APPENDIX A

TECHNICAL SPECIFICATIONS

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TECHNICAL SPECIFICATIONS

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SECTION 201

CLEARING AND GRUBBING AND REMOVAL OF OBSTRUCTIONS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Clearing and Grubbing

1. Removing and disposing of existing features.

2. Removing and disposing of trees, stumps, brush, roots, shrubs, logs and windfalls.

3. Stripping and disposing of the top layer of plants and grasses down past the root zone. 4-inch minimum depth or as recommended in the geotechnical report, or directed by Engineer.

4. Removing and disposing of all miscellaneous debris and other objectionable matter.

B. Removal of Obstructions

1. Removal of building, irrigation boxes, pipes, bridges, abandoned utilities, fences, drop inlets, culverts, and any other structures designated for removal on the Plans or by the Owner.

1.2 RELATED SECTIONS

A. Section 202 – Excavation and Embankment.

1.3 REGULATORY REQUIREMENTS

A. Conform to applicable code for disposal of debris.

B. Coordinate clearing work with utility companies.

PART 2 MATERIALS

NOT USED

PART 3 WORKMANSHIP

3.1 CLEARING AND GRUBBING

A. Protection.

1. Locate and protect all above ground and belowground utilities or relocate as directed by the Contract.

2. Protect benchmarks and survey monuments from damage and displacement.

3. Protect adjacent private and public land and crops in adjacent fields from damage.

4. Protect existing roads, railroad and irrigation canals from damage.

5. Retain, protect and water any desirable trees or vegetation on or adjacent to the site using the following procedures.

   a. Existing trees not designated for removal should be protected <u>before</u> site demolition begins.

      1 Protection should consist of a highly visible, barrier to be placed at or outside the drip line of the tree(s).

      2 Unless approved by the Engineer, no equipment, vehicles, building materials, chemicals, stockpiles or debris shall be placed inside the protection barriers.

   b. Unless otherwise approved by the Engineer, disruption of the irrigation facilities serving trees will not be allowed.

   c. Before the Contractor leaves the site, all existing trees which have been significantly damaged due to construction activities shall be replaced or repaired by a certified arborist at the expense of the Contractor.

   d. *Paint cut and scarred retained trees or shrubs with an asphaltum base paint prepared especially for tree surgery*.

   e. No changes in grade should be made within the protection area around trees.

   f. Should excavation damage or break roots greater than 1 inch in diameter, make a clean saw cut through the undamaged portion of the root behind the break perpendicular to the root.

g. If required by the property Owner or Engineer, hire an approved tree service to trim trees, prior to beginning excavation.

6. The Contractor is responsible for damage resulting from construction operations.

7. Take reasonable care to avoid damage by construction operations to streams and lakes adjacent to the construction area.

8. Preserve and protect all vegetation and ground cover not within the construction area, including areas not requiring grading, as directed.

B. Removal and Disposal

1. Complete clearing and grubbing to the limits defined by a line drawn 5 feet outside the grading area, unless shown on the Contract Documents or as directed.

2. Unless otherwise provided, all merchantable timber in the clearing area not removed from the right-of-way prior to the beginning of construction becomes the property of the Contractor.

3. Remove all brush and shrubs from the site including the roots. Dispose of the shrubs and brush off-site at a location provided by the Contractor. Do not dispose of brush and shrubs by burning or burial in backfill or trenches.

4. Strip all soils, heavy growths of grass, and sod that comprise the organic root-zone. Complete stripping 4 inches deep or as recommended by the Engineer. Berm the stripped material to line and grade as depicted on the Contract Documents. Do not use the stripped material as backfill or trench backfill.

5. Unless otherwise directed remove all stumps within the clearing limits.

6. Dispose of materials at locations that comply with all Federal, State, and Local Regulations.

C. Cleanup

1. Upon completion of the site work and project, clean the entire work area. Remove all excess excavated material, rocks, boulders, brush, trees, pipe, or debris of any type from the site and dispose at a site acceptable to Federal, State, and Local Regulations.

3.2 REMOVAL OF OBSTRUCTIONS

A. Protection

1. Locate and protect all live Utilities from damage.

2. Protect benchmarks and survey monuments from damage and displacement.

3. Exercise care to ensure areas outside the construction limits remain undisturbed.

4. Satisfactorily restore any damage to existing facilities or structures resulting from carelessness or negligence by the Contractor to their original condition at the Contractor's expense.

B. Removal and Disposal

1. Complete the Removal of Obstructions to the limit shown on the Plans and Specifications or as directed by the Engineer.

2. Unless otherwise specified, all removed material shall become the responsibility and property of the Contractor.

3. Dispose of unusable material outside the construction limits in an approved location in accordance with all local, state and federal regulations.

4. Dispose unusable material in such a manner that no unsightly appearance will result.

5. Copies of the disposal agreements with property owners are to be furnished to the Owner upon request.

C. Salvage

1. Carefully remove all items specified to be salvaged in one piece and take to a place identified in the Plans or Special Provisions; salvage shall become the property of the person or organization identified on the Plans or in the Special Provisions.

D. Preparations After Removal

1. Fill basements or cavities left by structure removal to the level or the surrounding ground and, if within the prism of the construction, compacted as described in the Plans and Special Provisions or as directed by the Engineer.

E. Traffic Control

1. Do not remove bridges, culverts and other drainage structures under the existing roadway until satisfactory arrangements have been made for the detouring of traffic.

PART 4 MEASUREMENT AND PAYMENT

4.1 Use one of the following unit price options as designated on the Bid Schedule. If required and not listed in the Bid Schedule, the following Bid Items are to be considered incidental to other Bid Items.

A. Clearing and Grubbing: By the acre in accordance with stakes set by the Engineer. Includes full compensation for all materials, labor and equipment necessary for completing the work and all appurtenances not itemized in the Bid Schedule.

1. Bid Schedule Payment Reference: 201.4.1.A.1.
2. Bid Schedule Description: Clearing and Grubbing…acre (AC).

B. Clearing and Grubbing: By the lump sum. Includes full compensation for all materials, labor and equipment necessary for completing the work and all appurtenances not itemized in the Bid Schedule.

1. Bid Schedule Payment Reference: 201.4.1.B.1.
2. Bid Schedule Description: Clearing and Grubbing…lump sum (LS).

C. Removal of Obstructions: By the lump sum (LS). Includes full compensation for all materials, labor and equipment necessary for completing the work and all appurtenances not itemized in the Bid Schedule.

1. Bid Schedule Payment References: 201.4.1.C.1.
2. Bid Schedule Description: Removal of Obstructions...lump sum (LS).

D. Removal of _____: By the horizontal square yard. Includes full compensation for all materials, labor and equipment necessary for completing the work and all appurtenances not itemized in the Bid Schedule.

1. Bid Schedule Payment References: 201.4.1.D.1
2. Bid Schedule Description: Removal of _____... square yard (SY).

E. Removal of _____: By the horizontal lineal foot. Includes full compensation for all materials, labor and equipment necessary for completing the work and all appurtenances not itemized in the Bid Schedule.

1. Bid Schedule Payment References: 201.4.1.E.1.
2. Bid Schedule Description: Removal of _____ ..lineal foot (LF).

F. Removal of _____: By the per each. Includes full compensation for all materials, labor and equipment necessary for completing the work and all appurtenances not itemized in the Bid Schedule.

1. Bid Schedule Payment References: 201.4.1.F.1.
2. Bid Schedule Description: Removal of _____...each (EA).

END OF SECTION

SECTION 202

EXCAVATION AND EMBANKMENT

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Excavation.

B. Controlled Blasting.

C. Cut Slope Finishing.

D. Subgrade.

E. Maintenance of Subgrade and Drainage.

F. Excavation of Unsuitable Materials.

G. Embankment Construction.

H. Borrow.

I. Classes of Compaction and Density Requirements.

J. Haul.

K. Dust Abatement.

1.2 RELATED SECTIONS

A. Section 201 – Clearing and Grubbing.

B. Section 203 – Soil Materials.

C. Section 204 – Structural Excavation and Backfill.

D. Section 205 – Dewatering.

E. Section 206 – Permanent Erosion Control.

F. Section 2040 - Fencing.

1.3 REFERENCES

A. AASHTO T 27: Sieve Analysis of Fine and Coarse Aggregates.

B. AASHTO T 88: Particle Size Analysis of Soils.

C. AASHTO T 89: Determining the Liquid Limits of Soils.

D. AASHTO T 90: Determining the Plastic Limit and Plasticity Index of Soils.

E. AASHTO T 99: Moisture-Density Relations of Soils using a 5.5 pound Rammer with a 12-inch Drop.

F. AASHTO T 176: Plastic Fines in Graded Aggregates and Soils by Use of the Sand Equivalent Test.

G. AASHTO T 180: Moisture-Density Relations of Soils using a 10-pound Rammer and an 18-inch Drop.

H. AASHTO T 191: Density of Soil In-Place by the Sand-Cone Method.

I. AASHTO T 205: Density of Soil In-Place by the Rubber-Balloon Method.

J. AASHTO T 238: Density of Soil and Soil-Aggregate In-Place by Nuclear Methods (Shallow Depth).

K. AASHTO T 239: Moisture Content of Soil and Soil Aggregate In-Place by Nuclear Methods (Shallow Depth).

L. AASHTO T 265: Laboratory Determination of Moisture Content of Soils.

M. AASHTO T 272: Family of Curves, One point method.

N. ASTM D 4253: Standard Test Method for Maximum Index Density and Unit Weight of Soils Using a Vibratory Table.

O. ASTM D 4254: Standard Test Method for Minimum Index Density and Unit Weight of Soils and Calculation of Relative Density.

P. ASTM D 2487: Classification of Soils for Engineering Purposes.

Q. TD-T-74: Compaction Standard for Coarse Granular Materials by Use of the Vibratory Spring-Load Compactor.

R. AASHTO T 310: In-Place Density and Moisture Content of Soil and Soil Aggregate by Nuclear Methods.

S. Occupational Safety and Health Standards for Excavations.

T. AASHTO T 255: Total Moisture Content of Aggregate by Drying.

U. AASHTO T 224: Correction for Coarse Particles in the Soil Compaction Test.

1.4 SUBMITTALS

A. Submit Blasting Plan for Engineer's approval.

PART 2 MATERIALS

NOT USED

PART 3 WORKMANSHIP

3.1 PREPARATION

A. Verify that survey benchmarks and intended elevations for the work are as indicated.

B. Identify required lines, levels, contours, and datum.

C. Locate, identify, and protect utilities that remain, from damage.

D. Notify utility company to remove and relocate utilities.

E. Protect benchmarks, existing structures, and fences, from excavation equipment and vehicular traffic.

3.2 EXCAVATION

A. Description.

1. The work consists of excavation, disposal, (or compaction) of all material not being removed under another bid item, which is encountered within the limits of the work necessary for the construction in accordance with the specifications and in reasonably close conformity with the lines, grades, and typical cross sections shown on the Contract Documents or as otherwise specified.

2. Unless a separate bid item is provided, excavation includes all required clearing and grubbing; the removal and disposal of structures or other obstructions which are visible or are indicated on the Contract Documents which obstruct the work; compaction; shaping and sloping of cuts, embankments, subgrades, shoulders, gutters, ditches, intersections, approaches and driveway entrances; backfilling ditches, depressions and areas behind sidewalks, curbs and/or curbs and gutters; satisfactory disposal of all unsuitable and surplus materials; and construction of approaches to structures.

3. Excavation includes all excavation performed under this item regardless of the material encountered. Complete excavation as “Excavation, Schedule No. 1,” or “Excavation, Schedule No. 2,” etc., when it is divided into appropriate schedules on the Contract Documents. Rock excavation, when anticipated, may be included in the Bid Schedule. Refer to Section 302.2.2 for definition of Rock Excavation.

4. For Structural Excavation refer to Section 204 – Structural Excavation and Backfill.

B. Construction Requirements.

1. Complete clearing and grubbing within the excavation area. Use all suitable materials removed from excavation in the formation of the embankment, subgrade, shoulders, and as designated or directed.

2. Remove all stumps, roots, logs or other timber more than 3 inches in diameter, and all brush, matted roots and other debris within the grubbing limits not suitable for embankment or backfill to a depth of not less than 6 inches below the original ground or 12 inches below subgrade, whichever is greater.

3. Dispose of all material resulting from the clearing and grubbing operations as specified in Section 201 – Clearing and Grubbing. Backfill and compact with suitable material, all depressions below subgrade or below the final surface of the ground resulting from the clearing and grubbing operations, as directed.

4. Remove and satisfactorily dispose of unsuitable, unstable materials from the foundation for embankments to the depth shown on the Contract Documents or as directed.

