



SECTION 62- PAVEMENT MARKING, CLOSURE MARKINGS, MARKERS, SIGNS, AND CONSTRUCTION FENCING

62-1 GENERAL

Under this section, the Contractor shall perform all work required by the plans for the application of pavement marking paint to taxiways, runways, roads, infield areas and other pavement in accordance with Section 310 5.6 of the Standard Specifications, except as specified otherwise in FAA Specification Item P 620, as included and modified hereafter, and as shown on the Plans.

Under this section, the Contractor shall provide also [temporary taxiway closure markings,] [pavement reflective markers,] [temporary road and taxiway signs,] [construction area fencing,] [weighted barricades,] [lighted "X" runway closure markers,] and all other incidentals, as shown on the Plans, and as required to accommodate the sequencing of the construction as the project progresses, including moving items from one phase to another phase.

ITEM P-620 RUNWAY AND TAXIWAY PAINTING

DESCRIPTION

620-1.1 *This item shall consist of the painting of numbers, markings, and stripes on the surface of runways, taxiways, and aprons, in accordance with these specifications and at the locations shown on the plans, or as directed by the Engineer.*

MATERIALS

620-2.1 MATERIALS ACCEPTANCE. *The Contractor shall furnish manufacturer's certified test reports for materials shipped to the project. The certified test reports shall include a statement that the materials meet the specification requirements. The reports can be used for material acceptance or the Engineer may perform verification testing. The reports shall not be interpreted as a basis for payment. The Contractor shall notify the Engineer upon arrival of a shipment of materials to the site.*

620-2.2 PAINT. *Paint shall be Waterborne, paint manufactured by Morton, or approved equal. Colors shall be as listed below:*

White: 37925 (Morton #2600A9)

Yellow: 33538 or 33655 (Morton #2601A9)

Black: 3-103e

Green: Morton #2594A9



- a. **WATERBORNE.** Paint shall meet the requirements of Federal Specification TT-P-1952E, Type I.
- b. **EPOXY.** Section not used.
- c. **METHACRYLATE.** Section not used.
- d. **SOLVENT-BASE.** Section not used.

[e. PREFORMED THERMOPLASTIC AIRPORT PAVEMENT MARKINGS. Markings must be composed of ester modified resins in conjunction with aggregates, pigments, and binders that have been factory produced as a finished product. The material must be impervious to degradation by aviation fuels, motor fuels, and lubricants.

(1) The markings must be able to be applied in temperatures down to 35°F without any special storage, preheating, or treatment of the material before application.

(2) **Graded Glass Beads.**

(a) The material must contain a minimum of thirty percent (30%) intermixed graded glass beads by weight. The intermixed beads shall conform to [Federal Specification. TT-B-1325D, Type I, gradation A] [Federal Specification. TT-B-1325D, Type IV].

(b) The material must have factory applied coated surface beads in addition to the intermixed beads at a rate of 1 lb. (± 10%) per 10 sq. ft. These factory-applied coated surface beads shall have a minimum of 90% true spheres, minimum refractive index of 1.50, and meet the following gradation.

<i>Size Gradation</i>			
<i>US Mesh</i>	<i>µm</i>	<i>Retained, %</i>	<i>Passing, %</i>
12	1700	0 - 2%	98 - 100%
14	1400	0 - 3.5%	96.5 - 100%
16	1180	2 - 25%	75 - 98%
18	1000	28 - 63%	37 - 72%
20	850	63 - 72%	28 - 37%
30	600	67 - 77%	23 - 33%
50	300	89 - 95%	5 - 11%
80	200	97 - 100%	0 - 3%

(3)

Heating



Indicators. The top surface of the material (same side as the factory applied surface beads) shall have regularly spaced indents. These indents shall act as a visual cue during application that the material has reached a molten state so satisfactory adhesion and proper bead embedment has been achieved and a post-application visual cue that the installation procedures have been followed.

