

When copying from this document set the following Styles:

S-1 (1404) MAINTENANCE OF TRAFFIC AND (2563) TRAFFIC CONTROL

The following write-up was created by the Traffic Control Specification Review Committee. Whomever in the District is putting together the time and traffic for the job, needs to go through the following write-up and pick and choose which portions are needed on the job.

THE SPECIAL PROVISIONS UNIT CAN NOT DO THIS FOR YOU.

REVISED 05/13/16 ◀DO NOT REMOVE THIS. IT NEEDS TO STAY IN FOR THE CONTRACTORS.

SP2016-18

All traffic control devices shall conform and be installed in accordance to:

- the "Minnesota Manual on Uniform Traffic Control Devices" (MN MUTCD);
- Part 6, "Field Manual for Temporary Traffic Control Zone Layouts" (Field Manual);
- the Speed Limits in Work Zones Guideline
- the Minnesota Flagging Handbook;
- the Minnesota MnDOT Standard Signs and Markings Manual;

Comment 1

The correct name of the MnDOT Manual where Standard Sign and Pavement Marking designs may be found.

And the provisions of MnDOT 1404 and 1710, the Plan, and these Special Provisions.

The Contractor shall furnish, install, maintain, and remove all traffic control devices required to provide safe movement of vehicular traffic through the Project during the life of the Contract from the start of Contract operations to the completion thereof. The Engineer will have the right to modify the requirements for traffic control as deemed necessary due to existing field conditions. The highways shall be kept open to traffic at all times, except as modified below.

Traffic control devices include, but are not limited to, barricades, warning signs, trailers, flashers, cones, and drums, as required and sufficient barricade weightsballasts to maintain barricade stability.

Comment 2

Ballast is the correct term for weights used to stabilize a barricade.

Use the following paragraph on jobs that have FEDERAL FUNDING on them.

The Contractor is advised of the changes to the Prevailing Wage Coverage as noted in the Notice to Bidders – Traffic Control Prevailing Wage Coverage contained in the front of this Proposal.

S-1.1 TRAFFIC CONTROL

- (A) If traffic control layouts are not present in the Plan, or if the Contractor modifies the layout or sequence from the Plan, the Contractor shall submit the proposed traffic control layout to the Engineer, for approval, at least seven (7) days prior to the start of construction. The Contractor does not need to submit layouts that can be found in the Field Manual. All other layouts that are not found in the plan or Field Manual shall be submitted. At least 24 hours prior to placement, all traffic control devices shall be available on the Project for inspection by the Engineer. The Contractor shall modify his/her proposed traffic control layout and/or devices as deemed necessary by the Engineer.

Comment 3

Field Manual layouts do not need to be submitted for review.

(B) The Contractor shall be responsible for the immediate repair or replacement of all traffic control devices that become damaged, moved or destroyed, of all lights that cease to function properly, and of all barricade weights/ballasts that are damaged, destroyed, or otherwise fail to stabilize the barricades. The Contractor shall further provide sufficient surveillance of all traffic control devices at least once every 24 hours.

Choose one of the following:

The Contractor shall furnish the Engineer names, addresses and phone numbers of at least two (2) local persons responsible for all traffic control devices.

OR

The Contractor shall furnish names, addresses, and phone numbers of at least three (3) individuals responsible for the placement and maintenance of traffic control devices. These individuals shall be "on call" 24 hours per day, seven days per week during the times any traffic control devices, furnished and installed by the Contractor, are in place. The required information shall be submitted to the Engineer at the Pre-construction Conference.

(C) The Contractor shall inspect, on a daily basis, all traffic control devices, which the Contractor has furnished and installed, and verify that the devices are placed in accordance with **the Traffic Control Layouts**, these Special Provisions, and/or the MN MUTCD. Any discrepancy between the placement and the required placement shall be immediately corrected.

The Contractor shall be required to respond immediately to any call from the Engineer or his designated representative concerning any request for improving or correcting traffic control devices. **If the Contractor is negligent in correcting the deficiency within one hour of notification the Contractor shall be subject to an hourly charge assessed at a rate of \$250.00 per hour for each hour or any portion thereof with which the Engineer determines that the Contractor has not complied.**

The Contractor is required to meet the traffic control device quality standards as determined in the Field Manual. The Contractor shall immediately replace traffic control devices that are deemed unacceptable. Signs that are dirty and result in a noticeable loss of reflectivity at night are also considered unacceptable and shall be cleaned or replaced. The Contractor shall be required to respond immediately to any call from the Engineer or his designated representative concerning the notification of unacceptable traffic control devices. **If the Contractor is negligent in correcting the deficiency within one day of notification the Contractor shall be subject to a daily charge assessed at a rate of \$500 for each day or any portion thereof with which the Engineer determines that the Contractor has not complied.**

(D) The person performing the inspection in paragraph (C) above shall be required to make a daily log. This log shall also include the date and time any changes in the stages, phases, or portions thereof go into effect. The log shall identify the location and verify that the devices are placed as directed or corrected in accordance with the Plan. All entries in the log shall include the date and time of the entry and be signed by the person making the inspection. The Engineer reserves the right to request copies of the inspection logs, as he deems necessary.

The Contractor shall provide copies of the inspection logs on a weekly basis on a day of the week determined by the Engineer. Additionally the Engineer may request copies of the logs at any time he deems necessary. **If the Contractor is negligent in providing the inspection logs on the predetermined weekly date or at the Engineer's request, the Contractor shall be subject to a daily charge assessed at a rate of \$250.00 per day for each day or any portion thereof with which the Engineer determines that the Contractor has not complied.**

(E) If, at any time, the Contractor fails to, in a timely manner, properly furnish, install, maintain or remove any of the required traffic control devices, the Department reserves the right to correct the deficiency. **Each**

time the Department takes such corrective action, the costs thereof, including mobilization, plus \$5,000 will be deducted from monies due or coming due the Contractor.

S-1.2 GENERAL REQUIREMENTS

(A) All portable sign assemblies shall be perpendicular to the ground. No roll-up signs will be allowed unless authorized by the Engineer. No traffic control device (signs, channelizing devices, arrowboards, etc.) shall be weighted so they become hazardous to motorists and workers. The approved ballast system for devices mounted on temporary portable supports is sandbags, unless it is designed, crash tested, and approved for the specific device. During freezing conditions, the sand for bags shall be mixed with a de-icer to prevent the sand from freezing. The sandbags shall be placed and maintained at the base of the traffic control device to the satisfaction of the Engineer.

When signs will remain in the same location for more than 30 consecutive days the signs shall be post mounted. This would not include portable signs, which are set up and taken down at the beginning and end of each work shift. The signs must be post mounted according to the Typical Temporary Sign Framing and Installation Detail Sheet found in the Plan or in these Special Provisions.

(B) When signs are installed, they shall be mounted on posts driven into the ground at the proper height and lateral offset as detailed in the MN MUTCD. **When signs are removed, the sign posts and stub posts shall also be removed from the Right of Way within two (2) weeks or the Contractor shall be subject to a daily charge assessed at a rate of \$100.00 per day for each day or portion thereof with which the Engineer determines that the Contractor has not complied.**

(C) All temporary rigid signs shall be fabricated with an approved retroreflective sheeting material of the appropriate color, and be listed under the Approved/Qualified Products List (APL/QPL) for either “Sheeting for Rigid Temporary Work Zone Signs, Delineators, and Markers (Type IX and XI)” or “Sheeting for Rigid Permanent Signs, Delineators, and Markers (Type IX and XI)”. Signs remaining in place that still apply during temporary operations need no change in sign sheeting.

Signs shall have an easily identifiable marking on the face to make the identification of approved retroreflective sign sheeting on temporary rigid signs in the field easier. This marking verifies that the sign sheeting has been approved for temporary rigid signs. Temporary rigid signs 4 sq. feet and under in size and all barricades and route markers will be exempt from this marking. The appropriate marking shall be used for each type of the approved sheeting types. Refer to the instructions for the marking of temporary signs that are on the APL or directly at the following link: <http://www.dot.state.mn.us/products/signing/pdf/typelabel.pdf>

The sheeting materials APL/QPL, including the retroreflective sheeting types, is located at <http://www.dot.state.mn.us/products/signing/sheeting.html>

Fill in the blanks in the following paragraph.

(D) At the beginning of the Project, the Contractor shall store at least [redacted] extra Type III barricades and [redacted] extra retroreflective drums, at a convenient location within the Project limits, to be used at the discretion of the Engineer. Furnishing and erecting these traffic control devices shall be incidental.

If additional devices, beyond the quantity specified above, are ordered by the Engineer the Contractor will be compensated according to Section **S-1404.10** (ADDITIONAL TRAFFIC CONTROL DEVICES AND EXTENDED USE OF TRAFFIC CONTROL DEVICES) of this Special Provision.

Districts should use the following to designate which operations, if any, will be allowed to utilize the Type A channelizers instead of barrels.

(E) On [redacted] operations, weighted channelizers (Type A) may be used in place of drums (Type B) for delineation in non-transition areas and may also be used to delineate the edge of a pavement drop-off of 4 inches [100 mm] or less. Except as authorized by the Engineer, these devices will only be allowed during daytime operations and cannot be used in unattended work zones.

Comment 4
Remove Metric Unit references throughout the document.

On _____ operations, 36 inch (900 mm) tubular markers (Type A) may be used in place of drums (Type B) for delineation in non-transition areas or to delineate the edge of pavement drop-off of 4 inches (100 mm) or less. Except as authorized by the Engineer, these devices will only be allowed during daytime operations and cannot be used in unattended work zones.

Use (F) only if it applies to the Project!

(F) **In Place Signing**

All in place signs and delineators mounted on less than three posts (not including back bracing) and which interfere with the Contractor's normal operation, shall be relocated outside of the work area by the Contractor at the direction of the Engineer. Any signs that are removed and might be reused are to be stored in such a manner as to protect the sign from scratching, fading, or other harmful results until said signs are reinstalled or delivered to MnDOT. All signs mounted on three or more posts requiring relocation will be relocated by State forces. The Contractor shall notify the Engineer ~~xxx~~ Working Days prior to the required relocation work. Signs mounted on three or more posts that must be removed but not relocated shall be removed by the Contractor. Upon completion of work at each sign location, or at the direction of the Engineer, the signs shall be replaced as near to their original locations as possible or to a location designated by the Engineer. Signs and structures damaged by the Contractor shall be replaced by him at his own expense. Regulatory signs, not otherwise covered by this Contract, may only be removed, replaced, or relocated by MnDOT personnel.

All costs incurred to relocate, salvage, and reinstall in place signing shall be incidental work.

OR

(F) **In Place Signing**

All in place signs and delineators that interfere with the Contractor's normal operation shall be relocated outside of the work area or removed by the Contractor at the direction of the Engineer. **This includes any other sign that interfere with the Contractor's operation.** Signs that are removed and will be reused are to be stored in such a manner as to protect the sign from scratching, fading, or other harmful effects until said signs are reinstalled. Upon completion of work at each sign location, or at the direction of the Engineer, the signs shall be replaced as near to their original locations as possible or to a location designated by the Engineer. **Signs and structures damaged by the Contractor shall be replaced by him at his own expense.**

The reinstalled sign posts shall be plumb and the sign panels shall be level. The minimum mounting height shall be 7 feet above the elevation of the traveled roadway. The minimum embedment length of the stub posts shall be 3.5 feet. The splice between the stub post and the riser post shall be a minimum of 12 inches. **The Contractor will be assessed a \$100 charge for each sign that does not comply with the In Place Signing requirements. In addition the Contractor will be required to correct the deficiency at his own cost within 2 weeks of being notified by MnDOT. If the deficiency has not been corrected within 2 weeks, the Contractor will be charged \$50 per sign per day until the deficiency has been corrected.**

All costs incurred to relocate, salvage, and reinstall in place signing shall be incidental ~~work~~.

(G) Open excavation adjacent to the existing pavement will not be permitted on opposite sides of the roadway at the same time.

(H) **The Contractor shall provide protective devices necessary to protect traffic from excavations, drop-offs, falling objects, splatter or other hazards that may exist during construction. This work shall be incidental.** The Contractor will not be allowed to suspend material, equipment, tools and personnel over traffic unless a lane closure is established below. All costs associated with the lane closure will be considered incidental.

(I) The Contractor will not be permitted to park vehicles or construction equipment in a location that obstructs any traffic control device. The parking of workers' private vehicles will not be allowed within the Project limits unless so approved by the Engineer.

Optional: Use this paragraph when you do not want the Contractor unloading or loading equipment without a full shoulder closure.

Note 1 of Layout 2 of the Field Manual is hereby deleted. The Contractor will not be allowed to load or unload material or equipment on the shoulders of the roadway without a full shoulder closure using appropriate signs, barricades and channelizing devices as directed by the Engineer.

(J) The Contractor will not be allowed to store materials or equipment within 30 feet [10 m] of through traffic unless approved by the Engineer. If materials or equipment must be stored within 30 feet [10 m] of through traffic, the Contractor shall provide Type B channelizers, barricades or barriers, placed near the object to warn and protect traffic.

(K) **High Visibility Apparel**

All workers within the road Right-of-Way who are exposed to either traffic or to construction equipment shall wear reflectorized high-visibility safety apparel.

High-visibility safety apparel means personal protective safety clothing that is intended to provide conspicuity during both daytime and nighttime usage, and meets the minimum performance Class 2 requirements of the ANSI/ISEA 107 – 2004 publication entitled “American National Standard for High-Visibility Safety Apparel and Headwear”.

Additional Requirements: ANSI/ISEA 107-2004 Class 3 Requirements (Class 2 Vest with Class E Long Pants)

- Flaggers– In addition to an ANSI Class 2 vest, shirt, or jacket, flagger shall wear high visibility Class E long pants and a hat.
- Nighttime and Low Light Conditions – All workers working at night or in low light conditions shall wear high visibility Class E long pants in addition to an ANSI Class 2 vest, shirt, or jacket and retro-reflective headgear.

