

SECTION 02610

BITUMINOUS PAVEMENT AND SURFACE PREPARATION

PART 1.00 - GENERAL

1.01 DESCRIPTION

A. Work Included:

1. Provide all materials, labor, equipment and incidentals required to remove and dispose existing bituminous concrete (3-inches) and furnish, place and compact bituminous concrete pavement, binder and surface course, including leveling as shown on the drawings or where disturbed during curbing and handicap ramp installation.
2. Sawcutting at driveways and match points and square cutting where allowed shall be included under this Item. The limits of work as shown on the plan shall be saw cut. The existing 3 inches of Bituminous concrete shall be removed and disposed, furnish and install 1.5 inches of binder and 1.5 inches of surface course. The installed bituminous concrete shall match existing elevations. Cleaning and sweeping of roadway shall also be included under this item. No additional payment shall be made for this service.
3. All work specified in this Section shall conform to all applicable requirements for materials and construction methods of the R.I. Standard Specifications for Road and Bridge Construction.
4. Bituminous concrete pavement, gravel surface courses and sub-base courses shall be placed in accordance with the dimensions shown on the drawings.

1.02 SCOPE OF WORK

- A. Direct traffic throughout the project time period by warning signs and flag persons in a manner providing maximum safety for the workers and traffic with the least interruption of the work.
- B. The CONTRACTOR shall provide a bituminous concrete binder and surface course (1 1/2", 9.5 MM, 1 1/2", 12.5 mm) of Class I-1) at driveway aprons, handicap ramp areas, curb resetting and as indicated on the Contract drawings.
- C. The CONTRACTOR shall maintain all pavement under this contract during the guarantee period of one year and shall promptly refill and repave areas which have settled or are otherwise unsatisfactory for traffic.

PART 2.00 - PRODUCTS

2.01 GRAVEL FOR PAVEMENT BASE AND GRAVEL SURFACES

- A. Crushed gravel for the base of paved roads shall consist of material reasonably free from silt, loam, clay and organic matter.
- B. All of the above specified gravels shall be placed and otherwise conform to the applicable sections within the R.I. Standard Specifications for Road and Bridge Construction.
- C. The top of the trench in areas with a gravel surface shall be backfilled in accordance with the preceding articles except the leveling course shall be brought to the finished grade.

2.02 BITUMINOUS CONCRETE PAVEMENT

- A. Bituminous Concrete Pavement shall conform to Section M.03 and Section 401 of the R.I. Standard Specifications for Road and Bridges.
- B. Bituminous Concrete (Hot-Mix) Type I-1 shall be used for temporary and permanent courses.

2.03 ASPHALT CEMENT

- A. Asphalt cement shall conform to the requirements of AASHO M20.

PART 3.00 - EXECUTION

3.01 BITUMINOUS CONCRETE PAVEMENT REPLACEMENT

- A. Temporary Pavement
 - 1. Subgrade and gravel base shall be prepared as specified within the Rhode Island Standard Specifications for Road and Bridge Construction.
 - 2. A 2 inch course of Type I-1 bituminous concrete pavement shall be laid upon a 12 inch gravel base thoroughly compacted and shaped to the required grade and cross section. The CITY may order gravel subgrade thicknesses different than those specified when job conditions warrant such changes.
 - 3. Trench pavement shall be finished flush with top of adjacent undisturbed pavement and conform with the existing cross section of roadway or as directed. Maintain trench pavement flush with adjacent undisturbed pavement as settlement of trench backfill occurs.

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4. If settlement or holes appear in the trench pavement, the CONTRACTOR shall make repairs within 48 hours of notification by the CITY. If after due notice, the CONTRACTOR fails to make the repairs, the work will be done by the CITY and the total cost of such repairs will be charged to the CONTRACTOR.
5. The edges of adjacent pavement shall be trimmed to a smooth line by saw cutting. All edges of adjacent pavement shall be cleaned to provide a firm, regular and clean surface to bond the pavement prior to placement of pavement.
6. A prime coat of asphalt cement shall be applied on the approved gravel base course and on the prepared and approved adjacent pavement edges and surfaces.
7. The trench pavement shall be laid in one 2 inch course of Type I-1 bituminous concrete.
8. Each course shall be rolled until thoroughly compacted to thickness specified and/or shown on the drawings. The permanent and undisturbed pavement surface shall conform to the existing cross sections of the roadway.
9. Care shall be taken not to alter the original street drainage.

B. Bituminous Concrete Binder and Surface Course

1. Paving shall be accomplished in accordance with the State of Rhode Island Standard Specifications for Road and Bridge Construction, and materials shall meet the requirements of Type I-1 asphalt.
2. Asphalt shall be applied with an approved self-propelled paver, (a self-propelled spreader box is not considered an approved paver), and compacted with a ten-ton roller to a minimum compacted thickness of 1-1/2", each course (3-inch total) except where leveling courses are required where required. Leveling courses, where required, will be the responsibility of the CONTRACTOR, and will be paid per ton. Approval by the CITY will be required prior to application of leveling courses.
3. A minimum of 2 copies of all weight delivery slips shall be turned over to a City of East Providence Inspector at the job site, and will be retained by the CITY. All weight delivery slips must contain the following information: name of customer (City of East Providence), bituminous mixture, truck number, street and/or job location material was used on. Each slip shall be signed by a Certified State Sworn Weigher, and include time load left plant. Tonnage shall be machine or hand printed in numbers, (tonnage written in words will not be accepted).

Any material (asphalt) left over at the end of each day, or material that cannot be used due to equipment breakdowns or bad weather conditions, shall be returned to the Contractor's Plant, and a credit shall be issued to the CITY for material not used. The amount of material returned shall be determined on the job site by the CITY.

4. Roadways to be paved shall be prepared by the CONTRACTOR. Preparation work will consist of square cutting or saw cutting to abutting or existing asphalt, square cutting of driveways, sidewalks, etc. where necessary, to insure a good bond to existing surfaces and a smooth and even surface when work is completed. Areas that are square cut or saw cut prior to overlay shall be left no lower than 3/4" after the existing asphalt is removed and new asphalt is added. The CONTRACTOR shall also leave the work site in a clean and orderly condition at the end of each work day.
5. The CONTRACTOR will be responsible for the adjusting of water utilities shut-offs, road boxes, and all manholes, to insure an even surface after the overlay has been applied. Drainage grates shall not be more than 3/4" lower than the new surface after the overlay is completed. Openings in front of catch basins must be cut out as marked by the Highway Supt., and new asphalt tapered to allow for maximum surface run off into basins. Areas around catch basins, manholes, shut-offs, etc., shall be left no lower than 3/4" at the end of each work day.
6. Areas along curbs, around manholes, catch basins, etc., other structures, and at all places not accessible to the roller, shall be thoroughly compacted with tampers. When rolling or tamping areas that are directly adjacent to curb, extreme care is to be taken to insure curbing is not damaged. In the event curbing is damaged, the CONTRACTOR shall be responsible for replacement at no cost to the CITY. The surface of the mixture after tamping shall be smooth and true to the established grade and crown.
7. Any mixture which becomes displaced, loose or segregated, mixed with dirt, shows an excess of bitumen, or in any way defective, shall be removed and replaced with fresh mixture, which shall be immediately compacted to conform with the surrounding area.
8. The CITY will be responsible for prohibiting traffic from passing over sections of newly compacted asphalt until the pavement has become properly hardened by cooling. Six (6) hours will be considered sufficient time for the pavement to set; however, this period may be shortened or extended, depending on weather

conditions, and shall be at the discretion of the CITY.
The use of excess water to cool asphalt down will not be permitted unless pre-approved in writing by the CITY.

