

PART 1 - GENERAL

1.01 SUMMARY:

- A. Section Includes: The work covered by this section consists of site clearing, grading, general and building excavation, disposal of debris and spoils, dewatering, preparation of subgrade, foundations, borrow, embankment, structural and general backfill, restoration, and cleanup necessary to construct the project, all as shown on the drawings and as specified herein.
- B. Related Sections: Drawings and General Provisions of the contract, including the General Covenants and Provisions, Supplementary Covenants and Provisions and General Requirements.
- C. Method of measurement: The quantity of fill material acceptably placed in the embankment will be measured and computed in cubic yards by the average end area method, to the nearest cubic yard.
  - 1. The soil preparation not otherwise included elsewhere will be inclusive.
- D. Basis for payment:
  - 1. Unit Price: If the work of this section is so designated to be paid, the Contractor will be paid the Contract Unit Price for the calculated quantity of material provided as shown on the Drawings and as specified herein.
    - a. Additional payments for increased quantities, labor or equipment usage will only be allowed if a change order is warranted due to a change in project scope or for unforeseen conditions, as determined by the Project Engineer, in accordance with the provisions of the General Conditions of the Contract.

1.02 QUALITY ASSURANCE:

- A. Codes and Standards: Perform all excavation work in compliance with applicable requirements of governing authorities having jurisdiction.
- B. Safety: All excavation work and methods of construction shall conform to the State of Iowa Bureau of Labor and all OSHA Standards.

1.03 JOB CONDITIONS:

- A. Site information shown on the Drawings regarding existing conditions is of a general nature. Visit the site and be familiar with existing conditions.
- B. Observe weather conditions. Attempt no work in frozen conditions without the approval of the DNR Construction Inspector.

1.04 PROTECTION OF PERSONS AND PROPERTY:

- A. Protect from damage existing buildings, walks, paving, fencing, sod, and other items noted to remain. Maintain bench marks, monuments, property stakes, and other reference points.
- B. Protect existing underground utilities to remain. Notify the DNR Construction Inspector of underground utilities or structures encountered but not indicated on drawings.
  - 1. Contractor responsibilities: Correcting damage caused to existing construction, utilities, surfacing, and other items noted to remain at no additional expense to the Owner.
- C. Barricade open excavations occurring as part of this work and provide warning lights.

1.05 EXPLOSIVES:

- A. The use of explosives is not permitted.

PART 2 - PRODUCTS

2.01 GENERAL FILL AND EMBANKMENT MATERIAL:

- A. Materials to be incorporated in the top 12 inches of earth embankment or general fill shall be earthy materials, free from stones larger than 2 inches, broken concrete, roots, or other materials that would significantly affect scarifying, compacting and finishing the subgrade. It is anticipated that the majority of excavation material from the required excavation will be acceptable for this use. Obtain approval of fill material prior to any placement from the DNR Construction Inspector.

2.02 STRUCTURAL BACKFILL MATERIAL:

- A. Structural backfill material shall consist of a natural sand or a mixture of sand with gravel, crushed stone, or other broken fine material to fill all voids in coarser material. The maximum size of any gravel, stone, or broken or fragmented material shall be of such size that 100 percent passes a 6-inch sieve. The liquid limit of the material shall not be greater than 25 and the plasticity index shall not be more than 6. The portion of the material which passes a No. 4 sieve shall conform to the following requirements:

<u>Sieve Size</u>	<u>Weight Passing</u>	Percentage By
No. 4	100	
No. 40	Not more than 75	
No. 100	Not more than 15	
No. 200	Not more than 8	

- B. The material shall be capable of being compacted to 95 percent maximum density without undue weaving and heaving as defined by ASTM D698, Method D.
- C. Obtain approval of fill material prior to any placement from the DNR Construction Inspector.

2.03 GRANULAR DRAINAGE FILL MATERIAL:

- A. Granular drainage fill for use under concrete slabs and walks where shown on the Drawings shall consist of granular, free--draining material, consisting of clean bank run gravel or crushed stone of full range of sizes. Maximum size of aggregate shall be 3/4 inch. 15 to 50% of that portion of weight of fill shall pass the No. 4 sieve.

2.04 TOPSOIL:

- A. Topsoil: Friable clay loam surface soil reasonably free of subsoil, clay lumps, stones and other objects over two inches in diameter, and without weeds, roots and other objectionable materials.

