1.0 GENERAL

1.1 EXTENT OF TOPSOIL AND SUBSOIL PLACEMENT

.1 Topsoil placement is required on exposed finished excavation surfaces, finished fill surfaces, ground areas affected by the Work, and other areas as specified in the Contract Documents or as designated by the Minister.

.2 Subsoil placement is required on prepared surfaces [where Subsoil has been removed as a separate operation] [in borrow areas] as specified in the Contract Documents or as directed by the Minister, prior to placement of Topsoil.

.3 The Minister may adjust the placement thickness of Topsoil and Subsoil to best utilize the available materials.

1.2 REFERENCES

.1 Provide Topsoil and Subsoil placement in accordance with the following standards (latest revision) except where specified otherwise.

.2 American Society for Testing and Materials (ASTM)

.1 ASTM D698 — Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12400 ft-lbf/ft3 (600 kN-m/m3))

.3 Alberta Transportation

.1 Field Guide for Erosion and Sediment Control available at www.transportation.alberta.ca

.2 Post-Disturbance Reclamation Criteria and Assessment Procedures for Borrow Excavations for Road Construction.

1.3 SUBMITTALS

.1 Provide the following submittals.

.2 A post-disturbance assessment report of each Contractor provided Borrow Area within [30] days after the completion of the reclamation work including Topsoil placement at each borrow area.

1.4 INITIAL POST-DISTURBANCE ASSESSMENT BY THE MINISTER

.1 Notify the Minister when reclamation work including Topsoil placement has been completed.

.2 Within [10] days of such notification, the Minister will undertake an initial post-disturbance assessment including inspection of the on-Site areas, except for Contractor provided Borrow Areas. The post-disturbance assessment will be conducted in accordance with Alberta Transportation's Post-Disturbance Reclamation Criteria and Assessment Procedures for Borrow Excavations for Road Construction document, with the exception that the vegetation component of the assessment will not be carried out. The Minister will notify the Contractor of the results of the assessment, including any deficiencies, within [15] days of the post-disturbance inspection.

.3 Contractor to repair any deficiencies and repeat the post-disturbance assessment at no cost to the Minister.

1.5 POST-DISTURBANCE ASSESSMENT BY THE CONTRACTOR

.1 For each Contractor Provided Borrow Areas, conduct a post-disturbance assessment in accordance with Alberta Transportation's Post-Disturbance Reclamation Criteria and Assessment Procedures for Borrow Excavations for Road Construction document, with the exception that the vegetation component of the assessment will not be required.

.2 Retain the same soil specialist who performed the pre-disturbance assessment as specified in Section 02234 – Topsoil and Subsoil Stripping to conduct the post-disturbance assessment of each Contractor Provided Borrow Area.

.3 Complete the post-disturbance assessments within [15] days of the completion of the reclamation work including Topsoil placement.

.4 Repair any deficiencies and repeat the post-disturbance assessment at no cost to the Minister.

1.6 MINISTER SUPPLIED MATERIALS

.1 The following existing stockpiled materials [are available for use], [are to be used] to the extent required for the Work.

Material	Location of Stockpile	Quantity
[Topsoil]	[ ]	[ ]
[Subsoil]	[ ]	[ ]

2.0 PRODUCTS

2.1 MATERIALS

.1 Provide materials in accordance with the following:

.2 Topsoil: Refer to Section 02234 – Topsoil and Subsoil Stripping for material specifications. Provide Topsoil from [stockpiles of materials produced from required stripping operations] [, and stockpiles of Minister supplied Topsoil].

.3 Subsoil: Refer to Section 02234 – Topsoil and Subsoil Stripping for material specifications. Provide Subsoil from [stockpiles of materials produced from required stripping operations] [, and stockpiles of Minister supplied Subsoil].

3.0 EXECUTION

3.1 PREPARATION

.1 Locate and protect utility lines, fencing, survey reference points, instrumentation, structures, culverts, and all other items before commencement of the Work.

3.2 SUBSOIL PLACEMENT [IN BORROW AREAS]

.1 Remove snow, ice, excess water, and deleterious materials from surfaces to receive Subsoil. Do not commence Subsoil placement until the Minister has inspected the prepared surface areas. Rectify any defects identified by the Minister.

.2 Prior to placement of subsoil, scarify foundation 500 mm deep once in the longitudinal direction and once in the perpendicular direction in areas with a width greater than 10 m or in a diagonal direction if the width is less than 10 m. Pick rocks 70 mm or larger.

