



**SPECIAL PROVISIONS
FOR
RAILROAD EMBANKMENT**

**Black Hawk County
NHSN-063-6(97)--2R-07**

**Effective Date
June 20, 2017**

THE STANDARD SPECIFICATIONS, SERIES 2015, ARE AMENDED BY THE FOLLOWING MODIFICATIONS AND ADDITIONS. THESE ARE SPECIAL PROVISIONS AND THEY SHALL PREVAIL OVER THOSE PUBLISHED IN THE STANDARD SPECIFICATIONS.

150272.01 DESCRIPTION.

Railroad Embankment consists of subgrade preparation, subballast placement, and appurtenances delivered in conformity with the contract documents. Railroad track will be installed by railroad forces.

150272.02 MATERIALS.

A. Subballast.

1. Subballast shall be crushed gravel or crushed stone with a minimum 75% of the material having two fractured faces. Subballast shall meet the quality requirements of ASTM D 1241 and be approved by the Engineer.
 - a. Crushed Gravel shall be the product resulting from crushing by mechanical means, and shall consist entirely of particles obtained by crushing gravel, all of which before crushing will be retained on a screen with openings equal to or larger than the maximum nominal size of the resulting crushed material. Final product gradations may be obtained by screening or blending various sizes of crushed gravel material.
 - b. Crushed Stone shall be the angular fragments resulting from crushing by mechanical means the following types of rocks quarried from undisturbed, consolidated deposits: granite and similar phanerocrystalline igneous rocks; limestone; dolomite; sandstone; massive metamorphic quartzite, or similar rocks.
 - c. **Quality and Material Characteristics.**
 - 1) Coarse Aggregate Portion (Fraction retained on a No. 10 sieve):

Na2So4 Soundness (5 cycles)	AASHTO T 104	Max. % Loss	25%
Los Angeles Abrasion	AASHTO T 96	Max. % Loss	50%
 - 2) Fine Aggregate Portion (Fraction passing a No. 40 sieve)

Plasticity Index	AASHTO T 90	Max.	10%
Liquid Limit	AASHTO T 89	Max.	35%

2. Subballast shall be uniformly graded and shall meet the following gradation requirements:

<u>Sieve Size</u>	<u>Percent Passing</u>
2 inch	100
1 inch	90-100
3/8 inch	50-84
No. 10	26-50
No. 40	12-30
No. 200	0-6

3. The source and supplier of the subballast material along with material test results showing the submitted material meets the requirements of this specification shall be provided to the Engineer for approval.

B. Ballast.

Ballast will be crushed granite or quartzite supplied by the Railroad.

150272.03 CONSTRUCTION.

A. General.

Track embankment construction not covered specifically herein shall be in accordance with AREMA recommendations and recommended practices.

The Contractor shall exercise care during construction to avoid disturbing the surface of the subballast. Any damage to either the subballast surface or side slopes caused by the Contractor's operations shall be repaired at Contractor's expense and to the satisfaction of the Engineer.

B. Railroad Flagging.

A railroad flagger shall be present whenever Contractor activities are located within 25 feet of an active rail line or have the potential to foul an active track. Coordinate with Railroad to determine when a railroad flagger shall be present. Contractor shall provide a radio to railroad flagger(s) to facilitate communication between construction crews and railroad operations.

C. Subgrade Preparation.

Prior to placement of subballast Contractor shall proofroll exposed subgrade with a fully loaded tandem axle dump truck with the Engineer present. The Engineer shall be notified at least 1 week prior to beginning any subgrade preparation for railroad embankment sections. Rutting greater than 4 inches or development of a mud wave shall be considered unacceptable performance. The type and extent of remedial action to mitigate unacceptable performance will be as determined by the Engineer and may consist of overexcavation, reconditioning, and recompaction or overexcavation and replacement with suitable material.

Following completion of proofrolling, any remedial measures, and acceptance by the Engineer of the exposed subgrade shall be scarified to a depth of 8 inches and recompacted to not less than 95% (Modified Proctor) of maximum density with moisture content at or within -4% of optimum. Moisture and density shall be determined with a nuclear density meter in accordance with ASTM D6938. The surface of the exposed subgrade shall be smooth and free of rocks or clay lumps greater than 3 inches in maximum dimension.

D. Subballast.

Subballast shall be placed only when weather conditions do not detrimentally affect the quality of the finished subballast. Hauling and placing of subballast will not be permitted when doing so will rut or deform the finished subgrade.

Subballast shall be placed in uniform lifts of not more than 6 inches loose for the full width of the cross section. Each lift of subballast shall be compacted to a density of not less than 95% of the maximum dry density determined by ASTM Test Designation: D 1557 (Modified Proctor).

The subballast shall be trimmed to the lines and grades shown on the plans and shall be maintained in a condition or manner acceptable to the Engineer until the final acceptance and completion of all work under this Contract. Any irregularities that develop in the subballast section during construction operations and prior to laying track, shall be filled and compacted to a smooth and even surface true to the subgrade elevations without any additional cost to the Contracting Authority.

Contractor shall plan and coordinate subballast placement work in such a manner that previously placed and compacted layers be allowed ample time for curing and development of sufficient stability before vehicles hauling materials for succeeding layers or other heavy equipment are permitted on the subballast. Prior to placing the succeeding layers of material, the top of the preceding layer shall be sufficiently moistened to ensure a strong bond between the layers. The edges and edge slopes of the subballast shall be bladed or otherwise dressed to conform to the lines and dimensions shown on the plans and present straight, neat, and workmanlike lines and slopes as free of loose material as practicable.

E. Pre-Ballast.

Pre-ballasting operations shall only occur when weather conditions do not detrimentally affect the quality of the finished subballast. Hauling and placing of ballast will not be permitted when doing so will rut or deform the finished subballast.

Notify the Engineer at least 48 hours prior to beginning pre-ballast operations. Railroad representatives may observe pre-ballasting operation to verify methods and suitability of final surface for their track construction operation.

Ballast will be supplied by the railroad and stockpiled at a location adjacent to the project site or within the limits of the adjacent railyard. Contractor shall load ballast from the stockpile location, transport to the project site, and place ballast to an elevation approximately 1/2 inch below the proposed base of tie. Contractor shall roll the placed ballast with an 8 ton dual vibratory steel drum roller. Roller shall make two to three passes to adequately consolidate ballast and provide a stabilized work platform for the Railroad to install track on top of.

F. Protection of Railroad Facilities.

All work associated with railroad track and signals will be performed by railroad forces. The Contractor shall protect existing railroad track, signal cabinets, masts, wiring, and appurtenances during construction.

150272.04 METHOD OF MEASUREMENT.

Measurement will be as follows:

A. Subgrade Preparation for Railroads.

Per square yard of subgrade prepared for subballast placement.

B. Railroad Subballast, Furnish & Place.

Per ton, satisfactorily placed.

C. Railroad Pre-Ballast.

Per cubic yard, satisfactorily placed.

150272.05 BASIS OF PAYMENT.

Payment will be the contract unit price as follows:

A. Subgrade Preparation for Railroads.

Payment is full compensation for proofrolling (excluding mitigation), scarification, and compaction of exposed subgrade.

B. Railroad Subballast, Furnish & Place.

Payment is full compensation for furnishing, placing, compacting, and trimming subballast per plans and specifications.

C. Railroad Pre-Ballast.

Payment is full compensation for loading, hauling, placing, and compacting Railroad supplied ballast per plans and specifications.