5. Waste and dispose of any excavated material not suitable for use on the project. Unless otherwise specified, the Contractor is responsible for locating, placing waste materials in, and final leveling and clean-up of disposal areas in compliance with Federal, State, and local rules for disposal.

6. Temporary excavations shall be sloped or shored in accordance with all State, local and Federal requirements.

7. Grade top perimeter of excavation to prevent surface water from draining into excavation.

8. Remove and properly dispose of lumped subsoil, boulders, and rock.

9. Notify Engineer of unexpected subsurface conditions and discontinue affected work in area until notified to resume work. Proceed with unaffected work.

10. Correct areas over-excavated by error in accordance with Section 202.3.8.

11. Categorize material into one of the five material classifications as set forth in Section 203 – Soil Materials and reuse or stockpile these materials in the areas designated and as depicted on the Contract Documents.

12. Provide dewatering as required per Section 205 – Dewatering.

C. Protection.

1. Locate, identify and protect excavations by methods required to prevent cave-in or loose soil from falling into excavation.

2. Protect all above-ground and below-ground utilities from damage.

3. Protect benchmarks and survey monuments from damage and displacement.

4. Protect all private and public property both within and adjacent to project limits.

5. Protect existing roads, railroad and irrigation canals from damage.

3.3 CONTROLLED BLASTING

A. General.

1. Controlled blasting consists of drilling and shooting a series of line holes for controlling the neat line of the back slope along the excavation line of the construction.

2. Controlled blasting is required in the excavation of rock or cemented materials where cut slopes, shown on the Contract Documents, are steeper than 3/4 horizontal to 1 vertical (3/4:1), regardless of the rippability of the material.

3. All blasting shall conform to the requirements of Section 302.

B. Blasting Techniques.

1. Presplitting involves drilling a single row of the line holes along the neat excavation line of the slope; properly load to minimize overbreak, and fire simultaneously in advance of the production round blasting. When line holes for presplitting are simultaneously detonated with the production round, use suitable millisecond delays in the production round blasting.

2. Cushion blasting involves leaving in place an undisturbed buffer section approximately 10 feet thick, between the neat excavation line of the slope and the production round blasting or ripping. After removal of the materials composing the production zone, trim the undisturbed section off the slope by firing simultaneously a single row of line holes drilled on the neat excavation line.

C. Controlled Blasting Provisions.

1. Line holes for controlled blasting are a minimum of 2 inches and a maximum of 3 inches in diameter with a 40-foot, maximum depth, and slope measurement. They are loaded with sufficient explosive charges to effect clean splitting of the materials between adjacent drill holes and a minimum of shattering or overbreak. Explosive charges include properly spaced cartridges, securely fastened to detonating cord with holes completely stemmed with free flowing sand or other approved materials.

2. Presplit or cushion blast a short test line of holes, as changes in conditions warrant, to determine the loading, spacing, and depth of lift required to obtain the desired result. Space drill holes as nearly parallel one to another as possible.

3. If drill holes do not remain open full depth or deviate more than 1 foot from a line formed by the intersection of the plane of the staked slope and a vertical perpendicular plane through the collar of a slope drill hole, reduce the lift until an open hole can be maintained or the deviation can be controlled within the 1-foot tolerance.

4. Successive sets of line holes may have their collars offset up to 1 foot, but be so inclined that all sets closely approximate the staked slopes.

5. Do not use lifters or springing of line holes in controlled blasting operations.

6. The end result of these specifications is intended to produce a cut face sheared along the staked slope line with a minimum of overbreak and little or no material shattered or loosened back of the finished slope. The amount and type of explosives, methods of loading, delay patterns, and other features not otherwise specified, are to meet the above requirements.

7. Furnish a blasting plan showing pattern and depth of drill holes, type and amount of explosives used, loading pattern, and sequence of firing to the Engineer prior to drilling.

3.4 CUT SLOPE FINISHING

A. Remove loosened or shattered rocks that are not expected to remain in their natural position from the slopes.

B. Do not proceed beyond the dimensions and elevations established, and do not remove material prior to staking and cross-sectioning the site.

C. When necessary to remove fencing, replace it in an equal to or better than condition as it was originally and confine livestock and other domestic animals in conformance to Section 2040 – Fencing.

3.5 SUBGRADE

A. After the earthwork has been substantially completed and after all underground utilities, manholes, etc., have been installed or adjusted to grade; bring the subgrade to the lines, grades, and cross sections shown on the Contract Documents and compact to the required density.

B. Remove all soft and unstable material and other portions of the subgrade, that cannot be compacted satisfactorily, as directed.

C. Remove boulders appearing in the excavation to a depth of at least 4 inches below subgrade.

D. Backfill all holes created by removal of unsuitable material in accordance with Section 202.3.8.

E. When the surface of an existing roadbed conforms approximately to the surface of the finished subgrade, scarify it for the full width of the subgrade to a sufficient depth to eliminate all depressions and to permit uniform reshaping and compaction.

F. Maintain ditches and drains along the subgrade to drain effectively. Reshape and reroll subgrade if rutting of 2 inches or more in depth occurs. Do not place surface course or pavement on frozen or muddy subgrade.

H. Compact the top 12 inches of the subgrade to the minimum compacted density specified for “Embankment in section 202.3.8”. The finished grade not to deviate more than 0.10 foot at any point from the staked elevation and the algebraic sum of the deviations from true grade of any 2 points not more than 30 feet apart, not to exceed 0.10 foot.

I. Obtain Owner approval of the subgrade.

3.6 MAINTENANCE OF SUBGRADE AND DRAINAGE

A. Maintain drainage, including drainage ditches, gutters, etc., for the subgrade during the construction of street improvements to avoid damage to embankments by erosion.

B. Provide and maintain temporary, drainage, sewer, underdrainage, etc., facilities until permanent facilities are completed.

C. Protect and preserve all existing water mains and appendages, drains, sewers, or other subsurface drains, conduits, gas mains, and other underground structures affected by the work.

D. The Contractor is responsible to satisfactorily repair, at his expense, all damage to facilities or structures resulting from the work or from his negligence during the period the contract is in force.

3.7 EXCAVATION OF UNSUITABLE MATERIAL

A. Remove and properly dispose of unsuitable material exposed after completion of the excavation to the subgrade or line and grade shown on the Contract Documents or as directed.

B. Dispose of unsuitable material that cannot be compacted in embankments in contractor furnished waste site as directed.

C. Repair material suitable for construction, except for excessive moisture, to meet the compaction and density requirements of 202.3.9.B.1 “Class A Compaction”, at no additional cost to the Owner. The repair is to consist of excavation, drying, replacement and compaction of the in-place soils or, at the Contractors option, other approved material that may be substituted for in-place soils.

D. The Engineer will identify the limits of the areas requiring subgrade repair or removal of unsuitable material.

3.8 EMBANKMENT CONSTRUCTION

A. General.

1. Embankment construction consists of the construction of fills and placement of backfills within the project limits to the lines, grades, dimensions and the typical sections shown on the Contract Documents or as designated.

2. Place embankment material after approval of the foundation. Do not use frozen material in embankments. Do not construct embankments on snow covered or frozen foundations, or other such surfaces within the embankment structure.

3. Key all embankments constructed on slopes steeper than 5 horizontal to 1 vertical (5:1) into the undisturbed ground with horizontal benches of sufficient width to allow for proper operation of compaction equipment. Slope each bench to drain. Incorporate in the embankment or waste material excavated from the benches, as directed.

4. Drain any seepage encountered in the embankment as shown on the Contract Documents or as directed.

5. Construct the first lift of embankment across swampy ground by end-dumping with a thickness capable of providing a stable surface. Then construct the remainder of the embankment in accordance with Section 3.8.B.8 or as directed.

6. Dry material containing excessive moisture to a moisture content that will permit the required compaction prior to placing in the embankment.

7. Place material that is not too granular to test in layers with a maximum loose thickness of 8 inches.

B. Construction Requirements.

1. Construct embankments with suitable material having a minimum sand equivalent of 25 (as determined by AASHTO T 176) and a minimum dry density of 100 pounds/cubic foot to the lines, grades, and cross sections shown on the Contract Documents. Also, to such heights above grades and such increased widths as necessary to allow for foundation settlement or consolidation. Eliminate stumps, trees, rubbish, vegetation, frozen lumps, or other unsuitable material from placement in embankments. If native material does not meet the 25 minimum sand equivalent requirement, the Contractor must procure a licensed geotechnical engineer to 1). Demonstrate that material will be suitable for embankment use and 2). Provide the method by which embankment will be placed and tested. Submit the findings to the Engineer for review and approval prior to work.

2. Bench or step embankments on sloping ground by cutting a minimum horizontal distance of 24 inches for secure bonding. Cut each bench as close to the one below as the slope of the ground will permit. Incorporating material cut out of the benches into the new fill will be incidental to constructing the embankment.

3. Grade and crown all embankment areas to prevent water from collecting or ponding prior to suspending grading operations.

4. Construct embankments adjacent to structures in equal layers on all sides of the structures to prevent distortion. Compact areas inaccessible to tamping rollers or power rollers by hand, mechanical tampers or other means until achieving the specified density.

5. Place embankment material in uniform layers for the entire width of the embankment. Complete, level and compact each layer of embankment before proceeding to the succeeding layer.

6. Keep leveling equipment in continuous operation during embankment construction for spreading, manipulating, blending and leveling the material.

7. Route hauling equipment and distribute travel over the entire area of each layer of material and over the entire width of the embankment without following in the immediate tracks of preceding equipment.

8. Keep the embankment surface level and uniform at all times. Construct the sides of the embankment first, and then bring the center up level with the shoulders.

9. Do not place embankment material when the moisture content in any layer causes excessive rutting or precludes proper compaction. Dry embankments rendered unstable by excessive amounts of moisture from any cause by scarifying and balding before placing succeeding layers.

10. Embankments constructed on frozen ground are to be re-excavated and re-compacted to grade and cross section after complete thawing of the ground and the soils can be suitably worked.

11. Provide the water and the compactive effort necessary to obtain the specified density. Watering and compaction is incidental to embankment construction and will have no separate payment.

12. The minimum field compaction shall be 95% of the maximum laboratory density as determined by AASHTO T-99.

    a. Correction of Coarse Particles in the Soil per AASHTO T-224.

    b. Family of Curves – One Point Method per AASHTO T-272.

    c. Compaction Standard for Coarse Granular Material by Use of the Vibratory Spring Load Compactor per Idaho T-74.

       In lieu of Idaho T-74, the Engineer may determine the standard density of coarse granular material in accordance with AASHTO T-180 Method D.

C. Compaction Control Tests.

1. Determination of in-place density and percent compaction of standard density shall be by: In-place Density and Moisture Content of Soil and Soil-aggregate by Nuclear Methods (Shallow Depth) per AASHTO T-310. The testing frequency for materials placed in a roadway section shall be 1 test per each 300 liner feet of roadway and 1 test per 10,000 square feet of general fill and embankment areas for each lift.

2. The applicable standard method will be determined according to the following table:

MATERIAL AT OR BELOW SUBGRADE:

AASHTO T-99 Method A	AASHTO T-99 Method D	IDAHO T-74	TOO GRANULAR TO TEST [2]
≤10% retained on No. 4	>10% retained on No. 4 and ≤30% retained on 3/4 in.[1]	≤30% retained on 3/4 in. and <10% retained on 3 in	>30% retained on 3/4. Document equipment and compaction effort.
			≥10% retained on 3 in. using 65 lb sample. Document equipment and compaction effort.

[1] >10% retained on 3/4, use AASHTO T-224.

[2] A gradation to verify "Too Granular to Test" will be performed at the same frequency as a density test would have been performed.

3. Material Too Granular to Test.

   a. Construct embankments with material too granular to test by Idaho Method T-74 in horizontal layers no thicker than 18 inches unless otherwise permitted. Distribute large rocks evenly and fill the voids between them with smaller rock and/or earth. Also, provide adequate water to facilitate compaction.

   b. Place and uniformly compact each layer more than 18 inches below subgrade with a minimum of 3 full coverages for each 6 inches of lift thickness or fraction thereof with rollers with the following minimum requirements.

   c. Vibratory rollers having a rated dynamic force of 30,000 pounds per impact and at least 1000 vibrations/minute.

   d. Grid rollers having a static weight of at least 20,000 pounds and 4000 pounds/foot of drum width.

   e. Rolling requirements may be reduced 1 coverage per 6 inches, or fraction thereof, for each increase of 5,000 pounds per impact for vibratory rollers or 1,000 pounds/foot of drum width for grid rollers.

   f. One complete coverage for each 6 inches of lift thickness is the minimum allowed.

g. Rock material placed within 18 inches of subgrade and rock backfill of overexcavated areas in rock cuts shall be constructed in layers not exceeding 9 inches thick, unless directed otherwise. Each layer shall be uniformly compacted with a minimum of 12 full coverages of a vibratory roller meeting the minimum requirements previously stated. Vibratory rolling may be reduced one full coverage for each increase of 5000 pounds per impact above the minimum. In no case will less than 6 full coverages per 9-inch lift, or fraction thereof, be allowed.

h. Limit the speed of grid rollers to no more than 4 mph and the speed of vibratory rollers to no more than 1.5 mph.

i. Include the cost for this work under other earthwork items, since all work described in this Subsection is considered incidental.