PART 3 - EXECUTION

3.01 SITE CLEARING:

- A. General: Remove vegetation, improvements, or obstructions interfering with installation of new construction. Removal includes digging out of stumps, roots, boulders and any other necessary items, the removal of which is not covered in the work of another section.
- B. Clearing and Grubbing: Clear site of trees, shrubs, and other vegetation, except those indicated or directed to be left standing.
  1. Completely remove stumps, roots, boulders and other debris protruding through the ground. Use only hand methods for grubbing inside drip line of trees indicated to be left standing.
  2. Depressions: Fill depressions caused by clearing and grubbing operations with satisfactory soil materials, unless further excavation work is required or indicated.
  3. Material for clearing and grubbing may be burned in accordance with IAC 567-23.2 and additional local ordinances. Unburned materials may be buried at locations designated by the Engineer.
  4. Material from clearing and grubbing may be processed by such means as chipping of logs, down timber or brush, for mulching material, or salvage of logs and down timber for firewood. Other vegetation may be disked into the existing ground surface. Field fence shall be removed from the project.

3.02 LAYING OUT WORK:

- A. Unless otherwise noted, DNR surveyor will locate new construction, set slope and grade stakes, and otherwise fully lay out work. Contractor will provide intermediate staking to maintain proper grades and control, check existing grades at site against grades or contours indicated on Drawings, and report any differences to Project Engineer before beginning of grading.
- B. Preserve stakes and markers. Replace at no cost to the Owner stakes or markers carelessly or willfully damaged by operations. Assume responsibility for accuracy of lines, grades, and dimensions.

3.03 STRIPPING AND SALVAGING OF TOPSOIL:

- A. Preparation: Mow or otherwise remove weeds, grass and other vegetation on entire area expected to be disturbed by the work of this section.
- B. Sod: Shred sod by shallow plowing, blading or disking throughout the entire area.
- C. Excavation of topsoil: Not required for this project.

3.04 DEWATERING:

- A. Dewatering System: Provide, maintain and operate sufficient well points, headers, pumps, trenches, and sumps to keep all excavations for structures free from water at all times. Submit proposal to the DNR Construction Inspector for review prior to construction.
- B. Surface Runoff: Grading shall be controlled around the excavation to prevent surface water from running into the excavations for the structure.
- C. Saturated Foundations: Prior to placing any concrete for foundations, remove soils in footing excavation that have become saturated with surface water.

3.05 EXCAVATION - GENERAL:

- A. General: General excavation consists of removal of materials of whatever nature, including boulders smaller than 1 cubic yard in volume, required for the construction of structures, roads, and walks. The method of excavating shall be at the Contractor's option, exercising great care to leave the final grade in an undisturbed condition. If final grade is disturbed, it shall be restored to requirements and to the satisfaction of the DNR Construction Inspector. Prior to placing any concrete for footings and foundation work, the Contractor shall notify the DNR Construction Inspector to inspect the excavation and shall obtain approval to proceed with the pour.
- B. Frozen Ground: Provide frost protection for all structural excavation work. Do not place concrete for foundation work on frozen ground.
- C. Protection of Existing Work: Protect existing work, including underground utilities and piping, from damage caused by excavation work. Repair any damage to existing work, utilities, or piping at Contractor's expense.
- D. Storage of Fill Materials: Store excavated fill material away from excavations to avoid slides. Deposit excess earth on site, where directed by DNR Construction Inspector.
- E. Removal of Unsuitable Materials: Cross-sectional dimensions and depths shown on Drawings shall be subject to such changes as may be found necessary by the DNR Construction Inspector to secure foundations free from soft, weathered, shattered and loose or other objectionable materials. Remove unsuitable material encountered and replace with granular materials from established pits satisfactory to the DNR Construction Inspector. Compact granular materials to at least 95 percent of maximum density.
  - 1. When the excavation of unsuitable materials and replacement with granular fill material directed by the DNR Construction Inspector is found to be above normal expectations, it will be paid for at the unit prices listed in the Contractor's submitted cost breakdown.

What constitutes normal expectations will be determined by the Project Engineer. The Project Engineer's decision will be final.

- F. Disposal of Excavated Materials: Materials free from sticks, roots, and other objectionable material may be used on site as directed by the DNR Construction Inspector.
  - 1. Remove excavated materials not suitable for fill as approved by Construction Inspector.

3.06 PLACEMENT OF EMBANKMENT MATERIAL:

- A. Deposit loose material in horizontal layers of not more than eight (8) inches in depth. Provide surface drainage of installed embankment material at all times during construction. Do not place embankment material on frozen ground nor use any frozen embankment material during construction.
- B. Smooth out deposited material to a uniform depth using suitable motor patrol, bulldozer, or self-propelled, tamping-type roller with blade attachment. Continue the initial smoothing and leveling during compaction to provide a surface free of ruts and other irregularities.
- C. Compaction: The desired compaction is to be obtained by the operation of an approved tamping type roller. Compaction will be considered in compliance with a minimum of one roller pass per inch depth of each lift, and continuing until the roller is supported on its tamping feet, as determined by the DNR Construction Inspector.
- D. Should a moisture problem be encountered in compacting the material, the manipulation necessary to incorporate water or to dry the material shall be considered incidental to embankment construction.