(4) Pigments. *Percent by weight.*

(a) White: Titanium Dioxide, ASTM D 476, type II shall be 10 percent minimum.

(b) Yellow and Colors: Titanium Dioxide, ASTM D 476, type II shall be 1 percent minimum.

Organic yellow, other colors, and tinting as required to meet color standard.

(5) Prohibited Materials. *The manufacturer shall certify that the product does not contain mercury, lead, hexavalent chromium, halogenated solvents, nor any carcinogen as defined in 29 CFR 1910.1200 in amounts exceeding permissible limits as specified in relevant Federal Regulations.*

(6) Daylight Directional Reflectance.

(a) White: The daylight directional reflectance of the white paint shall not be less than 75 percent (relative to magnesium oxide), when tested in accordance with Federal Test Method Standard No. 141D/GEN, Method 6121.

(b) Yellow: The daylight directional reflectance of the yellow paint shall not be less than 45 percent (relative to magnesium oxide), when tested in accordance with Federal Test Method Standard No. 141D/GEN. The x and y values shall be consistent with the Federal Hegman yellow color standard chart for traffic yellow standard 33538, or shall be consistent with the tolerance listed below:

x .462 x .470 x .479 x .501

y .438 y .455 y .428 y .452

(7) Skid Resistance. *The surface, with properly applied and embedded surface beads, must provide a minimum resistance value of 45 BPN when tested according to ASTM E303.*



- (8) **Thickness.** *The material must be supplied at a nominal thickness of 65 mils (1.7 mm).*
- (9) **Environmental Resistance.** *The material must be resistant to deterioration due to exposure to sunlight, water, salt, or adverse weather conditions and impervious to aviation fuels, gasoline, and oil.*
- (10) **Retroreflectivity.** *The material, when applied in accordance with manufacturer's guidelines, must demonstrate a uniform level of nighttime retroreflection when tested in accordance to ASTM E1710.*
- (11) **Packaging.** *A protective film around the box must be applied in order to protect the material from rain or premature aging.*
- (12) **Manufacturing Control and ISO Certification.** *The manufacturer must be ISO 9001:2000 certified and provide proof of current certification. The scope of the certification shall include manufacture of reflective markings.*
- a. *The markings must be a resilient thermoplastic product with uniformly distributed glass beads throughout the entire cross-sectional area. The markings must be resistant to the detrimental effects of aviation fuels, motor fuels and lubricants, hydraulic fluids, de-icers, anti-icers, protective coatings, etc. Lines, legends, and symbols must be capable of being affixed to bituminous and/or Portland cement concrete pavements by the use of a large radiant heater. Colors shall be available as required.*
- b. *The markings must be capable of conforming to pavement contours, breaks, and faults through the action of airport traffic at normal pavement temperatures. The markings must be capable of fully conforming to grooved pavements, including pavement grooving per FAA AC 150/5320-12, current version. The markings shall have resealing characteristics, such that it is capable of fusing with itself and previously applied thermoplastics when heated with a heat source per manufacturer's recommendation.*
- c. *Multicolored markings must consist of interconnected individual pieces of preformed thermoplastic pavement marking material, which through a variety of colors and patterns, make up the desired design. The individual pieces in each large marking segment (typically more than 20 ft. long) must be factory assembled with a compatible material and interconnected so that in the field it is not necessary to assemble the individual pieces within a marking segment. Obtaining multicolored effect by*



overlaying materials of different colors is not acceptable due to resulting inconsistent marking thickness and inconsistent application temperature in the marking/substrate interface.

