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PART 1 - GENERAL

1.1 DESCRIPTION

Work under this SECTION covers the requirements for materials, tools, equipment, and services necessary to complete the earthwork to rough grade for this project. The work shall include, but is not necessarily limited to, completion of the following work:

A. Acceptance of original ground lines or submittal of new survey data.

B. Excavation.

C. Implementation of Storm Water Pollution Prevention Plan (SWPPP).

D. Conveyances, placement, and compaction of excavated materials.

E. Site grading to elevations shown on the Plans.

F. Construction of drainage ways and any necessary rechanneling of existing creeks.

G. Field engineering.

1.2 REFERENCE SPECIFICATIONS

A. The following specifications or applicable standards are incorporated by reference into this SECTION:

1. SECTION 02010 – FIELD ENGINEERING.
2. SECTION 02100 – MOBILIZATION, SITE CLEARING & PREPARATION.
3. SECTION 02110 – IMPOUNDMENTS.
4. SECTION 02120 – SEDIMENT AND EROSION CONTROL.
5. SECTION 02220 – EARTHWORK, DAMS.
6. Iowa Department of Natural Resources.
7. Iowa Department of Transportation Standard Specifications.
8. National Pollutant Discharge Elimination System (NPDES).

B. Above-mentioned references, which do not appear printed with the Contract Documents, can be provided to Contractor upon request.

1.3 QUALITY ASSURANCE

A. Contractor shall use adequate numbers of skilled workers who are thoroughly trained and experienced in necessary crafts and who are completely familiar with specified requirements and methods needed for proper performance of work of this SECTION.

B. Contractor shall use equipment adequate in size, capacity, and numbers to accomplish work in a timely manner.

C. Contractor shall comply with requirements of governmental agencies having jurisdiction and with directives of Engineer and Division.

1.4 JOB CONDITIONS

A. Definitions

1. "Access Route" shall be understood to mean the route by which Contractor gains access to the site. Access routes do not necessarily include impacts by mass grading operations other than clearing, grubbing and those operations required for maintenance of the access route during construction.

2. "Grading Limits" shall be understood to mean the maximum extent of excavation, earth movement, or other grading operations.

3. "Project Boundary" shall be understood to enclose the total area impacted by the construction including the access route to the site. Exclusive of the access route, the project boundary is usually identical to the grading limits.

4. "Substantial Earthwork" shall be understood to mean mass excavation and movement of soil material beyond what is reasonably required to facilitate Clearing and Site Preparation with the grading limits. The creation of access routes through the site during Clearing and Site Preparation shall not be considered Substantial Earthwork provided Contractor exercises care to minimize excavation.

5. "Large Rocks" or "Large Boulders" shall be understood to mean stones that are typically larger than approximately twelve (12) to eighteen (18) inches which cannot be lifted by hand.

6. "Excessively Large Rocks" shall be understood to mean stones or geologic formations that cannot be easily moved with a Caterpillar D6 bulldozer or equivalent.

B. Nature of Work Site

1. Materials to be handled under this Contract include quantities of spoil, gob, and coal refuse which may be toxic and/or acidic in nature.

2. The Project site is situated in an area where underground coal mining may have been conducted. There is a possibility that mine drifts or shaft openings are present on site. Contractor shall exercise reasonable caution in recognition of this potential hazard, and shall notify Engineer and Division immediately upon discovery of any openings or any signs of instability. Sealing of openings may be incorporated into this Contract through issuance of change orders, at the discretion of Division. Additional specifications will be provided by Division as needed.

3. During excavation in existing spoil piles, Contractor shall recognize the possible existence of cavities or smoldering fires and, if encountered, shall notify Engineer and Division promptly. Contractor shall exercise caution and be prepared to take appropriate actions since accelerated combustion may occur. Burning materials shall be extinguished before being covered or incorporated as fill. Contractor shall notify Division and Engineer if smoldering fires are encountered.

4. During excavation in existing spoil piles, Contractor shall recognize the possible existence of buried waste materials which may include demolition, household, municipal, or other deleterious materials. Contractor shall immediately secure the waste area and notify Engineer and Division who will make determinations of final waste disposals.

