Bastrop County

REQUESTS FOR BIDS

Bid Reference Number: RFB 26BCP06E

Project Title: South Pope Bend Road Asphalt Replacement Project

Bid Closing Date: 2 :00 P.M. (CST), July 14, 2026

Pre-Bidding Meeting (On-Site at Project Location): 1:00P.M. (CST), July 7, 2026

Table of Contents.....Page 2

Request for Bids

(1) Introduction.....Page 3
(2) Definitions.....Page 3
(3) General Information.....Page 4
(4) RFB Withdrawals and/or Amendments.....Page 6
(5) Bid Submittal Requirements.....Page 6
(6) Bid Evaluation and Contract Award.....Page 7

Appendix A – Scope of Services

(1) Project Title.....Page 9
(2) Scope of Services Contact.....Page 9
(3) Bid Evaluation Factors.....Page 9
(4) Key Events Schedule.....Page 9
(5) Scope of Services.....Page 9
Project Site Map.....Page 11
BID SHEET.....Page 12

Appendix B – Bid

Bid Verification.....Page 13

I Contract Award Information

(1) Term of Contract.....Page 14

(2) Federal, State and/or Local Identification Information.....Page 14

II Contract Terms and Conditions

(1)Standard Terms and Conditions.....Page 14

RFB Acknowledgement Form.....Page 20

Appendix C – Form CIQ.....Page 21
Appendix D – Certificate of Interested Parties (Form 1295).....Page 23
Appendix E – HB 89 Verification Form.....Page 26
Appendix F – Bastrop County Section 3 Resolution.....Page 27
Appendix G – TxDOT Standard Sheets.....Page 31

Bastrop County

Request for Bids

1. Introduction

A. Project Overview: Bastrop County is requesting Bids with the intent of awarding a contract for the purchase of goods and services contained in Appendix A – Scope of Services.

B. RFB Questions:

i. RFB Clarifications: All questions related to requirements, processes or scope of work for this RFB should be submitted in writing to the Purchasing Agent identified in section 2 below. The County is the final judge of the meaning of any word(s), sentences, paragraphs or other parts of the solicitation documents. Bidders are encouraged to seek clarification, before submitting a Bid, of any portion of the Bid documents that appears to be ambiguous, unclear, inconsistent, or otherwise in error. Clarifications will be in writing.

ii. Replies: Responses to inquiries which directly affect an interpretation or effect a change to this RFB will be issued in writing by addendum and will be uploaded to the Bastrop County website (http://www.co.bastrop.tx.us/page/pur.bids). All such addenda issued by County prior to the submittal deadline shall be considered part of the RFB. The County shall not be bound by any reply to an inquiry unless such reply is made by such formal written addendum.

iii. Acknowledgement of Addenda: The Bidder must acknowledge all addenda by signing and returning such document(s) or by initialing appropriate area of the Bid.

C. Notification of Errors or Omissions: Bidders shall promptly notify the County of any omissions, ambiguity, inconsistency or error that they may discover upon examination of this RFB. The County shall not be responsible or liable for any errors and/or misrepresentation that result from the solicitations which are inadvertently incomplete, ambiguous, inconsistent or obviously erroneous.

D. Conflict of Interest Questionnaire (Form CIQ): A person or business, and their agents, who seek to contract or enter into an agreement with the County, are required by Texas Local Government Code, Chapter 176, to file a conflict of interest questionnaire (FORM CIQ) which is found in Appendix C.

E. Certificate of Interested Parties (1295 Form): A person or business, and their agents, who seek to contract or enter into an agreement with the County, are required by Texas Local Government Code Chapter 2252, Subtitle F, Title 10, Section 2252.908, to file a disclosure of interested parties with the Texas Ethics Commission (https://www.ethics.state.tx.us/whatsnew/elf_info_form1295.htm). A sample form and instruction sheet can be found in Appendix D.

F. House Bill 89 Verification Form: A person or business, and their agents, who seek to contract or enter into an agreement with the County, are required by Texas Local Government Code Chapter 2270 Section 1, Subtitle F, Title 10, Section 2270.001to submit a verification form to the County. This Chapter reads “Prohibition on Contracts with Companies Boycotting Israel”. This form is found in Appendix E.

G. Texas Senate Bill 13 (Sb 13): Energy Company Boycotts: If contractor is required to make a verification pursuant to section 2274.002 of the Texas Government Code, contractor verifies that it does not boycott energy companies and will not boycott energy companies during the term of the contract. If the contractor does not make that verification, the contractor must indicate in its response and state why the certification is not required.

H. Texas Senate Bill 19 (Sb 19): Firearm Entities And Trade Associations Discrimination: If contractor is required to make a verification pursuant to Section 2274.002 of the Texas Government Code, contractor verifies that it (1) does not have a practice, policy, guidance, or directive that discriminates against a firearm entity or firearm trade association and (2) will not discriminate during the term of the contract against a firearm entity or firearm trade association. If the contractor does not make that verification, the contractor must so indicate in its response and state why the verification is not required.

I. 2 CFR 200: In accordance with PART 200 of the UNIFORM ADMINISTRATIVE REQUIREMENTS, COST PRINCIPLES, AND AUDIT REQUIREMENTS FOR FEDERAL AWARDS, Bastrop County follows the procurement standards in the Code of Federal Regulations of 2 CFR 200.317 – 2CFR 200.327 and Appendix II to Part 200 for procurement actions to be funded with Federal funds.