- d. The marking material must set up rapidly, permitting the access route to be re-opened to traffic a maximum of 15 minutes after application.*
- e. The marking material shall have an integral color throughout the thickness of the marking material.]*

620-2.3 REFLECTIVE MEDIA. *Glass beads shall meet the requirements for Federal Specification, TT-B-1325D, Type I, gradation A. Glass beads shall be treated with all compatible coupling agents recommended by the manufacturers of the paint and reflective media to ensure adhesion and embedment.*

CONSTRUCTION METHODS

620-3.1 WEATHER LIMITATIONS. *The painting shall be performed only when the surface is dry and when the surface temperature is at least 45°F and rising and the pavement surface temperature is at least 5°F above the dew point. Painting operations shall be discontinued when the surface temperature exceeds limits recommended by the manufacturer. Markings shall not be applied when the pavement temperature is greater than 120°F.*

620-3.2 EQUIPMENT. *Equipment shall include the apparatus necessary to properly clean the existing surface, a mechanical marking machine, a bead dispensing machine, and such auxiliary hand painting equipment as may be necessary to satisfactorily complete the job.*

The mechanical marker shall be an atomizing spray type or airless-type marking machine suitable for application of traffic paint. It shall produce an even and uniform film thickness at the required coverage and shall apply markings of uniform cross-sections and clear-cut edges without running or spattering and without over spray.

620-3.3 PREPARATION OF SURFACE. *Immediately before application of the paint, the surface shall be dry and free from dirt, grease, oil, laitance, or other foreign material that would reduce the bond between the paint and the pavement. The area to be painted shall be cleaned by sweeping and blowing or by other methods as required to remove all dirt, laitance, and loose materials without damage to the pavement surface. Use of any chemicals or impact abrasives during surface preparation shall be approved in advance by the Engineer. Paint shall not be applied to Portland cement concrete pavement until*



the areas to be painted are clean of curing material. Sandblasting or high-pressure water shall be used to remove curing materials.

620-3.4 LAYOUT OF MARKINGS. *The proposed markings shall be laid out in advance of the paint application. The locations of markings to receive glass beads shall be shown on the plans or as indicated in the following list:*

- 1. All runway and taxiway holding position markings.*
- 2. Runway threshold marking.*
- 3. Runway threshold bar.*
- 4. Runway aiming point marking.*
- 5. Runway designation marking.*
- 6. Runway touchdown zone markings.*
- 7. Runway centerline marking.*
- 8. All taxiway centerline markings.*
- 9. Geographical position marking.*
- 10. Surface painted signs.*
- 11. Runway side stripes.*
- 12. Taxiway edge markings.*
- 13. Non-movement Area boundary markings.*
- 14. Displaced threshold markings.*
- 15. Demarcation bar.*

620-3.5 APPLICATION. *Paint shall be applied at the locations and to the dimensions and spacing shown on the plans. Paint shall not be applied until the layout and condition of the surface has been approved by the Engineer. The edges of the markings shall not vary from a straight line more than 1/2 inch in 50 feet and marking dimensions and spacings shall be within the following tolerances:*



<i>Dimension and Spacing</i>	<i>Tolerance</i>
<i>36 inches or less</i>	<i>±1/2 inch</i>
<i>greater than 36 inches to 6 feet</i>	<i>± 1 inch</i>
<i>greater than 6 feet to 60 feet</i>	<i>± 2 inches</i>
<i>greater than 60 feet</i>	<i>± 3 inches</i>

The paint shall be mixed in accordance with the manufacturer's instructions and applied to the pavement with a marking machine at the rate(s) shown in Table 1. The addition of thinner will not be permitted. A period of 30 days shall elapse between placement of a bituminous surface course or seal coat and application of the paint.

Table 1 APPLICATION RATES FOR PAINT, GLASS BEADS, AND SILICA SAND				
<i>Paint Type</i>	<i>Paint Square feet per gallon, ft²/gal</i>	<i>Glass Beads, Type I, Gradation A Pounds per gallon of paint-lb./gal.</i>	<i>Glass Beads, Type III Pounds per gallon of paint-lb./gal.</i>	<i>Silica Sand Pounds per gallon of paint-lb./gal.</i>
<i>Waterborne</i>	<i>115 ft²/gal. Maximum</i>	<i>7 lb./gal minimum</i>	<i>N.A.</i>	<i>N.A.</i>

Glass beads shall be distributed upon the marked areas at the locations shown on the plans to receive glass beads immediately after application of the paint. A dispenser shall be furnished that is properly designed for attachment to the marking machine and suitable for dispensing glass beads. Glass beads shall be applied at the rate(s) shown in Table 1. Glass beads shall not be applied to black paint. Glass beads shall adhere to the cured paint or all marking operations shall cease until corrections are made.

