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PART 00600 - BASES**Section 00610 - Reconditioning Existing Roadway****Description**

00610.00 Scope - This work consists of reconditioning and preparing existing subgrades, bases, surfacings and pavements on which an additional layer or course of material is to be placed, under the Contract. The work includes existing shoulders, cut ditches, road connections, approach roads, ramps, bridge decks if not provided for elsewhere, and other roadbed areas on which construction work under the Contract is to be performed.

Materials

00610.10 General - Materials required for reconditioning and preparation work may consist of selected soil, sand and gravel, aggregate subbase or base material, water, asphalt, asphalt and portland cement concrete surfacing, and other material as directed. The materials used shall conform to the Specifications of the applicable Sections.

00610.15 Quality Control - Provide quality control according to Section 00165.

Labor

00610.30 Quality Control Personnel - Provide certified technicians in the following fields:

- CEBT
- CAgT
- CDT

Construction

00610.40 Removal and Replacement of Unsuitable Materials - Remove unstable or unsuitable materials in the subgrade, subbase, base, surfacing or pavement areas as directed and dispose of according to 00330.41(a-4). Perform the removal and disposal according to 00140.30. Replace the removed materials with successive courses of materials furnished for other purposes under the Contract. Furnish, place and finish these materials as specified or as directed. If no materials are available for replacement, perform the replacement work as Extra Work.

00610.41 Ditches and Subgrades - Clean, trim and restore existing cut ditches to designated cross section and condition. Reshape, water, process and prepare the existing subgrade to the lines, grades, slopes and cross sections established. Compact according to 00330.43.

00610.42 Aggregate Subbase, Base and Surfacing - Reshape, water, process and prepare the upper layer of existing subbases, bases and surfacings to lines, grades and cross sections established. Compact to densities required for similar new work.

00610.43 Surfacing - Clean existing surfacings of all loose material, dirt and dust by brooming, flushing with water or other approved methods.

Measurement

00610.80 General - No measurement will be made of reconditioning and preparation work.

Materials used in the replacement of unsuitable materials according to 00610.40 will be measured in the manner applicable to the pay item under which the materials are furnished.

Payment

00610.90 Lump Sum Basis - Payment for reconditioning and preparation work accepted will be made at the Contract lump sum amount for the item "Reconditioning Existing Roadway". Payment will be payment in full for all material, equipment, labor and incidentals necessary to complete the work as specified, except for the following:

(a) Unsuitable Materials Removal and Disposal - Removal and disposal of unsuitable materials will be paid for according to 00140.30.

(b) Replacement Materials - Materials used for replacement of unsuitable materials according to 00610.40 will be paid for at the Contract unit price for the material involved. If there is no Contract unit price for the material, payment will be made according to 00140.30.

(c) Watering - Water furnished and used in the watering work and in the flushing of surfaces and pavements will be paid for according to Section 00340. If there is no watering pay item in the bid schedule, water furnished and used in the watering work and in the flushing of surfaces and pavements will be considered incidental to the work under this Section and no separate payment will be made.

00610.91 Incidental Basis - When neither the Special Provisions nor bid schedule indicates separate payment for the work under this section, perform the work as incidental work for which no separate payment will be made.

Section 00620 - Cold Plane Pavement Removal

Description

00620.00 Scope - This work consists of removing existing pavement and bridge deck surfaces to prepare a foundation for placing new surfacing.

Equipment

00620.20 General - Provide self-propelled planing machines or grinders:

- Capable of loosening pavement material
- Capable of accurately establishing profile grades within a tolerance of 6 mm (0.02 foot) by reference from either the existing pavement or from independent grade control
- With a positive means for controlling cross-slope elevations
- With a totally enclosed cutting drum with replaceable cutting teeth
- With an effective means of removing loosened material from the surface and preventing dust from escaping into the air
- Capable of providing a true cross-slope grade that will allow placement of overlay pavement to a uniform thickness

00620.21 Equipment for Grinding on Bridge Decks - To remove AC from bridge decks, use power-operated diamond grinders, micro-milling equipment or hydroblast machines capable of uniformly removing the existing surface to depths required.

(a) Diamond Grinders - Diamond grinders shall be power-driven self-propelled units with cutting heads made up of diamond cutting blades.