D. Borrow.

1. Borrow.

a. Borrow consists of material taken from areas <u>within</u> the project limits for the completion of embankments.

b. The areas within the project limits from which the borrow may be obtained will be designated on the Contract Documents.

c. Take borrow only from designated locations and within the horizontal and vertical limits stated or directed. Upon completion of operations, adequately drain and finish the surface of the borrow area to a neat and uniform grade.

2. Imported Borrow.

a. Imported borrow consists of material taken from areas <u>outside</u> the project limits for the completion of the embankments.

b. Imported borrow sources will generally be obtained by the Contractor, subject to approval by the Engineer.

3.9 CLASSES OF COMPACTION AND DENSITY REQUIREMENTS

A. Compact embankments including backfill and embankment foundations to meet the requirements of one of the following classes as specified in the Contract Documents.

B. If the class of compaction is not specified, use Class B compaction.

1. Class A Compaction: Class A compaction consists of compacting the top 12 inches of embankment and backfill material and the top 8 inches in cuts to the following requirements: For materials having a maximum dry weight of 120 pounds/cf or less, 95% of laboratory maximum density; for material having a maximum dry weight greater than 120 pounds/cf, 100% of laboratory maximum density. For embankment and backfill material within slopes extending outward at a 2 Horizontal to 1 vertical slope from the finished subgrade and placed more than 12 inches below subgrade, compact to 95% of standard density as per table 202.3.8.C.2.

2. Class B Compaction: Class B compaction consists of compacting embankment and backfill material within 12 inches of subgrade to the density standards for Class A compaction. Compact other material below subgrade by routing all construction equipment uniformly over the entire surface of each layer. Additional rolling may be directed if routing of equipment provides unsatisfactory compaction.

3. Class C Compaction: Class C compaction consists of compacting selected areas under embankments to the density standards for Class A compaction to a depth of 8 inches. The station limits of Class C compaction, will be shown on the plans or as directed. The width will be between subgrade shoulders.

4. Class D Compaction: Class D compaction consists of compacting designated areas shown on plans. The compaction consists of not less than one complete coverage with approved track type or rubber tired earth moving equipment. Place the embankment in lifts not to exceed 12 inches in depth of material before compaction. Adjust moisture content to optimum.

C. Compact materials above subgrade which do not have a specified compaction requirement as per type A compaction designated in 202.3.9.B.1.

D. Place material above subgrade that is to granular to test in layers no more than 9 inches and compact with a minimum of 12 full coverages of a vibratory roller. Vibratory rollers to be rated by minimum dynamic force to 30,000 pounds per impact and at least 1000 vibrations/minute. Vibratory rolling may be reduced 1 full coverage for each increase of 5000 pounds per impact above the minimum. In no case will less than 6 full coverages per 9-inch lift, or fraction thereof, be allowed.

3.10 HAUL

A. Haul consists of the authorized hauling of excavated material beyond the specified free haul distance.

1. Haul applies to excavation, borrow and granular borrow.

2. The free haul distance for excavation is 2000 feet.

3. No free haul will be required for borrow or granular borrow.

B. Measurement.

1. Calculating Excavation Haul.

a. Determine 2 points, 2000 feet apart, one on each side of the neutral grade point as indicated on the final construction haul diagram, located so that the included quantities of excavation and the included quantities of embankment measured by the average end area method areas balances.

b. The haul distance remains after subtracting the free haul from the distance measured between the center of volume of the remaining excavation and the center of volume of the resulting embankment.

c. The pay quantity is the length of haul multiplied by the accepted quantities hauled in excess of the free haul distance converted to the nearest whole haul unit.

2. Calculating Borrow Haul.

a. The length of haul for borrow and granular borrow is the distance between the center of volume of the source and the center of volume of the deposited material measured along the shortest practicable route.

b. The pay quantity is the length of haul multiplied by the accepted quantities hauled converted to the nearest whole haul unit.

c. Free Haul does not apply to Borrow or Granular Borrow Haul.

3. Compute haul quantities from a haul diagram prepared by the Engineer.

4. Haul may be computed with other analytical methods if approved by the Engineer.

5. In case the Contractor, for his own convenience, elects to use a haul plan differing from that proposed in the contract, the actual haul resulting from use of the Contractor's source or haul plan will be paid for, except that haul in excess of that which would have resulted from use of the contract proposal will not be allowed.

6. When there is no separate contract item in the proposal for haul, its cost will be considered incidental to the contract item for which it applies.

3.11 DUST ABATEMENT (See Division 1000)

A. Provide sufficient equipment to apply water as directed for suppressing dust caused by construction activities.

B. Suspend operations if dusty conditions continue to exist, due to insufficient or inadequate dust abatement practices, or lack of watering equipment.

C. Apply water uniformly as directed to suppress dust formation, without creating muddy conditions or ponding.

D. Apply water at the same frequency as workdays when applying on Saturdays, Sundays and holidays.

E. Watering equipment consists of watertight tanks mounted on trucks, adequately powered, and capable of applying water, as required.

F. Apply water under pressure from the tank through a spray apparatus capable of providing a uniform unbroken spread of water over the watered surface.

G. Locate a suitable device in the cab allowing positive shut-off, drive control and regulation of the water flow.

H. Prevent dust abatement water from conveying silt to storm drains. Refer to Division 1000.

3.12 EROSION CONTROL AND FENCING

A. Provide complete and approved erosion control and fencing plans prior to starting excavation and backfill operations.

B. Place per Section 206 – Permanent Erosion Control, Section 2040 – Fencing and Division 1000 – Construction Stormwater Best Management Practices (BMPs).

PART 4 MEASUREMENT AND PAYMENT

4.1 Use the following unit price options as designated in the Bid Schedule for Excavation. If required and not listed in the Bid Schedule, the following Bid Items are to be considered incidental to other Bid Items.

A. Excavation: By the cubic yard measured in its original position from field cross sections, using the average end area method with no correction for curvature. Includes full compensation for all materials, labor and equipment necessary for completing the work and all appurtenances not itemized on the Bid Schedule.

1. Bid Schedule Payment References: 202.4.1.A.1.
Bid Schedule Description: Excavation…cubic yard (CY).

B. Excavation: By the ton measured by weight tickets from certified scales submitted to and approved by the Engineer. Includes full compensation for all materials, labor and equipment necessary for completing the work and all appurtenances not itemized on the Bid Schedule.

1. Bid Schedule Payment References: 202.4.1.B.1.
2. Bid Schedule Description: Excavation…ton (TON).

C. Excavation: By the square yard measured within the limits of the work or designated on the Contract Documents. Includes full compensation for all materials, labor and equipment necessary for completing the work and all appurtenances not itemized on the Bid Schedule.

1. Bid Schedule Payment References: 202.4.1.C.1.
2. Bid Schedule Description: Excavation…square yard (SY).

D. Excavation: By the lump sum. Includes full compensation for all materials, labor and equipment necessary for completing the work and all appurtenances not itemized on the Bid Schedule.

1. Bid Schedule Payment References: 202.4.1.D.1.
2. Bid Schedule Description: Excavation…lump sum (LS).

4.2 Use the following unit price options as designated in the Bid Schedule for Rock Excavation. If required and not listed in the Bid Schedule, the following Bid Items are to be considered incidental to other Bid Items.

A. Rock Excavation: By the cubic yard measured in its original position from field cross sections, using the average end area method with no correction for curvature. Includes full compensation for all materials, labor and equipment necessary for completing the work and all appurtenances not itemized on the Bid Schedule.

1. Bid Schedule Payment References: 202.4.2.A.1.
2. Bid Schedule Description: Rock Excavation…cubic yard (CY).

B. Rock Excavation: By the ton measured by weight tickets from certified scales submitted to and approved by the Engineer. Includes full compensation for all materials, labor and equipment necessary for completing the work and all appurtenances not itemized on the Bid Schedule.

1. Bid Schedule Payment References: 202.4.2.B.1.
2. Bid Schedule Description: Rock Excavation…ton (TON).

C. Rock Excavation: By the square yard measured within the limits of the work or designated on the Contract Documents. Includes full compensation for all materials, labor and equipment necessary for completing the work and all appurtenances not itemized on the Bid Schedule.

1. Bid Schedule Payment References: 202.4.2.C.1.
2. Bid Schedule Description: Rock Excavation…square yard (SY).

D. Rock Excavation: By the lump sum. Includes full compensation for all materials, labor and equipment necessary for completing the work and all appurtenances not itemized on the Bid Schedule.

1. Bid Schedule Payment References: 202.4.2.D.1.
2. Bid Schedule Description: Rock Excavation…lump sum (LS).

4.3 Use the following unit price options as designated in the Bid Schedule for Excavation Schedule _____.

A. Excavation Schedule _____: By the cubic yard measured in its original position from field cross sections, using the average end area method with no correction for curvature. Includes full compensation for all materials, labor and equipment necessary for completing the work and all appurtenances not itemized on the Bid Schedule.

1. Bid Schedule Payment References: 202.4.3.A.1.
2. Bid Schedule Description: Excavation Schedule _____…cubic yard (CY).

B. Excavation Schedule _____: By the ton measured by weight tickets from certified scales submitted to and approved by the Engineer. Includes full compensation for all materials, labor and equipment necessary for completing the work and all appurtenances not itemized on the Bid Schedule.

1. Bid Schedule Payment References: 202.4.3.B.1.
2. Bid Schedule Description: Excavation Schedule _____…ton (TON).

C. Excavation Schedule _____: By the square yard measured within the limits of the work or designated on the Contract Documents. Includes full compensation for all materials, labor and equipment necessary for completing the work and all appurtenances not itemized on the Bid Schedule.

1. Bid Schedule Payment References: 202.4.3.C.1.
2. Bid Schedule Description: Excavation Schedule _____…square yard (SY).

D. Excavation Schedule _____: By the lump sum. Includes full compensation for all materials, labor and equipment necessary for completing the work and all appurtenances not itemized on the Bid Schedule.

1. Bid Schedule Payment References: 202.4.3.D.1.
2. Bid Schedule Description: Excavation Schedule _____…lump sum (LS).

4.4 Use the following unit price options as designated in the Bid Schedule for Controlled Blasting.

A. Controlled Blasting: By the linear foot measured horizontally along the finished slope parallel within the blasting limits or as designated on the Contract Documents. Includes full compensation for all materials, labor and equipment necessary for completing the work and all appurtenances not itemized on the Bid Schedule.

1. Bid Schedule Payment References: 202.4.4.A.1.
2. Bid Schedule Description: Controlled Blasting…linear foot (LF).

B. Controlled Blasting: By the square yard measured horizontally along the finished surface parallel within the blasting limits or as designated on the Contract Documents. Includes full compensation for all materials, labor and equipment necessary for completing the work and all appurtenances not itemized on the Bid Schedule.

1. Bid Schedule Payment References: 202.4.4.B.1.
2. Bid Schedule Description: Controlled Blasting…square yard (SY).

C. Controlled Blasting: By the drilled foot measured parallel to the line holes and includes all holes drilled whether loaded or not. Includes full compensation for all materials, labor and equipment necessary for completing the work and all appurtenances not itemized on the Bid Schedule.

1. Bid Schedule Payment References: 202.4.4.C.1.
2. Bid Schedule Description: Controlled Blasting…drilled foot (DF).

4.5 Use the following unit price options as designated on the Bid Schedule for Unsuitable Material Excavation and Repair.

A. Unsuitable Material Excavation: By the cubic yard measured in its original position within the limits designated by the Engineer, from field cross section using the Average End Area Method with no correction for curvature. Includes full compensation for all materials, labor and equipment necessary for completing the work and all appurtenances not itemized on the Bid Schedule.

1. Bid Schedule Payment References: 202.4.5.A.1.
2. Bid Schedule Description: Unsuitable Material Excavation…cubic yard (CY).

B. Unsuitable Material Excavation: By the square yard measured within the limits designated by the Engineer. Includes full compensation for all materials, labor and equipment necessary for completing the work and all appurtenances not itemized on the Bid Schedule.

1. Bid Schedule Payment References: 202.4.5.B.1.
2. Bid Schedule Description: Unsuitable Material Excavation…square yard (SY).

NOTE: Unsuitable Material Repair is incidental to Unsuitable Material Excavation unless a Separate Item is established as listed below.