3.07 STRUCTURAL EXCAVATION:

- A. Excavate to elevations and dimensions indicated on the Drawings; allow additional space as required for construction operations and inspection.
- B. Remove all existing construction encountered within the excavation to a depth of 6 inches below the indicated elevation of footings and subgrades to receive floor slabs, walks, and paving.
- C. If suitable bearing is not encountered at depth indicated on the Drawings for foundations, immediately notify the DNR Construction Inspector and do not proceed until instructions are given and necessary measurements made for the purpose of establishing additional volume of excavation.
- D. Excavate last 4 inches by hand, if machines are used for excavation.
- E. Fill with concrete, at Contractor's expense, unauthorized excavation carried below bottom of foundation levels shown.
- F. The DNR Construction Inspector will inspect and approve the bottoms of all excavations prior to concrete placement.

3.08 STRUCTURAL BACKFILL:

- A. Start backfill around foundations not less than 24 hours nor more than seven (7) days after application of waterproofing. Backfill walls and piers to approximately the same elevation on each side to equalize pressure.
- B. Compact structural backfill to same requirements as construction of embankments, Section 3.06.

3.09 PLACING BACKFILL ADJACENT TO WALLS AND FOOTINGS:

- A. Deposit fill on each side of piers, walls and free standing structures simultaneously to approximately the same elevation. Protect below grade waterproofing, dampproofing and insulation with a single thickness of 1/2" fiberboard, 1/8" asphalt impregnated board or other approved means. Place fill in workable condition, free of clods, frost, or debris, in 8" lifts, and thoroughly compact each lift with mechanical tamper.
- B. Do not operate heavy equipment for spreading and compacting backfill closer to any wall than a distance equal to the height of the backfill above the top of the footings. Backfill adjacent to walls shall be compacted to the same density as the adjacent fill with a small vibratory or hand tamping compactor.

3.10 PREPARATION OF EARTH SUBGRADE FOR CONCRETE:

- A. When excavating for footings or bottom mat slabs to be cast on native soil, excavate to final grade in a manner so as to not disturb the existing soil. If the soil is disturbed, compact it to the satisfaction of the DNR Construction Inspector. If the soil is not capable of compaction to the satisfaction of the DNR Construction Inspector, remove the disturbed material, and replace it with thoroughly compacted structural backfill material. Do not place concrete on surfaces that are muddy, frozen or contain frost. If during the course of construction, bottom surfaces become muddy or saturated with water, remove the undesirable material and replace with compacted structural backfill as indicated above.

3.11 PLACING PIPE IN FILL:

- A. When it is necessary to place pipe culverts, drain piping, or other appurtenances in general or structural backfill, bring the fill up to at least one foot above the top of the pipe or appurtenances. Do not leave areas of backfill depressed to allow for trenches. After the compacted fill is complete, excavate for the pipe or appurtenances. Backfill materials and compaction are to conform to the fill in which it is placed.

3.12 TRIMMING AND CLEAN UP:

- A. Final trimming and cleaning up shall consist of work as follows:
  - 1. Smooth out all irregularities; fill all washouts, make slopes uniform, slightly rounded at top and bottom, and compact the entire area of the fill to the required lines, grades and cross sections, within one-tenth foot (0.1) above or below the established grade.
  - 2. Where additional material is required, provide similar fill as the one used. Obtain such material from source approved by the DNR Construction Inspector.

3. When work is completed, remove and dispose of surplus material including stumps, trees and brush, and leave premises in a condition acceptable to the DNR Construction Inspector.

3.13 FINISH GRADING:

- A. After completion of rough grading, scarify areas to be seeded fertilized and mulched to a minimum depth of 4", as approved by the DNR Construction Inspector. Grade surfaces to eliminate water pockets or irregularities. Eliminate soil lumps and round off abrupt changes in slope. Spread excess earth on site as directed by DNR Construction Inspector. Topsoil removal, stockpiling, and deposit will not be required for this project.

3.14 SITE RESTORATION:

- A. All disturbed areas within the boundaries of this project (including borrow areas) not specifically receiving a finished surface are to be seeded in accordance with Section 02930 of these Specifications.