All high visibility apparel must be worn in the manner for which it was designed. All apparel worn on the torso must be closed in the front to provide contiguous 360 degree visibility. If a worker’s high-visibility apparel becomes faded, worn, torn, dirty, or defaced, reducing the conspicuity of the apparel, the apparel shall be removed from service and replaced with new apparel.

The Contractor will be subject to a non-compliant charge for failure to adhere to the clothing requirements as listed above. Non-compliance charges, for each incident, will **assessed at a rate of \$500.00 per incident** that the Engineer determines that the Contractor has not complied.

(L) **Night Work**

When work will be performed between the official hours of sunset and sunrise, all appropriate practices for night work will apply.

The Contractor shall provide sufficient numbers of light plants to illuminate the work area as determined by the Engineer. All costs incurred to provide such light plants shall be incidental.

The Contractor shall provide a sufficient amount of 2 inch [50 mm] wide highly reflective vehicle marking tape to be applied to Contractor vehicles and equipment **as directed by the Engineer, and as provided by the manufacturer's instructions**. This tape shall be considered incidental and shall be on the Approved Products List for “Conspicuity Vehicle Sheeting (Type VII)” as found at: <http://www.dot.state.mn.us/products/signing/sheeting.html>. Vehicle examples to be marked with tape are Contractor rollers, paver, millers and other equipment normally found in the lane closure.

Comment 5

The Contractor should provide Conspicuity Tape to mark their equipment and vehicles.

The State will assess monetary deductions in the amount of \$1000.00 for each Calendar Day or portion thereof, that the Contractor fails to provide sufficient numbers of light plants as described in this Section S-___. As light plants may be dedicated or otherwise made available to the Project, this assessment will be chargeable even if reasons beyond the control of the Contractor such as breakdowns, late delivery of materials, weather delays, or other unanticipated problems cause the work to be accomplished in non-daylight hours.

Use (M) when there is a pay item for Workers Present Speed Limit

(M) Workers Present Speed Limit

A “Workers Present Speed Limit” will be required on this project at all times that lane closures are in use and workers are present in the lane adjacent to through traffic. Provide speed limits signs and assemblies in accordance with the “Speed Limits in Work Zone Guidelines.” This publication may be obtained from the Office of Traffic, Safety and Technology, the District Traffic Engineer or at the following website: <http://www.dot.state.mn.us/speed/pdf/WZSpeedLimitGuideline.pdf>.

Payment for workers present speed limits will be made by the Unit Day as provided in Section S-2563 (WORKERS PRESENT SPEED LIMIT) of these Special Provisions.

OR

All costs incurred to provide workers present speed limits shall be incidental.

(N) The Contractor shall provide a Traffic Control Supervisor. Payment and measurement will be made as provided in Section S-2563 (TRAFFIC CONTROL SUPERVISOR) of these Special Provisions.

(O) In temporary traffic control zones only, a 12” x 18” black on white “Keep Right” sign, may be used in lieu of the sizes stated in the Standard Signs Manual.

S-1.3 VEHICLE WARNING LIGHT SPECIFICATION

All Contractors, subcontractors' and suppliers' mobile equipment, operating within the limits of the Project with potential exposure to passing traffic, shall be equipped with operable warning lights that meet the appropriate requirements of the SAE specifications. This would include closed roads that are open to local traffic only. This also includes any vehicle that enters the traveled roadway at any time. The SAE specification requirements are as follows:

~~360 Degree Rotating Lights~~ Optical Warning Devices for Authorized Emergency, Maintenance, and Service Vehicles- SAE Specification J845

~~Flashing Lights~~ Directional Flashing Optical Warning Devices for Authorized Emergency, Maintenance, and Service Vehicles - SAE Specification J595

~~Flashing Strobe Lights~~—SAE Specification J1318

Lights shall be mounted so that at least one light is visible at all times from a height of 3.5 feet and from a 60 foot radius about the equipment. In order to meet the 360 degree at 60 foot [18 m] radius requirements supplemental lighting may be used in addition to the lights on the Approved Products List. All supplemental lights must be SAE Class 1 certified. This specification is to be used for both day and night time operations. All costs incurred to provide warning lights shall be at no cost to the Department. These warning lights shall also be operating and visible when a vehicle decelerates to enter a construction work zone and again when a vehicle leaves the work zone and enters the traveled traffic lane.

~~Any warning lights shall be on the Approved Products List for Vehicle Lighting which is found at the following weblink: <http://www.dot.state.mn.us/products/vehiclelighting/vehiclesafetylights.html>. The list may also be obtained by contacting:~~

~~Vehicle Warning Lights
Office of Construction MS722~~

Transportation Bldg. OR by calling: (651)366-3585
395 John Ireland Blvd.
St. Paul, MN 55155

This list is updated periodically. Warning light suppliers and manufacturers may contact the above for information on adding new products to the list.

A \$100 penalty (per incident) will be assessed against the Contractor each time failure to comply with the above requirements is observed on the Project site. Non-compliance with the above requirements will be assessed a rate of \$100.00 per incident that the Engineer determines that the Contractor has not complied.

Comment 6

Updates the SAE specifications for Vehicle Lighting. Removes the reference to an Approved Products List.

S-1.4 LANE CLOSURE REQUIREMENTS

Use only the paragraphs that apply to this Project!

Use for Metro District

(A) Temporary lane closures or other traffic restrictions by the Contractor, during work hours and consistent with the time restrictions, will be permitted only during those hours and at those locations approved by the Engineer. **Requests for temporary lane closures shall be made at least 2 business days prior to the closure.** When a temporary lane closure is used by the Contractor, the closure shall be incidental work.

The Contractor shall contact the Regional Transportation Management Center (RTMC) at 651-234-7093 at the time when a lane freeway lane or ramp closure begins and again at the time when the freeway lane or ramp closure ends. The Contractor shall also contact the RTMC at the beginning and end times of full freeway roadway closures.

Comment 7

Contact the RTMC when closing a lane or ramp so that they may post and remove messages on Changeable Message Signs.

Use for all Districts, except Metro

(A) Temporary lane closures or other traffic restrictions by the Contractor, during work hours and consistent with the time restrictions, will be permitted only during those hours and at those locations approved by the Engineer. Requests for temporary lane closures shall be made at least 24 hours prior to such closures. When a temporary lane closure is used by the Contractor, the closure shall be incidental work.

Choose the appropriate (B)

Use for Metrowide projects and/or projects with multiple locations.

(B) Temporary lane restrictions will only be allowed as described in 1) and 2) below. If 1) and 2) conflict, the more restrictive condition will apply.

- (1) Work that will restrict or interfere with traffic will not be permitted between the hours of ____ A.M. and ____ A.M. and between the hours of ____ P.M. and ____ P.M. **Work that will restrict or interfere with traffic shall not be performed between 12:00 noon on the day preceding and 9:00 A.M. on the day following any consecutive combination of a Saturday, Sunday and legal holiday.**
- (2) Temporary lane closures will be permitted in accordance with the hours and number of lanes allowed as indicated in the Metro Lane Closure Manual,

<http://www.dot.state.mn.us/metro/trafficeng/laneclosure/index.html>. Lane closures that cross segments as defined in the Manual shall follow the more restrictive limits.

The Engineer will have the right to lengthen, shorten, or otherwise modify the foregoing periods of restrictions as actual traffic conditions may warrant. **If the Contractor is negligent in adhering to the established time schedules, he shall be subject to an hourly charge assessed at a rate of \$500.00 per hour for each hour or any portion thereof with which the Engineer determines that the Contractor has not complied.**

OR

(B) Work that will restrict or interfere with traffic will not be permitted between the hours of [] A.M. and [] A.M. and between the hours of [] P.M. and [] P.M. **Work that will restrict or interfere with traffic shall not be performed between 12:00 noon on the day preceding and 9:00 A.M. on the day following any consecutive combination of a Saturday, Sunday and legal holiday.** The Engineer will have the right to lengthen, shorten, or otherwise modify the foregoing periods of restrictions as actual traffic conditions may warrant. **If the Contractor is negligent in adhering to the established time schedules, he shall be subject to an hourly charge assessed at a rate of \$500.00 per hour for each hour or any portion thereof with which the Engineer determines that the Contractor has not complied**

OR

(B) Temporary lane closures will be permitted in accordance with the hours and number of lanes allowed as indicated in the Metro Lane Closure Manual, <http://www.dot.state.mn.us/metro/trafficeng/laneclosure/index.html>. Lane closures that cross segments as defined in the Manual shall follow the more restrictive limits. The Engineer will have the right to lengthen, shorten, or otherwise modify the foregoing periods of restrictions as actual traffic conditions may warrant. **If the Contractor is negligent in adhering to the established time schedules, he shall be subject to an hourly charge assessed at a rate of \$500.00 per hour for each hour or any portion thereof with which the Engineer determines that the Contractor has not complied.**

OR

(B) Temporary lane closures or other traffic restrictions will only be permitted between the official hours of sunrise and sunset. **Work that will restrict or interfere with traffic shall not be performed between 12:00 noon on the day preceding and 9:00 A.M. on the day following any consecutive combination of a Saturday, Sunday and legal holiday.** The Engineer will have the right to lengthen, shorten, or otherwise modify the foregoing periods of restrictions as actual traffic conditions may warrant. **If the Contractor is negligent in adhering to the established time schedules, he shall be subject to an hourly charge assessed at a rate of \$500.00 per hour for each hour or any portion thereof with which the Engineer determines that the Contractor has not complied.**

OR

(B) The Contractor shall maintain traffic as follows at the locations and times listed below:

THERE SHALL BE NO INTERFERENCE WITH TRAFFIC AT THE FOLLOWING LOCATIONS AND TIMES (24 HOUR CLOCK):						
T.H. (direction)	Location	Sun.	Mon.	T, W, Th	Fri.	Sat.

The Engineer will have the right to lengthen, shorten, or otherwise modify the foregoing periods of restrictions as actual traffic conditions may warrant. **If the Contractor is negligent in adhering to the**

established time schedules, he shall be subject to an hourly charge assessed at a rate of \$500.00 per hour for each hour or any portion thereof with which the Engineer determines that the Contractor has not complied.

OR

(B) **Insert TMC Chart here**

The Engineer will have the right to lengthen, shorten, or otherwise modify the foregoing periods of restrictions as actual traffic conditions may warrant. **If the Contractor is negligent in adhering to the established time schedules, he shall be subject to an hourly charge assessed at a rate of \$500.00 per hour for each hour or any portion thereof with which the Engineer determines that the Contractor has not complied.**

(C) Unless otherwise approved by the Engineer, any temporary lane closure that is adjacent to traffic, and is extending to or beyond 1000 feet [300 m] shall have a minimum of one Type III barricade, or three drums, placed in the closed lane for every 1000 feet [300 m] of extension. Any lane closure that is adjacent to traffic and in place 3 days or more, shall use the Type III barricade only.

(D) All lane closures shall have Drum (Type B) Channelizers with florescent reflectorized sheeting in the lane closure taper and in any shifts in traffic alignment.

(E) Short Term Duration lane closures will not be permitted during inclement weather, nor any other time when, in the opinion of the Engineer, the lane closure will be a greater than normal hazard to traffic.

Optional: Use this paragraph when there will be work performed in areas that have minimal shoulder or median widths and high speeds and volumes.

(F) When working on the shoulder or median the Contractor shall only perform this work using a lane closure on mainline and adhering to the above lane closure restrictions.

OR

When working on the shoulder or median the Contractor shall install the traffic control according to Layout 2 (Work on Shoulder) of the Field Manual. Notes 1 and 2 are deleted on Layout 2.

(G) Temporary lane restrictions and/or closures for removing and/or erecting overhead structures are permitted between the hours of [] A.M. and [] A.M. as approved by the Engineer. If the Contractor requests to close the road and the Engineer approves that it is necessary to temporarily detour traffic in order to remove or set the structures, the Contractor shall furnish the detour as directed by the Engineer. The temporary detour shall be incidental work. **If the Contractor is negligent in adhering to the established time schedules, he shall be subject to an hourly charge assessed at a rate of \$1500.00 per hour for each hour or any portion thereof with which the Engineer determines that the Contractor has not complied.**

The Contractor may stop all traffic on any road open to traffic to erect or remove overhead structures for periods not to exceed fifteen minutes only from 1:30 A.M. to 5:00 A.M. The Contractor shall allow sufficient clearance time between stopped periods to minimize the delay to traffic. **If the Contractor is negligent in adhering to the established time schedules, he shall be subject to an hourly charge assessed at a rate of \$1500.00 per hour for each hour or any portion thereof with which the Engineer determines that the Contractor has not complied.**

(H) No center lane closures will be permitted. Only double lane closures as shown in the Field Manual will be allowed at the times as directed by the Engineer. This may require night lane closures if traffic volumes warrant.

(I) The Contractor shall maintain a minimum of 1.25 miles [two km] between temporary lane closures, except if allowed by the Engineer.

~~Need to choose whether flashing arrow panel is incidental or will be paid for under Additional traffic control devices.~~

(J) **Flashing Arrow Boards**

The Contractor shall provide one vehicle or trailer mounted flashing arrow board for each lane of each work area where traffic is restricted. The arrow board shall meet the requirements of the MN MUTCD, and be on the Temporary Traffic Control Electronic Equipment Approved/Qualified Products List for “Flashing Arrow Boards” found at: <http://www.dot.state.mn.us/products/temporarytrafficcontrol/tcceelectronicequipment.html>. The flashing arrow board shall be equipped with a light that is visible to personnel in the work area to indicate that the unit is in operation. All costs incurred to provide the flashing arrow board shall be incidental.

