.
- b) **Portable Temporary Traffic Control Signal:** Shall operate from one master controller at a given site. The second controller or additional slave units shall be controlled by the master unit.

The controller shall have an operating temperature range from -40 to +120°F.

- 6. Vehicle Detection:** The system shall be capable of video, loop, microwave, or radar detection. Contractor may use existing detectors per plans and shall provide temporary detectors in the event existing detectors are unusable.
- 7. Traffic Signal Programming:** The Contractor shall program the controllers with the traffic signal programming that is provided in the project plans. Should the project plans not specify a traffic signal program, the City shall provide the traffic signal programming in writing. As project conditions and traffic needs change, the

Contractor will adjust the traffic signal splits and offsets as directed by the Engineer.

- H. Arrow Boards:** On roads with normal posted speeds of 45 mph and above, Type C units shall be used for all operations 24 hours or more in duration and Type B units may be used for operations less than 24 hours in duration. On roads with normal posted speeds less than 45 mph, Type A, B, or C, units may be used for all operations.

Type A: 48 inches x 24 inches, visible for a minimum of $\frac{1}{2}$ mile

Type B: 60 inches x 30 inches, visible for a minimum of $\frac{3}{4}$ mile

Type C: 98 inches x 48 inches, visible for a minimum of 1 mile

- I. Portable Changeable Message Signs:** Shall conform to Part 6 of the MUTCD except the minimum mounting height may be lowered, as approved by the Engineer. The Contractor shall furnish, place, operate, and maintain the Portable Changeable Message Signs (PCMS) at the locations shown on the plans.

J. Temporary Pavement Marking:

1. **General:** Temporary pavement markings shall be maintained in good condition until the permanent pavement marking is in place, or until approved by the Engineer.
2. All roadways open to traffic (including, but not limited to, newly paved surfaces, cold milled surfaces, asphalt surface treatments, flush seals, fog seals, and tack coats) shall have temporary centerline markings, lane lines, and lane use markings placed according to plans and MUTCD part 6 prior to nightfall.

Unless otherwise shown on the plans, centerline and the applicable lane lines may be temporarily marked by temporary pavement marking tape, temporary raised pavement markers, temporary flexible vertical markers (tabs), or temporary pavement marking paint.

The Contractor shall take the steps necessary to ensure the temporary markings on the final surface will match the markings on the existing surface.

3. **Materials for Temporary Pavement Marking:** Temporary pavement marking tape, temporary raised pavement markers, temporary flexible vertical markers (tabs), and temporary pavement marking paint shall be of the type specified and shall meet the following requirements.
 - a) **Temporary Pavement Marking Tape:** Shall be applied according to the manufacturer's recommendations.
 - b) **Temporary Raised Pavement Markers:** Shall be applied according to the manufacturer's recommendations. Four (4) inch wide reflectorized markers may be used in place of tape or paint.

- c) **Temporary Flexible Vertical Markers (Tabs):** Shall be applied according to the manufacturer's recommendations. Four (4) inch wide reflectorized markers may be used in place of tape or paint.
- d) **Temporary Pavement Marking Paint:** Shall be applied in accordance with Section 91.
- e) **Removal of Pavement Markings:** Shall be designated by the Engineer.

Pavement markings shall be removed from the pavement by methods that do not damage the surface or texture of the pavement. Pavement markings shall be removed before the traffic pattern is changed.

Covering the markings is not acceptable removal.

Sand or other material used for removal shall be disposed of as the work progresses. Accumulations of sand or other material, which interferes with drainage or constitutes a hazard to traffic, will not be permitted.

When sand blasting is used for removal of pavement markings or objectionable material, and the removal operation is performed within 10 feet of a lane occupied by the traveling public, the residue including dust, shall be removed immediately by a vacuum attachment operating concurrently with the sand blasting operation.

Damage to the pavement surface caused by pavement marking removal shall be repaired at the expense of the Contractor.

92.3 METHOD OF MEASUREMENT

- A. **Traffic Control, Lump Sum:** If traffic Control, Lump Sum bid item is utilized, field measurement for traffic control will not be measured.
- B. **Flagging:** Will be measured to the nearest 0.5 hour a flagger is performing flagging work. A record of the number of flagger hours used will be submitted to the Engineer.
- C. **Pilot Car:** Will be measured to the nearest 0.5 hour a pilot car is performing pilot car work. A record of the number of pilot car hours used will be submitted to the Engineer.
- D. **Traffic Control, Miscellaneous:** Will not be made.
- E. **Type 3 Barricades:** Type 3 barricades, of the type and length specified, will be measured per each used on the project. Measurement for Type 3 barricades will be made one time even if the Type 3 barricades are moved or replaced. The number of Type 3 barricades measured will be the greatest number of installations in place at

any one time, regardless of the number of setups throughout the duration of the project.