END OF SECTION 02200

SECTION 02270  
CLASS "D" SLOPE PROTECTION AND EROSION CONTROL

PART 1 - GENERAL

1.01 SUMMARY:

- A. Section includes: All material, labor and equipment necessary for the placement of riprap required for the protection of and to prevent soil erosion on designated slopes where shown on the drawings and as specified herein. Also included are material, labor and equipment necessary for soil and slope preparation as shown on the drawings not included elsewhere.
- B. Related Sections:
  - 1. Drawings and General Provisions of the contract, including the General Covenants and Provisions, Supplementary Covenants and Provisions and General Requirements.
- C. Method of measurement: All slope protection and erosion control will be delivered in tons. Weigh on accurate scales designed for weighing loaded trucks. Load vehicles to insure against loss of material between the scales and the point of delivery. No deduction will be made for the weight of moisture naturally occurring in the material. Material will not be deposited nor spread until the scale ticket is delivered to the DNR Construction Inspector and the weight of the material verified.
  - 1. The soil preparation not otherwise included elsewhere will be inclusive.
- D. Basis for payment:
  - 1. Unit Price: If the work of this section is so designated to be paid, the Contractor will be paid the Contract Unit Price for the calculated number of tons for each class of material provided as shown on the Drawings and as specified herein.
    - a. Additional payments for increased quantities, labor or equipment usage will only be allowed if a change order is warranted due to a change in project scope or for unforeseen conditions, as determined by the Project Engineer, in accordance with the provisions of the General Conditions of the Contract.

1.02 REFERENCES:

- A. Standards of materials and construction shall conform with the Standard Specifications for Highway and Bridge Construction, 2001 Series of the Iowa Department of Transportation.
  - 1. Section 4130 - Revetment Stone
- B. Where conflicts arise between the Drawings and Code Requirements, the latter shall prevail, unless Drawings are more stringent. Bring all conflicts to the attention of the Project Engineer and the DNR Construction Inspector.

1.03 SUBMITTALS:

- A. Samples: Submit, for verification purposes, samples of each type of material to be used in the work of this section, as requested by the DNR Construction Inspector.
- B. Weight tickets: Provide weight tickets for each truckload.
  - 1. Include the Contractor's name, date of delivery designation of mixture, load identification number, net weight of load and any other data which would aid in the identification of the load.
  - 2. Only weight tickets issued by a state licensed scale will be accepted.

1.04 QUALITY ASSURANCE:

- A. Qualification of Workers: Use adequate numbers of skilled workers who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the requirements and the methods needed for proper performance of the work of this section.

1.05 MATERIAL HANDLING:

- A. Class "D" Revetment Stone: Use a loading method which assures reasonable compliance with specified requirements and is acceptable to the DNR Construction Inspector. The DNR Construction Inspector will visually inspect material prior to loading and may reject material too fine or too coarse and require Contractor to load from another area.

1.06 PROJECT/SITE CONDITIONS:

- A. Existing Conditions: Survey job conditions prior to commencing work. Bring any discrepancies between existing conditions and the Drawings and Specifications to the attention of the Project Engineer/DNR Construction Inspector.
  - 1. Interface with existing conditions in accordance with the obvious intent of Drawings and Specifications. Claims for extra payments as a result of failure to examine existing conditions at the site will not be allowed.

PART 2 - PRODUCTS

2.01 MATERIALS:

- A. Revetment Stone: Provide Revetment Stone (Riprap), where indicated on the drawings, meeting the requirements of IDOT Standard Specification Section 4130 for gradation shown and which when subjected to the freezing and thawing test of the IDOT Laboratory, Method 211, Method C, shall not lose more than 10% for stones crushed to 1-1/2" to 3/4"(nominal) for Class "D" revetment. In addition the percentage of abrasion loss when tested in accordance to AASHTO T96 shall not exceed 50. Do not use material which split in layers less than 4-inches thick, when exposed to natural weathering regardless of the above tests results.
  - 1. Class "D" revetment stone shall be taken from blasted rock or broken concrete. Class "D" material shall not require additional processing. After visual inspection and prior to

loading, the engineer may designate material as too fine or too coarse and may require material to be loaded from another area. Class "E" material shall be processed to the extent that most of the material 3 in. and less shall be removed.

Revetment shall be well-graded material with a nominal top size of 250 lb.\* and meeting the following additional size limitations.

<u>Stone Weight</u>	<u>Minimum % Larger Than Stone Weight</u>
90 lb	50
5 lb	90

\*Note: The Engineer may approve using riprap containing material larger than 250 lb.

