

PART 1 - GENERAL

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| <u>1.1 Related Sections</u> | .1 | Section 31 23 10 - Excavating, Trenching and Backfill. |
| | .2 | Section 31 23 16.26 - Rock Removal. |
| | .3 | Section 31 37 00 - Rip Rap. |
| <u>1.2 Definitions</u> | .1 | Topsoil: material capable of supporting good vegetative growth and suitable for use in top dressing, landscaping and seeding. |
| | .2 | Waste material: material unsuitable for use in embankment or surplus to requirements. |
| | .3 | Borrow material: Rock Borrow material obtained from areas off site required for construction of embankments or for other portions of work. |
| | .4 | Embankment: Material derived from usable excavation and placed above original ground or stripped surface up to subgrade. |
| | .5 | Pavement structure: combination of layers of unbound or stabilized granular sub-base, base, and asphalt or concrete surfacing. |
| | .6 | Subgrade elevation: elevation immediately below pavement structure. |
| <u>1.3 Traffic Provisions</u> | .1 | Provide and maintain roadways, walkways and detours, for vehicular and pedestrian traffic and access to fire hydrants, alarms and emergency telephones. |

PART 2 - PRODUCTS

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| <u>2.1 Materials</u> | .1 | Embankment materials to approval of Departmental Representative. |
| | .2 | Material used for embankment not to contain organic matter, frozen lumps, weeds, sod, roots, logs, stumps, boulders larger than 150 mm or any other unsuitable material. |
| | .3 | Embankment Material:
.1 Rock Borrow: in accordance with Section 31 23 10 - Excavating, Trenching and Backfilling. |
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- .2 Rip Rap: in accordance with Section 31 37 00 - Rip Rap.
- .3 Select Backfill Material: in accordance with Section 31 23 10 - Excavating, Trenching and Backfilling.

PART 3 - EXECUTION

3.1 Compaction Equipment

- .1 Compaction equipment must be capable of obtaining required densities in materials on project.
 - .1 Demonstrate compaction equipment effectiveness on specified material and lift thickness by documented performance of test-strip before start of Work.
 - .2 Replace or supplement equipment that does not achieve specified densities.
- .2 Operate compaction equipment continuously in each embankment when placing material.

3.2 Water Distributors

- .1 Apply water with equipment capable of uniform distribution.

3.3 Embankments

- .1 Remove topsoil and rootmat.
 - .2 Pulverize existing pavement to sub-grade elevation, as directed.
 - .3 Do not place material which is frozen nor place material on frozen surfaces.
 - .4 Maintain a crowned surface during construction to ensure ready runoff of surface water. Do not place material in free standing water.
 - .5 Use specialized compaction equipment supplemented by routing, hauling, and leveling equipment over each layer of fill.
 - .5 Compaction:
 - .1 Place and compact to full width in uniform layers not exceeding 200 mm loose thickness. Departmental Representative may authorize thicker lifts if specified compaction can be achieved.
 - .2 Compact to a density of not less than 95% corrected maximum dry density in accordance with ASTM D698.
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- .3 Bring moisture content of soil to level required to achieve specified compaction. Add water or aerate as required.
- .4 Compact each layer of embankment until compaction equipment achieves no further significant consolidation.
- .5 Ensure required compaction for each layer before placing any material for next layer.

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| <u>3.4 Excavations</u> | .1 | Excavate fill or bedrock to subgrade level in accordance with Section 31 23 10 - Excavating, Trenching and Backfilling and Section 31 23 16.26 - Rock Removal. |
| <u>3.5 Subgrade Compaction</u> | .1 | After grading has been completed, scarify and mix subgrade surface to required depth of subgrade compaction. |
| | .2 | Remove unsuitable materials found during work. Replace with material approved by Departmental Representative |
| | .3 | Bring moisture content of soil to level required to achieve specified compaction. Add water or aerate as required. |
| <u>3.6 Finishing and Tolerances</u> | .1 | Shape and compact surfaces to within 30 mm of design elevations but not uniformly high or low. |
| | .2 | Do scarifying, grading, compacting or other methods of work as necessary to provide thoroughly compacted roadbed shaped to grades and cross sections as indicated or as directed by Departmental Representative. |
| | .3 | Finish edges and slopes of common material to neat condition, true to line and grade. <ul style="list-style-type: none">.1 Remove isolated boulders exposed in cut slopes and fill resulting cavities..2 Hand finish slopes that cannot be finished satisfactorily by machine. |
| <u>3.7 Maintenance</u> | .1 | Maintain finished surfaces in condition conforming to this section until acceptance. |