(b) Micro-milling - Micromilling equipment shall consist of:

(1) Cold Plane or Rotomill Grinders - Cold plane or rotomill grinding machines using carbide cutting tools in a rotary drum. Provide equipment with a tooth spacing of not more than 6.4 mm (1/4 inch), capable of leaving a smooth, uniform pattern of striations. Limit forward speed to 7.6 m/min (25 feet/minute). Operate at a drum speed of at least 120 RPM.

(2) Shot-Blasters - High-velocity, electric-powered shot-blast machines capable of imparting a minimum energy (E_K) of 67 800 N·m/s (50,000 ft-lb/sec), as calculated according to the following formula:

METRIC

$$E_K = \frac{Mv^2}{2}$$

Where: M = mass of shot blend expelled per second (kg/s)
 v = πdr
 d = diameter of blast wheel (m)
 r = blast wheel speed in revolutions per second (s^{-1})

ENGLISH

$$E_k = \frac{Wv^2}{2G}$$

Where: W = weight of shot blend expelled per second (lb/s)
 G = gravitational acceleration, 32.4 ft/s²
 v = πdr
 d = diameter of blast wheel (ft)
 r = blast wheel speed in revolutions per second (s⁻¹)

Machines shall cover at least 1.2 m (4 feet) per pass, and shall conform to EPA air pollution requirements by containing dust and steel abrasive media. If the equipment is not equipped for simultaneous bi-directional blasting, make separate passes in opposite directions to ensure equal cleaning on all sides of the exposed aggregate.

(c) Hydroblasting - Hydroblasting equipment shall be capable of removing concrete at a rate and volume acceptable to the Engineer. Demonstrate the removal rate and accuracy of the equipment to the Engineer prior to commencing work.

Construction**00620.40 Pavement Removal:**

(a) General - Remove the existing pavement to the depth, width, grade and cross section shown or as directed. The use of a heating device to soften the pavement is not permitted.

(b) Depth 25 mm to 50 mm (1 inch to 2 inches) - If the depth of the existing pavement to be removed is 50 mm (2 inches) or less, but more than 25 mm (1 inch) and the section will be under traffic, schedule the work so the full width and length of travel lane pavement can be removed during the same shift. Remove the shoulder area within 24 hours.

(c) Depth over 50 mm - If the depth of the existing pavement to be removed is over 50 mm (2 inches) and the section will be under traffic, schedule the work so the full width and length of the travel lanes and shoulders can be removed, leaving no longitudinal or transverse drop-offs, during the same shift.

(d) Pavement Removal Alternative - If unable to complete the pavement removal according to 00620.40(b) and (c), then within the same day construct a wedge of asphalt concrete, at a slope of 1V:10H or flatter along each exposed longitudinal drop-off, and 1V:50H or flatter along each exposed transverse drop-off. Place wedges completely across the milled area at intersections, points of beginning and ending of the milling operation, and around manholes, valve boxes and other structures. Longitudinal drop-offs of 25 mm (1 inch) or less do not require a wedge. Maintain wedges as long as the area remains under traffic or until pavement is replaced. Remove and dispose of wedges before placing new pavement.

(e) Warning Signs - Provide warning signs as required where abrupt or sloped drop-offs occur at the edge of the existing or new surface according to Section 00225.

(f) Pavement Removal on Bridges - Remove AC from bridge decks with equipment meeting the requirements of 00620.21.

00620.41 Surface Tolerance - Test with a 3.6 m (12 foot) straightedge furnished and operated by the Contractor, as directed. The variation of the top of the ridges from the testing edge of the straightedge, between any two ridge contact points, shall not exceed 6 mm (1/4 inch).

00620.42 Disposal of Materials - Materials removed under this Section that are not used on the Project become the property of the Contractor at the point of removal. Dispose of the material according to 00310.43 unless special site(s) are specified in the Special Provisions.

00620.43 Maintenance Under Traffic - If the cold-planed pavement surface will be exposed to traffic, sweep and clean prior to allowing traffic to use the roadway.

Measurement

00620.80 General - Cold plane pavement removal completed and accepted will be measured in place by the m² (square foot). When the Schedule of Items shows that the depth of pavement to be removed is variable, the depth as shown on the plans is an estimate and will be considered approximate only. No guarantee is made that the actual depth will be the same as the estimated depth.