2. Definitions

Bid: The signed and executed submittal of the entirety of Appendix B – Bid.

Bidder: The Bidder and the Bidder's designated contact signing the first page of the Bid.

County of Bastrop ("County"): The County of Bastrop, Texas.

Bastrop County Purchasing Office: The Bastrop County Purchasing Office is located at 1041 Lovers Lane, Bastrop County 78602. PH: (512) 581-7110; Fax: (512) 581-4228.

Project: The name is identified on the cover sheet and first page of Appendix A – Scope of Services.

Purchasing Agent: Bastrop County Purchasing Agent is Leon Scaife:
Phone: (512) 581-7110
E-Mail: leon.scaife@co.bastrop.tx.us

Request for Bids (RFB): The entirety of this document, including all Appendices and Addenda.

Scope of Services: The entirety of Appendix A – Scope of Services.

3. General Information

A. Tax Exempt Status: County purchases are exempt from State Sales Tax and Federal Excise Tax. Do not include tax in the Bid. County will furnish Excise Tax Exemption Certificate upon request.

B. Public Inspection of Bids: The County strictly adheres to the Texas Public Information Act (Texas Government Code Chapter 552.001, et seq.) and all other governing statutes, regulations, and laws regarding the disclosure of RFB information. Bids are not available for public inspection until after the contract award. If the Bidder has notified the County, in writing, that the Bid contains trade secrets or confidential information, the County will generally take reasonable steps to prevent disclosure of such information, in accordance with the Public Information Act. This is a statement of general policy only, and in no event shall the County be liable for disclosure of such information by the County in response to a request, regardless of the County's failure to take any such reasonable steps, even if the County is negligent in failing to do so.

C. Legal Relations and Responsibilities: Bidder shall maintain adequate records to justify all charges, expenses and costs incurred in performing the Services for a period of at least Five (5) years following the termination date of the contract. The County shall have full and complete access to all records, documents and information collected and/or maintained by Bidder in the course of the administration and performance of the Contract. This information shall be made accessible at Bidder's local place of business in the County's

jurisdiction, for purposes of inspection, reproduction and audit without restriction.

D. Application: These standard terms and conditions shall apply to all County of Bastrop (hereafter "County" or "Owner") solicitations and procurements, unless specifically accepted in the solicitation specifications.

E. Requirements: By submitting a Bid, the bidder agrees to provide the County of Bastrop with the specified goods or services described in the solicitation in accordance with these standard terms and conditions, at the agreed upon Bid price and in compliance with the stated specifications and any subsequent addendums issued prior to the date of the Bid opening.

F. Legal Compliance: Bidder must comply with all Federal, State and Local laws, statutes, ordinances, regulations and standards in effect at the time of delivery of goods and services, and must maintain any and all required licenses and certificates required under the same laws, statutes, ordinances, regulations and standards for services and/or goods provided in response to this solicitation. Bidder certifies that he/she holds all licenses required by the State of Texas for a provider of the goods and/or services described by the Scope of Services herein.

G. Right to Refuse Bid: The County reserves the right to refuse any and/or all parts of any and or/all Bids and to waive formalities in the best interest of the County. Bastrop County does not discriminate on the basis of race, color, national origin, sex, religion, and age or disability status in employment, procurement or provisions of service.

H. Estimated Quantities: This solicitation calls for unit pricing based on a range of material usage. Bastrop County does not guarantee quantities of these items. The actual amount ordered over the contract period may be more or less than the estimate. Quantities represent the County's best estimate, based on past history and anticipated purchases.

I. Independent Contractor: Bidder agrees that Bidder and Bidder's employees and agents have no employer-employee relationship with County. Bidder agrees that if Bidder is selected and awarded a contract, County shall not be responsible for the Federal Insurance Contribution Act (FICA) payments, Federal or State unemployment taxes, income tax withholding, Workers Compensation Insurance payments, or any other insurance payments, nor will County furnish any medical or retirement benefits or any paid vacation or sick leave.

J. Assignments: The rights and duties awarded the successful Bidder shall not be assigned to another without the written consent of the Bastrop County Purchasing Agent. Such consent shall not relieve the assigner of liability in the event of default by the assignee.

K. Liens: Bidder shall indemnify and save harmless the County against any and all liens and encumbrances for all labor, goods, and services which may be provided to the County by Bidder or Bidder's vendor(s), and if the County requests, a proper release of all liens or satisfactory evidence of freedom from liens shall be delivered to the County.

L. Gratuities/Bribes: Bidder certifies that no bribes in the form of entertainment, gifts, or otherwise, were offered or given by the successful Bidder, or its agent or representative, to any County officer, employee or elected representative, with respect to this RFB or any contract with the County, and that if any such bribe is found to have been made this shall be grounds for voiding of the contract

M. Financial Participation: Bidder certifies that it has not received compensation from the County to participate in preparing the specifications or RFB on which the Bid is based and acknowledges that this contract may be terminated and/or payment withheld if this certification is inaccurate.

N. Responsiveness of Bids: The County desires to receive competitive Bids but will declare any Bids "non-responsive" if they fail to meet the significant requirements outlined in this solicitation document.

O. Discrepancies and Errors: The unit prices of a bid that has been opened may not be changed for the purpose of correcting an error in the Bid price.

P. Identical Bids: In the event two or more identical Bids are received, and are lowest, responsible and responsive, award will be made as prescribed in the Texas Local Government Code, Chapter 2.62.027(b).