All emptied containers shall be returned to the paint storage area for checking by the Engineer. The containers shall not be removed from the airport or destroyed until authorized by the Engineer.

[620-3.6 APPLICATION--PREFORMED AIRPORT PAVEMENT MARKINGS.

a. Asphalt and Portland cement To ensure minimum single-pass application time and optimum bond in the marking/substrate interface, the materials must be applied using a variable speed self-propelled mobile heater with an effective heating width of no less than 16 feet and a free span between supporting wheels of no less than 18 feet . The heater must emit thermal



radiation to the marking material in such a manner that the difference in temperature of 2 inch wide linear segments in the direction of heater travel must be within 5 percent of the overall average temperature of the heated thermoplastic material as it exits the heater. The material must be able to be applied at ambient and pavement temperatures down to 35°F without any preheating of the pavement to a specific temperature. The material must be able to be applied without the use of a thermometer. The pavement shall be clean, dry, and free of debris. A non-VOC sealer with a maximum applied viscosity of 250 centi-Poise (ASTM D 2393) must be applied to the pavement shortly before the markings are applied. The supplier must enclose application instructions with each box/package.]

620-3.[6][7] PROTECTION AND CLEANUP. *After application of the markings, all markings shall be protected from damage until dry. All surfaces shall be protected from excess moisture and/or rain and from disfiguration by spatter, splashes, spillage, or drippings. The Contractor shall remove from the work area all debris, waste, loose or unadhered reflective media, and by-products generated by the surface preparation and application operations to the satisfaction of the Engineer. The Contractor shall dispose of these wastes in strict compliance with all applicable state, local, and Federal environmental statutes and regulations.*

METHOD OF MEASUREMENT

620-4.1 *See Section 62-[8]*

BASIS OF PAYMENT

620-5.1 *See Section 62-[9]*

TESTING REQUIREMENTS

- ASTM C 136 *Sieve Analysis of Fine and Coarse Aggregates*
- ASTM C 146 *Chemical Analysis of Glass Sand*
- ASTM C 371 *Wire-Cloth Sieve Analysis of Nonplastic Ceramic Powders*



ASTM D 92 Test Method for Flash and Fire Points by Cleveland Open Cup

ASTM D 711 No-Pick-Up Time of Traffic Paint

ASTM D 968 Standard Test Methods for Abrasion Resistance of Organic Coatings by Falling Abrasive

ASTM D 1213-54(1975) Test Method for Crushing Resistance of Glass Spheres

ASTM D 1652 Test Method for Epoxy Content of Epoxy Resins

ASTM D 2074 Test Method for Total Primary, Secondary, and Tertiary Amine Values of Fatty Amines by Alternative Indicator Method

ASTM D 2240 Test Method for Rubber Products-Durometer Hardness

ASTM G 15453 Operating Light and Water-Exposure Apparatus (Fluorescent Light Apparatus UV-Condensation Type) for Exposure of Nonmetallic Materials.

