SECTION 5
SPECIFICATIONS

SECTION 011100 - SUMMARY OF WORK

PART 1 - GENERAL

1.1 LOCATION OF THE PROJECT

A. The project is located on various streets within the Village of South Russell. A Summary Sheet is attached.

1.2 PROJECT DESCRIPTION

A. The project consists of pavement repairs, pavement planning, intermediate and surface courses, and single pass recycling.

Base Bid:

Southwyck Drive – Pavement Repair and Single Pass Recycling topped with Intermediate & Surface Courses.

Miscellaneous Streets within Village – Full Depth Pavement Repairs including Surface Course (6’ x 10’ minimum repair size) and Concrete Curb & Gutter.

Alternate A: Countryside Drive – Pavement Repair, Chip Seal Interlayer, Intermediate & Surface Courses.

Alternate B: Reserve Trail – Pavement Planing, Pavement Repair, Chip Seal Interlayer, Intermediate & Surface Courses.

B. Each bidder must bid on all Items, Alternates, Deductions, and Additions contained in the Bidding Forms. All bids not in conformity with this notice may be considered non-responsive and may be rejected.

2.2 SPECIFICATIONS

B. In general, these Specifications describe the work to be performed by the various trades, other than work specifically excluded. It shall be the responsibility of Contractors and Subcontractors to perform all work incidental to their trade, whether or not specific mention is made of each item, unless such incidentals are included under another Item.

C. It is advised that all Contractors and Subcontractors familiarize themselves with the contents of the complete Specifications, particularly for the trades preceding, following, related or adjacent to their work.

END OF SECTION 011100

Village of South Russell **2024 Pavement Repair Program**

			BASE BID	ALTERNATE A	ALTERNATE B
Description	BASE BID & ALTERNATES QUANTITY		SOUTHWYCK DRIVE 6,500 SY	COUNTRYSIDE DRIVE 4,700 SY	RESERVE TRAIL 3,000 SY
BONDS AND INSURANCES	1.00	LS	-----	-----	-----
PAVEMENT REPAIR	1,480.00	SY	325.00	705.00	450.00
PAVEMENT REPAIR w/ SURFACE COURSE - Misc. Locations	200.00	SY	200.00	0.00	0.00
COMBINATION CURB & GUTTER - Misc. Locations	150.00	LF	100.00	0.00	50.00
APRON TRANSITION	75.00	EA	40.00	35.00	0.00
PAVEMENT PLANING - Butt Joints	500.00	SY	200.00	300.00	0.00
PAVEMENT PLANING - Full Surface	3,000.00	SY	0.00	0.00	3,000.00
NON-TRACKING TACK COAT	2,130.00	GAL	975.00	705.00	450.00
ASPHALT SURFACE COURSE - 1.25"	520.00	CY	240.00	170.00	110.00
ASPHALT INTERMEDIATE COURSE - 0.75"	150.00	CY	140.00	110.00	70.00
MAINTAINING TRAFFIC	1.00	LS	-----	-----	-----
RECONDITIONING SHOULDERS	120.00	CY	65.00	55.00	0.00
CHIP SEAL INTERLAYER	7,700.00	SY	0.00	4,700.00	3,000.00
SINGLE PASS RECYCLING - 4 INCH	6,500.00	SY	6,500.00	0.00	0.00
STABILIZING ADDITIVE x 2.23	14,500.00	GAL	14,500.00	0.00	0.00

SECTION 011419 – USE OF SITE

PART 1 - GENERAL

1.1 GENERAL

A. The Contractor will be allowed the use of as much of the site designated for the improvements as is necessary for his operation.

1.2 USE OF STREETS

A. During the progress of the work, the Contractor shall make ample provisions for both vehicle and pedestrian traffic on any public street and shall indemnify and save harmless the Owner from any expense whatsoever due to their operations over said streets. The Contractor shall also provide free access to all the fire hydrants, water, and gas valves located along the line of his work. Gutters and waterways must be kept open or other provisions made for the removal of storm water. Street intersections may be blocked only one-half at a time, and the Contractor shall lay and maintain temporary driveways, bridges and crossings, such as in the opinion of the Engineer are necessary to reasonably accommodate the public.

B. In the event of the Contractor's failure to comply with these provisions, the Owner may cause the same to be done, and may deduct the cost of such work from any monies due the Contractor under this Agreement, but the performance of such work by the Owner at its instance shall serve in no way to release the Contractor from his general or particular liability for the safety of the public or the work.

C. The Contractor shall repair at no cost to the Owner, all existing roads, parking areas, grassed areas that are damaged due to the execution of his work. The Contractor shall remove daily all mud, soil and debris that may be tracked onto existing streets, drives, or walks by his equipment or that of subcontractors or suppliers.

1.3 CLOSING STREETS TO TRAFFIC

The Contractor may, with the approval of the Engineer, close streets, or parts of streets, to vehicular traffic. The streets are to remain closed as long as the construction work or the condition of the finished work requires or as determined by the Engineer. The Engineer shall be the judge of how many streets or parts of streets it is necessary for the Contractor to close at any time, and may refuse to permit the closing of additional streets to traffic until the majority of the work on the closed streets is completed and they are opened to traffic.

1.4 RIGHTS-OF-WAY

A. Whenever it is required to perform work within the limits of public or private property or in rights-of-way, such work shall be done in conformity with all agreements between the Owner and the owners of such. Care shall be taken to avoid injury to the premises entered, which premises shall be left in a neat and orderly condition by the removal of rubbish and the grading of surplus materials, and the restoration of said public or private property to the same general conditions as pertained at the time of entry for work to be performed under this contract.

B. The Contractor shall not (except after consent from the proper parties) enter or occupy with men, tools or equipment, any land outside the rights-of-way or property of the Owner.

C. When the Contractor performs construction within 10 ft. of a right-of-way or easement line, he shall place tall stakes properly identified at points of change in width or direction of the right-of-way or easement line and at points along the line so that at least two stakes can be seen distinctly from any point on the line.

1.5 EASEMENTS

A. Where the work is to be constructed upon easements, such easements will be secured by the Owner without cost to the Contractor. The Contractor shall not enter upon or occupy any private property outside of the limits of the easements furnished.

B. Care shall be taken to avoid injury to the premises entered, which premises shall be left in a neat and orderly condition by the removal of rubbish and the grading of surplus materials, and the restoration of said public or private property to the same general conditions as pertained at the time of entry for work to be performed under this contract.

1.6 PROTECTING EXISTING BUILDINGS, STRUCTURES AND ROADWAYS

A. The Contractor shall, at his own expense, shore up and protect any buildings, roadways, utilities or other public or private structures which may be encountered or endangered in the prosecution of the work, and that may not be otherwise provided for, and he shall repair and make good any damages caused to any such property by reason of his operations. All existing fences removed due to the prosecution of the work shall be replaced by the Contractor. No extra payment will be made for said work or material, but the cost of this work must be included in the price stipulated for the work to be done under this contract.

