

AGREEMENT FOR TRAFFIC STRIPING SERVICES – CITYWIDE

THIS AGREEMENT FOR TRAFFIC STRIPING SERVICES – CITYWIDE (“Agreement”) is entered into by and between the **CITY OF OCALA**, a Florida municipal corporation (“City”) and **MCSHEA CONTRACTING, LLC** a limited liability company duly organized and authorized to do business in the state of Florida (EIN: 26-4642586) (“Contractor”).

WHEREAS, on July 12, 2024, City issued an Invitation to Bid for the provision of Traffic Striping Services – Citywide, ITB No.: PWD/240837 (the “Solicitation”); and

WHEREAS, two (2) firms responded to the Solicitation and, after consideration of price and other evaluation factors set forth in the Solicitation, the bid submitted by McShea Contracting, LLC was found to be the lowest; and

WHEREAS, Contractor was chosen as the intended awardee to provide traffic striping services – Citywide (the “Project”); and

WHEREAS, Contractor certifies that Contractor is qualified and possesses the required experience and licensure.

NOW THEREFORE, in consideration of the foregoing recitals, the following mutual covenants and conditions, and other good and valuable consideration, City and Contractor agree as follows:

1. **RECITALS.** City and Contractor hereby represent, warrant, and agree that the Recitals set forth above are true and correct and are incorporated herein by reference.
2. **CONTRACT DOCUMENTS.** The Contract Documents which comprise the entire understanding between City and Contractor shall only include this Agreement and those documents listed in this section as Exhibits to this Agreement. Each of these documents are incorporated herein by reference for all purposes. If there is a conflict between the terms of this Agreement and the Contract Documents, then the terms of this Agreement shall control, amend, and supersede any conflicting terms contained in the remaining Contract Documents.

A. **Exhibits to Agreement:** The Exhibits to this Agreement are as follows:

- Exhibit A: Scope of Work (A-1 through A-3)
- Exhibit B: Price Proposal (B-1 through B-4)
- Exhibit C: Pavement Marking Materials (C-1 through C-13)
- Exhibit D: Manual on Uniform Traffic Control Devices (D-1 through D-2)
- Exhibit E: Profiled Thermoplastic Pavement Markings (E-1 through E-23)

If there is a conflict between the individual Exhibits regarding the scope of work to be performed, then any identified inconsistency shall be resolved by giving precedence in the following order: (1) Exhibit A, then (2) Exhibit B, then (3) Exhibit C, then (4) Exhibit D, then (5) Exhibit E.

3. **SCOPE OF SERVICES.** Contractor shall provide all materials, labor, supervision, tools, accessories, equipment necessary for Contractor to perform its obligations under this Agreement as set forth in the attached **Exhibit A - Scope of Work**. The Scope of Work and/or pricing under this Agreement may only be adjusted by written amendment executed by both parties.

4. **COMPENSATION.** City shall pay Contractor an amount no greater than **ONE MILLION, ONE HUNDRED THOUSAND AND NO/100 DOLLARS (\$1,100,000)** (the "Contract Sum") over the contract term as full and complete compensation for the timely and satisfactory performance of services in accordance with the unit pricing and frequency detailed in **Exhibit A – Scope of Work** and **Exhibit B – Price Proposal**.
 - A. **Price Adjustments.** Prices offered shall remain firm for the initial contract term. Requests for price adjustments may be submitted, in writing, **no later than NINETY (90) DAYS** prior to the expiration of the prior term and must include proper CPI justification or other documentation supporting the adjustment. The City will review the submitted request for price adjustment and render a decision, in its sole discretion, as to whether it is in the best interest of the City to adjust the pricing on the awarded goods or services or reject the adjusted pricing and issue a competitive solicitation. In any event, price increases for renewal terms shall be subject to a maximum negotiated increase of **no more than THREE PERCENT (3%)** annually unless there are mitigating market conditions. The City is under no obligation to renew the contract for an additional term or to accept Contractor's proposed price increases. Contractor must receive written notification from the City confirming that the City has accepted the new prices prior to processing any orders at the new cost. Any orders issued by the City prior to formal approval of a price increase shall not be modified. Any payment of the adjusted price by City does not constitute acceptance of new pricing. Contractors are expected to pass along to the City any and all decreases in pricing on products and services or to keep pricing constant when market conditions warrant no such increases.
 - B. **Notices to Proceed on Individual Projects.** City shall issue written Notices to Proceed for individual projects in alignment with project schedules. Notices to Proceed shall be issued at the pre-construction conference, after Contractor and City have agreed upon the time needed to complete each individual project as assigned. Contractor agrees to have project signs in place, be able to mobilize, and commence work within **SEVEN (7)** days of the date of issuance of a Notice to Proceed for each individual project. Contractor shall complete assigned projects within the time limits specified in the Notice to Proceed and substantial completion and final completion dates shall be strictly enforced by City. At no time will Contractor be allowed to lag behind. Contractor shall be expected to accurately track contract time and progress for each assigned project. Notices to Proceed for additional projects will not be issued if Contractor has failed to properly complete and close out previous projects assigned under this Agreement.
 - C. The Time for Performance under this Agreement may only be adjusted by Change Order, in the sole and absolute discretion of City. Any request for an extension of the Time for Performance must be submitted in a writing delivered to the City Project Manager, along with all supporting data. All requests for adjustments in the Contract Time shall be determined by City.
 - D. As to any delay, inefficiency, or interference in this performance of this Agreement caused by any act or failure to act by City, the Contractor's sole remedy shall be the entitlement of an extension of time to complete the performance of the affected work in accordance with the Contract Documents. Contractor agrees to make no claim for extra or additional costs attributable to said delays, inefficiencies, or interference, except as provided in this Agreement.

- E. None of the provisions of this section shall exclude City’s right of recovery for damages caused by delays or inefficiencies caused by any act or failure to act by Contractor, to include costs incurred by City for the procurement of additional professional services.
 - F. **Invoice Submission.** All invoices submitted by Contractor shall include the City Contract Number, an assigned Invoice Number, and an Invoice Date. Contractor shall submit the original invoice through the responsible City Project Manager at: **City of Ocala Department of Public Works** Attn: **Nick Blizzard**, Address: **1805 NE 30th Avenue, Building 300, Ocala, Florida 34470** E-Mail: njblizzard@ocalafl.gov
 - G. **Payment of Invoices by City.** The City Project Manager must review and approve all invoices prior to payment. City Project Manager’s approval shall not be unreasonably withheld, conditioned, or delayed. Payments by City shall be made no later than the time periods established in section 218.735, Florida Statutes.
 - H. **Withholding of Payment.** City reserves the right to withhold, in whole or in part, payment for any and all work that: (i) has not been completed by Contractor; (ii) is inadequate or defective and has not been remedied or resolved in a manner satisfactory to the City Project Manager; or (iii) which fails to comply with any term, condition, or other requirement under this Agreement. Any payment withheld shall be released and remitted to Contractor within **THIRTY (30)** calendar days of the Contractor’s remedy or resolution of the inadequacy or defect.
 - I. **Excess Funds.** If due to mistake or any other reason Contractor receives payment under this Agreement in excess of what is provided for by the Agreement, Contractor shall promptly notify City upon discovery of the receipt of the overpayment. Any overpayment shall be refunded to City within **THIRTY (30)** days of Contractor’s receipt of the overpayment or must also include interest calculated from the date of the overpayment at the interest rate for judgments at the highest rate as allowed by law.
 - J. **Amounts Due to the City.** Contractor must be current and remain current in all obligations due to the City during the performance of services under this Agreement. Payments to Contractor may be offset by any delinquent amounts due to the City or fees and/or charges owed to the City.
 - K. **Tax Exemption.** City is exempt from all federal excise and state sales taxes (State of Florida Consumer’s Certification of Exemption 85-8012621655C-9). The City’s Employer Identification Number is 59-60000392. Contractor shall not be exempted from paying sales tax to its suppliers for materials to fulfill contractual obligations with the City, nor will Contractor be authorized to use City’s Tax Exemption Number for securing materials listed herein.
5. **TERM OF AGREEMENT.** This Agreement shall become effective and commence on **NOVEMBER 1, 2024** and continue in effect for a term of **TWO (2) YEARS**, through and including **OCTOBER 31, 2026** (the “Term”). This Agreement may be renewed for up to **TWO (2)** optional **ONE (1) YEAR** periods by written consent between City and Contractor.
 6. **FORCE MAJEURE.** Neither party shall be liable for delay, damage, or failure in the performance of any obligation under this Agreement if such delay, damage, or failure is due to causes beyond its reasonable control, including without limitation: fire, flood, strikes and labor disputes, acts of war, acts of nature, terrorism, civil unrest, pandemics, acts or delays in acting of the government of the United States or the several states, judicial orders, decrees or restrictions, or any other like

reason which is beyond the control of the respective party ("Force Majeure"). The party affected by any event of force majeure shall use reasonable efforts to remedy, remove, or mitigate such event and the effects thereof with all reasonable dispatch.

- A. The party affected by force majeure shall provide the other party with full particulars thereof including, but not limited to, the nature, details, and expected duration thereof, as soon as it becomes aware.
 - B. When force majeure circumstances arise, the parties shall negotiate in good faith any modifications of the terms of this Agreement that may be necessary or appropriate in order to arrive at an equitable solution. Contractor performance shall be extended for a number of days equal to the duration of the force majeure. Contractor shall be entitled to an extension of time only and, in no event, shall Contractor be entitled to any increased costs, additional compensation, or damages of any type resulting from such force majeure delays.
7. **INSPECTION AND ACCEPTANCE OF THE WORK.** Contractor shall report its progress to the City Project Manager as set forth herein. All services, work, and materials provided by Contractor under this Agreement shall be provided to the satisfaction and approval of the City Project Manager.
- A. The City Project Manager shall decide all questions regarding the quality, acceptability, and/or fitness of materials furnished, or workmanship performed, the rate of progress of the work, the interpretation of the plans and specifications, and the acceptable fulfillment of the Agreement, in his or her sole discretion, based upon both the requirements set forth by City and the information provided by Contractor in its Bid. The authority vested in the City Project Manager pursuant to this paragraph shall be confined to the direction or specification of what is to be performed under this Agreement and shall not extend to the actual execution of the work.
 - B. Neither the City Project Manager's review of Contractor's work nor recommendations made by City Project Manager pursuant to this Agreement will impose on City Project Manager any responsibility to supervise, direct, or control Contractor's work in progress or for the means, methods, techniques, sequences, or procedures of construction or safety precautions or programs incident Contractor's furnishing and performing the work.
8. **TERMINATION AND DEFAULT.** Either party, upon determination that the other party has failed or refused to perform or is otherwise in breach of any obligation or provision under this Agreement or the Contract Document, may give written notice of default to the defaulting party in the manner specified for the giving of notices herein. Termination of this Agreement by either party for any reason shall have no effect upon the rights or duties accruing to the parties prior to termination.
- A. **Termination by City for Cause.** City shall have the right to terminate this Agreement immediately, in whole or in part, upon the failure of Contractor to carry out any obligation, term, or condition of this Agreement. City's election to terminate the Agreement for default shall be communicated by providing Contractor written notice of termination in the manner specified for the giving of notices herein. Any notice of termination given to Contractor by City shall be effective immediately, unless otherwise provided therein, upon the occurrence of any one or more of the following events:

- (1) Contractor fails to timely and properly perform any of the services set forth in the specifications of the Agreement;
 - (2) Contractor provides material that does not meet the specifications of the Agreement;
 - (3) Contractor fails to complete the work required within the time stipulated in the Agreement; or
 - (4) Contractor fails to make progress in the performance of the Agreement and/or gives City reason to believe that Contractor cannot or will not perform to the requirements of the Agreement.
- B. **Contractor's Opportunity to Cure Default.** City may, in its sole discretion, provide Contractor with an opportunity to cure the violations set forth in City's notice of default to Contractor. Contractor shall commence to cure the violations immediately and shall diligently and continuously prosecute such cure to completion within a reasonable time as determined by City. If the violations are not corrected within the time determined to be reasonable by City or to the reasonable satisfaction of City, City may, without further notice, declare Contractor to be in breach of this Agreement and pursue all remedies available at law or equity, to include termination of this Agreement without further notice.
- C. **City's Remedies Upon Contractor Default.** In the event that Contractor fails to cure any default under this Agreement within the time period specified in this section, City may pursue any remedies available at law or equity, including, without limitation, the following:
- (1) City shall be entitled to terminate this Agreement without further notice;
 - (2) City shall be entitled to hire another Contractor to complete the required work in accordance with the needs of City;
 - (3) City shall be entitled to recover from Contractor all damages, costs, and attorney's fees arising from Contractor's default prior to termination; and
 - (4) City shall be entitled to recovery from Contractor any actual excess costs by: (i) deduction from any unpaid balances owed to Contractor; or (ii) any other remedy as provided by law.
- D. **Termination for Non-Funding.** In the event that budgeted funds to finance this Agreement are reduced, terminated, or otherwise become unavailable, City may terminate this Agreement upon written notice to Contractor without penalty or expense to City. City shall be the final authority as to the availability of budgeted funds.
- E. **Termination for Convenience.** City reserves the right to terminate this Agreement in whole or in part at any time for the convenience of City without penalty or recourse. The City Project Manager shall provide written notice of the termination. Upon receipt of the notice, Contractor shall immediately discontinue all work as directed in the notice, notify all subcontractors of the effective date of the termination, and minimize all further costs to City including, but not limited to, the placing of any and all orders for materials, facilities, or supplies, in connection with its performance under this Agreement. Contractor shall be entitled to receive compensation solely for: (1) the actual cost of the work completed in conformity with this Agreement; and/or (2) such other costs incurred by Contractor as permitted under this Agreement and approved by City.

9. **LIQUIDATED DAMAGES FOR LATE COMPLETION.** The parties agree that it would be extremely difficult and impracticable under the presently known facts and anticipated circumstances to ascertain and fix the actual damages that City and its residents would incur should Contractor fail to achieve Substantial Completion and/or Final Completion and readiness for final payment by the dates specified for each individual project under the terms of this Agreement. Accordingly, the parties agree that should Contractor fail to achieve Substantial Completion by the dates specified on each City-issued Notice to Proceed, then Contractor shall pay City, as liquidated damages and not as a penalty, the daily sum given in the schedule below based on individual project cost for each calendar day of unexcused delay in achieving Substantial Completion beyond the date specified for Substantial Completion for each individual project in the City-issued Notice to Proceed:

Project Amount	Charge Per Calendar Day
\$50,000 and under	\$763
Over \$50,000 but less than \$250,000	\$958

After Substantial Completion, if Contractor shall neglect, refuse, or fail to complete the remaining work within the time specified in the Contract Documents for Final Completion and readiness for final payment or any proper extension thereof granted by City, Contractor shall pay City, as liquidated damages and not as a penalty, additional sum of **TWO HUNDRED AND NO/100 DOLLARS (\$200)** per day for each calendar day of unexcused delay in achieving completion and readiness for final payment.

- A. **No Waiver of Rights or Liabilities.** Permitting Contractor to continue and finish the work, or any part thereof, beyond the dates specified for Substantial Completion and/or Final Completion and readiness for final payment shall not operate as a waiver on the part of the City of any of its rights under this Agreement. Any liquidated damages assessed pursuant to this section shall not relieve Contractor from liability for any damages or costs of other contractors caused by a failure of Contractor to complete the work as agreed.
- B. **Right to Withhold or Deduct Damages.** When liquidated damages are due and owing, City shall have the right to: (1) deduct the liquidated damages from any money in its hands or from any money otherwise due or to become due to Contractor; or to (2) initiate any applicable dispute resolution procedure for the recovery of liquidated damages within the times specified under this Agreement.
- C. **Non-Cumulative.** The parties agree and understand that the amounts set forth under this section for liquidated damages are not cumulative with one another. The amount set forth as liquidated damages for Contractor’s failure to achieve Substantial Completion shall be assessed upon default and continue until Substantial Completion is attained. The amount set forth as liquidated damages for Contractor’s failure to achieve Final Completion and readiness for payment shall be assessed after Substantial Completion is attained and apply until Final Completion is attained.
- D. **Additional Costs.** In addition to the liquidated damages set forth under this section, Contractor agrees to pay all costs and expenses incurred by City due to Contractor’s delay in performance to include inspection fees, superintendence costs, and travel expenses.
- E. **Injunctive Relief.** The parties acknowledge that monetary damages may not be a sufficient remedy for Contractor’s failure to achieve Substantial Completion or Final Completion in

- accordance with the terms of this Agreement, and that City shall be entitled, in addition to all other rights or remedies in law and equity, to seek injunctive relief.
- F. **No Waiver of Rights or Liabilities.** Permitting Contractor to continue and finish the work, or any part thereof, beyond the dates specified for Substantial Completion and/or Final Completion and readiness for final payment shall not operate as a waiver on the part of the City of any of its rights under this Agreement. Any liquidated damages assessed pursuant to this section shall not relieve Contractor from liability for any damages or costs of other contractors caused by a failure of Contractor to complete the work as agreed.
 - G. **Right to Withhold or Deduct Damages.** When liquidated damages are due and owing, City shall have the right to: (1) deduct the liquidated damages from any money in its hands or from any money otherwise due or to become due to Contractor; or to (2) initiate any applicable dispute resolution procedure for the recovery of liquidated damages within the times specified under this Agreement.
 - H. **Non-Cumulative.** The parties agree and understand that the amounts set forth under this section for liquidated damages are not cumulative with one another. The amount set forth as liquidated damages for Contractor's failure to achieve Substantial Completion shall be assessed upon default and continue until Substantial Completion is attained. The amount set forth as liquidated damages for Contractor's failure to achieve Final Completion and readiness for payment shall be assessed after Substantial Completion is attained and apply until Final Completion is attained.
 - I. **Additional Costs.** In addition to the liquidated damages set forth under this section, Contractor agrees to pay all costs and expenses incurred by City due to Contractor's delay in performance to include inspection fees, superintendence costs, and travel expenses.
 - J. **Injunctive Relief.** The parties acknowledge that monetary damages may not be a sufficient remedy for Contractor's failure to achieve Substantial Completion or Final Completion in accordance with the terms of this Agreement, and that City shall be entitled, in addition to all other rights or remedies in law and equity, to seek injunctive relief.
10. **DELAYS AND DAMAGES.** The Contractor agrees to make no claim for extra or additional costs attributable to any delays, inefficiencies, or interference in the performance of this contract occasioned by any act or omission to act by the City except as provided in the Agreement. The Contractor also agrees that any such delay, inefficiency, or interference shall be compensated for solely by an extension of time to complete the performance of the work in accordance with the provision in the standard specification.
11. **MAINTENANCE AND GUARANTEE BOND.** Prior to final Payment, Contractor shall furnish a Maintenance and Guarantee Bond in the amount of **10% OF THE TOTAL PROJECT VALUE** for a period of **ONE (1)** year for labor and **ONE (1)** year for materials from the date of Substantial Completion. Prior to the City's receipt of Contractor's fully executed Maintenance and Guarantee Bond, Contractor will warrant all labor and materials completed pursuant to this Agreement.
12. **WARRANTY.** Contractor warrants that all labor, materials, and equipment furnished under the agreement are new, of the type and quality required for the Project, and installed in a good and workmanlike manner in accordance with the Contract Documents. The Contractor shall obtain for the benefit of the City all standard warranties of subcontractors, suppliers, and manufacturers

of all materials, equipment or supplies manufactured, furnished, or installed and provide said warranties to the City before the final payment will be authorized.