5. Spoil material used to construct fills is subject to significant increase in pore water pressure, particularly during rapid construction, with a corresponding decrease in shear strength that reduces the stability of slopes. Contractor shall exercise caution and notify Engineer and Division promptly should signs of slope instability appear.

6. Contractor shall maintain access to adjacent areas to which Landowner(s) require access as needed.

C. Earthwork Balance

1. The grades shown on Plans indicate a balance of earthwork materials when a shrinkage factor as indicated on the Plans or in the Supplemental Specifications is applied. Should a shortage or excess of material exist, final grades will be adjusted in areas as shown on the plans or as directed by Engineer at no additional cost to Division.

2. Changes in placement of fill material within the grading limits that impact the site drainage conditions or are in non-designated adjustment areas, can only be made with specific instructions by Engineer and Division.

D. Original Ground Lines

1. Acceptance of Original Ground Lines per Plans

a. Engineer has determined the excavation quantities using the original and proposed final grades indicated on the plans using a computer program. The original (or existing) ground lines are developed from aerial photography or LIght Detection and Ranging (LiDAR). Additional site-specific survey information may have been obtained and combined with LiDAR or photogrammetry to develop the original ground lines shown in the plans. The cross sections included with the plans were developed from the original ground lines and are provided for the benefit of Contractor.

b. ***Before*** commencing ***any*** substantial earthwork activities as defined in 1.3.A, Contractor shall accept in writing the original ground lines provided on the Plans. The purpose for acceptance of ground lines is to establish Excavation as a fixed quantity. Engineer shall prepare a form to be signed by Contractor indicating Contractor's acceptance of original ground lines.

c. If Contractor seeks to revise the original ground lines as provided in 1.4.D.2., below, he may request signing the original ground lines acceptance be delayed until after the site is cleared.

d. Commencement or evidence of ***any*** substantial earthwork activities shall be considered presumptive evidence of Contractor's acceptance, whether or not Contractor signs the form.

2. Revision of Original Ground Lines

a. Contractor may conduct a field survey at his own expense during or after clearing to verify accuracy of original ground data at an interval appropriate to depict actual site conditions. The survey must provide enough information to depict actual site conditions. Contractor may use conventional land survey, RTK GPS, or aerial methods to perform the survey. If an aerial method is selected, sufficient numbers of ground control points shall be used to validate the horizontal and vertical data. If ponds exist on the site, pond bathymetry shall be included. Contractor may perform the bathymetric survey at his expense or request this information from the Engineer.

b. If Contractor's survey information indicates that the actual ground elevations differ from the original ground elevations included in the Plans, this information shall be forwarded to Engineer and Division immediately. The data shall be in the form of an electronic CAD drawing, compatible with AutoCAD, that will allow Engineer to perform analyses and verify any claims to a change in Excavation quantity. The drawing may contain either a point cloud or contours, and the data shall extend to all extremities of grading limits shown on the Plans.

c. If Division and Engineer agree that there is a substantial difference between the original ground contours shown on the plans and the more recent survey data, then Division may, upon completion of clearing and grubbing operations, acquire additional survey information at its expense to verify Contractor's survey. This additional information will be used to establish a revised excavation quantity for the contract. Engineer may issue a revised grading plan to Contractor to address revisions to the original ground lines. In this situation, a change order will be developed to reflect the revised excavation quantity regardless of whether the change is in Contractor's favor

d. Acceptance of the revised ground lines as discussed above, shall be mutually agreed to between Contractor and Division, in writing ***prior*** to the commencement of ***any*** substantial earthwork. Engineer shall prepare a form to be signed by Contractor indicating Contractor's acceptance of the revised ground lines. Revisions to the existing ground lines will ***not*** be considered or allowed after substantial earthwork has commenced.

1.5 PERMITS AND FEES

A. Contractor shall obtain any permits required and pay any associated fees. If the project includes modifications to structures and/or roads, including providing access, that are under the jurisdiction of the local county, the appropriate permit shall be obtained by Contractor from the County Engineer prior to initiating any work in these areas. Contractor shall be reimbursed for the cost of the permits and extra materials required for work in these areas provided Contractor furnishes all documentation of those expenses to Division.

