



**CATEGORY 900
MATERIALS**

655 **ADD:** The following after the last paragraph of 900.02 **TECHNICIAN QUALIFICATION REQUIREMENTS.**

900.03 RECYCLED MATERIALS.

900.03.01 CERTIFICATION. All recycled or **rehandled** material furnished or supplied for use may require testing and certification to ensure compliance with all **State** and local applicable environmental **and EPA** regulations. The required testing may include, but not be limited to, the EPA Toxicity Characteristic Leaching Procedure (TCLP) or its successor. Provide testing and certification for all recycled materials at no additional cost **to the Administration.** Evaluation and interpretation of the test data will be made by **an OMT** Quality Assurance Manager. The above requirements do not preclude the normal materials acceptance process, and the recycled material shall **meet** all applicable specifications. EPA regulations governing the use of the material, certified test results, and material safety data sheets shall accompany the source of supply letter and sample submitted for approval.

Refer to the Special Provisions located in the Contract Documents for the usage of recycled materials not covered by this specification.

900.03.02 RECLAIMED/RECYCLED CONCRETE (RC).

Usage. Use RC for the following with written approval:

- (a)** Graded Aggregate Base (**GAB**).
- (b)** Common, Select, or Modified Borrow:
 - (1)** At least 2 ft above saturated soil or groundwater conditions,
 - (2)** At least 100 ft from surface waters (streams, creeks, or rivers),
 - (3)** At least 3 ft from exposed metal surfaces, and,
 - (4)** At least 3 ft from geotextile.
- (c)** Riprap.

Do not use RC as Capping Borrow nor as aggregate for the following:

- (a)** Portland cement concrete.
- (b)** Hot **mix** asphalt.



- (c) Drainage systems.
- (d) Mechanically stabilized earth (MSE) systems:
 - (1) MSE walls.
 - (2) Reinforced soil slopes (RSS).
 - (3) Reinforced earth slopes (RES).
- (e) In embankment construction as follows:
 - (1) Within 1 ft of the top surface of any area to be vegetated.
 - (2) Within 2 ft of saturated soil or groundwater conditions.
 - (3) Within 100 ft of any surface water course (streams, creeks, or rivers).
 - (4) Within 3 ft of any metal pipe or shoring.
- (f) Under pervious or porous surfaces.

Grading Requirements. The grading requirements for the use of RC are:

- (a) Table 901 A when used as GAB or for any other application within the pavement structure.
- (b) 204.02 when used in embankment construction.
- (c) 916.01 when used as Borrow material.
- (d) 901.02.01 when used as riprap.

RC shall not contain more than 5 percent brick and asphaltic material by mass except when used as Common Borrow.

pH Requirements. The pH shall be less than 12.0 for all applications. RC usage shall not cause water leaving the site to exceed a pH of 8.5. RC may be blended with natural materials to control the pH. RC used as GAB requires daily testing to monitor the pH, and as directed.

Quality Control. The producer shall submit a Quality Control Plan and obtain approval prior to production. The plan shall include, but not be limited to, the operational techniques and procedures proposed to produce the RC product. Quality control includes the sampling and testing performed to validate the quality of the product during production operations.



Quality Assurance. OMT Quality Assurance personnel will perform quality assurance inspection, sampling, and testing at the point of processing/reclamation. Additional inspection and compaction control will be performed by the Project Engineer.

900.03.03 RECYCLED ASPHALT PAVEMENT (RAP).

Usage. Use RAP for Common, Select, Capping, or Modified Borrow.

Do not use RAP as aggregate for the following:

- (a) Graded Aggregate Base (GAB).
- (b) Portland cement concrete.
- (c) Drainage systems.
- (d) Embankment construction.
- (e) Within 1 ft of the top surface of any area to be vegetated.

Refer to MSMT 412 and M 323 for the use of RAP in hot mix asphalt mixes.

Grading Requirements. The grading requirements for the use of RAP are:

- (a) 204.02 when used in embankment construction,
- (b) 916.01 when used as Borrow material,
- (c) 901.02.01 when used as riprap.

Quality Control. Create a captive stockpile for storing the RAP prior to use. Create a new captive stockpile and take new acceptance samples for gradation approval whenever the source of the RAP changes.

Quality Assurance. OMT Quality Assurance personnel will sample and test the RAP stockpiles to ensure that they meet the above gradation requirements. The completed test results will be reviewed by the OMT Soils and Aggregate Division for approval.

Construction of Control Test Strip. The location, equipment, and methods used to construct the control test strip shall be as directed; prior to approval. The equipment and methods used to construct the control test strip shall be the same as those used in subsequent construction. Place and test the control test strip when the RAP is 32°F or higher to establish the maximum density. RAP is temperature sensitive, which may affect the density.



Construct the control test strip **to a maximum length** of 100 ft, **at least** 12 ft wide; and **to** a maximum compacted lift thickness of 6 in. Prepare the subgrade for the control test strip in accordance with 204.03.07. Do not construct the control strip, or perform any subsequent construction, on frozen subgrade.

Compact the RAP for the control test strip with one pass of the roller. Measure the density after one pass with a nuclear density gauge (backscatter method) at the frequency for capping material at five random locations distributed across the length and width of the control test strip, as directed. Record the measurements and mark the locations for future reference.

Compact the RAP for the control test strip with a second pass of the roller. Measure and record the density again at the exact locations previously tested and as described above. Prepare a plot of density versus the number of roller passes. Continue this process until the maximum dry density of the control strip is established.

There should be no drop in average density during construction of the control test strip for each lift. A drop in the average density of greater than 2 pcf during construction of the control test strip is an indication that the material is not compacting properly, and a new test strip shall be **constructed**.

The Project Engineer may require **the Contractor to cut** into the control test strip for visual inspection. **All material, labor, equipment, tools, and incidentals necessary to provide an approved control test strip shall be at no additional cost to the Administration.**

Compaction Control. Use the roller pattern and number of passes determined from the construction of the test strip to compact the RAP for production placement. The density of the RAP compacted for production work shall be at least 97 percent of the maximum density obtained from the control test strip. Recheck the density of the production work if it is less than 97 percent of the maximum density obtained from the control test strip. Construct a new control test strip if the second density does not meet the 97 percent requirement. Construct a new control test strip if the measured density of the compacted RAP for production work exceeds 105 percent.

Establish one rolling pattern to achieve maximum density for each use based on the control test strips. Samples or results produced prior to the construction of any new stockpiles will not be considered.