OR

~~The Contractor shall provide one vehicle or trailer mounted flashing arrow board for each lane of each work area where traffic is restricted. The arrow board shall meet the requirements of the MN MUTCD, and be on the Temporary Traffic Control Electronic Equipment Approved/Qualified Products List for “Flashing Arrow Boards” found at: <http://www.dot.state.mn.us/products/temporarytrafficcontrol/tcceelectronicequipment.html>. The flashing arrow board shall be equipped with a light that is visible to personnel in the work area to indicate that the unit is in operation. Payment for flashing arrow board will be made by the unit day as provided elsewhere in these Special Provisions.~~

~~If the flashing arrow board is incidental delete the last sentence of the following paragraph.~~

~~It is imperative that the Contractor continually operate each Flashing Arrow Board at maximum legibility. Many factors, such as mechanical problems, insufficient charging, incorrect intensity settings, or other factors can degrade performance. If at any time the Contractor fails to operate the Flashing Arrow Board at maximum legibility, as determined by the Engineer, no payment will be made for each day that the Flashing Arrow Board is deemed inadequate.~~

The Flashing Arrow Board shall be stored off the shoulder when not in use, except if allowed by the Engineer. In the event the Engineer allows the arrow board to remain on the shoulder, the arrow board shall be delineated according to Layout 4 (Partial Shoulder Closure) in the Field Manual, as determined by the Engineer.

When not being actively used as a traffic control device, the Flashing Arrow Board shall be stored beyond the clear zone distance. **Non-compliant charges, for each incident, will be assessed at a rate of \$500.00 per incident that the Engineer determines that the Contractor has not complied.**

Comment 8

Removes the option to use a unit price for an item that is required in the MN MUTCD.

Use (K) when portable changeable message sign is required

(K) **Portable Changeable Message Signs**

The Contractor will provide a Portable Changeable Message sign (s) on this project to communicate real time information as shown in the plans or directed by the Engineer.

(PCMS) Type C Trailer Mounted Message Signs will be permitted and shall be on the Approved Products List for “Changeable Message Signs: Type C - Three Lines, Trailer Mounted” as found at: <http://www.dot.state.mn.us/products/temporarytrafficcontrol/tcceelectronicequipment.html>. It is imperative that the Contractor continually operate each PCMS at maximum legibility. Many factors, such as mechanical problems, insufficient charging, incorrect intensity settings, or other factors can degrade performance. If at any time the Contractor fails to operate a Portable Changeable Message Sign at maximum legibility, as determined by the Engineer, no payment will be made for each day that the Message Sign is deemed inadequate.

Except as approved by the Engineer, the message sign shall be stored off the shoulder when not in use. In the event the Engineer allows the message board to remain on the shoulder the message sign shall be delineated according to Layout 4 (Partial Shoulder Closure) in the Field Manual, as determined by the Engineer.

When not being actively used as a traffic control device, the Portable Changeable Message Sign shall be stored beyond the clear zone distance. **Non-compliant charges, for each incident, will be assessed at a rate of \$500.00 per incident that the Engineer determines that the Contractor has not complied.**

Payment for Portable Changeable Message Signs furnished and installed, as directed by the Engineer, will be made for each PCMS by the Unit Day as specified in Section S-2563 (PORTABLE CHANGEABLE MESSAGE SIGN) of these Special Provisions.

OR

~~All costs incurred to provide Portable Changeable Message Signs shall be incidental.~~

Comment 9

Removes “incidental” as a payment option.

Choose the appropriate (L).

~~(L) **Truck/Trailer Mounted Attenuators (TMAs) For All Lane Closures**~~

~~If the Contractor establishes a lane closure on a high-speed roadway, a vehicle equipped with a truck/trailer mounted attenuator that meets Test Level 3 requirements of NCHRP 350 (or AASHTO’s Manual for Assessing Safety Hardware (MASH)) shall be placed in the closed lane next to traffic prior to the active work site, as directed by the Engineer. The lane closure shall meet the requirements described in the appropriate Field Manual layout.~~

AND/OR

Comment 10

Removes option of requiring a TMA for all lane closures.

(L) **Truck/Trailer Mounted Attenuators (TMAs) For Mobile Operations**

If the Contractor establishes any temporary traffic control zone defined as “Mobile” by the Field Manual; Truck/Trailer Mounted Attenuators (TMA) **SHALL** be used on all work vehicles or equipment operating totally or partially in the traffic lane. All references to “should” in the Field Manual in regards TMA use for Mobile layouts are hereby changed to “shall”. The truck mounted attenuator shall meet the requirements of NCHRP 350 or AASHTO’s Manual for Assessing Safety Hardware (MASH). If on a high-speed roadway, the TMA shall meet Test Level 3 requirements.

- (1) If any work vehicle, equipment or manual work zone is not equipped with a TMA, a shadow vehicle equipped with a TMA shall be utilized in lieu thereof. The TMA mounted shadow vehicle shall maintain a minimum distance as per manufactures specifications from any operation that is otherwise unprotected by a TMA.
- (2) This requirement shall apply to all operations utilizing a Mobile work zone; including, but not limited to interim and permanent traffic striping and marking, stripe removal, rumble strip grinding, bituminous core cutting, running of the profilograph, and any other operations meeting the criteria for Mobile operations, as shown in the Field Manual.

Any Truck/Trailer Mounted Attenuators used shall be on the Mobile Crash Attenuator Approved/Qualified Products List for “Truck/Trailer Mounted Attenuators” found at:
<http://www.dot.state.mn.us/products/temporarytrafficcontrol/mobilecrashattenuators.html>

If any work vehicle, equipment or manual work zone is not equipped with a TMA, a shadow vehicle equipped with a TMA shall be utilized in lieu thereof. The TMA mounted shadow vehicle shall maintain a minimum distance of 200 and maximum distance of 300 feet from any operation that is otherwise unprotected by a TMA.

This requirement shall apply to all operations utilizing a Mobile work zone; including, but not limited to interim and permanent traffic striping and marking, stripe removal, rumble strip grinding, bituminous core cutting, running of the profilograph, and any other operations meeting the criteria for Mobile operations, as shown in the Field Manual.

Payment for Truck Mounted Attenuator (TMAs), as directed by the Engineer, will be made for each Truck/Trailer Mounted Attenuator by the Unit Day as specified in Section **S-2563** (TRUCK/TRAILER MOUNTED IMPACT ATTENUATOR (TMA)) of these Special Provisions.

S-1.5 FLAGGER TRAINING AND REQUIREMENTS

(A) Any person acting as a flagger on this Project shall have attended a training session taught by a Contractor's qualified trainer. The Contractor's qualified trainer shall have completed a "MnDOT Flagger Train the Trainer Session" in the five years before the start date of this Contract and shall be on file as a qualified flagger trainer with the Department. The Flagger Trainer's name and Qualification Number shall be furnished by the Contractor at the pre-construction meeting. The Contractor shall provide all flaggers with the MnDOT Flagger Handbook and shall observe the rules and regulations contained therein. This handbook shall be in the possession of all flaggers while flagging on the Project. The Contractor shall obtain handbooks from the Department. Flaggers shall not be assigned other duties while working as authorized flaggers. The "Checklist for Flagger training" form shall be furnished to the Engineer any time a new flagger reports to work on the Project. The "Checklist for Flagger Training" form is found at: <http://www.dot.state.mn.us/const/wzs/documents/flaggertrainingchecklist.pdf>.

~~The Engineer will have the right to waive the above requirements.~~

Comment 11

Remove old language from when Flagger Training was just being implemented.

(B) The Contractor shall furnish Flaggers as required to adequately control traffic. Flaggers shall conform to the requirements set forth in the MN MUTCD. Payment for Flaggers will be made by the unit hour for each Flagger as provided elsewhere in these Special Provisions.

OR

(B) The Contractor shall furnish Flaggers as required to adequately control traffic. Flaggers shall conform to the requirements set forth in the MN MUTCD. All costs incurred to provide such Flaggers shall be incidental.

OR

(B) The Contractor shall furnish Flaggers as required to adequately control traffic. Flaggers shall conform to the requirements set forth in the MN MUTCD. Measurement and payment will be made as provided in Section **S-2563** (FLAGGER) of these Special Provisions.

(C) The Contractor shall provide two-way radios for Flaggers.

Flaggers shall wear high visibility retroreflective safety vests, pants and hats at all times while actively flagging on the Project. High visibility apparel shall also comply with current Minnesota OSHA Rules 5207.0100 and 5207.1000. The Flaggers clothing shall be considered incidental.

The Contractor shall keep the separation distance between the last sign in the “flagger ahead” signing sequence and the actual flagger to the amount shown in the Field Manual, whenever it is practical. The maximum separation distance allowed from the signs to the flagger shall be ½ mile [0.8 km]. The Contractor shall use multiple flagger signing set-ups or continuously move the signing for moving flagging operations to keep within the distance limit. The “flagger ahead” signing sequence shall not be in place when flagging operations are not in effect.

The maximum distance between flaggers shall be ½ mile [0.8 km] unless otherwise authorized by the Engineer. In the event a distance longer than one mile is authorized, the Engineer may order the Contractor to provide two pilot cars at no additional cost to MnDOT.

All signs associated with the flagging operation must be removed or covered when flagging operations are not present.

The Contractor will be subject to a non-compliant charge for failure to adhere to the requirements listed in this Section S-_. These requirements include: providing two-way radios for flaggers, properly attired flaggers, flagging operation length requirements, and distance limit between the flagger and the last sign in the flagger sequence, and removing or covering flagger signs when flagging operations are not present. **Non-compliance charges, for each incident will be assessed at a rate of \$500 per incident that the Engineer determines that the Contractor has not complied.** The charges may be assessed equally, separately, and may be assessed concurrently.

The Contractor shall coordinate the flagging operations in a manner that causes as little delay to the traveling public as possible, and at no time shall the delay exceed [] 10 minutes. In the event that the Contractor is unable to meet the maximum delay requirements, operations shall shut down until such time a new traffic control plan is developed which does meet the maximum delay requirement.

Comment 12
Defaults to 10 minutes maximum delay unless other is noted.

If hauling operations create hazards for the traveling public, the Contractor will be required to provide additional flaggers, as directed by the Engineer. All costs incurred to provide the additional flaggers shall be incidental.

Use (D) only if it applies to the Project!

(D) The Contractor shall furnish at least one pilot car and driver for leading traffic through the work zone. Pilot Car operations shall be in accordance with the following:

1. Pilot cars shall be utilized on all two lane roadways.
2. Pilot Vehicles shall:
 - (a) Be capable of being turned around quickly in a small area.
 - (b) Equipped with lights that meet the requirements of Section S-1404.3 (VEHICLE WARNING LIGHT SPECIFICATION) of this Special Provision.
 - (c) Have a standard sign G20-4, “PILOT CAR, FOLLOW ME”, mounted on the rear of the vehicle. Mounting height of sign should be minimum of one foot from the ground.
3. Flaggers shall:
 - (a) have portable radio communication with the pilot car.
 - (b) not park vehicles at the flagging station.
4. The Contractor shall:
 - (a) take necessary precautions to prevent any traffic that enters the highway between Flaggers from going in the opposite direction as the pilot car caravan.
 - (b) In no case allow or force traffic onto the shoulders because of their operations without prior approval of the Engineer.

5. The Contractors equipment shall follow in line and use the roadway in a manner similar to all other through traffic during the time of lane, speed, and pilot car restrictions.

Optional Language:

6. The Contractor shall:
(a) Use two pilot cars for night operations, one pilot car for each direction.

(E) The Contractor shall furnish off-duty police officers in uniform with cars and a reflectorized high-visibility safety vest to direct traffic if deemed necessary and so ordered by the Engineer. "Police Officer" means every officer authorized to direct or regulate traffic or to make arrests for violations of traffic rules. Payment for police officers will be made by the unit hour as provided elsewhere in these Special Provisions.

OR

~~(E) The Contractor shall furnish off duty police officers in uniform with cars and a reflectorized high-visibility safety vest to direct traffic if deemed necessary and so ordered by the Engineer. "Police Officer" means every officer authorized to direct or regulate traffic or to make arrests for violations of traffic rules. No direct payment for police officers will be made; this work shall be incidental.~~

Comment 13

Remove the option to make "Police Officer" a non-paid option.

Use only the paragraphs in S-.6 that apply to the Project!

S-1.6 MILLING, SEALCOATING, AND PAVING OPERATIONS

Use the (A) paragraph that applies to the Project

(A) Milling and paving operations shall be completed over the full width of all traffic carrying lanes, including turn lanes, bypass, etc., under construction on each day's run.

OR

(A) The Contractor shall schedule milling and bituminous paving operations such that milled areas will be covered with a wear course within 24 hours of completion of the milling, except for delays caused by inclement weather.

OR

(A) Traffic will be allowed on the milled surface; however, the Contractor shall be responsible for furnishing and installing interim striping as directed by the Engineer. Payment for Interim striping will be made as provided elsewhere in these Special Provisions.

(B) When traffic is allowed to drive on the milled surface, the Contractor shall furnish and install "GROOVED PAVEMENT" and "BUMP" signs with "Advisory Speed" plates at locations determined by the Engineer. Payment for these signs shall be included in the lump sum payment for traffic control.

(C) Any drop-off where traffic will cross from or to the in place surface, or from or to the milled surface, shall be tapered and/or chamfered so as to provide for the safe passage of traffic.

(D) The Contractor shall schedule construction operations to minimize traffic exposure to uneven lanes, milled edges, and edge drop-offs. Only after every attempt has been made to avoid these conditions and one or more of them are deemed necessary, the Contractor shall provide and maintain the appropriate traffic control in accordance with the "DROP OFF GUIDELINES" in the Field Manual.

(E) The Contractor shall not mill any notches for surfacing tapers until immediately prior to paving, except that with the Engineer's permission, the Contractor may mill the notches, and install and maintain temporary bituminous tapers to provide for the safe passage of traffic until the surfacing taper is installed.

(F) Constructing and milling tapers and/or chamfers shall be incidental.

If the Project location has Aggregate shoulders, use the following

(G) The Contractor is directed to Section **S-2232** (MILL PAVEMENT SURFACE) of these Special Provisions for additional requirements to maintain shoulders.

Use the (H) paragraph that applies to the Project

(H) The Contractor shall maintain traffic with a minimum of delay during milling and paving operations at intersections controlled by signals or by all-way stop signs. The Contractor shall provide off-duty police officers, at no expense to the Department, to direct and control traffic around and through milling and paving operations at those intersections. "Police officer" means every officer authorized to direct or regulate traffic or to make arrests for violations of traffic rules.