C. Unsuitable Material Repair: By the cubic yard measured within the limits designated by the Engineer, on its final compacted position from field cross section using the Average End Area Method with no correction for curvature. Includes full compensation for all materials, labor and equipment necessary for completing the work and all appurtenances not itemized on the Bid Schedule.

1. Bid Schedule Payment References: 202.4.5.C.1.
2. Bid Schedule Description: Unsuitable Material Repair…cubic yard (CY).

D. Unsuitable Material Repair: By the square yard measured within the limits designated by the Engineer. Includes full compensation for all materials, labor and equipment necessary for completing the work and all appurtenances not itemized on the Bid Schedule.

1. Bid Schedule Payment References: 202.4.5.D.1.
2. Bid Schedule Description: Unsuitable Material Repair…square yard (SY).

4.6 Using the following unit price options as designated on the Bid Schedule for Borrow.

A. Borrow: By the cubic yard as measured in final compacted position from field cross section using the Average End Area Method with no correction for curvature. Includes full compensation for all materials, labor and equipment necessary for completing the work and all appurtenances not itemized on the Bid Schedule.

1. Bid Schedule Payment References: 202.4.6.A.1.
2. Bid Schedule Description: Borrow…cubic yard (CY).

B. Borrow: By the ton as measured by weight ticket from certified scales submitted to and approved by the Engineer. Includes full compensation for all materials, labor and equipment necessary for completing the work and all appurtenances not itemized on the Bid Schedule.

1. Bid Schedule Payment References: 202.4.6.B.1.
2. Bid Schedule Description: Borrow…ton (TON).

4.7 Use the following unit price option as designated on the Bid Schedule for Haul.

A. Haul: By the yard unit defined as ten cubic yards of material hauled 1,000 feet. Includes full compensation for all materials, labor and equipment necessary for completing the work and all appurtenances not itemized on the Bid Schedule.

1. Bid Schedule Payment References: 202.4.7.A.1.
2. Bid Schedule Description: Haul…yard unit (YU).

B. Haul: By the ton unit defined as ten tons of material hauled 1000 feet. Includes full compensation for all materials, labor and equipment necessary for completing the work and all appurtenances not itemized on the Bid Schedule.

1. Bid Schedule Payment References: 202.4.7.B.1.
2. Bid Schedule Description: Haul…ton unit (TU).

4.8 Use the following unit price options as designated on the Bid Schedule for Dust Abatement Water.

A. Dust Abatement Water: By the 1,000 gallons measured through calibrated tanks, distributors or accurate water meters. Includes full compensation for all materials, labor and equipment necessary for completing the work and all appurtenances not itemized on the Bid Schedule.

1. Bid Schedule Payment References: 202.4.8.A.1.
2. Bid Schedule Description: Dust Abatement Water…1,000 gallons (MG).

END OF SECTION

SECTION 204

STRUCTURAL EXCAVATION AND COMPACTING BACKFILL

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Excavation for Structures.

B. Backfilling for Structures.

C. Fill Quality Control.

1.2 RELATED SECTIONS

A. Section 203 - Soil Materials.

B. Section 205 - Dewatering.

C. Section 802 - Crushed Aggregate.

1.3 REFERENCES

A. AASHTO T 27: Sieve Analysis of Fine and Coarse Aggregates.

B. AASHTO T 88: Particle Size Analysis of Soils.

C. AASHTO T 89: Determining the Liquid Limits of Soils.

D. AASHTO T 90: Determining the Plastic Limit and Plasticity Index of Soils.

E. AASHTO T 99: Moisture Density Relations of Soils using a 5.5-pound Rammer with a 12-inch Drop.

F. AASHTO T 176: Plastic Fines in Graded Aggregates and Soils by Use of the Sand Equivalent Test.

G. AASHTO T 180: Moisture-Density Relations of Soils using a 10-pound Rammer and a 18-inch Drop.

H. AASHTO T 191: Density of Soil In-Place by the Sand-Cone Method.

I. AASHTO T 205: Density of Soil In-Place by the Rubber-Balloon Method.

J. AASHTO T 238: Density of Soil and Soil-Aggregate In-Place by Nuclear Methods (Shallow Depth).

K. AASHTO T 239: Moisture Content of Soil and Soil Aggregate In-Place by Nuclear Methods (Shallow Depth).

L. AASHTO T 265: Laboratory Determination of Moisture Content of Soils.

M. AASHTO T 99: The Moisture-Density Relations of Soils Using a 5.5 pound Rammer and a 12-inch Drop.

N. ASTM D 4253: Standard Test Method for Maximum Index Density and Unit Weight of Soils Using a Vibratory Table.

O. ASTM D 4254: Standard Test Method for Minimum Index Density and Unit Weight of Soils and Calculation of Relative Density.

P. ASTM D 2487: Classification of Soils for Engineering Purposes.

Q. ITD T-74: Compaction Standard for Coarse Granular Materials by Use of the Vibratory Spring-Load Compactor.

R. AASHTO T 310: In-Place Density and Moisture Content of Soil and Soil Aggregate by Nuclear Methods.

S. Occupational Safety and Health Standards for Excavations.

PART 2 MATERIALS

2.1 BACKFILL MATERIALS

A. Subsoil Type S2 specified in Section 203 – Soil Materials.

B. Subsoil Type S3 specified in Section 203 – Soil Materials.

C. Aggregate Type I and Type II as specified in Section 802 – Crushed Aggregate.

PART 3 WORKMANSHIP

3.1 PREPARATION

A. Identify required lines, levels, contours, and datum.

B. Locate, identify, and protect utilities that remain, from damage.

C. Notify utility company to remove and relocate utilities.

D. Protect benchmarks, existing structures, and fences, from excavation equipment and vehicular traffic.

E. Verify fill materials to be used are acceptable.

F. Dewater in accordance with Section 205 - Dewatering.

G. Compact subgrade to density requirements for subsequent backfill materials. Scarify, wet and recompact, if necessary, to achieve densities.

H. Cut out soft areas of subgrade not capable of insitu compaction. Backfill with Type II Aggregate as necessary and compact to density equal to or greater than requirements for subsequent backfill material. Refer to Section 802 - Crushed Aggregate.

I. Prior to placement of any fill material, compact subgrade to 95% of its maximum dry density as determined by AASHTO T 99.

3.2 EXCAVATION FOR STRUCTURE

A. Description.

1. Provide excavation and disposal of all materials required for the construction of structures and unless otherwise specified include all necessary drainage, pumping, bailing, sheeting, shoring; the construction of cribs and cofferdams and their subsequent removal; removing old structures or parts thereof as required.

B. Construction Requirements.

1. Remove unstable foundation material as directed below the designed elevation. Use suitable surplus excavated material in the construction of embankments, and unsuitable material will be wasted.

2. Sheet and brace trenches if necessary. Do not remove such sheeting until backfill has progressed to such a stage that no damage to pipe lines or structures will result from its removal.

3. Where rock, hardpan, or other unyielding material is encountered, and a yielding material is required as indicated by the Contract Documents, remove the unyielding material below the design grade and backfill, as directed.

4. Grade top perimeter of excavation to prevent surface water from draining into excavation.

5. All other backfill shall consist of materials described in Part 2 of this section uniformly distributed in layers of not more than 8 inches and compacted to the density standards for Class A compaction before successive layers are placed.

6. Where the footing is to rest on material other than rock or boulders, take special care not to destroy its bearing value.

7. Notify Engineer of unexpected subsurface conditions and discontinue affected work in area until notified to resume work. Proceed with unaffected work.

8. Correct areas over-excavated by error in accordance with Section 202 – Excavation and Embankment.

9. Pump from the interior of any foundation enclosure in such a manner as to preclude the possibility of any portion of the concrete materials being carried away. Do not pump during the placing of concrete or for a period of at least 24 hours thereafter, unless it is done from a suitable sump or well point separated from the concrete work.

10. Excavated material is categorized into one of the five material classifications as set forth in Section 203 – Soil Materials. These materials shall be stockpiled in the areas designed and to the line and grade as depicted on the Contract Documents.

3.3 BACKFILLING FOR STRUCTURES

A. Description: Compacting backfill includes the work of placing backfill material, compacting, sloping and cleaning up the sites. Replace material removed below design elevation with approved material.

1. Fill solid rock excavation below the established footing elevation with Class 3000 psi concrete for bridge and box culvert foundations.

B. Construction Requirements.

1. Place no structure until the foundation has been approved.

2. Backfill placed in areas not requiring a higher degree of compaction for some other purpose is to be compacted to approximately the same density as the adjacent undisturbed soil or gravel. Compaction may be obtained by any effective means.

3. Backfill areas to contours and elevations with Type S5 soil.

4. Systematically backfill to allow maximum time for natural settlement. Do not backfill over porous, wet, frozen or spongy subgrade surfaces.

5. Remove disturbed material from the excavation and the footing excavation, backfill to the plan elevation with approved material.

6. Place backfill in a manner that does not disturb or damage existing structures or utilities.

7. Backfill placed through water around abutments, wing walls and piers to consist of suitable material placed in layers. Compaction of the backfill will not be required.

8. Backfill pipe culverts and other conduits per the section of the ISPWC corresponding to the type of pipe being installed.

9. Do not place backfill against newly constructed masonry or concrete structures without fulfilling the requirements of Section 701 – Concrete Formwork.

10. Unless otherwise indicated in the plans or directed, remove all sheeting and bracing used in making structure excavation.

11. Maintain optimum moisture content of backfill materials to attain required compaction density.

12. Top surface of backfilling under access roads: Plus or minus 1 inch from required elevations.

13. Top surface of general backfilling: Plus or minus 1 inch from required elevations.

3.4 FIELD QUALITY CONTROL

A. Field testing will be performed by an approved testing laboratory suitable to the Engineer.

B. Tests and analysis of fill material will be performed in accordance with Section 202 – Excavation and Embankment.

C. Compaction testing will be performed in accordance with Section 202 - Excavation and Embankment.

D. If tests indicate work does not meet specified requirements, remove work, replace and retest at no cost to the Owner.

E. Frequency of Compaction Tests.

1. Trenches:

a. Horizontal Location: Test at start of trench with subsequent test a maximum of every 1,000 feet. Test a minimum of 2 locations in trenches less than 500 feet in length.

b. Vertical Location: At every horizontal location, test every 18 vertical inches, including 1 test at the top of the trench.Perform subsequent tests at locations where materials or construction procedures change.

2. Linear Foundations.

a. Horizontal Location: Test at start with subsequent tests a maximum of every 500 feet.

b. Vertical Location: At every horizontal location, obtain one test at subgrade. Subsequent tests every 18 inches compacted depth and at top of backfill or when materials or procedures change.

3. Area Foundations.

a. Horizontal Location: Test each backfill area with subsequent test for every 2,500 square feet of backfill surface area.

b. Vertical Location: At every horizontal location, obtain one test at subgrade. Subsequent tests every 18 inches compacted depth and at top of backfill or when materials or procedures change.

PART 4 MEASUREMENT AND PAYMENT

4.1 Use the following unit price options as designed on the Bid Schedule for Structural Excavation Schedule 1. If required and not listed in the Bid Schedule, the following Bid Items are to be considered incidental to other Bid Items.

A. Structural Excavation Schedule 1: By the cubic yard for bridges and box culverts and stiffleg culverts measured in its original position using the Average End Area Method within the following limiting planes. Includes full compensation for all materials, labor and equipment necessary for completing the work and all appurtenances not itemized on the Bid Schedule.

1. Bid Schedule Payment Reference: 204.4.1.A.1.
2. Bid Schedule Structural Excavation Schedule 1...cubic yard (CY).

B. Structural Excavation Schedule 1: By the lump sum for bridges and box culverts and stiffleg culverts measured in its original position using the Average End Area Method within the following limiting planes. Includes full compensation for all materials, labor and equipment necessary for completing the work and all appurtenances not itemized on the Bid Schedule.

1. Bid Schedule Payment Reference: 204.4.1.B.1.
2. Bid Schedule Structural Excavation Schedule 1...lump sum (LS).

C. The volume of material actually removed for Structural Excavation, Schedule 1 will be measured within a prism with limiting planes as follows:

1. Conduit and Structural Plate Pipe: As shown on the Contract Documents.

2. Other Structures:

a) The bottom of the foundation.

b) The vertical planes 4 feet outside of and parallel to the outside lines of the structure, in the case of bents with individual column footings, the entire bent shall be considered as one structure.

c) With upper limits as follows:

1) In embankment sections, the existing ground surface as cross-sectioned.
2) In roadway cut sections or channel changes, the planes of the roadway cut or channel changes as excavated.

