

Appendix B

**VDOT ACCEPTANCE OF MATERIALS, INVENTORY TRACKING
PROGRAM AND MANUAL OF INSTRUCTIONS**

ACCEPTANCE OF MATERIALSB-2

MATERIALS INVENTORY TRACKING PROGRAM.....B-3

VDOT MANUAL OF INSTRUCTIONS (excerpts)B-4

Materials Inventory Ledger Sheet.....B-10

Example of Contractors Daily Log & Quality Control Report (C-85).....B-11

VDOT Approved List of Pavement Marking MaterialsB-12 – B-22

Note: These lists are for training purposes only. Go to www.VirginiaDOT.org for current lists.

Acceptance of Materials

The Source of Materials Document

This document is commonly called the “Source of Materials”. A source of materials is required to be submitted by the contractor no later than seven (7) days prior to start of work so that testing, sampling and acceptance can be pre-assigned. This document details to the Department where and from whom the contractor will obtain the material. Upon assignment of the method of acceptance or inspection, the document is returned to the project and Contractor. This is done so that untested material does not arrive on the job site and cause delays while the material is being sampled and tested. Sometimes it is necessary to assign “on the job sampling”.

NOTE: The Source of Materials Document (C-25) can be submitted electronically via the VDOT website. Each district will process the Source of Materials document for each project specific to that district.

Section 106.01(b): The details of how pavement markings are to be accepted and the documentation necessary for the project records are detailed in the Materials Division Manual of Instructions. Also detailed is how a sample is to be taken and how much that sample can represent. An attempt is made to either sample or pre-approve at the source of supply to facilitate ease of acceptance.

Material is accepted by one of following methods:

- 1) Testing - Certification I
- 2) Testing - Certification II
- 3) S.P.E.L. - Special Product Evaluation List
- 4) Visual Acceptance

Certification I

Materials that are required to be tested as a batch or lot before use on a project. Each new batch or lot produced, must be tested and accepted before use. Examples of materials requiring Certification I are paint, thermoplastic, epoxy, polyester and glass beads.

The Certification I statement should read: We certify that our product (batch or lot number) _____ on invoice number _____ or shipping ticket number _____ has been sampled, tested, and approved by VDOT Materials Division as indicated by Laboratory Test Number, MS _____, or by an approved Quality Control Plan as indicated by its unique test number _____.

Note: Some materials that require a Certification I may be included on an Approved List. (Refer to Certification II for an explanation of the Approved List or QPL). However, every batch or lot produced must still be tested and approved before use.

Certification II

Materials that are tested and approved for use far in advance of their need on a project. Once these materials are approved, they are placed on an Approved List (or Qualified Products List - QPL) in the Manual of Instructions.

Some materials (pavement marking tape, pavement markers) don't have to be tested before use on each project. The Contractor simply selects these materials from the Approved List and begins using them.

These materials should arrive on the project with the following Certification II statement: We certify that our product has been tested, approved, and placed on a qualified products list. We certify that our (batch or lot number) _____ on invoice number _____ is the same product that was tested and approved. Indicated on the shipping document will be the test number from the approved list.

Special Product Evaluation List (S.P.E.L.)

Some selected materials may be used on projects under a trial basis. These materials are normally used along side approved materials and are monitored for performance. The S.P.E.L. Committee oversees these trials and makes recommendations for possible future use.

Visual Acceptance

The visual evaluation of pavement marking materials finished products on the road.

Materials Inventory Tracking Program

Section 704 of the Road and Bridge Specifications and the Manual of Instructions require the Contractor to use an approved inventory tracking system for all materials received from the Manufacturer.

The program consists of three (3) primary components:

- 1) **Inventory Ledger** - The striping Contractor maintains a running inventory of all materials received and shipped. When the records associated with the inventory are examined, a given load or batch of material received by the striping Contractor can be tracked to all projects where it was used. Thus it is readily apparent when a given batch has been exhausted. Furthermore, shipments of all materials can be tracked over a period of time. (Refer to Page B-10 for Inventory Ledger)
- 2) **Contractors Daily Log and Quality Control Report (C-85)** - The Contractor should fill out this report on a daily basis to track materials used, quantities, certification information, sample test numbers (MS No's), work completed (locations), and QC test results. The Contractor should review this report with the Inspector on a daily

basis. The Inspector should sign the report after reviewing. Pay Quantities are set and confirmed from this report. (Refer to Page B-11 for example of Form C-85)

- 3) **VDOT Monitor** - The Materials Division monitors the striping Contractor's operation by ensuring that 1 & 2 above are fulfilled. The Monitor also ensures that Manufacturer's certifications are maintained and that the current inventory records match the material on hand.