OR

(H) The Contractor shall maintain traffic with a minimum of delay during milling and paving operations at intersections controlled by signals or by all-way stop signs. The Contractor shall provide off-duty police officers to direct and control traffic around and through milling and paving operations at those intersections. "Police officer" means every officer authorized to direct or regulate traffic or to make arrests for violations of traffic rules. Payment for police officers will be made by the unit hour as provided elsewhere in these Special Provisions.

(I) The Contractor may close intersecting streets to traffic, other than at intersections controlled by signals or "All Way Stop" signs during milling and paving operations in the intersection, but only if there are adequate alternate routes for the intersecting street traffic. The Contractor shall not close adjacent intersecting streets to traffic concurrently. The Contractor shall notify the local road authorities of its schedule to close intersecting streets 48 hours in advance of the closure.

Use (J) on seal coating projects

(J) When traffic is allowed to drive on the sealed surface, the Contractor shall furnish and install "LOOSE GRAVEL" and "FRESH OIL" signs with "Advisory Speed" plates at locations determined by the Engineer. Payment for these signs shall be included in the lump sum payment for traffic control.

S-.7 should only be used when signals and lighting systems may be impacted by the Project

S-1.7 SIGNAL AND LIGHTING SYSTEMS

The Contractor shall not interfere with the operation of any traffic signal system, except as required by the Contract. The Contractor shall notify the Engineer at least 24 hours prior to beginning any work that will interfere with any traffic signal system or its detectors.

Use only the paragraphs that apply to this Project!

The in place signal system(s) shall remain in operation until the new signal system(s) become operational.

~~Choose paragraph 1 or 2.~~

~~1~~ The Contractor shall furnish off-duty police officers with cars for directing and controlling traffic during such times as the existing or temporary signal system at each location is out of operation. "Police officer" means every officer authorized to direct or regulate traffic or to make arrests for violations of traffic rules. Off-duty police officers shall be furnished in such numbers as deemed necessary by the Engineer to direct traffic. Payment for police officers will be made by the unit hour as provided elsewhere in these Special Provisions.

~~2~~ The Contractor shall furnish off duty police officers with cars for directing and controlling traffic during such times as the existing or temporary signal system at each location is out of operation. "Police officer"

~~means every officer authorized to direct or regulate traffic or to make arrests for violations of traffic rules. Off duty police officers shall be furnished in such numbers as deemed necessary by the Engineer to direct traffic. Payment for police officers will be considered incidental.~~

During the period when the existing signal system is de-energized and the new signal system is energized, the Contractor shall furnish, erect, and maintain "Stop Ahead" signs and "Stop" signs. The quantity and size of the temporary signs as well as their placement in the field shall be as directed by the Engineer. The Contractor shall furnish and install materials to keep these signs upright and stationary. The signs shall remain the property of the Contractor.

The Contractor shall maintain street lighting by means of the in place lights, the newly constructed lights, or a combination thereof, except as otherwise authorized in writing by the Engineer.

S-1.8 PORTABLE SIGNAL SYSTEM

The Contractor shall provide two (2) portable signals, to control traffic and all necessary advance signing as directed by the Engineer. The portable signals shall meet the requirements of the MN MUTCD and beyond the Temporary Traffic Control Electronic Equipment Approved/Qualified Products List for "Portable Signal Systems – Trailer Mounted" or "Portable Signal Systems – Pedestal Mounted" found at:

<http://www.dot.state.mn.us/products/temporarytrafficcontrol/tccelectronicequipment.html>. Time the signal to cause as little delay as possible to the traveling public, and at no time shall the delay exceed [redacted] minutes. The signal timing of each portable traffic signal system will be reviewed by District Traffic Engineering staff.

Payment for the portable signal system will be made for each Portable Traffic Signal by the Unit Day. See Section S-[redacted] (PORTABLE SIGNAL SYSTEM) of these Special Provisions for additional information.

Use only the paragraphs in S-9 that apply to the Project!

S-1.9 MAINTENANCE AND STAGING OF TRAFFIC CONTROL

(A) The Contractor shall maintain, at all times, the existing traffic movements at the following intersections: [redacted]; [redacted]; and [redacted].

(B) Pedestrian traffic shall be maintained and guided through the Project at all times. See Section S-2563 (ALTERNATE PEDESTRIAN ROUTE) of these Special Provisions.

(C) and (D) apply ONLY if there is not a tab in the Plan - fill in the # of signs

(C) On the day operations on the road begin, the Contractor shall provide [redacted] G20-1 "ROAD WORK NEXT [redacted] MILES" signs and [redacted] G20-2A "END ROAD WORK" signs to be placed, as directed by the Engineer. These signs will be placed at the end(s) of the Project. Payment for these signs shall be included in the lump sum payment for traffic control.

(D) The Contractor shall furnish, install, and maintain [redacted] "ROAD WORK AHEAD" and [redacted] "END ROAD WORK" signs in advance of and beyond each end of the construction limits as directed by the Engineer. The Contractor shall also furnish, install, and maintain [redacted] "ROAD WORK AHEAD" signs in advance of the construction limits on all intersecting roads and streets as directed by the Engineer. The signs shall conform to the standards shown in the MN MUTCD. Furnishing and erecting these signs shall be incidental. The signs shall remain the property of the Contractor.

(E) The Contractor shall cover all signs that are not consistent with traffic operations. The cover should be a plate of solid material covering the entire legend or all of that part of the legend that is inappropriate. Bolt the cover to the sign and place a minimum of 1/8 inch spacers (such as plastic or rubber) between the sign face and the cover. See the Typical Temporary Sign Framing and Installation Details Sheet found in the Plan or at <http://www.dot.state.mn.us/trafficeng/workzone/wz-templates/pdf/layout%202020.pdf> for details. This work will be done as required by the Engineer.

(F) Street identification signage shall be maintained at all times. Where the only existing signs are small city or county signs located at the intersection, street names and address numbers shall be maintained by temporary installations as required by the Engineer. This is necessary to maintain the 911 emergency system.

(G) The Contractor shall maintain a lane width of not less than [redacted] feet in each direction. In no case shall traffic be allowed or forced onto the shoulders as a result of the Contractors operations without prior approval of the Engineer.

During the time of lane, speed, and pilot car restrictions, the Contractor's equipment shall follow in line and use the roadway in a manner similar to all other through traffic.

(H) The Contractor may ban parking within the construction limits [redacted]. All necessary signing is the responsibility of the Contractor and shall be installed, as directed by the Engineer, 24 hours prior to the parking ban. The Contractor shall remove that signing as soon as the work in the area has been completed.

The Contractor shall notify the City of [redacted], phone number [redacted] at least 24 hours prior to posting any parking ban within the City.

(I) The Contractor shall keep the Right-of-Way fence closed up, except during work hours, by means of the in place fence, newly constructed fence, temporary fence (at the Contractor's expense), or a combination thereof.

(J) No access to or from any public road will be permitted for the Contractor's equipment, material deliveries, the hauling of excavated materials of any kind, or employees' private vehicles, except at in place public road intersections, or at locations and in such manner as approved by the Engineer.

(K) As each road is completed, the Contractor shall install the final signing and pavement markings required to safely open that road to traffic. This work shall be completed on or before the date of opening as approved by the Engineer. Overhead signs may be temporarily ground mounted at the Contractor's expense.

S-1.10 MEASUREMENT AND PAYMENT

Choose one of the following:

All traffic control required under this Contract shall be performed as incidental work.

OR

No measurement will be made of the various Items that constitute Traffic Control but all such work will be construed to be included in the single Lump Sum payment under Item 2563.601 (Traffic Control).

OR

Traffic control will be measured and paid for as follows:

No measurement will be made of the various items that constitute Traffic Control, but all such work shall be construed to be included in the lump sum payment under Item 2563.601 (Traffic Control). The lump sum payment shall be compensation in full for all costs of furnishing, installing, maintaining and removing the individual traffic control devices except for items as listed in the **Statement of Estimated Quantities. Traffic Control Plan.**

Comment 14

Clarifies the location of the unit prices for items not covered under Traffic Control Lump Sum.

OR

Traffic Control will be measured and paid for as follows:

Payment for furnishing, installing, maintaining, relocating and subsequently removing traffic control devices (including flaggers) as required will be made as a lump sum under Item 2563.601 (Traffic Control) and according to the following schedule:

- (1) When 5 percent of the Contract amount is earned, 50 percent of the amount bid for traffic control will be paid.
- (2) When 10 percent, or more, of the Contract amount is earned, an additional 25 percent of the amount bid for traffic control will be paid.
- (3) When 50 percent, or more, of the Contract amount is earned, an additional 20 percent of the amount bid for traffic control will be paid.
- (4) The remaining 5 percent bid for traffic control will be paid when all work has been completed and accepted.
- (5) In all items above, the original Contract amount shall be the total value of all Contract Items including the traffic control item, but the percentage earned in each case shall be exclusive of the traffic control item.

OR

Traffic Control will be measured and paid for as follows:

Payment for all traffic control required to complete the Project as shown in the Plans and specified in these Special Provisions shall be made as a lump sum payment under Item 2563.601 (Traffic Control). Payment includes all costs associated with furnishing, installing, maintaining, relocating and subsequently removing traffic control devices (including **flagpersons**) as required. No additional measurement for payment will be made for individual activities and devices that constitute Traffic Control, except for other traffic control Bid Items specifically provided in the Contract.

Traffic Control layouts or devices not shown in the plan or stated in these Special Provisions that are a necessary part of the Contractor's operations to complete the project as shown in the plan are included in the lump sum traffic control item. There will be no increase or decrease in the lump sum payment or additional payment for other traffic control Contract Items, except as provided in the following paragraph.

If the Engineer orders a change in traffic control because of a Plan error, omission, changed condition or change of project scope, payment for such changes will be made as Extra Work.

The Traffic Control Payment Schedule will be as follows:

- (1) When 5 percent of the Contract amount is earned, 50 percent of the amount bid for traffic control will be paid.
- (2) When 10 percent, or more, of the Contract amount is earned, an additional 25 percent of the amount bid for traffic control will be paid.
- (3) When 50 percent, or more, of the Contract amount is earned, an additional 20 percent of the amount bid for traffic control will be paid.
- (4) The remaining 5 percent bid for traffic control will be paid when all work has been completed and accepted.
- (5) In all items above, the original Contract amount shall be the total value of all Contract Items including the traffic control item, but the percentage earned in each case shall be exclusive of the traffic control item.

OR

Traffic Control will be measured and paid for as follows:

Lump Sum Traffic Control under Item(s) 2563.601 (Traffic Control).

The lump sum payment(s) shall be compensation in full for all costs of furnishing, installing, maintaining, relocating, and removing the individual traffic control devices as shown on the Traffic Control Layouts in the Plans and/or as specified in these Special Provisions. The lump sum shall also include any extra signing needed to facilitate traffic switches or for transitioning traffic from one stage to another.

If the Contractor requests changes in traffic control as shown on the Traffic Control Layout(s), and these changes are implemented, there will be no increase or decrease in the lump sum payment(s) for the stage(s) of traffic control.

Partial payments for lump sum Item 2563.601 (Traffic Control) will be made as follows:

- (1) When all traffic control devices for an individual stage, as shown on the Traffic Control Layouts, have been installed, 75% of the Contract Unit Price for that stage will be paid.
- (2) When all work in an individual stage and all traffic control devices for that stage are removed, the remaining 25% of the Contract Unit Price for that stage will be paid.

Use S-.11 for all Projects. The items shown below are in addition to what is covered by the traffic control pay item. Therefore nothing needs to be deleted from S-.12. (For example, if flaggers are incidental they should still be left in S-.12. The flaggers listed in S-.12 are in addition to the flaggers covered by the traffic control pay item.)

S-1.11

ADDITIONAL TRAFFIC CONTROL DEVICES AND EXTENDED USE OF TRAFFIC CONTROL DEVICES

The Engineer may require extra traffic control devices in addition to the traffic control devices shown on the plan Traffic Control Layouts, or in the Field Manual, as warranted by traffic conditions. The Department will pay for extra traffic control devices ordered under this section according to the schedule of predetermined prices in Table 2563-1. The Department will also use the predetermined prices in Table 2563-1 to pay for (1) additional temporary lane closures for Extra Work; and (2) extended use for all traffic control devices which are impacted by excusable and compensable delays, as defined in MnDOT 1806.2B.

The Department will not use the predetermined unit prices listed in Table 2563-1 if payment for a device is specifically provided for elsewhere in the Contract.

(A) General Requirements:

The Contractor must furnish the additional traffic control devices as ordered by the Engineer.

The devices installed must meet contract requirements and be in a functional and legible condition as determined in the sole discretion of the Engineer. Devices not meeting these requirements must be immediately replaced or repaired.

(B) Measurement:

Flashers, barricades, reflectorized drums, portable changeable message signs, 48 x 48 inch [1220 x 1220 mm] signs, and flashing arrow boards will be measured by the number of individual units of each type multiplied by the number of Calendar Days each unit is in service.

Driven post supports and all mounting hardware for 48 inch x 48 inch signs [1220 X 1220 mm] and Standard Signs are considered incidental.

Standard Signs, other than 48 x 48 inch [1220 x 1220 mm] signs, will be measured by the face area of signs furnished multiplied by the number of Calendar Days each square foot [square meter] of sign is in service.

Standard Signs with Portable Supports will be calculated and paid for as follows: Total Standard Sign Sq. Ft + Portable Support Cost (listed in Table 2563-1) = Standard Signs with Portable Supports Cost per day.

Construction Signs - Special will be measured by the sign face area thereof furnished, installed including supports, and removed as specified.

Temporary Molded Plastic Barrier and Temporary Concrete Barrier will be measured by the number of linear feet furnished multiplied by the number of Calendar Days each linear foot the barrier is in service.

Flaggers and Police Officers will be measured by the number of hours each is in service on the job. Police Officers shall be equipped with a patrol vehicle at all times on the job.