4.2 Use the following unit price options as designed on the Bid Schedule for Structural Excavation Schedule 2.

A. Structural Excavation Schedule 2: By the cubic yard for all other structures measured in its original position using the Average End Area Method within the following limiting planes. Includes full compensation for all materials, labor and equipment necessary for completing the work and all appurtenances not itemized on the Bid Schedule.

1. Bid Schedule Payment Reference: 204.4.2.A.1.
2. Bid Schedule Structural Excavation Schedule 2...cubic yard (CY).

B. Structural Excavation Schedule 2: By the lump sum for all other structures measured in its original position using the Average End Area Method within the following limiting planes. Includes full compensation for all materials, labor and equipment necessary for completing the work and all appurtenances not itemized on the Bid Schedule.

1. Bid Schedule Payment Reference: 204.4.2.B.1.
2. Bid Schedule Structural Excavation Schedule 2...lump sum (LS).

C. The volume of material actually removed for Structural Excavation, Schedule 2 be measured within a prism with limiting planes as follows:

1. Conduit and Structural Plate Pipe: As shown on the plans.

2. Other Structures:

a) The bottom of the foundation.

b) The vertical planes 4 feet outside of and parallel to the outside lines of the structure, in the case of bents with individual column footings, the entire bent shall be considered as one structure.

c) With upper limits as follows:

1) In embankment sections, the existing ground surface as cross-sectioned.

2) In roadway cut sections or channel changes, the planes of the roadway cut or channel changes as excavated.

4.3 Use the following unit price options as designed on the Bid Schedule for Compacting Backfill.

A. Compacting Backfill: By the cubic yard for bridges and box culverts and stiffleg culverts measured in its original position using the Average End Area Method within the following limiting planes. Includes full compensation for all materials, labor and equipment necessary for completing the work and all appurtenances not itemized on the Bid Schedule.

1. Bid Schedule Payment Reference: 204.4.3.A.1.
2. Bid Schedule Compacting Backfill...cubic yard (CY).

B. Compacting Backfill: By the lump sum for bridges and box culverts and stiffleg culverts measured in its original position using the Average End Area Method within the following limiting planes. Includes full compensation for all materials, labor and equipment necessary for completing the work and all appurtenances not itemized on the Bid Schedule.

1. Bid Schedule Payment Reference: 204.4.3.B.1.
2. Bid Schedule Compacting Backfill...lump sum (LS).

C. The volume for compacting backfill will be determined as follows:

1. Conduit: As shown on the plans.

2. Other Structures:

a) Below the original ground surface: A volume equal to the volume of structure excavation less the volume of the permanent structure including opening, contained within the limits of measurement for structure excavation.

b) Above the original ground surface: The volume contained between the outside walls of the structure and vertical planes 4 feet outside thereof; the original ground surface; and a horizontal plane 1 foot above the top of the structure or of the subgrade, whichever is the lesser.

c) Volumes of backfill placed through water around abutments, wingwalls and piers, will not be included in the measurement of quantities for compacting backfill.

END OF SECTION

SECTION 205

DEWATERING

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Trench Dewatering.

B. Dewatering for Structures.

1.2 RELATED SECTIONS

A. Section 202 – Excavation and Embankment.

B. Section 204 – Structural Excavation and Backfill.

C. Section 301 – Trench Excavation.

D. Section 303 – Exploratory Excavation.

E. Section 308 – Boring and Jacking.

1.3 REFERENCE

A. Idaho Water Quality Standards.

1.4 SUBMITTALS

A. Submit to the Engineer a dewatering plan including a statement of the method, installation and details of the dewatering system proposed.

PART 2 MATERIALS

NOT USED

PART 3 WORKMANSHIP

3.1 PREPARATION

A. Furnish, install and operate all necessary machinery, appliances and equipment to maintain all excavations and trenches free from water during construction.

3.2 CONSTRUCTION REQUIREMENTS

A. Dewater and dispose of water in accordance with applicable ordinances, State water quality standards, and agreements and in such a manner that it does not cause injury to public or private property, or to cause a nuisance or a menace to the general public. Water will not be discharged to offsite drainage facilities without prior written approval from operator of the facility.

B. Comply with Idaho Water Quality Standards, latest edition, for discharge of water to surface water.

C. Draw static water level to at least 1 foot below the bottom of the excavation prior to excavation to maintain the undisturbed state of the foundation soils and allow placement of bedding material and backfill to the required density.

D. Remove any soil loosened or disturbed by the excavation operations from the bottom of the excavation before placement of fill or backfill.

E. Prevent softening of the bottom of excavations and the formation of “quick” conditions or “boils” during excavation.

F. Additional cost for excavation stabilization, due to inadequate dewatering system, will be incidental to the work.

G. Control surface runoff to prevent entry or collection of water in excavations.

H. Install and operate the dewatering system so that adjacent structures or property are not endangered by the reduction in the groundwater level.

3.3 TERMINATION

A. Allow groundwater to return to static level to maintain the undisturbed state of the natural foundation soils. Prevent disturbance of the compacted backfill and prevent flotation or movement of structures or other work.

3.4 TESTING

A. At least once per day during dewatering activities, monitor wastewater from dewatering operations for changes in visual or odor components indicating the presence of contaminants including, but not limited to, gasoline and pesticides and other hazardous materials and toxins.

B. Cease dewatering operations and notify Engineer and regulatory agencies immediately upon encountering contaminants in water.

C. Maintain explosive atmosphere-detection device on-site. Measure atmosphere explosivity continuously at mid-height of excavation.

PART 4 MEASUREMENT AND PAYMENT

4.1 Use the following unit price options as designated in the Bid Schedule for Dewatering. Includes all labor, materials, and equipment required to dewater construction areas. If not listed in the Bid Schedule, Dewatering is considered incidental to other Bid Items.

A. Dewatering: By the linear foot measured along the horizontal centerline of the dewatered area.

1. Bid Schedule Payment Reference: 205.4.1.A.1.
2. Bid Schedule Description: Dewatering…linear foot (LF).

B. Dewatering: By the lump sum for all dewatering required.

1. Bid Schedule Payment Reference: 205.4.1.B.1.
2. Bid Schedule Description: Dewatering…lump sum (LS).

C. Dewatering: By the day measured on a 24-hour basis for all dewatering required on the project.

1. Bid Schedule Payment Reference: 205.4.1.C.1.
2. Bid Schedule Description: Dewatering…day (DAY).

D. Dewatering: By the square yard measured on a horizontal basis for the area that is dewatered.

1. Bid Schedule Payment Reference: 205.4.1.D.1.
2. Bid Schedule Description: Dewatering…square yard (SY).

END OF SECTION

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SECTION 206

PERMANENT EROSION CONTROL

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Class of Seeds.

B. Season of Work.

C. Seedbed Preparation.

D. Fertilizing.

E. Seeding.

F. Mulching.

G. Erosion Blanket.

H. Riprap.

1.2 RELATED SECTIONS

A. Section 203 - Soil Materials.

B. Section 805 - Asphalt.

C. Division 1000 – Construction Stormwater Best Management Practices.

PART 2 MATERIALS

2.1 EMULSIFIED ASPHALT

A. In accordance with Section 805 – Asphalt.

2.2 COMMERCIAL FERTILIZER

A. Furnish commercial fertilizer in containers marked with the weight and/or volume with the manufacturer's guaranteed analysis of the contents. Dry fertilizers must be free from lumps or cakes.

2.3 SOIL CONDITIONER

A. Soil conditioner may consist of peat moss, sedge peat, aged manure, compost or bark (that is reasonably free from wood substances). Material to contain a minimum of 50% organic matter by weight. The source must be approved before shipping to the project.

2.4 TOPSOIL

A. In accordance with Section 203 – Soil Materials.

2.5 MULCH

A. The sources of all types of mulch must be approved before shipping to the project.

1. Bark mulch (granular and ornamental type): Reasonably free of strips and splinters.

2. Straw: Reasonably weed-free grain straw other than rye.

3. Grass Hay: Reasonably weed-free and where it is to be anchored by crimping must have approximately 50% of the stems exceeding 10 inches in length.

4. Shredded Bark: Shredded or stringy texture.

5. Wood and Paper Fiber: Form a blotter-like ground cover when applied.

2.6 EROSION BLANKETS

A. Erosion blankets must be of material and construction that will remain in place, without deterioration, for at least three years or until 70 percent revegetation is established. The type and structure is to be approved prior to installation.

2.7 RIPRAP

A. Riprap will be classified as loose riprap, hand placed riprap, sack riprap and concrete stabilized riprap. Material to be durable, angular field or quarry stones of approved quality, sound, hard, free from seams and other structural defects from an approved source, suitable salvaged concrete or concrete in sacks. Material to be uniformly placed such that smaller material will fill the voids in larger material and the larger material will still be in contact with each other. Grading will be determined by visual inspection prior to placement.

B. Loose Riprap.

1. Stone to be nearly rectangular, approximately 50% having a volume greater than 1 cubic foot.

2. Maximum size not to exceed minimum depth of riprap as specified on the Contract Documents.

C. Hand Placed Riprap.

1. Stone to be nearly rectangular, approximately 40% having a volume greater than 1 cubic foot.

2. No stone to be less than 6 inches thick.

D. Sack Riprap.

1. To consist of Class 1500 psi concrete as specified in Section 703 - Cast-in-Place Concrete.

2. Only when pre-approved by the Engineer.

E. Concrete Stabilized Riprap.

1. Stone to conform to B or C above.

2. Concrete to conform to D above.

3. To be used only when pre-approved by the Engineer.

2.8 TEMPORARY SLOPE PROTECTION

A. Refer to Section 1000 – Construction Stormwater BMPs.

PART 3 WORKMANSHIP

3.1 SEEDING AND MULCHING

A. This work is to consist of seedbed preparation and sowing seed on prescribed areas in accordance with these specifications and Contract Documents.

B. Use the drill seeding method on all areas with slopes of 3:1 or flatter and where there is not excessive rock, gravel, or hardpan. Apply fertilizer, seed and mulch in separate operations, one following the other and in that order, except that fertilizer may be applied with fertilizer attachment at time of seeding or with irrigation water when establishment water is specified. Perform tillage and drilling so that cross-slope furrows remain.

C. Class of Seeding

1. Seeding is to be of the class as designated in Table 1.

Table 1
SEED CLASS

OPERATION	CLASS						
	A	B	C	D	E	F	G
Seedbed Preparation	X	X	X	X	-	-	X
Seeding	X	X	X	X	X	X	X
Mulching	X	-	X	-	X	-	X
Anchoring (Mechanical)	X	-	-	-	-	-	-
Anchoring (Tack)	-	-	X	-	X	-	-
Erosion Blanket	-	-	-	X	-	-	-

X = Required.
- = Not Required.

2. Seed mixture will be identified in the Special Provisions.

D. Season of Work

1. Perform seeding during the season(s) designated in the Contract Documents.

2. When a portion of an area to be seeded is ready during a designated seeding season, complete that portion during that season for partial acceptance.

3. Perform no seeding operations when soil is too wet or dry, frozen, or otherwise untillable.

4. If seeding of the work area is the only remaining work to be done on the contract and a time frame for seeding is provided for in the proposal, contract time for completion will be considered the latest date shown in the seeding time frame.

E. Construction Requirements

1. Seedbed Preparation.

a. Maintain areas to be seeded reasonably free of weeds by mechanical means or application of appropriate chemicals until seeding time. Keep weeds from going to seed.

b. Cultivate areas to be seeded by drilling to a minimum depth of 3 inches. Work the soil to obtain a surface that will permit proper operation of seeding equipment.

c. On areas to be seeded by broadcasting, till the seedbed immediately prior to seeding to a roughened condition and make the soil loose to an approximate 2 inches depth. Soil condition similar to that obtained by walking a cleated crawler tractor up and down the slopes is required. Where slopes are benched, no additional preparation will be required.

d. Roughly finish slopes to be topsoiled. After topsoil has been spread, prepare the surface for seeding as specified above.

e. On areas subject to severe erosion, the extent of seedbed preparation is not to exceed the area on which the entire seeding and mulching can be applied within one day's operation. If conditions occur which prevent seeding in a proper furrow, or if the roughened condition is destroyed, prepare the seedbed again.

2. Fertilizing (Commercial).

a. The type and application rate of fertilizer is identified in the Contract Documents. Apply the fertilizer by the most appropriate of the following methods:

1. Fertilizer drill.

2. Broadcast.

3. Water applied.

b. Wherever possible, place fertilizer with the seed at time of drilling by use of a fertilizer attachment. Fertilizer may be broadcast (wet or dry) or drilled. Fertilizer may be applied with irrigation water as directed. When fertilizing established stands, apply fertilizer when average noontime temperatures are 60^{o}F or under.

3. Seeding.

a. The mix and rate of seeding is designated in the Contract Documents.

b. Apply the seed uniformly over the area by the most appropriate of the following methods.

