



# LYON COUNTY PUBLIC WORKS

504 Fairgrounds Road  
Marshall, Minnesota 56258

July 18, 2014

SAP 042-624-15 and SP 042-070-006

## ADDENDUM #2

Attached is updated plan sheet No. 2 of 5 which makes a correction to the item number for both four and six inch striping. Also attached is S-40 of the special provisions which details the construction requirements of said striping. Please update your set of plans and insert the provisions into your proposal.

If you have questions, please contact our office at 507-532-8205.

A handwritten signature in black ink, appearing to read "Aaron VanMoer".

Aaron VanMoer  
Lyon County Engineer

---

### General Office

Highway 507-532-8205  
Ditches 507-532-8208  
Environ 507-532-8210  
Fax 507-532-8217

Aaron VanMoer  
County Engineer  
507-532-8205

Tim Amick  
507-532-1308  
Brooke Wyffels  
Parks/Fairgrounds  
507-532-8214

Paul Henriksen  
Environmental Administrator  
507-532-8210

Mark Volz  
GIS Coordinator  
507-532-8218

NOTE	ITEM NO.	ITEM	UNIT	S.P. 042-070-006		S.A.P. 042-624-015	TOTAL ESTIMATED QUANTITY
				PARTICIPATING	NON-PART.		
	2021.501	MOBILIZATION	LUMP SUM	0.30		0.70	1.00
	2051.501	MAINT. & REST. OF HAUL ROADS	LIMP SUM	0.30		0.70	1.00
1	2105.619	MINOR GRADING	RD STA		288.00		288.00
2	2112.501	SUBGRADE PREPARATION	RD STA			157.00	157.00
3	2123.503	MOTOR GRADER	HOUR			10.00	10.00
	2221.501	SHOULDER BASE AGGREGATE CLASS 5 MOD	TON			4500.00	4500.00
4	2232.603	MILLED RUMBLE STRIPS-INTERMITTENT	LIN FT	80700.00			80700.00
5	2360.501	TYPE SP12.5 WEARING COURSE MIX (3,C)	TON	2500.00		14000.00	16500.00
5	2360.501	TYPE SP12.5 NON-WEARING COURSE MIX (3,B)	TON	2500.00			2500.00
6	2563.601	TRAFFIC CONTROL	LUMP SUM	0.30		0.70	1.00
7	2575.501	SEEDING	ACRE			5.80	5.80
	2575.502	SEED MIXTURE 25-142	POUND			261.00	261.00
	2575.511	MULCH MATERIAL TYPE 1	TON			11.60	11.60
	2575.519	DISK ANCHORING	ACRE			5.80	5.80
	2582.603	4" SOLID LINE YELLOW-EPOXY (WR)	LIN FT		13850.00	11850.00	25700.00
	2582.603	6" SOLID WHITE-EPOXY (WR)	LIN FT	87500.00			87500.00

### CONSTRUCTION NOTES

1. MINOR GRADING SHALL INCLUDE ALL MATERIALS AND LABOR TO NOTCH AND SHAPE THE EXISTING AGGREGATE SHOULDERS PRIOR TO PAVING. STOCKPILING, PLACING, SHAPING AND ROLLING THE REMOVED AGGREGATE AFTER PAVEMENT IS COMPLETED SHALL ALSO BE INCLUDED IN THE TOTAL BID PRICE OF 2105.619 (MINOR GRADING). STA. 162+95.00 TO STA. 448+95.00.
2. THE CONTRACTOR SHALL SHAPE, WATER, AND COMPACT THE AGGREGATE SURFACE TO THE TYPICAL SECTION PRIOR TO BITUMINOUS PAVING. STA. 6+50.00 TO STA. 162+95.00.
3. THE CONTRACTOR SHALL PULL UP INPLACE TOPSOIL TO THE FINISHED SHOULDER P.I. PRIOR TO SEEDING OPERATIONS. STA. 6+50.00 TO STA. 162+95.00.
4. MILLED RUMBLE STRIP SHALL BE 8". RUMBLE STRIP SHALL BE OMITTED 250' ON EACH SIDE OF A RESIDENTIAL ENTRANCE AND 50' BEYOND THE TURNING RADIUS OF ALL CROSS ROADS. STA. 6+50.00 TO STA. 448+95.00.
5. 30° SAFETY EDGE SHALL BE INCLUDED. BITUMINOUS SAFETY EDGE SHALL EXTEND AT A 30° ANGLE FROM THE TOP OF EACH COURSE. STA. 6+50.00 TO STA. 448+95.00. BITUMINOUS TACK COAT SHALL BE INCLUDED IN THE TOTAL BID PRICE.
6. SEE SHEET 4.
7. SEEDING WIDTH SHALL NOT EXCEED 8.0'. STA. 6+50.00 TO STA. 162+95.00.