- B. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the Contractor subject to the approval of the Project Engineer.

### PART 3 - EXECUTION

#### 3.01 EXAMINATION:

- A. Examine the areas and conditions under which work of this section will be performed. Correct conditions detrimental to timely and proper completion of the work. Do not proceed until unsatisfactory conditions are corrected.

#### 3.02 PREPARATION:

- A. Surface Preparation: Begin with trench excavations to the elevations shown on the Drawings. Shape and dress the slope to be protected so that the revetment surface will be in compliance with the lines and grades shown on the Drawings.
  - 1. To control placement provide a grid system designating those areas shown on the Drawings to receive stone protection.
  - 2. The DNR Inspector will inspect the prepared base directly prior to placement of revetment.

#### 3.03 APPLICATION:

- A. Special Techniques: Spot loads and distribute over the surface marked in grid. Do not place any material until prepared base has been accepted by the DNR Construction Inspector.
- B. Place stone riprap to produce a reasonably well-graded mass of stone with the minimum practicable percentage of voids and in full course thickness in one operation.
  - 1. Distribute the largest stones so that the entire mass conforms approximately to the gradation specified.

2. Where necessary, allow some roughness in surface to break up wave action and decrease the velocity of the mass while keeping the mass fairly compact with all sizes of material in proper proportions.
  3. Hand place or rearrange individual stones with mechanical equipment as necessary to secure results as specified.
- C. Tolerances: Control distribution based on the assumed density of 100 lbs per cubic foot and the actual weights delivered.

END OF SECTION 02270

PART 1 - GENERAL

1.01 SUMMARY:

- A. Section Includes: The work covered by this section consists of furnishing all materials, labor, and equipment necessary or required to install engineering fabric as shown on the Drawings and as specified herein.
- B. Related Sections: Drawings and General Provisions of the contract, including the General Covenants and Provisions, Supplementary Covenants and Provisions and General Requirements as well as, but not necessarily limited to, the following:
  - Section 02200 - Earthwork
  - Section 02270 – Class “D” Slope Protection and Erosion Control
- C. Measurement: Measure the quantity of material installed, to the nearest square yard.
- D. Method of Payment:
  - 1. Contract Unit Price: When payment for the work of this section is so designated, the contractor will be paid the Contract Unit price per square yard.
    - a. In the event that the estimated quantity is larger than the quantity provided, pay the Owner a deduct for the difference in cost for both quantity and labor.
    - b. Additional payments for increased quantities or labor will only be allowed if a change order is warranted due to a change in project scope or for unforeseen conditions, as determined by the Project Engineer, in accordance with the provisions of the General Conditions of the Contract.
  - 3. The Owner will make no additional payments for additional material or labor to correct deficiencies, shortages, or mistakes by the Contractor.

1.02 REFERENCES:

- A. Standards of materials and construction shall conform with the Standard Specifications for Highway and Bridge Construction, Series of 2001, of the Iowa Department of Transportation.

1.03 CONTROL OF MATERIALS:

- A. General: Use materials as specified in this section, tested and approved for use by the DNR Construction Inspector in accordance with the applicable portions of 2001 Series, IDOT Section 4196.
- B. Field Testing: Testing of materials and workmanship will continue throughout the project as conducted by the DNR Construction Inspector. Cooperate in these tests in any way needed to obtain the required data and samples.

- C. Unacceptable materials: Unacceptable materials will be rejected in accordance with 2001 Series, IDOT Section 1106.04.

1.05 JOB CONDITIONS:

- A. Review job conditions prior to commencing work. Bring any discrepancies between existing work and the Drawings and Specifications to the attention of the Project Engineer/ DNR Construction Inspector.
- B. Observe weather conditions. Attempt no work in frozen conditions without written approval from the DNR Construction Inspector.

PART 2 - PRODUCTS

2.01 MATERIALS:

- A. Provide material in accordance with 2001 Series, IDOT Standard Specifications Section 4196.
- B. Engineering Fabric: Provide engineering fabric of a non-woven synthetic material formed into a stable network such that the filaments or yarns retain their relative position to each other. The material shall be mildew, rot, insect, and rodent resistant and shall be inert to commonly encountered chemicals found in soil. During all periods of shipment and storage, the fabric shall be maintained, wrapped in a heavy-duty protective covering to protect the fabric from direct sunlight, ultraviolet rays, mud, dirt, dust, and debris. The material shall be free of defects or flaws which significantly affect it's physical properties. A competent laboratory must be maintained by the producer of the fabric at the point of manufacture to ensure quality control. Each roll of fabric in the shipment is to be labeled with a number or symbol to identify that particular production run.
  - 1. Fabric for use under riprap will be capable of withstanding normal installation stresses and have the following minimum properties:

<u>Property</u>	<u>Value</u>	<u>Test Method</u>
A. Grab strength, dry; lb.....	150.....	ASTM D-4632
B. Elongation, dry; %.....	20.....	ASTM D-4632
C. Water permeability, K; .....	0.02 - 0.30.....	ASTM D-4491
D. Apparent opening size.....	40.....	ASTM D-4751

PART 3- EXECUTION

3.01 GENERAL:

- A. Accomplish the work of this section in accordance with the applicable portions of the 2001 Series, IDOT Standard Specifications for Highway and Bridge Construction.