1. Drill seeding (double disc with agitator).

2. Broadcast seeding.

a. Hydro-seeder.

b. Dry (whirlwind).

c. Where mulch is not to be used after drilling, plant seed at the bottom of approximately 2 inch depth furrows shaped by the double disc openers. Regulate the speed and spring pressure so that not over 1/2 inch of soil covers the seed and the furrows are left open. Drag chains will not be allowed. Where mulch is to be used after drilling, place seed as shallow in the soil as possible and still be well covered. Do not seed when wind interferes with seed placement. Drill spacing must not exceed 9 inches. Seed legume seed through a separate box from the grass seed, with seed spouts out, or broadcast ahead of the drill. Broadcast native seeds in the mix immediately ahead of the drill.

d. Thoroughly mix seed before placing in the drill or seeder box.

e. Where it is not practical to drill, broadcast the seed by use of a hydro-seeder or dry broadcast equipment. Do not mix fertilizer with the seed in the hydro-seeder. Do not agitate seed in the hydro-seeder over 30 minutes.

f. Do not drive trucks or equipment over the area after seed is in place.

4. Mulching.

a. Apply straw, grass hay, shredded bark, or wood fiber mulch as directed. Use the type of mulch as specified and spread uniformly at the following rates:

1. Straw or Grass Hay (air dry): 2 ton/acre.

2. Wood Fiber: 1 ton/acre.

3. Shredded Bark: per Contract Documents.

4. Process Grass Straw: 1 ton/acre.

b. Unless otherwise directed, anchor straw, grass hay, or shredded bark into the soil by use of a heavy disc with flat scalloped discs approximately 1/4-inch thick, having dull edges and spaced no more than 9 inches apart. Anchoring to a depth of at least 2 inches, and with no more than one pass of the equipment on the same surface. When straw, grass hay, or shredded bark is not anchored mechanically, tie it down with tack applied at the rate of approximately 200 gallons/ton of mulch. Apply wood fiber by hydro-seeder.

c. Do not mulch when wind interferes with mulch placement.

3.2. EROSION BLANKET

A. The type of blanket is as identified in the Contract Documents.

1. Place the blanket with fibers in contact with the soil over the entire area covered. On slopes the blanket may be unrolled either horizontally or vertically to the slope and lapped 4 inches over the adjoining blanket in the direction of flow and stapled. In ditches, the minimum width of blankets is to be 3 feet and lapped 4 inches. Staple blanket at joints, corners and at approximate 5-foot intervals with approved staples. Bury the ends and edges.

3.3 RIPRAP

A. Excavation

1. Excavate toe trench for riprap below probable scour elevation or to the elevation shown on the Contract Documents.

2. Where scour elevation can not be determined and no elevation is shown on the Contract Documents, excavate trench 2 feet below channel grade.

3. Do not place any stones or concrete until toe trench and slopes have been approved.

B. Loose Riprap

1. Place so that larger stones are in contact with each other and voids are filled with the finer materials, producing a well-graded compact mass.

2. Place the stone on the slope in a manner to ensure the specified thickness in one operation.

3. When placing riprap, do not disturb the underlying material.

4. Do not place in layers parallel to the slope.

C. Hand Placed Riprap

1. Place stones by hand on prepared slopes to the thickness specified or directed.

2. Start by placing a course of the largest stones in the toe trench.

3. Place each stone so that it is partly on the prepared slope and not completely on the stone below and thoroughly tamp or drive into place.

4. Make the exposed face as smooth as the shape and size of the stones will permit. Face not to vary more than 3 inches from a plane surface on the required slope.

D. Sack Riprap

1. Sack riprap to consist of 0.667 cubic foot of Class 1500 psi concrete placed in approved burlap or cloth sacks. Deposit on the slope to be protected in accordance with the Contract Documents or as directed.

2. Place concrete in sacks in a uniform volume, leaving enough room to tie the sacks.

3. Place the sacks in longitudinal rows in the trench and on the slope.

4. Place the sacks on the slope such that their outside faces are reasonably true to line and grade.

5. Place with the tied end turned under and firmly press the sack in place.

6. Stagger joints in succeeding rows.

7. Do not place in freezing weather. Replace any work damaged by freezing at no additional compensation from the Owner.

8. Concrete may be placed in sacks in a dry state and dampened in place.

E. Concrete Stabilized Riprap

1. Place riprap in accordance with 3.3 or 3.4 above, then cover with concrete.

   a. Clean surface of stones to be concrete of adhering dirt and clay and then moisten prior to placement of concrete.

   b. Place concrete on rock surface by use of chutes, tubes, buckets, pneumatic equipment or any other approved method that will prevent segregation of the materials.

   c. Immediately after placement, spade or rod the concrete into the rock voids to the depth shown on the Contract Documents.

   d. After placing concrete, thoroughly brush the rocks so that their top surfaces are exposed.

   e. Expose the outer rocks 33% to 25% of their diameter above the concrete surface.

   f. Do not allow any workmen or equipment on the finished area for at least 24 hours, or longer if ordered.

PART 4 MEASUREMENT AND PAYMENT

4.1 Use the following unit price as designated in the Bid Schedule. If required and not listed in the Bid Schedule, the following Bid Items are to be considered incidental to other Bid Items.

A. Seedbed Preparation: By the acre based on plan quantities except for authorized additives or deletions. Includes full compensation for all materials, labor and equipment necessary for completing the work and all appurtenances not itemized on the Bid Schedule.

1. Bid Schedule Payment References: 206.4.1.A.1.
2. Bid Schedule Description: Seedbed Preparation...acre (AC).

B. Seeding: By the acre based on plan quantities except for authorized additives or deletions. Includes full compensation for all materials, labor and equipment necessary for completing the work and all appurtenances not itemized on the Bid Schedule.

1. Bid Schedule Payment References: 206.4.1.B.1.
2. Bid Schedule Description: Seeding...acre (AC).

C. Mulching: By the acre based on plan quantities except for authorized additives or deletions. Includes full compensation for all materials, labor and equipment necessary for completing the work and all appurtenances not itemized on the Bid Schedule.

1. Bid Schedule Payment References: 206.4.1.C.1.
2. Bid Schedule Description: Mulching...acre (AC).

D. Mulch Anchoring (mechanical): By the acre based on plan quantities except for authorized additives or deletions. Includes full compensation for all materials, labor and equipment necessary for completing the work and all appurtenances not itemized on the Bid Schedule.

1. Bid Schedule Payment References: 206.4.1.D.1.
2. Bid Schedule Description: Mulch Anchoring (mechanical)...acre (AC).

E. Mulch Anchoring (tack): By the acre based on plan quantities except for authorized additives or deletions. Includes full compensation for all materials, labor and equipment necessary for completing the work and all appurtenances not itemized on the Bid Schedule.

1. Bid Schedule Payment References: 206.4.1.E.1.
2. Bid Schedule Description: Mulch Anchoring (tack)...acre (AC)..

F. Erosion Blanket: By the acre based on plan quantities except for authorized additives or deletions. Includes full compensation for all materials, labor and equipment necessary for completing the work and all appurtenances not itemized on the Bid Schedule.

1. Bid Schedule Payment References: 206.4.1.F.1.
2. Bid Schedule Description: Erosion Blanket...acre (AC).

G. Fertilizing: By the acre based on plan quantities except for authorized additives or deletions. Includes full compensation for all materials, labor and equipment necessary for completing the work and all appurtenances not itemized on the Bid Schedule.

1. Bid Schedule Payment References: 206.4.1.G.1.
2. Bid Schedule Description: Fertilizing...acre (AC).

H. Loose Riprap: By the ton, cubic yards based on neat line dimensions in place.

1. Bid Schedule Payment Reference: 206.4.1.H.1.
2. Bid Schedule Description: Loose Riprap…ton (TON)

3. Bid Schedule Payment Reference: 206.4.1.H.3.
4. Bid Schedule Description: Loose Riprap…cubic yard (CY)

I. Hand Placed Riprap: By the ton, cubic yards based on neat line dimensions in place.

1. Bid Schedule Payment Reference: 206.4.1.I.1.
2. Bid Schedule Description: Hand Placed Riprap… ton (TON)

3. Bid Schedule Payment Reference: 206.4.1.I.3
4. Bid Schedule Description: Hand Placed Riprap… cubic yard (CY)

J. Sack Riprap: By the ton, cubic yards based on neat line dimensions in place.

1. Bid Schedule Payment Reference: 206.4.1.J.1.
2. Bid Schedule Description: Sack Riprap…ton (TON)

3. Bid Schedule Payment Reference: 206.4.1.J.3
4. Bid Schedule Description: Sack Riprap…cubic yard (CY)

K. Concrete Stabilized Riprap: By the ton, cubic yards based on neat line dimensions in place.

1. Bid Schedule Payment Reference: 206.4.1.K.1.
2. Bid Schedule Description: Concrete Stabilized Riprap…ton (TON)

3. Bid Schedule Payment Reference: 206.4.1.K.3.
4. Bid Schedule Description: Concrete Stabilized Riprap…cubic yard (CY)

END OF SECTION

SECTION 1001

CONSTRUCTION SITE MANAGEMENT

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Short-term construction site management including:

1. Timing of Construction.
2. Staging Areas.
3. Preservation of Existing Vegetation.
4. Clearing Limits.
5. Stabilized Construction Entrance.
6. Erosion Prevention of Temporary Roads.

1.2 RELATED SECTIONS

A. Section 201 – Clearing and Grubbing.

B. Section 202 – Excavation and Embankment.

C. Section 205 – Dewatering.

D. Section 206 – Permanent Erosion Control.

E. Section 301 – Trench Excavation.

F. Section 305 – Pipe Bedding.

G. Section 306 – Trench Backfill.

H. Division 1000 – Construction Stormwater Best Management Practices.

1.3 REFERENCES

A. Idaho Department of Environmental Quality's Catalog of Stormwater Best Management Practices for Idaho Cities and Counties.

1.4 SUBMITTALS

A. Submit a Construction Site Discharge and/or Storm Water Pollution Prevention Plan for materials and methods to be installed or furnished under this section.

B. Submit manufacturer's certification that construction site management materials meet or exceed specified requirements.

C. Submit manufacturers' installation instructions and maintain copy at the jobsite.

D. When construction will disturb more than one acre, submit a Notice of Intent (NOI) to the Environmental Protection Agency and prepare and implement a Storm Water Pollution Prevention Plan, unless specified otherwise in the Contract Documents.

1.5 DELIVERY, STORAGE AND HANDLING

A. Unload, store and load construction site management materials in a manner which prevents damage.

PART 2 MATERIALS

2.1 INCORPORATED BY REFERENCE

A. Refer to Idaho Department of Environmental Quality's Catalog of Stormwater Best Management Practices at:

www.deq.state.id.us

PART 3 WORKMANSHIP

3.1 INCORPORATED BY REFERENCE

A. Refer to Idaho Department of Environmental Quality's Catalog of Stormwater Best Management Practices at:

www.deq.state.id.us

B. Unless otherwise specified in the Contract Documents, monitor, maintain, and remove BMPs in accordance with the Stormwater Pollution Prevention Plan and NOI.

PART 4 MEASUREMENT AND PAYMENT

4.1 Unless specifically indicated in the Bid Schedule, all labor, materials and equipment required for construction site management will be considered incidental to other Bid Items.

A. Sediment Control: By the lump sum for all work associated with erosion and sediment control including preparation and submittal of Sediment and Erosion Control Plans. Includes all appurtenances not itemized on the Bid Schedule.

1. Bid Schedule Payment Reference: 1001.4.1.A.1
2. Bid Schedule Description: Sediment Control…lump sum (LS).

4.2 Use the following unit price option as designated on the Bid Schedule. Includes all labor, materials and equipment for permitting, preparing, installing, maintaining, and removing temporary stabilized surfaces. If not separately indicated in the Bid Schedule, include this item in other Bid Items.

A. Staging Area: Per each as specified in the Bid Schedule. Includes all appurtenances not itemized in the Bid Schedule.

1. Bid Schedule Payment Reference: 1001.4.2.A.1
2. Bid Schedule Description: Staging Area…each (EA).

B. Stabilized Construction Entrance: Per each as specified in the Bid Schedule. Includes all appurtenances not itemized in the Bid Schedule.

1. Bid Schedule Payment Reference: 1001.4.2.B.1
2. Bid Schedule Description: Stabilized Construction Entrance… …each (EA).

C. Erosion Prevention of Temporary Roads: Per lump sum as specified in the Bid Schedule. Includes all appurtenances not itemized in the Bid Schedule.

1. Bid Schedule Payment Reference: 1001.4.2.C.1
2. Bid Schedule Description: Erosion Prevention of Temporary Roads… …lump sum (LS).