1.7 SITE FACILITIES

A. The Contractor shall furnish and place sufficient quantities of portable toilet facilities at locations convenient for use by the Contractor's personnel, Subcontractors, the Engineer, and the Owner.

1.8 RESTORATION

A. On all contract items that require and include surface restoration including repairs to driveways and roads outside trench limits, an amount equal to 10% of the unit price bid for sewer and/or waterline items will be considered the value of this work.

B. As work is completed, the payment for each contract item will be reduced by the 10% until full performance of all contract requirements.

C. Partial release of the 10% restoration money may be made by the Engineer commensurate with his determination of the value of said work.

D. If, in the opinion of the Engineer, the value of the restoration exceeds 10% of the contract line item, he may require a greater amount to be held but not in excess of 25%.

E. The amount held for restoration shall not be considered retainage of completed work but rather the value of work not yet performed and therefore not eligible for payment.

F. On lump sum items or contracts, the value of the restoration work will be determined by the approved schedule of values submitted by the Contractor.

END OF SECTION 011419

SECTION 013119 - PROJECT MEETINGS

PART 1 - GENERAL

1.1 PRECONSTRUCTION MEETING

A. Prior to the Contractor beginning any work on the project, the Owner will schedule and hold a preconstruction meeting to discuss all aspects of the contract work.

B. The Contractor shall be present and be prepared to comment in detail on all aspects of his work.

C. The Contractor shall bring to the preconstruction meeting a proposed construction progress schedule, erosion control plan, quality control program, concrete mix designs, asphalt mix designs (JMF), etc. Approval of each by the Engineer is required prior to the start of any work.

D. Included in the construction progress schedule shall be an implementation sequence of the proposed erosion control efforts required by the contract.

END OF SECTION 013119

SECTION 013216 – CONSTRUCTION PROGRESS SCHEDULE

PART 1 - GENERAL

1.1 PROGRESS SCHEDULE

A. Immediately after signing the Contract, the General Construction Contractor shall prepare a graphic progress schedule, indicating the work to be executed during each month and the rate of expected progress to secure completion on the agreed-upon completion date. The progress schedule shall be approved by the Engineer and Owner prior to starting work on the site. Copies of such graphic progress charts, upon which has been indicated the actual progress, shall be furnished to the Engineer with each requisition for payment.

This progress schedule must follow these general time frames (may vary with project):

1. Chip seal, paving fabric and/or the leveling course must start within 7 calendar days from the date of milling.

2. Casting adjustments and/or curb replacements must start within 7 calendar days from the completion of the chip seal, intermediate course and/or fabric.

3. Surface course asphalt concrete must begin installation within 7 calendar days from the completion of the casting adjustments and/or curb replacement.

4. Traffic paint, temporary or permanent must be installed within a time period as deemed adequate and desirable for each location.

B. Should the rate of progress fall materially behind the scheduled rate of progress, and unless the delay is authorized by the Engineer, each offending Contractor shall furnish additional labor, work overtime, or take other necessary means required for completion of the work on the scheduled date. No additional compensation beyond the set Contract price shall be paid for action taken or overtime expense incurred in maintaining scheduled progress.

END OF SECTION 013216

SECTION 013223.02 – SURVEY AND LAYOUT DATA

PART 1 - GENERAL

1.1 REFERENCE POINTS AND STAKING

A. The Owner shall provide engineering surveys for construction to establish reference points which, in his judgment, are necessary to enable the Contractor to proceed with the work. The Contractor shall be responsible for surveying and laying out the work and shall protect and preserve the established reference points and shall make no changes or relocations without the prior written approval of the Engineer. He shall report to the Engineer whenever any reference point is lost or destroyed or requires relocation because of necessary changes in grades or locations. The Contractor shall replace and accurately relocate all reference points so lost, destroyed or moved.

1.2 LAYOUT OF WORK

A. The Contractor shall lay out his work and be responsible for correct locations, elevations and dimensions of all work executed by him under this Contract. The Contractor must exercise proper precautions to verify the figures shown on the Drawings before laying out the work and will be held responsible for any error resulting from his failure to exercise such precaution. The Contractor shall employ a competent surveyor to establish lines and grades to insure the new construction aligns with any existing work.

END OF SECTION 013223.02

SECTION 013319.01 - FIELD TEST REPORTING
- AGGREGATE, SOILS, CONCRETE AND ASPHALT

PART 1 - GENERAL

1.1 SUMMARY

A. The Contractor shall be responsible for the quality of all materials incorporated into the project work and shall be responsible for all costs for testing and certification of same.

B. The Contractor shall provide the engineer with a Quality Control Plan in which his testing methods/procedures are defined. Said Plan shall meet with the approval of the Engineer and include identification of laboratories, types of testing, and the tentative amount and scheduling of each.

All certification of tests and/or gradations for material to be utilized in the work and all quality control testing shall be performed by an independent laboratory (not affiliated with, owned by, or managed by the Contractor). The laboratory shall be accredited by the AASHTO Materials Reference Laboratory for the type of testing performed.

C. The Owner may perform field Quality Assurance testing; however, such testing shall not relieve the Contractor from the responsibility of Quality Control testing or from supplying certificates from manufacturers or suppliers to demonstrate compliance with the specifications. It is intended that the testing by the Contractor and the Owner be complimentary toward a quality project; however, the Contractor may not assume the Owner will test or that any tests will be done in lieu of the Contractor's own Quality Control testing. In the same sense, the Contractor may not rely on Owner Quality Assurance testing as a basis of acceptance or approval of his work nor may any Owner-performed testing be reflected in his submitted plan.

1.2 TEST CRITERIA

A. The following tests at a minimum shall be included with the Contractor's Quality Control Plan in accordance with the specifications:

1. Aggregates
   a. For each material and/or different source, the laboratory shall perform soundness, gradation, and other tests for all parameters specified. Aggregates incorporated into concrete or asphalt mixes shall also be tested for moisture content daily.

2. Compaction Tests
   a. Compaction tests or field density tests shall be taken on all embankment, trench backfill, subgrade, and subbase materials.

   b. Minimum testing shall be as follows:
      Embankment testing shall be at least one (1) test/5,000 SF of each lift; Trench backfill testing shall be at least one (1) test/50 LF of each lift; Subgrade and/or subbase testing shall be at least one (1) test/200 LF of pavement or 5,000 SF of slabs; subject to greater frequency due to soil conditions or Engineer's direction.

   c. Proctors or relative density tests shall be performed as often as necessary for the differing soils or granular materials utilized. Proctors shall be run with a minimum of 5 points. Test reports shall show the wet (bulk) weight, dry weight, wet (bulk) density, dry density, moisture content weight and moisture content percentage. Both the dry curve and the wet curve shall be plotted.