B. Division has obtained any necessary permits from the U.S. Army Corps of Engineers for disturbance and mitigation of jurisdictional waters as shown on the plans for this project. The requirements of this permit have been incorporated into the Contract Documents. A copy of this permit can be made available upon request to the Division.

C. Division has obtained a Storm Water Discharge Permit for this project. Contractor will become a co-permittee with Division on this Storm Water Discharge Permit. A Storm Water Pollution Prevention Plan has been developed by the Engineer for this project and is part of the permit. Contractor is also responsible for the inspections and keeping the SWPPP documentation current. Refer to SECTION 02120.

D. If the project includes modifications to structures and/or roads, including providing access, that are under the jurisdiction of the local county, the appropriate permit shall be obtained by Contractor from the County Engineer prior to initiating any work in these areas.

1.6 SUBMITTALS

A. Contractor shall submit the following information to Engineer:

1. SWPPP certification forms developed by the Engineer and signed by Contractor and Subcontractors.

2. Original Ground Lines acceptance or submittal of new topographic information.

3. All Record Survey Notes.

1.7 SITE DISTURBANCES

A. Contractor shall take precautions to ensure that equipment and vehicles do not unnecessarily disturb or damage areas or other site improvements identified to be outside of the project limits. Contractor shall comply with SECTION 3.10 CLEAN-UP AND REPAIRS.

B. No work within or damage to any Conservation Reserve Program (CRP) land, existing wetland, or other jurisdictional area shall be permitted if said areas are to remain undisturbed as shown on the Plans. Division has no permit to disturb these areas. These areas are under the jurisdiction of other authorities and there could be fines levied against Contractor for disturbances in these areas.

PART 2 - PRODUCTS

2.1 FILL MATERIALS

A. General fill material consists of spoil piles, coal refuse materials, gob and all other soil material from required cut operations.

B. Materials designated on the plans as select borrow, cover materials, or impervious fill shall not be used as general fill.

C. If apparent good material suitable for use as select borrow, cover material, or impervious fill is encountered during excavation of general fill materials, Contractor shall notify Engineer immediately to evaluate these materials. Contractor shall segregate this good material from general fill as directed by Engineer. Depending upon the location, quantity, and quality of this material, a Change Order may be developed to address this good material located with excavation for general fill as agreed upon between Contractor and Division.

2.2 OTHER MATERIALS

A. Contractor shall provide other materials, not specifically described but required for a complete and proper installation, as selected by Contractor, subject to the approval of Engineer.

PART 3 - EXECUTION

3.1 SURFACE CONDITIONS

A. Contractor shall examine areas and conditions under which work of this SECTION will be performed and correct any conditions detrimental to timely and proper completion of work. Examples of detrimental conditions and their corresponding acceptable corrections generally include, but are not necessarily limited to that shown in **TABLE 02200-1**:

Table 02200-1: Typical Detrimental Conditions and Commonly Acceptable Corrections

Detrimental Condition	Correction
Excessively wet soil material	Mix with drier material before incorporating into fill, disking, or push off to the side outside of fill areas
Frozen soil material	Remove and/or comply with 3.9 F of this SECTION
Shallow buried vegetative debris	Excavate and bury per SECTION 02100
Rocks or boulders	Comply with 3.8 C of this SECTION
Ponded water on the site	Comply with 3.6 of this SECTION

B. Do not proceed with grading in unsatisfactory areas until corrections are completed.

3.2 ELEVATIONS AND LINES

A. In general, the Project Boundary encloses the total area impacted by construction including the access route to the site. The grading limits show the maximum extent of mass grading operations. Both shall be as shown on Plans, approved by Division and Engineer. Contractor, accompanied by Engineer, shall jointly review the clearing and grading limits prior to clearing operations. The project boundary and grading limits shall be staked according to requirements set forth in SECTION 02010, Field Engineering.

