

Section 02337

LIME/FLY-ASH STABILIZED SUBGRADE

PART 1 GENERAL

1.01 SUMMARY

A. This Section includes foundation course of lime/fly-ash stabilized subgrade material.

1. Application of lime slurry and fly-ash to Subgrade
2. Mixing, compaction, and curing of lime, slurry, fly-ash, water and subgrade into a stabilized foundation

1.02 MEASUREMENT AND PAYMENT

A. Unit Prices.

1. Measurement and payment for lime/fly-ash stabilized subgrade are on per ton basis compacted in place to proper density. Separate measurement will be made for each required thickness of subgrade course.
 - a. Limits of measurement shall match actual pavement replaced, but no greater than the maximum pavement replacement limits shown on Plans. Limits for measurement will be extended to include installed lime/fly ash stabilized subgrade material that extends to 2 feet beyond outside edge of pavement to be replaced, except where proposed pavement section shares a common longitudinal or transverse edge with existing pavement section. No payment will be made for lime/fly ash stabilized subgrade in areas beyond these limits.
 - b. Limits of measurement and payment shall match pavement replacement limits shown on Plans, except as noted in Paragraph 1.02.A.1.a, or as approved by Project Manager.
2. Payment for hydrated lime and quicklime is by ton of 2,000 pounds dry-weight basis.
3. Payment for commercial lime slurry is by ton of 2,000 pounds of lime calculated on percentage by weight of dry solids for grade of slurry.
4. Payment for fly ash is on unit price basis per ton.
5. Refer to Section 01270 – “Measurement and Payment” for unit price procedures.

B. Stipulated Price (Lump Sum). If Contract is Stipulated Price Contract, payment for Work in this Section is included in total Stipulated Price.

1.03 REFERENCES

ASTM C618 - Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete.

1.04 SUBMITTALS

- A. Conform to requirements of Section 01330 – “Submittal Procedures”.
- B. Submit certification that fly-ash, hydrated lime, quicklime, or commercial lime slurry complies with these specifications.
- C. Submit weight tickets, certified by supplier, with each bulk delivery of materials to work site.

1.05 e

- A. Section 01270 – “Measurement and Payment”
- B. Section 01330 – “Submittal Procedures”
- C. Section 01454 – “Testing Laboratory Services”
- D. Section 02336 – “Lime Stabilized Subgrade”

1.06 – 1.07 NOT USED

1.08 DELIVERY, STORAGE, AND HANDLING

- A. Conform to requirements of Section 02336 – “Lime Stabilized Subgrade”.
- B. Quicklime can be dangerous; exercise extreme caution if used for Work. Become informed about recommended precautions in handling, storage and use of quicklime.

1.09 PROJECT SITE CONDITIONS (NOT USED)

1.10 DEFINITIONS

- A. Moist Cure: Curing soil lime/fly-ash material to obtain optimum hydration.
- B. 1,000-Foot Roadway Section: 1,000 feet per lane width or approximately 500 square yards of compacted subgrade for other than full-lane-width roadway sections.

1.11 – 1.13 NOT USED

PART 2 PRODUCTS

2.01 MANUFACTURER(S) (NOT USED)

2.02 MATERIALS AND/OR EQUIPMENT

- A. Water: clean, clear and free from oil, acids, alkali, or vegetable matter.
- B. Conform to requirements of Section 02336 – “Lime Stabilized Subgrade” for Type A hydrated lime, Type C quicklime, and Type B commercial lime slurry shall.

- C. Fly-Ash: Residue or ash remaining after burning finely pulverized coal at high temperatures conforming to requirements of ASTM C618, Class C, and following:
 - 1. Minimum CaO content of 20 percent
 - 2. Loss on ignition not to exceed 3 percent
 - 3. Contain no lignite ash
- D. Asphaltic Seal Cure: Conform to requirements of Section 02336 – “Lime Stabilized Subgrade”.

2.03 – 2.04 NOT USED

PART 3 EXECUTION

3.01 – 3.02 NOT USED

3.03 ERECTION/INSTALLATION APPLICATION AND/OR CONSTRUCTION

Conform to Part 3 of Section 02336 – “Lime Stabilized Subgrade” with following exceptions:

- 1. Include fly ash in percentage amounts in lime or lime slurry as established from geotechnical evaluation for application, mixing, and compaction.
- 2. Apply lime/fly-ash as single mix, single pass over lower PI soils.
- 3. Conduct operations to minimize elapsed time between mixing and compacting lime/fly-ash stabilized subgrade in order to take advantage of rapid initial set characteristics. Complete compaction within 2 hours of commencing compaction, and not more than 6 hours after adding and mixing last stabilizing agent.

3.04 REPAIR/RESTORATION (NOT USED)

3.05 FIELD QUALITY CONTROL

- A. Testing shall be performed under provisions of Section 01454 – “Testing Laboratory Services”.
- B. Soil shall be sampled to establish percent of fly-ash and hydrated lime, quicklime, or lime slurry to be applied to subgrade material.
- C. Testing shall be in accordance with Part 3 of Section 02336 – “Lime-Stabilized Subgrade”.

3.06 – 3.10 NOT USED

END OF SECTION