3.02 PREPARATION OF SUBGRADE:

- A. Shape subgrade prior to starting the work of this section, as directed by the DNR Construction Inspector, and as recommended by the fabric manufacturer.
- B. Install fabric according to the details in the Drawings and according to the manufacturers recommendations.

3.03 CLEAN UP:

- A. Upon completion of construction, remove all excess materials and construction debris, and restore any damage done to existing buildings or landscape.

END OF SECTION 02272

PART 1 - GENERAL

1.01 SUMMARY:

- A. Section Includes: The work covered by this section consist of furnishing all materials, labor, and equipment necessary or required to do the grading, placing and compacting of fill materials and surfacing, crushed stone paving for roadways and/or parking areas as shown on the Drawings and as specified herein.
- B. Related Sections: Drawings and General Provisions of the contract, including the General Covenants and Provisions, Supplementary Covenants and Provisions and General Requirements as well as, but not necessarily limited to, the following:

Section 02200 - Earthwork

- C. Measurements and Payments:
  - 1. Measure the quantity of material delivered in tons.
  - 2. Weigh on accurate scales designed for weighing loaded trucks.
  - 3. Load vehicles to insure against loss of material between the scales and the point of delivery.
    - a. No deductions will be made for the weight of moisture naturally occurring in the material.
    - b. Material will not be deposited and spread until the scale weigh ticket is delivered to the inspector and the weight of material verified.
  - 4. The Contract Documents may provide for payment of a lump sum bid amount for the entire project.
    - a. The quantity of material provided will be verified by scale tickets and compared to the estimated quantity provided as part of the Contractor's Price Breakdown.
    - b. In the event that the estimated quantity is larger than the quantity provided, the Contractor shall pay the Owner a deduct for the difference in cost for both quantity and labor.
    - c. Additional payments for increased quantities or labor will only be allowed if a change order is warranted due to a change in project scope or for unforeseen situations, as determined by the Architect, warranting

additional material and labor to accomplish the original work of this section.

- c. The Owner will make no additional payments for additional material or labor to correct deficiencies, shortages or mistakes by the Contractor.

D. Basis of payment:

- 1. Include in the contract amount, an amount for the cost of the work of this section based on unit price per ton for the surfacing material which shall be full compensation for furnishing all material, tools, equipment and labor necessary to complete the work of this section in conformance with the Drawings and Specifications.
- 2. This shall be full payment for furnishing, delivering, depositing and spreading the surfacing material as directed and approved by the DNR Construction Inspector.
- 3. The DNR Construction Inspector will:
  - a. Verify that all quantities are in accordance with requirements.
  - b. Calculate the value of deducts owed the Owner at the unit price provided in the Contractor's Price Breakdown.

1.02 REFERENCES:

- A. Standards of materials and construction shall conform with the Standard Specifications for Highway and Bridge Construction, Series of 2001 of the Iowa Department of Transportation.

1.03 SUBMITTALS:

- A. Provide submittals as required in section 01300.

1.04 CONTROL OF MATERIALS:

- A. General: Use materials as specified in this section, tested and approved for use by the DNR Construction Inspector in accordance with the applicable portions of 2001 Series, I.D.O.T. Section 1106.
- B. Samples and Tests: Submit samples of materials to the DNR Construction Inspector in advance of the anticipated use to avoid construction delays. Submit samples and tests in accordance with 2001 Series, IDOT Section 1106.02.
- C. Field Testing: Testing of materials and workmanship will continue throughout the project as conducted by the DNR Construction Inspector. Cooperate in these tests in any way needed to obtain the required data and samples.

- D. Unacceptable Materials: Unacceptable materials will be rejected in accordance with 2001 Series, IDOT Section 1106.04.

1.05 JOB CONDITIONS:

- A. Survey job conditions prior to commencing work. Bring any discrepancies between existing work and the Drawings and Specifications to the attention of the Architect/DNR Construction Inspector.
- B. Observe weather conditions. Attempt no work in frozen conditions without written approval from the DNR Construction Inspector.