Q. Withdrawal of Bids: Bidders may withdraw any submitted bids prior to the bid submission deadline. Bidders may not withdraw once the bids have been publicly opened, without the approval of the County's Purchasing Agent. Bidders will be allowed to withdraw bids that contain substantial mathematical errors in extension. However, once a bid has been withdrawn, it can no longer be considered.

R. Disqualification of Bidder: The County may disqualify bidders, and their bids not be considered, for any of the following reasons: Collusion among bidders; bidder's default on an existing or previous contract with the County, including failure to deliver goods and/or services of the quality and price bid; bidder's lack of financial stability; any factor concerning the bidder's inability to provide the quantity, quality, and timeliness of services or goods specified in the solicitation; bidder involved in a current or pending lawsuit with the County; bidder's attempt to influence the outcome of the solicitation through unauthorized contact with County officials outside of those listed in the solicitation documents; and bidder's attempt to offer gifts, gratuities, or bribes to any County employee or elected official in connection with a solicitation.

S. Waiver of Formalities: County reserves the right to reschedule, extend, or cancel this RFB at any time. County reserves the right to reject any or all responses, and to waive formalities or irregularities in connection with this RFB and may consider submissions not made in compliance with this request for bids if it elects to do so, to the extent permitted by law, although the County will have no obligation for such consideration. The County reserves the right to waive any minor irregularities that do not materially affect the scope or pricing of submitted Bids.

T. Outstanding Liabilities: Bidders shall not have outstanding, unpaid liabilities owed to the County. Liabilities may include, but are not limited to, property taxes, hotel occupancy taxes, and license or permit fees. Bids will be considered non-responsive and not given further consideration if submitted by a bidder with such outstanding liabilities.

U. Offset: The County may, at its option, offset any amounts due and payable under contract award under this solicitation against any debt lawfully due the County from a vendor, whether or not the amount due arises pursuant to the terms of the contract and whether or not the debt has been reduced to judgment by a court.

V. Solicitation Results: The County normally posts solicitation results on-line after bids are received and approved in Commissioner's Court. The County's website is www.co.bastrop.tx.us. Results are on the Purchasing Solicitation page, in the same place as the original solicitation documents. Posted results are for informational purposes only, not a notice of award.

W. Control of The Work: Bidder shall furnish all materials and perform work in reasonably close conformity with the scope of work referenced in this request for Bid. Bidder must obtain written approval from Bastrop County before deviating from the scope of work provided in this request for bids. Failure to promptly notify Bastrop County of any errors or concerns with the scope of work will constitute a waiver of all claims for misunderstandings or ambiguities that result from the errors, omissions, or discrepancies discovered.

X. Cost of Bid: The cost of submitting Bids shall be borne by the Bidder, and the County will not be liable for any costs incurred by a Bidder responding to this solicitation.

4. RFB Withdrawals and/or Amendments

A. RFB Withdrawal: The County reserves the right to withdraw this RFB for any reason.

B. RFB Amendments: The County reserves the right to amend any aspect of this RFB by formal written Addendum prior to the bid submittal deadline and will endeavor to notify all potential bidders that have registered with the County, but failure to notify shall impose no obligation or liability on the County. All modifications and addendums must be in written form prepared by the County department issuing the solicitation. Bidder is responsible for incorporating any and all modifications and addendums into their bids.

5. Bid Submittal Requirements

A. Submittal Packet – Required Content: Bidder shall submit one (1) signed original Bid. This submittal packet shall be submitted in a sealed envelope with all items listed on Appendix B of this bid document (Page 13).

B. Submittal Deadline: The deadline for submittal of Bids is 2:00PM (CST) July 14, 2026. It is the Bidder's responsibility to have the Bid correctly marked and hard copies delivered to the Bastrop County Purchasing Office. No extensions will be granted, and no late Bids will be accepted.

C. Bids Received Late: Bidders are encouraged to submit their Bids as soon as possible.
The time and date of receipt as recorded in the Bastrop County Purchasing Office shall be the official time of receipt. The County is not responsible for late delivery of mail or other carrier. Late Bids will not be considered under any circumstances.

D. Alterations or Withdrawals of Bid: Any submitted Bid may be withdrawn or a revised Bid substituted if a written notice is submitted to the Bastrop County Purchasing Office prior to the submittal deadline. Any interlineations, alteration, erasure or other amendment made before the submittal deadline, must be signed or initialed by the Bidder or the Bidder's authorized agent, guaranteeing authenticity. Bids cannot be altered, amended or withdrawn by the Bidder after the submittal deadline.

E. Bid Format: All Bids must be prepared in single-space type, on standard 8-1/2" x 11" vertically oriented pages, using one side of the paper only. Pages shall be numbered at the bottom. Entries shall be typed, or legibly written in ink. All Bids shall be mailed or hand delivered to Bastrop County. Any other format (via telephone, fax, email, etc.) shall be rejected by the County.

F. Validity Period: Once the submittal deadline has passed, any Bid shall constitute an irrevocable Bid to provide the commodities and/or services set forth in the Scope of Services at the price(s) shown in the Bid on the terms set forth in the Bid, such Bid to be irrevocable until the earlier of the expiration of ninety (90) days from the submittal deadline, or until a contract has been awarded by the County.

