

Division 5: Select Borrow II, CBR 15

5.01 SCOPE: Select Borrow II shall consist of material with a Minimum CBR of 15 obtained from off-site sources. This material will be used to replace unsuitable existing material within the roadway when directed and trench for utility construction. All costs of materials, labor, and equipment necessary to excavate, haul, place and compact Select Borrow II to the plan grade shall be included in the contract price specified in the Unit Price Table.

5.02 MATERIALS: Select Borrow shall consist of local or commercial materials void of roots and debris and meeting the following requirements:

A. Select Borrow II shall be sandy soil Type II or III and shall conform to the following requirements:

1. Grading: (When tested in accordance with VTM-25)

Percentage by Weight of Material Passing

Type	3" Sieve	2" Sieve	No. 200 Sieve Maximum
II		Minimum 100	25
III	Minimum 100		20

2. Atterberg Limits:	<u>Max. Liquid Limit</u>	<u>Max. Plasticity Index</u>
Type II	30	9
Type III	30	9

B. Select Borrow II obtained from off-site sources must have a value of fifteen (15) or greater from the California Bearing Ratio test for shearing resistance as explained in ASTM D1883. All off-site sources must be from a location approved by the Engineer prior to construction. The use of materials from these sources will not be permitted until representative samples have been tested and the results are furnished and approved by the Engineer. Test results will be accepted only if they have been sampled within ninety (90) days of the contract agreement. The Contractor will be responsible for furnishing all associated costs for the above tests at no additional expense to the City.

C. Should it be determined that excavation materials for storm drain and utility trenches in the right-of-way are unsuitable for backfilling (Classes III, Type SM and SC, IV & Class V Soil Types listed under USCS Soil Classification System [ASTM D2487]) "Select Borrow shall be furnished and placed by the Contractor at the locations as directed by the Engineer.

5.03 EXECUTION: Select Borrow II to be used as backfill for roadway and trench excavation where unsuitable materials are encountered shall be furnished and placed in accordance with the following requirements:

A. Backfill shall be evenly and carefully be placed around and over the pipe in six (6) inch maximum layers, each layer being thoroughly and carefully tamped until twelve (12) inches of cover exists over the pipe. Between twelve inches above the pipe and eight inches below the top of the subgrade may be placed and tamped in horizontal layers with the top six inches compacted by the following method. Tamping shall be performed using suitable pneumatic compactors or an approved equal. Compaction equipment specifically designed for these purposes must be present and operational at the job site and shall be utilized throughout the length and depth of the trench to obtain uniform compaction. The degree of compaction and density shall be determined by the VTM-1. Where settlement is important and where excavation has been made through permanent pavement, curbs, and driveways, and sidewalks, or where structures are undercut by excavation, it shall be the Contractor's responsibility to provide compaction of the backfill material to ninety-five percent (95%) of its maximum density at plus or minus twenty percent (20%) of its optimum moisture. Surplus material shall be disposed of by the Contractor. Pavement and shoulders are to be cleaned of excess material immediately after backfill.

- B. Compaction Tests: The City, or its authorized representatives, reserve the right to perform compaction tests on any or all portion(s) of backfill placed at no costs to the Contractor. However, in the event the compaction of this backfill is not in compliance with the above requirements, the Contractor shall take corrective measures at no costs to the City to bring the backfill within the limits of these Specifications. The Contractor shall then be responsible for reimbursing the City all costs associated with the performance of compaction test(s) in those sections of the backfill that failed the compaction test(s).
- C. Select Borrow II will be used as directed by the Engineer where existing trench materials are classified as per Division 5.02(C).

5.04 MEASUREMENT AND PAYMENT: Select Borrow II shall include the cost of handling, placing and compacting the material, and the cost of removing and disposing of the unsuitable material at off-site locations. This item will be measured and paid for as follows:

- A. Pipe: Measurement of volume will be determined based on width and depth as defined in this division.

If the nominal pipe diameter exceeds ten (10) inches, the volume will be reduced by the amount displaced by the pipe or portions thereof as determined utilizing outside pipe diameters.

- 1. Width: The trench width used in determining the volume of select borrow to be paid for shall be the nominal pipe diameter plus two (2) feet for sewer laterals, water and sewer force mains, and storm drain pipes and culverts. The width for gravity sewers shall be as follows:

	Sewer Depth (Plans) (Feet)	Pay Width (Feet)
Less than or equal to	5	3.0
	5 – 7	5.0
	7 – 9	5.5
	9 – 11	6.5
	11 – 13	8.0
Greater than	13	9.5

- 2. Depth: The trench depth and corresponding stations shall be measured for payment. "Depth" shall be from the pipe invert or from the top of suitable backfill (whichever is higher) to the finish grade elevation along the centerline of the pipe less the combined thickness of pavement and aggregate base course specified for patching where applicable. Select Borrow II shall be measured at stations for depth at its beginning or ending, at abrupt changes in depth, at changes in pay width, and at intervals not exceeding 50 feet.
- B. Measurement for Select Borrow II used in constructing embankments will be measured based on sections comprised of field sections taken after clearing and grubbing, regular excavation, and placement of surplus suitable on-site material compacted to finished plan grades.
- C. Select Borrow II shall be paid for at the unit price per cubic yard as per Unit Price Table

