

- (b) **Atterberg Limits:** The liquid limit shall be not more than 25. The plasticity index shall be not more than 3. Tests will be performed in accordance with the requirements of VTM-7.
- (c) **Soundness Loss:** Soundness loss shall conform to the requirements of Table II-4 for aggregate bases. Tests will be performed in accordance with the requirements of AASHTO T103 or T104.
- (d) **Abrasion Loss:** Abrasion loss shall be not more than 45 percent. Tests will be performed in accordance with the requirements of AASHTO T96.

## SECTION 206—LIGHTWEIGHT AGGREGATE

### 206.01—Description.

These specifications cover lightweight aggregate used in hydraulic cement concrete and asphalt surface treatment.

### 206.02—Detail Requirements.

Lightweight aggregate shall consist of clay, shale, or slate expanded through a sintering or rotary kiln.

- (a) **Lightweight aggregate used in hydraulic cement concrete** shall conform to the requirements of AASHTO M195.
- (b) **Lightweight aggregate used for asphalt surface treatment** shall conform to the requirements of AASHTO M195 except that Sections 3, 6, and 8 will not apply. Grading shall conform to the requirements of Table II-3 except that the maximum percentage by weight of material passing the No. 8 sieve shall be 16 percent and passing the No. 16 sieve shall be 9 percent.

## SECTION 207—SELECT MATERIAL

### 207.01—Description.

These specifications cover nonplastic material obtained from roadway cuts, borrow areas, or commercial sources used as foundation for subbase, shoulder surfacing, fill, backfill, or other specific purposes.

TABLE II-6  
Design Range: Select Material, Type I

% by Weight of Material Passing				
3 in Sieve	2 in Sieve	No. 10 Sieve	No. 40 Sieve	No. 200 Sieve
100	95–100	25–55	16–30	4–14

**207.02—Detail Requirements.**

Select material shall consist of approved local or commercial materials free from roots, muck, and debris.

(a) **Grading:**

1. **Type I:** Grading for Type I shall conform to the job-mix formula selected from within the design range specified in Table II-6, subject to the applicable tolerances specified in Table II-7 when tested in accordance with the requirements of VTM- 25.
2. **Type II and Type III:** Grading for Types II and III shall conform to the following when tested in accordance with the requirements of VTM-25:

**% by Weight of Material Passing Sieve**

Type	3 in	2 in	No. 200
II		Min. 100	Max. 25
III <sup>1</sup>	Min. 100		Max. 20

<sup>1</sup>A maximum of 25 percent of material retained on the No. 200 sieve will be allowed for Type III if the liquid limit is less than 25 and the plasticity index is less than 6.

TABLE II-7  
Process (P) and Range (R) Tolerance: Select Material, Type I

No. Test	Tolerance on Each Laboratory Sieve (%)									
	3 in		2 in		No. 10		No. 40		No. 200	
	P	R	P	R	P	R	P	R	P	R
1	0.0		±4.0		±15.0		±10.0		±6.0	
2	0.0	0.0	±3.0	5.0	±10.5	18.5	±7.0	13.0	±4.0	8.5
3	0.0	0.0	±2.5	5.5	±8.5	22.0	±5.5	15.0	±3.5	10.0
4	0.0	0.0	±2.0	6.0	±7.5	23.5	±5.0	16.5	±3.0	10.5
8	0.0	0.0	±1.5	7.0	±5.5	26.5	±3.0	18.5	±2.0	12.0

**(b) Atterberg Limits:**

1. **Type I:** The mean of the Atterberg limits shall conform to the requirements in Table II-8 when tested in accordance with the requirements of VTM-7.
2. **Types II and III:** Atterberg limits shall conform to the following when tested in accordance with the requirements of VTM-7:

Type	Max. Liquid Limit	Max. Plasticity Index
II	30	9
III	30	9

- (c) **CBR:** Tests for CBR will be performed in accordance with the requirements of VTM-8 for conformance to the specified value.
- (d) **Soundness:** Soundness for Type 1 shall conform to the requirements of Table II-4. Tests will be performed in accordance with the requirements of AASHTO T103 or T104.