PART 2 - PRODUCTS

2.01 MATERIALS:

- A. Provide Class "A" crushed stone consisting of a uniform mixture of coarse and fine particles produced by crushing ledge rock, predominantly limestone, dolomite, or quartzite.
  - 1. Percentage of wear: No more than 45, when tested in accordance with AASHTO T96, Grading B.
  - 2. Gradation: In accordance with gradation number 11, section 4109 of IDOT Standard Specifications, as follows:

<u>Percent</u>	<u>Sieve Size</u>
100	1
20-75	4
20-40	8
6	200

- 3. Additional Requirements: Provide material containing no more than 4% mud balls.

PART 3 - EXECUTION

3.01 GENERAL:

- A. Accomplish the work of this section in accordance with the applicable portions of the 2001 Series, IDOT Standard Specification for Highway and Bridge Construction.

3.02 PREPARATION OF SUBGRADE:

- A. Conform to 2001 Series, IDOT Section 2111. If unsuitable subgrade materials are encountered, remove this material to a depth as indicated by the DNR Construction Inspector and replace with suitable ballast material.

3.03 PLACING OF CRUSHED STONE COURSE:

- A. Construct base course using crushed rock top course material as defined by 2001 Series, IDOT Section 4121. Place the base course in accordance with applicable sections of the IDOT Standard Specifications for Granular Subbase, Standard Compaction as defined by the IDOT Standard Specifications.

3.05 CLEAN UP:

- A. Upon completion of construction, remove all excess materials and construction debris, and restore any damage done to existing buildings or landscape.

END OF SECTION 02506

PART 1 - GENERAL

1.01 SUMMARY:

- A. Section Includes: Seedbed preparation and application of seed mixtures and fertilizer to all areas designated on the Drawings or all areas within the boundaries of this project having been disturbed by works of this project and not receiving finished surfacing, as determined by the DNR Construction Inspector and as specified herein.
- B. Related Sections: Drawings and General Provisions of the Contract, including the General Covenants and Provisions, Supplementary Covenants and Provisions and General Requirements as well as, but not necessarily limited to, the following:

Section 02200 - Earthwork

1.02 REFERENCES:

- A. Standards of materials and construction shall conform with the Standard Specifications for Highway and Bridge Construction, 2001 Series of the Iowa Department of Transportation.

1.03 QUALITY ASSURANCE:

- A. Codes and Standards: Perform all work of this section in accordance with the requirements of the "Standard Specifications" 2001 I.D.O.T. Section 2601.

1.04 PROJECT/SITE CONDITIONS:

- A. Environmental Requirement:
  - 1. Weather conditions shall be observed. Seeding shall be performed only during normal application periods, optimum temperature, moisture and climatic condition to promote germination and plan growth. Normal application periods are between March 1 and May 31 and between August 10 and September 30.
- B. Existing Conditions: Survey job conditions prior to commencing work. Bring any discrepancies between existing work and the Drawings and Specifications to the attention of the Project Engineer/DNR Construction Inspector.

1.05 SEQUENCING AND SCHEDULING:

- A. Properly coordinate the work of this section with all other trades.
- B. Do not start the work of this section until the work of all other trades has been completed unless otherwise approved by the DNR Construction Inspector.

PART 2 - PRODUCTS

2.01 MATERIALS:

- A. All topsoil used for seedbed shall be in accordance with Section 02200.
- B. All seeds shall be "redtag" quality or better supplied from the latest available crop, free of noxious weed seed and supplied in the following varieties and percentages of weight.
- C. Provide mixture of types and quantities as specified herein for seeding of areas designated by the Project Engineer, the DNR Construction Inspector as indicated on the Drawings, and as specified herein.

- 1. Class "A" Mixture: For areas to remain in semi-natural state where mowing is required only as a temporary control measure.

Fescue, Kentucky 31	25 lbs. per acre
Switchgrass (Blackwell)	8 lbs. per acre
Alfalfa (Northern Grown)	5 lbs. per acre
Birdfoot Trefoil (Empire)	4 lbs. per acre
Alsike Clover	4 lbs. per acre

- 2. Class "B" Mixture: For same situation as where Class "A" mixture is used but where a lighter mix is preferable.

Fescue, Kentucky 31	20 lbs. per acre
Switchgrass (Blackwell)	3 lbs. per acre
Alfalfa (Northern Grown)	4 lbs. per acre
Birdfoot Trefoil (Empire)	4 lbs. per acre
Alsike Clover	4 lbs. per acre

- 3. Class "C" Mixture: For area designated as fine seeded, lawns or other mowed grass areas.