When materials are shipped directly from the manufacturer to the project, the inventory tracking program **will** apply. In these cases, the Project Inspector will contact the District Materials Division Industrial Inspector, who will assume the duties of the Monitor. The Contractor will be responsible for maintaining all documentation as detailed above.

Other Detailed Requirements

Pavement Markings are a safety item. In emergency situations, where approved by the engineer, pavement markings may be applied without the proper documentation. Section 204.30 of the Manual of Instructions provides for sampling, testing and documentation procedures when marking materials are to be sampled on the project. **Under the tracking program this should never happen. In all other cases the Contractor must present the appropriate documentation to the Inspector before proceeding with the work.**

This tracking ultimately leads to the manufacturer and test coverage. Certifications I & II are used to verify that the material used is that which was tested. It is **IMPOSSIBLE** to document usage after the fact. Contractors who do not have the necessary paper work prior to beginning work should not be allowed to proceed.

EXCERPTS FROM VDOT MANUAL OF INSTRUCTIONS

Accepting Glass Beads on the Project

Glass beads are to appear as a separate entry on the Contractor's Daily Log and QC Report.

Virginia Glass Beads Acceptance Program (VGBAP)

Glass beads are either tested by VDOT or accepted under a modified acceptance program which is a QA/QC program where the volume of material warrants it's use.

Sampling and certification of glass beads is detailed in Section 204.30 of the Manual of Instructions. As with other materials, certifications are issued by the manufacturer to the Contractor. The same rules apply for inventory tracking of beads as for other materials.

SEC. 204.30 REFLECTIVE MATERIALS

(Secs. 231, 234, 235, 246, and 701) See Sec. 207 for acceptance of reflective materials on modified inspection procedures.

(a) PAVEMENT MARKINGS

(1) Sampling, Testing and Approval

Sampling of reflectorized pavement markings, including glass beads, in the field will not normally be necessary. This material is normally pre-sampled and pre-tested. Materials sampled at the point of manufacture should arrive at the job site or storage area with evidence of test as outlined below. If no such evidence is present, then representative samples need to be taken and shipped to the Central Office Laboratory, in accordance with Sec. 203, using Form TL-10, as outlined in Sec. 800.

(a) Glass Beads

Glass beads will be sampled at the point of manufacture by representatives of the State Materials Engineer and forwarded to the Central Materials Laboratory for testing and acceptance or accepted under an approved Quality Control Plan, namely the Virginia Glass Bead Acceptance Plan (VGBAP).

The Virginia Glass Bead Acceptance Plan (VGBAP) involves the sampling, testing, documentation and certification of glass beads by the manufacturer at the manufacturing site in combination with a VDOT monitoring effort. VDOT reserves the right to discontinue acceptance of glass beads in the event that verification test results indicate non-specification material is being provided or test procedures are not being followed.

Each batch of glass beads manufactured for use in Virginia must be sampled and tested. A batch is defined as no more than 132,000 pounds. From the batch, X number of units or bags of glass beads will be selected for testing, X being equal to the cube root of the number of units or bags in each batch. For example a batch of 132,000 lbs. contains 2640, 50 pound bags. The cube root of 2640 is 14. Therefore, 14 bags from a 132,000 lb. batch need to be selected. The 14 bags will be opened, split down using a 16:1 splitter and combined until a quart sample is obtained. This quart sample is further split in the laboratory until a 50 gram test sample is obtained and will be tested in accordance with the specified methods. Glass bead testing equipment (Roundometer, Sieves, Balances, Scales, etc.) at the manufacturing facilities will be inspected by VDOT personnel or its representatives on an intermittent basis. A file of test reports representing this batch of glass beads must be maintained. A copy of the certified test reports must be provided to the VDOT Central Materials Division. Cooperation with VDOT and/or its representatives during periodic verification of certified test reports is required.

The manufacturer must perform the following responsibilities with the assistance of a VDOT

approved commercial testing agency.

Quality Control Sampling by the manufacturer will be at the rate of one sample per batch of glass beads produced for use in Virginia.