9. The CONTRACTOR shall leave the work site and general area in a clean and orderly condition at the end of each work day.

3.02 GUARANTEE

- A. The CONTRACTOR shall maintain pavement under this contract during the guarantee period of one year.

END OF SECTION

SECTION 02615

PAVEMENT MARKINGS, THERMOPLASTIC & EPOXY RESIN

PART 1.00 GENERAL

1.01 DESCRIPTION

- A. The work under this section shall include removing existing pavement markings and furnishing and applying a reflectorized oil and grease impervious thermoplastic road marking material which is hot extrusion applied with a surface application of glass spheres or an epoxy resin road marking material. The properly applied markings shall be reflectorized and able to durably resist degradation and deformation by traffic.

PART 2.00 PRODUCTS

2.01 MATERIALS

- A. The thermoplastic material shall be homogeneously composed of pigment, filler, resins, and glass reflectorizing spheres and shall be available in both white and yellow.
- B. The pigment, beads, and filler shall be uniformly dispersed in the resin. The material shall be free from all skins, dirt, and foreign objects and shall comply with requirements according to TABLE 1.

TABLE 1
COMPOSITION

<u>COMPONENT</u>	<u>BY WEIGHT</u>
Binder	18.0% Min.
Glass Beads (AASHTO M247 Type 1)	25.0% Min.
Titanium Dioxide (ASTM D476-Type 2)	8.0% Min.
Yellow (For Yellow Only)	2.0% Min.
Calcium Carbonate & Inert Filler	See Note

Note: Amount of Calcium Carbonate and inert fillers shall be at the option of the manufacturer, providing all other requirements of the specification are met.

- C. The binder shall be primarily composed of maleic-modified glycerol ester of resin and the binder shall not contain, oil and grease compatible, petroleum based hydrocarbon resins.
- D. The thermoplastic material after heating for four (4) hours at 425° and cooled at 77° shall meet the following color characteristics:

WHITE: Daylight reflectance at 45° - 0°...75% Min.

YELLOW: Daylight reflectance at 45° - 0°...45% Min.
and match Federal Test Standard Number 595 - color
13538.

- E. When applied at a temperature range of 412° + 12.5° F and thickness of 0.125" the thermoplastic material shall set to bear traffic in not more than two (2) minutes when the air temperature is 50° F and not more than ten (10) minutes when the air temperature is 90°F.
- F. After heating the thermoplastic material for four (4) hours at 425°F the bond strength to Portland Cement concrete shall exceed 180 psi.
- G. For at least ninety (90) days after application the material shall show no cracks other than with substrate cracking.
- H. The solid block material shall be packaged in suitable corrugated containers, 14" x 28" x 3" in size weighing approximately 50 pounds, which will not adhere to material while in storage. Each batch shall designate the color, manufacturer's name, batch number and date of manufacture. Each batch manufactured shall have its own separate number. The label shall warn the user that the material shall be heated in the range of 400° - 440°F during application.
- I. Properly formulated oil impervious thermoplastic will, when 100 grams of a sample is melted and mixed thoroughly with 10 grams (10%) of Quaker State non-detergent motor oil to approximately 425°F remain hard after cooling and show definite separation of the oil as a distinct layer on top of the cooled thermoplastic.

2.02 EPOXY RESIN PAVEMENT MARKINGS

- A. General. The two-component, 100 percent solids paint shall be formulated and designed to provide a simple volumetric mixing ration (e.g., 2 part component A to 1 part component B) specifically for service as a hot-spray applied binder for glass beads in such a manner as to produce maximum adhesion, friction and reflection. The material shall be composed of epoxy resins and pigments only and meet the following requirements:

- 1. Color. White - the color (after drying at the specified thickness) shall be a flat white, free from tint, furnishing good opacity and visibility under both daylight and artificial light, and shall match Chip No. 17875 of Federal Standard 595.
Yellow - the color (after drying at the specified thickness) shall match Chip No. 13538 of Federal Standard 595.

The paint shall be well mixed in the manufacturing process and shall be free from defects and imperfections that may adversely affect the serviceability of the finished product. The paint shall not liver, thicken, curdle, gel, settle excessively, or otherwise display any objectionable properties

after storage. Individual components shall not require mixing prior to use when stored for a maximum of twelve months.

2. Composition. The overall paint composition shall be left to the discretion of the manufacturer, but shall meet the following requirements.

White:	Titanium Dioxide	20+/- 2 percent, by weight
	ASTM D476 Type III	
	Epoxy Resin	80+/- 2 percent, by weight
Yellow:	Chrome Yellow	25+/- 2 percent, by weight
	ASTM D211 Type III	
	Epoxy Resin	75+/- 2 percent, by weight

3. Epoxy Content (Component A). The epoxy content of the epoxy resin will be tested in accordance with ASTM D1652 and calculated as the weight per epoxide equivalent (WPE) for both white and yellow.

The epoxy content will be determined by a pigment free basis. The WPE shall meet a target value provided by the manufacturer within a tolerance of +/- 50.

4. Amine Value (Component B). The amine value shall be tested in accordance with ASTM D2074 to determine its total amine value. The total amine value shall meet a target value provided by the manufacturer within a tolerance of +/- 50.

The manufacturer may specify an alternate test method for determining the amine value subject to the approval of the Engineer.

5. Toxicity. Upon heating to application temperature, the material shall not exude fumes which are toxic or injurious to persons or property. A certification stating such is required to be submitted to the Engineer.
6. Abrasion Resistance (ASTM D4060). When the abrasion resistance of the material is tested with a CS-17 wheel under a load of 1,000 grams for 1,000 cycles, the wear index shall be no greater than 82.
7. Hardness (ASTM D2240). The Type D durometer hardness of the material shall not be less than 75 nor more than 100 after the material has been conditioned for not less than 72 hours nor more than 96 hours at 23degrees +/- 2 degrees C.
8. Tensile Strength (ASTM D638). The tensile strength of the material shall not be less than 6,000 psi after 72 hours of conditioning at 23+/-2 degrees Celsius.
9. Compressive Strength (ASTM D695). The compressive strength of the material shall not be less than 12,000 psi after 72 hours of conditioning at 23+/- 2 degrees Celsius.