Federal Test Method Paint, Varnish, Lacquer and Related Materials; Methods of Inspection,

Standard No. 141D/GEN Sampling and Testing

MATERIAL REQUIREMENTS

ASTM D 476 Specifications for Dry Pigmentary Titanium Dioxide Pigments Products

Code of Federal Regulations 40 CFR Part 60, Appendix A – Definition of Traverse Point Number and Location

Code of Federal Regulations 29 CFR Part 1910.1200 – Hazard Communications

FED SPEC TT-B-1325D Beads (Glass Spheres) Retroreflective

AASHTO M 247 Glass Beads Used in Traffic Paints

FED SPEC TT-P-1952E Paint, Traffic and Airfield Marking, Waterborne



Commercial Item Description (CID) A-A-2886B Paint, Traffic, Solvent Based

FED STD 595 Colors used in Government Procurement

END OF ITEM P-620

[DELETE / RENUMBER FOLLOWING SECTIONS AS APPROPRIATE FOR THE PROJECT:]

62- 2 ROAD PAVEMENT MARKINGS

All road pavement markings shall conform to Sections 210 1.6 and 310 5.6 of the Standard Specifications.

62-3 CONSTRUCTION BARRICADES

The Contractor shall provide and maintain barricades of the types shown on the plans. Barricades shall be low-profile, water-filled construction barricades[, or Caltrans Type 1 Lighted barricades,] and shall be used to delineate airfield pavement work area limits for the project. Standard weighted wooden barricades will not be allowed for airfield pavement construction area delineation. Location of barricades shall be as shown on the plans or as approved by the Engineer and [Los Angeles International][] Airfield Operations.

Barricades shall be Low Profile Type 1, water-filled barricades. The Type 1 barricades shall be furnished in with orange and white reflective striping on two sides. They shall be constructed of resiliently deformable and frangible material, designed as modular, interlocking units, which will easily assemble, disassemble, and nest for compact storage. Barricade shape shall be low enough so as to not interfere with taxiing aircraft. The Type 1 barricade shall be furnished in alternating orange and white and will be installed so that the colors alternate on adjacent barricades. Each 96” length of barricade shall be equipped with at least one red omni-directional steady burning light. Barricades shall meet the minimum requirements of FAA AC 150/5370-2E, Operational Safety on Airports During Construction. Barricades will be Multi-Barrier Safety Barricade Model AR24x96 HDPE SPN or approved equal.

Caltrans Type 1 lighted barricades shall conform to Caltrans Type 1 requirements.

Barricades for road work shall be as detailed on the plans.



Maintenance of the barricades and flashers will be the sole responsibility of the Contractor. No additional payment will be made for maintaining and moving barricades to accommodate the phasing.

62-4 TEMPORARY CONSTRUCTION BARRICADE FENCING

The Contractor shall provide and maintain construction barricade fencing to delineate work area limits for each construction phase. Location of barricade fencing shall be approved by the Engineer and Los Angeles International Airfield Operations. The fencing lines are intended as a safety device to aid the Contractor's workers and subcontractors in easily delineating areas of the airport which are off limits from those areas approved for his work activities. Fencing shall be 36" high, orange temporary safety fence, Tensar Easy Gardener BX 205116, or approved equal. Posts, excavation, backfill, and all other incidentals necessary for complete fencing installation, as detailed on the Plans and as approved by the Engineer, shall be included in this item, including periodic relocation as may be needed to accommodate construction phasing.

62-5 TEMPORARY PAVEMENT MARKINGS AND REMOVALS

Temporary pavement markings required to accommodate aircraft and vehicle traffic shall also be a portion of temporary work and will be measured for payment as Runway and Taxiway Painting. In order to accommodate the various phasing requirements of the Plans, or for other reasons, the Contractor will be required to remove pavement markings at various locations as the construction proceeds, as indicated on the Plans and as specified in Section 14 of these Specifications.

62-6 TRAFFIC SIGNS

The Contractor shall provide 16 gauge aluminum traffic signs, with reflectorized faces and legends, for [**"Stop" signs,**] [**"Stop for Aircraft" signs,**][**other**] and [**Taxiway Designation**] signs as shown on the Plans. Sizes, materials, and mounting methods shall be as indicated on the Plans. Posts, excavation, backfill, and all other incidentals necessary for complete signs as detailed on the Plans and as approved by the Engineer shall be included in this item, including periodic relocation as may be needed to accommodate construction phasing.

