

From Sta. 49 to Sta. 87 - 42 of the E. E. Neel Free Gravel Road, in
Vermillion Township, Vermillion Co., Ind.

The roadway between curb lines shall be taken down to sub-grade, care being taken not to plow within 3 inches of the subgrade stakes, which last shall be carefully removed with pick and shovel, in such manner as to leave a true and perfect surface, which shall be rolled down with a 5 ton roller three times before the concrete foundation is laid.

The roadbed shall be carefully graded and shaped to an elevation of at least eleven inches below the established grade line given by the Engineer, and intended for the surface of the pavement when completed.

The County Surveyor or his assistant, shall set all grade stakes and therefore the same must be protected and maintained by the Contractor and his employees, until the services of the same shall be no longer needed.

The contractor shall do all necessary grading and shall provide all earth necessary for filling and dispose of all surplus excavation by removing the same as the Engineer may direct.

In order to bring the roadbed to the proper shape and grade, a pattern made under the direction of the Engineer, giving the street the proper convexity, shall be used continuously as a guide to the graders. After the roadbed is properly graded and shaped, it shall be thoroughly rolled and compacted by the steam roller, wherever it practicable to use said roller: and wherever the use of the steam roller is impracticable the foundation shall be compacted either by the use of the small roller or by tamping. Should any depressions appear during the progress of rolling, such as the settlement of sewer branches, or otherwise, same must at once be filled up and again rolled, so that, when the process of rolling shall cease, the entire roadbed shall be uniform and complete in its settlement.

Concrete.

Upon the sub-grade thus formed shall be spread the concrete foundation, composed of clean sharp coarse sand and gravel aggregate, containing not to exceed 30% of sand fine enough to pass through a No. 8 screen. (If the aggregate shall at any time exceed 30% of sand it must be remedied either by screening out the excess of sand or by adding a sufficient quantity of broken stone or screened gravel to bring quality of the aggregate to the required standard) and Lehigh or ^{Portlans} Portland Cement in the following proportion, viz., One part of the cement and six parts of said coarse aggregate. A suitable board platform shall be made on which to mix the concrete. The gravel shall first be placed on the board then the proper amount of cement shall be evenly spread over the gravel. The whole shall then be turned with shovels or hoes at least three times and until the mass is thoroughly mixed and has assumed a uniform color. Clean water shall then be added and the whole turned until thoroughly mixed into what is known as a wet mixture. The same shall then be placed on the sub-grade and shaped to the proper cross-section to give the required thickness at every point.

Should it be deemed advisable by the Engineer the concrete shall be mixed into a plastic state and thoroughly rammed, after being on the sub-grade.

In case the mixture is made by machinery the concrete shall be of the same general consistency as the hand mixed concrete as above specified. In no case shall a continuous mixing machine be used.

Hand mixed concrete shall not be made in batches of more than one yard in each batch.

Cement

The cement shall be of the best quality of Portland cement of established brand and must be finely ground, free from lumps, caking or water marks. The cement shall be evenly ground and when tested upon standard sieves it shall pass at least the following percentages by weight: No. 100 sieve, 92%; No. 200 sieve, 75%. When tested in the form of briquettes it must show at least the following tensile strengths per square inch; all test briquette being mixed with barely sufficient water to form the consistency of stiff dough: the load to be applied uniformly applied at the rate of 1000# per minute. The expense of all testing shall be borne by the contractor and must be considered as a part of the contract.

Immediately upon delivery, the cement shall be stored by the