The manufacturer is to test each batch of glass beads in accordance with ASTM D-1155 Procedure B for Roundness and ASTM D-1214 for Sieve Analysis. A moisture resistance test should also be performed.

Monitor samples will be taken to verify the manufacturer's testing procedures. The monitor sample will be taken at periodic intervals at the manufacturer's facility at the average rate of one per month. The sample taken for monitor acceptance will be a "split" sample, with the manufacturer testing a portion of the sample and VDOT's Central Materials Division testing the other portion.

Monitor samples will consist of one unit or bag of glass beads being randomly selected by VDOT personnel or its representative. This unit or bag will be split in the usual manner by the manufacturer's personnel in the presence of the VDOT's Inspector to obtain two (2) pint samples. One pint will be appropriately labeled and tested by the glass manufacturer, while the other will be tested by the VDOT Central Materials Division. VDOT will perform the tests in the same manner as the manufacturer.

The manufacturer is to maintain a file of certified test reports for all glass beads shipped to VDOT facilities as well as Contractors that perform work for VDOT. These reports are to be kept by the manufacturer for at least 12 months and are to be available for verification by VDOT personnel. A copy of the certified test report is also to be sent to the VDOT Central Laboratory.

The test reports shall contain the following information:

- Manufacturer's name and address
- Quantity represented
- Pallet numbers represented by the test
- Pallet numbers sampled for the test
- Unique Report Number

Statement indicating that "the manufacturer certifies that these are the test results obtained on glass beads tested under the Virginia Glass Bead Acceptance Program." Test Results obtained on the sample of glass beads.

All shipping documents will contain sufficient information such that at any point, the glass bead pallet numbers may be "back tracked" to the original test results.

Shipping documents are to be provided to Contractors or VDOT for all shipments.

(b) Traffic Paint

Traffic paint shall be sampled the same as "Paint", as outlined in Sec. 204.24.

(c) Thermoplastic

Block type thermoplastic marking materials will require 1 block sampled and tested at the Central Office Chemistry Laboratory. Granular materials will be sampled by splitting to obtain

a 1 quart sample for testing by the Chemistry Laboratory.

(d) Preformed Tape

Approved List

(e) Polyester Resin

Polyester shall be sampled the same as “Paint”, as outlined in Sec. 204.24, except that the catalyst will not be sampled.

(f) Epoxy Resin

Epoxy resin shall be sampled the same as “Paint”, as outlined in Sec. 204.24, except that both components shall be sampled.

(2) Acceptance

- (a) After appropriate testing has been completed, the manufacturer of the material will attach a certification to their shipping documents similar to one of the following:

Certification I

We certify that our product (batch or lot number) on invoice number_____or shipping ticket number_____has been sampled, tested, and approved by VDOT Materials Division as indicated by Laboratory Test Number, MS ____, or by an approved Quality Control Plan as indicated by its unique test number_____.

Certification II

We certify that our product has been tested, approved, and is currently on a qualified products list. We certify that our (batch or lot number) on invoice number is the same product that was tested and approved. Indicated on the shipping document will be the test number from the approved list.

All related materials such as primers, sealers and adhesives for use with the markings shall be included on a shipping ticket covered by one of these certifications.

The individual pavement marking items will require certifications as indicated below:

A. Construction Pavement Markings

Type D - Tape (removable)	Certification II
Type E - Tape (black, removable)	Certification II
Type F - Paint (temporary)	Certificaiton II
Glass Beads	Certification I

B. Permanent Markings

Type A - Paint	Certification I
Type B	
Class I - Thermoplastic	Certification I
Class III - Epoxy	Certification I
Class IV - Tape (flat)	Certification II
Class VI - Tape (profiled)	Certification II
Glass Beads	Certification I

(b) Materials shipped directly from the manufacturer for use on a specific project, and materials shipped to a central storage site for use on multiple projects shall be tracked by an inventory tracking program maintained by the Contractor. The program shall be under the control of the Contractor who will keep a running inventory of all pavement marking materials shipped from that inventory, including all related materials such as primers, sealers and adhesives used in the application.

A Pavement Marking Materials Inventory Ledger form (see sample form Appendix B-10) shall be used to record all shipments to and from the Contractor's stock. A separate Pavement Marking Inventory Ledger shall be maintained for each type of material and for each manufacturer. All ledger entries shall be substantiated by manufacturer shipping documents which shall include the Certification I & II statements. Ledger entries for materials received into stock shall indicate quantity, units, date of receipt, manufacturer's lot or batch number, VDOT or other appropriate test numbers and balance on hand. When materials are taken from inventory for shipment to a project, ledger entries shall include quantity shipped, units, project number, date shipped, and balance on hand. All ledger entries shall be initialed by the Contractor and such initials certify that all entries are accurate and correct.