Payment

00620.90 General - Payment for performing all work required to remove and dispose of the existing pavement as specified, including replacement of cutting teeth, will be made at the Contract price per m² (square foot) for the item "Cold Plane Pavement Removal, _____ Deep". The depth will be inserted in the blank. If the depth is variable, the range will be inserted in the blank.

Temporary wedges constructed, maintained, and removed under 00620.40(d) will be at the Contractor's expense.

Payment will be payment in full for furnishing all equipment, labor and incidentals necessary to complete the work as specified.

Section 00640 - Aggregate Base and Shoulders

Description

00640.00 Scope - This work consists of furnishing and placing one or more courses of aggregate base and/or shoulders on a prepared surface to the lines, grades, thicknesses and cross sections shown or established.

Materials

00640.10 General - Aggregates shall be either 25.0 mm - 0 (1" - 0) or 19.0 mm - 0 (3/4" - 0) as the Contractor elects. Use clean, hard, durable aggregates, reasonably well-graded from the maximum size to dust. Base aggregates shall conform to Section 02630 and shoulder aggregate shall conform to Section 02640.

00640.16 Acceptance of Aggregates - Acceptance will be visual by the Engineer.

Construction

00640.40 Preparation of Foundation - Provide a firm surface on which aggregates are to be placed according to 00641.40.

00640.41 Hauling and Placing - Transport the aggregate to the job site, add water to obtain proper moisture content, and place on the prepared surface or material by means acceptable to the Engineer.

Do not place shoulder aggregates on the top lift of newly constructed EAC or open-graded pavement.

00640.42 Thickness and Number of Layers:

(a) Base - If the required compacted depth of the base course exceeds 150 mm (6 inches), construct it in two or more layers of nearly equal thickness. The maximum compacted thickness of any one layer shall not exceed 150 mm (6 inches).

Place each layer in spreads as wide as practical and to the full width of the course before a succeeding layer is placed.

(b) Shoulders - Place shoulder aggregates in a single layer, or two or more layers of nearly equal thickness. The maximum compacted thickness of any one layer shall not exceed 230 mm (9 inches).

00640.43 Compacting and Shaping - Compact each layer of material placed in shoulder and base areas by rollers conforming in general to 00641.24 or as directed.

Shape and maintain the surface of each layer during the compaction operations to meet the requirements of 00640.44. Produce a uniform texture and firmly key the aggregates.

Apply water over the materials for proper compaction according to Section 00340, and as directed.

Continue the compactive effort until there is no reaction or yielding observed under the compactor.

00640.44 Surface Tolerance - The finished surface and the surface of each underlying layer of the aggregate shall parallel the established grade and cross section for the finished surface within 12 mm (1/2 inch).

The finished surface of the compacted aggregate base, when tested with a 3.6 m (12 foot) straightedge, shall not vary from the testing edge by more than 12 mm (1/2 inch) at any point. Furnish and operate the straightedge as directed.

Maintenance

00640.60 Care of the Work - After construction of each layer and completion of base, maintain the layer to specified conditions and prevent or repair segregation, ravelling, or rutting, until it is covered with a following layer or until all work is completed.

Measurement

00640.80 General - Aggregate will be measured by the Mg (ton) in the hauling vehicle, according to 00190.10.

Water used in the care of the work under 00640.60 will be classed as incidental work for which no separate measurement will be made.

Payment

00640.90 General - The accepted quantities of aggregates will be paid for at the Contract price per Mg (ton) for the following item(s):

- (a) Aggregate Base
- (b) Aggregate Shoulders

Payment will be payment in full for furnishing and placing the materials including furnishing all equipment, labor and incidentals necessary to complete the work as specified.

No separate or additional payment will be made for water used to obtain proper compaction according to 00640.43 or in the care of the work according to 00640.60.

Section 00641 - Aggregate Subbase, Base, and Shoulders

Description

00641.00 Scope - This work consists of furnishing and placing one or more layers of aggregates, mixed with water, on a prepared surface to the lines, grades, thicknesses and cross sections shown or established.

