



STATE OF MINNESOTA  
OFFICE MEMORANDUM

Office of Materials  
1400 Gervais Avenue  
Maplewood MN 55109

**DATE:** January 9, 2004 (Revised February 12, 2004)

**TO:** Distribution: 003, 046, 034, 618, 650  
Assistant District Engineers, State Aid Engineers,  
Materials Engineers, Resident Engineers, County  
Engineers & Municipal Engineers)

**FROM:** Douglas J. Schwartz, Concrete Engineer

**PHONE:** 651-779-5576

**SUBJECT:** Schedule of Price Reductions for Failing Materials for  
Concrete Construction

Attached is a copy of "Schedule of Price Reductions for Materials for Concrete Construction". This is a revision of "Schedule of Price Reductions for Materials for Concrete, Bituminous and Grading & Base Construction" issued April 26, 1995. This revision applies to concrete construction items only and is effective January 9, 2004. This schedule is for Project personnel use for determining price reductions.

The Concrete Engineering Unit offers the following guide for price reductions on non-complying construction materials when not addressed in the Contract. This schedule is available on the Concrete Engineering website at [www.mrr.dot.state.mn.us/pavement/concrete/concrete.asp](http://www.mrr.dot.state.mn.us/pavement/concrete/concrete.asp).

Material not meeting requirements shall not knowingly be placed in the work. Should any non-conforming material be inadvertently placed in the work, it will not be accepted for payment at Contract prices. **The Contractor does not have the option of taking a price reduction in lieu of complying with the Specifications.** The Engineer will designate a reasonable price for the cost of material when a Contract price has not been established. The non-conforming material shall be subject to the price reductions listed below for the indicated test provided the material was placed to the satisfaction of the Engineer. Otherwise the determination shall be made according to other procedures addressed in Specification 1503.

With failing or borderline material, make sure next load is tested before it is incorporated into the work.

**General**

- 1) Contact the Concrete Engineering Unit when calculated price reductions exceed \$10,000.
- 2) Bid prices for the project in question should be reviewed prior to calculating a price reduction. If the bid prices are considerably below average prices, then the price reduction should be assessed based on: (1) the average bid price as determined by the Estimating Section or (2) a fair market value.
- 3) The price reduction will normally be the quantity represented by the failing test times price reduction per unit quantity (cubic yards) determined from the "Schedule of Price Reductions" times the bid price.
- 4) The price reduction shall represent only the quantity of material represented by the sample and actually used.

Example: A quantity of ready-mixed concrete is placed in the work. A slump test indicates failing material. The price reduction would only apply to that load of ready-mix represented by the test, not by all concrete placed since the last passing test.

Example: The average of 4 gradation tests representing a day's paving production (lot) fails to meet requirements. The price reduction is applied to the entire day's production.

**Contact the Concrete Engineering Unit if it is suspected that untested or non-compliant concrete was placed into the work so that appropriate destructive or non-destructive testing can be performed to determine the acceptability of the work.**

- 5) Contact the Concrete Engineering Unit for price reductions not addressed in the attached schedule.

Upon request, the Concrete Engineering Unit will provide advice on the price reduction or provide a field review of the Project for further recommendations.

If you have any comments on this memo or recommendations for changes, please contact the Concrete Engineering Unit.

ATTACHMENT

cc: K. Shannon	C. Turgeon	M. Marttila
Bill Lohr, FHWA	R. Kasa	M. Masten
S. Babcock	J. Kochsiek	B. Izevbekhai
W. Garr		

**SCHEDULE OF PRICE REDUCTIONS FOR MATERIALS  
FOR CONCRETE CONSTRUCTION**

**Slump - Isolated tests (not consistently high or low)**

(SEE SPEC. 2461.4A4a) Slumps that are consistently high or low require corrective action by the Contractor's quality control personnel. When test results are inconsistent or borderline, every load should be tested.