Contractor's Daily Log and Quality Control Report (C-85)

The Contractor's Daily Log and Quality Report is used to track the Contractor's pavement marking materials shipped and installed, quantities, certification information, sample test numbers (MS No's.), work completed (locations) and QC test results. The C-85 form shall have the statement, "Materials shipped under this certification have been tested and approved by VDOT as indicated by laboratory test numbers listed hereon." The C-85 form shall be reviewed and signed by the Contractor and the VDOT inspector on a daily basis.

Monitoring-The Materials Industrial Technician will perform periodic inspection at the pavement marking contractor's storage site and of project records to ensure that the records are being kept in compliance with the above. For those projects where the material is shipped directly to the project, the inspector shall contact the Materials Industrial Technician for monitoring the use of material. The Materials Industrial Technician shall be given free access to all files used in the tracking program and provided with copies of any documents from such files as may be requested. If the Materials Industrial Technician determines that material is untested or needs to be retested,

samples shall be taken at the appropriate rate and forwarded to the Central Office Materials Laboratory. The Contractor shall not ship material in question until appropriate test coverage is obtained.

The Materials Industrial Technician will be responsible for obtaining a copy of each C-85 and making distribution to the receiving District Materials Engineer.

(b) PAVEMENT MARKERS AND DELINEATORS

Pavement markers and delineators will be accepted on approved list.

**PAVEMENT MARKING
CONTRACTOR'S DAILY LOG AND QUALITY CONTROL REPORT**

Contractor:	Date:	Start Time:	Finish Time:
Job/Project No:	Sheet	of	
Weather:			
Air Temp. (Start)	Air Temp. (Finish)	Surface Temp. (Start):	

*** MATERIALS DOCUMENTATION:**

Type of Material	Quantity	Units	Certification Letter (Type/Date)	MS Number	Exp. Date

WORK COMPLETED:

Type of Marking	Contract Item No.	Quantity	Units	Location/Description	Width	Color

Quality Control Measurements:

Material Type	Q.C. Measurement (Units)	Location	Time	Inspector (Initial)

*** Material shipped under this certification has been tested and approved by VDOT as indicated by laboratory test numbers listed hereon.**

Contractor Q. C. Technician		Date	
VDOT Representative		Date	

(17) QUALIFIED PREFORMED TAPE LIST – (CHEMISTRY LAB)

The following products have been prequalified, *but* the manufacturer must supply certification for each lot.

Manufacturer's instructions for installation shall be followed both as to method and temperature of application to pavement requirements. Primer/sealers may be required; the manufacturer's specific recommendations shall be followed, and the cost of the primer/sealer shall be included in the bid price or unit price. Although approved for use, not all products may be equal in all characteristics. Contractor needs to determine the best product for his intended use.

TYPE	NAME	MANUFACTURER	Approval No.
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Type B**Class IV**

These tapes may be used for stop lines, crosswalks, messages and arrows only:

White

420	3M Manufacturing	STR-91-77
Series 1000	Brite-Line Technologies	STR-96-137-PA
ATM 300	Advance Traffic Markings	STR-98-TX-510

Yellow

ATM 300	Advance Traffic Markings	STR-98-TX-511
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Class VI

These tapes may be used for edge lines, center and skip lines, messages and arrows only:

White

380I	3M Manufacturing	STR-96-160-PA
Stamark 860	3M Manufacturing	MS 11860

Yellow

381I lead free	3M Manufacturing	STR-96-161-PA
Stamark 861	3M Manufacturing	MS 11861

For center and skip lines only:

380I-5 Contrast white	3M Manufacturing	MS 11107
381I-5 Contrast yellow	3M Manufacturing	MS 11108

QUALIFIED PREFORMED TAPE LIST

The following products have been prequalified, *but* the manufacturer must supply certification for each lot.