Materials

00641.10 General - Aggregate shall be sized as specified. Shoulder aggregates shall be either 25.0 mm - 0 (1" - 0) or 19.0 mm - 0 (3/4" - 0) size as the Contractor elects. Aggregates shall meet the following requirements:

| | |
|-----------------------------|---|
| Base..... | Section 02630 |
| Shoulder..... | Section 02640 |
| Subbase..... | Aggregate for aggregate subbase shall be reasonably well graded from coarse to fine |
| Open-graded aggregates..... | 02630.11 |

Maximum size aggregate shall not exceed 75% of the compacted thickness of the layer in which it is incorporated. Aggregates passing the 6.3 mm (1/4 inch) sieve shall not be less than 10% nor more than 50% of the whole, by mass(weight). No more than 10% of the aggregate shall pass the 150 µm (No. 100) sieve. Within these limits, the subbase aggregate gradation shall be adequate to produce a dense, firm base when placed and compacted.

(a) Grading - All of the grading requirements are given as percentages by mass (weight). The gradation will be determined by sieve analysis according to AASHTO T 27.

(b) Abrasion - The source materials for aggregate subbase shall not exceed 45% wear when tested according to AASHTO T 96.

(c) Sand Equivalent - Aggregate subbase will be tested according to AASHTO T 176 and shall have a sand equivalent of not less than 25.

00641.11 Stockpiling - If the produced aggregates are to be stockpiled, prepare the stockpile site and pile the materials according to 00680.40 and 00680.41.

00641.12 Limits of Mixture - Provide a mixture of aggregate and water having a uniform moisture content sufficient to obtain the required compaction. Water may be introduced in a mixing plant, or on the grade. Determine the proportion of aggregate and water according to AASHTO T99 and AASHTO T 224. Proportions will be in percentages by mass (weight) and will be known as the "Mix Design". The amount of water required in the mix design will normally be within a range of 5% to 10% of the mixture, based on dry mass (weight) of the aggregates. The mixture furnished shall conform to the mix design with a tolerance in optimum water content of plus or minus 2%. Any mixture having water content in excess of 2% over the Mix Design may be accepted for use, according to 00641.84, if approved.

00641.15 Quality Control:

(a) Aggregate Production Quality Control - A CAgT shall perform sampling and testing of aggregates according to Section 00165 and the MFTP. Statistically evaluate the aggregates according to Section 00165.

(b) Preproduced Aggregate - Compliance of aggregates produced and stockpiled before issuance of Notice to Proceed will be determined according to (1) or (2) below.

- (1) Continuing production records meeting the requirements of Section 00165 and the MFTP
- (2) Sampling and testing the entire stockpile according to Section 00165 and the MFTP

In addition, the material shall meet the requirements of 00641.10.

00641.16 Acceptance of Aggregates - Acceptance will be according to Section 00165.

(a) Stockpiled Aggregate for Aggregate Base and Shoulders - Acceptance will be based on the Contractor's quality control testing, if verified, as required in Section 00165.

(1) Aggregate Gradation - A stockpile contains specification aggregate gradation when the Quality Level (QL) for each sieve size, calculated according to 00165.40, is equal to or greater than the QL indicated in Table 00165-2 for a PF of 1.00. Each required sample represents a subplot. When the QL indicated in Table 00165-2 yields a PF of less than 1.00 for any sieve size, the material is non-specification.

(2) Non-specification Aggregate Gradation - Stockpiled aggregates having non-specification aggregate gradation will be rejected unless the non-specification material is removed from the stockpile. Do not add additional material to the stockpile until enough non-specification material has been removed so that the QL for each sieve size is equal to or greater than the QL in Table 00165-2 for a 1.00 PF

No payment will be made for non-specification materials.

(b) Aggregate Base and Shoulder Mixture - Acceptance testing will be performed on random samples obtained immediately following mixing with water according to the MFTP. For non-specification mixture the Engineer will determine the appropriate price reduction or order its removal from the work according to 00150.25.

(c) Aggregate Subbase - Aggregate subbase will be accepted based on the Engineer's visual inspection. Samples will be obtained and tested for compliance with 00641.10 by the Engineer if it is suspected that the material does not meet Specifications.

Equipment

00641.20 Mixing Plant - Mix aggregate and water by one of the following methods:

(a) Mixing Plant - Mix with a pug mill, rotary mixer, or other equipment at a mixing plant that:

- Has adjustable weighing or calibrated feeders, and other equipment that produces uniform, non-segregated, specified mixtures.
- Discharges water into the mixer by weighing or metering. The device shall be adjustable and shall assure uniform water content in the mixture.
- Has mixing blades or paddles of proper size, adjustment and clearance to provide uniform mixture.