Remove and replace the concrete or comply with the following:

**BRIDGE DECK CONCRETE**  
**2" to 3" (50 mm to 75 mm) specified**

<2.00"	(<50 mm)	No deduction if material is satisfactorily placed
3.25" - 3.75"	(80 mm - 95 mm)	OK - Substantial Compliance
4.00" - 4.50"	(100 mm - 115 mm)	No payment for the concrete
>4.50"	(>115 mm)	Pay at 25% of unit bid price for the concrete item represented

**GENERAL CONCRETE**  
**1" to 2" (25 mm to 50 mm) specified**

<1.00"	(<25 mm)	No deduction if material is satisfactorily placed
2.25" - 2.50"	(55 mm - 65 mm)	OK - Substantial Compliance
2.75" - 3.50"	(70 mm - 90 mm)	Pay at 50% of concrete price
3.75" - 4.25"	(95 mm -105 mm)	Pay at 75% of unit bid price for the concrete item represented or no payment for the concrete
>4.25"	(>105 mm)	Pay at 25% of unit bid price for the concrete item represented

**2" to 3" (50 mm to 75 mm) specified**

<2.00"	(<50 mm)	No deduction if material is satisfactorily placed
3.25" - 3.75"	(80 mm - 95 mm)	OK - Substantial Compliance
4.00" - 5.00"	(100 mm - 125 mm)	Pay at 75% of unit bid price for the concrete item represented or no payment for the concrete
>5.00"	(>125 mm)	Pay at 25% of unit bid price for the concrete item represented

**3" to 4" (75 mm to 100 mm) specified**

<3.00"	(<75 mm)	No deduction if material is satisfactorily placed
4.25" - 5.00"	(105 mm - 125 mm)	OK - Substantial Compliance
5.25" - 5.75"	(130 mm - 145 mm)	Pay at 75% of unit bid price for the concrete item represented or no payment for the concrete
>5.75"	(>145 mm)	Pay at 25% of unit bid price for the concrete item represented

**LOW SLUMP BRIDGE DECK CONCRETE**

**0.5" to 1" (15 mm to 25 mm) specified**

< 0.50"	<15 mm)	No deduction if material is satisfactorily placed
1.25"	(30 mm)	OK - Substantial Compliance
1.50"	(40 mm)	Pay at 50% of unit bid price for the concrete item represented
1.75"	(45 mm)	No Pay at the unit bid price for the concrete item represented
>1.75"	(>45 mm)	No Pay - Investigate (Contact Concrete Unit)

**LOW SLUMP CONCRETE - PATCHING**  
**0.5" to 1" (15 mm to 25 mm) specified**

<0.50"	(<15 mm)	No deduction if material is satisfactorily placed
1.25"	(30 mm)	OK - Substantial Compliance
1.50" - 1.75"	(40 mm - 45 mm)	Pay at 75% of unit bid price for the concrete item represented
>1.75"	(45 mm)	Pay at 25% of unit bid price for the concrete item represented

**NOTE: If piling or footing concrete is below the slump values listed above, deduct concrete price.**

**Water Ratio**

**See Spec 2461.3J(2)- Water used/Design water = 1.04 maximum**

When not in compliance, contact the Concrete Unit for a recommendation. The Water Ratio requirement does not apply to High Early Mixes.

**Air Content**

**General Concrete - See Specification 2461.4A4b**

**Low Slump Concrete - See Specification 2404.2B2**

This is a Contract Item. The price reduction provisions of Specification 2461.4A4b apply.

**Aggregate Gradation**

**See Specification 3126, 3128 & 3137) and the Requirements in the Special Provisions**

**Deducts are based on Agency Samples Only**

This policy may be modified when statistical acceptance methods are used as stated in the Special Provisions.

**Determination of Quantities Represented by a Failing Test**

Since the Producer may not be aware of a failing Quality Assurance test until several days after the aggregate is sampled, as a general policy, deduction quantities are calculated based on the quantity produced from the time the failing sample was taken until a passing Producer Quality Control sample passes and the split of this sample passes Agency testing. The Agency Monitor should take an additional Quality Assurance sample as soon as possible to confirm that the aggregate gradation is in compliance with Specifications.