- A. Contractor shall provide a **ONE (1) YEAR** material warranty from the date of delivery against operational failure occurring during normal use and caused by defective material or workmanship.
 - B. Contractor shall provide **ONE (1) YEAR** warranty on labor.
13. **PERFORMANCE EVALUATION.** At the end of the contract, City may evaluate Contractor's performance. Any such evaluation will become public record.
14. **NOTICE REGARDING FAILURE TO FULFILL AGREEMENT.** Any Contractor who enters into an Agreement with the City of Ocala and fails to complete the contract term, for any reason, shall be subject to future bidding suspension for a period of **ONE (1)** year and bid debarment for a period of up to **THREE (3)** years for serious contract failures.
15. **CONTRACTOR REPRESENTATIONS.** Contractor expressly represents that:
- A. Contractor has read and is fully familiar with all of the terms and conditions of this Agreement, the Contract Documents, and other related data and acknowledges that they are sufficient in scope and detail to indicate and convey understanding of all terms and conditions of the work to be performed by Contractor under this Agreement.
 - B. Contractor has disclosed, in writing, all known conflicts, errors, inconsistencies, discrepancies, or omissions discovered by Contractor in the Contract Documents, and that the City's written resolution of same is acceptable to Contractor.
 - C. Contractor is familiar with all local, state, and Federal laws, regulations, and ordinances which may affect cost, progress, or its performance under this Agreement whatsoever.
 - D. **Public Entity Crimes.** Neither Contractor, its parent corporations, subsidiaries, members, shareholders, partners, officers, directors, or executives, nor any of its affiliates, contractors, suppliers, subcontractors, or consultants under this Agreement have been placed on the convicted vendor list following a conviction of a public entity crime. Contractor understands that a "public entity crime" as defined in section 287.133(1)(g), Florida Statutes, is "a violation of any state or federal law by a person with respect to and directly related to the transaction of business with any public entity or with an agency or political subdivision of any other state or with the United States..." Contractor further understands that any person or affiliate who has been placed on the convicted vendor list following a conviction for a public entity crime: (1) may not submit a bid, proposal, or reply on a contract: (a) to provide any goods or services to a public entity; (b) for the construction or repair of a public building or public work; or (c) for leases of real property to a public entity; (2) may not be awarded or perform work as a contractor, supplier, subcontractor, or consultant under a contract with any public entity; and (3) may not transact business with any public entity in excess of the threshold amount provided in section 287.017, Florida Statutes, for CATEGORY TWO for a period of 36 months from the date of being placed on the convicted vendor list.
16. **CONTRACTOR RESPONSIBILITIES.** Except as otherwise specifically provided for in this Agreement, the following provisions are the responsibility of the Contractor:
- A. Contractor shall competently and efficiently supervise, inspect, and direct all work to be performed under this Agreement, devoting such attention thereto and applying such skills

- and expertise as may be necessary to perform the work in accordance with the Contract Documents.
- B. Contractor shall be solely responsible for the means, methods, techniques, sequences, or procedures and safety precautions or programs incident thereto.
 - C. Contractor shall be responsible to see that the finished work complies accurately with the contract and the intent thereof.
 - D. Contractor shall comply with all local, state, and Federal laws, regulations, and ordinances which may affect cost, progress, or its performance under this Agreement, and be responsible for all costs associated with same.
 - E. Contractor shall continue its performance under this Agreement during the pendency of any dispute or disagreement arising out of or relating to this Agreement, except as Contractor and City may otherwise agree in writing.
17. **NO EXCLUSIVITY.** It is expressly understood and agreed by the parties that this is not an exclusive agreement. Nothing in this Agreement shall be construed as creating any exclusive arrangement with Contractor or as prohibit City from either acquiring similar, equal, or like goods and/or services or from executing additional contracts with other entities or sources.
18. **RESPONSIBILITIES OF CITY.** City or its Representative shall issue all communications to Contractor. City has the authority to request changes in the work in accordance with the terms of this Agreement and with the terms in **Exhibit A**. City has the authority to stop work or to suspend any work.
19. **COMMERCIAL AUTO LIABILITY INSURANCE.** Contractor shall procure, maintain, and keep in full force, effect, and good standing for the life of this Agreement a policy of commercial auto liability insurance with a minimum combined single limit of One Million Dollars (\$1,000,000) per occurrence for bodily injury and property damage arising out of Contractor’s operations and covering all owned, hired, scheduled, and non-owned automobiles utilized in said operations. If Contractor does not own vehicles, Contractor shall maintain coverage for hired and non-owned automobile liability, which may be satisfied by way of endorsement to Contractor’s Commercial General Liability policy or separate Commercial Automobile Liability policy.
20. **GENERAL LIABILITY INSURANCE.** Contractor shall procure and maintain, for the life of this Agreement, commercial general liability insurance with minimum coverage limits not less than:
- A. One Million Dollars (\$1,000,000) per occurrence and Two Million Dollars (\$2,000,000) aggregate limit for bodily injury, property damage, and personal and advertising injury; and
 - B. One Million Dollars (\$1,000,000) per occurrence and Two Million Dollars (\$2,000,000) aggregate limit for products and completed operations.
 - C. Policy must include coverage for contractual liability and independent contractors.
 - D. Policy must include Additional Insured coverage in favor of the City that is no less restrictive than that afforded under the CG 20 26 04 13 Additional Insured Form.
21. **WORKERS’ COMPENSATION AND EMPLOYER’S LIABILITY.** Worker’s Compensation insurance shall be provided by Contractor as required by Chapter 440, Florida Statutes, or any other applicable state or federal law, including the U.S. Longshoremen’s and Harbor Workers Compensation Act and the Jones Act.

- A. Contractor shall similarly require any and all subcontractors to afford such coverage for all of its employees as required by applicable law.
- B. Contractor shall waive and shall ensure that Contractor's insurance carrier waives, all subrogation rights against the City of Ocala and its officers, employees, and volunteers for all losses or damages. Contractor's policy shall be endorsed with WC 00 03 13 Waiver of our Right to Recover from Others or its equivalent.
- C. Exceptions and exemptions to this Section may be allowed at the discretion of the City's Risk Manager on a case-by-case basis in accordance with Florida Statutes and shall be evidenced by a separate waiver.

22. ADDITIONAL INSURANCE REQUIREMENTS.

- A. Contractor's insurance coverage shall be primary insurance for all applicable policies. The limits of coverage under each policy maintained by Contractor shall not be interpreted as limiting Contractor's liability or obligations under this Agreement. City does not in any way represent that these types or amounts of insurance are sufficient or adequate enough to protect Contractor's interests or liabilities or to protect Contractor from claims that may arise out of or result from the negligent acts, errors, or omissions of Contractor, any of its agents or subcontractors, or for anyone whose negligent act(s) Contractor may be liable.
- B. No insurance shall be provided by the City for Contractor under this Agreement and Contractor shall be fully and solely responsible for any costs or expenses incurred as a result of a coverage deductible, co-insurance penalty, or self-insured retention to include any loss not covered because of the operation of such deductible, co-insurance penalty, self-insured retention, or coverage exclusion or limitation.
- C. **Certificates of Insurance.** No work shall be commenced by Contractor under this Agreement until the required Certificate of Insurance and endorsements have been provided nor shall Contractor allow any subcontractor to commence work until all similarly required certificates and endorsements of the subcontractor have also been provided. Work shall not continue after expiration (or cancellation) of the Certificate of Insurance and work shall not resume until a new Certificate of Insurance has been provided. **Contractor shall provide evidence of insurance in the form of a valid Certificate of Insurance (binders are unacceptable) prior to the start of work contemplated under this Agreement to: City of Ocala. Attention: Procurement & Contracting Department, Address: 110 SE Watula Avenue, Third Floor, Ocala Florida 34471, E-Mail: vendors@ocalafl.gov.** Contractor's Certificate of Insurance and required endorsements shall be issued by an agency authorized to do business in the State of Florida with an A.M. Best Rating of A or better. The Certificate of Insurance shall indicate whether coverage is being provided under a claims-made or occurrence form. If any coverage is provided on a claims-made form, the Certificate of Insurance must show a retroactive date, which shall be the effective date of the initial contract or prior.
- D. **City as Additional Insured.** The City of Ocala shall be named as an Additional Insured and Certificate Holder on all liability policies identified in this Section with the exception of Workers' Compensation, Auto Liability (except when required by Risk Management) and Professional Liability policies. **Workers Compensation policy must contain a Waiver of Subrogation in favor of the City.**

- E. **Notice of Cancellation of Insurance.** Contractor's Certificate of Insurance shall provide **THIRTY (30) DAY** notice of cancellation, **TEN (10) DAY** notice if cancellation is for non-payment of premium. In the event that Contractor's insurer is unable to accommodate the cancellation notice requirement, it shall be the responsibility of Contractor to provide the proper notice. Such notification shall be in writing by registered mail, return receipt requested, and addressed to the certificate holder. Additional copies may be sent to the City of Ocala at vendors@ocalafl.gov.
- F. **Failure to Maintain Coverage.** The insurance policies and coverages set forth above are required and providing proof of and maintaining insurance of the types and with such terms and limits set forth above is a material obligation of Contractor. Contractor's failure to obtain or maintain in full force and effect any insurance coverage required under this Agreement shall constitute material breach of this Agreement.
- G. **Severability of Interests.** Contractor shall arrange for its liability insurance to include or be endorsed to include a severability of interests/cross-liability provision so that the "City of Ocala" (where named as an additional insured) will be treated as if a separate policy were in existence, but without increasing the policy limits.
23. **SAFETY/ENVIRONMENTAL.** Contractor shall be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the Work. Contractor shall make an effort to detect hazardous conditions and shall take prompt action where necessary to avoid accident, injury or property damage. EPA, DEP, OSHA and all other applicable safety laws and ordinances shall be followed as well as American National Standards Institute Safety Standards. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury, or loss to:
- A. All employees on the work and other persons that may be affected thereby;
 - B. All work, materials, and equipment to be incorporated therein, whether in storage on or off the site; and
 - C. Other property at the site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, and utilities not designated for removal, relocation, or replacement in the course of construction.
- All, injury, or loss to any property caused, directly or indirectly, in whole or in part, by Contractor, any subcontractor, or anyone directly or indirectly employed by any of them, or anyone for whose acts any of them may be liable, shall be remedied by Contractor. Contractor's duties and responsibilities for the safety and protection of the work shall continue until such time as the work is completed and accepted by City.
24. **NON-DISCRIMINATORY EMPLOYMENT PRACTICES.** During the performance of the contract, the Contractor shall not discriminate against any employee or applicant for employment because of race, color, religion, ancestry, national origin, sex, pregnancy, age, disability, sexual orientation, gender identity, marital or domestic partner status, familial status, or veteran status and shall take affirmative action to ensure that an employee or applicant is afforded equal employment opportunities without discrimination. Such action shall be taken with reference to, but not limited to: recruitment, employment, termination, rates of pay or other forms of compensation and selection for training or retraining, including apprenticeship and on-the-job training.

25. **SUBCONTRACTORS.** Nothing in this Agreement shall be construed to create, impose, or give rise to any duty owed by City or its representatives to any subcontractor of Contractor or any other persons or organizations having a direct contract with Contractor, nor shall it create any obligation on the part of City or its representatives to pay or seek payment of any monies to any subcontractor of Contractor or any other persons or organizations having a direct contract with Contractor, except as may otherwise be required by law. City shall not be responsible for the acts or omissions of any Contractor, subcontractor, or of any of their agents or employees. nor shall it create any obligation on the part of City or its representatives to pay or to seek the payment of any monies to any subcontractor or other person or organization, except as may otherwise be required by law.
26. **EMERGENCIES.** In an emergency affecting the welfare and safety of life or property, Contractor, without special instruction or authorization from the City Project Manager, is hereby permitted, authorized, and directed to act at its own discretion to prevent threatened loss or injury. Except in the case of an emergency requiring immediate remedial work, any work performed after regular working hours, on Saturdays, Sundays, or legal holidays, shall be performed without additional expense to the City unless such work has been specifically requested and approved by the City Project Manager. Contractor shall be required to provide to the City Project Manager with the names, addresses and telephone numbers of those representatives who can be contacted at any time in case of emergency. Contractor's emergency representatives must be fully authorized and equipped to correct unsafe or excessively inconvenient conditions on short notice by City or public inspectors.
27. **INDEPENDENT CONTRACTOR STATUS.** Contractor acknowledges and agrees that under this Agreement, Contractor and any agent or employee of Contractor shall be deemed at all times to be an independent contractor and shall be wholly responsible for the manner in which it performs the services and work required under this Agreement. Neither Contractor nor its agents or employees shall represent or hold themselves out to be employees of City at any time. Neither Contractor nor its agents or employees shall have employee status with City. Nothing in this Agreement shall constitute or be construed to create any intent on the part of either party to create an agency relationship, partnership, employer-employee relationship, joint venture relationship, or any other relationship which would allow City to exercise control or discretion over the manner or methods employed by Contractor in its performance of its obligations under this Agreement.
28. **ACCESS TO FACILITIES.** City shall provide Contractor with access to all City facilities as is reasonably necessary for Contractor to perform its obligations under this Agreement.
29. **ASSIGNMENT.** Neither party may assign its rights or obligations under this Agreement to any third party without the prior express approval of the other party, which shall not be unreasonably withheld.
30. **RIGHT OF CITY TO TAKE OVER CONTRACT.** Should the work to be performed by Contractor under this Agreement be abandoned, or should Contractor become insolvent, or if Contractor shall assign or sublet the work to be performed hereunder without the written consent of City, the City Project Manager shall have the power and right to hire and acquire additional men and equipment, supply additional material, and perform such work as deemed necessary for the completion of this Agreement. Under these circumstances, all expenses and costs actually incurred by City to accomplish such completion shall be credited to City along with amounts

attributable to any other elements of damage and certified by the City Project Manager. The City Project Manager's certification as to the amount of such liability shall be final and conclusive.

31. **PUBLIC RECORDS.** Contractor shall comply with all applicable provisions of the Florida Public Records Act, Chapter 119, Florida Statutes. Specifically, Contractor shall:
- A. Keep and maintain public records required by the public agency to perform the service.
 - B. Upon request from the public agency's custodian of public records, provide the public agency with a copy of the requested records or allow the records to be inspected or copied within a reasonable time at a cost that does not exceed the cost provided in Chapter 119, Florida Statutes, or as otherwise provided by law.
 - C. Ensure that public records that are exempt or confidential and exempt from public records disclosure requirements are not disclosed except as authorized by law for the duration of the contract term and following completion of the contract if Contractor does not transfer the records to the public agency.
 - D. Upon completion of the contract, transfer, at no cost, to the public agency all public records in possession of Contractor or keep and maintain public records required by the public agency to perform the service. If Contractor transfers all public records to the public agency upon completion of the contract, Contractor shall destroy any duplicate public records that are exempt or confidential and exempt from public records disclosure requirements. If Contractor keeps and maintains public records upon completion of the contract, Contractor shall meet all applicable requirements for retaining public records. All records stored electronically must be provided to the public agency, upon request from the public agency's custodian of public records, in a format that is compatible with the information technology systems of the public agency.

IF CONTRACTOR HAS QUESTIONS REGARDING THE APPLICATION OF CHAPTER 119, FLORIDA STATUTES, TO CONTRACTOR'S DUTY TO PROVIDE PUBLIC RECORDS RELATING TO THIS CONTRACT, CONTACT THE CUSTODIAN OF PUBLIC RECORDS AT: CITY OF OCALA, OFFICE OF THE CITY CLERK; 352-629-8266; E-mail: clerk@ocalafl.gov; City Hall, 110 SE Watula Avenue, Ocala, FL 34471.