(b) Road Mix - Motor grader or other suitable equipment.

00641.21

00641.21 Hauling Equipment - Provide mixture hauling vehicles capable of hauling and depositing the mixture with a minimum of mix segregation.

00641.22 Spreading Equipment - Provide equipment capable of spreading the material and striking it off to designated line, grade, and transverse slope without segregation, dragging, or fracture of aggregate.

00641.24 Compacting Equipment - Provide self-propelled rollers and compactors capable of reversing without backlash. Rollers and compactors shall have a gross static mass (weight) of at least 7 Mg (8 tons), and shall be capable of compacting to specified density while the mix is still moist.

Labor

00641.30 Quality Control Personnel - Provide certified technicians in the following fields:

- CEBT
- CAgT
- CDT

Construction

00641.40 Preparation of Foundation - Provide a firm surface or material, on which aggregates are to be placed, according to Section 00320, 00330, or 00610 as applicable.

00641.41 Mixing, Hauling and Placing - Add water to the aggregate while mixing to provide a moisture content according to 0641.12.

Thoroughly mix the combined aggregate and water for as long as necessary to produce a homogenous mixture with all aggregate particles uniformly coated with water. Mix, haul and place the material by one of the following methods:

(a) Stationary Mixing Plant - Combine materials in a pug mill or rotary mixer.

Deliver and deposit the mixture without delay. Deliver the mixture to the spreading equipment by direct deposit into its receiving device, or by placing in uniform windrows in front of the equipment.

(b) Road Mix - Place materials for each layer, add water and mix with motor grader until homogeneous mixture is achieved.

Do not place aggregate shoulder material on the top lift of newly constructed EAC or open-graded pavement.

00641.42 Placing Aggregate Base or Subbase on Geotextile - When subgrade or drainage geotextile is required between the subgrade and base, place the first lift of material directly on the fabric, without road mixing.

00641.43 Thickness and Number of Layers:

(a) Aggregate Base Courses - If the required compacted depth of the base course exceeds 150 mm (6 inches), construct it in two or more layers of nearly equal thickness. The maximum compacted thickness of any one layer shall not exceed 150 mm (6 inches) unless approved.

Place each layer in spreads as wide as practical and to the full width of the course before a succeeding layer is placed.

(b) Aggregate Subbase Courses - The maximum compacted thickness of any one layer shall not exceed 230 mm (9 inches) unless approved.

(c) Shoulder Courses - Place aggregates in shoulder areas, other than as part of the base course, in one layer, or in two or more layers of nearly equal thickness. The maximum compacted thickness of any one layer shall not exceed 230 mm (9 inches).

00641.44 Shaping and Compacting:

(a) Base Courses - Begin compaction of each layer immediately after the material is spread and continue until a density of not less than 100% of the maximum density has been achieved when tested according to the MFTP.

Shape and maintain the surface of each layer during the compaction operations to produce a uniform texture meeting the requirements of 00641.45.

Apply additional water over the materials for proper compaction, according to Section 00340 and as directed.

(b) Subbase and Shoulder Courses - Compact each layer of material until no reaction or yielding is observed under the compactor.

00641.45 Surface Tolerance - The finished surface of the aggregate and the surface of each underlying layer shall parallel the established grade and cross section for the finished surface within 15 mm (1/2 inches).

The finished surface of the compacted aggregate, when tested with a 3.6 m (12 foot) straightedge, shall not vary from the testing edge by more than 15 mm (1/2 inch) at any point. Furnish and operate the straightedge as directed.

Maintenance

00641.60 Care of the Work - After construction of each layer and completion of base, maintain the layer to specified conditions and prevent or repair segregation, ravelling, or rutting until it is covered with a following layer or until all work is completed.

Measurement

00641.80 General - Aggregate mixture will be measured by the Mg (ton), by the m³ (cubic yard), or by the m² (square yard). The unit of measurement will be shown in the Schedule of Items.

If aggregates are mixed in a stationary plant, there will be no separate measurement of water added at the plant to bring the material to optimum moisture content.

If aggregates are mixed in the hauling vehicle (road mix), water used to bring the mixture to optimum moisture for mixing and compaction will be measured separately and paid for according to Section 00340.