6. Bid Evaluation and Contract Award

A. Bid Evaluation and Contract Award Process: An award of a contract to provide the goods or services specified herein will be made using competitive sealed bids, in accordance with Chapter 262 of the Texas Local Government Code, Chapter 2269 of the Texas Government Code and with the County's purchasing policy. All bids should be based on unit pricing (Cost per ton of material or per Linear Foot to complete all task listed within Appendix A to include all necessary bonds and insurance). Bastrop County will score all eligible respondents based on their bid price. The contract will be given to the lowest/best value/most responsive bidder that complies with all requests for bid items and requirements set forth by Bastrop County in this RFB, to include bonds, insurance requirements and Bastrop County may consider: 1) price: 2) the offeror's

experience and reputation: 3) the quality of the offeror's goods and/or services: 4) the impact on the ability of the Governmental entity to comply with rules relating to historically underutilized businesses: 5) the offeror's safety record: 6) the offeror's proposed personnel: 7) whether the offeror's financial capability is appropriate to the size and scope of the project. The selected bidder must NOT be debarred from any federal and/or state agency and Bastrop County will conduct a review of the bidder's status on SAM.Gov. The Bastrop County Commissioners' Court will make the final selection and award. **The County has the right to reject any and/or all Responses.**

B. Completeness: If the Bid is incomplete or otherwise fails to conform to the requirements of the RFB, County alone will determine whether the variance is so significant as to render the bid non-responsive, or whether the variance may be cured by the bidder or waived by the County, such that the bid may be considered for award.

C. Ambiguity: Any ambiguity in the bid as a result of omission, error, lack of clarity or non- compliance by the bidder with specifications, instructions and all conditions shall be construed in the favor of the County. In the event of a conflict between these standard RFB requirements and details provided in Appendix A – Scope of Services or Appendix B – Bid, the Appendices shall prevail.

D. Controlling Document: In the case of a discrepancy between this solicitation and the formal contract, the formal contract will prevail and control.

E. Firm Prices: Unless otherwise stated in the specifications, Bidder's prices remain firm for 90 days from date of Bid opening and, upon award, remain in effect for the contract period specified in the solicitation. If formal award has not occurred within 90 days of bid opening, the Contractor and the County may mutually agree to extend the firm price period.

F. Additional Information: County may request any other information necessary to determine bidder's ability to meet the minimum standards required by this RFB.

G. Debarment: The selected Bidder must **NOT** be debarred from any federal and/or state agency and Bastrop County will conduct a review of the Bidder's status on SAM.Gov. The Bastrop County Commissioners' Court will make the final selection and award. The County has the right to reject any and/or all Responses.

****THE REMAINDER OF THIS PAGE LEFT BLANK INTENTIONALLY****

Appendix A – Scope of Services

1. **Project Title:** South Pope Bend Road Asphalt Replacement Project

2. **Scope of Services Contact:**

   Questions about the technical nature of the Scope of Services, etc. may be directed to Bastrop County Purchasing Agent, Leon Scaife through e-mail at leon.scaife@co.bastrop.tx.us

3. **Bid Evaluation Factors:**

Bid Price	Factor
Lump Sum	Cost to complete all task listed within "Scope of Services" based on a unit price of materials and services. Lump Sum price MUST include the cost of mobilization, demobilization, personnel, equipment, materials, insurance and bonds.

4. **Key Events Schedule:**

Bid Release Date	June 24, 2026
Pre-Bid Meeting (On-site at the project location)	1PM, July 7, 2026
Deadline for Submittal of Written Questions	5 PM, July 8, 2026
Sealed Bids Due to and Opened by County	2 PM, July 14, 2026
Anticipated Award Date	July 27, 2026

5. **Scope of Services:**

   Project Overview:

1. Bastrop County is in need of a contractor to perform flexible pavement structure repair 6" and 8" on South Pope Bend Rd. at locations to be determined and marked by Bastrop County. The estimated length of the project area is 1 ½ miles. The contractor will perform level-up to restore roadway crown and improve ride quality. Limits to be determined and marked by Bastrop County. The selected contractor will perform a 1.5" TY-D overlay with bonding course along entirety of roadway surface. All driveways shall be feathered out to minimize bump. Contractor shall tie in all side streets with milled out joints. Contractor shall also perform striping and final clean up. All tasks requested in this bid request fall under the following TxDOT standards:

   - Item 341 - Dense-Graded Hot-Mix Asphalt
   - Item 351 - Flexible Pavement Structure Repair
   - Item 666 - Retroreflectorized Pavement Markings
   - Item 672 - Raised Pavement Markers
   - Special Specification 3007 - Bonding Course
   - TCP (1-2) - 18

   The CONTRACTOR will be required to provide traffic control for this project as the project site will require lane closures. ***Traffic control must comply with the TMUTCD (Texas Manual on Uniform Traffic Control Devices) and TxDOT's Barricade and Construction (BC) standard sheets.*

   Bastrop County has estimated the following quantities of material and services that will be needed to complete all tasks for this project; however, Contractors should field verify the project scope before submitting a bid:

Bid Item	*Unit*	*Bid Quantity*
Flexible Pavement Structure Repair (6")	*SY*	*11050*
Flexible Pavement Structure Repair (8")	*SY*	*3000*
D-GR HMA TY-D PG76-22	*TON*	*1780*
D-GR HMA TY-D PG64-22 (Level-Up)	*TON*	*400*
Bonding Course	*GAL*	*2450*
REFL PAV MRK TY I (Y) 4"(SLD)(090MIL)	*LF*	*17000*
REFL PAV MRK TY I (W) 4"(SLD)(090MIL)	*LF*	*17000*
REFL PAV MRK TY I (W) 8"(SLD)(090MIL)	*LF*	*250*
REFL PAV MRK TY I (W) (ARROW)(090MIL)	*EA*	*2*
REFL PAV MRK TY I (W) (WORD)(090MIL)	*EA*	*2*
REFL PAV MRK TY I (Y) 12"(SLD)(090MIL)	*LF*	*380*
REFL PAV MRKR TY II A-A	*EA*	*255*
Traffic Control	*LS*	*1*

The selected contractor **SHALL** mobilize and start work within Thirty (30) days of receipt of a Notice-To-Proceed issued by Bastrop County. Payment and Performance bonds shall be required and issued for this contract should the total bid price for this project reach the State of Texas threshold for public works projects. The contractor agrees that, before any work begins, a Payment Bond will be executed and delivered to Bastrop County for the amount of one hundred percent (100%) of the estimated project total, should the contracted total meet and/or exceed twenty-five thousand dollars ($25,000). A Performance bond in an amount of one hundred percent (100%) of the estimated project price should also be executed and delivered to Bastrop County should the contracted amount meet and/or exceed one hundred thousand dollars ($100,000). The Performance and/or Payment Bond must be maintained throughout the contracted project execution period. At the completion of all work on the requested project, the Payment and/or Performance Bond shall be released. Cost of all bonds must be included in the bid price.

The project site is S. Pope Bend Road starting approximately 145ft south of State Highway 71 at the intersection of Union Chapel Rd and S. Pope Bend Rd. and heading South for approximately 1.6 miles to Jones Rd. The following map shows the project location.

REMAINDER OF THIS PAGE LEFT BLANK INTENTIONALLY

REMAINDER OF THIS PAGE LEFT BLANK INTENTIONALLY

RFB 26BCP06E - South Pope Bend Road Asphalt Replacement Project
BID SHEET

TxDOT Bid Code	Bid Item	Unit	Bastrop County Estimated Bid Quantity	Unit Price	Total Bid Cost
351-7005	FLEXIBLE PAVEMENT STRUCTURE REPAIR (6")	SY	11050	$	$
351-6004	FLEXIBLE PAVEMENT STRUCTURE REPAIR (8")	SY	3000	$	$
341-7056	D-GR HMA TY-D PG76-22	TON	1780	$	$
341-7046	D-GR HMA TY-D PG64-22 (Level-Up)	TON	400	$	$
3007-7001	Bonding Course	GAL	2450	$	$
0666-7416	REFL PAV MRK TY I (Y) 4"(SLD)(090MIL)	LF	17000	$	$
0666-7404	REFL PAV MRK TY I (W) 4"(SLD)(090MIL)	LF	17000	$	$
0666-6035	REFL PAV MRK TY I (W) 8"(SLD)(090MIL)	LF	250	$	$
0666-6053	REFL PAV MRK TY I (W) (ARROW)(090MIL)	EA	2	$	$
0666-7065	REFL PAV MRK TY I (W) (WORD)(090MIL)	EA	2	$	$
0666-6140	REFL PAV MRK TY I (Y) 12"(SLD)(090MIL)	LF	380	$	$
672-6009	REFL PAV MRKR TY II A-A	EA	255	$	$
502/510	Traffic Control	LS	1	$	$
	Bonds (Payment/Performance)	LS	1	$	$
TOTAL BID PRICE FOR RFB 26BCP06E				$	
Total Number of Days to Complete All Tasks within RFB 26BCP06E					days

Authorized Bidder's Name: Signature: Date:

Appendix B – Bid Verification

Submittal Checklist: (To determine validity of Bid - all bids received without the following items will be considered non-responsive and will be rejected. Forms from previous solicitations for goods or services will not be used in place of the required forms for this RFB)

_____Appendix A (Pages 9 through 12) must be completed, signed and included in the Bid submittal.

_____Appendix B (Pages 13 through 20) must be completed, signed and included in the Bid submittal.

_____Appendix C – Conflict of Interest Form (CIQ Form) (Page 21) must be completed, signed and included in the Bid submittal.

_____Appendix E – HB 89 Verification Form (Page 26) must be completed, signed and included in the Bid submittal.

_____Certificate of Insurance showing Proof of Contractor's Ability to Meet the Insurance Requirements (Page 18).

_____Signed Addendum(s) (If any are issued by Owner).

All Bids submitted to Bastrop County shall include this page with the submitted Bid.		
RFB Number:	**RFB 26BCP06E**	
Project Title:	**South Pope Bend Road Asphalt Replacement Project**	
Submittal Deadline:	**2:00 P.M. (CST), July 14, 2026**	
Submit hard-copies to:	**MAIL:** Bastrop County Purchasing Department: Attn: Leon Scaife 1041 Lovers Lane Bastrop Texas, 78602	**HAND DELIVER:** Bastrop County Purchasing Department: Attn: Leon Scaife 1041 Lovers Lane Bastrop Texas, 78602

Bidder Information:			
Bidder's Legal Name:			
Address:			
City, State & Zip			
Federal Employers Identification Number #			
Bidder's Point of Contact:			
Phone Number:		**Fax Number:**	
E-Mail Address:			

Bidder Authorization

I, the undersigned, have the authority to execute this Bid in its entirety as submitted and enter into a contract on behalf of the Bidder.

