# Optional Grading Concepts NJSP-15-18

**1.0 Description.**

**1.1** This specification allows the use of optional typical “Cut” and “Fill” sections and embankment construction. The earthwork quantities provided in the plans are developed from the Commissions furnished cross sections. The Commission has provided a complete set of plans, quantities and cross sections to construct this project if the optional grading concepts are not elected for use.

**2.0 General Conditions.**

**2.1** The bidder may consider one, all, combination, or none of the following approved optional grading concepts listed below. The bidder may consider these optional grading design concepts for the specified sections of the project. Optional Grading Concepts will be evaluated based on the lowest overall bid for the entire contract.

**{{MODIFY CONCEPTS AS PROJECT REQUIRES, THE FOLLOWING ARE EXAMPLES ONLY:}}**

(a) Concept 1 –Fill Slopes

Minimum Requirements – Fill slopes may be steepened using any of the options shown Figures A-1 and A-2. Roadway profile shall have a maximum grade of 6%. Revised ditch and culvert designs shall reference the MoDOT Project Development Manuals (http://www.modot.org/business/index.htm) hydraulic requirements. Revised geometric design proposals shall reference the AASHTO Green Book and AASHTO Roadside Design Guide.

(b) Concept 2 – Ramp Fill Slopes

Minimum Requirements – Fill slopes may be steepened using any of the options shown in Figures A-1 and A-2. Ramp profile shall have a maximum grade of 7%. Revised ditch and culvert designs shall reference the MoDOT Project Development Manuals (http://www.modot.org/business/index.htm) hydraulic requirements. Revised geometric design proposals shall reference the AASHTO Green Book and AASHTO Roadside Design Guide.

(c) Concept 3 –Rock Cuts

Minimum Requirements – Rock cuts may be cut at 2:1 slopes to provide additional embankment material at specific locations on the project to reduce overhaul lengths. This option may be used at all locations except between station 12+00 and 16+59.43 of Ramp 2 due to the proximity to radio tower guy wires. Rte 54 roadway profile shall have a maximum grade of 6%. Revised ditch and culvert designs shall reference the MoDOT Project Development Manuals (http://www.modot.org/business/index.htm) hydraulic requirements. Revised geometric design proposals shall reference the AASHTO Green Book and AASHTO Roadside Design Guide.

 (d) Concept 4 – Ditch Cut Sections/Rock Cuts

Minimum Requirements – Ditch inslopes may be steepened from 6:1 to 4:1, which reduces the excavation as shown in Figure B. When steepening the inslopes 34’ distance from the edge of pavement to the start of the vertical rock cut or soil backslope shall be maintained. Ditches shall be a minimum depth of 2 feet except for ditches that abut 18” rock base which shall be a minimum of 4 feet deep. The contractor may also reduce the shelf of rock benches from 15’ to 10’ to reduce excavation as shown in Figure B. Revised ditch and culvert designs shall reference the MoDOT Project Development Manuals (http://www.modot.org/business/index.htm) hydraulic requirements. Revised geometric design proposals shall reference the AASHTO Green Book and AASHTO Roadside Design Guide.

(e) Concept 5 – Disposal of Excess Material

Minimum Requirements –The contractor may fill against the fill slope of this project if minimum design requirements are met. Revised roadway drainage ditches must remain within Commission right of way. Revised ditches must be a minimum depth of 2 feet except for ditches that abut 18” rock base which must be a minimum of 4 feet deep. The Route 54 roadway profile shall have a maximum grade of 6%. Ramp profiles shall have a maximum grade of 7%. Revised ditch and culvert designs shall reference the MoDOT Project Development Manuals (http://www.modot.org/business/index.htm) hydraulic requirements. Revised geometric design proposals shall reference the AASHTO Green Book and AASHTO Roadside Design Guide.

**2.2** Any of the optional grading concepts elected by the contractor shall be submitted to the engineer 5 working days in advance of the work to be performed. The contractor shall be responsible for any utility modifications required for any elected optional grading proposal. The Commission will not be responsible to the contractor for any delays to work attributable to any such proposal.

**2.3** The contractor can elect to use any of the Commission approved grading options, but the changes in hydraulics due to revised ditch and culvert designs or changes in geometric layout shall be approved with the sign and seal of a Registered Professional Engineer in the State of Missouri.

**3.0 Method of Measurement.**

**3.1 Contract Quantity Payment.** The quantities of excavation and compacting embankment for which payment will be made will be those shown in the contract for the various items in accordance with Sec 203.8.1 except as follows.

**3.1.1** Final measurement will not be made of Unclassified Excavation and Compacting Embankment for optional grading concepts as allowed in this provision.

**3.1.2** Final measurement will be made in accordance with Sec 203.8.1.1 (c) for changes in grade, slope or typical section that are not listed in this provision.

**3.1.3** Special design cross road drainage structures, including the pipe, excavation and bedding, located within the allowed optional grading areas shall not be final measured and are set up in the contract as Lump Sum, per each. The flared end sections will be paid for as set up in the plans.

**3.2 Measured Quantities.** Final Measurement will be made for all contract items other than Unclassified Excavation, Compacting Embankment and special design cross road drainage structures, if affected by an optional grading concept as allowed in this provision.

**4.0 Basis of Payment.**

**4.1** Payment for Unclassified Excavation and Compacting Embankment will be in accordance with Sec 203.9 except as follows.

**4.1.1** Unclassified Excavation and Compacting Embankment will be paid for at the contract unit price for “Unclassified Excavation” Item No. 203-99.01 and “Compacting Embankment” Item No. 203-99.01 per lump sum.

**4.1.2** Adjustments to the estimated quantities of Unclassified Excavation and Compacting Embankment as shown in the plans due to an appreciable error as defined in standard specification section 101 (see Supplemental Specifications effective August 1, 2007) will be paid per cubic yard at the fixed contract unit price specified below. Contractors shall provide data showing any error in the Commission furnished grading quantities and/or existing ground elevations prior to beginning any excavation for the specified work. There will be no payment for any change in quantities due to contractors use of optional grading concepts as outlined in this provision or for any other revised grading quantities that are a result of a contractor’s revision to the excavation as shown in the plans. Any changes to the quantities of excavation from a contractor’s original proposed grading option that has been approved by the engineer, will not be considered as an appreciable error and will not warrant a change in quantity payment.

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| **Item No.** | **Item of Work** | **Unit** | Fixed Price |
| 203-10.00 | Class A Excavation | Cy | $2.50 |
| 203-20.00 | Class C Excavation | Cy | $5.00 |
| 203-60.00 | Compacting Embankment | Cy | $0.25 |

**4.2** No direct payment will be made for the disposal of excess unclassified material.

**4.3** Payment for special design drainage structures in the limits of the grading options will be paid for using pay item number 726-99.02 EA. This includes the pipe, excavation and bedding.