62-7 LIGHTED "X" RUNWAY CLOSURE MARKERS

Under this section the Contractor shall supply [four (4)] two (2)] lighted runway closure markers to indicate to inbound aircraft that the marked runway is closed. Contractor shall provide and maintain the equipment during the project construction period, but they shall become the property of the Airport and delivered to the Airport Maintenance Yard by the Contractor upon completion of the work. Each marker shall be provided with a generator power unit, but during the progress of the project they are to be wired to temporary power cables. The generator power supply shall be used only in emergencies.



The units shall be manufactured by Hali-Brite, RXM or approved equal and shall consist of an all weather sign panel and illuminated “X” with indicators capable of being visible from a distance of up to five miles. The units shall contain their own power-generating systems sufficient for total operation in a stationary stable position.

Lighted Xs shall meet the following requirements:

- A. The portable runway closure marker shall be designed to form a lighted X which contains twenty-one (21) 90-watt par 38, 10-degree weather proof outdoor standard base clear Halogen spot bulbs with one (1) bulb located in the center and five (5) bulbs located in each of the four (4) legs. All X panel bulbs, light sockets, wiring and connections shall be enclosed in a weather resistant housing.
- B. The lighted X formed when opened and operating shall be 20 feet 6 inches each continuous leg and 14 feet 6 inches on the peripheral.
- C. The marker shall collapse for transport and storage so that all parts are inside the trailer frame dimensions to prevent damage.
- D. Illumination of the marker shall be workable in a continuous or flashing mode. This shall be controlled by a solid state flasher. Mechanical flashers are not acceptable.
- E. A photo cell shall be used to reduce the voltage to 75 volts for nighttime operations.
- F. Flash interval time shall be:
 - (1) Bright Mode: Approximately 2.5 seconds on and 2.5 seconds off.
 - (2) Dim Mode: Approximately 2.5 seconds on and 2.5 seconds off.
- G. A radio interference filter shall be installed with a operation frequency of 50 Hz.
- H. The marker shall have at least two (2) lights (mounted at the backside of the upper portion of the top of the legs of the X) on the backside of the X to indicate power is being supplied to the marker and to indicate that more than one (1) bulb has become inoperative.
- I. The marker shall be designed so it can be used while still attached to the tow vehicle or have the means to stand alone.



- J.** The marker shall be able to withstand winds of 40 MPH (64.37 KPH) while in operational mode. This must be documented.
- K.** The runway closure marker shall be visible from a distance of 3 to 5 miles VFR daytime and a minimum of 6 miles VFR nighttime. These distances shall be determined from an aircraft using a Loran receiver. Documents substantiating these field tests by an independent third party shall accompany specifications.
- L.** Set up time for the marker shall be capable of being accomplished by one person in two (2) minutes or less. This means the marker can be raised and operating within this time frame.
- M.** The marker shall have the fuel capacity to run at full load for a minimum of 120 hours without refueling. Contractor shall be responsible for refueling.
- N.** The marker shall have the capability of being hard wired for the convenience of operating without the use of a generator for prime power.
- O.** The marker angle mechanism shall be constructed of 2" (60.96 cm) square tubing, minimum.
- P.** All electrical components shall be UL listed.
- Q.** The angle mechanism shall be capable of tilting 3 degrees from vertical and have trailer adjustments to accommodate this angle no matter what the degree of the runway.
- R.** The angle mechanism shall be operated by an electric actuator which will both raise and lower the mechanism with power from the generator.
- S.** The marker lighted legs shall be constructed from a lightweight aluminum type material.
- T.** A locking system shall be installed to secure the legs from expanding when the marker is in the transport mode.
- U.** The trailer frame shall be constructed from approximately 2" (60.96 cm) square tubing.
- V.** Trailer dimensions: 7 feet 6 inches wide, 10 feet long.