32. **AUDIT.** Contractor shall comply and cooperate immediately with any inspections, reviews, investigations, or audits relating to this Agreement as deemed necessary by the Florida Office of the Inspector General, the City's Internal or External auditors or by any other Florida official with proper authority.
33. **PUBLICITY.** Contractor shall not use City's name, logo, seal or other likeness in any press release, marketing materials, or other public announcement without City's prior written approval.
34. **E-VERIFY.** Pursuant to section 448.095, Contractor shall register with and use the U.S. Department of Homeland Security's ("DHS") E-Verify System, accessible at <https://e-verify.uscis.gov/emp>, to verify the work authorization status of all newly hired employees. Contractor shall obtain affidavits from any and all subcontractors in accordance with paragraph 2(b) of section 448.095, Florida Statutes, and maintain copies of such affidavits for the duration of this Agreement. By entering into this Agreement, Contractor certifies and ensures that it

utilizes and will continue to utilize the DHS E-Verify System for the duration of this Agreement and any subsequent renewals of same. Contractor understands that failure to comply with the requirements of this section shall result in the termination of this Agreement and Contractor may lose the ability to be awarded a public contract for a minimum of one (1) year after the date on which the Agreement was terminated. Contractor shall provide a copy of its DHS Memorandum of Understanding upon City's request. Please visit www.e-verify.gov for more information regarding the E-Verify System.

35. **CONFLICT OF INTEREST.** Contractor is required to have disclosed, with the submission of their bid, the name of any officer, director, or agent who may be employed by the City. Contractor shall further disclose the name of any City employee who owns, directly or indirectly, any interest in Contractor's business or any affiliated business entity. Any additional conflicts of interest that may occur during the contract term must be disclosed to the City of Ocala Procurement Department.
36. **WAIVER.** The failure or delay of any party at any time to require performance by another party of any provision of this Agreement, even if known, shall not affect the right of such party to require performance of that provision or to exercise any right, power, or remedy hereunder. Any waiver by any party of any breach of any provision of this Agreement should not be construed as a waiver of any continuing or succeeding breach of such provision, a waiver of the provision itself, or a waiver of any right, power, or remedy under this Agreement. No notice to or demand on any party in any circumstance shall, of itself, entitle such party to any other or further notice or demand in similar or other circumstances.
37. **SEVERABILITY OF ILLEGAL PROVISIONS.** Wherever possible, each provision of this Agreement shall be interpreted in such a manner as to be effective and valid under the applicable law. Should any portion of this Agreement be declared invalid for any reason, such declaration shall have no effect upon the remaining portions of this Agreement.
38. **INDEMNITY.** Contractor shall indemnify and hold harmless City and its elected officials, employees and volunteers against and from all damages, claims, losses, costs, and expenses, including reasonable attorneys' fees, which City or its elected officials, employees or volunteers may sustain, or which may be asserted against City or its elected officials, employees or volunteers, arising out of the activities contemplated by this Agreement including, without limitation, harm or personal injury to third persons during the term of this Agreement to the extent attributable to the actions of Contractor, its agents, and employees.
39. **NO WAIVER OF SOVEREIGN IMMUNITY.** Nothing herein is intended to waive sovereign immunity by the City to which sovereign immunity may be applicable, or of any rights or limits of liability existing under Florida Statute § 768.28. This term shall survive the termination of all performance or obligations under this Agreement and shall be fully binding until any proceeding brought under this Agreement is barred by any applicable statute of limitations.
40. **NOTICES.** All notices, certifications or communications required by this Agreement shall be given in writing and shall be deemed delivered when personally served, or when received if by facsimile transmission with a confirming copy mailed by registered or certified mail, postage prepaid, return receipt requested. Notices can be concurrently delivered by e-mail. All notices shall be addressed to the respective parties as follows:

If to Contractor: McShea Contracting, LLC
Attention: Steve Maitland
508 Owen Avenue North
Lehigh Acres, Florida, 33971
Phone: 239-368-5200
E-mail: stevem@mcsheacontracting.com

If to City of Ocala: Daphne M. Robinson, Esq., Contracting Officer
City of Ocala
110 SE Watula Avenue, 3rd Floor
Ocala, Florida 34471
Phone: 352-629-8343
E-mail: notices@ocalafl.gov

Copy to: William E. Sexton, Esq., City Attorney
City of Ocala
110 SE Watula Avenue, 3rd Floor
Ocala, Florida 34471
Phone: 352-401-3972
E-mail: cityattorney@ocalafl.gov

41. **ATTORNEYS' FEES.** If any civil action, arbitration or other legal proceeding is brought for the enforcement of this Agreement, or because of an alleged dispute, breach, default or misrepresentation in connection with any provision of this Agreement, the successful or prevailing party shall be entitled to recover reasonable attorneys' fees, sales and use taxes, court costs and all expenses reasonably incurred even if not taxable as court costs (including, without limitation, all such fees, taxes, costs and expenses incident to arbitration, appellate, bankruptcy and post-judgment proceedings), incurred in that civil action, arbitration or legal proceeding, in addition to any other relief to which such party or parties may be entitled. Attorneys' fees shall include, without limitation, paralegal fees, investigative fees, administrative costs, sales and use taxes and all other charges reasonably billed by the attorney to the prevailing party.
42. **JURY WAIVER.** IN ANY CIVIL ACTION, COUNTERCLAIM, OR PROCEEDING, WHETHER AT LAW OR IN EQUITY, WHICH ARISES OUT OF, CONCERNS, OR RELATES TO THIS AGREEMENT, ANY AND ALL TRANSACTIONS CONTEMPLATED HEREUNDER, THE PERFORMANCE HEREOF, OR THE RELATIONSHIP CREATED HEREBY, WHETHER SOUNDING IN CONTRACT, TORT, STRICT LIABILITY, OR OTHERWISE, TRIAL SHALL BE TO A COURT OF COMPETENT JURISDICTION AND NOT TO A JURY. EACH PARTY HEREBY IRREVOCABLY WAIVES ANY RIGHT IT MAY HAVE TO A TRIAL BY JURY. NEITHER PARTY HAS MADE OR RELIED UPON ANY ORAL REPRESENTATIONS TO OR BY ANY OTHER PARTY REGARDING THE ENFORCEABILITY OF THIS PROVISION. EACH PARTY HAS READ AND UNDERSTANDS THE EFFECT OF THIS JURY WAIVER PROVISION.

43. **GOVERNING LAW.** This Agreement is and shall be deemed to be a contract entered and made pursuant to the laws of the State of Florida and shall in all respects be governed, construed, applied, and enforced in accordance with the laws of the State of Florida.
44. **JURISDICTION AND VENUE.** The parties acknowledge that a majority of the negotiations, anticipated performance and execution of this Agreement occurred or shall occur in Marion County, Florida. Any civil action or legal proceeding arising out of or relating to this Agreement shall be brought only in the courts of record of the State of Florida in Marion County or the United States District Court, Middle District of Florida, Ocala Division. Each party consents to the exclusive jurisdiction of such court in any such civil action or legal proceeding and waives any objection to the laying of venue of any such civil action or legal proceeding in such court and/or the right to bring an action or proceeding in any other court. Service of any court paper may be effected on such party by mail, as provided in this Agreement, or in such other manner as may be provided under applicable laws, rules of procedures or local rules.
45. **REFERENCE TO PARTIES.** Each reference herein to the parties shall be deemed to include their successors, assigns, heirs, administrators, and legal representatives, all whom shall be bound by the provisions hereof.
46. **MUTUALITY OF NEGOTIATION.** Contractor and City acknowledge that this Agreement is a result of negotiations between Contractor and City, and the Agreement shall not be construed in favor of, or against, either party because of that party having been more involved in the drafting of the Agreement.
47. **SECTION HEADINGS.** The section headings herein are included for convenience only and shall not be deemed to be a part of this Agreement.
48. **RIGHTS OF THIRD PARTIES.** Nothing in this Agreement, whether express or implied, is intended to confer any rights or remedies under or because of this Agreement on any persons other than the parties hereto and their respective legal representatives, successors and permitted assigns. Nothing in this Agreement is intended to relieve or discharge the obligation or liability of any third persons to any party to this Agreement, nor shall any provision give any third persons any right of subrogation or action over or against any party to this Agreement.
49. **AMENDMENT.** No amendment to this Agreement shall be effective except those agreed to in writing and signed by both parties to this Agreement.
50. **COUNTERPARTS.** This Agreement may be executed in counterparts, each of which shall be an original and all of which shall constitute the same instrument.
51. **ELECTRONIC SIGNATURE(S).** Contractor, if and by offering an electronic signature in any form whatsoever, will accept and agree to be bound by said electronic signature to all terms and conditions of this Agreement. Further, a duplicate or copy of the Agreement that contains a duplicated or non-original signature will be treated the same as an original, signed copy of this original Agreement for all purposes.
52. **ENTIRE AGREEMENT.** This Agreement, including exhibits, (if any) constitutes the entire Agreement between the parties hereto with respect to the subject matter hereof. There are no other representations, warranties, promises, agreements, or understandings, oral, written, or implied, among the Parties, except to the extent reference is made thereto in this Agreement. No course of prior dealings between the parties and no usage of trade shall be relevant or admissible to supplement, explain, or vary any of the terms of this Agreement. No representations,

understandings, or agreements have been made or relied upon in the making of this Agreement other than those specifically set forth herein.

53. **LEGAL AUTHORITY.** Each person signing this Agreement on behalf of either party individually warrants that he or she has full legal power to execute this Agreement on behalf of the party for whom he or she is signing, and to bind and obligate such party with respect to all provisions contained in this Agreement.

IN WITNESS WHEREOF, the parties have executed this Agreement on _____.

ATTEST:

CITY OF OCALA

Angel B. Jacobs
City Clerk

Barry Mansfield
City Council President

Approved as to form and legality:

MCSHEA CONTRACTING, LLC

By: _____
(Printed Name)

By: _____
(Printed Name)

Title: _____

Title: _____
(Title)

BACKGROUND

Contractor shall provide materials, labor, and equipment for the placement of roadway pavement striping and markings for Traffic Annual Striping services.

This work includes but is not limited to, pavement edge lines, skip traffic stripes, solid traffic stripes, directional arrows, pavement messages, island nose reflective paint, reflective pavement markers, and flexible breakaway delineator posts. **Note: Minor scraping of Right of Way may be required to install/replace pavement edge lines properly.**

WORK SCHEDULES AND MAINTENANCE OF TRAFFIC

Contractor shall schedule work to minimize impact on the peak traffic periods. Peak periods are defined as 7:00 a.m. to 9:00 a.m. and 4:00 p.m. to 6:00 p.m. Monday through Friday. No lane closures shall be permitted during the peak periods. Work performed in FDOT right of way must comply with local FDOT work time constraints.

- A. Contractor shall provide maintenance of traffic following the latest **FDOT Standard Plans index 100-600 Series** for the project. Failure to comply with this requirement will result in a complete shutdown by the City Traffic Engineer with no additional compensation to the Contractor. Driveway access shall be maintained at all times.
- B. Contractor shall provide sufficient signage, proper flagging operations, and barricade placement to ensure the safety of vehicular and pedestrian traffic at all locations where work is being done for this project following the latest **FDOT Standard Plans index 100-600 Series**.
- C. Contractor shall always maintain a good and sufficient fence, railing, or barrier around all exposed portions of said work in such a manner as to warn vehicular and pedestrian traffic of hazardous conditions. Should the contractor fail to properly barricade his work or stored material sites in the manner outlined above, the City may have the necessary barricading done, and all costs incurred for said barricading shall be charged to the Contractor.

PROJECT SPECIFICATIONS AND STANDARDS

This project will require the Contractor to have the following specifications, standards, and documents, which are incorporated by reference:

Florida Department of Transportation (FDOT) Design Standards which can be obtained by downloading from:

<https://www.fdot.gov/design/standardplans/current/default.shtm>

Florida Department of Transportation Standard Specifications (FDOT) for Road and Bridge Construction (latest edition) which can be obtained by downloading from:

<https://www.fdot.gov/programmanagement/Implemented/SpecBooks/default.shtm>

Manual on Uniform Traffic Control Devices (MUTCD) which can be obtained by downloading from:

<https://www.fdot.gov/traffic/trafficservices/mutcd.shtm>

Licensing Requirements: Contractor shall submit proof that they possess a current, active Asbestos Supervisor license. The City of Ocala and NESHAP require an asbestos-trained person to be on site. Federal 40 CFR 61.145(c)(8) states in part, "no RACM shall be stripped, removed, or otherwise handled or disturbed at a facility regulated by this section unless at least one on-site representative, such as a foreman or management level person or other authorized person trained in the provisions of this regulation and the means of complying with them is present." DEP requires this "trained person" to be on site when non-friable ACM is present or is discovered so that problems can be caught early and corrected without delay.

QUALITY CONTROL

The Contractor shall be responsible for the professional quality, workmanship, and accuracy of all projects. Any errors or deficiencies shall be corrected by the Contractor at no additional cost to the City.

- A. All material shall follow the **Approved Product List (APL) from the Florida Department of Transportation Standard Specifications (FDOT) for Road and Bridge Construction latest edition.**
- B. **Retro reflectivity:** Apply white and yellow pavement markings that will attain an initial retro-reflectivity of not less than 450 mcd/lx·m² and not less than 350 mcd/lx·m², respectively for all longitudinal lines. All chevrons, diagonal lines, stop lines, messages, symbols, and arrows will attain an initial retro-reflectivity of not less than 300 mcd/lx·m² and 250 mcd/lx·m² for white and yellow respectively. All crosswalks, railroad dynamic envelopes, and bicycle markings shall attain an initial retro-reflectivity of not less than 275 mcd/lx·m². Black pavement markings must have a retro reflectance of less than 5 mcd/lx m².

PROJECT MANAGEMENT

The Contractor shall identify a project manager for the project and provide emergency and non-emergency telephone numbers to the City upon award of the contract. Contractor shall provide a project schedule before any work commences.

The Contractor shall always provide supervision of all work crews while performing work under this contract. Each work crew shall have a designated person on the work site who has the authority to respond to inquiries about work details or priorities.

All material pickups/deliveries shall be coordinated with the City of Ocala Project Manager, Nick Blizzard, njblizzard@ocalafl.gov, 352-351-6733.

SAFETY

1. The Contractor shall be fully responsible for meeting all OSHA, local, state, and national codes concerning safety provisions for their employees, sub-contractors, all building and site occupants, staff, public, etc.
2. The Contractor shall be responsible for all damage to buildings, curbing, pavement, landscaping, or irrigation systems caused by the delivery or removal of materials.
3. In no event shall the City be responsible for any damages to any of the Contractor's equipment or clothing lost, damaged, destroyed, or stolen.

4. Before completion, storage and adequate protection of all material and equipment will be the Contractor's responsibility.

PROGRESS REPORT/UPDATED SCHEDULES

Progress report and updated project schedule must be submitted with each monthly pay request indicating the percentage of services completed to date. This report will serve as support for payment to the Contractor and the basis for payment in the event the project is suspended or abandoned.

SITE HOUSEKEEPING AND CLEAN-UP

The Contractor shall keep the premises free at all times from the accumulation of waste materials and rubbish caused by operations and employees. Such responsibilities shall include but not be limited to:

1. Periodic cleanup to avoid hazards or interference with operations at the site, and to leave the site in a reasonably neat condition.
2. The work site will be completely cleaned after each day of work.
3. After each project, the Contractor shall remove from the building and site all tools, equipment, surplus materials, debris, temporary facilities, scaffolding, and equipment. The areas of work shall be swept thoroughly and all marks, stains, rust, dirt, paint drippings, and the like shall be removed from all new and existing work to the satisfaction of the City.
4. The Contractor shall legally dispose of debris.