Printed Name and Position of Authorized Representative:_____

Signature of Authorized Representative:_____

Signed this _____(day) of _____ (month), _____(year)

Appendix B – Bid (continued)

I. *CONTRACT AWARD INFORMATION:*

A. Term of Contract

Any contract resulting from this RFB shall be effective from the date that the Notice to Proceed is received by the CONTRACTOR and shall remain in effect until satisfactory completion of all tasks listed in this request for proposals. Number of Days provided by the Contractor on the attached bid sheet will be listed as the time frame for the contract term.

B. Federal, State and/or Local Identification Information

1) Centralized Master Bidders List registration number:_____

2) Prime contractor HUB / MWBE registration number:_____

3) Employer Identification Number (EIN)/Federal Tax Identification Number:_____

4) An individual Bidder acting as a sole proprietor must also enter the Bidder's Social Security Number:

#_____-_____-_____.

II. *CONTRACT TERMS AND CONDITIONS. EXCEPT WHERE BIDDER MAKES SPECIFIC EXCEPTION IN THE SUBMITTED BID, ANY CONTRACT RESULTING FROM THIS RFB WILL CONTAIN THE FOLLOWING TERMS AND CONDITIONS, WHICH BIDDER HEREBY ACKNOWLEDGES, AND TO WHICH BIDDER AGREES BY SUBMITTING A BID*:

1. **Standard Terms and Conditions**

A. Taxpayer Identification: Bidders must provide the County with a current W-9 before any goods or services can be procured from the Bidder.

B. Governing Law and Venue: All Bids submitted in response to this solicitation and any resulting contract shall be governed by, and construed in accordance with the laws and court decisions of the State of Texas. Any legal or equitable actions arising from this request for Bids or any resulting contract shall be brought before an appropriate court located in the Bastrop County.

C. Resolution of Program Non-compliance and Disallowed Costs: In the event of any dispute, claim, question, or disagreement arising from or relating to this agreement, or the breach thereof, including determination of responsibility for any costs disallowed as a result of non-compliance with federal, state or TxCDBG program requirements, the parties hereto shall use their best efforts to settle the dispute, claim, question or disagreement. To this effect, the parties shall consult and negotiate with each other in good faith within 30 days of receipt of a written notice of the dispute or invitation to negotiate, and attempt to reach a just and equitable solution satisfactory to both parties. If the matter is not resolved by negotiation within 30 days of receipt of written notice or invitation to negotiate, the parties agree first to try in good faith to settle the matter by mediation administered by the American Arbitration Association under its Commercial Mediation Procedures before resorting to arbitration, litigation, or some other dispute resolution procedure. The parties may enter into a written amendment to this Agreement and choose a mediator that is not affiliated with the American Arbitration Association. The parties shall bear the costs of such mediation equally. [This section may also provide for the qualifications of the mediator(s), the locale of meetings, time limits or any other item of concern to the parties. If the matter is not resolved through such mediation within 60 days of the initiation of that procedure, either party may proceed to file suit.

D. Termination for Cause: The occurrence of any one or more of the following events will justify termination of the contract by the County for cause:

i. The successful Bidder fails to perform in accordance with the provisions of these specifications; or

ii. The successful Bidder violates any of the provisions of these specifications; or

iii. The successful Bidder disregards laws or regulations of any public body having jurisdiction; or

iv. The successful Bidder transfers, assigns, or conveys any or all of its obligations or duties under the contract to another without written consent of the County.

v. If one or more of the events identified in Subparagraphs I (i) through (iv) occurs, the County may, terminate the contract by giving the successful Bidder seven (7) Calendar days written notice. In such case, the successful Bidder shall only be entitled to receive payment for goods and services provided before the effective date of termination. The successful Bidder shall not receive any payment on account of loss of anticipated profits or revenue or other economic loss resulting from such termination.

vi. When the contract has been so terminated by the County, such termination shall not affect any rights or remedies of the County then existing or which may thereafter accrue.

A "Termination for Cause" clause will be added to selected Bidder's contract with Bastrop County.

E. Termination for Convenience: This contract may be cancelled or terminated at any time by giving vendor thirty (30) days written notice. Vendor may be entitled to payment for services actually performed; to the extent said services are satisfactory.

A "Termination for Convenience" clause will be added to selected Bidder's contract with Bastrop County.

F. Force Majeure: To the extent that either party to this Contract shall be wholly or partially prevented from the performance within the term specified of any obligation or duty placed on such party by reason of or through strikes, stoppage of labor, riot, fire, flood, acts of war, insurrection, accident, order of any court, act of God, or specific cause reasonably beyond the party's control and not attributable to its neglect or nonfeasance, in such event, the time for the performance of such obligation or duty shall be suspended until such disability to perform is removed. Determination of force majeure shall rest solely with Bastrop County.

G. Compliance with the Byrd Anti-Lobbying Amendment (31 U.S.C. 1352): Contractors that apply or bid for an award of $100,000 or more must file the required certification. Each tier certifies to the tier above that it will not and has not used Federal appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee of any agency, a member of Congress. officer or employee of Congress , or an employee of a member of Congress in connection with obtaining any Federal contract, grant or any other award covered by 31 U.S.C. 1352. Each tier must also disclose any lobbying with non-Federal funds that takes place in connection with obtaining any Federal award. Such disclosures are forwarded from tier to tier up to the non-Federal award.