- W.** The trailer floor shall be expanded steel to serve as a work platform for servicing personnel and to minimize the possibility of ice and snow accumulation
- X.** The tires shall be minimum 4.80 X 12” (203.20 X 30.48 cm) tubeless 4-ply tires, 12” (30.48 cm) wheels and be covered with metal type fenders. Shall come with three (3) tires mounted on three wheels (one is for a spare).
- Y.** A 1,500-pound axle with built-in independent Henschen type suspension or equal. Axle springs, shackles, or shock absorbers are not acceptable.
- Z.** 2-Inch FAS-LOC coupling rated at 3,500 pounds GVW., with safety chains.
- A1.** Shall have 3” pintle ring hitch mounted at the rear of the trailer to facilitate towing of a second runway closure marker.
- B1.** Provisions to accommodate safety chains shall be mounted at the rear of the trailer.
- C1.** D.O.T. approved brake, tail, and turn signal lights and reflectors shall be provided.
- D1.** Five (5) 2,000-pound jack stands located at each corner and tongue.
- E1.** The entire marker unit shall be powder coated gloss to a 1.8 mil minimum dry film thickness. Powder to be outdoor rated, UV resistant, polyester TGIC with the following characteristics:
 - (1) H-2H Pencil Hardness ASTM-D522.
 - (2) 160 IN-Lb Gardner direct & reverse impact ASTM-D2794 modified.
 - (3) Flex over 1/4 dia. needed without fracture.
- F1.** Diesel Powered Generator:
 - (1) Rated Watts: Minimum 4,000.
 - (2) Voltage: 120/240.
 - (3) Amperage: 29.2/14.6.
 - (4) Fuel Capacity: 30 Gallons.
 - (5) Run Time: 120 hours.
 - (6) Shall comply with Mil Spec. W-F 800 for the use of alternative fuels.
 - a. CF-1.



- b. CF-2.
- c. JET-A.
- (7) Starting System: 12V DC Electric & Recoil Rope.
- (8) Electrical Outlets:
 - a. 2-120V (15A) w/ GFI.
 - b. 1-120V (30A) w/ twistlock.
 - c. 1-240V (20A).
- (9) Other Features:
 - a. Low Oil Pressure Safety Protection System.
 - b. Running Time Meter.
 - c. USDA Forestry Approved Muffler.
 - d. Circuit Breaker Protection.
 - e. Anti-Vibration Rubber Mounts.
 - f. Dry Air Cleaner.
 - g. 12V Battery Charging System.
- G1.** Protective Cover
 - (1) Total Weight: 18 OZ P.S.Y.
 - (2) Width: 61 inches.
 - (3) Yarn: Polyester.
 - (4) Count: 20 by 20.
 - (5) Denier: 1000D by 1000D.
 - (6) Grab Tensile (FS 5100): 400 by 338.
 - (7) Tongue Tear (FS 5134): 77 by 77.
 - (8) Adhesion (FS 5970): 15 lbs.
 - (9) Abrasion (FS 5306): 1,000 cycles.
 - (10) Low Temperature: -40 degrees.
 - (11) Continuous: 180 degrees.
 - (12) Intermittent: 200 degrees.
 - (13) Finish: Matte.
 - (14) Treatments: Anti-mildew, U.V. pigments.
 - (15) Putup: 75 yards.
- H1.** The marker shall have a protective “Sunbrella” or approved equal type storage cover.
- I1.** Manuals – One (1) operators manual, and one (1) parts manual for each unit shall accompany equipment at time of delivery. Microfiche, computer diskette or CD is acceptable if printed manuals are not available. Manuals to be in English.
- J1.** Warranty
 - (1) State terms and conditions of factory warranty. Minimums of one (1) year, to include parts and labor.



- (2) Equipment and all components thereof must comply with all Federal, State, and local regulations that may apply at time of delivery.
- (3) Vendor shall be responsible to provide LAWA Construction and Maintenance, all applicable service bulletins. These shall be mailed to the same location as the delivery address.