Water used in the care of the work under 00641.60 will be incidental work with no separate measurement and payment.

00641.81 Mass (Weight) Basis - If measurement is by the Mg (ton), quantities will be measured in the hauling vehicle, the mixture will be measured after mixing according to 00190.10.

00641.82 Volume Basis - If measurement is by the m³ (cubic yard) in the hauling vehicle, transport material in vehicles whose maximum "water level" capacity may be readily measured and calculated. Quantities will be determined at the point of delivery, with no allowance for settlement of material during transit. When required to facilitate measurement, level the vehicle loads at the point of delivery. Payment will not be made for material in excess of the maximum "water level" capacity and deductions will be made for loads below the maximum "water level" capacity.

00641.83 Area Basis - If measurement is by the m² (square yard), the quantity will be the number of m² (square yards) of aggregate base constructed to the full thickness. The full thickness will be identified by the pay item in the Schedule of Items. The surface area will be determined by horizontal measurements. Each area constructed with varying thicknesses, as directed or shown, will be adjusted by converting it to an equivalent area at the pay item thickness on a proportionate volume basis.

00641.84 Adjustment of Water in Mixture - If the water in the aggregate mixture placed according to 00641.41(a) exceeds the percentage established in the mix design by more than 2%, the excess percentage of water will be deducted from the measurement of the mixture. Determination of excess water will be made by the same procedure used in setting the water content of the Mix Design under 00641.12 or converted to the equivalent volume.

Payment

00641.90 General - The accepted quantities of aggregates will be paid for at the Contract price per unit of measurement for the following items:

| Pay Item | Unit of Measurement |
|---|---|
| (a) Aggregate Subbase | Mg (Ton) or m ³ (Cubic Yard) |
| (b) Aggregate Base | Mg (Ton) or m ³ (Cubic Yard) |
| (c) _____ Aggregate Base | Mg (Ton) or m ³ (Cubic Yard) |
| (d) Aggregate Shoulders | Mg (Ton) or m ³ (Cubic Yard) |
| (e) Aggregate Base, _____ mm (Inches) Thick | m ² (Square Yard) |

Item (b) will apply when the Contractor has the option of furnishing one or another of two or more designated sizes of aggregates.

In item (c), the designated size of aggregate to be used will be inserted in the blank.

In item (e), the depth of aggregate base will be inserted in the blank.

Payment will be payment in full for furnishing and placing the materials, including furnishing all equipment, labor and Incidentals necessary to complete the work as specified.

No separate or additional payment will be made for water used in the mixture, mixed and placed according to 00641.41(a), subject to the limitations of 00641.84.

No separate or additional payment will be made for water used in the care of the work according to 00641.60.

00641.91 Material on Hand - Payment for stockpiled materials on hand may be allowed according to 00195.60, subject to the requirements of 00641.10, 00641.15, 00641.16(a), and subject to QA verification.

Section 00680 - Stockpiled Aggregates

Description

00680.00 Scope - This work consists of furnishing crushed rock or other aggregates in stockpiles at the places and in the manner specified.

Materials

00680.10 Sources of Material - Obtain the material to be furnished in stockpiles from sources according to Section 00160 and the special provisions.

00680.11 Aggregates - Provide aggregates meeting the following requirements:

(a) Aggregate Base and Shoulder Aggregate - Furnish aggregates in stockpiles of the sizes specified and conforming to the requirements of 00641.10.

(b) Emulsified AC Aggregate - Furnish aggregates in stockpiles of the following sizes or as specified:

| METRIC | ENGLISH |
|-------------------|--------------|
| 25 mm - 12.5 mm | 1" - 1/2" |
| 19.0 mm - 12.5 mm | 3/4" - 1/2" |
| 12.5 mm - 6.3 mm | 1/2" - 1/4" |
| 9.5 mm - 6.3 mm | 3/8" - 1/4" |
| 9.5 mm - 4.75 mm | 3/8" - No. 4 |
| 9.5 mm - 2.36 mm | 3/8" - No. 8 |

Aggregates in stockpiles shall conform to the following requirements:

(1) Quality - Provide aggregates meeting the requirements of 00715.10(a), (c), (d), (e) and (f).