Bluegrass, Kentucky	70%
Ryegrass, Perennial, Fineleaf	10%
Fescue Creeping Red	20%

4. Class "D" Mixture: For all areas, unless otherwise specified, where a prairie grass in natural state is required.

Big Bluestem	30 lbs. per acre
Switchgrass (Blackwell)	5 lbs. per acre
Sideoats Grama	5 lbs. per acre
Little Bluestem	5 lbs. per acre

- D. Seed is to be delivered on site in separate packaging for each individual type of seed within each mixture and mixed in the presence of the DNR Construction Inspector if required. Commercial mixture in the quantities as specified will be acceptable at the discretion of the DNR Construction Inspector, if these quantities are verifiable.

**E. Seed mixture for this project to be Class "A" mixture.**

**2.02 FUNGICIDE:**

- A. All seeds for permanent seeding shall be treated with a non-mercurial fungicide (75% concentration or equivalent) at the rate of 5-1/2 ounces per 100 pounds of seed.

**PART 3 - EXECUTION**

**3.01 EXAMINATION:**

- A. Examine the areas and conditions under which work of this section will be performed. Correct conditions detrimental to timely and proper completion of the work. Do not proceed until unsatisfactory conditions are corrected.

**3.02 SEEDBED PREPARATION:**

- A. The area to be seeded shall be raked or graded to fill washes or gullies. Pick up and dispose of all debris, including stones, boulders, logs, stumps, or other foreign material that will interfere with the seeding operation.

**3.03 FERTILIZER APPLICATION:**

- A. Spread fertilizer over the area at the rate of 750 pounds per acre of 15-15-15 (or equivalent).
- B. Unless otherwise indicated, spread all fertilizer with a mechanical spreader, which will secure a uniform rate of application.
- C. Spread fertilizer after the preliminary preparation of seedbed and prior to the sowing of any seeds.

- D. Disk the fertilizer and roll the area prior to seeding.
- E. On area inaccessible to field machinery, spread fertilizer after preparation of the seedbed and thoroughly rake into the soil.
- F. Application of fertilizer in combination with seeding by hydraulic seeder as specified in I.D.O.T. Section 2601.04H will be acceptable at the discretion of the DNR Construction Inspector.

3.04 SEED APPLICATION:

- A. Preparation: Mix all seeds specified for this project thoroughly at the project site prior to placing in spreading equipment.
- B. On all areas accessible to field machinery, all grass seeds may be sown with a gravity, cyclone or hydraulic seeder as specified herein. On areas inaccessible to field machinery, the use of hand-cyclone seeder will be permitted.
- C. Apply seed mixture at a rate of four pounds per 1,000 square feet, unless otherwise indicated, during fair, calm weather. One half of the seed mixture shall be sown in one direction and the remainder at right angles to the first sowing.

3.05 SEED APPLICATION IN MAINTAINED LAWNS:

- A. For maintained lawns to be seeded as part of this project, apply fertilizer prior to preparation of the seedbed.
- B. A rotary tiller will be required for preparation of the seedbed. The seedbed after tilling will be raked firm, smooth and free of clods, rocks and other debris.
- C. Roll the seedbed shall both before and after the application of seeds. Apply seeds over damp soil by broadcast seeding.
- D. Roll, seed, and fertilize by hand or with hand operated equipment in areas inaccessible to field equipment.

3.06 SPRING OVERSEEDING:

- A. Seedbed preparation will not be required provided the overseeding is applied when the ground is free from frost action after March 1 and before April 1 or as directed by the DNR Construction Inspector.

3.07 MOWING:

- A. When requested by the DNR Construction Inspector, mowing may be required prior to permanent seeding or anytime during the growing season.

3.08 MULCHING:

- A. All seeded areas are to be mulched unless otherwise designated in the contract documents.
- B. All areas requiring mulch are to be mulched as soon as seed is sown and final rolling is completed.
- C. Mulch is to be evenly and uniformly distributed and anchored into the soil. The application rate for reasonably dry material shall be approximately 1-1/2 tons of dry cereal straw, 2 tons of wood excelsior, or 2 tons of prairie hay per acre, or other approved material, depending on the type of material furnished.
  - 1. All accessible mulched areas are to have mulch consolidated into the soil with a mulch stabilizer, and slope areas are to be tacked on the contour.
  - 2. Crawler type or dual wheel tractors are to be used for the mulching operation. Equipment is to be operated in a manner to minimize displacement of the soil and disturbances of the design cross section.

END OF SECTION 02930