B. Minor refinements to grading limits, within the designed project boundary, as shown on Plans will be implemented by mutual agreement, in interest of the project, based on field conditions, at no additional cost to Division. It is the intent that the areal extent of these refinements, if any, be offsetting so that there is no significant increase or decrease in Project work.

C. Constructed grades shall be established to be within three-tenths (0.3) feet of design grades as shown on Plans, except that this tolerance shall be adjusted as necessary to ensure positive drainage in all areas and to achieve earthwork balance with approval of Engineer and Division.

3.3 UTILITIES

A. Contractor shall take all precautions needed to insure that existing utilities to remain, including septic systems and field tile, are adequately protected. If existing utilities become damaged, the service shall be restored as soon as possible and repairs completed at no cost to the Division.

B. If active utility lines are encountered that were not made known to Contractor, Contractor shall take the necessary steps to protect the utility and maintain service at no additional cost to Division.

C. If utility lines are found that interfere with the planned grading, Contractor shall immediately notify Engineer and Division.

3.4 PROTECTION OF PERSONS AND PROPERTY

A. Contractor shall barricade all open holes and depressions that present a safety hazard during the course of his work.

B. Contractor shall protect structures, utilities, and other facilities from damage caused by settlement, lateral movements, washouts, sedimentation, vibrations, and other hazards created by operations under this SECTION.

C. Contractor shall use means necessary to prevent dust from becoming a nuisance to the public, neighbors, and to other work being performed on or near the site.

D. Contractor shall maintain access to adjacent areas at all times.

3.5 SEDIMENT AND EROSION CONTROL

A. Contractor shall implement the SWPPP for this project and conduct all earthwork activities to minimize losses due to erosion and sedimentation.

B. Effective measures shall be initiated where needed to protect areas adjacent to the site prior to the commencement of clearing, grubbing, excavation, or other operations that will disturb the natural protection. Natural vegetation shall be preserved to the greatest extent possible. Contractor shall prevent siltation of existing and newly constructed drainage ways or repair them as necessary at his own expense.

C. Work shall be scheduled to expose, for the shortest possible time, areas subject to erosion. SWPPP practices shall be implemented as soon as practical. Adequate and timely maintenance of SWPPP practices and other methods shall be Contractor's responsibility, as well as the subsequent removal of any temporary measures.

D. Modifications to the SWPPP and repairs will likely be required during the course of the project. The Contractor will work in conjunction with the Engineer and Construction Observer to minimize offsite erosion and sediment. Modifications shall be documented and kept with the SWPPP file maintained by the Contractor.

3.6 CARE OF WATER

A. Contractor shall be responsible for the care and control of all water that enters the site, either through precipitation, seepage, underground utilities, etc. Contractor shall furnish, install, operate, and maintain means and devices with which to properly remove and dispose of water that interferes with completion of the work. Any discharge shall be to approved drains or channels in accordance with NPDES requirements specified in SECTION – 02110 Impoundments.

B. Contractor shall provide berms, channels, or basins as needed to protect adjacent areas from flooding caused by run off from the site. Contractor shall promptly remove all water collecting in depressions. Water that collects in depressions that cannot be removed by standard drying methods shall be tested, treated as necessary, and discharged in accordance with SECTION – 02110 Impoundments at no cost to Division.

C. Any drainage facility used by Contractor shall be adequate to prevent damage to completed work at the site, and adjacent properties. Existing drainage channels and conduits shall be cleaned, enlarged, or supplemented as necessary to carry all increased runoff attributable to Contractor’s operations.

3.7 GROUND SURFACE PREPARATION PRIOR TO FILL PLACEMENT

A. Contractor shall remove vegetation, debris, unsatisfactory soil materials, obstructions, and deleterious materials from ground surface prior to placement of fills.

B. Contractor shall plow, strip, or break up surfaces steeper than one (1) vertical to four (4) horizontal so that fill material will bond with existing surface.

3.8 EXCAVATION

A. Contractor shall excavate material encountered within the grading limits to lines, grades, and elevations indicated on Plans and/or as specified herein. All material excavated is not specifically classified but shall be considered similar to Class 13 Excavation, Iowa DOT Item 2102.02.