H. Contract Work Hours and Safety Standards Act (40 U.S.C. 3701-3708): Where applicable , all contracts awarded by the non-Federal entity in excess of $100,000 that involve the employment of mechanics or laborers must include a provision for compliance with 40 U.S.C. 3702 and 3704, as supplemented by Department of Labor regulations (29 CFR Part 5) . Under 40 U.S.C. 3702 of the Act, each contractor must be required to compute the wages of every mechanic and laborer on the basis of a standard work week of 40 hours. Work in excess of the standard work week is permissible provided that the worker is compensated at a rate of not less than one and a half times the basic rate of pay for all hours worked in excess of 40 hours in the work week. The requirements of 40 U.S.C. 3704 are applicable to construction work and provide that no laborer or mechanic must be required to work in surroundings or under working conditions which are unsanitary, hazardous or dangerous. These requirements do not apply to the purchases of supplies or materials or articles ordinarily available on the open market, or contracts for transportation or transmission of intelligence.

I. Clean Air Act (42 U.S.C. 7401-7671q.) and the Federal Water Pollution Control Act (33 U.S.C. 1251-1387): Contracts and subgrants of amounts in excess of $150,000 must contain a provision that requires the non-Federal award to agree to comply with all applicable standards, orders or regulations issued pursuant to the Clean Air Act (42 U.S.C. 7401-7671q) and the Federal Water Pollution Control Act as amended (33 U.S.C 1251-1387). Violations must be reported to the Federal awarding agency and the Regional Office of the Environmental Protection Agency (EPA).

J. Affirmative Action/EOE: Bastrop County is an Affirmative Action/Equal Opportunity Employer and strives to attain goals for of the Housing and Urban Development Act of 1968 (12U.S.C. 1701u) as amended. See Appendix F - Bastrop County Section 3 Resolution. During the performance of an awarded contract, the contractor agrees as follows:

1. The contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, sexual orientation, gender identity, or national origin. The contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, sex, sexual orientation, gender identity, or national origin. Such action shall include, but not be limited to the following: Employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The contractor agrees to post in conspicuous places. Available to employees and applicants for employment, notices to be provided setting forth the provisions of this nondiscrimination clause.

2. The contractor will, in all solicitations or advertisements for employees placed by or on behalf of the contractor, state that all qualified applicants will receive considerations for employment without regard to race, color, religion, sex, sexual orientation, gender identity, or national origin.

3. The Contractor will not discourage or in any other manner discriminate against any employee or applicant for employment because such employee or applicant has inquired about, discussed, or disclosed the compensation of the employee or applicant or another employee or applicant. This Provision shall not apply to instances in which an employee who has access to the compensation information of other employees or applicants as a part of such employee's essential job functions discloses the compensation of such other employees or applicants to individuals who do not otherwise have access to such information, unless such disclosure is in response to a forma l complaint or charge, in furtherance of an investigation, proceeding, hearing, or action, including an investigation conducted by the employer, or is consistent w1th the contractor's legal duty to furnish information.

4. The contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice to be provided advising the said labor union or workers' representatives of the contractor's commitments under this section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

5. The contractor will comply with all provisions of Executive Order 11246 of September 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.

6. The contractor will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by the administering agency and the Secretary of Labor for purposes of investigation to ascertain compliance w1th such rules, regulations and orders.

7. In the event of the contractor's noncompliance with the nondiscrimination clauses of this contract or with any of the said rules, regulations, or orders, this contract may be canceled , terminated, or

suspended in whole or in part and the contractor may be declared ineligible for further Government contracts or federally assisted construction contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, and such other sanctions may be 1mposed and remedies invoked as provided in Executive Order 11246 of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.

8. The contractor will include the portion of the sentence Immediately preceding paragraph (1) and the provisions of paragraphs (1) through (7) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The contractor will take such action with respect to any subcontract or purchase order as the administering agency may direct as a means of enforcing such provisions, including sanctions for noncompliance: Provided, however. That in the event a contractor becomes involved in. or is threatened with litigation with a subcontractor or vendor as a result of such direction by the administering agency the contractor may request the United States to enter into such litigation to protect the interests of the United States.

9. The applicant further agrees that it will be bound by the above equal opportunity clause with respect to its own employment practices when it participates in federally assisted construction work: Provided, That if the applicant so participating is a State or local government, the above equal opportunity clause is not applicable to any agency, instrumentality or subdivision of such government wh1ch does not participate in work on or under the contract.

10. The applicant agrees that it will assist and cooperate actively with the administering agency and the Secretary of Labor in obtaining the compliance of contractors and subcontractors with the equal opportunity clause and the rules, regulations. and relevant orders of the Secretary of Labor, that it will furnish the administering agency and the Secretary of Labor such information as they may require for the supervision of such compliance , and that it will otherwise assist the administering agency in the discharge of the agency's primary responsibility for securing compliance.

11. The applicant further agrees that it will refra1n from entering into any contract or contract modification subject to Executive Order 11246 of September 24 , 1965, with a contractor debarred from, or who has not demonstrated eligibility for, Government contracts and federally assisted construction contracts pursuant to the Executive order and will carry out such sanctions and penalties for violation of the equal opportunity clause as may be imposed upon contractors and subcontractors by the administering agency or the Secretary of Labor pursuant to Part II, Subpart D of the Executive order . In addition, the applicant agrees that if it fails or refuses to comply with these undertakings. the administering agency may take any or all of the following actions: Cancel, terminate, or suspend in whole or in part this grant (contract, loan. insurance. guarantee); refrain from extending any further assistance to the applicant under the program with respect to which the failure or refund occurred until satisfactory assurance of future compliance has been received from such applicant; and refer the case to the Department of Justice for appropriate legal proceedings.