K1. Training/Startup

- (1) Vendor shall have training of operation and maintenance provided. Time and location to be determined by LAWA personnel.
- (2) Equipment shall be ready for immediate use.

62-[8] METHOD OF MEASUREMENT

The quantity of “Runway and Taxiway Painting” to be paid for shall be the number of square feet of double-coat painting of stripes, numerals, or other markings, applied to pavement at the locations and to the dimensions shown on the plans, and performed in accordance with the specifications and accepted by the Engineer. Both temporary and permanent marking will be measured as “Runway and Taxiway Painting”. One square foot of measurement includes two coats of paint over an applicable area. Reflective markers for temporary edge delineation of pavement will not be measured separately for payment, but will be considered incidental to the marking quantity for the painting and no separate payment will be made.

The quantity of Infield Painting (Green) to be paid for shall be the number of square feet of double-coat painting infield areas, applied to pavement at the locations and to the dimensions shown on the plans, and performed in accordance with the specifications and accepted by the Engineer. One square foot of measurement includes two coats of paint over an applicable area.

Road marking to be paid for shall be the number of square feet of double-coat painting infield areas, applied to pavement at the locations and to the dimensions shown on the plans, and performed in accordance with the specifications and accepted by the Engineer. One square foot of measurement includes two coats of paint over an applicable area.

Construction Barricades, Signs and Construction Fencing to Accommodate Phasing will be measured for payment as a single lump sum item, including providing and maintaining barricades, traffic signs and fencing as required by the plans. These items shall be moved to accommodate phasing and shall be maintained at the Contractor’s cost, as required by these specifications and to the satisfaction of the Engineer for the duration of the project.

Marking removals will be measured and paid under Section 14 of these Specifications.



Lighted "X" Runway Closure Markers will be measured as the number of closure markers, provided, including operation, relocation and maintenance of the markers during the project, and delivering the items to the Airport at the conclusion of the project.

62-[9] BASIS OF PAYMENT

Payment will be made at the contract unit price per square foot for “Runway and Taxiway Painting” per square foot, whether temporary or permanent, with or without reflective media, which price shall be full compensation for all layout for furnishing all materials, labor, equipment, tools, and incidentals necessary to provide permanent or temporary airfield pavement striping and marking.

Payment will be made at the contract unit price per square foot for “Infield Painting (Green)” per square foot, which price shall be full compensation for all layout for furnishing all materials, labor, equipment, tools, and incidentals necessary to complete the item. No separate payment will be made for pavement reflective markers as required.

Payment will be made at the contract unit price per square foot for “Road painting per square foot, whether temporary or permanent, which price shall be full compensation for all layout for furnishing all materials, labor, equipment, tools, and incidentals necessary to road painting.

Payment will be made at the contract lump sum price for “Construction Barricades, Signs and Construction Fencing to Accommodate Phasing”, which price shall be full compensation for all layout for furnishing all materials, labor, equipment, tools, and incidentals necessary to complete, operate and maintain the items as specified.

Payment will be made at the contract unit price for “Lighted "X" Runway Closure Markers”, which price shall be full compensation for furnishing all materials, labor, equipment, tools, and incidentals necessary to complete, operate, relocate and maintain the item as specified. Markers become the property at LAWA at the conclusion of the project.

No additional payment will be made for difficulties encountered when providing any work under this section in areas of night construction, or in other areas subject to construction phasing restrictions.

Payment will be made under:

Item 62.1	Runway and Taxiway Painting	per square foot
Item 62.2	Infield Painting (Green)	per square foot
Item 62.3	Road Marking	per square foot
Item 62.4	Construction Barricades, Signs and Construction Fencing to Accommodate Phasing	per lump sum



Item 62.5 Lighted "X" Runway Closure Markers per each

END OF SECTION 62