B. Contractor shall make every reasonable attempt to salvage the best soil encountered so that it can be placed within the upper twelve (12) inches of final grade since one of the primary goals of the project is to revegetate the site.

C. Contractor shall inspect the site and form own opinion on the presence and extent of boulder and rock excavation anticipated.

1. Rock and boulder excavation is not a unit price item and shall be considered as incidental in the unit price for excavation.

2. Any large rocks and/or large boulders encountered during grading shall be relocated as necessary to provide a minimum of three (3) feet of fill over the object.

3. Contractor shall promptly notify Engineer or Construction Observer if excessively large boulders are encountered which cannot be removed or excavated by conventional earth moving or ripping equipment and will not have at least three (3) feet of cover.

4. Contractor shall not use explosives

D. Contractor shall excavate and fill in a manner and sequence that will provide proper drainage at all times and minimizes off site sedimentation.

E. Contractor shall properly backfill any unauthorized excavation, unless permission is received by Engineer and Division. Unauthorized excavation includes removal of materials beyond indicated elevations or dimensions, or Project Limits without a properly executed Change Order or Contract Amendment authorizing such additional excavation.

F. Contractor shall be responsible for the safety and maintenance of all excavation sides and slopes until completion of backfilling and shall comply with all OSHA requirements.

G. If coal seams are encountered during excavation, Contractor shall notify Division and the following shall apply:

1. For coal seams located in “cut” areas above finished grades, the coal shall be excavated and buried in designated fill areas with at least three (3) feet of suitable cover soil. This work shall be performed at no additional cost to the Division.

2. Coal seams encountered at or near finished grade, shall be over excavated a minimum three (3) feet and buried in an area designated by Engineer or Division and covered with at least three (3) feet of suitable soil. The excavation from which the coal seam was

extracted shall be backfilled with a minimum three (3) feet of suitable material. Depending upon the location and extent of the coal seam encountered near finished grade, Division may, negotiate a change order to compensate Contractor for the additional work of handling the coal seam.

3.9 FILL PLACEMENT AND COMPACTION

A. Contractor shall place general fill materials in lifts not more than twenty- four (24) inches in loose thickness and run all rubber-tired equipment (i.e. scrapers, dump trucks) over the entire lift. If only track equipment is being used, the maximum loose lift thickness shall be limited to twelve (12) inches.

B. General fill shall be placed in horizontal lifts. To facilitate horizontal placement of general fill, benching into existing slopes shall be required as described in Table 02200-2:

Table 02200-2 Benching Requirements for Placing General Fill On Existing Slopes

Slope	Benching Requirements
slope > 1:1	none: fill operations proceed from base upward in uniform lifts
1:1 ≥ slope ≥ 8:1	2’ minimum height benches
8:1 > slope ≥ 10:1	1’ minimum height benches
slope < 10:1	none: scarification required to promote bonding with fill material

C. In areas of existing water impoundments as shown on Plans, and upon completion of dewatering, fill initiation shall be performed in accordance with Item 3.10 "Initiating Fill Placement in Ponds and Wet Areas" below.

D. Fill placed in structural areas, such as embankments, shall be placed and compacted as discussed in SECTION 02220 – EARTHWORK, DAMS.

E. Fill placed to construct terraces or roadways, shall be placed in lifts not to exceed twelve (12) inches in thickness and compacted in place with the wheels of rubber-tired equipment. If tracked equipment is used, the lift thickness shall not exceed six (6) inches. Fill material shall consist of cohesive material with a suitable moisture content to achieve compaction.

F. Contractor shall not place frozen materials within any structural area and can only use frozen material as fill if all of the following conditions are met:

1. Fill shall not be placed on any areas where the frost depth exceeds one (1) inch. Removal of frost materials shall be made at no additional expense to Division.

2. Frozen materials shall be broken up so that no dimension of an individual piece exceeds about six (6) inches. Frozen material shall be well mixed with unfrozen material throughout lift to be compacted.