.3 Place Subsoil to a uniform thickness on prepared surfaces of the borrow areas as directed by the Minister, prior to placement of Topsoil.

.4 Place Subsoil in an unfrozen condition in continuous horizontal lifts not exceeding 300 mm in thickness without voids or bridging of material. Spread and compact each lift to obtain a Standard Proctor Density of between 75% and 85% in accordance with ASTM D698.

3.3 SUBGRADE PREPARATION PRIOR TO TOPSOIL PLACEMENT

.1 Remove excess water from subgrade surfaces.

.2 Grade the subgrade area to eliminate uneven areas and to provide proper drainage.

.3 Prior to placement of Topsoil, scarify foundation 500 mm deep once in the longitudinal direction and once in the perpendicular direction, pick rocks 70 mm or larger.

.4 If Subsoil was placed, disc the Subsoil area to a minimum depth of 100 mm but not deeper than thickness of Subsoil. Disc the entire subgrade area once in the longitudinal direction, and once in the perpendicular direction.

.5 Remove roots, rocks greater than [70] mm in diameter, debris, and other deleterious materials that are on top of the subgrade.

.6 Disc the subgrade area when lumps larger than 70 mmm are prevalent.

3.4 TOPSOIL PLACEMENT

.1 Do not commence Topsoil placement until the Minister has inspected the prepared subgrade. Rectify any defects as required by the Minister.

.2 Topsoil placement will not be allowed to proceed, if in the opinion of the Minister, there is inadequate soil moisture after seeding for germination and there will be insufficient time left in the growing season to allow the vegetation to root and thereby minimize soil erosion.

.3 Place Topsoil in an unfrozen condition, in dry, calm weather.

.4 Spread the Topsoil to provide a uniform thickness over the entire area as specified in the Contract Documents or as directed by the Minister.

.5 Remove weeds, roots, rocks greater than [70] mm in diameter, debris, and other deleterious materials from the Topsoil.

.6 Manually spread Topsoil around structures, culverts, fences, instruments, or other obstructions.

.7 Grade the Topsoil to eliminate uneven areas, and to provide positive drainage.

.8 Use the track weight of a crawler tractor or dozer to compact Topsoil.

.9 Minimize traffic on placed Topsoil to prevent over–compaction [beyond the compaction results determined in the pre-disturbance assessment as specified in Section 02234 – Topsoil and Subsoil Stripping]. If Topsoil becomes over-compacted, rework to meet specified requirements.

3.5 FINISH GRADING (SURFACE PREPARATION) PRIOR TO SEEDING

.1 Fine grade Topsoil areas to remove humps and hollows.

.2 Cultivate to a depth of 150 mm and in a direction perpendicular to the local drainage pattern. Harrow the Topsoil surface to produce a loose friable bed to a depth of not less than 25 mm prior to seeding.

.3 Provide a finished Topsoil surface that is ready for seeding, and that does not require additional preparation of any kind.

.4 Seeding will not be permitted on hardened, crusted or rutted soil.

3.6 SURFACE TRACKING PRIOR TO HYDROSEEDING

.1 Surface Tracking is the roughening of the Topsoil moving a tracked tractor or dozer, or other mechanical means acceptable to the Minister, up and down the slope leaving depressions perpendicular to the slope direction, to provide a serrated texture that will reduce erosion potential.

.2 Perform Surface Tracking in accordance with Alberta Transportations B.M.P. #34 (a-c) of the Field Guide for Erosion and Sediment Control, except as modified herein.

.3 Perform Surface Tracking prior to Hydroseeding.

.4 During Surface Tracking, avoid turning movements or changes in directions that causes loosening or disturbance of the Topsoil. Limit the number of track passes to 1 or 2 times to avoid overcompaction.

.5 Surface Track the following areas:

.1 All cut and fill slopes with slopes steeper than 3H:1V with a vertical height greater than 1.5 m.

.2 All cut and fill slopes with a slope length greater than 8 m regardless of the actual slope.

3.7 CLEAN-UP

.1 Dispose of roots, debris, and other deleterious materials at the specified waste disposal area or at an off-Site waste disposal facility.

.2 Pick and dispose of any rocks greater than [70] mm diameter that appear prior to the date of [Substantial Performance of the Work] [Warranty Performance of the Work].

END OF SECTION