3. Concrete Mix Design
   a. For each type of concrete, the laboratory shall perform the necessary mix design providing all test data as required by the specifications.

4. Concrete Field and Laboratory Tests
   a. The laboratory shall cast concrete cylinders and test beams:
      1. One set of four cylinders per 50 CY with a minimum of two sets per day. The cylinders shall be broken: one at 7 days, two at 28 days, one at 56 days, unless otherwise directed by the Engineer.
      2. One beam per 50 CY with a minimum of two beams per day.

   b. Temperature and unit weight shall be run on fresh concrete at intervals sufficient for the type of structure being placed and a minimum of once per day. Bulk weight, bucket weight, (tare), net weight, bucket factor (bucket volume) and unit weight shall be recorded on the fresh concrete report. Show all batch weights for yield calculations. Slump and air content tests shall be taken a minimum of one test per 20 CY and at least once per day.

   c. All field and laboratory testing shall be performed by technicians certified by the American Concrete Institute (ACI) for the type of testing performed.

   d. Initial cure of all cylinders shall be in a temperature controlled cure box or temperature controlled water tank with a hi-low thermometer. Hi-low temperature readings shall be recorded on the fresh concrete report.

5. Asphalt Mix Design
    a. For each type of asphalt mix, submit job mix formula (JMF) prepared by an ODOT pre-qualified laboratory from tests performed on the aggregates proposed for use.
    b. Sample and test for gradation and bitumen content per ODOT 441.

1.3 LABORATORY REPORTS

A. Reports of laboratory and field tests will be distributed to the Engineer, Owner, and Suppliers within 24 hours of completion.

END OF SECTION 013319.01

SECTION 013543 - ENVIRONMENTAL PROTECTION

PART 1 - GENERAL

1.1 UNNECESSARY NOISE, DUST AND ODORS

A. The Contractor's performance of this contract shall be conducted so as to eliminate all unnecessary noise, dust and odors.

1.2 SEWAGE, SURFACE AND FLOOD FLOWS

A. The Contractor shall take whatever action is necessary to provide all necessary tools, equipment and machinery to adequately handle all sewage, surface flows and flood flows which may be encountered during the performance of the work. The entire cost of and liability for handling such flows is the responsibility of the Contractor and shall be included in the price for the appropriate item.

1.3 WORK IN FREEZING WEATHER

A. Written permission from the Engineer shall be obtained before any work is performed which, in the judgment of the Engineer, may be affected by frost, cold, or snow. When work is performed under such conditions, the Contractor shall provide facilities for heating the materials and for protecting the finished work.

1.4 POLLUTION CONTROL

A. It shall be the responsibility of the Contractor to prevent or limit pollution of air and water resulting from his operations.

B. The Contractor shall perform work required to prevent soil from eroding or otherwise entering onto all paved areas and into natural watercourses, ditches, and public sewer systems. This work shall conform to all local ordinances and/or regulations, if any, and if not otherwise regulated by local ordinances or regulations shall at a minimum conform to the Ohio EPA General Storm Water NPDES Permit for Construction Activities and the Ohio Department of Natural Resources Rainwater and Land Development manual. This work may consist of but not be limited to construction and continual maintenance of silt fence, bio bag filters, sedimentation traps, stilling basins, check dams, temporary seeding, temporary mulching, erosion mats and other means to clarify waters containing suspended materials from excavations, embankments, cleared and grubbed or stripped areas, stockpiles, well points, and disposal sites and shall be commensurate with the contractor’s schedule, sequence of work, means and methods. If a SWPPP plan is not required for the project, the contractor shall at a minimum submit a plan of his proposed erosion control prevention methods for approval by the Owner and/or other regulatory authorities having jurisdiction prior to starting any construction activities which may cause erosion.

C. The Contractor shall perform work required to prevent dust attributable to his operations from entering the atmosphere. Dust on unsurfaced streets or parking areas and any remaining dust on surfaced streets shall be controlled with water and/or calcium chloride dust palliative as needed.

D. Any material removed from sanitary or storm sewers shall be disposed in accordance with all applicable regulations.

END OF SECTION 013543

SECTION 014323 – QUALIFICATIONS OF TRADESMEN

PART 1 - GENERAL

1.1 CHARACTER OF WORKMEN AND EQUIPMENT

A. The Contractor shall employ competent and efficient workmen for every kind of work. Any person employed on the work who shall refuse or neglect to obey directions of the Engineer or his representative, or who shall be deemed incompetent or disorderly, or who shall commit trespass upon public or private property in the vicinity of the work, shall be dismissed when the Engineer so orders, and shall not be re-employed unless express permission be given by the Engineer. The methods, equipment and appliances used on the work and the labor employed shall be such as will produce a satisfactory quality of work, and shall be adequate to complete the contract within the specified time limit.

B. In hiring of employees for the performance of work under this Contract, or any Subcontract hereunder, no Contractor or Subcontractor, nor any person acting on behalf of such Contractor or Subcontractor, shall, by reason of race, sex, creed or color, discriminate against any citizen of the State of Ohio in the work to which the employment relates. No Contractor, Subcontractor, nor any person on his behalf shall, in any manner, discriminate against or intimidate any employee hired for the performance of work under this contract on account of race, creed, sex or color.

END OF SECTION 014323

SECTION 015526 - TEMPORARY TRAFFIC CONTROL DEVICES

PART 1 - GENERAL

1.1 BARRICADES, SIGNS AND LIGHTS

A. The Contractor shall employ watchmen on the work when and as necessary. The Contractor shall erect and maintain such strong and suitable barriers and such lights as will effectively prevent the occurrence of any accident to health, limb or property. Lights shall be maintained between the hours of one-half (1/2) hour after sunset and one-half (1/2) hour before sunrise.

B. No manhole, trench, excavation will be left open awaiting connection or removal at a later date by the Contractor's forces or others but shall be temporarily backfilled and resurfaced if applicable with a temporary pavement passable to traffic at no additional cost to the Owner.

C. In addition to other safety requirements, a minimum of four (4) foot high fence will be incorporated around any shaft or manhole or other excavation left open at the end of a day's work.

1.2 MAINTENANCE OF TRAFFIC

A. The Contractor is required to provide maintenance of traffic in conformance with the Ohio Manual of Uniform Traffic Control Devices and Item 614 of the current Construction and Material Specifications of the Ohio Department of Transportation.

B. This work shall include providing suitable and satisfactorily trained and properly attired flagmen for use at any location where existing roadway is narrowed to a width of less than 2 full lanes (18 feet).

C. The Contractor is also responsible for maintaining local access to all residences and businesses along the route of the sewer and to provide whatever temporary materials are necessary to provide a safe, adequate drive surface.