CERTIFIED BY:



LIC. NO. 50428

ADDENDUM #2

S.A.P. NO. 042-624-015  
S.P. NO. 042-070-006

SHEET 2 OF 5 SHEETS

**S-40 (2582) PERMANENT PAVEMENT MARKINGS (EPOXY WR)**  
REVISED 10/22/13 <DO NOT REMOVE THIS. IT NEEDS TO STAY IN FOR THE CONTRACTORS.  
SP2014-226

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

S-40.1 The language below applies to the permanent pavement markings for this Project that are to be Wet Reflective/Recoverable pavement markings, utilizing Epoxy Paint (WR). These markings are to be recessed in accordance with MnDOT Technical Memorandum No. 13-13-T-03.

S-40.2 The wet reflective/recoverable pavement marking material utilized for this Project must be listed within Epoxy Paint – Recoverable category on the MnDOT Approved/Qualified Products Lists.

S-40.3 **GROOVING BITUMINOUS and/or CONCRETE PAVEMENT SURFACES FOR WET REFLECTIVE/RECOVERABLE PAVEMENT MARKINGS**

The wet reflective/recoverable pavement markings are to be grooved into the pavement surfaces. **GRINDER-TYPE CUTTING HEADS CANNOT BE USED.** Grooving operations are incidental.

S-40.4 The following is hereby added to MnDOT 2582.3B, Application:

Dry or wet groove the pavement while the roadway is open or closed to traffic. Clean the groove completely prior to pavement marking application, using an air compressor with at least 185 CFM air flow and 120 PSI air pressure. The compressor must be equipped with a moisture and oil trap, and cannot have more than 50 feet of 3/4 inch ID hose between the compressor and the air nozzle. The air nozzle must have an inside diameter of 1/2 inch or greater.

(A) Grooving Equipment

The grooving shall be performed by a self-propelled machine equipped with gang stacked diamond cutting blades mounted on a floating head with controls capable of providing uniform depth and alignment.

The cutting heads shall consist of stacked 3 mm to 9 mm [1/8 inch to 3/8 inch] wide diamond tipped cutting blades. The spacers between each blade must be such that the raise in the bottom of the finished groove between the blades is less than 25% of the groove depth. The resulting bottom of the groove shall have a fine corduroy finish. If a coarse tooth pattern is present, increase the number of blades and/or decrease the thickness of the spacers on the cutting head.

The equipment shall be capable of grooving the total width of the groove in one pass or be capable of grooving uniform depths with multiple passes. The maximum number of passes is detailed below. If multiple passes are used, the ridge between passes shall be mechanically removed prior to groove cleaning and pavement marking application.

The equipment shall be capable of grooving double lines simultaneously or parallel lines to a uniform depth with two passes.

The equipment shall be self-vacuuming and leave the cut groove ready for pavement marking installation. Dry cut grooving without a vacuum will only be allowed if markings run perpendicular to the roadway, such as Stop Bars. Use the equipment and method approved by the pavement marking manufacturer .

(B) Grooves

The grooving shall be performed within the following tolerances. Failure to meet these tolerances will result in the suspension of work until the Contractor can demonstrate that these tolerances can be met to the satisfaction of the Engineer. **The pavement marking system shall be applied so that it is centered within the groove.**

GROOVE WIDTH AND MAXIMUM NUMBER OF PASSES		
MARKING WIDTH	GROOVE WIDTH	MAX NUMBER OF PASSES
100 mm [4 inches]	130 mm $\pm$ 3 mm [5" $\pm$ 1/8"]	1
150 mm [6 inches]	180 mm $\pm$ 3 mm [7" $\pm$ 1/8"]	1
200 mm [8 inches]	230 mm $\pm$ 3 mm [9" $\pm$ 1/8"]	1
300 mm [12 inches]	330 mm $\pm$ 3 mm [13" $\pm$ 1/8"]	2
600 mm [24 inches]	635 mm $\pm$ 3 mm [25" $\pm$ 1/8"]	3

**Provide a groove depth of 70 mil  $\pm$  10 mil.**

Since pavements are irregular, the depth of groove across the width may vary. To compensate for this, the depth of the groove shall be measured from the bottom of the groove to a straight edge extended over the groove from the pavement surface opposite the pavement joint.