(C) Payment:

For contracts without a sub-contract agreement for traffic control services; reasonable invoices may be accepted for additional traffic control devices obtained. The reasonableness of the invoice for additional traffic control is subject to audit in accordance with MnDOT 1721.

Total compensation for Additional Traffic Control Devices and the Extended Use of Traffic Control Devices will have a maximum payout allowance based on average lifespan as determined by the department.

The following devices will have a 180 Day maximum pay out allowance: Reflectorized Cones/Weighted Channelizer Devices, Surface Mounted/Weighted Delineators, Opposing Traffic Lane Divider, Reflectorized Safety Drum, Reflectorized Safety Drum w/Down Arrow, Flasher Type A (Low Intensity), Flasher Type B (High Intensity) and Flasher Type C (Steady Burn).

The following devices will have a 365 Day maximum pay out allowance: Type I Barricade, Type II Barricade, Direction Indicator Barricade, Type III Barricade, 48 X 48 Inch ~~[1220 x 1220 mm]~~ Standard Sign, 48 X 48 Inch ~~[1220 x 1220 mm]~~ Standard Sign with Portable Supports, Standard Signs, Standard Signs with Portable Supports, Standard Signs Portable Support Cost per day, Construction Sign - Special, Temporary Plastic Molded Barrier and Temporary Concrete Barrier Energy Absorption End Treatment System.

The following devices have a maximum pay out allowance five years or greater: Temporary Concrete Barrier, Portable Changeable Message Board, Flashing Arrow Board and Portable Radar Trailer.

(C.1) Devices, Flagger and Police Officers:

Payment for all additional traffic control devices, Flaggers and police officers, as ordered by the Engineer, will be made in accordance with the following schedule:

Table 2563-1 ADDITIONAL TRAFFIC CONTROL DEVICES, FLAGGERS and POLICE OFFICERS

Item Number	Item	Unit	Pre-determined Price
2563.610	Flagger	Hour	* 1
2563.610	Police Officer	Hour	* 2
2563.613	Reflectorized Cones/Weighted Channelizer Devices	Each/Day	\$0.13 \$0.16
2563.613	Surface Mounted/Weighted Delineators	Each/Day	\$0.22 \$0.25
2563.613	Opposing Traffic Lane Divider	Each/Day	\$1.26 \$1.44
2563.613	Type I Barricade	Each/Day	\$0.29 \$0.34
2563.613	Type II Barricade	Each/Day	\$0.27 \$0.31
2563.613	Direction Indicator Barricade	Each/Day	\$0.39 \$0.46
2563.613	Type III Barricade	Each/Day	\$1.53 \$1.76

Item Number	Item	Unit	Pre-determined Price
2563.613	Reflectorized Safety Drum	Each/Day	\$0.53 \$0.61
2563.613	Reflectorized Safety Drum w/Down Arrow	Each/Day	\$0.66 \$0.75
2563.613	Flasher Type A (Low Intensity)	Each/Day	\$0.25 \$0.29
2563.613	Flasher Type B (High Intensity)	Each/Day	\$0.53 \$0.61
2563.613	Flasher Type C (Steady Burn)	Each/Day	\$0.22 \$0.26
2563.613	48 X 48 Inch [1220 x 1220 mm] Standard Sign	Each/Day	\$0.75 \$0.86
2563.613	48 X 48 Inch [1220 x 1220 mm] Standard Sign W/Port. Sup.	Each/Day	\$1.22 \$1.39
2563.613	Roll up Sign W/Stand	Each/Day	\$1.25 \$1.43
2563.617	Standard Signs	Square Foot/Day	\$0.16 \$0.17
2563.613	Standard Signs W/ Portable Supports	Each/Day	\$TBD
	Standard Sign Portable Support Cost per day		\$0.47 \$0.53
2563.618	Construction Sign Special * 5	Square Foot	\$38.59 \$44.09
2563.603	Temporary Plastic Molded Barrier	Linear Foot/Day	\$0.25 \$0.29
2563.603	Temporary Concrete Barrier	Linear Foot/Day	\$0.04 \$0.05
2563.613	Temp. Concrete Barrier Energy Absorption End Treat. Sys.	Each/Day	\$34.23 \$39.10
2563.613	Portable Changeable Message Board * 3	Each/Day	\$22.45 \$25.65
2563.613	Flashing Arrow Board * 4	Each/Day	\$6.89 \$7.88
2563.613	Portable Radar Trailer * 4	Each/Day	\$21.36 \$24.40

- *1 Will be paid in accordance with MnDOT 1904.4A.
- *2 Will be paid at the invoice price plus 10%.
- *3 (PCMS) Type C Trailer Mounted Message Signs will be permitted. The Contractor shall continually operate each PCMS at maximum legibility.
- *4 The Contractor shall continually operate each Flashing Arrow Board or Portable Radar Trailer at maximum legibility.
- *5 Construction Signs – Special includes fabrication, installation, supports and removal as specified. Construction Signs - Special are not eligible for additional compensation due to extended use as described in Sections C.2 “Labor” and C.3 “Equipment” listed below.

Comment 15
Updates the prices for 2017.

(C.2) Labor:

Payment for labor to furnish, install, and remove additional traffic control devices listed in Table 2563-1 as set forth in C.1 “Devices, Flagger and Police Officers”, will be in accordance with 1904.3(4) or 1904.4A.

Payment for labor to inspect and maintain additional traffic control devices will be incidental to the 2563.601 (Traffic Control) Item already contained in the Plan during the original contract period, unless a contract revision meets the requirements listed in MnDOT 1402.3.

Payment for labor to inspect and maintain all traffic control devices, when an extension of contract time is due to an excusable and compensable delay in accordance with MnDOT 1806.2B, will be in accordance with MnDOT 1904.3(4) or 1904.4A

(C.3) Equipment:

Payment for equipment to furnish, install, and remove additional traffic control devices listed in Table 2563-1 as set forth in C.1 “Devices, Flagger and Police Officers”, shall be in accordance with MnDOT 1904.3(4) or 1904.4C

Payment for equipment to inspect and maintain additional traffic control devices will be incidental to the 2563.601 (Traffic Control) Item already contained in the Plan during the original contract period, unless a contract revision meets the requirements listed in MnDOT 1402.3.

Payment for equipment to inspect and maintain all traffic control devices, when an extension of contract time is due to an excusable and compensable delay in accordance with MnDOT 1806.2B, will be in accordance with MnDOT 1904.3(4) or 1904.4C.

S-2 (2563) TRAFFIC CONTROL SUPERVISOR

The designer needs to modify Section S-.3 as to when the Traffic Control Supervisor will be required.

WHENEVER YOU USE THIS WRITEUP, YOU HAVE TO HAVE THE PAY ITEM FOR THIS ON THE PLAN. IT CAN NOT BE INCIDENTAL.

SP2016-230

The Contractor shall provide a Traffic Control Supervisor for all major traffic control modifications to the Project, in accordance with Contract provisions and as directed by the Engineer.

S-2.1 The Contractor shall provide a Traffic Control Supervisor for all major traffic control modifications listed below:

1. Initial startup of the Project
2. Whenever any bypass is placed into operation
3. Winter suspension traffic control adjustment operation
4. Spring start-up traffic control adjustment operation
5. Completion of the Project
6. Any other major changes to the Traffic Control set-up (due to Contractors staging of operations)

The Traffic Control Supervisor shall be on site 3 days prior to all major traffic control modifications listed above until the major traffic control modification is functioning properly allowing for safe, long term accommodations for traveling public.

During the 3 day time period prior to the major traffic control modification, the Traffic Control Supervisor will be expected to be on-site to develop a site plan for the major traffic control modification, to determine and ensure timely delivery of the proper quantity of traffic control devices, and to develop staging plans for the major traffic control modification operation. The Traffic Control Supervisor shall then coordinate and direct the installation of the devices as well as the staging of the traffic control modification to ensure a safe and efficient transition is completed. Following the transition, the Traffic Control Supervisor shall monitor the traffic flow of the site(s) in question and make modifications necessary to provide for the safe and efficient passage of the traveling public.

S-2.2 The Traffic Control Supervisor shall be certified as a worksite supervisor by MnDOT. A copy of the traffic Control Supervisor’s certification shall be provided to the Engineer at the Project pre-construction conference.

MnDOT certification as a Traffic Control Supervisor can be obtained by attending a 3 day MnDOT Traffic Control Supervisor Course within the last 5 years. Additional information on MnDOT’s certification can be obtained by contacting Leigh Kriewall at 651-366-4217.

The National ATSSA Traffic Control Supervisor Certification will not be accepted.

(A) The Contractor shall, at the pre-construction conference, designate a Traffic Control Supervisor who shall be responsible for and perform the traffic control management. The traffic Control Supervisor shall be either an employee of the Contractor other than the superintendent, or an employee of a firm which has a subcontract for overall traffic control management for the project. The Traffic Control Supervisor shall be responsible for the management of the traffic control operations of the Project, including those of the Contractor, subcontractors, and suppliers. The primary responsibility of the Traffic Control Supervisor shall be the Traffic Control Management of this Project.

(B) The Traffic Control Supervisor shall have the authority needed to effectively require modifications and maintenance of traffic controls. This includes having the authority necessary to obtain and use all labor, equipment, and materials needed to provide and maintain traffic control in routine and in emergency situations.

(C) The Traffic Control Supervisor shall have an up-to-date copy of the Part VI of the MN MUTCD (Minnesota Manual on Uniform Traffic Control Devices), including the “Field Manual for Temporary Traffic Control Zone Layouts,” and “ A Guide to Establishing Speed Limits in Highway Work Zones.”

S-2.3 Traffic control management by the Traffic Control Supervisor includes, but is not limited to:
Choose applicable items which apply to the Project ONLY

1. Ensuring that traffic control devices are functioning as required. This includes the repair or replacement of all signs, barricades, and other traffic devices that become damaged, moved, or destroyed, or lights that cease to function properly, and barricade weights that are damaged or otherwise fail to stabilize barricades.
2. Providing sufficient surveillance of signs, barricades, and other traffic control devices. This includes inspecting traffic control devices on every calendar day that traffic control devices are in use (by the Traffic Control Supervisor or his approved representative). Routine surveillance reports shall be submitted to the Project engineer weekly.
3. The Traffic Control Supervisor will be on the Project every working day, “on call” at all times, and available within 45 minutes of notification, at other than normal working hours. The Contractor shall give the Engineer, the names, addresses, and phone numbers of at least three individuals (one of which is the Traffic Control Supervisor) responsible to provide and ensure immediate attention to the traffic control management. *{the designer needs to modify this section as to when the Traffic Control Supervisor will be required}*.

S-2.4 Traffic Control Supervisor shall be provided by the Contractor during the time periods indicated above. **For any period of time the Traffic Control Supervisor is not available to provide traffic control management, the Contractor will be subject to an hourly charge assessed at a rate of \$250.00 per hour for each hour or any portion thereof which the Engineer determines that the Contractor has not complied.**

WHENEVER YOU USE THIS WRITEUP, YOU HAVE TO HAVE THE PAY ITEM FOR THIS ON THE PLAN. IT CAN NOT BE INCIDENTAL.

S-2.5 Measurement for Traffic Control Supervisor will be made by the per day of service (Unit Day) as specified. Payment for Traffic Control Supervisor provided, as directed by the Engineer, and per these Special Provisions, will be made under Item 2563.613 (Traffic Control Supervisor) at the Contract bid price per Unit Day, which shall be compensation for costs incidental thereto.

OR

WHENEVER YOU USE THIS WRITEUP, YOU HAVE TO HAVE THE PAY ITEM FOR THIS ON THE PLAN. IT CAN NOT BE INCIDENTAL.

S-2.6 No measurement will be made of the various duties of the Traffic Control Supervisor, but all such work shall be construed to be included in the lump sum payment under Item 2563.601 (Traffic Control Supervisor). The lump sum payment shall be compensation for all costs incidental thereto.

S-3 (2563) INTELLIGENT WORK ZONE SYSTEM

REVISED 03/01/16 ◀DO NOT REMOVE THIS. IT NEEDS TO STAY IN FOR THE CONTRACTORS.
SP2016-231

S-3.1 SYSTEM OVERVIEW

This project will utilize a Stopped Traffic Warning System which will be referred to as the “system”. The system shall be a fully automated, stand-alone system, capable of providing real-time warnings for Stopped Traffic Queues.

For the Stopped Traffic Warnings, the system will post static signs with remote actuated warning lights at locations shown in the Plan. Sensors along the roadway will detect traffic queues and activate the appropriate warning signs. *The data collected by the sensors will be aggregated with the system activations and delivered via email at the end of each day to the appropriate personnel to identify system functionality and appropriate set points.*

S-3.2 SYSTEM REQUIREMENTS

This Pay Item shall consist of furnishing, installing, relocating, operating, maintaining and removing an automated, portable, real-time system meeting the requirements noted herein, during the duration the Project is in a single lane operation. Included in the operational responsibilities is the assuming of all communication costs such as cellular telephone, satellite, *generating operational data*, and internet subscription charges. In addition to these requirements, the Contractor shall assume all responsibility for any damaged equipment due to crashes, vandalism, adverse weather, etc. that may occur during the systems deployment.

The system for this Project shall consist of at least the following components:

(A) Temporary “warning signs”: **STOPPED OR SLOW TRAFFIC, WHEN FLASHING** (G20-X14). Two signs shall be placed at each location (one left side and one right side). These warning signs may be ground mounted on approved crashworthy sign supports or mounted on trailers. *If ground mounted, the solar/battery assembly shall be crashworthy or located outside the clear zone.* See the Traffic Control Plan for the proposed sign locations. The signs will be located at the direction of the Engineer. The initial installation will be in advance of the any lane closures. The signs shall remain in place until the completion of the Project.