**207.03—Job-Mix Formula for Select Material, Type I.**

The Contractor shall submit or shall have the supplier submit a job-mix formula for the Engineer's approval prior to starting work. The formula shall establish a single percentage of aggregate passing each required sieve size denoted in Table II-6 and shall be in effect until a modification is approved by the Engineer. If unsatisfactory results or other changed conditions make it necessary, the Contractor shall prepare and submit a new formula for the Engineer's approval.

**207.04—Mixing.**

The Contractor shall provide a laboratory as specified in Section 106.07. Select material shall be produced at optimum moisture  $\pm 2$  percentage points.

TABLE II-8  
Atterberg Limits: Select Material Type I

No. Tests	Max. Liquid Limit	Max. Plasticity Index
1	25.0	6.0
2	23.9	5.4
3	23.2	5.1
4	23.0	5.0
8	22.4	4.7

The Contractor shall have a certified Central Mix Aggregate Technician present at the plant during initial setup and subsequent production.

### **207.05—Acceptance of Select Material, Type I.**

Sampling and testing for determination of grading and Atterberg limits shall be performed by the Contractor. The Contractor shall provide the Department copies of test results on forms furnished by the Department and shall maintain appropriate current quality control charts. The Department will perform independent monitor tests. If there is a statistically significant difference between the two sets of results, an investigation will be made to determine the reason for the difference. If it is determined that the material does not conform to the requirements of the Contract, the material will be rejected or a payment adjustment will be made in accordance with the requirements of Section 207.07 herein.

Determination of grading and Atterberg limits will be based on a mean of the results of tests performed on four samples taken in a stratified random manner for each 2,000-ton lot. Lots of 4,000 tons may be used when the normal daily production of the source from which the material is being obtained is more than 2,000 tons. If visual examination reveals that the material is obviously contaminated or segregated, the material will be rejected without additional sampling or testing. If it is necessary to determine the grading and Atterberg limits of the material in an individual location, one sample taken from the material in question will be tested and the results will be compared to the job-mix formula with the tolerances specified in Tables II-7 and II-8 for one test. The results obtained will apply only to the material in question.

A lot will be considered acceptable for grading if the mean of the results falls within the allowed deviation from the job-mix formula and the difference between the maximum and minimum results does not exceed the range values specified in Table II-7.

A lot will be considered acceptable for Atterberg limits if the mean of the test results is less than the maximum allowed for the liquid limit and plasticity index values specified in Table II-8.

If the liquid limit exceeds 30 or the plasticity index exceeds 9 on any individual sample, that portion of the lot from which the sample was taken will be considered a separate part of the lot and shall be removed from the road.

If the Contract requires less than 2,000 tons of material, the amount of material necessary to complete the last lot is less than 2,000 tons (or 4,000 tons, if applicable), the job-mix formula is modified within a lot, or a portion of the lot is rejected on the basis of individual test results, the mean results of the tests on the samples taken will be compared to the job-mix formula with the applicable process tolerances specified in Tables II-7 and II-8 for the number of tests performed.

**207.06—Referee System for Select Material, Type I.**

If the test results obtained for one of the four samples or the mean of the four samples tested to evaluate a particular lot is questionable, the referee system as defined in Section 208.07 will be applied except that the final mean results will be compared to the job-mix formula with the tolerances given in Tables II-7 and II-8 for the mean of eight tests.

**207.07—Payment Adjustment System for Select Material, Type I.**

If a lot of material does not conform to the acceptance requirements stated herein, adjustment points, determined as follows, will be applied for each 1 percent or part thereof that the grading or Atterberg limits are outside the job-mix formula with the tolerances given in Tables II-7 and II-8.

Sieve Size	Adjustment Points	
	Process	Range
3 in	1	1
2 in	1	1
No. 10	1	1
No. 40	3	3
No. 200	5	5

Atterberg Limits	Adjustment Points
Liquid limit	3
Plasticity index	7

If the total adjustment (excluding the range adjustment) for the lot is more than 25 points, the failing material shall be removed from the road. If the total adjustment (excluding the range adjustment) is 25 points or less and the Contractor does not elect to remove and replace the material, the contract unit price for the material will be reduced by 1 percent for each adjustment point. The total adjustment will be applied to the tonnage represented by the sample(s).

## SECTION 208—SUBBASE AND AGGREGATE BASE MATERIAL

**208.01—Description.**

These specifications cover material used to form a foundation for base or surface pavement.