(2) Grading - Perform sieve analysis according to AASHTO T 27 and T 11. Provide grading for the designated size aggregate according to the following:

| Sieve Size | METRIC | | | | | |
|---------------------------|-----------------------|-------------|------------|-----------|------------|------------|
| | Designated Sizes (mm) | | | | | |
| | 25.5 - 12.5 | 19.0 - 12.5 | 12.5 - 6.3 | 9.5 - 6.3 | 9.5 - 4.75 | 9.5 - 2.36 |
| Percent Passing (by mass) | | | | | | |
| 25.0 mm | 100 | 100 | | | | |
| 19.0 mm | 95 - 100 | 90 - 100 | 100 | | | |
| 12.5 mm | 60 - 90 | 0 - 10 | 85 - 100 | 100 | 100 | |
| 9.5 mm | - | - | - | 85 - 100 | 80 - 100 | 100 |
| 6.3 mm | 15 - 30 | 0 - 2 | 0 - 15 | 0 - 15 | 10 - 40 | - |
| 4.75 mm | - | - | - | - | - | 45 - 65 |
| 2.36 mm | 0 - 7 | - | 0 - 4 | - | 0 - 6 | 0 - 10 |
| 600 µm | - | - | - | 0 - 2 | 0 - 2 | - |
| 75 µm | 0 - 2 | 0 - 2 | 0 - 2 | 0 - 2 | 0 - 2 | 0 - 2 |
| 75 µm * | 0 - 1 | 0 - 1 | 0 - 1 | 0 - 1 | 0 - 1 | 0 - 1 |

* In gravels

ENGLISH

| Sieve Size | Designated Sizes (inches) | | | | | |
|------------|-----------------------------|-----------|-----------|-----------|-------------|-------------|
| | 1 - 1/2 | 3/4 - 1/2 | 1/2 - 1/4 | 3/8 - 1/4 | 3/8 - No. 4 | 3/8 - No. 8 |
| | Percent Passing (by weight) | | | | | |
| 1" | 100 | 100 | | | | |
| 3/4" | 95 - 100 | 90 - 100 | 100 | | | |
| 1/2" | 60 - 90 | 0 - 10 | 85 - 100 | 100 | 100 | |
| 3/8" | - | - | - | 85 - 100 | 80 - 100 | 100 |
| 1/4" | 15 - 30 | 0 - 2 | 0 - 15 | 0 - 15 | 10 - 40 | - |
| No. 4 | - | - | - | - | - | 45 - 65 |
| No. 8 | 0 - 7 | - | 0 - 4 | - | 0 - 6 | 0 - 10 |
| No. 30 | - | - | - | 0 - 2 | 0 - 2 | - |
| No. 200 | 0 - 2 | 0 - 2 | 0 - 2 | 0 - 2 | 0 - 2 | 0 - 2 |
| No. 200 * | 0 - 1 | 0 - 1 | 0 - 1 | 0 - 1 | 0 - 1 | 0 - 1 |

* In gravels

00680.15 Aggregate Production Quality Control - Provide quality control during production of aggregate according to Section 00165. Sampling and testing shall be performed by a CAgT at the minimum frequency schedule indicated in the MFTP for Section 00641, or according to Section 00715, as applicable. Aggregates will be evaluated for compliance according to the following:

(a) Gradation - Analyze gradation statistically according to Section 00165. A stockpile contains specification aggregate when the Pay Factor (PF) for each sieve size calculated according to 00165.40 is equal to or greater than 1.00. Each required sample represents a subplot.

When the results from Table 00165-2 yield a Pay Factor of less than 1.00 for any sieve size, the material is non-specification. The Engineer will reject any stockpile of aggregate containing non-specification material unless the non-specification material is removed from the stockpile. Do not add additional material to such a stockpile until enough non-specification material is removed so that the PF for each sieve size is equal to or greater than 1.00.

(b) Other Tests - Stop production, make appropriate operational adjustments, and remove all failing material from the stockpile whenever a quality control test result, other than sieve analysis, does not meet Specifications. Document operational adjustments made and notify the Engineer prior to resuming production.

00680.16 Acceptance of Aggregate - The Contractor's quality control tests will be used for acceptance of aggregates if verified by the Agency's quality assurance program. The Agency will perform aggregate production quality assurance according to the following:

(a) ODOT-Administered Projects - Quality assurance testing on projects administered by ODOT will be performed according to Section 00165, the MFTP and the ODOT Quality Assurance Manual.