(B) Sufficient traffic detection device(s) to sequentially activate the stopped traffic flashers as the queue extends. The system shall be capable of identifying stopped/slowed traffic conditions in advance of the lane closure taper. The system shall self-test for communication or sensor failures. All sensors shall be of a type whose accuracy is not degraded by inclement weather or degraded visibility conditions including precipitation, fog, darkness, excessive dust, and road debris. *The operational status of the sensors shall be shown in the daily reports.*

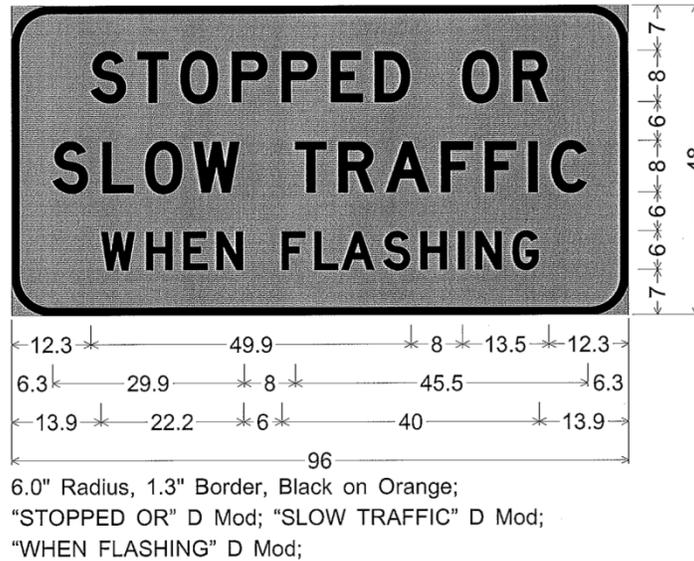
(C) The system shall have a reliable communication system and provide warnings to the system manager and the Project Engineer when communication or device failures are detected.

(D) The system shall have reporting features to a secure website, *and/ or text message or email*. The website shall, at a minimum, show the current speeds at each detector location and whether the warning flashers are activated. *The text messages and/or email notifications shall be generated in real time when the system has detected an event and provide event detail and system operational status.* The website shall provide access to archival data for the duration of the Project. This archival data shall be printable.

(E) The system shall provide data logging of system events and key detection data. The data should include the dates and times that the system was activated, which signs were activated, duration of the activation, and

average speeds at each detection device. This data shall be provided to the Engineer on a DVD/CD *in a CSV format* at the close of the Project, *or pushed in a selectable daily/weekly report basis, in a graphical representation to the Engineer.*

(F) The system shall use 12” LED beacons mounted 12” above the sign display. The flash rate shall be 55 flash cycles per minute, as defined by the MUTCD. The sign panel shall be:



S-3.3 SYSTEM OPERATION AND PERFORMANCE

The system shall be capable of continuous 24/7 operation.

The remote web access shall allow the system manager or Project Engineer to shut-down the system during apparent failures.

The Stopped Traffic Warning System shall activate the warning signs whenever average traffic speeds fall below 40 mph and turn-off when the average speed returns to above 55 mph. These speeds are only suggested and actual field trials will determine the appropriate trigger values to be approved by the Engineer. *The adjustments to set points shall be incidental to the system.* The system shall be configured so that during low volume time periods such as early morning, the lack of traffic does not produce an average speed that activates the stopped traffic flashers.

If during the duration of the Project, it is found that the detectors or warning signs need to be relocated due to a change in the Project’s traffic conditions or queuing patterns, the Contractor shall provide this adjustment *at the system relocation price.* The replacement, repositioning or the addition of detectors to maintain the system’s *designed* operational accuracy may be required throughout the Project duration and will be considered incidental to the system.

S-3.4 SYSTEM TRAINING

Interested *project personnel/partners* shall attend an education and training session at or near the time and place of the construction kick-off meeting. The training shall include at least one representative from each of the following entities:

- Prime Contractor
- Department of Transportation representative (Project Engineer and District Traffic Engineer)
- Others – such as local police, state patrol, local EMS, local media

The training shall consist of at least a review of the following:

- In the event of an emergency, instructions on how to override the system flashers.
- In the event of a power failure, instructions detailing how to power cycle the system.
- List of telephone numbers to call to request technical support.
- Data Logging, printing reports, and interpreting the reports.

S-3.5 SYSTEM WARRANTY, MAINTENANCE, AND SUPPORT

The system shall be maintained and supported through the duration of the deployment. The Contractor (system provider) shall assign a system manager for the system deployment. The system manager shall respond to system failures.

The Contractor shall be required to respond immediately to any call from the Engineer or his designated representative concerning any request for correcting any deficiency in the system. **If the Contractor is negligent in correcting the deficiency within two hours of notification, the Contractor shall be subject to the hourly charge of \$250.00.**

S-3.6 MEASUREMENT

Measurement will be made by the Lump Sum.

S-3.7 RELOCATE

Measurement will be made by the PER EACH DEVICE.

S-3.8 PAYMENT

Payment will be made under Item 2563.601 (Intelligent Work Zone System) at the Contract bid price per Lump Sum, which shall be compensation in full for furnishing, installing, relocating, operating, maintaining and removing the system. The system shall remain the property of the Contractor.

S-4 (2563) ALTERNATE PEDESTRIAN ROUTE

To be used on all projects in which pedestrian movements may be impacted by construction – including sidewalks; intersection pedestrian crossings; as well as access to businesses, residences, schools and other pedestrian destinations. All projects that impact pedestrian movements shall include Alternate Pedestrian Routes (APRs). An APR maintains the existing level of ADA accessibility.

*The Designer needs to work with the District Traffic and Construction offices to determine how to meet pedestrian requirements for a particular job. The following write-up or some form of it may be used to help meet these requirements or the District may use their own language. The language may be included in the Time and Traffic or this writeup can be used if the District prefers to use a pay item. Please contact Ken Johnson at 651-234-7386 or Ted Ulven at 651-366-4222 for help with this if needed. **THE SPECIAL PROVISIONS UNIT CAN NOT DO THIS FOR YOU.***

REVISED 08/04/16 ◀DO NOT REMOVE THIS. IT NEEDS TO STAY IN FOR THE CONTRACTORS.
SP2016-232

S-4.1 Maintain and guide pedestrian traffic through the Project at all times using continuous Alternate Pedestrian Routes (APRs) per standards set forth in the MN MUTCD Chapter 6D. Provide each APR to the same level of accessibility of each existing access and walkway prior to construction. Incorporate accessible pedestrian signals (APS), temporary curb ramps, pedestrian barricades, pedestrian channelizers, detectable edges, temporary walkway surfaces and other accessible design features as necessary. Provide continuous walkway surfaces that are smooth, stable and slip resistant. Use accessible device standards as shown in Figures 6K-12 and 6K-13 in the Field Manual. For bypasses and detours, utilize Layouts 84 and 85 in the Field Manual. Use 6F.74.1 from the MN MUTCD if using temporary walkway surface devices as part of the continuous walkway surface over short segments of rough, soft or uneven ground.

S-4.2 Minimize disruption to pedestrians to the maximum extent feasible by providing APRs in the following order of preference:

1. Provide the APR on the same side of the street as the disrupted route utilizing bypasses.
2. Where it is not feasible to provide a same side APR, provide an APR on the other side of the street.
3. Where it is not feasible to provide an APR on the other side of the street, provide an APR detour with trailblazing signs.

If existing parking spots are desired to be used for an APR route within the project limits, contact the [redacted] (name of local agency) for approval and parking banning notification procedures.

S-4.3 Schedule and coordinate the replacement of pedestrian access to accommodate the needs of businesses and residences [redacted] days prior to the replacement. Leave the existing sidewalks in-place until such time that it is required to remove them to accommodate new construction. Pedestrian access may be provided to businesses and homes through the use of any public access from adjacent parking lots and side streets. Provide front door access to buildings without alternate public entrances.

S-4.4 Protect the pedestrian route with pedestrian barricades or pedestrian channelizing devices if it is adjacent to construction, excavation drop-offs, traffic, or other hazards. Protect the pedestrian route with portable barrier if it is on the shoulder, in a parking lane, or in a closed lane adjacent to traffic on a multilane road or if the speed limit is greater than 40 mph. When both sides of a pedestrian route require channelizing devices, use similar types, unless portable barrier is used to protect pedestrians from traffic.

Use if pedestrian curb ramp work is included in project

S-4.5 No pedestrian curb ramp or blended transition work shall occur concurrently at adjacent intersections.

Use if needed

S-4.6 No closures for sidewalk or pedestrian curb ramp or blended transition related work are allowed along route between the hours of X-X AM and X-X PM.

Use if needed

S-4.7 The Contractor is advised that the corridor has Transit service. Re-locations of stops can only be made with the approval of the Engineer. The Contractor is hereby directed to Section S-1707 (PUBLIC CONVENIENCE AND SAFETY) of these Special Provisions.

S-4.8 Notify the Engineer in writing at least [redacted] hours prior to the start of any construction operation that will necessitate a change in pedestrian access.

S-4.9 Furnish the name, address, email, and phone number of at least one individual responsible for the maintenance of the APR. This individual shall be "on call" 24 hours a day, seven days per week during the times any devices, furnished and installed by the Contractor, are in place. Submit the required information to the Engineer at the pre-construction meeting.

Answer calls immediately and begin corrective measures needed within one hour. **If the Contractor is negligent in correcting the deficiency within one hour of notification the Contractor shall be subject to a monetary deduction at the rate of \$100.00 per hour when only one residence or location is affected and at the rate of \$500.00 per hour in all other cases that the Engineer determines the Contractor has not complied.**

Use without pay item

S-4.10 No measurement will be made of the various items that constitute APRs. Payment for all costs of the APRs, including furnishing, installing, maintaining and removing the individual devices, shall be included in the lump sum payment for traffic control.

OR

Use with pay item

S-4.11 No measurement will be made of the various items that constitute Alternate Pedestrian Route, but all such work shall be construed to be included in the lump sum payment under Item 2563.601 (Alternate Pedestrian Route). The lump sum payment shall be compensation in full for all costs of furnishing, installing, maintaining and removing the individual devices.

S-5 (2563) RAISED PAVEMENT MARKERS TEMPORARY (TRPMS)

SP2016-233

This work shall consist of constructing temporary raised pavement markers and the selected mounting system, placing the marker on the roadway, and removing the marker in accordance with the specification TEMPORARY RAISED PAVEMENT MARKERS (TRPM) and the following:

S-5.1 The specification TEMPORARY RAISED PAVEMENT MARKERS (TRPM) can be accessed on the MnDOT Office of Traffic, Safety, and Technology website.

S-5.2 TRPMs will be measured by the number of markers installed. Payment will be made under Item 2563.602 (Raised Pavement Marker Temporary) at the Contract bid price per each.

S-6 (2563) PORTABLE CONCRETE BARRIER DELINEATOR

SP2016-234

This work shall consist of furnishing, installing and maintaining delineators on portable precast concrete barriers in accordance with the provisions of MnDOT 2564, the Plans, and the following:

S-6.1 The size and spacing of the barrier delineators shall be as specified in the Plans. The approved barrier delineators can be found at: <http://www.dot.state.mn.us/products/signing/delineationdevices.html>.

S-6.2 Measurement will be made by the number of barrier delineators furnished and installed as specified. Payment will be made under Item 2563.602 (Portable Concrete Barrier Delineator) at the Contract bid price per each, which shall be payment in full for all costs involved.

S-7 (2563) MEDIAN BARRIER DELINEATOR

SP2016-235

This work shall consist of furnishing, installing and maintaining barrier delineators on median barriers in accordance with the provisions of MnDOT 2564, the details shown in the Plans, and the following:

S-7.1 The reflectors shall be 7-7/8 x 4-1/2 inch **200 x 114 mm** in size or an approved equal, or a substitute barrier at a closer spacing, as directed by the Engineer. The approved barrier reflectors can be found at: <http://www.dot.state.mn.us/products/signing/delineationdevices.html>.

S-7.2 Measurement will be made by the number of barrier delineators furnished and installed as specified. Payment will be made under Item 2563.602 (Median Barrier Delineator) at the Contract bid price per each, which shall be payment in full for all costs involved.

S-8 (2563) TUBE DELINEATORS

SP2016-236

This work shall consist of furnishing, installing, and replacing tube delineators in accordance with the Traffic Engineering Manual and the following:

S-8.1 The delineators shall be located as shown in the Plans.

S-8.2 Removal of the post and surface mount assembly shall be done as directed by the Engineer.

Delineators that are fastened to the concrete or bituminous pavement with epoxy cement shall not be placed without the prior approval of the Engineer.

S-8.3 Used materials may be furnished in accordance with the following:

In the event the Contractor elects to utilize used materials, the tubes, bases and reflectorization shall conform to the foregoing requirements and shall be in near new condition at the time of installation. During the progress of work, the Engineer may require the replacement of reflectorized material whose effectiveness has been substantially reduced by traffic damage or other causes.

If there is no pay item for REPLACE TUBE DELINEATORS use the following highlighted paragraphs instead of the following non-bolded paragraphs

S-8.4 The Contractor shall replace damaged or missing tubes and bases on a daily basis with new or used materials (approved by the Engineer), including, but not limited to the high impact plastic tubing, the polyethylene support tubing and the reflective sheeting.

S-8.5 The Contractor shall replace damaged or missing tubes and bases on a daily basis.

The work under Item 2563.602 (Replace Tube Delineator) shall consist of replacing a portion of the Delineator with new or used materials (approved by the Engineer), including, but not limited to the high impact plastic tubing, the polyethylene support tubing and the reflective sheeting, in accordance with the following:

The Contractor is cautioned not to order the entire planned quantity of replacement delineators from the supplier at the beginning of the Project. Experience gained as the Project proceeds will indicate the number of replacement delineators required.

S-8.6 **MEASUREMENT AND PAYMENT**

Tube Delineators will be measured by the number of delineators furnished and installed complete in place as specified. Payment therefore will be made under Item 2563.602 (Tube Delineator) at the Contract bid price per each, which shall be compensation in full for furnishing, installing, replacing the portion or portions of any damaged delineators, removing the delineators, and for the filling of the holes in the old concrete pavement as specified.

