**SP-02, EARTHWORK, EXCAVATION, UNSUITABLE MATERIALS, AND BACKFILL MATERIALS**

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1. **DESCRIPTION**

Earthwork shall be performed to the lines and grades indicated on the plans. The work shall include excavation, furnishing, placement, compaction, and satisfactory disposal of all materials encountered within the limits of the Work necessary for the construction of the Project.

All excavated materials that are not required for the Project or are unsuitable for fills shall be considered as waste and shall be hauled off the site at the Contractor’s expense.

The Contractor shall be responsible for all borrow material required to construct the Project as shown on the plans.

1. **MATERIALS**

Provide bedding material in accordance with Article 1016-3 for Class II, Type 1 or Class III, Type 1 or Type 2 select material.

Provide backfill material in accordance with Article 1016-3 for Class II, (Type 1 for flexible pipe) or Class III select material.

Provide foundation conditioning material in accordance with Article 1016-3 for Class V or VI select material

Provide foundation conditioning geotextile in accordance with Article 1056-2 for Type 2 geotextile.

Provide borrow material in accordance with Article 1018.

1. **MEASUREMENT AND PAYMENT**

There will be no direct payment for earthwork, excavation, unsuitable materials, and backfill materials described in this special provision. Payment will be made at the contract unit prices for the various items covered by sections 226 *Undercut Excavation*, 300 *Pipe Installation*, 305 *Drainage Pipe*, 310 *Pipe Culverts*, SP-01 *Comprehensive Grading*, SP-03 *Select Material*, and SP-04 *Borrow Excavation*.

**(A) Unsuitable Material**

Unsuitable material shall be defined as any and all unsuitable materials regardless of its nature. Unsuitable Material not incorporated into the Project shall be removed, hauled, and disposed by the Contractor only as authorized by the Engineer. Stockpiled Unsuitable Material shall be disposed of no less than once per week.

Proposed Project Subgrade, other than Pipe Culvert Trench Subgrade

Unsuitable material ***below*** the proposed project sub-grade, including but not limited to below the invert of an open channel or bottom of detention facilities, shall be removed, measured, hauled, disposed of, replaced, and paid for under NCDOT Section 226, *Undercut Excavation*.

Unsuitable material ***above*** the proposed project sub-grade shall be removed, hauled, and disposed of at no additional cost to the City.

Proposed Pipe Culvert Trench Subgrade

Unsuitable material ***below*** the proposed project pipe culvert trench subgrade within the approved trench excavation limits for storm drainage pipe and storm drainage culvert (including but not limited to box culverts, oval pipe culverts and three-sided culverts/bridges) shall be removed, measured, hauled, disposed of, replaced, and paid for in accordance with Section 300-9 (B) *Foundation Conditioning Material* and Section 300-9 (C) *Foundation Conditioning Geotextile*.

Unsuitable material ***above*** the proposed pipe culvert trench sub-grade shall be removed, hauled, disposed of at no additional cost to the City.

**(B) Bedding and Backfill**

* Pipe (including round, elliptical, etc.)
	+ There will be no separate measurement or payment for select bedding and select backfill material required in the installation of pipe as illustrated in NCDOT 300.01. All bedding and select backfill material will be included in cost of the installed pipe.
* Culvert (Box Culverts/Bends/Bottomless Culverts)
	+ There will be no separate measurement or payment for bedding required in the installation of culverts as illustrated in Figure 2.1 of the *Precast Reinforced Concrete Culvert* Special Provision or as shown on the plans. All bedding material will be included in cost of the installed pipe or culvert.
	+ Material needed for buried culvert inverts and channel inverts inside three-sided bridge/culverts shall be incidental to the cost of the culvert unless otherwise directed by the Engineer.

When local material meeting the requirements for the select bedding and backfill is approved for use by the Engineer, no deductions in the cost of pipe culvert will be made. Local material is defined as material generated on the project site or within the project limits.

Within the Existing or Proposed Roadway

* Pipe (including round, elliptical, etc.)
	+ For pipe located within the existing or proposed roadway, including beneath the proposed curb and gutter or between road ditch lines, the Contractor shall use suitable material from the elevation of the select backfill material included in the cost of the installed pipe to the subgrade.
* Culvert (Box Culverts/Bends/Bottomless Culverts)
	+ For culverts located within the existing or proposed roadway, including beneath the proposed curb and gutter or between road ditch lines, the Contractor shall use suitable material from the elevation of the bedding included in the cost of the installed culvert to the subgrade.

When local material meeting the requirements for suitable material is approved for use by the Engineer, there will be no separate measurement or payment for the material incorporated into the completed and accepted Project.

For NCDOT maintained streets, suitable material shall be defined as meeting NCDOT 1018.

For City maintained streets, suitable material shall be defined as material meeting both:

* Unified Soil Classification System (USCS) designation of GW, GP, GM, GC, SW, SP, SM, or SC and
* American Association State Highway Transportation Official (AASHTO) Soil Classification System designation of A-1, A-3, A-2-4, or A-2-5.

When local suitable material is not available to complete the backfill of the trench, the Contractor shall use select material in accordance with SP-03 *Select Material*.

Do not use *Select Material* until all local suitable material has been incorporated into the Project. There shall be no measurement or payment made for *Select Material* brought to the site at the Contractor’s convenience.

Outside of the Proposed or Existing Roadway

* Pipe (including round, elliptical, etc.)
	+ For pipe located outside the existing or proposed roadway, the Contractor shall use local suitable material from the elevation of the select backfill material included in the cost of the installed pipe to the finished grade or subgrade.
* Culvert (Box Culverts/Bends/Bottomless Culverts)
	+ For culverts located outside the existing or proposed roadway, the Contractor shall use local suitable material from the elevation of the bedding included in the cost of the installed culvert to the finished grade or subgrade.

When local suitable material is not available to complete the backfill of the trench, the Contractor shall use borrow material in accordance with SP-04, *Borrow* *Excavation*.

Do not use *Borrow Excavation* material until all local suitable material has been incorporated into the Project. There shall be no measurement or payment made for borrow excavation material brought to the site at the Contractor’s convenience.

When local suitable material is not available to complete the backfill of the trench, the Contractor shall use select material in accordance with SP-03, *Select Material*.

Do not use *Select Material* until all local suitable material has been incorporated into the Project. There shall be no measurement or payment made for select material brought to the site at the Contractor’s convenience.

 **(C) Other**

No separate measurement or payment will be made for any other excavation, furnishing, placement, compaction or satisfactory disposal of material encountered within the limits of Work necessary for construction of the Project. All other earthwork shall be considered incidental to the Project and paid for in *Comprehensive Grading,* unless noted elsewhere in the Contract Documents*.*