Type D Class I

Scotchlane 620™ white	3M Manufacturing	STR-95-35
Scotchlane 621™ yellow lead free	3M Manufacturing	STR-95-36
Scotchlane 750™ white	3M Manufacturing	PMM(2000PA)-5
Scotchlane 751™ yellow lead free	3M Manufacturing	PMM(2000PA)-6
ATM 200 white	Advance Traffic Markings	STR-98-TX-507
ATM 200 yellow	Advance Traffic Markings	STR-98-TX-508
ATM 120 white	Advance Traffic Markings	STR-98-TX-505
ATM 121 yellow	Advance Traffic Markings	STR-98-TX-506
ATM 1200W white	Advance Traffic Markings	PMM-02-10-MS
ATM 1200Y yellow	Advance Traffic Markings	PMM-02-11-MS
ATM 2000W white	Advance Traffic Markings	PMM-02-12-MS
ATM 2000Y yellow	Advnace Traffic Markings	PMM-02-13-MS
Series 100 white	Brite-Line Technologies	STR-97-150-MN
Series 100 yellow lead free	Brite-Line Technologies	STR-97-149-MN
RW-140 white	Trelleborg	PMM(2000PA)-187
RY-140 yellow	Trelleborg	PMM(2000PA)-188

Type D Class II

Scotchlane 750™ white	3M Manufacturing	PMM(2000PA)-5
Scotchlane 751™ yellow lead free	3M Manufacturing	PMM(2000PA)-6
ATM 200 white	Advance Traffic Markings	STR-98-TX-507
Series 100 white	Brite-Line Technologies	STR-97-150-MN
ATM 1200W white	Advance Traffic Markings	PMM-02-10-MS
ATM 1200Y yellow	Advance Traffic Markings	PMM-02-11-MS
ATM 2000W white	Advance Traffic Markings	PMM-02-12-MS
ATM 2000Y yellow	Advance Traffic Markings	PMM-02-13-MS

Type D Class III

Scotchlane 750™ white	3M Manufacturing	PMM(2000PA)-5
Scotchlane 751™ yellow lead free	3M Manufacturing	PMM(2000PA)-6

Type E

Scotchlane™ Series A145	3M Manufacturing	STR-93-111
ATM 280 black	Advance Traffic Markings	STR-98-TX-509
Deltaline BTR	Brite-Line Technologies	STR-97-83-MN
RB-140 black	Trelleborg	PMM-01-UT-28

(18) ABRASIVES – (CHEMISTRY LAB)

RECYCLABLE ABRASIVES

1. Steel Grit and Shot *

EXPENDABLE ABRASIVES

- | | |
|--|-----------------------|
| 1. Starblast XL – DuPont | Phone: (800) 441-9487 |
| 2. Black Blast -- Virginia Materials and Supplies | Phone: (757) 855-0155 |
| 3. GMA ROM 30 x 60 Garnet – Barton Mines Company | Phone: (800) 792-5462 |
| 4. Crystalgrit -- Virginia Materials and Supplies | Phone: (757) 855-0155 |
| 5. Glass Jet – Virginia Materials and Supplies | Phone: (757) 855-0155 |
| 6. Western’s Bengal Bay Garnet – Virginia Materials and Supplies | Phone: (757) 855-0155 |
| 7. Reed Minerals Black Beauty® 1240 from Moundsville WV plant | Phone: (717) 763-4200 |
| 8. Reed Minerals Black Beauty® 2040 from Moundsville WV plant | Phone: (717) 763-4200 |
| 9. Reed Minerals Black Beauty® 4490 from Moundsville WV plant | Phone: (717) 763-4200 |

(20) **APPROVED WATER BORNE LEAD FREE TRAFFIC PAINT – (CHEMISTRY LAB)**

<u>White</u>	<u>Manufacturer</u>	<u>Product No.</u>	<u>NTPEP Submittal No.</u>
Sherwin Williams		BP14016	STR-97-41-AL
		BP14019	STR-97-44-AL
		BP15652	STR-98-PA-135
		BP15622	STR-98-PA-150
		BP17312	PMM(2000PA)-170
		BP17313	PMM(2000PA)-171
		BP17316	PMM(2000PA)-174
Ennis Paint (formerly LaFarge Road Markings and Centerline)		CL-6000	STR-96-85-PA
		CL-6004	STR-96-68-PA
		CL-7018	STR-97-69-AL
		CL-8210	STR-98-PA-96
		CL-8214	STR-98-PA-100
		CL-8216	STR-98-PA-102
		CL-8218	STR-98-PA-104
		CL-8220	STR-98-PA-106
	CL-8222	STR-98-PA-108	
Ennis Paint (formerly LaFarge Road Markings and Linear Dynamics)		LD96-1002	STR-96-85-PA
		LD96-1008	STR-96-91-PA
		LD971001C	STR-97-138-AL
		LD981001	STR-98-PA-158
		LD981002	STR-98-PA-159
		LD981003	STR-98-PA-160
		LD981004	STR-98-PA-161
		LD981005	STR-98-PA-162
Ennis Paint (formerly LaFarge Road Markings)		LRMOOWB-19	PMM(2000PA)-110
		LRMOOWB-20	PMM(2000PA)-111
Ennis Paint		Douglas 303-98	STR-98-PA-214
		Ennis EP200W13	STR-98-PA-17
		Ennis EP200W14	STR-98-PA-18
		Ennis EP200W16	STR-98-PA-20
		EP415W03	PMM(2000PA)-61
		EP415W04	PMM(2000PA)-62