S-8.7 **MEASUREMENT AND PAYMENT**

(A) Tube Delineators will be measured by the number of delineators furnished and installed complete in place as specified. Payment therefore will be made under Item 2563.602 (Tube Delineator) at the Contract price per each which shall be compensation in full for furnishing, installing, and removing the delineators and for the filling of the holes in the old concrete pavement as specified.

(B) Measurement and payment will be made only for the actual quantity of Delineators replaced as specified. No adjustment of any Contract bid prices will be made for any increased or decreased quantities thereof. Delineators will be measured separately by the number of units furnished and installed as replacements. Payment therefore will be made under Item 2563.602 (Replace Tube Delineator) at the Contract bid price per each, which shall be compensation in full for replacing the portion, or portions, of the delineator as described above.

S-9 (2563) FLAGGER

REVISED 03/01/16 ◀DO NOT REMOVE THIS. IT NEEDS TO STAY IN FOR THE CONTRACTORS.
SP2016-237

The Contractor shall provide qualified flaggers in accordance with the applicable provisions of the MnDOT Standard Specifications, MN MUTCD, as determined by the Engineer, these Special Provisions, and the following:

S-9.1 Qualified flaggers shall be provided to safely provide for traffic control, primarily at intersections, in such numbers and for such items as determined by the Engineer. Flaggers shall not override in-place signals, stop signs or control interchanges without approval of the Engineer.

S-9.2 The flagger shall be properly uniformed and have a STOP/SLOW sign with a five foot minimum staff.

S-9.3 The flaggers shall be equipped with two-way radios.

S-9.4 Except as otherwise authorized by the Engineer, the maximum length of the flagging operation shall be no more than 1 mile ~~[1.6 km]~~.

Use only if the paragraph applies to this Project!

S-9.5 The Contractor shall provide a pilot car and maintain proper lane closures with appropriate delineation. Pilot Car operations shall be in accordance with Technical Memorandum No. 05-15-T-01 that can be found at <http://techmemos.dot.state.mn.us/>.

S-9.6 Measurement will be made by the length of time flaggers are in service on the Project. Payment will be made under Item 2563.610 (Flagger) at the Contract bid price per hour, which shall be compensation in full for all costs for each flagger provided.

S-10 (2563) POLICE OFFICER

SP2016-238

The Contractor shall provide off-duty police officers in accordance with the applicable provisions of the MnDOT Standard Specifications, as determined by the Engineer, these Special Provisions, and the following:

S-10.1 To maintain safety for traffic, Off-Duty police officers shall be provided in such numbers and for such times as determined by the Engineer.

S-10.2 The police officers shall be properly uniformed and fully equipped including police car, and shall be paid for by the hour.

S-10.3 Payment for police officers at the Contract bid price shall be compensation in full for all costs for providing the police officers. Such payments will be measured and paid for in accordance with the following schedule:

<u>Item No.</u>	<u>Item</u>	<u>Unit</u>
2563.610	Police Officer	Hour

S-11 (2563) WORKERS PRESENT SPEED LIMIT

REVISED 05/13/16 <DO NOT REMOVE THIS. IT NEEDS TO STAY IN FOR THE CONTRACTORS.
SP2016-239

A "Workers Present Speed Limit" of [] MPH will be required on this Project at all times that lane closures are in use and workers are present in the lane adjacent to through traffic. Provide speed limit signs and assemblies in accordance with the plan and the "Speed Limits in Work Zones Guidelines." This publication may be obtained from the Office of Traffic, Safety and Technology; the District Traffic Engineer; or at the following website: <http://www.dot.state.mn.us/speed/pdf/WZSpeedLimitGuideline.pdf>.

Install workers present speed limit signs and assemblies when a lane closure is in use and workers are present in the lane adjacent to through traffic. Remove or cover workers present speed limit signs and assemblies when workers are not present in the lane adjacent to through traffic. Document the installation and removal of the workers present speed limit. In place statutory speed limit (30, 55, 65 or 70 mph) signs may be

covered at the start of the Project and remain covered until the Workers Present Speed Limit is no longer needed. For other in place posted speed limits, uncover the in place speed limit signs at the end of each work shift .

Cover all speed limit signs that are not consistent with the workers present speed limit. The cover should be a plate of solid material covering the entire legend or all of that part of the legend that is inappropriate. Attach the cover to the sign and place a minimum of 1/8 inch **3 mm** plastic spacers between the sign face and the cover. See the Typical Temporary Sign Framing and Installation Details Sheet found in the Plan or at <http://www.dot.state.mn.us/trafficeng/workzone/wz-templates/pdf/layout%2020.pdf> for details.

If the work area is protected by positive protection, such as temporary barrier, a workers present speed limit shall not be used.

The contractor may use an Electronic Workers Present Speed Limit system any electronic speed limit system used shall meet the following:

(A) SYSTEM REQUIREMENTS

This Project will utilize changeable Light Emitting Diode (L.E.D.) Speed Limit Panels which will be used to display speed limits as motorists drive through the work zone and is referred to as the "system". This system shall be deployed as shown in the traffic control plan.

This work includes furnishing, installing, operating, maintaining, relocating and removing the L.E.D signs according to the requirements defined herein and in the Traffic Control Plans, and providing the maintenance and operation of the complete system during the duration of the Project. The Contractor shall assume all responsibility for any damaged equipment due to crashes, vandalism, adverse weather, etc. that may occur during the system's deployment.

Each character (number) shall be 18 inches in height and 12 inches in width. The sign shall be clearly visible and legible from a distance of 1,000 feet under both day and night conditions. The L.E.D. speed limit signs shall be able to be changed remotely (Hand held remote).

When the system is activated, all signs installed on roads open to traffic that are not consistent with traffic operations shall be covered or removed as directed by the Engineer. The cover should be a rigid panel covering the entire legend or all of that part of the legend that is inappropriate. Bolt the cover to the sign and place a minimum of 1/8 inch **3 mm** spacers (such as plastic or rubber) between the sign face and the cover. See the Typical Temporary Sign Framing and Installation Details Sheet found in the Plan or at <http://www.dot.state.mn.us/trafficeng/workzone/wz-templates/pdf/layout20.pdf> for details.

The system shall operate continuously 24 hours a day, 7 days a week, displaying either the workers present or 24/7 speed limit as appropriate. The system shall collect and store speed limit data and be archived into a database with time and date stamps which will be provided to the Engineer upon request, and at completion of the project.

(B) SYSTEM WARRANTY, MAINTENANCE AND SUPPORT

The system shall be maintained, supported, and warranted against material defects by its supplier through the duration of the deployment.

Respond immediately to any call from the Engineer or his designated representative concerning any request for correcting any deficiency in the system. **If the Contractor is negligent in correcting the deficiency within two hours of notification, the Contractor will be subject to the hourly charge of \$250.00 per hour for each hour or any portion thereof with which the Engineer determines that the Contractor has not complied.**

S-11.1 Measurement for Workers Present Speed Limit will be made by the Unit Day.

S-11.2 Payment will be made under Item 2563.613 (Workers Present Speed Limit) at the Contract bid price per unit day, which shall be compensation in full for all work and material necessary, regardless of number of set ups and lane closures.

S-12 (2563) TRUCK/TRAILER MOUNTED IMPACT ATTENUATOR (TMA)

NEW WRITEUP 03/01/16 ◀DO NOT REMOVE THIS. IT NEEDS TO STAY IN FOR THE CONTRACTORS.

SP2016-239.1

The Contractor shall provide Truck Mounted Impact Attenuators in accordance with the applicable MnDOT Standard Specifications, as directed by the Engineer, and the following:

S-12.1 If the Contractor establishes a lane and or shoulder closure on a high-speed roadway, a vehicle equipped with a truck mounted attenuator that meets the requirements of NCHRP 350 (or AASHTO's Manual for Assessing Safety Hardware (MASH)) shall be placed in the closed lane/shoulder next to traffic prior to the active work site, as directed by the Engineer. The lane/shoulder closures shall meet the requirements described in the appropriate Field Manual layout.

S-12.2 Measurement will be made by the number of Truck Mounted Impact Attenuators provided per day of service (Unit Day) as specified.

S-12.3 Payment for Truck Mounted Impact Attenuators provided, as directed by the Engineer, will be made under Item 2563.613 (Truck Mounted Impact Attenuator) at the Contract bid price per Unit Day, which shall be compensation in full for all costs relative thereto. The Truck Mounted Impact Attenuators shall remain the property of the Contractor.

S-13 (2563) PORTABLE CHANGEABLE MESSAGE SIGN

SP2016-240

The Contractor shall furnish, install, maintain and remove Portable Changeable Message Signs in accordance with Contract provisions, as directed by the Engineer and the following:

S-13.1 The Portable Changeable Message Signs shall be trailer mounted three line, DOT signs with eight characters per line with a character height of 18 inches [450 mm] as approved by the Engineer.

S-13.2 (PCMS) Type C Trailer Mounted Message Signs will be permitted and shall be on the Approved Products List for "Changeable Message Signs: Type C - Three Lines, Trailer Mounted" as found at: <http://www.dot.state.mn.us/products/temporarytrafficcontrol/tcceletronicsequipment.html>. It is imperative that the Contractor continually operate each PCMS at maximum legibility. Many factors, such as mechanical problems, insufficient charging, incorrect intensity settings, or other factors can degrade performance. If at any time the Contractor fails to operate a Portable Changeable Message Sign at maximum legibility, as determined by the Engineer, no payment will be made for each day that the Message Sign is deemed inadequate.

S-13.3 The changeable message signs shall be in operation within 24 hours of notification by the Engineer. Remove the changeable message signs within 24 hours after notification by the Engineer. Multiple mobilizations of the changeable message signs will be required and shall be incidental. The changeable message signs shall be subject to approval of the Engineer. All maintenance and repair as required will be incidental.

S-13.4 Except as approved by the Engineer, the message sign shall be stored off the shoulder when not in use. Delineate the changeable message sign according to Layout 4 (Partial Shoulder Closure) in the Field Manual if the Engineer permits the sign to remain on the shoulder.

S-13.5 When not being actively used as a traffic control device, the Portable Changeable Message Sign shall be stored beyond the clear zone distance. **Non-compliant charges, for each incident, will be assessed at a rate of \$500.00 per incident that the Engineer determines that the Contractor has not complied.**

S-13.6 Measurement will be made by the number of Portable Changeable Message Signs furnished and installed per day of service (Unit Day) as specified.

S-13.7 Payment for Portable Changeable Message Signs furnished and installed, as directed by the Engineer, will be made under Item 2563.613 (Portable Changeable Message Sign) at the Contract bid price per Unit Day. This payment shall be compensation in full for all costs incidental thereto, including but not limited to furnishing and installing the signs with appropriate message, maintaining the signs, revising the messages as directed by the Engineer, and removing the signs at the direction of the Engineer. The Portable Changeable Message Signs shall remain the property of the Contractor.

S-14 (2563) CONSTRUCTION SIGN - SPECIAL

SP2016-241

This work shall consist of furnishing, installing, maintaining, and removing construction signs with special messages in accordance with the provisions of MnDOT 2564, other Contract provisions, as directed by the Engineer, and the following:

S-14.1 All materials required to furnish and install the special construction signs shall remain the property of the Contractor.

S-14.2 Measurement will be made by the area in square feet of special construction signs constructed as specified.

S-14.3 Payment will be made under Item 2563.618 (Construction Sign – Special) at the Contract bid price per square foot, which shall be compensation in full for all costs incidental thereto, including but not limited to furnishing and installing the signs, mounting hardware and posts, maintaining the signs, and removing the signs upon direction of the Engineer.

S-15 (2580) INTERIM PAVEMENT MARKING

SP2016-247

This work consists of placing interim pavement markings on those pavements, prior to opening them to traffic, where the in-place surface is to be covered by a subsequent paving course or the permanent lane markings are to be placed at a future date. The Contractor has the option of furnishing the following material, unless the material type is indicated in the Plan:

- (A) Removable Preformed Plastic Pavement Marking (4 inch 100 mm wide) Tape in accordance with MnDOT 3355.
- (B) Epoxy Resin Pavement Markings in accordance with MnDOT 3590 and 3592.
- (C) Traffic Marking Paint in accordance with MnDOT 3591 and 3592.
- (D) Temporary Raised Pavement Markers in accordance with the following specification:
 - TEMPORARY RAISED PAVEMENT MARKERS (TRPMs)

The above specifications can be accessed on the MnDOT Office of Traffic, Safety, and Technology website.

S-15.1 When centerline or lane markings (excluding edge lines) are removed, apply the interim pavement markings prior to opening the roadway to traffic. Apply the interim pavement marking on a clean, dry pavement surface, free of dirt and foreign matter as recommended by the material manufacturer and as required by contract.

S-15.2 Use primer prior to the installation of all tape regardless of weather or pavement conditions or Manufacturer's specifications. Follow the manufacturer's specifications for all other installation procedures and materials. The primer and application of the primer shall be incidental.

S-15.3 Apply all centerline and lane markings prior to ending work each day. Apply edge lines within 14 calendar days of pavement course installation.

S-15.4 Interim markings shall consist of center line markings including no passing zone markings, painted islands, and lane lines (excluding edge lines) in accordance with the Minnesota Manual on Uniform Traffic Control Devices (MN MUTCD). Provide interim markings with a width of 4 inch varying in width by no greater than ¼ in [6 mm] and with a cycle length as indicated in the Plan. Provide interim markings parallel to the direction of traffic flow. Lateral placement of the markings from centerline shall be as directed by the Engineer.

If the Contractor is negligent in adhering to the above provisions, he/she shall be subject to an hourly charge assessed at a rate of \$250.00 per hour for each hour or any portion thereof which the Engineer determines that the Contractor has not complied.

