

### III-05.01 Aggregate Base Course CI 5 and Salvaged Base Course

The slough of the aggregate base shall not be steeper than 4:1 when placing hot bituminous pavement on base for a new section. Steeper base sloughs may be used for placement of concrete.

Base course provided under the surface course will either consist of totally virgin aggregate (Aggregate Base Course CI 5), or a mixture of virgin aggregate and recycled/removed asphalt, concrete, or aggregate (Salvaged Base Course). The bid item quantity for base course within the plans should generally use TON units.

The decision to use either the Aggregate Base Course CI 5 bid item, or the Salvaged Base Course bid item within the plans should be evaluated by the designer and/or district using the following criteria:

- Salvaged Base Course bid item shall be used if the amount of removed material available from the project results in a total quantity of Salvaged Base Course being  $\geq 50\%$  of the base needed for the proposed project.
- Consequently, if  $< 50\%$  total is generated, then the Aggregate Base Course CI 5 bid item shall be used. Coordinate with the District and allow the use of the bid item Salvaged Base Course as requested.

For example, if a project requires 100,000 TON of proposed base needed to build the project and:

- There are 12,000 TON of existing bituminous removals, which will create a maximum of 40,000 TON of Salvaged Base Course (30% minimum existing bituminous material, Section 817-Spec Book).
- There are also 3,000 TON of existing concrete removals, which will create another 10,000 TON of Salvaged Base Course (30% Minimum existing concrete material, Section 817-Spec Book).
- The total maximum Salvaged Base Course generated is  $40,000 + 10,000 \text{ TON} = \underline{50,000 \text{ TON}}$ .
- The criteria for using the Salvaged Base Course bid item within the plans has been met above because the total 50,000 TON Salvaged Base Course generated is  $\geq 50\%$  of the 100,000 TON of proposed base required for the project.

However, the designer needs to also consider the project phasing and operations when calculating the above criteria. If the project phasing does not provide access to removing existing material for salvaging into proposed base course due to traffic control or operations, the designer needs to adjust their above criteria calculations. Another consideration that needs to be adjusted by the designer above is if the removed bituminous material is to be incorporated into Recycled Asphalt Pavement (RAP).

All assumptions, considerations, and calculations used above shall be displayed within a table on the Basis of Estimate (Section 10) of the plans to clearly summarize the existing and proposed materials for the project.

### **III-05.02 Permeable Stabilized Base Course**

Permeable base is generally not used on NDDOT projects, and the decision for its use will be evaluated on a case-by-case basis. Materials and Research Division will identify these projects and would provide the recommendation in their report.

Permeable base is an open graded base that allows water to drain through it at a relatively high rate (approx. 1500 ft. per day).

The materials used for permeable base treatment are asphalt or cement. An additional 6" width of permeable base shall be placed on both sides of the mainline pavement for edge drain constructability. The thickness of the base should be given in the Materials and Research Division recommendations. The aggregate and cementitious materials are specified in Section 304 of the Standard Specifications.

### **III-05.03 Full Depth Reclamation**

Some existing roadways may have surfacing which is so badly deteriorated that an overlay would not be appropriate. Where complete reconstruction is not considered an option, full depth reclamation could be considered.

Generally, full depth reclamation is accomplished by placing virgin aggregate on the existing roadway and then processing the virgin aggregate, surfacing, and possibly the underlying aggregate base material with a reclaimer. The virgin aggregate, existing surfacing and the existing aggregate base are mixed together, in place, to form a blended base. This process is commonly called "Mine and Blend". In some cases, a stabilizing agent is also added to the blended material. These stabilizers can be lime, cement, or asphalt cement; but are typically cement.

The total depth of blending, the thickness and class of virgin aggregate, stabilizing agent, and whether the reclaimer can run on the subgrade or must run on the surfacing, will be as recommended by the Materials and Research Division.

The blending is done on the roadway, or can be accomplished by hauling the materials from the roadway and blending them off site and then hauling the blended base back to the roadway to lay and compact.

**III-05.04 Edge Drains**

Edge drains are perforated pipe systems that allow water to enter and be carried to outlets where it is emptied into the highway ditch or storm sewer. Edge drains are placed in trenches that are parallel to the centerline of the roadway and adjacent to the outer edge of concrete. This item should be covered in the Materials and Research recommendations.

Where there is guardrail, locate the drains so they don't conflict with the guardrail posts.

**III-05.05 Prime Coat**

Prime coat is a thin layer of liquid asphalt and is generally placed on a finished base to protect it from the elements and to provide a temporary surface until the final surfacing can be placed. The rate of application may vary, but is normally 0.35 GAL/SY for virgin aggregate and 0.25 GAL/SY for salvaged bituminous material base.

If the primed base will be open to traffic, blotter sand should be provided at the rate of 12 lb/sy (generally).