Exhibit B - PRICE PROPOSAL

CONTRACT# PWD/240837



Bidder name

Bidder Location

McShea Contracting, LLC

Lehigh Acres, FL

ITEM	DESCRIPTION	UOM	QTY	COST
0705 10 1	Object Marker, Type 1	EA	1	\$59.00
0705 10 2	Object Marker, Type 2	EA	1	\$65.00
0705 10 3	Object Marker, Type 3	EA	1	\$150.00
0705 10 4	Object Marker, Type 4	EA	1	\$79.00
0705 11 1	Delineator, Flexible Tubular	EA	1	\$75.00
0705 11 2	Delineator, Non-Flexible	EA	1	\$70.00
0706 1	Retro-Reflective Pavement Markers (Remove)	EA	1	\$2.00
0706 3	Retro-Reflective Pavement Markers	EA	1	\$4.00
0710 11111	Painted Pavement Markings, Standard, White, Solid, 6"	LF	1	\$0.50
0710 11122	Painted Pavement Markings, Standard, White, Solid, 8"	LF	1	\$1.00
0710 11123	Painted Pavement Markings, Standard, White, Solid, 12"	LF	1	\$3.00
0710 11124	Painted Pavement Markings, Standard, White, Solid, 18"	LF	1	\$3.00
0710 11125	Painted Pavement Markings, Standard, White, Solid, 24"	LF	1	\$3.00
0710 11131	Painted Pavement Markings, Standard, White, Skip, 6", 10-30 Or 3-9 Skip	LF	1	\$0.50
0710 11151	Painted Pavement Markings, Standard, White, Dotted / Guideline/ 6-10 Gap Extension, 6"	LF	1	\$0.50
0710 11160	Painted Pavement Markings, Standard, White, Message	EA	1	\$50.00
0710 11170	Painted Pavement Markings, Standard, White, Arrows	EA	1	\$50.00
0710 11170-C	Painted Pavement Markings, Standard, White, Combination Arrows	EA	1	\$50.00
0710 11180	Painted Pavement Markings, Standard, White, Yield Line	LF	1	\$1.00
0710 11190	Painted Pavement Markings, Standard, White, Island Nose	SF	1	\$3.00
0710 11211	Painted Pavement Markings, Standard, Yellow, Solid, 6"	LF	1	\$0.50
0710 11222	Painted Pavement Markings, Standard, Yellow, Solid, 8"	LF	1	\$1.00
0710 11223	Painted Pavement Markings, Standard, Yellow, Solid, 12"	LF	1	\$0.10
0710 11224	Painted Pavement Markings, Standard, Yellow, Solid, 18"	LF	1	\$3.00
0710 11225	Painted Pavement Markings, Standard, Yellow, Solid, 24"	LF	1	\$0.10

ITEM	DESCRIPTION	UOM	QTY	COST
0711 11111	Thermoplastic, Standard, White, Solid, 6"	LF	1	\$1.50
0711 11123	Thermoplastic, Standard, White, Solid, 12"	LF	1	\$6.00
0711 11124	Thermoplastic, Standard, White, Solid, 18"	LF	1	\$7.00
0711 11125	Thermoplastic, Standard, White, Solid, 24"	LF	1	\$8.00
0711 11131	Thermoplastic, Standard, White, 6" 10' x 30' Skip Stripe	LF	1	\$1.25
0711 11151	Thermoplastic, Standard, White, Dotted/Guideline/6-10 Gap Extension, 6"	LF	1	\$1.25
0711 11160	Thermoplastic, Standard, White, Message	EA	1	\$100.00
0711 11170	Thermoplastic, Standard, White, Arrow	EA	1	\$60.00
0711 11170-C	Thermoplastic, Standard, White, Combination Arrow	EA	1	\$75.00
0711 11180	Thermoplastic, Standard, White, Yield Line	LF	1	\$5.00
0711 11211	Thermoplastic, Standard, Yellow, Solid, 6"	LF	1	\$1.50
0711 11222	Thermoplastic, Standard, Yellow, Solid, 8"	LF	1	\$1.50
0711 11223	Thermoplastic, Standard, Yellow, Solid, 12"	LF	1	\$1.00
0711 11224	Thermoplastic, Standard, Yellow, Solid, 18"	LF	1	\$3.00
0711 11225	Thermoplastic, Standard, Yellow, Solid, 24"	LF	1	\$2.00
0711 11231	Thermoplastic, Standard, Yellow, Skip, 6"	LF	1	\$1.25
0711 11251	Thermoplastic, Standard, Yellow, Dotted/Guideline/6-10 Gap Extension, 6"	LF	1	\$1.25
0711 11421	Thermoplastic, Standard, Blue, Solid, 6"	LF	1	\$5.00
0711 11421-S	Thermoplastic Pavement Markings, Standard, Blue, Handicap Symbol	EA	1	\$20.00
0711 11421-PS	Thermoplastic, Preformed Standard, Blue, Solid, 6"	LF	1	\$8.00
0711 11421-PHS	Thermoplastic, Preformed Pavement Markings, Standard, Blue, Handicap Symbol	EA	1	\$150.00
0711 12121	Thermoplastic, Refurbishment, White, Solid, 6"	LF	1	\$1.40
0711 12122	Thermoplastic, Refurbishment, White, Solid, 8"	LF	1	\$1.40
0711 12123	Thermoplastic, Refurbishment, White, Solid, 12"	LF	1	\$5.00
0711 12124	Thermoplastic, Refurbishment, White, Solid, 18"	LF	1	\$6.00
0711 12125	Thermoplastic, Refurbishment, White, Solid, 24"	LF	1	\$7.00
0711 12131	Thermoplastic, Refurbishment, White, Skip, 6"	LF	1	\$1.40

ITEM	DESCRIPTION	UOM	QTY	COST
0711 12151	Thermoplastic, Refurbishment, White, Dotted/Guideline/6-10 Gap Extension, 6"	LF	1	\$1.40
0711 12160	Thermoplastic, Refurbish, White, Message	EA	1	\$100.00
0711 12170	Thermoplastic, Refurbish, White, Arrows	EA	1	\$90.00
0711 12170-C	Thermoplastic, Refurbish, White, Combination Arrows	EA	1	\$75.00
0711 12221	Thermoplastic, Refurbishment, Yellow, Solid, 6"	LF	1	\$1.40
0711 12222	Thermoplastic, Refurbishment, Yellow, Solid, 8"	LF	1	\$1.40
0711 12223	Thermoplastic, Refurbishment, Yellow, Solid, 12"	LF	1	\$0.50
0711 12224	Thermoplastic, Refurbishment, Yellow, Solid, 18"	LF	1	\$4.50
0711 12225	Thermoplastic, Refurbishment, Yellow, Solid, 24"	LF	1	\$0.50
0711 12231	Thermoplastic, Refurbishment, Yellow, Skip, 6"	LF	1	\$1.40
0711 12251	Thermoplastic, Refurbishment, Yellow Dotted/Guideline/6-10 Gap Extension, 6"	LF	1	\$1.40
0711 14122	Thermoplastic, Preformed, White, Solid, 8"	LF	1	\$5.00
0711 14123	Thermoplastic, Preformed, White, Solid, 12"	LF	1	\$8.00
0711 14124	Thermoplastic, Preformed, White, Solid, 18"	LF	1	\$9.00
0711 14125	Thermoplastic, Preformed, White, Solid, 24"	LF	1	\$14.00
0711 14131	Thermoplastic, Preformed, White, Skip, 6"	LF	1	\$3.00
0711 14160	Thermoplastic, Preformed, White, Message	EA	1	\$150.00
0711 14160-PB	Thermoplastic Preformed Pavement Markings, Standard, Bike Symbol	EA	1	\$210.00
0711 14170	Thermoplastic, Preformed, White, Arrows	EA	1	\$125.00
0711 14170-C	Thermoplastic, Preformed, White, Combination Arrows	EA	1	\$250.00
0711 14222	Thermoplastic, Preformed, Yellow, Solid, 8"	LF	1	\$3.00
0711 14224	Thermoplastic, Preformed, Yellow, Solid, 18"	LF	1	\$8.00
0711 14560	Thermoplastic, Preformed, White with Black Contract, Message	EA	1	\$400.00
0711 14-CDG	Clearing Dirt / Grass from Edge-Line	LF	1	\$4.00
0711 14-LMK	Lay-Out for Markings	LF	1	\$3.00
0711 14-LS	Lay-Out for Symbol	SF	1	\$0.10
0711 14-LME	Lay-Out for Message	SF	1	\$0.10
0711 14-RG	Remove Existing Marking - Grinding	SF	1	\$5.00
0711 14-RWB	Remove Existing Marking - Water Blast	SF	1	\$7.00
0701 10100	Profiled Thermoplastic, Standard-Remove	LF	1	\$3.00
0701 11111	Audible & Vibratory-Profiled Thermoplastic, Standard, White, Solid 6"	LF	1	\$1.50
0701 11112	Audible & Vibratory-Profiled Thermoplastic, Standard, White, Solid 8"	LF	1	\$1.50
0701 11121	Audible & Vibratory-Profiled Thermoplastic, Standard, White, Skip 6"	LF	1	\$1.50

ITEM	DESCRIPTION	UOM	QTY	COST
0701 11211	Audible & Vibratory-Profiled Thermoplastic, Standard, Yellow, Solid 6"	LF	1	\$1.50
0701 11212	Audible & Vibratory-Profiled Thermoplastic, Standard, Yellow, Solid 8"	LF	1	\$1.50
0711 11221	Audible & Vibratory-Profiled Thermoplastic, Standard, Yellow, Skip 6"	LF	1	\$1.50
0711 11191	Thermoplastic, Standard, 6"white, Railroad Dynamic Envelope on Asphalt Surfaces	LF	1	\$1.50
0711 11193	Thermoplastic, Standard, 12"white, Railroad Dynamic Envelope on Asphalt Surfaces	LF	1	\$6.00

SECTION 971 PAVEMENT MARKING MATERIALS

971-1 General Requirements.

971-1.1 Packaging and Labeling: The name and address of the manufacturer shall be shown on the label. The label must also show the color, date of manufacturer, lot number, and APL number. The label shall warn the user of any special handling or precautions of the material, as recommended by the manufacturer. Any packaging and labeling not so marked will not be accepted.

971-1.2 Storage: All materials must have a container storage life of one year from the date of manufacture. Any pavement marking materials, which although inspected and approved at the point of manufacture, hardens or livers in the containers will be rejected even though it conforms to these Specifications in all other respects.

971-1.3 Mixing: All paints shall be delivered to the project completely mixed, and ready to be used without additional oil or thinner. Thinners shall not be used under any circumstances.

971-1.4 **Approved Product List (APL):** All pavement marking materials shall be one of the products listed on the Department's Approved Product List (APL). Manufacturers seeking evaluation of their product shall apply the following Section 6 and the infrared identification curve (2.5 to 15 μm) for the vehicle component. The Department will test all pavement marking materials by FM 5-541, Part B. A notation of the number of coats and the thickness of each coat at which the product passes testing may be placed on the APL. When listed, this will be the minimum criteria for the application of the pavement marking material.

971-1. 5 Samples: Field samples will be obtained following the Department's Sampling, Testing, and Reporting Guide Schedule.

971-1. 6 Color: Materials other than white and yellow shall meet the color requirements as identified in 23 CFR 665 Table 5 Appendix to Part 655, Subpart F. White-colored materials will only be required to meet the initial daytime chromaticity requirements.

Yellow materials for pavement markings shall meet the following performance requirements. The initial daytime chromaticity for yellow materials shall fall within the box created by the following coordinates:

Initial Daytime Chromaticity Coordinates (Corner Points)				
	1	2	3	4
x	0.530	0.510	0.455	0.472
y	0.456	0.485	0.444	0.400

The nighttime chromaticity for yellow materials shall fall within the box created by the following coordinates:

Nighttime Chromaticity Coordinates (Corner Points)				
	1	2	3	4
x	0.575	0.508	0.473	0.510
y	0.425	0.415	0.453	0.490

971-1.7 Additional Requirements: Pavement marking materials shall be characterized as non-hazardous as defined by the Resource Conservation and Recovery Act (RCRA) 40 CFR 261. Provide supporting independent analytical data or product material safety data sheets (SDS) identifying any components listed in Table 1 of 40 CFR 261.24.

Additionally, retroreflective elements shall contain no more than 200 ppm by weight of lead or arsenic when tested by the Environmental Protection Agency (EPA) Testing Methods 3052, 6010B, and 6010C.

971-2 Glass Spheres.

971-2.1 General Requirements: Glass spheres shall be of a composition designed to be highly resistant to traffic wear and to the effects of weathering for the production of a reflective surface, without altering the day visibility of the marking. The general requirements of 971-1 apply to glass spheres.

971-2.2 Specific Properties: The large (Type 3 or larger) glass spheres used for drop-on beads shall have an adhesion coating. Type 1 glass spheres used for drop-on beads shall have a dual coating. Beads used in the intermix of materials are not required to be coated.

The following physical requirements apply:

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Property	Test Method	Specification
Roundness*	AASHTO PP 74	Min: 70 % by weight
Roundness**	AASHTO PP 74	Min: 80% by weight
Refractive Index*	Becke Line Method (25+/-5C)	1.5 minimum
Refractive Index**	Becke Line Method (25+/-5C)	1.9 minimum
*Type 1, 3, 4 and 5 beads		
**High Index beads		

Sieve Size	Percent by Mass Passing Designated Sieve (AASHTO PP 74)				
	Grading Designation				
	Type 1 (AASHTO)	Type 3 (FP 96)	Type 4 (FP 96)	Type 5 (FP 96)	High Index
No. 8				100	
No. 10			100	95 - 100	
No. 12		100	95 - 100	80 - 95	
No. 14		95 - 100	80 - 95	10 - 40	
No. 16	100	80 - 95	10 - 40	0 - 5	100
No. 18		10 - 40	0 - 5	0 - 2	
No. 20	95 - 100	0 - 5	0 - 2		95 - 100
No. 25		0 - 2			
No. 30	75 - 95				55 - 85
No. 40					15 - 45
No. 50	15 - 35				0 - 5
No. 80					
No. 100	0 - 5				

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971-2.3 Sampling: A random 50 pound sample of glass spheres shall be obtained for each 50,000 pound shipped. Send each 50 pound sample to the State Materials Office.

971-2.4 Containers: The spheres shall be furnished in new 50 pound moisture-proof bags or 2000 pound triwall boxes. All containers shall meet Interstate Commerce Commission requirements for strength and type.

971-3 Standard Paint.

971-3.1 General: Standard paints shall include water reducible products that are single packaged and ready mixed. The paint shall have the capability of being cleaned and flushed from the pavement marking machines using regular tap water and any required rust inhibitors. The manufacturer shall have the option of formulating the paint according to his own specifications. However, the requirements delineated in this Specification and Section 710 shall apply regardless of the type of formulation used. The paint shall be free from all skins, dirt and foreign objects.

971-3.2 Composition:

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Component	Test Method	Criteria
Total Solids, by weight	ASTM D2369	minimum 75%
Pigments, by weight	ASTM D3723	minimum 57%
Vehicle Solids % of Vehicle*		minimum 40%
TiO ₂ , Type II Rutile (white paint only)	ASTM D476	minimum 1.0 lb/gal
Volatile Organic Content, (VOC)	ASTM D3960	maximum 150 g/L
*Vehicle Solids % of Vehicle = $\frac{(\% \text{ total solids} - \% \text{ pigment})}{(100 - \% \text{ pigment})}$		

971-3.3 Physical Requirements: Test laboratory samples in accordance with ASTM E811 and E1349 and also meet the following criteria:

Property	Test Method	Minimum	Maximum
Density	ASTM D1475	13.5 ± 1.4 lb/gal	-
Viscosity at 77°F	ASTM D562	80 KU	100 KU
Fineness of Grind	ASTM D1210	3(HS)	
Dry Opacity at 5 mils WFT	ASTM D2805	0.92	-
Bleed Ratio	ASTM D969	0.95	-
Flexibility	ASTM D522 Method B	Pass	-
Abrasion Resistance	ASTM D4060	Pass	-

971-3.3.1 Set To Bear Traffic Time: The paint shall set to bear traffic in not more than two minutes.

971-3.3.2 Abrasion Resistance: Test four samples using a Taber Abrader. The paint shall be applied to specimen plates using a drawdown blade having a clearance of 20 mils. Clean with a soft brush and weigh each sample. Abrade samples for 1,000 cycles with a combined load of 500 g (arm plus auxiliary weight) on each arm and CS-10 wheels. Clean the

samples with a soft brush and weigh again. The average weight loss for the four plates shall not exceed 75 mg per plate.

971-3.3.3 Retroreflectivity: The white and yellow pavement markings shall attain an initial retroreflectance of not less than 300 mcd/lx·m² and 250 mcd/lx·m², respectively. The retroreflectance of the white and yellow pavement markings at the end of the six month period shall not be less than 150 mcd/lx·m².

971-3.4 Application Properties: Meet the requirements of Section 710 for application properties.

971-3.5 Packaging and Labeling: The paint shall be placed in 55 gallon open-end steel drums with a re-usable multi-seal sponge gasket or 275 gallon Intermediate Bulk Container (IBC). No more than 50 gallons of paint shall be placed in any drum or 250 gallons in any IBC to allow for expansion during transport and storage. Clearly mark the containers with the weight in pounds per gallon, the volume of materials in units of gallons.

971-4 Durable Paint.

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971-4.1 General: Durable paints shall include water reducible products that are single packaged and ready mixed. The paint shall have the capability of being cleaned and flushed from the pavement marking machines using regular tap water and any required rust inhibitors. The manufacturer shall have the option of formulating the material according to his own specifications. However, the requirements delineated in this Specification and Section 710 shall apply regardless of the type of formulation used. The paint shall be free from all skins, dirt and foreign objects. The manufacturer shall provide the recommended thickness prior to installation.

971-4.2 Composition:

Component	Test Method	Criteria
Total Solids, by weight	ASTM D2369	75% minimum
Pigments, by weight	ASTM D3723	57% minimum
Vehicle Solids, % on Vehicle*		40% minimum
TiO ₂ , Type II Rutile (white paint only)	ASTM D476	1.0 lb/gal minimum
Volatile Organic Content, (VOC)	ASTM D3960	150 g/L maximum
*Vehicle Solids % of Vehicle = $\frac{(\% \text{ total solids} - \% \text{ pigment})}{(100 - \% \text{ pigment})}$ Vehicle solids shall be 100% acrylic emulsion polymer.		

971-4.3 Physical Requirements: Test laboratory samples in accordance with ASTM E811 and E1349. Samples shall meet the following criteria:

Property	Test Method	Minimum	Maximum
Density	ASTM D1475	13.5 ± 1.4 lb/gal	N/A
Viscosity at 77°F	ASTM D562	80 KU	100 KU
Fineness of Grind	ASTM D1210	3(HS)	
Dry Opacity at 5 mils WFT	ASTM D2805	0.92	-
Bleed Ratio	ASTM D969	0.95	-
Flexibility	ASTM D522 Method B	Pass	-
Abrasion Resistance	ASTM D4060	Pass	-

971-4.3.1 Set To Bear Traffic Time: The paint shall set to bear traffic in not more than ten minutes.

971-4.3.2 Abrasion Resistance: Test four samples using a Taber Abrader. The paint shall be applied to specimen plates using a drawdown blade having a clearance of 20 mils. Air dry each sample until fully cured based on the manufacturers product recommendation. Clean with a soft brush and weigh each sample. Abrade samples for 1,000 cycles with a combined load of 500 g (arm plus auxiliary weight) on each arm and CS-10 wheels. Clean the samples with a soft brush and weigh again. The average weight loss for the four plates shall not exceed 75 mg per plate.