<u>Yellow</u>	<u>Manufacturer</u>	<u>Product No.</u>	<u>NTPEP Submittal No.</u>
Sherwin Williams		BP-14021	STR-97-46-AL
		BP15611	STR-98-PA-139
		BP15623	STR-98-PA-151
		BP17314	PMM(2000PA)-172
Ennis Paint (formerly LaFarge Road Markings and Linear Dynamics)		LD961009	STR-96-92-PA
		LD981009	STR-98-PA-165
		LD981010	STR-98-PA-166
Ennis Paint (formerly LaFarge Road Markings)		LRMOOWB-31	PMM(2000PA)-122
Aexcel		72Y-AO65	STR-96-148-PA
Ennis Paint		Douglas 306-98	STR-98-PA-217
		Douglas 307-98	STR-98-PA-218
		Ennis EP200Y-15	STR-98-PA-26
		Ennis EP200Y-18	STR-98-PA-29
		EP415Y03	PMM(2000PA)-66
		EP415Y04	PMM(2000PA)-67
		EP415Y05	PMM(2000PA)-68
EP415Y06	PMM(2000PA)-69		

(22) PAVEMENT MARKERS – (CHEMISTRY LAB)**SNOW PLOWABLE RAISED PAVEMENT MARKERS**

Manufacturer	Casting Model No.	Reflector Description	Casting Adhesive	Reflector Adhesive
Avery Dennison (formerly Stimsonite)	98 (note 1)	940 (note 2)	Lord Thermoset EP-87 or AASHTO-M237, Type IV	Liquid Nails - 602
Avery Dennison (formerly Stimsonite)	101	944 Ray-O-Lite 2004 Ray-O-Lite 2004S 3M 190	Lord Thermoset EP-87 or AASHTO-M237, Type IV (note 3)	Liquid Nails – 602 3M-LN602
Accent Stripe, Inc. NTPEP RPM-99OH-5	Northstar 41	Ray-O-Lite 2004 Ray-O-Lite 2004S 3M 190	Lumiline SMA or AASHTO-M237, Type IV	Liquid Nails – 602 3M-LN602
Nightline	B-400	Ray-O-Lite 2004 Ray-O-Lite 2004S 3M 190	Poly-Carb or Epoplex MA 50 or AASHTO-M237, Type IV	Liquid Nails – 602 3M-LN602
Hallen NTPEP RPM-2000OH-3	H-1010 HP H-960 HP	Ray-O-Lite 2004 Ray-O-Lite 2004S 3M 190	AASHTO-M237, Type IV	Liquid Nails – 602 3M-LN602
Ray-O-Lite (Pac-Tec)	Snow-Lite 100	Ray-O-Lite 2004 Ray-O-Lite 2004S 3M 190	Epoplex MA 50 Slocum Type M-397	BK0246-01 or Liquid Nails – 602 3M-LN602

NOTES:

Note 1: The Model 98 has been discontinued. The 940 reflector can be used as a replacement in existing Model 98 castings. The Model 98 has been replaced with the approved castings listed below.

Note 2: All reflectors are approved for use in any casting in which they fit.

Note 3: Lord Thermostat EP-87 formerly Epoxy #2203.