FULL DEPTH GROOVE LENGTHS	
Full Depth Groove Length (Broken Line)	3 m $\pm$ 75 mm [10 feet $\pm$ 3 inches]
Tapers At End of Each Line	150 mm $\pm$ 230 mm [6 inches to 9 inches]
Space Between Double lines	100 mm $\pm$ 6 mm [4 inches $\pm$ 1/4 inch]

Place the groove 2 in  $\pm$  1 in [50 mm  $\pm$  25 mm] from the edge of joints or seams along edge or centerline, unless otherwise indicated in the Plan.

Grooving alignment deviations from the control guide or existing lines specified by the Engineer shall not exceed 50 mm [2 inches].

Place all pavement markings to be grooved in accordance with pavement marking or element manufacturer's instructions. Do not construct a groove in new bituminous pavement within a minimum 10 days of the placement of the final course of pavement, unless otherwise directed by the Engineer.

If the Epoxy (WR) markings are to be installed in the same location where there are existing pavement markings, including interim or temporary, the removal of the existing pavement markings shall be incidental. The Contractor may cut the groove and remove the existing marking in a simultaneous operation.

S-40.5 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-40.6 MnDOT 2582.3F is hereby deleted and replaced with the following:

**Construction Striper Operations Daily Log**

After applying pavement markings, complete the "Construction Striper Operations Daily Log" form which can be found on the Office of Traffic, Safety and Technology website and as approved by the

Engineer. The Department will not pay for pavement markings until the Contractor submits the completed "Construction Striper Operations Daily Log" to the Engineer.

**Striper Computerized Data Logging System for Liquid Markings (DLS)**

The pavement marking device shall have an onboard monitoring system for the purpose of managing the amount of striping materials being applied to a surface. Collect data for any pavement marking application of 300 feet (drive length) or greater.

The following data shall be included in the documentation from the DLS:

1. State Project Number,
2. For every highway marked, the highway number with the beginning and ending reference points 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,
3. Date, and beginning and ending time of application,
4. Vendor and product (binder and reflective material),
5. Lot number(s) of product used,
6. Striping contractor (striper code),
7. Designation of the marking being applied (LEL – Left Edgeline, REL – Right Edgeline, CL - Centerline, LL – Lane Line Broken or Dotted, 1LL – left most LL in multilane, 2LL – second to left most LL in multilane, etc),
8. Width of marking being applied,
9. Presence of groove or rumble strip (if pavement marking is being installed on top of, begin and end points of groove or rumble will be recorded by GPS),

The following data shall be reported as an average for each drive mile installed:

1. Application vehicle speed to the nearest 0.1 MPH,
2. Weight (LBS) and/or volume (GAL as measured through a positive displacement pump mechanism or flow meter) of liquid material(s) used by color,
3. Weight (LBS) of reflective material used,
4. Ratio of reflective material used (weight) per liquid material used (volume) reported as LBS/GAL,
5. Ambient air temperature (in degrees Fahrenheit),
6. Road surface temperature (in degrees Fahrenheit),
7. Humidity (%),
8. The system shall record the average material application rates and film thickness calculated over the section striped, and

This system shall be capable of storing data and exporting to the Department's Pavement Marking Management Tool (PMMT). 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 data to the Engineer at the Engineer's discretion. The printed and electronic records shall be produced in their final form prior to the records being removed from the pavement marking equipment.

Provide to the Engineer the above records for all longitudinal non-handwork lines installed.

The Contractor shall have equipment with functional DLS equipment that is operational, calibrated and in use during pavement marking operations. Pavement marking installation without the use of a DLS shall constitute unauthorized work under 1512.

The Contractor shall provide the Engineer the DLS manufacturer's recommendations for equipment calibration frequency and provide certification that the equipment meets manufacturer's recommended calibration.

A 100 foot distance shall be travelled prior to the start of pavement marking operations to verify the physical and electronic measurement of distance travelled is consistent.

The Striper Computerized Data Logging System shall be incidental.

S-40.7 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 Department will pay for permanent pavement markings on the basis of the following schedule:

<u>ITEM NO.</u>	<u>ITEM</u>	<u>UNIT</u>
2582.603	4" SOLID LINE YELLOW - EPOXY (WR) .....	linear foot
2582.603	6" SOLID LINE WHITE - EPOXY (WR) .....	linear foot