D. At all boring locations, Contractor shall provide suitable flashers, barricades, and traffic control devices as may be deemed necessary by the Engineer or the responsible authority in the case of the Department of Transportation, Turnpike Commission, or Conrail. This may extend to maintain facilities on a 24-hour basis until such time as the areas are completely backfilled.

END OF SECTION 015526

SECTION 017800 - FINAL COMPLIANCE AND SUBMITTALS

PART 1 - GENERAL

1.1 The following forms and related sign-offs shall be documented in accordance with provisions of the contract. These forms shall be completed by the Contractor and approved by the Owner before final retainer is approved for release. Forms for Items A to E will be attached to the Contractor's executed copy of the contract.

A. Certificate of Substantial Completion (To be submitted at time of Substantial Completion).

B. Contractor's Certification of Completion.

C. Contractor's Affidavit of Prevailing Wage.

D. Consent of Surety Company for Final Payment.

E. Affidavit of Final Acceptance Date and Correction Period.

F. Certificate of Insurance verifying completed operations insurance coverage.

END OF SECTION 017800

SECTION 321216 - ASPHALT CONCRETE PAVING AND MATERIALS

SECTION 1 - MATERIALS

1.1 The asphalt concrete mixture and installation thereof shall meet Ohio Department of Transportation (ODOT) Specifications except as modified in these specifications.

1.2 In the ODOT Specifications substitute "Engineer" for "Department" (except as stated below in reference to ODOT 403 for Department VA testing and acceptance).

1.3 No steel slag shall be used as coarse or fine aggregate for any asphalt concrete.

1.4 All asphalt cement utilized on this project shall meet AASHTO Provisional Standard MP1 or any superseding AASHTO specification for performance graded asphalt cement binder in conformance with PG 64-22.

1.5 The following exceptions shall be made for the Asphalt Concrete Surface Course:

A. The coarse aggregate material shall be only limestone.
B. No Recycled Asphalt Product (R.A.P.) will be permitted.

1.6 Except where designated otherwise in the plans or specifications all asphalt concrete mixes shall be designed for medium traffic volumes. Where light or heavy traffic pavements are designated in the plan, the contractor shall use an asphalt concrete mix designed for such traffic conditions.

1.7 Acceptance of the mixture will be based upon the certification that the mixture was produced according to the approved JMF within the production control and composition tolerances of the specifications. The Contractor shall hire and pay for an independent testing lab approved by the Engineer to perform all sampling, testing, monitoring, analysis and certification required by the Laboratory, Monitoring Team or Department in ODOT 403 and 441. All work by the independent laboratory shall be performed by personnel with ODOT Level II Bituminous Concrete certification.

1.8 ODOT 401.20 - "Asphalt Binder Price Adjustment" shall not apply to this contract.

1.9 Monument box and valve box risers shall be East Jordan Iron Works No. 8626, No. 8631, or approved equal. The Contractor shall follow the manufacturer's recommended installation procedure. New manhole frames and grate or frame and cover shall be EJIW 1710.

1.10 Brick used for manhole, catch basin, or inlet basin castings adjusted to grade under ODOT 611.10 Method D.1. shall be red shale or clay sewer brick meeting the requirements of ASTM C32 sewer brick, grade SM.

1.11 Risers used for manhole castings adjusted to grade under ODOT 611.10 Method D.2. shall be manufactured by Manhole Systems, Model MS-101TB, or approved equal.

1.12 All materials delivered to this project must have been weighed on a platform scale with electronic imprinter to show gross, tare, and net weights. No payment will be made for materials which are not correctly weighed as necessary. Material weight shall not exceed the current legal allowable limit.

1.14 Unless specified elsewhere in the specifications, material for berms shall be Recycled Asphalt Pavement complying with O.D.O.T. 703.18 A. RAP gradation.

SECTION 2 - PAVING EQUIPMENT

2.1 All spreading equipment shall be self propelled. The Contractor shall identify the make and model of the paving machine that will be used for the intermediate and surface courses for approval prior to the pre-construction meeting.

2.2 All equipment, tools, and machines used in the performance of this work shall be maintained in satisfactory working order at all times. The Contractor shall be prepared to furnish proof of certification that all equipment to be used on the project has been calibrated within the past six (6) months.

SECTION 3 - GENERAL - PAVING

3.1 All paving shall be done on a single-lane basis.

3.2 If traffic loop detectors are encountered and broken, the Contractor is to repair as per local specifications. The cost for this work will be paid under the loop detector replacement bid item, if any; at negotiated unit prices; or by time and materials as directed by the Engineer.

3.3 Tack Coat, Item 407, shall be applied at the rate of from 0.05 to 0.15 gallons per square yard as appropriate for the surface conditions with sand cover if required.

3.4 Driveway aprons shall be matched to new pavement with 24” transition sections or as shown on the drawings or required by the Engineer.

3.5 Unless otherwise shown on the drawings, jointing of new to existing pavement shall be by milled butt joints six (6) feet in width (or as shown on the plans) from edge of pavement to edge of pavement. Depth of this milled area shall equal the total of subsequent intermediate course and surface course as specified.

3.6 One (1) copy of each hauled/weighed material truck load ticket (plant ticket) for materials incorporated in this project shall be provided to the project representative daily. If a partial load is used, the Contractor's foreman and the project representative shall confer and come to an agreement as to what portion of the product was used. The percent of material of this load, as reported by the project representative, is what shall be recorded as utilized.

3.7 For variable depth courses where tonnage tickets are used for determining quantities for payment, the conversion to cubic yards shall be number of tons verified and approved by the Engineer divided by 2.00 regardless of the actual density of the mix.

3.8 Positive drainage is to exist subsequent to the completion of the surface course. The Contractor shall take any necessary measures to assure positive drainage of the surface course. It shall be the responsibility of the Contractor to repair any low/puddled areas at his own cost by milling out the affected areas to a minimum depth equal to the nominal depth of the course being repaired and replacing with the specified asphalt concrete to grades that will correct the drainage problem.

3.9 Surface tolerances for all completed surface courses shall be as noted in ODOT 401.19. This tolerance shall apply regardless of whether or not an intermediate course is installed.

3.10 At the direction of the Engineer, periodic weight checks of asphalt concrete in loaded trucks shall be made by the Contractor and verified by the Engineer.

3.11 All quality control testing data performed on material incorporated into this project shall be forwarded to the Engineer for review as soon as it is available.