3. Each lift containing frozen materials shall be covered with at least twenty-four (24) inches of frost-free materials.

G. Refer to Supplemental Specifications concerning fill areas deeper than fifteen (15) feet.

3.10 INITIATING FILL PLACEMENT IN PONDS AND WET AREAS

A. Contractor shall place fill in pond and wet areas in a manner that minimizes fill settlement in these areas as much as practical. Prior to placing fill in these areas, Contractor shall discuss his grading plans in these areas with Engineer in the dewatering planning meeting.

B. Prior to placing fill in these areas, Contractor shall dewater areas with standing or impounded water in accordance with the neutralization and dewatering plan as developed in accordance with SECTION 02110 – Impoundments.

C. In shallow swampy areas, Contractor may work these areas by pushing out the bottom muck with dry material from one end to the other. Contractor may have to periodically allow the muck time to drain, perhaps as much as several days, during filling operations in these areas. Work can be completed in other areas of the site during this drying time.

D. In areas where deeper muck is present, Contractor shall initiate filling operations using one or more of following approved methods, or another method selected by Contractor subject to review and approval by Engineer. Individual methods may not be suitable for all applications.

1. Squeeze out muck in bottom by dozing in dry material from one end of pond towards other. Contractor may have to periodically allow muck time to drain, perhaps several days, during which time Contractor may continue work elsewhere prior to resuming mucking operations.

2. Push in dry material and intermix with muck until stable.

3. Use cell method to isolate smaller zones within the area to be filled. The cell method consists of constructing cofferdams of widths no more than required for a dozer to properly construct them. These cofferdams shall be spaced as necessary to complete filling over the muck. The zones created by the cofferdams shall then be worked in accordance with items 1 and/ or 2 above.

4. In areas receiving relatively deep fills (over ten (10) feet), Contractor may place an initial lift of no more than four (4) feet in height to bridge over the muck. Subsequent lifts shall be placed and compacted as outlined in Section 3.9 above. Any of these areas that result in slope instability or excessive settlement in the future shall be corrected as necessary by Contractor at no additional cost to Division.

5. Any other method selected by Contractor and reviewed by Engineer which achieves desired objective, which is to permit stable filling operations to continue.

E. Contractor shall prevent siltation of existing drainage ways and ponds during mucking operations and placement of fill over muck. Failure of Contractor to protect silt from leaving Project Limits shall be corrected at no cost to Division. Any vegetation disturbed as a result of failure shall be replaced in kind at no cost to Division.

3.11 GRADING

A. The Contactor shall uniformly grade areas within the Project Limits as shown on the plans and as specified in this SECTION. Contractor shall also grade the transition areas adjacent to the site as needed to complete work and provide a smooth transition.

B. In areas where a change of slope is required, Contractor shall construct a rolled transition section having a minimum radius of approximately eight (8) feet, unless adjacent construction will not permit such a transition, or if such a transition defeats positive control of drainage.

C. Contractor shall finish grade all areas to drain readily.

3.12 FIELD QUALITY CONTROL

A. Contractor shall obtain approval from Engineer or Construction Observer based on their inspection and approval of subgrades in fill areas prior to placement of fill.

B. Contractor shall make changes in placement of fill material within the Project Limits as needed to adjust for inaccuracies inherent with estimating the shrinkage factor. These changes shall be made only after consultation with and direction from Engineer and/or Division.

C. Contractor shall provide additional compaction of fill as directed by Engineer and Construction Observer if Engineer and Construction Observer determines that fills have been placed that were not properly compacted.

D. Contractor shall notify Engineer and Construction Observer upon completion of stages of construction and obtain Engineer's approval before commencing with subsequent stages of construction.

3.13 MAINTENANCE

A. Contractor shall protect all areas of newly graded fill as follows:

1. Protect newly graded areas from traffic and erosion and keep free from trash and weeds.

2. Repair and reestablish grades in settled, eroded, and rutted areas to specified tolerances.

B. Contractor shall scarify the surface, reshape, and compact (if necessary) any completed areas that are disturbed by subsequent construction operations or adverse weather, prior to further construction, such as riprap placement or seeding.