971-4.3.3 Retroreflectivity: The white and yellow pavement markings shall attain an initial retroreflectance of not less than 450 mcd/lx·m² and 300 mcd/lx·m², respectively. The retroreflectance

of the white and yellow pavement markings at the end of the 18 month period shall not be less than 150 mcd/lx·m².

971-4.4 Application Properties: Application properties shall meet the requirements of Section 710.

971-4.5 Packaging and Labeling: The paint shall be placed in 55 gallon open-end steel drums with a re-usable multi-seal sponge gasket or 275 gallon Intermediate Bulk Container (IBC). No more than 50 gallons of paint shall be placed in any drum or 250 gallons in any IBC to allow for expansion during transport and storage. Clearly mark the containers with the weight in pounds per gallon, the volume of materials in units of gallons.

971-5 Standard Thermoplastic Material.

971-5.1 General: The manufacturer shall utilize alkyd based materials only and shall have the option of formulating the material according to his own specifications. However, the requirements delineated in this Specification and Section 711 shall apply regardless of the type of formulation used. The pigment, glass spheres, and filler shall be well dispersed in the resin. 971-5.2 Composition: 1133 July 2020

971-5.2 Composition:

Component	Test Method	White	Yellow
Binder	ASTM D 4797	20% minimum	20% minimum
TiO ₂ , Type II Rutile	ASTM D476	10% minimum	-
Glass Spheres	ASTM D 4797	40% minimum	40% minimum
Yellow Pigment		-	% minimum per manufacturer
Calcium Carbonate and Inert Filler (- 200 mesh sieve)		30% maximum	37% maximum

Percentages are by weight.

The alkyd/maleic binder must consist of a mixture of synthetic resins (at least one synthetic resin must be solid at room temperature) and high boiling point plasticizers. At least one-half of the binder composition must be 100% maleic-modified glycerol of rosin and be no less than 15% by weight of the entire material formulation.

971-5.3 Glass Spheres: The glass spheres in the intermix shall consist of 50% Type 1 and 50% Type 3 and meeting the requirements of this Section.

971-5.4 Sharp Silica Sand: Sharp silica sand used for bicycle markings and pedestrian crosswalk lines shall meet the following gradation requirements:

Sieve Size

Percent by Mass Passing Designated Sieve (ASTM D1214)

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Sieve Size	Percent by Mass Passing Designated Sieve (ASTM D1214)
20	100
50	0 to 10

971-5.5 Physical Requirements: Laboratory samples shall be tested in accordance with ASTM D4960 and shall meet the following criteria:

Property	Test Method	Minimum	Maximum
Water Absorption	ASTM D570	-	0.5%
Softening Point	ASTM D36	195°F	-
Low Temperature Stress Resistance	AASHTO T250	Pass	-
Specific Gravity	Water displacement	1.9	2.3
Indentation Resistance	ASTM D7735* Type A Durometer	40	75
Impact Resistance	ASTM D256, Method A	1.0 N·m	-
Flash Point	ASTM D92	475°F	-

* The durometer and panel shall be at 115°F with a 1000 g load applied. Instrument measurement shall be taken after 15 seconds.

971-5.5.1 Set To Bear Traffic Time: The thermoplastic shall set to bear traffic in not more than two minutes.

971-5.5.2 Retroreflectivity: The white and yellow pavement markings shall attain an initial retroreflectance of not less than 450 mcd/lx·m² and not less than 350 mcd/lx·m², respectively. The retroreflectance of the white and yellow pavement markings at the end of the three year APL testing period shall not be less than 250 mcd/lx·m².

971-5.6 Application Properties: Application properties shall meet the requirements of Section 711.

971-5.7 Packing and Labeling: The thermoplastic material shall be packaged in suitable biodegradable or thermo-degradable containers which will not adhere to the product during shipment and storage. The container of thermoplastic material shall weigh approximately 50 pounds. The label shall also warn the user that the material shall be heated in the range as recommended by the manufacturer.

971-6 Preformed Thermoplastic Material.

971-6.1 General: The manufacturer shall have the option of formulating the material according to his own specifications. However, the requirements delineated in this Specification and Section 711 shall apply regardless of the type of formulation used. The pigment, glass spheres, and filler shall be well dispersed in the resin.

971-6.2 Composition: The preformed thermoplastic shall consist of high quality materials, pigments and glass spheres or other reflective material uniformly distributed throughout their cross-sectional area, with a reflective layer of spheres or other reflective material embedded in the top surface.

971-6.3 Glass Spheres: Material shall contain no less than 30% glass spheres by weight.

971-6.4 Color: Materials shall meet the performance requirements specified in 971-1.6 and the following additional requirements. The initial luminance factor, Cap Y, shall not be less than 55.

971-6.5 Physical Requirements: Laboratory samples shall be tested in accordance with ASTM D4960 and shall meet the following criteria:

Property	Test Method	Minimum	Maximum
Softening Point	ASTM D36	195°F	-
Low Temperature Stress Resistance	AASHTO T250	Pass	-
Indentation Resistance	ASTM D7735* Type A Durometer	40	75
Impact Resistance	ASTM D256, Method A**	1.0 N·m	-

*The durometer and panel shall be at 115°F with a 1000 g load applied. Instrument measurement shall be taken after 15 seconds.
 **The test specimen for ASTM D256 shall be 1 in. x 1 in. x 6 in. and shall not be notched.

971-6.5.1 Retroreflectivity: The white pavement markings other than crosswalks and bicycle markings shall attain an initial retroreflectance of not less than 300 mcd/lx·m². Crosswalks and bicycle markings shall attain initial retroreflectivity of not less than 275 mcd/lx·m². Black pavement markings shall have a retroreflectance of less than 5 mcd/lx m². The retroreflectance of the white pavement markings at the end of the three year period shall not be less than 150 mcd/lx·m².

971-6.5.2 Skid Resistance: The surface of the pavement markings shall provide a minimum skid resistance value of 35 BPN (British Pendulum Number) when tested according to ASTM E303. Bicycle markings and pedestrian crosswalks shall provide a minimum skid resistance value of 55 BPN.

971-6.6 Application Properties: Application properties shall meet the requirements of Section 711.

971-6.7 Packing and Labeling: The thermoplastic material shall be packaged in suitable biodegradable or thermo-degradable containers which will not adhere to the product during shipment and storage. Clearly mark each container with the thickness of the preformed material in units of inches.

971-7 Permanent Tape Materials.

971-7.1 General: The materials for permanent tape pavement markings shall consist of white or yellow weather-resistant reflective film as specified herein. The pigment, glass spheres, and filler shall be well dispersed in the resin. However, the requirements delineated in this Specification and Section 713 shall apply.

971-7.2 Composition: Permanent tape pavement markings shall consist of high-quality plastic materials, pigments, and glass spheres uniformly distributed throughout their cross-sectional area, with a reflective layer of spheres embedded in the top surface.

971-7.3 Skid Resistance: The surface of the pavement markings shall provide a minimum skid resistance value of 35 BPN when tested according to ASTM E303. Bicycle markings and pedestrian crosswalks shall provide a minimum skid resistance value of 55 BPN.

971-7.4 Thickness: The APL will list the specified thickness of each approved product.

971-7.5 Durability and Wear Resistance: The film shall be weather resistant and, through normal wear, shall show no significant tearing, rollback or other signs of poor adhesion.

971-7.6 Conformability and Resealing: The pavement markings shall be capable of conforming to pavement contours, breaks and faults under traffic at pavement temperatures recommended by the manufacturer. The film shall be capable of use for patching worn areas of the same types of film in accordance with the manufacturer's recommendations.

971-7.7 Tensile Strength: The pavement markings shall have a minimum tensile strength of 40 psi when tested according to ASTM D638. A rectangular test specimen 6 inches by 1 inch by 0.05 inches minimum thickness shall be tested at a temperature range of 40 to 80°F using a jaw speed of 0.25 inch/min.

971-7.8 Pigmentation: The pigment shall be selected and blended to provide a material which is white or yellow conforming to standard highway colors through the expected life of the pavement markings. Test laboratory samples in accordance with ASTM E811 and E1349.

971-7.9 Glass Spheres: The pavement markings shall have glass retention qualities such that, when at room temperature a 2 inches by 6 inches specimen is bent over a 0.5 inch diameter mandrel axis, a microscopic examination of the area on the mandrel shall show no more than 10% of the spheres with entrapment by the material of less than 40%. The bead adhesion shall be such that spheres are not easily removed when the film surface is scratched firmly with a thumbnail.

971-7.10 Retroreflectivity: The materials shall attain an initial retroreflectance of not less than 450 mcd/lx·m² for white markings and not less than 350 mcd/lx·m² for yellow markings. The pavement markings shall retain a minimum retroreflectance for two years of not less than 300 mcd/lx·m² for white markings and not less than 250 mcd/lx·m² for yellow markings. The retroreflectance of the white, yellow and contrast pavement markings at the end of the five year APL testing period shall not be less than 150 mcd/lx·m².

971-7.11 Packaging and Labeling: Ship all permanent tape materials in containers which will not adhere to the product during shipment and storage. Clearly mark each container with the thickness of the preformed material in units of inches.

971-8 Two Reactive Component Material.

971-8.1 General: Two reactive component materials intended for use under this Specification shall include, but not be limited to, epoxies, polyesters and urethanes. The manufacturer shall have the option of formulating the material according to his own specifications. However, the criteria outlined in this Specification and Section 709 shall apply regardless of the type of formulation used. The material shall be free from all skins, dirt and foreign objects.

971-8.2 Composition:

Component	Test Method	Criteria
TiO ₂ , Type II Rutile (white material only)	ASTM D476	minimum 10% by weight
Volatile Organic Content, (VOC)	ASTM D3960	maximum 150 g/L

971-8.3 Physical Requirements: Test laboratory samples in accordance with ASTM and also meet the following criteria:

Property	Test Method	Minimum	Maximum
Adhesion to Concrete	ASTM D4541, ASTM D7234 or ACI 503	Concrete Failure	-
Hardness	ASTM D7735, Type D	75	-
Abrasion Resistance	ASTM D4060	Pass	-

971-8.3.1 Set To Bear Traffic Time: The material shall set to bear traffic in not more than two minutes.

971-8.3.2 Abrasion Resistance: Test four samples using a Taber Abrader. The material shall be applied to specimen plates using a drawdown blade having a clearance of 15 mils. Clean with a soft brush and weigh each sample. Abrade samples for 1,000 cycles with a combined load of 500 g (arm plus auxiliary weight) on each arm and CS-10 wheels. Clean the samples with a soft brush and weigh again. The average weight loss for the four plates shall not exceed 60 mg per plate.

971-8.3.3 Retroreflectivity: The white and yellow pavement markings shall attain an initial retroreflectance of not less than 450 mcd/lx·m² and not less than 350 mcd/lx·m², respectively. The retroreflectance of the white and yellow pavement markings at the end of the three year period shall not be less than 150 mcd/lx·m².

971-8.4 Application Properties: Application properties shall meet the requirements of Section 709.

971-8.5 Packaging and Labeling: The two reactive component material shall be placed in 55 gallon open-end steel drums with a re-usable multi-seal sponge gasket or 275 gallon Intermediate Bulk Container (IBC). No more than 50 gallons of material shall be placed in any drum or 250 gallons in any IBC to allow for expansion during transport and storage. Clearly mark the containers with the volume of materials in units of gallons and the product name.

971-9 Profiled Thermoplastic Material.

971-9.1 General: The manufacturer shall utilize alkyd based materials only and shall have the option of formulating the material according to his own specifications. However, the 1137 July 2020

requirements delineated in this Specification shall apply regardless of the type of formulation used. The pigment, reflective elements, and filler shall be well dispersed in the resin.

971-9.2 Composition:

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Component	Test Method	White	Yellow
Binder	ASTM D 4797	20% minimum	20% minimum
TiO ₂ , Type II Rutile	ASTM D476	10% minimum	-
Reflective Elements	ASTM D 4797	% minimum per manufacturer	% minimum per manufacturer
Yellow Pigment		-	% minimum per manufacturer
Calcium Carbonate and Inert Filler (-200 mesh sieve)		% minimum per manufacturer	% minimum per manufacturer
Note: Percentages are by weight.			

The alkyd/maleic binder must consist of a mixture of synthetic resins (at least one synthetic resin must be solid at room temperature) and high boiling point plasticizers. At least one-half of the binder composition must be 100% maleic-modified glycerol of rosin and be no less than 15% by weight of the entire material formulation.

971-9.3 Retroreflective Elements: The reflective elements in the intermix shall be determined by the manufacturer and identified for the APL.

971-9.4 Physical Requirements: Laboratory samples shall be tested in accordance with ASTM D4960 and shall meet the following criteria:

Property	Test Method	Minimum	Maximum
Water Absorption	ASTM D570	-	0.5%
Softening Point	ASTM D36	210°F	-
Low Temperature Stress Resistance	AASHTO T250	Pass	-
Specific Gravity	Water displacement	1.9	2.3
Indentation Resistance	ASTM D7735* Type A Durometer	65	-
Impact Resistance	ASTM D256, Method A	1.0 N·m	-
Flash Point	ASTM D92	475°F	-
*The durometer and panel shall be at 80°F, with a 1000 g load applied. Instrument measurement shall be taken after 15 seconds.			

971-9.4.1 Set To Bear Traffic Time: When applied at the temperatures and thickness specified by Section 701, the baseline material shall set to bear traffic in not more than two minutes. The bumps shall set to bear traffic in not more than 10 minutes at ambient air temperatures of 80°F or less and in not more than 15 minutes for ambient air temperatures exceeding 80°F.

971-9.4.2 Retroreflectivity: The white and yellow pavement markings shall attain an initial retroreflectance of not less than 300 mcd/lx·m² and not less than 250 mcd/lx·m², respectively. The retroreflectance of the white and yellow pavement markings at the end of the three year period shall not be less than 150 mcd/lx·m².

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971-9.4.3 Durability: Durability shall include flattening of the profile or raised portions of the line. The flattening of the profile or raised portion of the line shall not exceed 25% at the end of the three year period.

971-9.5 Application Properties: Application properties shall meet the requirements of Section 701.

971-9.6 Packing and Labeling: The thermoplastic material shall be packaged in suitable biodegradable or thermo-degradable containers which will not adhere to the product during shipment and storage. The container of thermoplastic material shall weigh approximately 50 pounds. The label shall warn the user that the material shall be heated in the range as recommended by the manufacturer.

971-10 High Friction Thermoplastic Material.

971-10.1 General: The manufacturer shall utilize alkyd based materials only and have the option of formulating the material according to his own specifications. However, the requirements of this Specification shall apply regardless of the formulation used. The pigment, reflective elements, and filler shall be well dispersed in the resin.

971-10.2 Composition:

Component	Test Method	White
Binder	ASTM D 4797	18% minimum
TiO ₂ , Type II Rutile	ASTM D476	10% minimum
Reflective Elements	ASTM D 4797	30% minimum per manufacturer
Skid Resistant Elements		10% minimum per manufacturer
Note: Percentages are by weight.		

The alkyd/maleic binder shall consist of a mixture of synthetic resins (at least one synthetic resin must be solid at room temperature) and high boiling point plasticizers. At least one-half of the binder composition must be 100% maleic-modified glycerol of rosin and be no less than 15% by weight of the entire material formulation.

971-10.3 Retroreflective Elements: The reflective elements in the intermix shall be determined by the manufacturer and identified on the APL.

971-10.4 Physical Requirements: Laboratory samples shall be tested in accordance with ASTM D4960 and shall meet the following criteria:

Property	Test Method	Minimum	Maximum
Softening Point	ASTM D36	195°F	-
Hardness of Skid Resistance Elements	Moh's Scale	9	-
Indentation Resistance	ASTM D7735* Type A Durometer	55	85
Impact Resistance	ASTM D256, Method A	1.0 N·m	-
Flash Point	ASTM D92	475°F	-
*The durometer and panel shall be at 115°F, with a 1000 g load applied. Instrument measurement shall be taken after 15 seconds.			

971-10.4.1 Set To Bear Traffic Time: When applied at the temperatures and thicknesses specified by Section 711, the material shall set to bear traffic in not more than two minutes.

971-10.4.2 Retroreflectivity: The white pavement markings shall attain an initial retroreflectance of not less than 275 mcd/lx·m². The retroreflectance of the white pavement markings at the end of the three year period shall not be less than 150 mcd/lx·m².

971-10.4.3 Skid Resistance: The surface of the pavement markings shall provide a minimum initial skid resistance value of 55 BPN when tested in accordance to ASTM E303.

971-10.5 Application Properties: Application properties shall meet the requirements of Section 711.

971-10.6 Packaging and Labeling: The thermoplastic material shall be packaged in suitable biodegradable or thermo-degradable containers which will not adhere to the product during shipment and storage. The container of thermoplastic material shall weigh approximately 50 pounds. The label shall warn the user that the material is to be heated in the range as recommended by the manufacturer.

Manual on Uniform Traffic Control Devices

In accordance with [Section 316.0745, Florida Statutes](#), the Department of Transportation has adopted the U.S. Department of Transportation, Federal Highway Administration's Manual on Uniform Traffic Control Devices (MUTCD) by [Rule 14-15.010, F.A.C.](#)

The ***Manual on Uniform Traffic Control Devices for Streets and Highways***—the **MUTCD**—defines the standards used by road managers nationwide to install and maintain traffic control devices on all streets, highways, pedestrian and bicycle facilities, and site roadways open to public travel. The MUTCD is published by the Federal Highway Administration (FHWA) under [23 Code of Federal Regulations \(CFR\), Part 655, Subpart F](#).