3.12 Quantity verification (but not necessarily payment quantity) for all asphalt concrete incorporated into the work shall be by weight tickets as produced by the plant or supplier or other means approved by the Engineer. Tack coat shall be verified by a ticket filled out and signed by the Contractor's tack truck driver based on weights taken or observations of level indicators. All verification tickets are required to be submitted to the Engineer on the day the material is incorporated into the work; however, the Engineer may, at his sole discretion, accept verification tickets for any items up to seven (7) calendar days subsequent to the work being performed. **After that date, additional verification tickets for material will not be accepted for consideration of payment.**

3.13 No work is to be performed without the presence of the Engineer or his designated Project Representative. Forty-eight (48) hour advance notice of work shall be given to the Engineer and Owner by the Contractor.

3.14 When any surface course or intermediate course is placed on a new intermediate course while that course is still clean and within ten (10) days of installation of that course, a tack coat will not be required. When any surface course or intermediate course is placed on a new intermediate course that is not clean or is not placed within ten (1) days after installation of that course, the Contractor shall provide a tack coat, Item 407, at his own expense, as directed by the Engineer.

3.15 All edges of surface courses abutting curbs or other appurtenances shall be sealed with hot AC-20.

END OF SECTION 321216

321216.21 - BITUMINOUS PAVEMENT SINGLE PASS RECYCLING

PART 1 – GENERAL

1.1 SCOPE OF WORK

This work shall consist of recycling the existing pavement as specified to the depth indicated on the plans or in the specifications and/or in close conformity to the existing line, grade, and width.

1.2 GENERAL DESCRIPTION

Through a Single Pass Asphalt Recycling Machine, the pavement's existing asphalt shall be milled to a designated depth, mixed with an asphalt emulsion additive. Grading and rolling of inaccessible areas shall follow to insure proper drainage and compaction.

The recycled material shall be such that 95 - 100% meets a gradation of one and one half (1 ½) inches or smaller. Although the specified pavement thickness will be designated in the proposal, the Contractor may be required to vary the depth to insure that the underlying subgrade is not disturbed.

Asphalt Recycling Machine

1. Milling Drum: The milling drum shall operate in an upmilling direction and be equipped with a minimum of 140 teeth plus end of drum with a sufficient number of teeth segments to insure a square cut. The machine shall be equipped with a fully automatic performance regulator that automatically regulates the working speed with the milling drum pressure.

2. Milling Depth and Slope Controls: The "Single Pass Asphalt Recycler" shall be equipped with an automatic grade control. The nominal milling depth shall be set on both sides of the machine. The grade control shall maintain depth by constantly monitoring both of the rear positioning cylinders to insure uniform depth from the crown of the road to the road's edge. The recycling machine shall be equipped with a slope control device that permits the milling to be sloped from 0" to 5/8" per foot in either direction.

3. Crawler Tracks: All four crawler tracks shall be equipped with rubber pads to eliminate damage to existing pavement not included in the project. Rubber-tired machines will not be permitted.

4. Liquid Asphaltic Emulsion Metering System: The additive system shall have an electronic control unit for selecting and measuring the required amount of asphaltic emulsion. The control unit shall also monitor the amount of emulsion that the volumetrically controllable pump sends to the injection nozzles. It shall also have a programmable microprocessor that compensates for variables such as forward speed of the machine, the milling depth, milling width, and material density to always provide the correct percentage of emulsion additive. The recycling width shall vary by opening and closing valves to the individual injection nozzles.

5. Variable Paving and Compaction Screed: The recycling machine shall be equipped with a vibrating paving screed capable of shaping to grade and profile, including pre-compaction in a "Single Pass."

Preparation

If applicable, prior to the "Single Pass Asphalt Recycling" procedure, the Contractor shall remove existing pavement adjacent to the existing vertical curb, curb and gutter, or pavement edge to a depth as determined by the thickness of the new pavement or as directed by the Engineer. The width of the pavement removal shall be at least four (4) feet or as determined by the Engineer in the field.

Excess grindings as a result of this operation shall be removed from the site.

When complete and after the intended asphalt concrete overlays the final edge of pavement elevation shall not vary more than 1" from original elevation.

Materials and Application Rates

The asphalt emulsion shall be Cationic Cyclogen ME-CSS1, and be mixed at the rate of .50 gallons per inch depth per square yard. This rate can vary due to field conditions, test results, and the Engineer (or his field representative's decision).

Grading and Compaction

Fine grading and compaction shall follow the "In-place Asphalt Recycling" operation, specifically areas which may not be accessible. Grading shall meet requirements for bituminous base material for ODOT #301. Compaction shall meet the requirements of ODOT #401.

Cationic Cyclogen ME – CSS-1

The Recycling Agent Cyclogen ME shall be composed of petroleum resin oil base emulsion with water. The recycling agent Cyclogen ME shall be blended with Emulsified Asphalt CSS-1 at a ratio varying between 15% and 25% by volume as required by a job mix formula prepared by the Contractor and approved by the Engineer.

Specification for CSS-1

Viscosity, Saybolt Furol at 77º F
Min: 20 Max: 100

Storage Stability Test	24h%	1

Particle Charge Test	(Positive)
Sieve Test	0.10 Max
Cement Mixing Test	2.0 Max

Distillation
Oil distillate by volume of emulsions, % residue 57 min

Test Residue

Penetration	100 Min.	250 Max.
Ductility	40 Min.	
Solubility in trichlorethylene		97.5%

Specification for Cyclogen ME

The Emulsion Recycling Agent shall be composed of a petroleum resin oil base uniformly emulsified with water. The Contractor shall submit a certified statement from the recycling agent manufacturer showing that the emulsion conforms to the following physical and chemical requirements.

Test-Emulsion	ASTM Test Method	Requirements Min.	Max.
Viscosity @ 25º C, SFS	D-244	15	40
Residue, %wt	D-244 (Mod)	60	65
Miscibility Test	D-244 (Mod)	No coagulation	
Sieve Test, %wt	D-244 (Mod)	-0.1	
Particle Charge Test	D-244	Positive or Neutral	

ASTM D-244 Modified Evaporation Test for percent of residue is made by heating 50 grams sample to 149º C (300º F) until foaming ceases; then cool immediately and calculate results. Test procedure identical with ASTM D-244-60 except that .02 Normal Calcium Chloride solution shall be used in place of distilled water.

TEST ON EMULSION RESIDUE FROM DISTILLATION

Property	Function & Purpose	ASTM Test Method	Required
Viscosity @ 60ºC cSt	Asphalt Viscosity Adjustment in recycled mix	D-2170	200-500
Flash Point, COC, ºC	Handling precaution	D-92	204 min.
Volatility, IBP, ºC	Avoidance of air pollution and hardening by evaporation	D-1160	149 min.
2% v, ºC		10mm	191 min.
5% v, ºC			210 min.
RFT-C Weight Change, %wt.	Durability of the Recycling Agent	D-2872	4.0 max
Compatibility, PC/S	Avoidance of Syneresis	D-2006-70	0.5 min.
Saturates %wt	Compatibility with aged asphalt	D-2007	28 max.
Asphaltenes, %w	Compatibility with aged asphalt	D-2006-70	1.0 max.
Chemical Composition (PC + A/S + A)	Durability of asphalt in recycled mix	D-2006-70	0.4 – 0.8
RTF-C Ratio*	Durability of asphalt in recycled mix	D-2872	2.5 max.