(b) Projects Administered by Other Agencies - The quantity of quality assurance testing on projects administered by Agencies other than ODOT will be at the discretion of the Agency or as specified.

Equipment

00680.20 Rock Crusher - Comply with the following:

(a) Permits - Before crushing rock for the Project, provide the Agency with copies of permits according to 00160.70.

(b) Crusher - Furnish rock crusher(s) capable of producing rock meeting these Specifications. Use an impact crusher of sufficient size and capable of producing aggregate in cubical form, free from sharp points or slivers.

00680.21 Conveyor - Provide conveyor(s) capable of reaching a minimum distance of 21 m (70 feet), to stockpile sanding materials in sand sheds without segregation during stockpiling.

00680.22 Hauling Equipment - Provide vehicles for hauling crushed aggregates capable of discharging the materials without segregation.

Labor

00680.30 Quality Control Personnel - Provide a Certified Aggregate Technician (CAgT) certified by ODOT.

Construction

00680.40 Preparation of Sites:

(a) Source Sites - Prepare and develop the source site according to the terms of the source permit and source development plan in the special provisions.

(b) Stockpile Sites - Clear, level and prepare stockpile sites as directed.

00680.41 Piling of Materials - Place each separate designated size of material to be stockpiled at a given site in a separate stockpile. Locate each stockpile to occupy as small an area as practical, and separate each pile so that working room will be adequate for removing the materials later. Height of the piles shall not be less than 2.4 m (8 feet), nor side slopes flatter than 1V:1.5H, unless directed. Except in sand sheds, stockpile sanding materials to a height of 4.6 m (15 feet), or as directed.

Place the material in stockpiles with a minimum of segregation. Unless otherwise permitted, place the material in stockpiles in horizontal layers not more than 1.2 m (4 feet) in thickness.

00680.42 Places of Delivery - Places of delivery and the tentative plans of distribution of the materials will be shown or specified.

00680.43 Agency's Right to Materials - If the Engineer finds it necessary, the Agency may take materials from stockpiles before the stockpiles have been completed and measured, or may take a part of the materials intended for placement in stockpiles, in trucks or other vehicles at the plant.

Finishing and Cleaning Up

00680.70 Cleaning Up Source Sites - Clean up the source sites according to the terms of the source permit and source development plan in the special provisions.

Measurement

00680.80 General - The quantity of each designated size of material will be the number of m³ (cubic yards), or the mass (weight) of the designated size of material delivered to and placed in stockpiles or sand sheds, as specified. Measurement of m³ (cubic yards) will be by cross-section measurement of the completed stockpiles, with no allowance for settlement or shrinkage. Measurement of mass (weight) will be according to 00190.10.

Work described in 00680.43 will be measured according to 00680.83.

00680.81

00680.81 Hauling - Unless specified, hauling of stockpiled materials will not be measured separately. The hauling costs are included in the Contract unit price(s) for the stockpiled material(s).

00680.82 Sand Sheds - No separate measurement will be made for placing materials in sand shed(s).

00680.83 Materials Taken from Stockpiles Prior to Completion - Materials taken by the Agency according to 00680.43 will be measured in the Agency's hauling vehicles. If measurement is on the volume basis, the vehicle measurement will be converted to equivalent stockpile measurement at the ratio of 1.00 m³ (1.00 cubic yard), vehicle measurement to 0.95 m³ (0.95 cubic yard), stockpile measurement. If measurement is on the mass (weight) basis, determine the mass (weight) of the material taken in Agency vehicles in the same manner and by the same means as used in determining the mass (weight) of materials stockpiled and paid for under the Contract.

Payment

00680.90 General - The accepted quantities of each size of specified material, will be paid for at the Contract price per unit of measurement for the following item:

_____ Material In Stockpile..... Mg or m³ (Ton or Cubic Yard)

The respective sizes of stockpiled aggregates will be inserted in the blank.

There will be no separate payment for source development and clean-up, preparation of stockpile sites, or placing materials in sand sheds, as the work will be considered incidental to payment for the listed pay item.

Payment will be payment in full for furnishing and placing materials in stockpiles and sand sheds, and for furnishing all equipment, labor and incidentals necessary to complete the work as specified.