TEMPORARY PAVEMENT MARKERS

Manufacturer	Marker No.	Size	Adhesive
Avery Dennison (formerly Stimsonite)	88	4" x 4"	2202 Bituminous or AASHTO-M237, Type II
Avery Dennison (formerly Stimsonite)	911	4" x 4"	2202 Bituminous or AASHTO-M237, Type II
Avery Dennison (formerly Stimsonite)	948	2" x 4"	2202 Bituminous or AASHTO-M237, Type II
Ray-O-Lite	“Standard” Types – B, D, DR 2004, 2004S	4" x 4"	Bitumen Adhesive
Ray-O-Lite	Types – B, C, D, DR, G, H, K, X, Z	2" x 4"	Bitumen Adhesive
Ray-O-Lite	Model AA Types – B, C, D, DR, G, H, K, X, Z	4" x 4"	Bitumen Adhesive
Ray-O-Lite	Model AA-ARC II Types – B, C, D, DR, G, H, K, X, Z	4" x 4"	Bitumen Adhesive
3M	290 (White) 291 (Yellow)	3.5" x 4" 3.5" x 4"	Bitumen Adhesive
Bunzl Extrusion Washington, Inc. – Tacoma Division			
Formerly Davidson Plastics Corporation and/or Bunzl Extrusion Tacoma	DAPCO RPM	4" x 4"	Bitumen Adhesive

NOTES:

RECESSED PAVEMENT MARKERS

Manufacturer	Marker No.	Size	Adhesive
Ray-O-Lite	2004, 2004S Types – B, C, D, DR, G, H, K, X, Z	For 4" wide slots/ grooves	EP-326 Epoxy
Avery Dennison (formerly Stimsonite)	948	For 4.5" wide slots/ grooves	2202 Bitumen or AASHTO- M237, Type II
Avery Dennison (formerly Stimsonite)	944SB	For 4" wide slots/ grooves	2201 Epoxy or AASHTO- M237, Type II

NOTES:

(43) **Approved Yellow (Lead Free) Thermoplastic Products
- (CHEMISTRY LAB)**

The following thermoplastic formulations have been evaluated and found to have satisfactory initial nighttime color. Note that, as part of materials acceptance, all production batches will be tested for comparison with the originally submitted samples.

Ennis Paint (formerly Avery Dennison) (formerly Stimsonite)

Product No. 884188 (formerly YID-5GX-VA-DCA)
Product No. 884189 (formerly YID-5GX-VA-HRB)
Product No. 884186 (Y1D-5GX-VA-DCC)
Product No. 884187 (Y1D-5GX-VA-HRC)

Swarco

Product No. Swarolux 98 STR-115
Product No. Swarolux 98 STR-116
Product No. VYALF001
Product No. VYALF002

Ennis Paint (formerly Cataphote)

Alkyd Extrude (Yellow L. F. Thermoplastic)

Product No. 32101462
Product No. 32101464
Product No. 32101466
Product No. 32101468
Product No. 32101463

Alkyd Spray (Yellow L. F. Thermoplastic)

Product No. 32102462
Product No. 32102464
Product No. 32102466
Product No. 32102468

Ennis Paint (formerly LaFarge Road Marking and LDI)

Product No. E E VA AL F Y 99 1 (Made in Eastpoint, Ga.)
Product No. P E VA AL F Y 99 1 (Made in Pennsdale, Pa.)
Product No. E E VA AL F Y 99 2 (Made in Eastpoint, Ga.)
Product No. P E VA AL F Y 99 2 (Made in Pennsdale, Pa.)
Product No. E E VA AL F Y 99 3 (Made in Eastpoint, Ga.)
Product No. P E VA AL F Y 99 3 (Made in Pennsdale, Pa.)
Product No. EEVAAALFY998
Product No. EEVAAALFY04
Product No. EEVAAALFY06

Crown Technology

Product No. Ecotherm 06-YAX-AACF
06-YAX-01CF
06-YAX-00CF

Ennis Paint

Product No. Va-AK-SX-YNL-1

s.Dobco

Product No. Y1X0605
Y1S0605
Y1X0615
Y1X0625

(48) **APPROVED TYPE F CONSTRUCTION MARKINGS – (CHEMISTRY LAB)**

All waterborne paint markings shall be applied at a wet film thickness of 15±1 mil and a glass bead application rate of 6 pounds per gallon.

