

shall be furnished, placed and compacted so as to make to surface conform to the required subgrade.

(c) All objectionable materials shall be burned, buried or otherwise disposed of with injury to the adjoining property.

(d) Such clearing and grubbing shall be considered as manipulation and shall not be paid for, same to be included in the price bid for grading.

38- EXCAVATION.

Under this item the contractor shall do all the excavation required for the construction of the roadway, and its connections, the placing and compacting of the excavated materials, and the hauling of the whole earthwork surface of the highways, or as shown on the plans or as directed by the engineer. He shall grade the entire length of the roadway, ditches and side slopes to the required lines and grades; he shall grade public highway junctions as directed, and remove spongy places, or unsatisfactory material from the subgrade, or from the side of the new embankments to the depth directed; he shall remove all objectionable materials from the entire highway including material and grubbing. Sod removed from excavation shall be burned or disposed of satisfactorily but shall not be used in the construction of embankments or shoulders.

(a) All suitable materials from the excavation shall be used, so far as practicable, in making embankments, building up low places on the subgrade or shoulders and other places as directed. Surplus material shall be placed in embankments, shall also be used in extending the shoulders, or shall be deposited in spoil banks, as directed by the Engineer. All surplus materials shall be removed and disposed of as directed by the Engineer. All surplus materials shall be removed before the subgrade or shoulder rolling is completed, and before any pavement material is placed on the road way.

(b) If there is not sufficient suitable material to complete the grading and to bring to subgrade height, the contractor shall borrow additional material from the sides of the highway or from the other borrow pits, when notified by the Engineer, so that the established grades for the roads, the embankments, etc., will be secure. All borrow pits out side the right of way will be acquired by the County, and all borrow pits shall be left in a neat and satisfactory condition, and shall be thoroughly drained.

(c) The Contractor shall remove all boulders and all muck, quick sand, soft clay, and spongy material which will not consolidate under the roller, from the subgrade to a depth to be determined by the Engineer. He shall refill the space with acceptable material from the excavations, or with stone or gravel if so directed. If stone or Gravel is used, the same will be paid for at actual cost.

(d) After all drains have been laid and the subgrade has been properly shaped, it shall be compacted with an approved self propelled roller, weighing not less than ten (10) tons. Care shall be taken not to roll a clay foundation to the extent that it will develop into a plastic condition. All hollows and depressions which develop shall be filled with acceptable material and the subgrade will again be rolled. This process of filling and rolling will be repeated until no depressions develop. In places where the character of the material makes the use of such roller impracticable, a lighter one may be permitted.

(e) All ditches and drains shall be satisfactorily completed to effectively drain the highway.

(f) At such intervals as the Engineer may direct, lateral trenches or weep holes shall be opened thru the shoulders of the ditches. These shall be filled with material satisfactory to the engineer, and the cost of the same to be paid for at actual cost.

39- EMBANKMENTS.

Shall be formed of suitable materials. If formed of stone all reasonable precaution shall be taken to insure solid embankment. The upper surface of the embankment shall be rolled, and left in a satisfactory condition, and approximately to the lines and grades as shown upon the plans.

(a) Large stones shall not project within six (6) inches of the finished subgrade, or shoulders, and all hollows and depressions shall be filled with the smaller stones from the excavation or other acceptable material.

(b) Where the filling is less than two (2') Feet in depth, all vegetable matter shall be removed from the original surface. Sod shall be removed and payment shall be made as "excavation" of not to exceed three (3") inches over the entire area from which sod is removed.

(c) Where necessitated by the existing slope, the surface shall be trenched or otherwise broken up, before placing the new embankment thereon. Such trenching or breaking up shall be considered as manipulation, and shall not be paid for.

(d) Embankments where concrete is to be placed thereon, shall be constructed in horizontal layers, not exceeding twelve (12") inches, and may be required by the Engineer not to exceed eight (8") inches, when in his opinion the same is necessary. Each layer shall extend across the entire fill and shall be compacted and thoroughly rolled to the satisfaction of the engineer.

(e) In order that fills and embankments may be allowed natural settlements, to as great an extent as possible, all culverts and other structures below the road surface shall be constructed and back filled as long as possible before the construction of the roads.

(f) At all intersections of the public highways the contractor shall grade back a sufficient distance as directed by the Engineer, so that a smooth riding and satisfactory junction will be produced.

(g) The gravity of the excavation to be paid for shall be the number of cubic yards of material measured in its original position, excavated and disposed of as directed by the engineer.