10. Infrared Spectrophotometer Analysis (ASTM D2621). Samples of both Part A and Part B (and of that mixed to the proper ratio) shall be analyzed by infrared spectrography. The spectrum of each component and final product shall be a reasonable match to the spectrum of the original formulation submitted by the manufacturer.
 11. Directional Reflectance (ASTM E1347). The daylight directional reflectance (without glass spheres) shall be not less than 84 percent for white and not less than 50 percent for yellow (relative to Magnesium Oxide).
 12. Dry Time - Laboratory (ASTM D711). The epoxy resin compounds, when mixed in the proper ratio and applied to a uniform wet film thickness of 20 mils and immediately dressed with glass beads at the proper rate, shall exhibit a no-tracking drying condition in not more than 30 minutes at 72 degrees F.
 13. Dry-Time - Field. The no-tracking condition for the field shall be considered as the condition where no visual displacement of the epoxy resin striping material is observed
- B. Certification. The manufacturer shall furnish a certified test report by an independent testing laboratory prior to the start of the work indicating that the material as specified has been tested in accordance with the above procedures and that the results comply with the above requirements. A Material Safety Data Sheet is also required.
- C. Packaging. The epoxy materials shall be shipped in appropriate, durable, and substantial containers. Individual containers shall be plainly marked with the following information: manufacturer's name and address; name of product; lot number; batch number; color; net weight and volume of contents; date of manufacture; date of expiration; statement of content (i.e., Part A-contains pigment and epoxy resin; Part B - contains catalyst); mixing proportions, application temperatures and instructions; and safety information.

2.03 GLASS BEADS - DUAL GRADATION

- A. Scope. This specification covers the requirements for glass beads which are to be dropped onto white and yellow epoxy resin pavement marking material to produce a highly weather-and-wear resistant reflectorized traffic marking.
- B. Detailed Requirements.
1. reflective Glass Spheres. The glass spheres shall be transparent, clean, smooth and spherically shaped, free of milkiness, pits, or excessive air bubbles and conform to the following specific requirements.
 - a. Coatings. The spheres shall be coated to enhance their embedment characteristics to the binder. They shall show no

tendency to absorb moisture in storage and shall remain free of clusters and hard lumps.

b. Quality Assurance. The spheres shall be segregated into maximum lots of 2,500 pounds and lot numbers shall be stamped onto each. Each lot shall be tested for gradation, rounds and coating and a Certificate of Compliance stating such will accompany each lot.

c. Gradation. The glass spheres shall meet the following gradation requirements when tested in accordance with ASTM D1214.

Type I		Type II	
Sieve Size	Percent Passing	Sieve Size	Percent Passing
10	100	20	95-100
12	95-100	30	80-95
14	80-95	50	9-42
16	10-40	80	0-10
18	0-5	-	-
20	0-2	-	-

d. Roundness. The glass spheres shall have a minimum of 80 percent rounds per screen for the two highest sieve quantities for Types I and II, and no more than 3 percent angular particles per screen for the Type I gradation. The remaining fractions shall typically be no less than 75 percent rounds as tested according to ASTM D1155, Procedure A.

e. Refractive Index. The glass spheres shall have a refractive index of 1.50 to 1.52 when tested according to AASHTO M247.

f. Silica Content. The silica content of the glass spheres shall not be less than 60 percent.

g. Packaging. Reflective glass spheres shall be shipped in moisture resistant bags. Each bag shall be marked with the name and address of the manufacturer, the name and net weight of the material, batch or lot number, and shall include a certified test report stating that they meet the above test requirements.

PART 3.00 EXECUTION

- A. The thermoplastic material shall readily be applicable at temperatures between 400° and 440°F from the approved equipment to produce a 0.090" cross section of line at varying width in yellow or white as shown on the plans.
- B. Equipment supplies shall consist of a completely enclosable steel mobile trailer containing a thermoplastic applicator equal to Pave-Mark Corporation's Apollo System II Plus 1, a spare propane gas bottle, spare tire, 4" and 12" width extrusion dies and a variable

width bead dispenser.

- C. The approved thermoplastic applicator must be capable of thermostatically melting and properly applying at least 175 lbs. of thermoplastic material per hour without the use of a separate melting kettle. A block thermoplastic material preheater shall be quick mountable at an 82° vertical angle on the applicator to rapidly melt material. The material discharged into the extrusion die shall be heated by means of a covered radiant heater. Torch flame heating the die is unacceptable.
- D. The CONTRACTOR shall supply a minimum of 100 pounds of, AASHTO M-247, drop-on beads for each ton of thermoplastic material purchased. The glass bead dispenser shall be automatically operated only by the extrusion die control handle. The knurled bead shaft shall not rotate more than one-half inch wider than the thermoplastic line width in order to conserve material.
- E. Any existing pavement marking consisting of thermoplastic and/or paint must be removed from the roadway surface within the project area prior to application of any new striping using a pavement marking removing technique approved by the CITY.

3.01 EPOXY RESIN PAVEMENT MARKINGS

- A. Equipment - Equipment for the application of epoxy resin traffic stripes or special handwork shall consist of one or more mobile, truck-mounted and self-contained pavement marking machines, specifically designed to apply epoxy resin striping material and reflective glass beads in continuous and skip-line patterns. The equipment shall be capable of applying straight and curved lines in a true arc. In addition, the truck mounted unit shall be provided with accessories to allow for the marking of legends, symbols, crosswalks, and other special patterns. At any time throughout the duration of the project, the Contractor shall provide free access to the equipment for inspection by the Engineer. The Engineer may approve the use of portable applicator in lieu of mobile truck mounted accessories for use in applying special markings only, provided such equipment can demonstrate satisfactory application of reflectorized epoxy markings in accordance with these specifications.

The application equipment shall be capable of installing a minimum of 10 miles of epoxy reflectorized pavement markings in an eight hour day and shall include the following features:

1. Individual material reservoirs for the storage of each of the individual epoxy resin components and each type of glass beads.
2. Heating element of sufficient capacity to maintain the individual epoxy resin components at the manufacturer's recommended temperature for spray application.
3. Two separate gravity type glass beads dispensers capable of

uniformly applying glass beads to epoxy resin traffic stripes at the rate required.

4. Accurately calibrated, tamper-proof, metering type device to monitor the ratio of the components being fed to the spray nozzle. The devices should be visible to the operator while the equipment is in use and can be capable of displaying the proportioning such that the actual mixing ratio can be determined at all times.

5. Accurately calibrated, tamper-proof, metering type devices that measure and record the number of gallons of epoxy resin material used and corresponding length of stripe(s) applied. Each application gun shall have individual footage accumulators which are activated only when material is being applied. This information shall be provided in a format that permits a direct determination of the yield (average mil thickness) of the applied materials.