- F. Flexible Delineators:** Will be measure per each used on the project.
- G. Traffic Control Signs:** Will be measured to the nearest 0.1 foot and the area computed to the nearest 0.1 square foot of the sign face. Deduction will not be made for rounded corners. Measurement for traffic control signs will be made one time even if the traffic control signs are moved or replaced. The amount of traffic control signs measured will be the greatest number of installations in place at any one time, regardless of the number of setups throughout the duration of the project.
- H. Temporary Traffic Control Signal:**
 - 1. Short Term Temporary Traffic Control Signal:** Will be made on a per site basis. One site will be considered to be all signals, overhead span wires, support poles, and other equipment in use at an intersection.
 - 2. Portable Temporary Traffic Control Signal:** Will be made on a per each basis. One unit will be considered to be a portable traffic control signal mounted on a trailer.
- I. Arrow Board:** Will be measured on a per each basis of the total number of arrow boards used on the project. Measurement for arrow boards will be made one time even if the arrow boards are moved or replaced. The amount of arrow boards measured will be the greatest number of arrow boards on the project at any one time, regardless of the number of setups throughout the duration of the project.
- J. Portable Changeable Message Sign:** Will be measured on a per each basis of the total number of portable changeable message signs used on the project. Measurement for portable changeable message signs will be made one time even if the portable changeable message signs are moved or replaced. The amount of portable changeable message signs will be the greatest number of portable changeable message signs on the project at any one time, regardless of the number of setups throughout the duration of the project.
- K. Temporary Pavement Marking:** Measurement for tape and paint will be made the linear foot of tape or paint. Tabs, and raised pavement markers will be measured by the each.
- L. Remove Pavement Marking:** Will not be made. The plan quantity will be used for payment unless additional pavement marking removal is ordered by the Engineer.

92.4 BASIS OF PAYMENT

- A. Traffic Control, Lump Sum:** If traffic Control, Lump Sum bid item is utilized, field measurement for traffic control will not me measured. Payment will be full compensation for installation, maintenance, relocation, and removal of the traffic

control devices. Based on the lump sum contract price for Traffic Control, partial payments will be considered based on the following schedule:

<u>Milestone</u>	<u>Payment Amount</u>
Necessary signs furnished to site	50% of bid item amount
40% of original contract amount earned	75% of bid item amount
Project completion	100% of bid item amount

- B. Flagging:** Will include all costs for provided certified flagger, stop/slow paddle, flag, and any nighttime illumination required. The accepted number of flagging hours will be paid at the contract unit price.
- C. Pilot Car:** Will be paid for at the contract unit price.
- D. Traffic Control, Miscellaneous:** Will include all costs for installation, maintenance, and removal of all cones; Type 1 and Type 2 barricades; tubular markers; vertical panels; direction indicator barricades; drums; flashing warning lights; and flags on signs; temporary pedestrian access route. Payment will include all costs for removing and covering non-applicable traffic control devices, shadow vehicles, traffic control inspections, reporting for traffic control inspections, and the designated traffic control contact person.
- E. Type 3 Barricades:** Will include all cost for installation, maintenance, and removal.
- F. Flexible Delineators:** Will include all cost for installation, maintenance, and removal.
- G. Traffic Control Signs:** Will be paid for by the square foot. Payment for traffic control signs will be made following satisfactory installation. Payment will be full compensation for installing, maintaining, relocating, and removing traffic control signs and supports. Hinged signs and signs with tabs, such as right and left signs, will be paid for as one sign. Costs for posts and supports shall be included in the contract unit price of the sign.

Additional payment will not be made for any traffic control sign turned away, covered, or temporarily taken out of service and returned to service. If a fixed location traffic control sign is relocated due to an error in the plans or as directed by the Engineer, an additional 50% of the designated sign rate will be paid.

The Contractor's failure to maintain, relocate, or remove traffic control signs and supports as required will result in a price adjustment assessed to the contract.

H. Temporary Traffic Control Signal:

- 1. Short Term Temporary Traffic Control Signal:** Will be paid for at the contract unit price per each site. Payment will be full compensation for furnishing, installing, maintaining, tree trimming, and all other incidentals for the short term

- temporary traffic control signal, which may include using existing controller, signal heads, and detectors or providing new as designated in the plans.
- 2. Portable Temporary Traffic Control Signal:** Will be paid for at the contract unit price per each unit. Payment will be full compensation for furnishing, installing, maintaining, relocating, tree trimming, and all other incidentals for the portable temporary traffic control signal.
 - I. Arrow Board:** Will be paid for at the contract unit price per each. Payment will be full compensation for labor, equipment, materials, delivery, installation, maintenance, relocation, and removal.
 - J. Portable Changeable Message Sign:** Will be paid for at the contract unit price per each. Payment will be full compensation for labor, equipment, materials, delivery, installation, maintenance, relocation, and removal.
 - K. Temporary Pavement Marking:** Will be by the linear foot for paint and tape, and per each for tabs and raised pavement markings. Payment will be full compensation for all costs to furnish, install, and remove (when required) temporary pavement markings including costs to remove and properly dispose of temporary road marker covers, temporary road markers, and temporary pavement marking tape.
 - L. Remove Pavement Marking:** Will be by the foot, each, word, or square foot depending on the bid item unit description. Payment will be full compensation for all costs to remove and properly dispose of the pavement markings.

END OF SECTION