The MUTCD, which has been administered by the FHWA since 1971, is a compilation of national standards for all traffic control devices, including road markings, highway signs, and traffic signals. It is updated periodically to accommodate the nation's changing transportation needs and address new safety technologies, traffic control tools, and traffic management techniques.

On December 19, 2023, a Final Rule adopting the 11th Edition of the MUTCD was published in the *Federal Register* with an effective date of January 18, 2024. States must adopt the 11th Edition of the National MUTCD as their legal State standard for traffic control devices within two years from the effective date. The *Federal Register* notice, which provides detailed discussion of the final dispositions of major changes from the 2009 edition, can be viewed at <https://www.federalregister.gov/d/2023-27178>.

FHWA does not print copies of the MUTCD. The PDF version of the [11th Edition of the MUTCD](#) is the most current edition of the official FHWA publication.

Request to Experiment (RTE)

What is a MUTCD Request to Experiment?

MUTCD [Requests to Experiment](#) (RTE) include a new traffic control device or a different application of an existing device that will improve road user safety or operation, but the device or application is not currently compliant with or not included in the MUTCD. All RTE's should originate with the State/local highway agency or toll operator responsible for managing the roadway or controlled setting where the experiment will take place. The FHWA must approve the RTE before it begins.

What is the process to conduct a MUTCD Request to Experiment in Florida?

[Section 1A. 10 of the MUTCD](#) contains the guidance and process necessary to submit a RTE along with a [flow chart on the experimentation process](#).

For all state roads, the State Traffic Operations Engineer in the State Traffic Engineering and Operations Office is responsible for submitting all MUTCD RTE's on state roads in Florida. For a non-state road, the request must be made through the local agency with jurisdiction over the road.

In accordance with FHWA requirements, the RTE must evaluate conditions both before and after installation of the experimental device and describe the measurements of effectiveness (MOEs) of the safety and operational benefits (e.g., better visibility, reduced congestion).

A list of all current RTE locations on the state highway system can be accessed through our [eTraffic online map](#).

Interim Approval (IA)

What is a MUTCD Interim Approval?

Section 1B.03 of the MUTCD contains a provision authorizing the Federal Highway Administration to issue Interim Approvals and Section 1B.07 contains more information. Such approvals allow the interim use, pending official rulemaking, of a new traffic control device, a revision to the application or manner of use of an existing traffic control device, or a provision not specifically described in the MUTCD. Interim Approvals are considered by the Office of Transportation Operations based on the results of successful experimentation, studies, or research, and an intention to place the new or revised device into a future rulemaking process for MUTCD revisions.

Any jurisdiction that wishes to use a device or application that has received Interim Approval must submit a written request to the FHWA, Director of the Office of Transportation Operations. The request must indicate whether blanket jurisdiction-wide approval is being requested or must state the location(s) where the device will be used, and must include the jurisdiction's agreement to comply with items B, C, and D in paragraph 10 of Section 1B.07 of the 11th Edition of the MUTCD. A State may request Interim Approval for all jurisdictions in that State.

The letter of request (on agency letterhead) should be addressed to the Director of the Office of Transportation Operations, Federal Highway Administration, and should be sent electronically as an attachment (PDF or Word Document) to an e-mail to: MUTCDofficialrequest@dot.gov. [Note: If e-mail is not possible, the letter may be sent via postal mail or delivery service to FHWA at 1200 New Jersey Avenue, S.E., HOTO-1, Washington, DC 20590.]

Helpful Links

[FDOT's Roadway Design Bulletin 10-05](#) provides information on the implementation of the MUTCD in Florida.

A list of [Frequently Asked Questions](#) about the MUTCD has been developed by FHWA to help answer a wide variety of the MUTCD's most frequently asked questions.

[Compliance dates](#) for replacing non-compliant traffic control devices on existing highways and bikeways in accordance with MUTCD requirements have also been established by FHWA.

The MUTCD [Official Rulings](#) is a resource that allows web site visitors to obtain information about requests for changes, experiments, and interpretations related to the MUTCD that have been received by the FHWA. The current status of experiments, as well as any contact information for the requestor that has been made a part of the public record, is also available. Click [HERE](#) for a complete list of Official MUTCD Interpretations issued by FHWA.

SECTION 701 PROFILED THERMOPLASTIC PAVEMENT MARKINGS

701-1 Description.

Profiled thermoplastic pavement markings consist of thermoplastic material with raised thermoplastic bumps creating a raised profile marking. Apply profiled thermoplastic pavement markings following the Contract Documents.

701-2 Materials.

Use only materials listed on the Department's Approved Product List (APL) as an approved system and meet the following requirements:

Profiled Thermoplastic.....	971-1 and 971-9
Retroreflective Elements*	971-1.7
Glass Spheres*	971-1 and 971-2

*Use retroreflective elements or glass spheres recommended by the manufacturer.

The Engineer will take random samples of the materials following the Department's Sampling, Testing, and Reporting Guide schedule.

701-3 Equipment.

Use equipment capable of providing continuous, uniform heating of the pavement marking material to temperatures exceeding 390°F, mixing and agitating the material in the reservoir to provide a homogenous mixture without segregation. Use equipment that will maintain the pavement marking material in a plastic state, in all mixing and conveying parts, including the line dispensing device until applied. Use equipment that is capable of producing a consistent pattern of bumps with a longitudinal distance between bumps of approximately 30 inches center-to-center intervals. Use equipment that meets the following requirements:

1. Capable of traveling at a uniform, predetermined rate of speed, both uphill and downhill, to produce a uniform application of pavement marking material and capable of following straight lines and making normal curves in a true arc.
2. Capable of applying retroreflective elements or glass spheres to the surface of the completed pavement marking by automatic dispensers attached to the pavement marking machine such that the retroreflective elements or glass spheres are dispensed closely behind the installed line. Use retroreflective element or glass sphere dispensers equipped with an automatic cut-off control that is synchronized with the cut-off of the thermoplastic material and applies the retroreflective elements or glass spheres uniformly on the entire pavement marking surface with 50 to 60% embedment.
3. Equipped with a special kettle for uniformly heating and melting the pavement marking material. The kettle must be equipped with an automatic temperature control device and material thermometer for positive temperature control and to prevent overheating or scorching of the thermoplastic material.
4. Meets the requirements of the National Fire Protection Association (NFPA), State and Local authorities.

701-4 Application.

701-4.1 General: Remove existing thermoplastic pavement markings and raised bumps using a method approved by the Engineer such that pavement surface scars or traces of the

removed thermoplastic pavement markings will not conflict with new pavement markings. Do not use paint to blackout, hide, or disguise existing pavement markings.

Before applying pavement markings, remove any material that would adversely affect the bond of the pavement markings by a method approved by the Engineer.

Before applying pavement markings to any portland cement concrete surface, apply a primer, sealer or surface preparation adhesive of the type recommended by the manufacturer. Offset longitudinal lines at least 2 inches from construction joints of portland cement concrete pavement.

Apply pavement markings to dry surfaces only, and when the ambient air and surface temperature is at least 50°F and rising for asphalt surfaces and 60°F and rising for concrete surfaces.

Apply pavement markings to the same tolerances in dimensions and in alignment specified in 710-5. When applying pavement marking over existing markings, ensure that no more than 2 inches on either end and not more than 1 inch on either side of the existing line is visible.

Conduct field tests in accordance with FM 5-541. Take test readings representative of the pavement marking performance. Remove and replace pavement markings not meeting the requirements of this Section at no additional cost to the Department.

701-4.2 Thickness: Apply flat base lines having a thickness of 0.100 inches or 100 mils to 0.150 inches or 150 mils, exclusive of the bumps, when measured above the pavement surface.

Measure, record and certify on a Department approved form and submit to the Engineer, the thickness of white and yellow pavement markings in accordance with FM 5-541.

The Engineer will verify the thickness of the pavement markings in accordance with FM 5-541 within 30 days of receipt of the Contractor's certification.

701-4.3 Dimensions of Raised Bumps: Apply the raised bumps with a profile such that the leading and trailing edges are sloped at a sufficient angle to create an audible and vibratory warning.

Bumps on edge line and centerline markings shall be at least 0.45 inches at the highest point of the bump, above the pavement surface, including the base line. The height shall be measured after application of drop-on retroreflective elements or glass spheres. Bumps shall have a minimum baseline coverage dimension of 2.5 inches in both transverse and longitudinal directions. The bumps may have a drainage channel, the width of each drainage channel will not exceed 1/4 inch at the bottom of the channel. The longitudinal distance between bumps shall be approximately 30 inches.

701-4.4 Retroreflectivity: Apply white and yellow profiled thermoplastic markings that will attain an initial retroreflectance of not less than $300 \text{ mcd/lx}\cdot\text{m}^2$ and not less than $250 \text{ mcd/lx}\cdot\text{m}^2$, respectively. Measure, record and certify on a Department approved form and submit to the Engineer, the retroreflectivity of white and yellow pavement markings in accordance with FM 5-541.

701-4.5 Color: Use pavement marking materials that meet the requirements of 971-1.

701-4.6 Retroreflective Elements or Glass Spheres: Apply retroreflective elements or glass spheres to all markings at the rates determined by the manufacturer's recommendations as identified for the APL System.

701-4.7 Loss: If more than 1% of the bumps or more than three consecutive bumps are missing or broken (less than half a bump remaining) within the first 45 days under traffic,

replace all failed bumps at no expense to the Department. If more than 2% of the bumps fail within the first 45 days under traffic, the replacement period will extend an additional 45 days from the date all replacement bumps were installed. If, at the end of the additional 45 days, more the 2% of all bumps (initial and replacement) fail, replace all failed bumps at no expense to the Department. Measure, record and certify on a Department approved form and submit to the Engineer, the loss of bumps.

701-5 Contractor's Responsibility for Notification.

Notify the Engineer prior to the placement of the materials. At the time of notification, submit a certification to the Engineer with the APL number and the batch or Lot numbers of the thermoplastic materials and retroreflective elements or glass spheres to be used. Packaging labels that contain the information required by 971-1.1 will be accepted in lieu of a certification.

701-6 Protection of Newly Applied Profiled Thermoplastic Markings.

Do not allow traffic onto or permit vehicles to cross newly applied pavement markings until they are sufficiently dry. Remove and replace any portion of the pavement markings damaged by passing traffic or from any other cause, at no additional cost to the Department.

701-7 Observation Period.

Longitudinal pavement markings, with the exception of bumps, are subject to a 180 day observation period under normal traffic. The observation period will begin with the satisfactory completion and acceptance of the work. The observation period for bumps will be in accordance with the requirements of 701-4.7.

The longitudinal pavement markings shall show no signs of failure due to blistering, excessive cracking, chipping, discoloration, poor adhesion to the pavement, loss of retroreflectivity or vehicular damage. The retroreflectivity shall meet the initial requirements of 701-4.4. The Department reserves the right to check the retroreflectivity anytime prior to the end of the observation period.

Replace, at no expense to the Department, any longitudinal pavement markings that do not perform satisfactorily under traffic during the 180 day observation period.

701-8 Corrections for Deficiencies.

Correct all deficiencies by removal and reapplication of a one mile section centered around the deficiency, at no cost to the Department.

701-9 Submittals.

701-9.1 Submittal Instructions: Prepare a certification of quantities, using the Department's current approved form, for each project in the Contract. Submit the certification of quantities and daily worksheets to the Engineer. The Department will not pay for any disputed items until the Engineer approves the certification of quantities.

701-9.2 Contractor's Certification of Quantities: Request payment by submitting a certification of quantities no later than Twelve O'clock noon Monday after the estimate cut-off date or as directed by the Engineer, based on the amount of work done or completed. Ensure the certification of quantities consists of the following:

1. Contract Number, FPID Number, Certification Number, Certification Date and the period that the certification represents.

2. The basis for arriving at the amount of the progress certification, less payments previously made and less any amount previously retained or withheld. The basis will include a detailed breakdown shown on the certification of items of payment.

701-10 Method of Measurement.

The quantities, authorized and acceptably applied, under this Section will be paid as follows:

1. The length, in gross miles, of 6 inch solid and 10'-30' skip lines.
2. The area, in square feet, for removal of existing thermoplastic pavement markings acceptably removed. Payment for removal of thermoplastic pavement markings will only be made for locations where the existing pavement surface is to remain..

The gross mile measurement will be taken as the distance from the beginning of the profiled thermoplastic line to the end of the profiled thermoplastic line and will include the unmarked gaps for skip lines. The gross mile will not include designated unmarked lengths at intersections, turn lanes, etc. Final measurement will be determined by plan dimensions or stations, subject to 9-1.3.1.

701-11 Basis of Payment.

Price and payment will be full compensation for all work specified in this Section, including, all cleaning and preparing of surfaces, furnishing of all materials, application, curing and protection of all items, protection of traffic, furnishing of all tools, machines and equipment, and all incidentals necessary to complete the work. Final payment will be withheld until all deficiencies are corrected. Payment will be made under:

- Item No. 701 Profiled Thermoplastic Pavement Markings.
Line Item Exhibit "E"

SECTION 705 OBJECT MARKERS AND DELINEATORS

705-1 Description.

Furnish and install object markers to mark obstructions within or adjacent to the roadway of the types and at the locations called for in the Standard Plans or in the Plans.

Furnish and install delineators along the side of the roadway to indicate the alignment of the roadway as indicated in the Standard Plans or in the Plans.

705-2 Materials.

705-2.1 General: Meet the following requirements:

Object Markers and DelineatorsSection 993

Retroreflective and Nonreflective

Sign SheetingSection 994

705-2.2 Product Acceptance on the Project: Ensure that delineators and delineator posts are listed on the Department's Approved Product List (APL).

705-3 Installation Requirements.

Install delineators and object markers in accordance with the MUTCD, Standard Plans and Plans.

Place barrier delineators at a spacing of 25 feet for the first 100 feet of barrier and at 100 feet spacing thereafter. Orient barrier delineators as detailed in the Standard Plans or APL drawings.

705-4 Method of Measurement.

The quantity to be paid will be the number of delineators or object markers furnished, installed and accepted, with the exception of barrier delineators on new barriers, which are included in the cost of the barrier.

705-5 Basis of Payment.

Prices and payments will be full compensation for work specified in this Section, including the cost of labor, materials, and incidental items required to complete the work.

Payment will be made under:

Line Item Exhibit "E"

SECTION 706 RAISED PAVEMENT MARKERS AND BITUMINOUS ADHESIVE

706-1 Description.

Place raised pavement markers (RPMs) and adhesive, which upon installation produces a positive guidance system to supplement other reflective pavement markings.

706-2 Materials.

Use only Class B markers unless otherwise shown in the Plans.

Meet the requirements of Section 970.

706-2.1 Product Acceptance on the Project. Use only RPMs and bituminous adhesive that are listed on the Department's Approved Product List (APL). For Class F RPMs, provide a warranty assigned to the Department in accordance with Section 970.

706-3 Equipment.

Use equipment having either thermostatically controlled double boiler type units utilizing heat transfer oil or thermostatically controlled electric heating pots to install hot applied bituminous adhesive. Use a melter/applicator unit suited for both melting and pumping the bituminous adhesive through heated applicator hoses.

Heat the bituminous adhesive to between 375°F and 425°F and apply directly to the bonding surface from the melter/applicator by either pumping or pouring. Maintain the application temperature between 375°F and 425°F. The bituminous adhesive may be reheated. However, do not exceed the manufacturer's recommendations for pot life at application temperatures.

706-4 Application.

Install RPMs in accordance with the Plans and Standard Plans.

Apply RPMs to the bonding surface using bituminous or epoxy adhesives in accordance with the manufacturer's instructions.

For Class F RPMs, installation may include the removal of roadway surface material to recess a portion of the RPM housing.

Prior to application of adhesive, clean the portion of the bonding surface of any material which would adversely affect the adhesive.

Apply the adhesive to the bonding surface (not the RPM) so that 100% of the bonding area of the RPM will be covered, in accordance with adhesive manufacturer's recommendations. Apply sufficient adhesive to ensure that when the marker is pressed downward into the adhesive, adhesive will be forced out around the entire perimeter of the RPM.

Immediately remove excess adhesive from the bonding surface and exposed surfaces of the RPMs. Soft rags moistened with mineral spirits meeting Federal Specifications TT-T-291 or kerosene may be used to remove adhesive from exposed faces of the RPMs. Do not use any other solvent. If any adhesive, pavement marking materials or other foreign matter adheres to the traffic face of the RPM, replace the RPM at no cost to the Department.

Restore any areas impacted by the installation of Class F RPMs to original condition.

Ensure that all final RPMs are in place prior to opening the road to traffic.

If more than 2% of the RPMs fail in adhesion or alignment within the first 45 days under traffic, replace all failed RPMs at no expense to the Department. If more than 5% of the RPMs

fail in adhesion and or alignment during the initial 45 day period, the Engineer will extend the replacement period an additional 45 days from the date that all replacement RPMs have been installed. If, at the end of the additional 45 day period, more than 2% of all RPMs (initial installation and 45 day replacements combined) fail in adhesion or alignment, replace all failed RPMs at no expense to the Department.

706-5 Contractor's Responsibility for Notification.

Notify the Engineer prior to the placement of RPMs. At the time of notification, submit the APL number and the batch or Lot numbers of RPMs and bituminous adhesive to be used.

706-6 Method of Measurement.

The quantities to be paid for will be the number of RPMs, furnished and installed, completed and accepted.

706-7 Basis of Payment.

706-7.1 Class B RPMs: Price and payment for Class B RPMs will not be measured or paid for separately when the item for painted pavement markings (Final Surface) is included in the proposal. Price and payment for all work and materials in this Section will be made in accordance with 710-11.2.

For projects without Final Surface Pavement Markings, price and payment for Class B RPMs will be full compensation for all work and materials in this Section.