6. All applicator guns on the spray carriages shall be in full view of the operator during operation. The equipment shall be capable of placing two lines simultaneously with either line a solid or intermittent pattern on yellow or white. When the color of the material is changed, a quantity of material equal 150 linear feet of stripe(s) shall be wasted to eliminate the chance of contamination of the alternate color.

7. An air pressure nozzle shall be directed to the area to be striped to permit cleaning of the road surface immediately prior to application of the material. The pressure in the line shall be a minimum of 175 psi.

8. When working on a roadway with more than one lane in either direction, the applicator truck shall have a permanently mounted, variable direction, illuminated arrow board, fully operational and visible to approaching traffic.

- B. General. Before any pavement marking work is begun, a schedule of operations shall be submitted for the approval of the Engineer. At least 5 days prior to the starting of striping, the Contractor shall provide the Engineer with the epoxy manufacturer's written instructions for use, including but not limited to, material mixing ratios and application temperatures.

When pavement markings are applied under traffic flow conditions, the Contractor shall provide all necessary signs, cones, arrow boards, etc., in accordance with the contract provisions and the latest edition of MUTCD to maintain and protect the traffic, the marking operation, and the pavement markings until thoroughly set.

If, for any reason, it is not possible to place epoxy lane and center lines within the guidelines and restrictions of the contract, and no previous lines exist, the Contractor, at their expense, shall place the appropriate color of four-inch reflective temporary pavement markings for the entire length of the roadway that is unstriped in accordance with the latest edition of the MUTCD. The temporary pavement markings and possible subsequent removal shall be

at the Contractor's expense. The type of temporary markings will be approved by the Engineer.

The Contractor shall be responsible for removing, to the satisfaction of the Engineer, all tracking marks, spilled epoxy markings applied in unauthorized areas.

- C. Power Wash. All special patterns, handwork, and oil or other deleterious substances shall be removed by a power wash machine with a pressure of 1400-2800 psi with the water heated to 180-195 degrees F. No chemicals shall be added to the water in the process. The machine will be equipped with a turbo blast tip with oscillating head and shall be capable of supplying 5 gallons/minute/gun.

Pavement cleaning shall consist of at least a brushing with a rotary, non-metallic broom and additionally as may be recommended by the manufacturer, all to the satisfaction of the Engineer. New Portland cement concrete shall be cleaned by sandblasting to remove any surface treatments and/or laitance. Surface cleaning and preparation work shall be performed only in the area of the epoxy markings applications. The pavement surface shall be air-blasted to remove dirt and residues just prior to the application of the markings.

1. Restrictions. Epoxy striping material shall be applied to substantially dry pavement surfaces. The pavement surface temperature and the ambient temperature shall be a minimum of 35 degrees F. at time of application. Operations shall neither start nor be continued during periods of rain or in the case of damp pavement. Operations shall not continue until the Engineer determines that the roadway surface is dry enough to achieve adhesion.

The individual epoxy components shall be heated to the temperatures recommended in the epoxy manufacturer's written instructions for use or as stated in the FHWA Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects (note maximum temperature of 140 degrees F.)

The ratio of the two components shall be monitored during the application, using the installed metering devices. Should the ratio fall outside the range of +/- 5 percent of the manufacturer's specified mixing ration for over 30 seconds or at any time fall outside the range of +/- 10 percent, the application shall be stopped and the cause of the problem determined and corrected before proceeding.

2. Application. Epoxy pavement markings must be reflectorized for night visibility by adding reflective spheres before the paint dries or sets, by the double-drop method. The reflective spheres, Type I followed immediately by Type II, shall be evenly dispersed on a minimum wet film thickness of 20 mils on existing and new pavements at a minimum rate of 12 pounds per gallon for each type of glass sphere. All special patterns and handwork (i.e., stop bars, arrows, legends, symbols, etc.) shall meet the above application

rates with the following exception: The double-drop application of glass spheres will use the Type II gradation only with two applications at a minimum of 12 pounds per gallon each

The Contractor shall place necessary spotting at appropriate points to provide horizontal control for striping and to determine necessary starting and stopping points. Longitudinal joints, pavement edges and existing markings shall serve as horizontal control when approved by the Engineer.

Epoxy reflectorized pavement markings shall be placed at the width, thickness, and pattern designated by the Contract Documents. Marking operations shall not begin until applicable surface preparation work is completed and approved by the Engineer, and the atmospheric conditions and pavement surface temperature are acceptable to the Engineer. The temperature of the mixed epoxy may be adjusted as required for prevailing conditions, including air temperature and pavement temperature to achieve the prescribed no-track time. The speed of the applicator truck shall not exceed the recommended rate for the combination of the truck rate, pressure in the lines, and the tip opening and height of the spray gun to insure the required thickness.

- D. Quality Assurance. A tolerance of $\frac{1}{4}$ -inch under or over the specified width will be allowed for striping provided the variation is gradual and does not detract from the general appearance. Alignment deviations for the control guide shall not exceed 2 inches provided the variation is gradual and does not detract from the general appearance. Material shall not be applied over a longitudinal joint. Establishment of these tolerances shall not relieve the Contractor of his responsibility to comply as closely as practicable with planned dimensions.

Retroreflection shall be measured using a 30-meter geometry portable unit following ASTM D6359 with the following exceptions: minimum values shall not be less than 350 mcd/lum/m² for white and 225 mcd/lum/m² for yellow as measured by the Engineer; and measurement for acceptance shall be performed between 14 and 60 days after placement.

Epoxy reflectorized pavement markings, which after application and curing are determined by the Engineer to be defective and not in compliance with this Specification, shall be repaired. Repair of defective markings shall be the responsibility of the Contractor and shall be performed to the satisfaction of the Engineer at no additional cost to the City. Repair methods shall be detailed and submitted for approval to the Engineer prior to corrective action.

- E. Symbols and Word Messages. Symbols and word messages shall be applied to the pavement where designated on the Plans or as directed by the Engineer. The letters shall be elongated in the direction of traffic as shown on the Plans or as directed by the Engineer.
- F. Epoxy Retroreflection Values. Payment will be as follows:
1. Minimum 350/225 (white/yellow): 100% contract unit price

2. Minimum 330/205 (white/yellow): 90% contract unit price
3. Minimum 310/185 (white/yellow): 80% contract unit price
4. Minimum 300/175 (white/yellow): 75% contract unit price
5. Below 300/175 (white/yellow): 0% contract unit price

END OF SECTION

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RESETTING GRANITE CURB
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SECTION 02621

RESETTING GRANITE CURB

PART 1.00 GENERAL

1.01 DESCRIPTION OF WORK

- A. Provide all materials, equipment and labor necessary to complete the work as indicated on the drawings or as specified herein.
- B. This work shall consist of resetting of existing granite curb where designated on the plans, in accordance with these specifications and in reasonably close conformity with the lines and grades shown on the plans or established by the CITY, including at all handicap ramps. Work includes the cleaning of curb lock off the existing curb as well as within the trench.