*Viscosity, RTF-C residue @ 60ºC cSt/ viscosity, original materials @ 60ºC cSt.

The materials shall be a napthanic base cationic emulsion and shall have the capability of rejuvenating by increasing the ductility and penetration value of the asphalt binder in the material to be recycled. This will be verified by the Pre- and Post-test Comparisons.

The Contractor shall furnish a notarized manufacturer's certification attesting to conformance to the above physical and chemical requirements. Previous use documentation will be required for similar type applications.

Preliminary Testing

Test core samples have been extracted from random locations by the Engineer to determine the depth of asphalt on each pavement to be recycled.

Mix Design

It shall be the Contractor's responsibility to remove samples of pavement and perform the hereinafter described testing to establish an approved mix design. The proposed mix design shall be submitted to the Engineer at least two days prior to the start of work on any pavement section.

A representative sample shall be taken for 8,000 sq. yds. of pavement to be recycled, or at each visible change in the mix type. The aggregate and asphalt binder shall be separated and analysis of the aggregate gradation and amount, penetration value and viscosity of the residual asphalt shall be performed. The basic properties of the pavement to be recycled shall be determined as follows: A representative sample of pavement to be recycled, about 5 kg, for each test area shall be heated at 140ºF for approximately one half hour and then crumbled, taking care not to crush the aggregate. The residual asphalt shall be extracted from a 4 kg sample of the crumbled pavement by absom recovery method. The recovered asphalt shall be evaluated for percent of total pavement sample by weight, penetration value at 77ºF and viscosity of 140ºF. The sample aggregate shall be dried and a sieve analysis performed to determine: percent retained on No. 8 sieve, percent retained on No. 200 sieve, percent passing No. 200 sleeve. From the gradation data, the asphalt demand of the aggregate sample shall be determined by the following formula:

$$\frac{P = (4R + 75 + 12F) \times C}{100}$$

Asphaltic Recycling Agent Required = P x A
Where:

P = weight percent of asphalt in the mix
R = weight percent of rock in the aggregate, retained on No. 8 sieve
S = weight percent of "sand" defined as the portion in the aggregate passing No. 8 sieve, retained on No. 200 sieve
F = weight percent of fines in the aggregate, passing No. 200 sieve, and
A = Asphalt content, sample extraction
C = a factor to adjust from new aggregate (c=1.0) to recycled aggregate.
Therefore if
Penetration value of recovered AC is 15 or less, C = 1.2
Penetration value of recovered AC is greater than 15, C = 1.1
Fines (F) passing No. 200 sieve exceed 7.5%, C = 1.2

A check of moisture content in the pavement to be recycled shall be performed. It is required that a minimum moisture content of 4% be maintained throughout the blending and compaction operation.

Should additional moisture above the designed percentage of recycling agent be necessary then water shall be added to said agent to satisfy the requirement.

Recycling Agent

The asphalt recycling agent shall be composed of a petroleum resin oil base uniformly emulsified with water. The Contractor shall submit a certified statement from the recycling agent manufacturer showing that the asphalt recycling emulsion conforms to the following physical and chemical requirements.

SPECIFICATIONS FOR RECYCLING AGENT

Tests – Emulsion	ASTM Test Method	Requirements
Viscosity @ 25ºC, SFS ASTM	D-244	15 – pumping
Stability	GB Method**	Pass
Emulsion coarseness	Sieve test	0.1 max.
%w	ASTM D-244***	
Sensitivity to fines	Cement mixing	2.0 max.
%w	ASTM D-244	
Particle charge	ASTM D-244	Positive
Concentration of all phase, %w	(MOD)****	60 min.

Meets all requirements of Pacific Coast User Producer specs for Asphalt Recycling Agents dated 5/15/79.

** The following suitable pumping temperatures, M-88 Cº (190ºF).
*** Viscosity, ATF-C residue @ 60ºC cSt/viscosity, original materials @ 60 cSt.
**** For conversion to tons, use 242 gal/ton.

SPECIFICATIONS FOR RECYCLING AGENT RESIDUE

Tests – emulsion	ASTM Test Method	Requirements
Viscosity @ 60ºC, cSt	D-2170	1000-4000
Flash Point, COC, C	D-92	232 min.
Volatility		
IBP, C	D-1160, 10mm	163 min.
2% v, C	D-1160, 10mm	204 min.
5% v, C	D-1160, 10mm	221 min.
RTF-C weight change, %w	D-2872	2.0 max.
Compatibility, PC/S	D-2006-70	7.0 max.
Saturates, %w	D-2007	28 max.
Asphaltenes, %w	D-2006-70	7.0 max.
Chemical Composition	D-2006-70	0.6 – 1.0 max.
(N + A1)/ (P + A2)		
RTF-C Ratio**	D-2872	2.5 max.
Specific Gravity***	D-70	0.98 – 1.02

Suitable pumping temp: 88ºC (190ºF)
** Viscosity, RTF-C residue @ 60ºC cSt/viscosity, original materials @ 60ºC cSt.
*** For gal./ton conversion use 242 gal./ton.

Additional Additives

To provide additional stability and obtain optimum moisture content during curing a 35% calcium Chloride solution shall be injected into recycled mat. Based on preliminary mix design where the asphalt content is less the 6% .30 to .35 gallons per square yards calcium chloride solution is required. Where asphalt content exceeds 6% .60 to .70 gallons per square yard calcium chloride solution is required.

Field Conditions

The equation system is used for estimating purposes only and may change as field conditions vary. Final decisions and field adjustments for amount of Cyclogen ME and additional water additive shall be made in concert by both the Contractor and the Engineer or the Field Inspector.

SECTION 329200.19 – SODDING, SEEDING AND MULCHING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

. Drawings and General Provisions of Contract, including General and Supplementary Conditions and Division 1 Specification sections, apply to work of this section.

1.2 DESCRIPTION OF WORK

A. Installation of seeded and sodded areas shall be the extent shown on Contract Drawings and shall include supplying all seed, sod, soil condition materials, mulching materials and watering and the incorporation of these materials into the work as specified.

B. The Contractor shall place stockpiled topsoil in those areas requiring seeding or sod. If the quantity of stockpiled topsoil is insufficient, the Contractor shall furnish and install additional topsoil as required to complete the work.

1.1 QUALITY ASSURANCE

A. Any subcontracted restoration work shall be performed by a qualified firm specializing in landscape work.

B. Topsoil: Before delivery of topsoil, furnish Architect/Engineer with written statement giving location of properties from which topsoil is to be obtained, names and addressed of owners, depth to be stripped, and crops grown during past 2 years.