END OF SECTION

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SECTION 1002

CONSTRUCTION SITE HOUSEKEEPING

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Short-term construction site housekeeping practices for storm water management including:

1. Dust Control.

2. Cover Materials and Equipment.

3. Spill Prevention and Control.

4. Vehicle/Equipment Washing and Maintenance.

5. Waste Management.

1.2 RELATED SECTIONS

A. Section 201 – Clearing and Grubbing.

B. Section 202 – Excavation and Embankment.

C. Section 205 – Dewatering.

D. Section 206 – Permanent Erosion Control.

E. Section 301 – Trench Excavation.

F. Section 305 – Pipe Bedding.

G. Section 306 – Trench Backfill.

H. Division 1000 – Construction Stormwater Best Management Practices.

1.3 REFERENCES

A. Idaho Department of Environmental Quality's Catalog of Stormwater Best Management Practices.

1.4 SUBMITTALS

A. Submit a Construction Site Discharge and/or Storm Water Pollution Prevention Plan for materials and methods to be installed or furnished under this section.

B. Submit manufacturer's certification that construction site management materials meet or exceed specified requirements.

C. Submit manufacturer's installation instructions and maintain copy at the jobsite.

D. When construction will disturb more than one acre, submit a Notice of Intent (NOI) to the Environmental Protection Agency and prepare and implement a Storm Water Pollution Prevention Plan, unless specified otherwise in the Contract Documents.

1.5 DELIVERY, STORAGE AND HANDLING

A. Unload, store and load construction site management materials in a manner which prevents damage.

PART 2 MATERIALS

2.1 INCORPORATED BY REFERENCE

A. Refer to Idaho Department of Environmental Quality's Catalog of Stormwater Best Management Practices at:

www.deq.state.id.us

PART 3 WORKMANSHIP

3.1 INCORPORATED BY REFERENCE

A. Refer to Idaho Department of Environmental Quality's Catalog of Stormwater Best Management Practices at:

www.deq.state.id.us

B. Unless otherwise specified in the Contract Documents, monitor, maintain, and remove BMPs in accordance with the Stormwater Pollution Prevention Plan and NOI.

PART 4 MEASUREMENT AND PAYMENT

4.1 Unless specifically indicated in the Bid Schedule, all labor, materials and equipment required for construction site housekeeping will be considered incidental to other Bid Items.

END OF SECTION

SECTION 1003

SEDIMENT COLLECTION

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Short-term sediment collection for construction activities including:

1. Straw Bales.
2. Biofilter Bags.
3. Silt Fence.
4. Vegetative Buffer Strip.
5. Sediment Trap Basin.
6. Portable Sediment Tank.

1.2 RELATED SECTIONS

A. Section 201 – Clearing and Grubbing.

B. Section 202 – Excavation and Embankment.

C. Section 205 – Dewatering.

D. Section 206 – Permanent Erosion Control.

E. Section 301 – Trench Excavation.

F. Section 305 – Pipe Bedding.

G. Section 306 – Trench Backfill.

H. Division 1000 – Construction Stormwater Best Management Practices.

1.3 REFERENCES

A. Idaho Department of Environmental Quality's Catalog of Stormwater Best Management Practices.

1.4 SUBMITTALS

A. Submit a Construction Site Discharge and/or Storm Water Pollution Prevention Plan for materials and methods to be installed or furnished under this section including design of sediment basins.

B. Submit manufacturer's certification that construction site management materials meet or exceed specified requirements.

C. Submit manufacturers' installation instructions and maintain copy at the jobsite.

D. When construction will disturb more than one acre, submit a Notice of Intent (NOI) to the Environmental Protection Agency and prepare and implement a Storm Water Pollution Prevention Plan, unless specified otherwise in the Contract Documents.

1.5 DELIVERY, STORAGE AND HANDLING

A. Unload, store and load construction site management materials in a manner which prevents damage or excessive exposure to sunlight and weather.

PART 2 MATERIALS

2.1 INCORPORATED BY REFERENCE

A. Refer to Idaho Department of Environmental Quality's Catalog of Stormwater Best Management Practices at:

www.deq.state.id.us

PART 3 WORKMANSHIP

3.1 INCORPORATED BY REFERENCE

A. Refer to Idaho Department of Environmental Quality's Catalog of Stormwater Best Management Practices at:

www.deq.state.id.us

B. Unless otherwise specified in the Contract Documents, monitor, maintain, and remove BMPs in accordance with the Stormwater Pollution Prevention Plan and NOI.

PART 4 MEASUREMENT AND PAYMENT

4.1 Use one of the following unit price options as designated on the Bid Schedule. Includes all labor, materials and equipment for permitting, preparing, installing, maintaining, and removing temporary sediment collection facilities. If not separately indicated in the Bid Schedule, include this item in other Bid Items.

A. Straw Bales: Per linear foot Includes all appurtenances not itemized in the Bid Schedule.

1. Bid Schedule Payment Reference: 1003.4.1.A.1.
2. Bid Schedule Description: Straw Bales…linear foot (LF).

B. Biofilter Bags: Per linear foot. Includes all appurtenances not itemized in the Bid Schedule.

1. Bid Schedule Payment Reference: 1003.4.1.B.1.
2. Bid Schedule Description: Biofilter Bags…linear foot (LF).

C. Silt Fence: Per linear foot measured on a horizontal basis along the centerline of the silt fence. Includes all appurtenances not itemized in the Bid Schedule.

1. Bid Schedule Payment Reference: 1003.4.1.C.1.
2. Bid Schedule Description: Silt Fence…linear foot (LF).

D. Vegetation Buffer Strip: Per linear foot measured on the horizontal centerline of the vegetation buffer strip. Includes all appurtenances not itemized in the Bid Schedule.

1. Bid Schedule Payment Reference: 1003.4.1.D.1.
2. Bid Schedule Description: Vegetation Buffer Strip…linear foot (LF).

E. Sediment Trap Basin: Per each as specified in the Bid Schedule. Includes all appurtenances not itemized in the Bid Schedule.

1. Bid Schedule Payment Reference: 1003.4.1.E.1.
2. Bid Schedule Description: Sediment Trap Basin…each (EA).

F. Portable Sediment Tank: Per each as specified in the Bid Schedule. Includes all appurtenances not itemized in the Bid Schedule.

1. Bid Schedule Payment Reference: 1003.4.1.F.1.
2. Bid Schedule Description: Portable Sediment Tank…each (EA).

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SECTION 1007

SLOPE STABILIZATION

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Short-term slope stabilization for construction activities including:

1. Top Soiling.

2. Seeding.

3. Sodding.

4. Erosion Control Planting.

1.2 RELATED SECTIONS

A. Section 201 – Clearing and Grubbing.

B. Section 202 – Excavation and Embankment.

C. Section 205 – Dewatering.

D. Section 206 – Permanent Erosion Control.

E. Section 301 – Trench Excavation.

F. Section 305 – Pipe Bedding.

G. Section 306 – Trench Backfill.

H. Section 601 – Culvert, Storm Drain, and Gravity Irrigation Pipe.

I. Division 1000 – Construction Stormwater Best Management Practices.

1.3 REFERENCES

A. Idaho Department of Environmental Quality's Catalog of Stormwater Best Management Practices.

1.4 SUBMITTALS

A. Submit a Construction Site Discharge and/or Storm Water Pollution Prevention Plan for materials and methods to be installed or furnished under this section.

B. Submit manufacturer's certification that construction site management materials meet or exceed specified requirements.

C. Submit manufacturers' installation instructions and maintain copy at the jobsite.

D. When construction will disturb more than one acre, submit a Notice of Intent (NOI) to the Environmental Protection Agency and prepare and implement a Storm Water Pollution Prevention Plan, unless specified otherwise in the Contract Documents.

1.5 DELIVERY, STORAGE AND HANDLING

A. Unload, store and load slope protection materials in a manner which prevents damage or excessive exposure to sunlight and weather.

PART 2 MATERIALS

2.1 INCORPORATED BY REFERENCE

A. Refer to Idaho Department of Environmental Quality's Catalog of Stormwater Best Management Practices at:

www.deq.state.id.us

PART 3 WORKMANSHIP

3.1 INCORPORATED BY REFERENCE

A. Refer to Idaho Department of Environmental Quality's Catalog of Stormwater Best Management Practices at:

www.deq.state.id.us

B. Unless otherwise specified in the Contract Documents, monitor, maintain, and remove BMPs in accordance with the Stormwater Pollution Prevention Plan and NOI.

PART 4 MEASUREMENT AND PAYMENT

4.1 Unless specifically indicated in the Bid Schedule, all labor, materials and equipment required for slope stabilization will be considered incidental to other Bid Items.

A. Topsoiling: By the square yard measured on a horizontal basis for the type specified. Includes all appurtenances not itemized in the Bid Schedule.

1. Bid Schedule Payment Reference: 1007.4.1.A.1
2. Bid Schedule Description: Topsoiling… square yard (SY).

B. Seeding: By the square yard measured on a horizontal basis for the type specified. Includes all appurtenances not itemized in the Bid Schedule.

1. Bid Schedule Payment Reference: 1007.4.1.B.1
2. Bid Schedule Description: Seeding… square yard (SY).

C. Sodding: By the square yard measured on a horizontal basis for the type specified. Includes all appurtenances not itemized in the Bid Schedule.

1. Bid Schedule Payment Reference: 1007.4.1.C.1
2. Bid Schedule Description: Sodding…square yard (SY).

D. Erosion Control Planting: Per each measured on a horizontal basis for the type specified. Includes all appurtenances not itemized in the Bid Schedule.

1. Bid Schedule Payment Reference: 1007.4.1.D.1
2. Bid Schedule Description: Erosion Control Planting,

Type ____, Size _____…per each (EA).

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SECTION 1103

CONSTRUCTION TRAFFIC CONTROL

PART 1 GENERAL

1.1 SECTION INCLUDES

A. This work consists of furnishing, erecting, maintaining and relocating necessary traffic control dividers at locations prescribed in the Contract Documents or as directed by the Engineer. Furnish all traffic control devices unless otherwise specified in the contract. Retain ownership throughout the project and remove when no longer needed.

1.2 RELATED SECTIONS

A. Section 301 – Trenching.

B. Section 307 – Street Cuts and Surface Repair.

1.3 REFERENCES

A. Manual on Uniform Traffic Control Devices (MUTCD), latest edition as modified

B. AASHTO Standard Specifications for transportation and methods of Sampling and Testing.

C. American Society for Testing and Materials (ASTM).

D. ATSSA Quality Standards for Work Zone Traffic Control Devices.

E. Local jurisdiction requirements.

PART 2 MATERIALS

2.1 GENERAL

A. Material used in the construction of sign panels and other devices and their supporting structures will be at the Contractor's option.

B. All sign, barricade, drum and vertical panel colors, except black, to be reflectorized.

1. Reflective sheeting.

a. Reflectivity sheeting to conform to ASTM D 4956.

b. Retro-reflective sheeting to conform to ASTM D 4956 supplemental requirement S1, if specified.

c. Reboundable retro-reflective sheeting to conform to ASTM D 4956 including supplemental requirement S2.

2. Reflectivity requirements.

a. Class B: All reflective sheeting used for removable cutout legends, borders, orange colored signs, barricades, drums vertical panels, and all STOP, YIELD, DO NOT ENTER, and WRONG WAY signs to meet the retro-reflectivity requirements of ASTM D 4956, Type III or Type IV sheeting.

3. Fabrication.

a. Apply the reflective sheeting on aluminum or plywood sections as required in accordance with the manufacturer's recommendations and in such a manner that no background material will be visible when the sign is assembled.

b. Do not splice reflectorized material on panel 24 inches or less in width.

c. For panels larger than 24 inches in width, only one splice is allowed.

1) Placement: Place splice horizontal or at 45 degrees from horizontal with the top sheet overlapping the bottom sheet not less than 3/16 inches.

2) Butt Splices: Signs, which are screen processed with transparent color to have butt splices.

3) Butt Splice Gaps: Less than or equal to 1/32 inches between the sheets or reflective material.

4) Other: In addition to the above limitations, manufactured splices will be accepted.

4. Match color of sign faces composed of two or more pieces of panel or reflective sheeting. Non-uniform shading and undesirable contrast between adjacent widths of applied sheeting will not be accepted.

5. Cracks, discoloration, appearance of air pockets, or any other indication of non-adherence in the sheeting will not be accepted.

6. Finish.

   a. Sealing: Seal sign edges and all splices of the reflective sheeting in conformance with the methods specified by the reflective sheeting manufacturer.

   b. Cutting: Cut direct applied cutout reflective sheeting legends, borders and symbols with a smooth regular outline, free from ragged or torn edges.

   c. Cutting: Cut letters, numerals and symbols having interior or exterior rounded corners with a smooth 3/16 inches ±1/16 inches radius.