PART 2.00 EXECUTION

2.01 SALVAGE OF CURBING

- A. The CONTRACTOR shall carefully remove, store and clean any curbing specified for resetting. The CONTRACTOR shall replace any existing curbing that is to be reset which is lost, damaged or destroyed as a result of the CONTRACTOR'S operations or failure to store and protect the curbing in a proper and acceptable manner.

2.02 EXCAVATION AND INSTALLATION/RESETTING

- A. Excavation shall be made to a sufficient depth and width in order to install the curb to the proper line and grade.
- B. All soft and unsuitable material shall be removed and replaced with suitable material at the direction of the CITY.
- C. All base material shall be thoroughly compacted to a firm, even surface. All materials under the curbing shall be carefully and thoroughly rammed in order to support the curbing properly for the entire length of each piece.
- D. After curbing has been set to the proper line and grade, clean backfill material shall be placed in 6" to 8" layers and thoroughly compacted to the satisfaction of the CITY.

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- E. Backfill shall include placing material on the backside of the curbing, approximately 8± inches wide. The material shall be graded or sloped to prevent someone from tripping.
- F. Where specified, granite curb may be saw cut to meet the proper line and grade.
- G. The CONTRACTOR shall place asphalt where existing asphalt pavement was disturbed by resetting the curb. Loam and seed shall be placed where existing ground was disturbed. This work shall be considered a cost incidental to resetting the curb and compensation shall be included under the bid price for resetting granite curb in the proposal

END OF SECTION

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CURB INSTALLATION
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SECTION 02625

CURB INSTALLATION

PART 1.00 GENERAL

1.01 DESCRIPTION OF WORK

- A. Provide all materials, equipment and labor necessary to properly install, curbing in accordance with the specifications included herein.
- B. This work shall consist of supplying City of East Providence Standard granite curb where required, transporting materials, saw cutting, excavating, setting of curb to line and grade, backfilling, compaction, grading, placement of curb lock and temporary asphalt pavement and cleaning up the work area.

PART 2.00 MATERIALS

- A. All granite curbing, radii and granite inlet stones shall be furnished by the CONTRACTOR. All necessary transportation of materials shall be furnished by the CONTRACTOR at no additional cost to the CITY. Note that State and City details differ. No Chamfer is required on the State granite as it should match existing.

PART 3.00 EXECUTION

- A. Sawcut existing asphalt pavement one (1) foot off front of proposed curb. Excavation shall be made to a sufficient depth to allow for a gravel base. The base shall be mechanically or hand tamped to a compaction of 95% of maximum density before any curbing is installed. All materials such as inorganic matter, roots, leaves, frost, ice or other materials which are deemed unsuitable by the CITY shall be removed and replaced with suitable gravel. All materials under curbing shall be carefully and thoroughly rammed in order to support the curbing properly for the entire length of each piece.
- B. The curb shall be set so that the front top axis line conforms to the line and grade required. The gravel base upon which the curb is to be set shall be compacted to a firm, even surface.
- C. Curbing shall be laid with joints as narrow as possible.

- D. Where specified, curb may be cut to meet the proper line and grade.
- E. After curbing has been set to the proper line and grade, clean backfill material shall be placed in 6" to 8" layers and thoroughly compacted to the satisfaction of the City Engineer. Additional backfill materials shall be provided as needed at no extra cost to the CITY. Backfill shall include placing material on the backside of the curbing approximately 8" wide, material shall be graded or sloped to prevent someone from tripping or falling.
- F. The area of excavation on the front side of the curbing shall be backfilled with a cement concrete curb lock to the required grade to allow for the placement of two 1.5 inch (3-inch total) course of Type I-1 bituminous concrete pavement (permanent pavement patch). Permanent pavement shall be finished flush with the top of adjacent undisturbed pavement. This shall be included in the unit cost of installing the new curbing.
- G. CONTRACTOR shall maintain the permanent pavement patch for a minimum period of 90 days.

PART 4.00 NOTIFICATION

- A. The CONTRACTOR shall notify the Engineering Division by telephone or in person, twenty-four (24) hours prior to the start of curb installation work.

PART 5.00 MISCELLANEOUS

- A. The installation of curb during rainy days will not be allowed. If the CONTRACTOR is working in the CITY and it begins to rain, the CONTRACTOR will be allowed to complete the job in progress or shutdown and cleanup to the satisfaction of the CITY. No further work for that day will be permitted.
- B. All labor and materials furnished shall be guaranteed by the CONTRACTOR for a period of one (1) year following installation. Said guarantee shall cover settlement of curbing, damage to the curbing due to negligence by the CONTRACTOR, correction of defective work and any disintegration, crumbling or spalling of curb.

END OF SECTION

CAPITAL SIDEWALK IMPROVEMENT PROGRAM 2021-2022
CONCRETE SIDEWALKS
SECTION 02630

SECTION 02630

CONCRETE SIDEWALKS

PART 1.00 GENERAL

1.01 DESCRIPTION

- A. The CONTRACTOR shall furnish materials, equipment, labor and all incidental items necessary to remove and dispose of existing sidewalks and install Portland cement concrete sidewalks in accordance with the Contract Documents. Such work includes but is not limited to the following:
1. Removal and disposal of Existing sidewalk material
 2. Subgrade preparation & root trimming
 3. Install gravel base course and compact
 4. Form work
 5. Concrete mixing, placing, finishing and curing
 6. Control and isolation joints
 7. Reinforcing
 8. Installation of truncated domes
 9. Saw cutting existing concrete sidewalk
 10. Asphalt patching, including behind sidewalks at driveways and roadways
 11. Provide 48 hour and 24 hour previous notice to residents as to when the driveways will be poured and access will be limited
 12. Loaming and seeding
 13. Cleanup

PART 2.00 PRODUCTS

- A. Portland cement concrete shall meet the requirements of Section 600 for Class A concrete and Section M.02, as applicable, of the Rhode Island Standard Specifications for Roads and Bridges. Concrete mixes shall be subject to inspection and test at RIDOT approved mixing plants for compliance with quality requirements. High early strength concrete is allowed in areas of driveway aprons.
- B. Reinforcing shall be molded steel wirefabric conforming to ASTM Standard Specifications for "Welded Steel Wire Fabric for Concrete Reinforcement", Designation: A 185-69. Wire shall be #10 gauge in 6" x 6" W4xW4 mesh. Fiber mesh reinforcement is also required throughout.

- C. Preformed joint filler shall be an asphalt impregnated type approved by the CITY.
- D. Gravel Borrow Subbase shall meet the gradation requirements of Column I, Table I in subsection M.01.09 of the Rhode Island Standard Specifications for Roads and Bridges.
- E. All other materials not specifically described but required for the complete and proper installation of the Portland cement sidewalks shall be as selected by the CONTRACTOR, subject to the approval of the CITY.