For material represented by Agency gradation tests outside of specification range, deducts are as follows:

**Individual Aggregate Fractions**  
**( $\frac{3}{4}$ " +  $\frac{3}{4}$ " -, 3/8" -, (19.0 mm +, 19.0 mm -, 9.50 mm -) Sand, Etc.)**

All Spec. Sieves other than #200 (75 $\mu$ m) % outside of spec range	Price Reduction
$\pm 1$ & $\pm 2$	Substantial Compliance
$\pm 3$	\$2.00/CY of Concrete*
$\pm 4$	\$3.00/CY of Concrete*
$\pm 5$	\$5.00/CY of Concrete*
$\pm 6$	\$7.00/CY of Concrete*
$\pm 7$	\$9.00/CY of Concrete*
$\pm 8$	\$11.00/CY of Concrete*
$> \pm 8$	Contact Concrete Unit

SAND ONLY - % Passing #200 (75 $\mu$ m) sieve % outside of max spec.	Price Reduction
+ 0.1 & + 0.2	Substantial Compliance
+ 0.3	\$2.00/CY of Concrete*
+ 0.4	\$3.00/CY of Concrete*
+ 0.5	\$5.00/CY of Concrete*
+ 0.6	\$7.00/CY of Concrete*
+ 0.7 & +0.8	\$10.00/CY of Concrete*
$> + 0.8$	Contact Concrete Unit

Price reductions for gradation failures are not cumulative. When failures occur on #200 (75  $\mu$ m) sieve and on other sieves concurrently, the larger reduction shall apply.

**\*For Metric Projects, Multiply Cubic Yards **Deducts** by 1.3 to convert deductions to Cubic Meters**

**Combined Aggregate Gradation - See Special Provisions**

The allowable variation of the combined gradation of all the aggregate fractions is based on a working range calculated from the Job Mix Formula (JMF). **The working range may be adjusted upon the request of the Contractor and the approval of the Concrete Engineer.** Price reductions are based on Contractor testing as verified by Agency testing. Testing normally represents one day's production. This production quantity is identified as a "lot". A lot is represented by the cumulative average of test results representing each subplot. Each lot shall have a minimum of 3 sublots. If production results in less than 3 sublots per day, the quantities shall

be included in the next day of concrete production. If Contractor test results are marginal or suspect or if the Agency test results fail, test all split samples and compare results. Contact the Concrete Engineering Unit for a recommendation if comparison results do not agree.

<u>Combined Aggregate</u> All Spec. Sieves other than #200 (75 µm) % outside of working range	<u>Price Reduction per Lot</u>
± 1	\$ 1.00/CY*
± 2	\$ 5.00/CY*
> ± 2	Contact Concrete Unit

% Passing #200(75 µm) sieve % outside of max spec.	<u>Price Reduction per Lot</u>
± 0.1	\$ 1.00/CY*
± 0.2	\$ 5.00/CY*
> 0.2	Contact Concrete Unit

**\*For Metric Projects, Multiply Cubic Yards Deducts by 1.3 to convert deductions to Cubic Meters**

**Well-Graded Aggregate - See Special Provisions**

The well-graded aggregate concept requires that percentage of aggregate retained on specific sieves represent a specified proportion of the total combined aggregate.

Price reductions for concrete paving projects are based on Contractor testing as verified by Agency testing.

Price reductions for microsilica high performance bridge deck concrete mixes are based on Agency testing.

Testing normally represents one day's production. This production quantity is identified as a "lot". A lot is represented by the average of test results representing each subplot. Each lot shall have a minimum of 3 sublots. If production results in less than 3 sublots per day, the quantities shall be included in the next day of concrete production. If Contractor test results are marginal or suspect, test all split samples and compare results. Contact the Concrete Unit for a recommendation if comparison results do not agree.

<u>Combined Aggregate</u> All Spec. Sieves other than #200 (75 µm) % outside of working range	<u>Price Reduction</u>
± 1	\$ 1.00/CY*
± 2	\$ 5.00/CY*
> ± 2	Contact Concrete Unit

<u>% Passing #200 (75 µm) sieve%</u> outside of max spec.	<u>Price Reduction</u>
± 0.1	\$ 1.00/CY*
± 0.2	\$ 5.00/CY*
> 0.2	Contact Concrete Unit

**\*For Metric Projects, Multiply Cubic Yards Deducts by 1.3 to convert deductions to Cubic Meters**

**Aggregate Quality Failures**

Contact the Concrete Engineering Unit for a recommendation.

For any other material failures not addressed above or for further interpretation, contact the Concrete Engineering Unit.