OR

S-15.5 Place all interim markings during daylight hours. Conform with the following interim striping tolerances:

A tolerance of plus ¼ in [~~6 mm~~] and minus 0 in from the specified width will be allowed for striping provided the variation is gradual and does not detract from the general appearance. Lengths for the broken line segments may vary no more than plus or minus 3 in [~~76 mm~~]. Place all longitudinal markings 2 in ± 1 in [~~50 mm ± 25 mm~~] from the edge of pavement or longitudinal (centerline) joint. Also, pertaining to the cycle length, the total allowance for the broken segment and gap shall be no more than plus or minus 3 in [~~76 mm~~]. Establishment of application tolerances shall not relieve the Contractor of their responsibility to comply as closely as practicable with the planned dimensions. Interim markings on the final pavement surface should match the location of the final markings.

In the event the Engineer determines the interim striping is out of tolerance, take corrective action. Remove pavement markings utilizing equipment that is not detrimental to the final surface, as required by the Engineer. All costs associated with removing and restriping the interim markings will be at the Contractor's expense. This would include any costs associated with repairing damage caused to the wearing course after pavement marking removal.

If the Contractor is negligent in adhering to the above provisions, he/she shall be subject to an hourly charge assessed at a rate of \$250.00 per hour for each hour or any portion thereof which the Engineer determines that the Contractor has not complied.

S-15.6 When temporary raised pavement markings are used as interim markings, install per the TRPM specification or as indicated in the Plan. Removal of TRPMs shall be incidental.

S-15.7 Maintain and replace the interim markings without additional compensation until they are covered by the next paving course, are replaced with permanent pavement markings, or final acceptance of the Project is made. Remove all Temporary Raised Pavement Markings used as Interim Pavement markings. Remove any solid line delineations on the final pavement surface marked with Pavement Marking Tape prior to placing the Permanent Pavement Markings. The Engineer may require the removal of any Interim Pavement Markings that will interfere with the placement of the permanent markings or could cause confusion to the traveling public if left in place. Removal of interim pavement Markings, if required, shall be incidental, and shall be in accordance with MnDOT 2102.

Use S-.8 & S-.9 or S-.10.

S-15.8 Interim pavement markings will be measured by the actual length in linear feet [meters] of each line marked as indicated in the Plan and will not include the gap between broken lines. No additional quantity will be included for repair or renewal work. Measurement for raised pavement markings will be made according to the length of line being simulated.

S-15.9 Payment for Interim Pavement Marking at the Contract price per unit of measure shall be compensation in full for all costs of furnishing and placing the marking, removal if required, and all necessary maintenance and renewal work.

Payment for Interim Pavement Marking will be made on the basis of the following schedule:

<u>Item No.</u>	<u>Item</u>	<u>Unit</u>
2580.603	Interim Pavement Marking.....	linear foot [meter]

OR

S-15.10 No measurement will be made of any individual pavement markings placed, maintained and removed but all such work will be construed to be included in the single Lump Sum payment under Item 2580.601 (Interim Pavement Marking). Payment shall be compensation in full for all costs of furnishing, placing, maintaining and removing the pavement markings as required.

S-16 (2580) PAVEMENT MARKINGS – LATE SEASON

This specification is to be used on projects where late season striping is anticipated such as multi-year projects or paving into October. If striping is expected to happen after October 1, this specification should be included. If striping is expected to happen after October 15, this specification and a pay item should be included.

SP2016-48

Late Season Pavement Marking will consist of furnishing and applying late season pavement markings, both striping and messages. Perform the work in accordance with the applicable MnDOT Standard Specifications, the details in the Plan and the following:

Consider all pavement marking operations after October 1 or prior to April 1 Pavement Marking – Late Season and this specification will apply.

For Areas that are lower volume, or rural.

S-16.1 MATERIALS

Use a product listed as either “Late Season Epoxy” or “Late Season Latex” on the MnDOT Pavement Marking Qualified Product list issued by the Office of Traffic, Safety and Technology. This list can be found at: <http://www.dot.state.mn.us/products/pavementmarkings/lateseasonpavementmarkingmaterials.html>

OR for Areas that are higher volume, or urban, or have high turning volumes or have major weaving expected.

S-16.2 MATERIALS

Use a product listed as “Late Season Epoxy” on the MnDOT Pavement Marking Qualified Product list issued by the Office of Traffic, Safety and Technology. This list can be found at: <http://www.dot.state.mn.us/products/pavementmarkings/lateseasonpavementmarkingmaterials.html>

S-16.3 MEASUREMENT

Measure "Pavement Marking – Late Season" by the length in linear feet. The length **will not** include any gaps between broken or dotted lines. Measure all stripes as the equivalent 4" width.

Measure "Pavement Message – Late Season" by area of markings furnished and installed as specified.

No additional quantity will be included for repair or renewal work.

S-16.4 PAYMENT

Use the following paragraph and pay item when the pavement marking is expected to be installed between October 15 and March 15.

The Department will pay for "Pavement Marking – Late Season" in accordance with the schedule set forth below at the appropriate Contract bid price for the specified unit of measure. The Contract bid price includes compensation in full for all costs incidental thereto including, but not limited to all costs of preparing the surface, controlling and protecting traffic, furnishing, and applying, the "Pavement Marking - Late Season":

<u>ITEM NO.</u>	<u>DESCRIPTION</u>	<u>UNIT</u>
2580.603	Pavement Marking – Late Season	Linear foot
2580.618	Pavement Message – Late Season	Square foot

OR use the following paragraph when the pavement marking is expected to be installed between October 1 and October 15 or between March 15 and April 1.

When the Engineer determines that "Pavement Marking – Late Season" are required, in the absence of a Contract item therefore, compensation will be made as Extra Work.

S-17 (2581) REMOVABLE PREFORMED PLASTIC MASK (BLACK)

SP2016-249

This work shall consist of furnishing, placing and removing temporary pavement marking material over in-place pavement markings on bituminous pavement when traffic control must be temporarily changed. This work shall be in accordance with the provisions of MnDOT 2581, as modified below. The removable preformed plastic pavement marking material shall conform to the requirements of MnDOT 3355.

S-17.1 The 2nd paragraph of MnDOT 2581.4 is changed to read as follows:

The Engineer will base the measurement of removable preformed plastic mask (black) tape on equivalent lengths of 6 in ~~[150 mm]~~ wide marking tape. Broken line marking will be measured by the actual length of material used and will not include the gap between the broken lines.

S-17.2 Measurement will be made by the length in linear feet [meters].

S-17.3 Payment for pavement markings of each type will be made in accordance with the schedule set forth below at the appropriate Contract bid price for the specified unit of measure. Such payment, in each instance, shall be compensation for all costs of furnishing, placing, maintaining, replacing, and removing the Marking.

<u>ITEM NO.</u>	<u>DESCRIPTION</u>	<u>UNIT</u>
2581.603	Removable Preformed Plastic Mask (Black)	linear foot [meter]

S-18 (2582) PERMANENT PAVEMENT MARKINGS

Use the following when MRM is to be used on the project.

SP2016-250

The provisions of MnDOT 2582 are hereby modified and/or supplemented with the following:

S-18.1 The first paragraph of MnDOT 2582.3C.3 is supplemented with:

Initial pavement marking retroreflectivity is defined as the pavement marking retroreflectivity as measured between 14 days and 44 days after pavement marking installation.

S-18.2 **Mobile Retroreflectometer Measurements (MRM)**

Provide retroreflectivity measurements of longitudinal markings utilizing an independent Contractor using a vehicle-mounted mobile retroreflectometer utilizing 30 meter CEN geometry in accordance with ASTM E 1710-95 (Standard Test Method for Measurement of Retroreflective Pavement

Markings Materials with CEN-Prescribed Geometry Reflectometers). The retroreflectometer shall be calibrated no less than twice a day in accordance with the operating manual and calibration guide for the particular machine and vehicle. Measurement shall consist of the average retroreflective readings and standard deviations over 0.1 mile intervals (or over the length of the line if shorter than 0.1 mile) for each type of pavement marking placed under this Contract.

Provide a measurement report that includes:

1. State Project Number,
2. Data collection software version,
3. Date and time of data collection,
4. The highway number with the beginning and ending reference points of data collection rounded to the nearest thousandths of a mile and the beginning and ending coordinates determined by a Global Positioning System receiver with 3 meter accuracy, including the direction of travel in terms of increasing or decreasing reference points,
5. Which line is being read (LEL – Left Edgeline, REL – Right Edgeline, CL, Centerline, LL – Lane Line Skip, 1LL – left most LL in multilane, 2LL – second to left most LL in multilane, etc),
6. The 0.1 mile station averages and standard deviations,
7. An explanation for any intervals that are marked invalid,
8. A summary of the average retroreflective readings in one mile increments,
9. A summary of average retroreflective readings based on 0.1 mile intervals. Base the summary on Table 2582-2.

Table 2582-2		
Summary of Average Retroreflective Readings		
Product	White	Yellow
PREF TAPE	Percent of Intervals < 300 :	Percent of Intervals < 250 :
	300 <= Percent of Intervals < 419 :	250 <= Percent of Intervals < 349 :
	420 <= Percent of Intervals <= 479 :	350 <= Percent of Intervals <= 399 :
	480 < Percent of Intervals <= 539 :	400 < Percent of Intervals <= 449 :
	540 < Percent of Intervals <= 600 :	450 < Percent of Intervals <= 500 :
	600 < Percent of Intervals :	500 < Percent of Intervals :
EPOXY	Percent of Intervals < 150 :	Percent of Intervals < 100 :
	150 <= Percent of Intervals < 209 :	100 <= Percent of Intervals < 139 :
	210 <= Percent of Intervals <= 239 :	140 <= Percent of Intervals <= 159 :
	240 < Percent of Intervals <= 269 :	160 < Percent of Intervals <= 179 :
	270 < Percent of Intervals <= 300 :	180 < Percent of Intervals <= 200 :
	300 < Percent of Intervals :	200 < Percent of Intervals :
PAINT	Percent of Intervals < 150 :	Percent of Intervals < 100 :
	150 <= Percent of Intervals < 191 :	100 <= Percent of Intervals < 125 :
	192 <= Percent of Intervals <= 219 :	126 <= Percent of Intervals <= 144 :
	220 < Percent of Intervals <= 246 :	145 < Percent of Intervals <= 162 :
	247 < Percent of Intervals <= 275 :	163 < Percent of Intervals <= 180 :
	275 < Percent of Intervals :	180 < Percent of Intervals :

Provide the measurement report in the form of an electronic database file, or delimited text file, containing all raw data collected. The electronic file must also contain a summary that is capable of being

directly uploaded to the Department’s Pavement Marking Management Tool (PMMT) database. Submit the data to the email address: PMdata.dot@state.mn.us . The format of the required data file can be found at the following website: <http://www.dot.state.mn.us/trafficeng/pavement/manual.html> under the Heading Pavement Marking Management Tool. Provide a printed record of the summary to the Engineer at the Engineer’s discretion.

Conduct the evaluation of retroreflectivity between 14 days and 44 days after pavement marking installation. Excess beads or reflective elements must not be visible before the retroreflectivity testing is conducted.

Collect the data when pavement and markings are dry, clean and no visible moisture is on the road surface. Note in the report any areas where the pavement markings are obscured. Measure centerline markings in both directions. Measure other longitudinal markings in the direction of intended vehicular travel.

Evaluate any replaced or repaired markings at no additional cost per this Special Provision.

The Mobile Retroreflectometer Measurements, including but not limited to materials, equipment, labor and time, will be measured based on the Linear Foot. The Linear Foot will be measured for the distance travelled by the mobile retroreflectometer as it measures the retroreflectivity of the pavement marking. This assumes one laser instrument on one van that will read one line with each pass. For a one mile section of two-lane, two-way roadway this would need four (4) passes – First Direction: REL and CL, Second Direction: REL and CL - equating to 21120 linear feet.

No payment for pavement markings will be made until the evaluation of retroreflectivity is complete and the work accepted by the Engineer.

S-18.3 The provisions of MnDOT 2582.5 are hereby deleted and replaced with the following:

2582.5 BASIS OF PAYMENT

The contract unit price for permanent pavement markings includes the costs of materials, installation, traffic control, surface preparation, and primers as required by the contract.

The Contract unit price for the retroreflectivity evaluation includes all costs incurred in materials, equipment, labor, traffic control and time as required by the contract.

The Department will pay for pavement markings on the basis of the following schedule:

<u>ITEM NO.</u>	<u>ITEM</u>	<u>UNIT</u>
2582.501	Pavement Message * † ‡ β	square foot (square meter)
2582.502	___ in <u>mm</u> * † ‡ β	linear foot (meter)
2582.503	Crosswalk * † ‡ β	square foot (square meter)
2582.603	Mobile Retroreflectometer Measurements	linear foot (meter)
	Specified type of line	
	* Specified material	
	† Specified if markings are Ground In	
	‡ Specified if markings are WR	
	β Specified if markings are Contrast	

S-19 (2582) TEMPORARY PAVEMENT MARKINGS
NEW WRITEUP 03/01/16 ◀DO NOT REMOVE THIS. IT NEEDS TO STAY IN FOR THE CONTRACTORS.
SP2016-250.1

Choose one of the following:

S-19.1 The Contractor shall be required to supply manpower to assist MnDOT personnel in pavement marking related projects such as, but not inclusive to, collecting data from in place lane lines and marking final pavement marking alignments. MnDOT personnel shall be given a minimum of 24 hours' notice to provide this service. This shall also include any lane closures or traffic control necessary to complete these projects safely. Payment for said pavement marking related projects shall be incidental.

OR

The Contractor shall be responsible for pavement marking related activities such as, but not inclusive to, collecting data from in place lane lines and marking permanent pavement marking alignments. This shall also include any lane closures or traffic control necessary to complete these projects safely. MnDOT personnel will assist in the location of gores, messages and tapers for permanent pavement marking alignments. MnDOT personnel shall be given a minimum of 24 hours' notice to provide this assistance.

The Contractor shall be responsible for the location and placement of temporary pavement markings. MnDOT personnel will be available to assist in the spotting of transition areas, gores, messages and tapers, and shall be given a minimum of 24 hours' notice to provide this assistance.

S-19.2 Payment for said pavement marking related projects shall be incidental with no direct compensation made.