706-7.2 Class F RPMs: Price and payment for Class F RPMs will be full compensation for all work and materials in this Section.

706-7.3 Payment Items: Line Item Exhibit "E"

SECTION 709 TWO REACTIVE COMPONENTS PAVEMENT MARKINGS

709-1 Description.

Apply two reactive components pavement markings in accordance with the Contract Documents.

709-2 Materials.

Use only materials listed on the Department's Approved Product List (APL) as an approved system and meeting the following requirements:

Two Reactive Components 971-1 and 971-8

Retroreflective Elements* 971-1.7

Glass Spheres* 971-1 and 971-2

*Use only retroreflective elements or glass spheres recommended by the manufacturer.

The Engineer will take random samples of the materials in accordance with the Department's Sampling, Testing and Reporting Guide schedule.

709-3 Equipment.

Use equipment that will produce continuous uniform dimensions of pavement markings of varying widths and meets the following requirements:

1. Capable of traveling at a uniform, predetermined rate of speed, both uphill and downhill, to produce a uniform application of the two reactive components material and capable of following straight lines and making normal curves in true arcs.
2. Capable of applying retroreflective elements or glass spheres to the surface of the completed line by an automatic retroreflective element dispenser attached to the pavement marking machine such that the retroreflective elements or glass spheres are dispensed closely behind the installed line. Use a retroreflective element or glass sphere dispenser equipped with an automatic cut-off control that is synchronized with the cut-off of the material and applies the retroreflective elements or glass spheres in a manner such that the retroreflective elements or glass spheres appear uniform on the entire pavement markings surface.
3. Capable of providing the manufacturer's recommended mixing ratio between the components in a thorough and consistent manner.

709-4 Application.

709-4.1 General: Remove existing pavement markings, such that scars or traces of removed markings will not conflict with new pavement markings by a method approved by the Engineer. Before applying pavement markings, remove any material by a method approved by the Engineer that would adversely affect the bond of the pavement markings.

Offset longitudinal lines at least 2 inches from construction joints of portland cement concrete pavement.

Apply pavement markings to dry surfaces only, and when the ambient air and surface temperature is at least 40°F and rising.

Do not apply two reactive components pavement markings when winds are sufficient to cause spray dust.

Apply two reactive components pavement markings to the same tolerances in dimensions and in alignment specified in 710-5. When applying two reactive components pavement marking over existing markings, ensure that not more than 2 inches on either end and not more than 1 inch on either side of the existing line is visible.

Apply the two reactive components pavement markings to the pavement in accordance with the manufacturer's instructions or as directed by the Engineer.

Conduct field tests in accordance with FM 5-541. Take test readings representative of the pavement marking performance. Remove and replace two reactive components pavement markings not meeting the requirements of this Section at no additional cost to the Department.

Apply all final pavement markings prior to opening the road to traffic.

709-4.2 Thickness: Apply two reactive components pavement markings to attain a minimum wet film thickness in accordance with the manufacturer's recommendations as identified on the APL. Measure, record and certify on a Department approved form and submit to the Engineer, the thickness of white and yellow pavement markings in accordance with FM 5-541.

709-4.3 Retroreflectivity: Apply white and yellow two reactive components pavement markings that will attain an initial retroreflectivity of not less than 450 mcd/lx·m² and not less than 350 mcd/lx·m², respectively for all longitudinal lines.

Measure, record and certify on the Department approved form and submit to the Engineer, the retroreflectivity of white and yellow two reactive components pavement markings in accordance with FM 5-541.

709-4.4 Color: Use materials that meet the requirements of 971-1.

709-4.5 Retroreflective Elements or Glass Spheres: Apply retroreflective elements or glass spheres to all white and yellow two reactive components pavement markings, at the rates determined by the manufacturer's recommendations as identified on the APL.

709-5 Contractor's Responsibility for Notification.

Notify the Engineer prior to the placement of the materials. At the time of notification, submit a certification to the Engineer with the APL number and the batch or Lot numbers of the materials and retroreflective elements or glass spheres to be used. Packaging labels that contain the information required by 971-1.1 will be accepted in lieu of a certification.

709-6 Protection of Newly Applied Pavement Markings.

Do not allow traffic onto or permit vehicles to cross newly applied pavement markings until they are sufficiently dry. Remove and replace any portion of the pavement markings damaged by passing traffic or from any other cause, at no additional cost to the Department.

709-7 Observation Period.

Longitudinal pavement markings are subject to a 180 day observation period under normal traffic. The observation period shall begin with the satisfactory completion and acceptance of the work. The longitudinal pavement markings shall show no signs of failure due to blistering, excessive cracking, chipping, discoloration, poor adhesion to the pavement, loss of retroreflectivity or vehicular damage. The retroreflectivity shall meet the initial requirements of 709-4.3. The Department reserves the right to check the retroreflectivity any time prior to the end of the observation period.

Replace, at no additional expense to the Department, any longitudinal pavement markings that do not perform satisfactorily under traffic during the 180 day observation period.

709-8 Corrections for Deficiencies.

Correct all deficiencies by removal and reapplication of a one mile section centered around the deficiency, as determined by the Engineer, at no additional cost to the Department.

709-9 Submittals.

709-9.1 Submittal Instructions: Prepare a certification of quantities, using the Department's current approved form, for each project in the Contract. Submit the certification of quantities and daily worksheets to the Engineer. The Department will not pay for any disputed items until the Engineer approves the certification of quantities.

709-9.2 Contractor's Certification of Quantities: Request payment by submitting a certification of quantities no later than Twelve O clock noon Monday after the estimate cut-off date or as directed by the Engineer, based on the amount of work done or completed. Ensure the certification of quantities consists of the following:

1. Contract Number, FPID Number, Certification Number, Certification Date and the period that the certification represents.
2. The basis for arriving at the amount of the progress certification, less payments previously made and less any amount previously retained or withheld. The basis will include a detailed breakdown provided on the certification of items of payment.

709-10 Method of Measurement.

The quantities, authorized and acceptably applied, under this Section will be paid as follows:

1. The length, in gross miles, of solid, 10'-30' skip, and 3'-9' dotted, 6'-10' dotted, 2'-2' dotted, and 2'-4' dotted lines.
2. The area, in square feet, for removal of existing markings acceptably removed. Payment for removal of conflicting markings will be in accordance with 102-5.8. Payment for removal of non-conflicting markings will be paid separately.

The gross mile measurement will be taken as the distance from the beginning of the two reactive component line to the end of the two reactive component line and will include the unmarked gaps for skip and dotted lines. The gross mile measurement will not include designated unmarked lengths at intersections, turn lanes, etc. Final measurement will be determined by plan dimensions or stations, subject to 9-1.3.1.

709-11 Basis of Payment.

Price and payment will be full compensation for all work specified in this Section, including, all cleaning and preparing of surfaces, furnishing of all materials, application, curing and protection of all items, protection of traffic, furnishing of all tools, machines and equipment, and all incidentals necessary to complete the work. Final payment will be withheld until all deficiencies are corrected. Payment will be made under:

Line Item Exhibit "E"

SECTION 710 PAINTED PAVEMENT MARKINGS

710-1 Description.

Apply painted pavement markings, in accordance with the Contract Documents.

710-2 Materials.

Use only materials listed on the Department's Approved Product List (APL) meeting the following requirements:

Materials for Raised Pavement Markers (RPMs) and Bituminous Adhesive	Section 970
Standard Paint	971-1 and 971-3
Durable Paint	971-1 and 971-4
Glass Spheres	971-1 and 971-2

The Engineer will take random samples of all material in accordance with the Department's Sampling, Testing and Reporting Guide schedule.

710-3 Equipment.

Use equipment that will produce continuous uniform dimensions of pavement markings of varying widths and meet the following requirements:

1. Capable of traveling at a uniform, predetermined rate of speed, both uphill and downhill, in order to produce a uniform application of paint and capable of following straight lines and making normal curves in a true arc.
2. Capable of applying glass spheres to the surface of the completed line by an automatic sphere dispenser attached to the pavement marking machine such that the glass spheres are dispensed closely behind the installed line. Use a glass spheres dispenser equipped with an automatic cut-off control that is synchronized with the cut-off of the paint and applies the glass spheres in a manner such that the spheres appear uniform on the entire pavement markings surface.
3. Capable of spraying the paint to the required thickness and width without thinning of the paint. Equip the paint tank with nozzles equipped with cut-off valves, which will apply broken or skip lines automatically.

710-4 Application.

710-4.1 General: Remove existing pavement markings, such that scars or traces of removed markings will not conflict with new pavement markings, by a method approved by the Engineer. Before applying pavement markings, remove any material that would adversely affect the bond of the pavement markings by a method approved by the Engineer.

Apply standard paint to dry surfaces only, and when the ambient air and surface temperature is at least 40°F and rising.

Apply durable paint to dry surfaces only. Do not apply durable paint when the ambient air and surface temperature is below 50°F, relative humidity is above 80% or when the dew point is within 5°F of the ambient air temperature.

Do not apply painted pavement markings when winds are sufficient to cause spray dust.

Apply painted pavement markings, having well defined edges, over existing pavement markings such that not more than 2 inches on either end and not more than 1 inch on either side is visible. When stencils are used to apply symbols and messages, the areas covered by the stencil reinforcing will not be required to be painted.

Mix the paint thoroughly prior to pouring into the painting machine. Apply paint to the pavement by spray or other means approved by the Engineer.

Conduct field testing in accordance with FM 5-541. Remove and replace painted pavement markings not meeting the requirements of this Section at no additional cost to the Department.

Apply all pavement markings prior to opening the road to traffic.

710-4.1.1 Painted Pavement Markings (Final Surface): On concrete surfaces or newly constructed asphalt, the painted pavement markings (final surface) will include one application of standard paint and one application of Class B RPMs applied to the final surface.

For center line and edge line rumble strip installations where the pavement marking is placed within the grinding, apply a second application of standard paint within 24 hours of each day's grinding operation.

For center line rumble strip installations where RPMs are in conflict with the grinding, install Class D RPMs with the first application of standard paint. Remove Class D RPMs prior to grinding, then install Class B RPMs in an unground area after grinding.

Do not apply final surface paint for bicycle arrows or bicycle messages, 24 inch longitudinal bars in special emphasis crosswalks, or route shields where preformed thermoplastic will be applied.

Install all RPMs in accordance with Standard Plans, Indexes 706-001 and 711-003, prior to opening the road to traffic.

Temporary RPMs must meet the requirements of Section 102.

Permanent RPMs must meet the requirements of Section 706.

710-4.2 Thickness: Apply standard paint to attain a minimum wet film thickness in accordance with the manufacturer's recommendations. Apply durable paint to attain a minimum wet film thickness of 0.025 inches or 25 mils. Measure, record, and certify on a Department approved form and submit to the Engineer, the thickness of white and yellow durable paint pavement markings in accordance with FM 5-541.

710-4.3 Retroreflectivity: Apply white and yellow standard paint that will attain an initial retroreflectance of not less than $300 \text{ mcd/lx}\cdot\text{m}^2$ and not less than $250 \text{ mcd/lx}\cdot\text{m}^2$, respectively. Apply white and yellow durable paint that will attain an initial retroreflectance of not less than $450 \text{ mcd/lx}\cdot\text{m}^2$ and not less than $300 \text{ mcd/lx}\cdot\text{m}^2$, respectively.

Measure, record and certify on a Department approved form and submit to the Engineer, the retroreflectivity of white and yellow pavement markings in accordance with FM 5-541.

The Department reserves the right to test the markings within three days of receipt of the Contractor's certification. Failure to afford the Department opportunity to test the markings will result in non-payment. The test readings should be representative of the Contractor's pavement marking performance. If the retroreflectivity values measure below values shown above, reapply the pavement marking at no additional cost to the Department.

For standard paint, ensure that the minimum retroreflectance of white and yellow pavement markings are not less than $150 \text{ mcd/lx}\cdot\text{m}^2$. If the retroreflectivity values for standard paint fall below the $150 \text{ mcd/lx}\cdot\text{m}^2$ value within 180 days of initial application, the pavement

marking will be reapplied at the Contractor's expense. If the retroreflectivity values for durable paint fall below the initial values of 450 mcd/lx m² value for white and 300 mcd/lx m² for yellow within 180 days of initial application, the pavement marking will be reapplied at the Contractor's expense.

710-4.4 Color: Use paint material that meets the requirements of 971-1.

710-4.5 Glass Spheres: Apply glass spheres on all pavement markings immediately and uniformly following the paint application. The rate of application shall be based on the manufacturer's recommendation.

For longitudinal durable paint markings, apply a double drop of Type 1 and Type 3 glass spheres. For transverse durable paint markings, apply a single drop of Type 3 glass spheres.

The rate of application shall be based on the manufacturer's recommendation.

710-5 Tolerances in Dimensions and in Alignment.

Establish tack points at appropriate intervals for use in aligning pavement markings, and set a stringline from such points to achieve accuracy.

710-5.1 Dimensions:

710-5.1.1 Longitudinal Lines: Apply painted skip line segments with no more than plus or minus 12 inches variance, so that over-tolerance and under-tolerance lengths between skip line and the gap will approximately balance. Apply longitudinal lines at least 2 inches from construction joints of portland cement concrete pavement.

710-5.1.2 Transverse Markings, Gore Markings, Arrows, and Messages: Apply paint in multiple passes when the marking cannot be completed in one pass, with an overall line width allowable tolerance of plus or minus 1 inch.

710-5.1.3 Contrast Lines: Use black paint to provide contrast on concrete or light asphalt pavement, when specified by the Engineer. Apply black paint in 10 foot segments following each longitudinal skip line.

710-5.2 Alignment: Apply painted pavement markings that will not deviate more than 1 inch from the stringline on tangents and curves one degree or less. Apply painted pavement markings that will not deviate more than 2 inches from the stringline on curves greater than one degree. Apply painted edge markings uniformly, not less than 2 inches or more than 4 inches from the edge of pavement, without noticeable breaks or deviations in alignment or width.

Remove and replace at no additional cost to the Department, pavement markings that deviate more than the above stated requirements.

710-5.3 Correction Rates: Make corrections of variations in width at a maximum rate of 10 feet for each 0.5 inch of correction. Make corrections of variations in alignment at a maximum rate of 25 feet for each 1 inch of correction, to return to the stringline.

710-6 Contractor's Responsibility for Notification.

Notify the Engineer prior to the placement of the materials. At the time of notification, submit a certification to the Engineer with the APL number and the batch or Lot numbers of the paint and glass spheres to be used.

710-7 Protection of Newly Applied Pavement Markings.

Do not allow traffic onto or permit vehicles to cross newly applied pavement markings until they are sufficiently dry. Remove and replace any portion of the pavement markings damaged by passing traffic or from any other cause, at no additional cost to the Department.

710-8 Corrections for Deficiencies to Applied Painted Pavement Markings.

Reapply a 1.0 mile section, centered around any deficiency, at no additional cost to the Department.

710-9 Submittals.

710-9.1 Submittal Instructions: Prepare a certification of quantities, using the Department's current approved form, for each project in the Contract. Submit the certification of quantities and daily worksheets to the Engineer. For Lump Sum pay item 710-90, document the quantity as an estimated percentage (in decimal form) of the total lump sum amount on the daily worksheet. The Department will not pay for any disputed items until the Engineer approves the certification of quantities.

710-9.2 Contractor's Certification of Quantities: Request payment by submitting a certification of quantities no later than Twelve O'clock noon Monday after the estimate cut-off date or as directed by the Engineer, based on the amount of work done or completed. Ensure the certification of quantities consists of the following:

1. Contract Number, FPID Number, Certification Number, Certification Date and the period that the certification represents.
2. The basis for arriving at the amount of the progress certification, less payments previously made and less any amount previously retained or withheld. The basis will include a detailed breakdown provided on the certification of items of payment.

710-10 Method of Measurement.

The quantities, authorized and acceptably applied, under this Section will be paid as follows:

1. The length, in gross miles, of solid, 10'-30' skip, 3'-9' dotted, 6'-10' dotted, 2'-2' dotted, and 2'-4' dotted lines.
2. The length, in linear feet, of transverse lines, diagonal lines, chevrons, and parking spaces.
3. The number of pavement messages, symbols, and arrows. Each arrow is paid as a complete marking, regardless of the number of "points" or directions.
4. Lump Sum, as specified in 710-4.1.1 (final surface) and 710-9.1.
5. The area, in square feet, for removal of existing markings acceptably removed. Payment for removal of conflicting markings will be in accordance with 102-5.8. Payment for removal of non-conflicting markings will be paid separately.

The gross mile measurement will be taken as the distance from the beginning of the painted line to the end of the painted line and will include the unmarked gaps for skip and dotted lines. The gross mile measurement will not include designated unmarked lengths at intersections, turn lanes, etc. Final measurement will be determined by plan dimensions or stations, subject to 9-1.3.1.

710-11 Basis of Payment.

710-11.1 General: Price and payment will be full compensation for all work specified in this Section, including, all cleaning and preparing of surfaces, furnishing of all materials, application, curing and protection of all items, protection of traffic, furnishing of all tools, machines and equipment, and all incidentals necessary to complete the work. Final payment will be withheld until all deficiencies are corrected.

710-11.2 Painted Pavement Markings (Final Surface): Price and payment for painted pavement markings (final surface) will be full compensation for all applications of painted pavement markings, and all applications and removal of RPMs in accordance with 710-4.1.1 and 710-9.1.

710-11.3 Payment Items: Line Item Exhibit "E"

SECTION 711 THERMOPLASTIC PAVEMENT MARKINGS

711-1 Description.

