

SUBGRADE LAYER - Section 305

A subgrade layer is composed of soil materials treated with Portland cement or Portland-pozzolan cement, untreated aggregate materials, blended calcium sulfate, or asphaltic concrete, as specified. A subgrade layer is constructed beneath a Class I Base Course or other designated layers to improve the quality and increase the support value of the top layer of material in the embankment.

After the contractor has selected the type of materials for the subgrade layer, the same type shall be used throughout the project.

MATERIALS

ASPHALTIC CONCRETE

The materials selected and used for asphaltic concrete must conform to Specification Section 501 or 502. Sampling, testing, approval, and other procedures shall be in accordance with the *Application for Quality Assurance for Asphaltic Concrete Mixtures*.

PORTLAND CEMENT CONCRETE

Portland cement concrete **is not an approved** material for the construction of a Subgrade Layer under Specification Section 305.

AGGREGATES FOR AGGREGATE SUBGRADE LAYER

Stone, shell, sand-shell, crushed slag, and recycled Portland cement concrete may be used for subgrade layer without stabilization. These materials must meet all specification requirements and be tested and approved prior to incorporation in the project. If the contractor requests advance payment, the materials shall be placed in dedicated stockpiles. For regulations for dedicated stockpiles, refer to page 10.

BLENDED CALCIUM SULFATE

Blended calcium sulfate may be used as an untreated subgrade layer. Blended calcium sulfate must be blended with an approved aggregate for pH control and placed in dedicated stockpiles. All sampling will be accomplished in accordance with Specification Section 203, non-plastic embankment.

SOILS FOR TREATED SUBGRADE LAYER

To be acceptable for treatment, soils can contain no more than 79% sand or 69% silt. The district laboratory will determine the percent sand or silt in accordance with DOTD TR 407 from samples obtained by department personnel. Additionally, to be acceptable for treatment, materials can have a P. I. no greater than 25. The district laboratory will determine P.I. in accordance with DOTD TR 428 from samples obtained by department personnel. When in-place materials do not meet these specifications, they shall be removed and replaced with specification material under the appropriate bid item. It shall be the responsibility of the contractor to locate and provide materials which meet the specifications and which are appropriate for use.

CEMENT

Cement shall be Types 1, 1(B), Type II, or 1P meeting the requirements of Specification Subsections 1001.01 or 1001.02 and be from an approved source listed in QPL 7. Cement is to be delivered in bulk transports. It must be protected from dampness, water or other contaminants. Cement that has partially set or has visible signs of moisture damage shall not be used.

WATER

Water must meet the requirements of Specification Section 1018.

EQUIPMENT

When central plant mixing is used, all equipment shall meet the requirements for Class I Base Course (Specification Section 301).

Equipment for asphaltic concrete subgrade layer shall conform to Specification Section 503.

Equipment for in-place treated subgrade layer shall conform to Specification Section 303.

Equipment for aggregate or blended calcium sulphate subgrade layer shall conform to Specification Section 301.

CONSTRUCTION DETAILS

SUBGRADE LAYER CONSTRUCTED WITH ASPHALTIC CONCRETE

Subgrade layers built with asphaltic concrete shall be constructed in accordance with Specification Section 501 or 502. For construction details, refer to the appropriate *Application of Quality Assurance Specifications for Asphaltic Concrete Mixtures*.

SUBGRADE LAYER CONSTRUCTED WITH AGGREGATE

Aggregate subgrade layer is to be constructed in accordance with Specification Section 302. For construction details, refer to Class II Base Course.

SUBGRADE LAYER CONSTRUCTED WITH TREATED SOILS

When central plant mixing is used, Specification Section 301 will apply. Refer to Class I Base Course.

When in-place mixing is used, Specification Section 303 will apply. Refer to In-place Cement Stabilized Base Course.

Regardless of the mixing process, the mixture will be treated with 9% cement unless adjusted by the project engineer and pulverized to meet the specification requirements when tested in accordance with DOTD TR 431.

SUBGRADE LAYER CONSTRUCTED WITH BLENDED CALCIUM SULFATE

When blended calcium sulfate is used, refer to Specification Sections 203, non-plastic embankment, and 302, Class II Base Course.

QUALITY ASSURANCE

QUALITY CONTROL (QC)

Refer to the QC section for the appropriate type of construction listed in the preceding section entitled **Construction Details**.

INSPECTION AND ACCEPTANCE

Refer to the Inspection and Acceptance section for the appropriate specification reference listed in the preceding section entitled **Construction Details**.

QUALITY ASSURANCE DOCUMENTATION

The contractor shall maintain documentation of the QC program as required by the engineer.

When a central mix plant is used, the documentation requirements for Class I Base Course will apply.

For in-place treatment, the documentation requirements for Section 303 will apply.

For aggregate subgrade layer, the documentation requirements for Class II Base Course will apply.

For asphaltic concrete subgrade layer, the documentation requirements for Part V of the specifications will apply.

For blended calcium sulfate subgrade layer, the documentation requirements for non-plastic embankment, Specification Section 203 and Class II Base Course, Specification Section 302 will apply.