WATERBORNE PAINT CLASS I

Manufacturer	Product No.	NTPEP Submittal No.
<u>White</u>		
Sherwin Williams	BP-14016	STR-97-41-AL
	BP-14019	STR-97-44-AL
	BP15652	STR-98-PA-135
	BP15622	STR-98-PA-150
	BP17312	PMM(2000PA)-170
	BP17313	PMM(2000PA)-171
	BP17316	PMM(2000PA)-174
Ennis Paint (formerly LaFarge Road Markings and Centerline)	CL-6000	STR-96-64-PA
	CL-6004	STR-96-68-PA
	CL-7018	STR-97-69-AL
	CL-8210	STR-98-PA-96
	CL-8214	STR-98-PA-100
	CL-8216	STR-98-PA-102
	CL-8218	STR-98-PA-104
	CL-8220	STR-98-PA-106
CL-8222	STR-98-PA-108	
Ennis Paint (formerly LaFarge Road Markings and Linear Dynamics)	LD96-1002	STR-96-85-PA
	LD96-1008	STR-96-91-PA
	LD971001C	STR-97-138-AL
	LD981001	STR-98-PA-158
	LD981002	STR-98-PA-159
	LD981003	STR-98-PA-160
	LD981004	STR-98-PA-161
LD981005	STR-98-PA-162	
Ennis Paint (formerly LaFarge Road Markings)	LRMOOWB-19	PMM(2000PA)-110
	LRMOOWB-20	PMM(2000PA)-111
Ennis Paint	Douglas 303-98	STR-98-PA-214
	Ennis EP200W13	STR-98-PA-17
	Ennis EP200W14	STR-98-PA-18
	Ennis EP200W16	STR-98-PA-20
	EP415W03	PMM(2000PA)-61
	EP415W04	PMM(2000PA)-62

WATERBORNE PAINT CLASS I

Manufacturer	Product No.	NTPEP Submittal No.
Yellow		
Sherwin Williams	BP-14021	STR-97-46-AL
	BP15611	STR-98-PA-139
	BP15623	STR-98-PA-151
	BP17314	PMM(2000PA)-172
Ennis Paint (formerly Linear Dynamics) and LaFarge Road Markings	LD96-1009	STR-96-92-PA
	LD981009	STR-98-PA-165
	LD981010	STR-98-PA-166
Ennis Paint (formerly LaFarge Road Markings)	LRMOOWB-31	PMM(2000PA)-122
Aexcel	72Y-AO65	STR-96-148-PA
Ennis Paint	Douglas 306-98	STR-98-PA-217
	Douglas 307-98	STR-98-PA-218
	Ennis EP200Y-15	STR-98-PA-26
	Ennis EP200Y-18	STR-98-PA-29
	EP415Y03	PMM(2000PA)-66
	EP415Y04	PMM(2000PA)-67
	EP415Y05	PMM(2000PA)-68
EP415Y06	PMM(2000PA)-69	

WATERBORNE PAINT CLASS II

Manufacturer	Product No.	NTPEP Submittal No.
White		
Sherwin Williams	BP-14016	STR-97-41-AL
	BP15652	STR-98-PA-135
	BP15622	STR-98-PA-150
	BP17312	PMM(2000PA)-170
	BP17313	PMM(2000PA)-171
Ennis Paint (formerly Centerline and LaFarge Road Markings)	CL-8214	STR-98-PA-100
	CL-8216	STR-98-PA-102
	CL-8218	STR-98-PA-104
	CL-8220	STR-98-PA-106
	CL-8222	STR-98-PA-108
Ennis Paint (formerly Linear Dynamics and LaFarge Road Markings)	LD981001	STR-98-PA-158
	LD981004	STR-98-PA-161
	LD981005	STR-98-PA-162

WATERBORNE PAINT CLASS II

Manufacturer	Product No.	NTPEP Submittal No.
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White

Ennis Paint	Douglas 303-98	STR-98-PA-214
	Ennis EP200W13	STR-98-PA-17
	Ennis EP200W14	STR-98-PA-18
	Ennis EP200W16	STR-98-PA-20
	EP415W03	PMM(2000PA)-61
	EP415W04	PMM(2000PA)-62

Yellow

Sherwin Williams	BP-14021	STR-97-46-AL
	BP15623	STR-98-PA-151
	BP17314	PMM(2000PA)-172

Ennis Paint

LaFarge Road Markings

LRMOOWB-31

PMM(2000PA)-122

Ennis Paint

Douglas 306-98

STR-98-PA-217

Douglas 307-98

STR-98-PA-218

EP415Y03

PMM(2000PA)-66

EP415Y04

PMM(2000PA)-67

EP415Y05

PMM(2000PA)-68

EP415Y06

PMM(2000PA)-69