PART 3.00 EXECUTION

- A. The CONTRACTOR shall remove and dispose of any existing sections of hot mix or cement concrete sidewalks designated for replacement as specified and/or designated by the CITY. Excavation shall be made to the required depths and widths as shown on the detail or designated by the CITY. No trees shall be removed unless designated by the CITY.
- B. The removal and disposal of all excavated material from the work site shall be the responsibility of the CONTRACTOR.
- C. Where a newly constructed sidewalk abuts an existing sidewalk, the existing sidewalk shall be cut with a concrete saw only. The concrete saw shall conform to Subsection 501.03.2.c of the Rhode Island Standard Specifications for Road and Bridge Construction.
- D. The foundation shall be shaped and compacted to a firm even surface conforming to that shown on the CITY Standard Detail. All soft and yielding material shall be removed and replaced with acceptable material.
- E. The gravel base shall be placed in layers not over 6 inches in depth and compacted to the specified depth below finish grade.
- F. Forms shall be of wood or metal and shall extend for the full depth of the concrete. All forms shall be straight, free from warp and of sufficient strength to resist the pressure of the concrete without springing. Bracing and staking of forms shall be such that the forms remain in both horizontal and vertical alignment until their removal.
- G. The foundation shall be thoroughly moistened immediately prior to the placing of the concrete. The proportioning, mixing and placing of the concrete shall be in accordance with the requirements for the class of concrete specified.

- H. In sidewalk area, the concrete shall be placed to a thickness of 4-inches. In driveway areas and handicap ramp areas the concrete shall be placed to a minimum thickness of 8-inches with wire mesh. Mesh shall be placed no less than 2" and no more than 3" from the bottom of the slab. Fiber mesh shall also be added to the concrete.
- I. The surface shall be broom finished. No plastering of the surface will be permitted. All outside edges of the slab and all joints shall be edged with a 1/4 inch radius edging tool.
- J. Expansion joints shall be of the dimensions specified, and shall be filled with the type of premolded expansion joint filler noted. The sidewalk, where required, shall be divided into sections by dummy joints formed by a jointing tool or other acceptable means as directed. These dummy joints shall extend into the concrete for at least 1/3 of the depth and shall be approximately 1/8 inch wide.

Construction joints shall be formed around all appurtenances such as manholes, utility poles, etc., extending into and through the sidewalk. Premolded expansion joint filler 1/4 inch thick shall be installed in these joints. Expansion joint filler of the thickness indicated shall be installed between concrete sidewalks and any fixed structure such as a building or bridge. This expansion joint material shall extend for the full depth of the walk.

- K. Special care shall be exercised when working around drain, electrical, other utility manholes, water gate valves, etc. so that structures are not damaged.
- L. Concrete shall be cured for at least 72 hours, except at driveways where high early strength concrete can be used and cured for at least 24 hours. Curing shall be by means of moist burlap mats or by other approved methods. During the curing period all traffic, both pedestrian and vehicular, shall be excluded. Vehicular traffic shall be excluded for such additional time as the CITY may direct.
- M. The CONTRACTOR shall place asphalt as needed to match new sidewalks at driveway aprons. Loam and seed shall be placed where existing ground was disturbed by placement of concrete forms. This work shall be considered a cost incidental to the construction of sidewalks and compensation shall be included under the bid prices for sidewalk construction in the proposal.

- N. Tree pits shall be allowed for during reconstruction of the sidewalk at sites of existing street trees. The pits shall be 3' X 4' in size or equal in size to existing tree pits outside, but in close proximity to the construction area. Minimum clear space around objects shall meet ADA requirements.
- O. All plaques and monuments removed during excavation and preparation of the work site should be reinstalled at their original locations.
- P. Before final acceptance the CONTRACTOR shall remove all rubbish, excess materials, temporary structures, equipment, etc. to the satisfaction of the CITY. All parts of the work shall be left in an acceptable condition.
- Q. All work shall comply with ADA requirements.
- R. The CONTRACTOR shall maintain all work done under this contract for a period of one (1) year from the date of final acceptance.

END OF SECTION

CAPITAL SIDEWALK IMPROVEMENT PROGRAM 2021-2022
TREE & SHRUB PROTECTION
SECTION 02915

SECTION 02915

TREE & SHRUB PROTECTION

PART 1.00 - GENERAL

1.01 DESCRIPTION

A. Work Included:

Furnish all labor, materials, equipment and incidentals required to do all miscellaneous work and cleaning up not otherwise specified. The work of this Section includes, but is not limited, to the following:

1. Tree and Shrub Protection Device.
2. Tree and Shrub Root Pruning.
3. Tree Cut-out Paving.
4. Tree Wells and Tree Walls.

PART 2.00 - PRODUCTS

2.01 Landscape Material

- A. All landscape material shall be in accordance with the RIDOT Blue Book, Section L, Landscaping.
- B. Tree Protection Device. Wood framing shall consist of nominal lumber 6 feet in length; the width and thickness shall vary from 2" x 2" to 2" x 6", depending on trunk diameter. Binding material shall consist of single strand 9-gauge wire or ½-inch strapping.
- C. Shrub Protection Device. Fencing shall consist of standardized snow fencing. The Contractor shall utilize standard steel posts in maintaining the position of the fencing. The steel post shall be a minimum of 6 feet in length.
- D. Drip-Line Tree Protection Device. Materials shall be as indicated above in the shrub protection devices.

PART 3.00 - EXECUTION

3.01 Tree and Shrub Root Pruning

- A. This work consists of both mechanical and manual pruning of existing tree and shrub roots in order to allow for the installation of new roadway features without causing extensive damage to the root systems of nearby plant materials. Pruning work shall be as performed at the locations indicated on the plans or as directed by the City Engineer as well as the City Tree Warden, all in accordance with these specifications.
- B. The Contractor shall notify the Tree Warden (Ron Nawrocki) at 435-7757 48 hours prior to commencement of this work. All work shall take place in the presence of the tree warden.
- C. Mechanical and manual tree and shrub pruning shall take place between August 15 and June 15 of the following year.
- D. Mechanical Root Pruning. This work shall proceed prior to any excavation work within the project limits. Roots which are found during excavation, outside the designated mechanical root pruning area, may require pruning at the discretion of the Engineer and Tree Warden.

The machinery to be used shall be a Vermeer CRL-24 Rockwheel, the Vermeer V430A Root Cutter or an approved equal. Trencher equipment shall not be permitted. All hand equipment must be disinfected, sharp, and approved by the Tree Warden.

Mechanical root pruning shall take place 6 to 12 inches from the edge of any proposed excavation, or as designated on the plans. The areas to be pruned will be field located prior to commencement of this item by the Contractor and the Tree Warden and the Engineer.

