

1.0 GENERAL

1.1 QUALITY CONTROL

- .1 Perform quality control tests for riprap and riprap bedding specified in Section 02330 – Earthwork Materials.
- .2 Transport only suitable materials meeting the specifications to the Site.

1.2 QUALITY ASSURANCE

- .1 The Owner or Engineer of Record may perform testing to assure conformance to the specified requirements after the materials have been placed.
- .2 The Owner or Engineer of Record may reject riprap and riprap bedding at the source, in the transport vehicle, in the stockpile, or in place.
- .3 During the course of the Work, and prior to acceptance, provide assistance to the Owner or Engineer of Record in conducting the following quality assurance testing:
 - .1 Load a 7 m³ sample of each class of riprap, selected by the Owner, and transport to the on-Site test location as designated by the Owner or Engineer of Record.
 - .2 The Owner will count the number of boulders in the sample, compute the effective particle size (De) for each sample, and determine the gradation for the sample
 - .3 A minimum of 1 gradation test may be conducted for each class of riprap, and for every individual source for each class of riprap. The frequency of riprap testing may be increased as deemed necessary by the Owner until the Contractor consistently meets the specified requirements.
- .4 The Owner may take samples of riprap bedding for quality assurance testing. Cooperate with the Owner during testing.

2.0 PRODUCTS

2.1 MATERIALS

Provide materials in accordance with the following:

- .1 Riprap: Refer to Section 02330 – Earthwork Materials for material specifications.
- .2 Riprap Bedding Zone 5B: Refer to Section 02330 – Earthwork Materials for material specifications.

3.0 EXECUTION

3.1 STOCKPILES

- .1 Obtain prior authorization from the Owner for temporary stockpile locations on-Site. Do not stockpile riprap or riprap bedding in areas where contamination with the underlying soils can occur. Prepare stockpile areas by grading the area level and diverting drainage from adjacent areas away from the stockpile locations.
- .2 Stockpile riprap and riprap bedding in a manner that minimizes segregation.
- .3 Stockpiled riprap must have temporary fencing around it to mitigate against public interaction during non-working times.

3.2 PLACEMENT

- .1 Prior to placing riprap and riprap bedding, installed geotextile on the receiving surfaces as specified in Section 02342 – Geosynthetics.
- .2 Place riprap and riprap bedding at the locations, and to the lines, grades, slopes, and elevations specified in the Contract Documents.
- .3 Surfaces to receive riprap and riprap bedding may be frozen, but remove water, snow, ice, frozen lumps, and other deleterious materials from receiving surfaces.
- .4 Do not place riprap and riprap bedding until the receiving surfaces have been inspected by the Owner or Engineer of Record. Rectify defects, including any identified by the Owner, until the receiving surfaces meet the requirements of the Contract Documents.
- .5 Place riprap and riprap bedding by clam shell, dragline, backhoe, or similar lifting equipment. Do not end-dump and push riprap and riprap bedding into place on the slopes.
- .6 Do not cause segregation, particle damage, breakdown, or excessive displacement of the previously placed riprap and riprap bedding. Replace or repair damaged or displaced material.
- .7 Obtain the specified distribution of the various sizes of particles throughout the mass by using selective loading at the source or stockpile, by controlled dumping of successive loads during placing, or by other methods of placement.
- .8 Commence placement of riprap and riprap bedding from the toe of the slope and proceed up the slope.
- .9 Place riprap and riprap bedding to its full thickness in one operation. Compaction is not required. Bucket tamping of the riprap bedding is to be performed upon installation.

- .10 At the defined interfaces between riprap bank stabilization and the native riverbank (per the riprap extents specified in the Contract Documents), riprap and riprap bedding are to be placed to allow for a smooth transition to the native riverbank, while maintaining the minimum riprap thickness within the defined riprap extents.
- .11 Where riprap bank stabilization interfaces with outfall headwalls, riprap placement may be field fit to conform with Site conditions. Riprap thickness at these locations may be reduced from the prescribed minimum to provide smooth transitions between the riprap, headwall structures, and adjacent grades.
- .12 Place riprap in a closely packed arrangement such that smaller rocks fill the voids between larger rocks and there are no unfilled spaces that would permit the escape of underlying layers of placed materials. Interlock the riprap and dress slopes as required.
- .13 Rearrange rocks to eliminate any tendency of the rocks to move or slide after placement.
- .14 Do not break individual riprap particles after placement.
- .15 Do not allow equipment to travel upon riprap and riprap bedding.
- .16 Provide a completed riprap surface that is smooth, regular, and uniform.
- .17 When placing riprap and riprap bedding adjacent to the Red Deer River (including keying in the toe of the riprap) adhere to the specifications outlined in Section 02240 – Care of Water and Section 02242 – Instream Activity.

END OF SECTION