Apply new thermoplastic pavement markings, or refurbish existing thermoplastic pavement markings, in accordance with the Contract Documents.

711-2 Materials.

Use only materials listed on the Department's Approved Product List (APL) meeting the following requirements.

Standard and Refurbishment Thermoplastic	971-1 and 971-5
Preformed Thermoplastic	971-1 and 971-6
High Friction Thermoplastic	971-1 and 971-10
Glass Spheres	971-1 and 971-2

Use sand materials meeting the requirements of 971-5.4.

The Engineer will take random samples of all material in accordance with the Department's Sampling, Testing and Reporting Guide schedule.

711-3 Equipment.

Use equipment capable of providing continuous, uniform heating of the pavement marking material to temperatures exceeding 390°F, mixing and agitation of the material in the reservoir to provide a homogeneous mixture without segregation. Use equipment that will maintain the pavement marking material in a plastic state, in all mixing and conveying parts, including the line dispensing device until applied. Use equipment which can produce varying width lines and which meets the following requirements:

1. Capable of traveling at a uniform, predetermined rate of speed, both uphill and downhill, to produce a uniform application of pavement marking material and capable of following straight lines and making normal curves in a true arc.
2. Capable of applying glass spheres to the surface of the completed pavement marking by a double drop application for standard thermoplastic pavement markings and a single drop application for recapping and refurbishment thermoplastic pavement markings. The bead dispenser for the first bead drop shall be attached to the pavement marking machine in such a manner that the beads are dispensed closely behind the installed line. The second bead dispenser bead shall be attached to the pavement marking machine in such a manner that the beads are dispensed immediately after the first bead drop application. Use glass spheres dispensers equipped with an automatic cut-off control that is synchronized with the cut-off of the thermoplastic material and applies the glass spheres uniformly on the entire pavement markings surface with 50 to 60% embedment.
3. Equipped with a special kettle for uniformly heating and melting the pavement marking material. The kettle must be equipped with an automatic temperature control device and material thermometer for positive temperature control and to prevent overheating or scorching of the thermoplastic material.
4. Meet the requirements of the National Fire Protection Association, state, and local authorities.

711-4 Application.

711-4.1 General: Remove existing thermoplastic pavement markings using a method approved by the Engineer such that pavement surface scars or traces of the removed thermoplastic pavement markings will not conflict with new pavement markings. Do not use paint to blackout, hide, or disguise existing pavement markings.

Before applying pavement markings, remove any material that would adversely affect the bond of the pavement markings by a method approved by the Engineer.

Before applying pavement markings to any portland cement concrete surface, apply a primer, sealer, or surface preparation adhesive of the type recommended by the manufacturer. Offset longitudinal lines at least 2 inches from any longitudinal joints of portland cement concrete pavement.

Apply pavement markings to dry surfaces only, and when the ambient air and surface temperature is at least 50°F and rising for asphalt surfaces and 60°F and rising for concrete surfaces.

Apply pavement markings to the same tolerances in dimensions and in alignment specified in 710-5. When applying pavement markings over existing markings, ensure that no more than 2 inches on either end and not more than 1 inch on either side of the existing line is visible.

Apply thermoplastic material to the pavement by extrusion or other means approved by the Engineer. When thermoplastic pavement markings are to be removed and replaced, apply new thermoplastic pavement markings prior to opening to traffic.

Conduct field tests in accordance with FM 5-541. Take test readings representative of the pavement marking performance. Remove and replace pavement markings not meeting the requirements of this Section at no additional cost to the Department.

With the exception of short-term raised rumble strips, wait at least 14 days after constructing the final asphalt surface course to place thermoplastic pavement markings. Installation of thermoplastic on concrete requires a clean, dry surface. Follow the manufacturer's recommendations for surface preparation for thermoplastic on concrete. Provide temporary pavement markings during the interim period prior to opening the road to traffic.

711-4.1.1 Preformed Thermoplastic: Apply markings to dry surfaces only and when ambient air temperature is at least 32°F. Prior to installation, follow the manufacturer's recommendations for pre-heating. For railroad dynamic envelopes, keep all equipment and personnel out of the foul area.

711-4.1.2 High Friction Thermoplastic: High friction thermoplastic may be used as an alternative to preformed thermoplastic for special emphasis crosswalk markings. Apply markings only by gravity or air pressure thermoplastic hand liners set-up with double drop bead attachments. Install markings in accordance with the manufacturer's recommendations.

711-4.2 Thickness:

711-4.2.1 Standard Thermoplastic Markings: Apply or recap standard thermoplastic pavement markings for longitudinal lines to attain a minimum thickness of 0.10 inch or 100 mils and a maximum thickness 0.15 inch or 150 mils when measured above the pavement surface.

All chevrons, diagonal and transverse lines, messages, symbols, and arrows, wherever located, will have a thickness of 0.09 inch or 90 mils to 0.12 inch or 120 mils when measured above the pavement surface.

Measure, record and certify on Department approved form and submit to the Engineer, the thickness of white and yellow pavement markings in accordance with FM 5-541.

The Engineer will verify the thickness of the pavement markings in accordance with FM 5-541 within 30 days of receipt of the Contractor's certification.

711-4.2.2 Refurbishment Thermoplastic Markings: Apply a minimum of 0.06 inch or 60 mils of thermoplastic material. Ensure that the combination of the existing marking and the overlay after application of glass spheres does not exceed the maximum thickness of 0.150 inch or 150 mils for all lines.

Measure, record and certify on Department approved form and submit to the Engineer, the thickness of white and yellow pavement markings in accordance with FM 5-541.

The Engineer will verify the thickness of the pavement markings in accordance with FM 5-541 within 30 days of receipt of the Contractor's certification.

711-4.2.3 Preformed Thermoplastic: Apply 0.125 inch or 125 mils of preformed thermoplastic material. Use preformed thermoplastic for bicycle markings, shared use path markings, 24 inch markings on special emphasis crosswalks, route shields, ramp exit numbers, roundabout informational markings, railroad dynamic envelopes, white dotted lines (2'-4') with trailing black contrast, and black contrast arrows, messages, and symbols.

Measure, record and certify on Department approved form and submit to the Engineer, the thickness of the pavement markings in accordance with FM 5-541.

711-4.2.4 High Friction Thermoplastic: Apply lines to attain a minimum thickness of 0.09 inch or 90 mils and a maximum thickness of 0.12 inch or 120 mils, when measured above the pavement surface.

Measure, record and certify on Department approved form and submit to the Engineer, the thickness of the pavement markings in accordance with FM 5-541.

711-4.3 Retroreflectivity: Apply white and yellow pavement markings that will attain an initial retroreflectivity of not less than $450 \text{ mcd/lx}\cdot\text{m}^2$ and not less than $350 \text{ mcd/lx}\cdot\text{m}^2$, respectively for all longitudinal lines. All chevrons, diagonal lines, stop lines, messages, symbols, and arrows will attain an initial retroreflectivity of not less than $300 \text{ mcd/lx}\cdot\text{m}^2$ and $250 \text{ mcd/lx}\cdot\text{m}^2$ for white and yellow respectively. All crosswalks, railroad dynamic envelopes and bicycle markings shall attain an initial retroreflectivity of not less than $275 \text{ mcd/lx}\cdot\text{m}^2$. Black pavement markings must have a retroreflectance of less than 5 mcd/lx m^2 .

Measure, record and certify on Department approved form and submit to the Engineer, the retroreflectivity of white and yellow pavement markings in accordance with FM 5-541.

711-4.4 Glass Spheres:

711-4.4.1 Longitudinal Lines: For standard thermoplastic markings, apply the first drop of Type 4 or larger glass spheres immediately followed by the second drop of Type 1 glass spheres. For refurbishment thermoplastic markings, apply a single drop of Type 3 glass spheres. Apply reflective glass spheres to all markings at the rates determined by the manufacturer's recommendations.

711-4.4.2 Chevrons, Diagonal and Transverse Lines, Messages, Symbols, and Arrows: For standard or refurbishment thermoplastic markings, apply a single drop of Type 1 glass spheres. Apply retroreflective glass spheres to all markings at the rates determined by the manufacturer's recommendations.

Apply a mixture consisting of 50% glass spheres and 50% sharp silica sand to all standard thermoplastic crosswalk lines at the rates determined by the manufacturer's recommendations.

711-4.4.3 Preformed Markings: These markings are factory supplied with glass spheres and skid resistant material. Apply glass spheres and skid resistant material in accordance with the manufacturer's instructions.

711-5 Contractor's Responsibility for Notification.

Notify the Engineer prior to the placement of the materials. At the time of notification, submit a certification to the Engineer with the APL number and the batch or Lot numbers of the thermoplastic and glass spheres to be used. Packaging labels that contain the information required by 971-1.1 will be accepted in place of a certification.

711-6 Protection of Newly Applied Thermoplastic Pavement Markings.

Do not allow traffic onto or permit vehicles to cross newly applied pavement markings until they are sufficiently dry. Remove and replace any portion of the pavement markings damaged by passing traffic or from any other cause, at no additional cost to the Department.

711-7 Observation Period.

Longitudinal pavement markings are subject to a 180 day observation period under normal traffic. The observation period shall begin with the satisfactory completion and acceptance of the work. The longitudinal pavement markings shall show no signs of failure due to blistering, excessive cracking, chipping, discoloration, poor adhesion to the pavement, loss of retroreflectivity or vehicular damage. The retroreflectivity shall meet the initial requirements of 711-4.3. The Department reserves the right to check the retroreflectivity any time prior to the end of the observation period. Replace, at no additional expense to the Department, any longitudinal pavement markings that do not perform satisfactorily under traffic during the 180 day observation period.

711-8 Corrections for Deficiencies.

Recapping applies to conditions where additional pavement marking material is applied to new or refurbished pavement markings to correct a thickness deficiency. Correct deficiencies by recapping or removal and reapplication of a 1 mile section centered around the deficiency, as determined by the Engineer, at no additional cost to the Department.

711-9 Submittals.

711-9.1 Submittal Instructions: Prepare a certification of quantities, using the Department's current approved form, for each project in the Contract. Submit the certification of quantities and daily worksheets to the Engineer. The Department will not pay for any disputed items until the Engineer approves the certification of quantities.

711-9.2 Contractor's Certification of Quantities: For all items except railroad dynamic envelope, request payment by submitting a certification of quantities no later than Twelve O clock noon Monday after the estimate cut-off date or as directed by the Engineer, based on the amount of work done or completed. Ensure the certification of quantities consists of the following:

1. Contract Number, FPID Number, Certification Number, Certification Date and the period that the certification represents.
2. The basis for arriving at the amount of the progress certification, less payments previously made and less any amount previously retained or withheld. The basis will include a detailed breakdown provided on the certification of items of payment.

711-10 Method of Measurement.

711-10.1 Certified Quantities: The certified quantities, authorized and acceptably applied, under this Section will be paid as follows:

1. The length, in gross miles, of solid, 10'-30' skip, 3'-9' dotted, 6'-10' dotted, 2'-2' dotted, and 2'-4' dotted lines.
2. The length, in linear feet, of transverse lines, diagonal lines, chevrons, and parking spaces.
3. The number of pavement messages, symbols, and arrows. Each arrow is paid as a complete marking, regardless of the number of "points" or directions.
4. The area, in square feet, for removal of existing thermoplastic pavement markings acceptably removed. Payment for removal of thermoplastic pavement markings will only be made for locations where the existing pavement surface is to remain.

The gross mile measurement will be taken as the distance from the beginning of the thermoplastic line to the end of the thermoplastic line and will include the unmarked gaps for skip and dotted lines. The gross mile measurement will not include designated unmarked lengths at intersections, turn lanes, etc. Final measurement will be determined by plan dimensions or stations, subject to 9-1.3.1.

711-10.2 Plan Quantities: The plan quantity length, in linear feet of railroad dynamic envelope markings.

711-11 Basis of Payment.

Prices and payments will be full compensation for all work specified in this Section, including, all cleaning and preparing of surfaces, furnishing of all materials, application, curing and protection of all items, protection of traffic, furnishing of all tools, machines and equipment, and all incidentals necessary to complete the work. Final payment will be withheld until all deficiencies are corrected. Payment will be made under:

Line Item Exhibit "E"

SECTION 713 PERMANENT TAPE PAVEMENT MARKINGS

713-1 Description.

Apply permanent tape pavement markings, in accordance with the Contract Documents.

713-2 Materials.

Use only materials listed on the Department's Approved Product List (APL) meeting the following requirements:

Permanent Tape 971-1 and 971-7

The Engineer will take random samples of all material in accordance with the Department's Sampling, Testing and Reporting Guide schedule.

713-3 Equipment.

Use equipment that is mobile and maneuverable to the extent that straight lines can be followed and normal curves can be made in a true arc.

Ensure the mechanical applicator is equipped with film cut-off device and a measuring device that automatically and accumulatively measures the length of each line placed with an accuracy tolerance of plus or minus 2 percent. Tape may be placed by hand on short sections, 500 feet or less if the tolerances in dimensions and in alignment specified in 710-5 are met.

713-4 Application.

713-4.1 General: Remove existing pavement markings, such that scars or traces of removed markings will not conflict with new pavement markings by a method approved by the Engineer. Before applying permanent tape, remove any material by a method approved by the Engineer that would adversely affect the bond of the tape.

Apply a primer, sealer or surface preparation adhesive of the type recommended by the manufacturer. Ensure the permanent tape adheres to the pavement surface.

Offset longitudinal lines at least 2 inches from construction joints on portland cement concrete pavement.

Apply permanent tape to dry surfaces only, and when the ambient air and surface temperature is at least 55°F and rising.

Apply permanent tape to the same tolerances in dimensions and in alignment specified in 710-5.

Apply permanent tape to the pavement by means approved by the Engineer.

Conduct field testing in accordance with FM 5-541. Take test readings representative of the pavement marking performance. Remove and replace permanent tape not meeting the requirements of this Section at no additional cost to the Department.

Apply all pavement markings prior to opening the road to traffic.

713-4.2 Thickness: Apply permanent tape pavement markings that have a thickness as designated on the APL for the particular product used.

Measure, record and certify on a Department approved form and submit to the Engineer, the thickness of white and yellow pavement markings in accordance with FM 5-541. **713-4.3**

Retroreflectivity: Apply white and yellow pavement markings that will attain an

initial retroreflectivity of not less than 450 mcd/lx·m

Measure, record and certify on Department approved form and submit to the Engineer, the retroreflectivity of white and yellow pavement markings in accordance with FM 5- 541.

713-4.4 Color: Use material meeting the requirements of 971-1.

713-5 Contractor's Responsibility for Notification.

Notify the Engineer prior to the placement of the material. At the time of notification, submit the APL number and the batch or Lot numbers of tape to be used.

713-6 Protection of Newly Applied Pavement Markings.

Do not allow traffic onto or permit vehicles to cross newly applied pavement markings until they are sufficiently bonded. Remove and replace any portion of the pavement markings damaged by passing traffic or from any other cause, at no additional cost to the Department.

713-7 Observation Period.

Longitudinal pavement markings are subject to a 180 day observation period under normal traffic.

The observation period shall begin with the satisfactory completion and acceptance of the work.

The longitudinal pavement markings shall show no signs of failure due to blistering, excessive cracking, chipping, discoloration, poor adhesion to the pavement, loss of retroreflectivity or vehicular damage. The retroreflectivity shall meet the initial requirements of 713-4.3. The Department reserves the right to check the retroreflectivity any time prior to the end of the observation period.

Replace, at no additional expense to the Department, any longitudinal pavement markings that do not perform satisfactorily under traffic during the 180 day observation period.

713-8 Corrections for Deficiencies.

Correct all deficiencies by removal and reapplication of a one mile section centered around the deficiency, as determined by the Engineer, at no additional cost to the Department.

713-9 Submittals.

713-9.1 Submittal Instructions: Prepare a certification of quantities, using the Department's current approved form, for each project in the Contract. Submit the certification of quantities and daily worksheets to the Engineer. The Department will not pay for any disputed items until the Engineer approves the certification of quantities.

713-9.2 Contractor's Certification of Quantities: Request payment by submitting a certification of quantities no later than Twelve O clock noon Monday after the estimate cut-off date or as directed by the Engineer, based on the amount of work done or completed. Ensure the certification of quantities consists of the following:

1. Contract Number, FPID Number, Certification Number, Certification Date and the period that the certification represents.
2. The basis for arriving at the amount of the progress certification, less payments previously made and less any amount previously retained or withheld. The basis will include a detailed breakdown provided on the certification of items of payment.
2 for white markings and not less than 350 mcd/lx·m
2 for yellow markings. Black pavement markings must have a retroreflectance of less than 5 mcd/lx
m²

713-10 Method of Measurement.

The quantities authorized and acceptably applied, under this Section will be paid as follows:

1. The length, in gross miles, of 6 inch solid, 10'-30' skip, and 3'-9' dotted lines.
2. The area, in square feet, for removal of existing markings acceptably removed. Payment for removal of conflicting markings will be in accordance with 102-5.8. Payment for removal of non-conflicting markings will be paid separately.

The gross mile measurement will be taken as the distance from the beginning of the permanent tape line to the end of the permanent tape line and will include the unmarked gaps for skip and dotted lines. The gross mile measurement will not include designated unmarked lengths at intersections, turn lanes, etc. Final measurement will be determined by plan dimensions or stations, subject to 9-1.3.1.

713-11 Basis of Payment.

Price and payment will be full compensation for all work specified in this Section, including, all cleaning and preparing of surfaces, furnishing of all materials, application, curing and protection of all items, protection of traffic, furnishing of all tools, machines and equipment, and all incidentals necessary to complete the work. Final payment will be withheld until all deficiencies are corrected. Payment will be made under:

Line Item Exhibit "E"