The cut made by the specified machinery shall be 2 to 4 inches wide and 15 to 18 inches deep. The length shall be as delineated on the plans. Paint shall not be used on wounds caused by pruning.

- E. Manual Root Pruning. This work shall proceed prior to any excavation work within the project limits. Manual root pruning shall be delineated on the field by the Engineer and Tree Warden prior to commencement. However, manual root pruning limits may be extended to other areas at the discretion of the Engineer or Tree Warden. Manual root pruning shall be performed with hand equipment that is

disinfected, sharp, and approved by the Engineer and Tree Warden.

The Contractor shall carefully hand dig the soil from the delineated area taking care not to rip or otherwise damage the roots during the excavation process. Once located, the root(s) shall be completely exposed, by hand, and cleanly cut using hand pruning equipment.

Pruning shall be performed immediately following the exposure of the root(s). After pruning the exposed root(s) shall be covered with existing soil and lightly tamped to remove air pockets. No roots shall be exposed longer than one hour.

- F. Method of Measurement will be measured by the number of linear feet of each item actually pruned in accordance with the Plans, or as directed by the Engineer.
- G. Basis of Payment. No separate payment will be made for this item and shall be included in the Concrete Sidewalk line item.

3.02 Tree and Shrub Protection Device

- A. Tree Protection Device. This work consists of applying wood framing around the trunk or trunks of the tree from the ground level to the height of 6 feet as indicated on the Plans or as directed by the Engineer, all in accordance with these Specifications.
 - 1. The wood framing shall be placed around the trunk in sufficient quantity to protect the trunk from mechanical damage, wood framing members shall not be spaced greater than 4 inches apart. The binding material shall be tight to prevent the wood from moving. The binding material shall not come in contact with the trunk or any portion of the tree. Under no circumstance shall nails or any other type of fastener enter the tree. The wood framing shall be removed and legally disposed of when all mechanical work within the surrounding area has been completed.
- B. Shrub Protection Device. This work consists of applying standardized snow fencing around shrubs in a circumferential manner as indicated on the plans or as directed by the Engineer or Tree Warden, all in accordance with these specifications.

1. The snow fencing shall be placed around the shrub in a circumferential manner assuring a 1-foot clearance between the face of the fence and the outer face of the shrub. If a 1-foot clearance is not possible, the fence shall be located as close to the shrub as needed without touching the shrub. The fence shall not be secured to the shrub in any manner. The Contractor shall utilize standard steel posts to support the snow fence. At no time shall restraining lines be secured to the shrub or to surrounding vegetative growth. The fencing shall be removed when all mechanical work within the surrounding areas has been completed.

C. Drip-Line Tree Protection Device. This work shall consist of applying standardized snow fencing around the drip-line of trees in a circumferential manner as indicated on the plans or as directed by the Engineer or Tree Warden, all in accordance with these specifications.

1. The snow fencing shall be placed around the drip-line of the tree in the same manner as indicated above for shrub protection devices.

3.03 Method of Measurement. Tree Protection Device will be measured by the number of each such unit actually installed in accordance with the plans and/or as directed by the Engineer and/or Tree Warden.

Shrub Protection and Drip-line Tree Protection Devices shall be measured by the number of linear feet actually installed in accordance with the Plans and/or as directed by the Engineer and/or Tree Warden.

3.04 Basis of Payment. Each tree that is within eight feet of any excavation work shall be protected and shall be paid under the unit price of concrete sidewalk installation.

END OF SECTION

CAPITAL SIDEWALK IMPROVEMENT PROGRAM 2021-2022
LOAMING AND SEEDING
SECTION 02920

SECTION 02920

LOAMING AND SEEDING

PART 1.00 - GENERAL

1.01 WORK INCLUDED

- A. This Section covers all labor, materials and equipment necessary to do all loaming, seeding and related work as indicated on the drawings and as herein specified. All lawns disturbed by the CONTRACTOR'S operations shall be repaired as herein specified, however the cost will be included in the cost of installing sidewalks. Payment for this item shall cover new grass strips only, areas previously consisting of either cement or bituminous concrete sidewalks.

1.02 QUALITY ASSURANCE

- A. For a particular source of loam, the CITY may require the CONTRACTOR to send approximately 10 pounds of loam to an approved testing laboratory and have the following tests conducted:
 - 1. Organic concentration
 - 2. pH
 - 3. Nitrogen concentration
 - 4. Phosphorous concentration
 - 5. Potash concentration
- B. These tests shall be at the CONTRACTOR'S expense. Test results, with soil conditioning and fertilizing recommendations, shall be forwarded to the CITY.

PART 2.00 - PRODUCTS

2.01 MATERIALS

- A. LOAM
 - 1. Loam shall be a natural, fertile, friable soil, typical of productive soils in the vicinity, obtained from naturally well-drained areas, neither excessively acid nor alkaline, and containing no substances harmful to grass growth. Loam shall not be delivered to the site in frozen or muddy condition and shall be reasonably free of stumps, roots, heavy or stiff clay, stones larger than 1 inch in diameter, lumps, coarse sand, noxious weeds, sticks, brush or other litter.

2. The loam shall contain not less than 4 percent nor more than 20 percent organic matter as determined by the loss of weight by ignition of oven-dried samples. Test samples shall be oven-dried to a constant weight at a temperature of 230 F.

B. LIME

1. Lime shall be standard commercial ground limestone containing at least 50 percent total oxides (calcium oxide and magnesium oxide), and 50 percent of the material must pass through a No. 100 mesh sieve with 98 percent passing a No. 2 mesh sieve.

C. FERTILIZER

1. Fertilizer shall be commercial fertilizer, 10-10-10 fertilizer mixture containing at least 40 percent of organic nitrogen. It shall be delivered to the site in the original sealed containers, each showing the manufacturer's guaranteed analysis. Fertilizer shall be stored so that when used it will be dry and free flowing. No fertilizer shall be used which has not been marketed in accordance with State and Federal Laws relating to fertilizers.

D. MULCH

1. Materials to be used in mulching shall conform to the following requirements:
 - a. Hay Mulch - Hay Mulch shall consist of mowed and properly cured grass, clover or other acceptable plants. No salt hay shall be used.
 - b. Straw Mulch - Straw Mulch shall consist of stalks or stems of grain after threshing.
 - c. Wood Fibre Mulch - Wood Fibre Mulch shall consist of wood fibre produced from clean, whole uncooked wood, formed into resilient bundles having a high degree of internal friction and shall be dry when delivered to the project.

E. SEED

1. Seed shall be of an approved mixture, the previous year's crop, clean, high in germinating value, a perennial variety and low in weed seed. Seed shall be obtained from a reliable seed company and shall be

accompanied by certificates relative to mixture purity and germinating value.