C. Drums used for traffic control devices to be constructed of plastic or other approved yielding materials.

   1. Metal drums are not acceptable for use.

   2. Plastic or other yielding drums to be designed to limit rolling to a minimum if upset by outside forces.

   3. All drums to have reflective markings on the bottom and top unless the base and top are designed to separate on impact.

   4. Sandbags or other weights are not permitted on top of drums.

D. Striping material to be 4 inches wide, retro-reflective pressure sensitive tape manufactured for use as pavement striping, suitable for use on either concrete or asphalt surfaces.

   1. Tape to be either white or yellow as specified.

   2. Tape to have a precoated pressure-sensitive adhesive with no protective liner that does not require activation procedures.

   3. The striping materials to be thin, flexible, formable and durable, and after placement remain conformed to the texture of the pavement surface.

   4. Average thickness of material, based on 5 μm readings of different locations, to be greater than or equal to 9 mils.

E. Striping material used as temporary striping to be removable without requiring sandblasting, solvents, or grinding methods. It will not be necessary to remove material between successive asphalt overlays.

2.2 Advance warning arrow panels to meet the following requirements:

TYPE	MINIMUM SIZE	MINIMUM NUMBER OF PANEL LAMPS	MINIMUM LEGIBILITY DISTANCE*
A	24 x 48 inches	12	0.5 mile
B	30 x 54 inches	13	0.75 mile
C	48 x 96 inches	15	1.0 mile

Minimum legibility requirements are the distance at which the arrow panel message can be comprehended by a driver on a sunny day or a clear night.

A. Panels to be of solid construction and be finished non-reflective black.

1. Mount panels on a vehicle, trailer, or other suitable support, with the bottom of the panel at least 6 feet above the roadway surface.

2. Panels to be provided with remote controls and appropriate self-contained power source.

3. Panels to be equipped with hour meters which record only actual hours of operation.

B. Advanced warning arrow panels to have the following mode selections:

1. Left or right flashing or sequential arrows, or

2. Left or right sequential chevrons, and

3. Double flashing arrows, and

4. Caution (4 or more lamps arranged in a pattern which will not indicate a direction).

C. Advanced warning arrow panels to be capable of minimum 50% dimming from rated lamp voltage.

1. The flashing rate of the lamps should not be less than 25 nor more than 40 flashes per minute.

2. Minimum lamp on-time to be 50% for the flashing arrow and 25% for the sequential arrow.

D. Temporary flexible raised pavement markers to be yellow body with yellow reflective tape on two sides and a protective cover or white body with white reflective tape on one side and a protective cover.

1. Marker body and cover to be manufactured from a flexible polyurethane material with a factory applied adhesive on the marker base with release paper.

2. Cover to be attached to vertical portion of the marker in such a way that it will not come off because of traffic, but can be easily removed manually.

3. Reflective tape for the marker to be metalized polycarbonate microprism retro-reflective material with acrylic backing or equal.

4. Tape to have a minimum reflectance of 1800 candlepower/ footcandle/sf at 0.1° observation and 0° entrance angles.

E. Portable tubular markers used for traffic control devices.

1. To be constructed of plastic or other approved yielding materials.

2. Metal markers are not acceptable for use.

3. Markers to be orange or fluorescent orange plastic, 36 inches minimum height, 3.5 inches minimum width when facing traffic.

4. Markers to have two 3 inches wide retro-reflective white bands placed a maximum of 2 inches from the top with a maximum of 6 inches between the bands.

5. Base to weigh a minimum of 5 pounds.

6. Reflectivity to meet the requirements of Class B sheeting of this subsection.

PART 3 WORKMANSHIP

3.1 General.

A. Conform to the latest edition of the Manual on Uniform Traffic Control Devices (MUTCD) for the design and use of traffic control devices.

B. Submit a Traffic Control Plan and obtain necessary permits for approval by the Engineer and the Agency responsible for the roadway.

C. Do not cause unnecessary inconvenience to the public, as determined by the Engineer.

D. Provide and maintain continuous, safe and adequate pedestrian and vehicle access to each residence, fire hydrant, commercial and industrial establishment, church, school, parking lot, service station, motel, fire station, police station, hospital, and similar establishments, unless otherwise approved by the Engineer. All work done in public rights-of-way must be in accordance with the Americans with Disabilities Act of 1990 (ADA).

E. Allow traffic to pass through the work area unless a detour is approved by the Engineer.

F. Maintain traffic control devices by immediately cleaning, servicing, or replacing any device that is lost, stolen, destroyed, damaged, inoperative, or when its retro-reflectivity is reduced to 75% for Class A or Class B sheeting of the required initial retro-reflectivity.

G. Used signs with the specified sheeting materials, legends, and colors, will be considered satisfactory if they meet the above retro-reflectivity requirements.

H. Repair or replace all damaged traffic control devices. This work is considered incidental to this item.

I. Provide positive devices to prevent barricades and drums from being blown over.

J. Employ properly trained, equipped, attired and certified flaggers if traffic is constricted or if deemed necessary by the Engineer.

K. Use pavement-marking tape to temporarily mark lane separation lines for traffic channelization. Install pavement-marking tape as soon as practicable and before nightfall, on all newly placed pavements, including leveling courses, scrub coats, asphalt treated bases, road mix pavements, and asphalt plant mix surface courses.

1. Install 4 inch x 4 foot sections of pavement-marking tape at the same cycle length as detailed on the permanent marking plan.

2. On roads of severe curvature, install 4 inch x 2 foot lengths of pavement-marking tape at half cycle lengths.

3. During its period of use, maintain the tape in its proper location and in and effective condition to serve the purpose for which it is intended.

3.3 Use temporary flexible raised pavement markers to temporarily mark lane separation lines on all pavement being used by traffic during seal coating operations on a daily basis.

A. Do not apply markers more than 24 hours prior to seal coat operations.

B. Apply markers on their own respective color of pavement markings.

C. Place one marker at the same cycle length as permanent marking.

D. Use half cycle length on roadways with severe curvature.

E. Place markers within a turn bay or painted median at no more than 25 feet intervals including all angle points.

F. Supply and apply additional markers and vary spacing as directed.

3.4 Maintain all traffic control items when in use such that functionality is maintained in accordance with the MUTCD and to the satisfaction of the Engineer. Maintenance will be considered incidental to other bid items unless specifically listed in the Bid Schedule.

PART 4 MEASUREMENT AND PAYMENT

4.1 Use one or more of the following unit price options as designated on the Bid Schedule. Includes all labor, material, and equipment required to provide temporary construction traffic control as specified and all other items incidental thereto. If required and not listed in the Bid Schedule, the following Bid Items are to be considered incidental to other Bid Items. Traffic control maintenance will be considered incidental to other bid items unless specifically listed in the Bid Schedule.

A. Construction Traffic Control: By the lump sum. Includes labor, maintenance and all ancillary items necessary.

1. Bid Schedule Payment Reference: 1103.4.1.A.1
2. Bid Schedule Description: Construction Traffic Control….lump sum (LS)

B. Traffic Control Signs: Per square foot for the types and signs specified.

1. Bid Schedule Payment Reference: 1103.4.1.B.1
2. Bid Schedule Description: Traffic Control Signs…. square foot (SF)

C. Traffic Control Barricades: Per each for the type of barricade specified.

1. Bid Schedule Payment Reference: 1103.4.1.C.1.
2. Bid Schedule Description: Traffic Control Barricades, Type _____…. each (EA).

D. Traffic Control Drums: Per each for the type of drums specified.

1. Bid Schedule Payment Reference: 1103.4.1.D.1.
2. Bid Schedule Description: Traffic Control Drums … each (EA).

E. Advance Warning Arrow Panel: Per each for the type specified.

1. Bid Schedule Payment Reference: 1103.4.1.E.1.
2. Bid Schedule Description: Advance Warning Arrow Panel….each (EA)

F. Temporary Flexible Raised Pavement Markers: Per each for the color of marker specified.

1. Bid Schedule Payment Reference: 1103.4.1.F.1.
2. Bid Schedule Description: Temporary Flexible Raised Pavement Markers….each (EA).

G. Traffic Control Maintenance: For each day traffic control is in use.

1. Bid Schedule Payment Reference: 1103.4.1.G.1.
2. Bid Schedule Description: Traffic Control Maintenance….day (DAY)

H. Portable Tubular Markers: Per each for the type of marker specified.

1. Bid Schedule Payment Reference: 1103.4.1.H.1.
2. Bid Schedule Description: Portable Tubular Markers….each (EA)

I. Traffic Control Flaggers: Per man-hour of traffic control during construction.

1. Bid Schedule Payment Reference: 1103.4.1.I.1.
2. Bid Schedule Description: Traffic Control Flaggers … man hours (MH).

J. Traffic Control Maintenance: Per man-hour of approved maintenance during construction. Maintenance shall be required on all projects, but incidental to other traffic control bid items if not listed as a separate bid item.

1. Bid Schedule Payment Reference: 1103.4.1.J.1.
2. Bid Schedule Description: Traffic Control Maintenance:… man hours (MH).

K. Temporary Striping Tape: Per linear foot of centerline for the type of tape installed.

1. Bid Schedule Payment Reference: 1103.4.1.K.1.
2. Bid Schedule Description: Temporary Striping Tape… linear foot (LF).

END OF SECTION

SECTION 2010

MOBILIZATION

PART 1 GENERAL

1.1 SECTION INCLUDES

A. This work consists of preparatory work including but not limited to:

1. Movement of personnel.

2. Movement of equipment.

3. Project site supplies and incidentals.

4. Establishment of project offices, buildings and other facilities.

5. All work and operations which must be performed or costs incurred before beginning work on the various contract items.

6. Work signs.

PART 2 MATERIALS

2.1 GENERAL

A. When directed, install work signs per Standard Drawings SD-2010 A - Installation of Informational Signs, SD-2010 B-Owner Informational Signs and SD-2010 C-Utility Informational Signs.

PART 3 WORKMANSHIP

3.1 PROJECT INFORMATIONAL SIGNS

A. Furnish, install and subsequently remove informational signs at each end of the Project. Informational signs shall be in accordance with Standard Drawings SD-2010A, SD-2010B and SD-2010C in the ISPWC. Furnish and place the information signs at the time they place their other construction signs, barricades and traffic control devices, and shall remove the signs upon completion of the work. Two sizes of signs are designated. One size designation is for projects that are one month or longer in duration. All costs incurred for signs, barricades and traffic control devices shall be included under Item 2010.4.1.A.1 in the Bid Schedule.

3.2 SANITARY FACILITIES

A. When included in the Bid Schedule, provide and maintain enclosed portable restroom facilities for the use of Project personnel. Provide at least one restroom for each ten (10) full-time employees. Maintain the restroom facilities in a neat and sanitary condition and, as a minimum, clean and service the facilities on a weekly basis.

B. Place the facilities in a location which is in reasonable walking access distance for the Contractor's employees. This may necessitate periodic relocation for moving operations. Place the facilities in a location which minimizes the visual impact on adjacent property owners and in a location and placement method which minimizes the possibility of vandalism. On some projects, this may require placing the restroom facilities on trailers to allow for daily removal from the site and storage during non-working hours in a secure location.

PART 4 MEASUREMENT AND PAYMENT

4.1 Use the following lump sum Bid Item as indicated in the Bid Schedule. Includes all labor, material and equipment required to perform the work as specified. All mobilization costs for subcontractors is considered incidental to this bid item. If not listed in the Bid Schedule, mobilization is incidental to other Bid Items.

A. Mobilization: By the lump sum. Allowable amounts for partial payment of mobilization are as follows: 1) 60% of the contract unit price or 6% of the total contract amount, whichever is less, will be paid on the first monthly progress estimate. 2) 40% of the contract unit price or 4% of the total contract amount, whichever is less, will be paid on the second monthly progress estimate providing that productive work on the project has been initiated. 3) Upon completion of all work on the project, payment of any amount bid for mobilization in excess of 10% of the total original contract amount will be paid.

Total contract amount is defined as the original total of all bid items plus the cost of items paid for at invoice as shown on the original bid schedule.

1. Bid Schedule Payment Reference: 2010.4.1.A.1.
2. Bid Schedule Description: Mobilization…lump sum (LS).

B. Sanitary Facilities: By the lump sum for providing and servicing the restroom facilities.

Payment for providing and servicing the restroom facilities will be base upon the Contract lump sum price. For projects that entail more than one pay estimate, the Contractor shall be paid based upon a pro-ration of the Contract price base upon the period of time for payment versus the total length of the Contract.

1. Bid Schedule Payment Reference: 2010.4.1.B.1.
2. Bid Schedule Description: Sanitary Facilities…lump sum (LS).

END OF SECTION