C. Contractor shall maintain new and existing drainage ways free from detrimental quantities of sediment, leaves, sticks, trash, and other debris during execution of the work.

D. Contractor shall maintain access to adjacent areas at all times.

E. Upon request by Engineer or Division, Contractor shall dredge or re-excavate drainage channels if these become silt-filled prior to establishment of vegetation. If the site has not yet been seeded, dredged material may be spread within the Grading Limits. If the site has been seeded, Contractor shall dispose of the dredged material in a manner and location approved by Engineer or Division.

F. Contractor shall remove accumulated sediment from designed wetland ponds that were used for sediment control during construction.

PART 4 - MEASUREMENT AND PAYMENT

4.1 UNIT PRICES

A. Construction cost of work included in this SECTION of the Construction Specifications shall be included in Contractor's unit prices set forth in the Proposal and Schedule of Prices (*Document C*) for work items described below. The unit price for each of these items shall include its pro rata share of overhead so that sum of products obtained by multiplying unit prices so set forth by amount of work actually constructed, measured as described herein, shall constitute full payment to Contractor for performance of work included in this SECTION.

B. Measurement and payment for each work item in this SECTION shall be in accordance with following:

1. *Excavation*: Payment for the cost of excavation shall include all of the work necessary to complete grading the site to design grade as shown on the Plans. The preparation and implementation of Erosion Control Plan shall be paid under separate bid items.

   Engineer shall determine in cubic yards the total amount of excavation to grade the site to the specified design grades. There will be no measurement and payment for overfill, overexcavation or unauthorized excavation. Assuming Contractor accepts original ground lines and the Engineer and Division agree, payment for this bid item will be based on the plan quantities which have been determined using a computer analysis. The Division reserves the right to require a topographic survey of final grades if they do not appear to be in compliance with the Plans.

   If Contractor or Division does not accept the plan quantities, the following steps outlined below will be followed for payment.

   a. Contractor shall provide survey information to Engineer regarding the disputed existing topographic information as stated in Paragraph 1.4.D.2 of this Section.

   b. Contractor shall determine the amount of material excavated by completing a full survey of the site after completion of clearing but before commencement of significant earthwork activities and another full survey after all grading is completed. Contractor shall submit all survey notes and data to Engineer who will determine the amount of excavation based on this information. At a minimum, all survey information shall extend to the extremities of the grading limits shown on the plans.

   c. The grade tolerance established in Paragraph 3.2 above is to permit latitude in achieving final grades. Widespread overexcavation of up to three-tenths (0.3) feet in cut areas, either accidentally or for the sole purpose of increasing pay quantities, shall not be recognized for measurement and payment. In these instances, Division reserves the right to base the paid quantity of cubic yards of excavation upon the design grade contours shown on the plans.

   d. If the final grades do not appear to be in compliance with the plans, Division reserves the right to require a full topographic survey. Contractor shall provide to Engineer, at no cost to Division, electronic survey data for determining the final earthwork quantities using the original ground lines as stated in Paragraph 1.4.D.2 of this Section.

   Contractor shall be paid at unit price for "Excavation" for each cubic yard as measured above. Said unit price shall constitute full payment for excavation, dewatering (excepting for discharge required in SECTION 02110), boulder relocation and burial, placing of fill, compaction, grading, and all incidental work pertaining thereto. No separate payment item is included for unauthorized excavation.

   Partial pay requests will be made on the estimated percentage complete as agreed to by Contractor and Engineer applied to the contract totals for this bid item. Payment for the full amount of grading will only be made after the final staking is completed and the grading is accepted as completed by the Engineer.

2. *Erosion Control Measures:* Erosion Control Measures shall be implemented and paid for as provided in SECTION 02120 – Sediment and Erosion Control.

4.2 SUMMARY – UNITS OF MEASUREMENT*:*

Units of measurement for bid items applicable to work covered by this SECTION are as follows:

Description	**Unit**
Excavation	Cu. Yd.

END OF SECTION 02200