Contractor shall have a soils test done at his expense and analyzed by an approved testing agency, to determine soil amendments for topsoil and provide a copy to the Engineer prior to the start of fine grading.

B. Seed: All seed specified shall meet O.D.O.T. specifications as to the percentage purity, weed seed, and germination. All seed shall be approved by the State of Ohio, Department of Agriculture, Division of Plant Industry, and shall meet the requirements of these specifications.

Contractor shall provide the Engineer with a list of the seed he intends to use, including varieties of seed, labels, and suppliers name and phone number, four (4) weeks prior to the start of seeding, for approval.

D. Sod: All sod shall meet the current specifications of ODOT for percentage of weeds. The Contractor shall provide the Engineer with the following information from the sod supplier: the name of the producer, the location of sod field, the date the sod was cut and the thickness the sod was cut.

1.4 DELIVERY, STORAGE AND HANDLING

A. Packaged Materials: Deliver packaged materials in containers showing weight, analysis, and name of manufacturer. Protect materials from deterioration during delivery, and while stored at site.

1.5 JOB CONDITIONS

B. Utilities: Determine location of underground utilities and perform work in a manner which will avoid possible damage. Hand excavate, as required. Maintain grade stakes set by others until removal is mutually agreed upon by parties concerned.

C. Excavation: When conditions detrimental to plant growth are encountered, such as rubble fill, adverse drainage conditions, or obstructions, notify Engineer before planting.

D. Soil Stabilization: The Contractor shall provide permanent or temporary soil stabilization to denuded areas within fifteen days after final grade is reached on any portion of the site. Any such area which will not be regraded for longer than fifteen days shall also be stabilized. Soil stabilization includes any measures which protect the soil from the erosive forces of raindrop impact and flowing water. Applications include seeding and/or mulching. The Contractor shall consider time of year, site conditions and estimated time of use for the project. If necessary, the Contractor shall coordinate soil stabilization practices with the local Soil and Water Conservation District.

D, All work shall be guaranteed for one full growing season to commence upon final acceptance of lawn work.

E. Spring-sown work shall be installed between April 1st and May 30th and Fall-sown work shall be installed between September 1st and October 15th. No permanent seeding shall take place between May 30th and September 1st and between October 15th and April 1st. The dates for seeding may be changed at the discretion of the Architect/Engineer.

PART 2 - PRODUCTS

2.1 TOPSOIL

A. Topsoil shall be furnished by the Contractor. Stockpiled material, if any, shall be utilized prior to obtaining additional topsoil.

B. New topsoil shall conform to the U.S. Department of Agriculture soil texturing triangle. Screen topsoil from clay lumps, brush, weeds, litter, roots, stumps, stones larger than 1/2 inch in any dimension, and any other extraneous or toxic matter harmful to plant growth.

Obtain topsoil from naturally well drained sites where topsoil occurs in a depth of not less than 4 inches. Do not obtain from bogs or marshes.

C. Soil amendments shall be added according to the soils test requirements. Amendments can include, but are not limited to fertilizer, lime, compost, and organic matter.

2.2 SEED

A. Seed shall be vendor mixed, delivered in original bags and shall be proportioned as follows:

Common Name	Proportion by Weight
Kentucky Blue Grass	40%
Penn Lawn Fescue	40%
Perennial Rye	20%

1. Supplier's name and analysis of seed is to be submitted to the Engineer.

2.3 MULCH

A. Mulch shall be clean straw free of seed and weed seed.

B. If hydroseeding is used, wood fiber mulching material shall be used and shall consist of virgin wood fibers manufactured expressly from whole wood chips and shall conform to the following specifications.

- Moisture content	10.0% $\pm$ 3.0%
- Organic content	99.2% $\pm$ 0.8% O.D. Basis
- pH	4.8 $\pm$ 0.5
- Water holding capacity, minimum (grams of water per 100 grams of fiber)	1,000

Wood fiber mulching material shall be processed in such a manner as to contain no growth or germination inhibiting factors, and must contain a biodegradable green dye to aid in visual metering during application.

2.4 SOD

A. Sod shall be well-rooted Kentucky Blue Grass (Poa pratensis) blend grown on a mineral soil and obtained from a commercial sod nursey. Sod shall be free of all noxious weeds such as wild mustard, thistles, quack grass, etc. and reasonably free from dandelions and crabgrass.

B. Sod shall have been recently mowed to a height of not more than 2 inches and shall be cut in strips not less than 3 feet long nor more than 6 feet long and shall be cut in a uniform width of not over 18 inches.

C. Sod shall be delivered to the job within 24 hours after being cut and shall be installed within 36 hours after being cut.

D. During wet weather, the sod shall be allowed to dry sufficiently to prevent tearing during handling and placing and during dry weather have been watered before lifting to insure its vitality and to prevent dropping off of soil during handling.

PART 3 - EXECUTION

3.1 PREPARATION - GENERAL

A. A soils test of the topsoil shall be done by the Contractor at his expense. A copy of the test shall be submitted to the Engineer.

B. Rough grading must be approved prior to placing topsoil.

C. Loosen subgrade of lawn areas. Remove any stones greater than 1-inch in any dimension. Remove sticks, roots, rubbish, and other extraneous matter.

C. Spread topsoil to a minimum depth of 4 inches, to meet lines, grades, and elevations shown on plan, after light rolling and natural settlement. Remove sticks, roots, rubbish, stones greater than 1/2" in any dimension, and other extraneous matter. Topsoil shall be tilled thoroughly by plowing, disking, harrowing, or other approved methods. Add specified soil amendments and mix thoroughly into the topsoil.

D. Preparation of Unchanged Grades: Where seed is to be planted in areas that have not been altered or disturbed by excavating, grading, or stripping operations, prepare soil for planting as follows: Till to a depth of not less than 6 inches. Apply soil amendments and initial fertilizers as specified. Remove high areas and fill in depressions. Till soil to a homogenous mixture of fine texture, free of lumps, clods, stones, roots and other extraneous matter. Soils test requirements apply here as well.

1. Prior to preparation of unchanged areas, remove existing grass, vegetation and turf. Dispose of such material outside of project limits. Do not turn existing vegetation over into soil being prepared for seed. If necessary, supply and install topsoil in areas where there is no topsoil left after vegetation has been removed in conformance to Section 2.1.
2. Allow for sod thickness in areas to be sodded.
3. Apply specified soil amendments at rates specified in the soils test and thoroughly mix into upper 2 inches of topsoil. Add topsoil if existing grade has less than 4" of topsoil. Delay application of amendments if planting will not follow within a few days.