2. Grass seed for lawn areas shall conform to the following requirements:

	Proportion By Weight	Germination Purity	Purity Minimum
Chewing's Fescue	30%	70%	97%
Kentucky 31 Fescue	30%	90%	98%
Kentucky Blue Grass	20%	80%	85%
Domestic Rye Grass	20%	90%	98%

Grass seed for cross-country areas, slopes and other areas not normally mowed shall conform to the following requirements:

	Proportion By Weight	Germination Minimum	Purity Minimum
Creeping Red Fescue	50%	85%	95%
Kentucky 31	30%	85%	95%
Domestic Rye	10%	90%	98%
Red Top	5%	85%	92%
Ladino Clover	5%	85%	96%

PART 3 - EXECUTION

3.01 SURFACE PREPARATION

- A. After approval of rough grading, loam shall be placed on areas affected by the CONTRACTOR'S operations. Loam shall be at least 6 inches compacted thickness.
- B. Lime shall be applied to bring the pH to 6.5 or, without a soil test, at the rate of 2-3 tons of lime per acre.
- C. Fertilizer shall be applied according to the soil test, or without a soil test, at the rate of 1,000 pounds per acre.
- D. Loam shall be worked a minimum of 3 inches deep, thoroughly incorporating the lime and fertilizer into the soil. The loam shall then be raked until the surface is finely pulverized and smooth and compacted with rollers, weighing not over 100 pounds per linear foot of tread, to an even surface conforming to the prescribed lines and grades. Minimum depth shall be 6 inches after completion.

3.02 SEEDING

- A. Seeding shall be done when weather conditions are approved as suitable, in the periods between April 1 and May 30 or August 15 to October 1, unless otherwise approved.
- B. If there is a delay in seeding, during which weeds grow or soil is washed out, the CONTRACTOR shall remove the weeds or replace the soil before sowing the seed without additional compensation. Immediately before seeding is begun the soil shall be lightly raked.
- C. Seed shall be sown at the approved rate on a calm day by machine.
- D. One half the seed shall be sown in one direction and the other half at right angles. Seed shall be raked lightly into the soil to a depth of 1/4 inch and rolled with a roller weighing not more than 100 pounds per linear foot of tread.
- E. The surface shall be kept moist by a fine spray until the grass shows uniform germination over the entire area. Wherever poor germination occurs in areas larger than 3 sq. ft., the CONTRACTOR shall reseed, roll and water as necessary to obtain proper germination.
- F. The CONTRACTOR shall water, weed, cut and otherwise maintain and protect seeded areas as necessary to produce a dense, healthy growth of perennial lawn grass.
- G. If there is insufficient time in the planting season to complete the fertilizing and seeding, permanent seeding may be left until the following planting season, at the option of the CONTRACTOR or on order of the CITY. In that event, a temporary cover crop shall be sown. This cover crop shall be cut and watered as necessary until the beginning of the following planting season, at which time it shall be plowed or harrowed into the soil, the area shall be fertilized and the permanent seed crop shall be sown as specified.

3.03 PLACING MULCH

- A. Hay or Straw Mulch shall be loosely spread to a uniform depth over all areas designated on the plans, at the rate of 4½ tons per acre, or as otherwise directed.
- B. Hay or Straw Mulch may be applied by mechanical apparatus, if in the judgment of the CITY the apparatus spreads the

mulch uniformly and forms a suitable mat to control slope erosion. The apparatus shall be capable of spreading at least 80 percent of the hay or straw in lengths of 6 inches or more, otherwise it shall be spread by hand without additional compensation.

- C. Wood Fibre Mulch shall be uniformly spread over certain selected seeded areas at the minimum rate of 1,400 pounds per acre unless otherwise directed. It shall be placed by spraying from an approved spraying machine having pressure sufficient to cover the entire area in one operation.

3.04 SEEDING AND MULCHING BY SPRAY MACHINE

- A. The application of lime, fertilizer, grass seed and mulch may be accomplished in one operation by the use of an approved spraying machine. The materials shall be mixed with water in the machine and kept in an agitated state in order that the materials may be uniformly suspended in the water. The spraying equipment shall be so designed that when the solution is sprayed over an area, the resulting deposits of lime, fertilizer, grass seed and mulch shall be equal to the specified quantities.
- B. A certified statement shall be furnished, prior to start of work, to the CITY by the CONTRACTOR as to the number of pounds of limestone, fertilizer, grass seed and mulch per 100 gallons of water.
- C. This statement should also specify the number of square yards of seeding that can be covered with the solution specified above. If the results of the spray operation are unsatisfactory, the CONTRACTOR will be required to abandon this method and to apply the lime, fertilizer, grass seed and mulch by other methods.

3.05 INSPECTION AND ACCEPTANCE

- A. At the beginning of the planting season following that in which the permanent grass crop is sown, the seeded areas will be inspected. Any section not showing dense, vigorous growth at that time shall be promptly reseeded by the CONTRACTOR at their own expense. The seeded areas shall be watered, weeded, cut and otherwise maintained by the CONTRACTOR until the end of that planting season, when they will be accepted if the sections show dense, vigorous growth.

END OF SECTION

CAPITAL SIDEWALK IMPROVEMENT PROGRAM 2021-2022
MISCELLANEOUS WORK AND CLEANING UP
SECTION 02989

SECTION 02989

MISCELLANEOUS WORK AND CLEANING UP

PART 1.00 - GENERAL

1.01 DESCRIPTION

A. Work Included:

Furnish all labor, materials, equipment and incidentals required to do all miscellaneous work and cleaning up not otherwise specified. The work of this Section includes, but is not limited, to the following:

1. Driveways shall be made accessible at the end of each work day. Any extra work required to accomplish this shall be included in the Furnish and Install 6" Concrete Sidewalks item.
2. Provide access for mail delivery on a daily basis.
3. Provide access for trash pickup. CITY shall provide pickup schedule so that work does not conflict with trash vehicles.
4. Restoration, repair or replacement of existing catch basins, sewer manholes, sewer and drainage pipe, water and sewer services encountered during construction.
5. Restoration of concrete walks, driveways, fences, walls, mailboxes, signs, etc., as required.
6. Installation of erosion control measures and continued maintenance for the duration of the Contract.
7. Restore grass areas with loam and seed.
8. Cleaning up the construction site.
9. Providing and setting up of temporary Fluorescent Traffic Cones (RIDOT Std. 26.1.0) and or Polyethylene Drums with markings around the work zones during construction operations and overnight.
10. Maintaining the safe passage of traffic in accordance with Section 01570, Traffic Control.
11. All other work incidental to completing the project.

PART 2.00 - PRODUCTS

None this Section

PART 3.00 - EXECUTION

3.01 CLEAN UP

- A. The Contractor shall remove all construction material, excess excavation, equipment or other debris remaining on the job as a result of construction operations and shall render the site of the work in a neat and orderly condition at least equal to that which existed prior to the start of construction.

END OF SECTION