E. Fine grade areas to smooth, even surface with loose, uniformly fine texture. Roll, rake, and drag lawn areas, remove ridges and fill depressions, as required to meet finish grades. Remove sticks, roots, rubbish, stones greater than 1/2" in any dimension, and other extraneous matter. Limit fine grading to areas which can be planted immediately after grading.

F. Moisten prepared areas before planting if soil is dry. Water thoroughly and allow surface moisture to dry before planting lawns. Do not create a muddy soil condition.

G. Restore areas to specified condition, if eroded or otherwise disturbed, after fine grading and prior to planting.

3.2 SEEDING

A. Do not use wet seed or seed that is moldy or otherwise damaged in transit or storage. Seed shall not be sown when the ground is frozen, muddy, or when weather conditions prevent proper soil preparation, interference with sowing and/or proper incorporation of seed into the soil.

B. Sow seed using a spreader or hydroseeder. Do not seed when wind velocity exceeds 5 miles per hour. Distribute seed evenly over entire area by sowing 2-1/2 lbs. per 1,000 SF at right angles to each other. Total amount to equal 5 lbs. per 1,000 SF unless otherwise altered by the plans or Engineer.

C. Mulch shall be spread uniformly to form a continuous blanket at a rate of 100 lbs. per 1,000 SF. Mulch shall be 1-1/2" loose measurement over seeded areas.

Anchor mulch using an ODOT specified SS-1 at 60 gal./ton non-toxic tackifier such as Hydro-stik, or equal, or by securing with a netting such as Conwed, or equal.

C. Unless otherwise directed by the Architect/Engineer, the seeded area shall be watered, as soon as the seed is covered, at the rate of 120 gallons per 1,000 square feet. The water shall be applied by means of a hydroseeder or a water tank under pressure with a nozzle that will produce a spray that will not dislodge the mulching material. Cost of this watering shall be included in the cost of seeding and mulching.

E. Contractor has the option to hydroseed large lawn areas, using equipment specifically designed for such application. The rate of application of wood fiber mulching materials is 40 lbs./1,000 SF. The Contractor shall submit data regarding the hydroseed mixture, mulch and application rates for the Engineer's review and approval prior to performing the work. Contractor shall not hydroseed within close proximity to buildings and structures when unfavorable wind conditions may blow the hydroseed material onto the structure.

3.3 DORMANT SEEDING METHOD

A. Seeding shall not take place from October 15 through November 20. During this period prepare the seed bed, add the required amounts of lime and fertilizer, and other amendments, then mulch and anchor.

B. From November 20 through April 1, when soil conditions permit, prepare the seed bed, lime and fertilize, apply the selected seed mixture, mulch, and anchor. Increase the seeding rate by 50 percent.

3.4 SODDING

A. Do not plant dormant sod or place if ground is frozen or extremely wet.

B. Lay sod to form a solid mass with tightly fitted joints. Butt ends and sides of sod strips; do not overlap. Stagger strips to offset joints in adjacent courses. Work from boards to avoid damage to subgrade or sod. Tamp or roll lightly to ensure contact with subgrade. Work sifted soil into minor cracks between pieces of sod; remove excess to avoid smothering of adjacent grass. Anchor sod on slopes with wood pegs to prevent slippage.

C. Water sod thoroughly with a fine spray immediately after planting.

D. Upon completion, the surface of the sod shall coincide with the finished grade.

3.5 RECONDITIONING EXISTING LAWNS

A. A soils test shall be required for existing lawns prior to any reconditioning. The soils test shall be done at the Contractor's expense. A copy shall be submitted to the Engineer prior to starting.

B. Recondition all existing lawn areas damaged by Contractor's operations including storage of materials and equipment and movement of vehicles. Also recondition existing lawn areas where minor regrading is required.

C. Provide soil amendments as called for in the soils test.

D. Provide new topsoil, as required, to fill low spots and meet new finish grades.

E. Cultivate bare and compacted areas according to the topsoil specifications.

F. Remove diseased and unsatisfactory lawn areas; do not bury into soil. Remove topsoil containing foreign materials resulting from the Contractor's operations, including oil drippings, stone, gravel, and other loose building materials.

G. All work shall be the same as for new seeding.

H. Water newly planted seed areas. Maintenance of reconditioned lawns shall be the same as maintenance of new lawns.

3.5 ESTABLISHMENT

A. Maintain work areas as long as necessary to establish a uniformly close stand of grass over the entire lawn area. A uniformly close stand of grass is defined as the seeded areas having 90%+ coverage of grass at 60 days after seeding. 90%+ coverage is defined as very little or no dirt showing when seeded area is viewed from directly overhead.

B. Maintain lawns by watering, fertilizing, weeding, mowing, trimming, and other operations such as rolling, regrading and replanting as required to establish a smooth acceptable lawn.

1. Mowing

a. Mow lawn areas during the period of maintenance to a height of 2 inches whenever the height of the grass becomes 3 inches. A minimum of 3 mowings is required during the period of maintenance.

2. Refertilizing

a. Distribute fertilizer on the seeded area between August 15 and October 15, during the period when grass is dry. The fertilizer shall be as specified in the soils test.

3. Reseeding

   a. Reseed with the seed specified for the original seeding, at the rate of 4 lbs. per 1,000 SF in a manner which will cause minimum disturbance to the existing stand of grass and at an angle of not less than 15 degrees from the direction of rows of prior seeding.

4. Resodding

   a. Resodding shall be with sod as herein specified. Trenches shall be filled and resodded.

5. Watering

   a. The Contractor shall keep all work areas watered daily to achieve satisfactory growth unless otherwise approved by the Engineer in writing. Water shall be applied at a rate of 120 gallons per 1,000 square feet. If water is listed as a pay item, it shall be separately paid for based on the actual amount of water used, measured in thousands of gallons. If there is no pay item for watering, then the Contractor shall include the price of watering in the price per square yard of seeding or sodding.

6. Any mulching which has been displaced shall be repaired immediately. Any seed work which has been disturbed or damaged from the displacement of mulch shall be repaired prior to remulching.

3.6 INSPECTION AND ACCEPTANCE

A. When seeding work is complete and an acceptable stand of growth is attained, the Contractor shall request the Owner's Representative to make an inspection to determine final acceptance.

B. Acceptance shall be based upon achieving a vigorous uniformly stand of the specified grasses. If some areas are satisfactory and some are not, acceptance may be made in blocks, provided they are definable or bounded by readily identified permanent surfaces, structures, or other reference means. Partial acceptance decisions may be made by the Engineer and will be for no less than 75% of the total job. Excessive fragmentation into accepted and unaccepted areas shall not be allowed. Unaccepted areas shall be maintained by the Contractor until acceptable.

C. No payment shall be made until areas are accepted.

D. All seeded/sodded areas shall be guaranteed for one full growing season to commence upon final acceptance of the areas.

END OF SECTION 329200.19