12. Subcontracts. Each nonexempt prime contractor or subcontractor shall include the equal opportunity clause 1n each of its nonexempt subcontracts.

K. Payment Terms: Unless otherwise specified in the Scope of Services or otherwise agreed to in writing by Bastrop County, payment terms for the County are Net 30 days upon receipt of invoice after receipt of goods or services. A 5% retainage will be held from each invoice until the completion of the project. Pay applications must be submitted to the Bastrop County Purchasing Department for approval and processing for payment. Bastrop County will pay based on percentage of completion at the time of pay application submission pending verification from the Bastrop County Road and Bridge Precinct Commissioner. Final approval will be based on

an inspection of the project for verification of compliance with all aspects of the scope of work listed within Appendix A of this RFB. The work performed in accordance with this contract shall be paid for using unit pricing (per ton of material to include all other cost associated with completing the project). This price is full compensation for all task listed in the bid submitted by the vendor and must include all necessary fees, charges and bonds needed to complete this work. Bastrop County will NOT pay any fees to the vendor other than the agreed upon unit price. Contractor shall submit written proof of the quantity of material used with each invoice for verification of invoice cost.

L. Liquidated Damages: Should the **CONTRACTOR** fail to complete the requirements set forth in the scope of work, Bastrop County will suffer damage. The amount of damage suffered by Bastrop County is difficult, if not impossible, to determine at this time. Therefore, the CONTRACTOR shall pay Bastrop County, as liquidated damages, the following:

- The **CONTRACTOR** shall pay Bastrop County, liquidated damages, $1500 per incident where the **CONTRACTOR** fails to repair damages that are caused by the **CONTRACTOR** and/or sub-contractor(s). Application of liquidated damaged does not release the **CONTRACTOR** from the responsibility of resolving or repairing

- The amount specified above are mutually agreed upon as reasonable and the proper amount of liquidated damages Bastrop County would suffer in the aforementioned examples.

M. Warranty of Products and Services: All products or services furnished under this contract shall be warranted to be merchantable and good quality and fit for the purposes intended as described in this bid, to the satisfaction of County and in accordance with the manufacturers specifications, terms, and conditions of the scope of work (Appendix A), and all services performed shall be warranted to be of a good and workmanlike quality, in addition to, and not in lieu of, any other express written warranties provided.

N. Payment and Performance Bonds: Payment and Performance bonds shall be required and issued for this contract should the total bid price reach the State of Texas threshold for public works projects. The contractor agrees that within ten (10) days after a work order is issued and sent to them by Bastrop County, a Payment Bond will be executed and delivered to Bastrop County for the amount of one hundred percent (100%) of the estimated contract total, should the contract total meet and/or exceed twenty-five thousand dollars ($25,000). A Performance bond in an amount of one hundred percent (100%) of the estimated contract price should also be executed and delivered to Bastrop County should the contract amount meet and/or exceed one hundred thousand dollars ($100,000). The Performance and Payment Bond must be maintained throughout the contract execution period. At the completion of all work, the Payment and Performance Bond shall be released. Cost of all bonds must be included in the bid price. Payment for services will not be made until receipt of all required bonds has been made to Bastrop County. **NO WORK CAN BEGIN ON A PROJECT UNTIL ALL NECCESSARY BONDS HAVE BEEN RECEIVED BY BASTROP COUNTY.**

O. Funding: State of Texas statutes prohibit the obligation and expenditure of public funds beyond the fiscal year for which a budget has been approved. Orders or other obligations that may arise beyond the end of the current fiscal year shall be subject to approval of budget funds.

P. Taxes: The County is exempt from all federal excise taxes and all state and local sales and use taxes. If such taxes are listed on a Bidder's invoice, they will not be paid.

Q. Insurance: The Bidder, consistent with its status as an independent contractor, shall carry, and shall require any of its subcontractors to carry, at least the following insurance in such form, with such companies, and in such amounts (unless otherwise specified) as County may require:

1. Worker's Compensation and Employer's Liability insurance, including All States Endorsement, to the

extent required by federal law and complying with the laws of the State of Texas;

2. Commercial General Liability insurance, including Blanket Contractual Liability, Broad Form Property Damage, Personal Injury, Completed Operations/Products Liability, Premises Liability, Medical Payments, Interest of Employees as additional insureds, and Broad Form General Liability Endorsements, for at least One Million Dollars ($1,000,000) Combined Single Limit Bodily Injury and Property Damage on an occurrence basis;

3. Comprehensive Automobile Liability insurance covering all owned, non-owned or hired automobiles to be used by the Contractor, with coverage for at least One Million Dollars ($1,000,000) Combined Single Limit Bodily Injury and Property Damage.

Contractor shall submit proof to Bastrop County that said contractor has the ability to meet all insurance requirements listed above.

S. Indemnification: Bidder agrees to defend, indemnify and hold harmless the County of Bastrop, all of its officers, agents, employees, appointees and volunteers from and against all claims, actions, suits, demands, proceedings, costs, damages and liabilities, including reasonable attorneys' fees, court costs, related expenses for personal injury (including death), property damage or other harm for which recovery of damages is sought, suffered by any person or persons, that may arise out of or be occasioned by Bidder's breach of any of the terms or provisions of any contract awarded as a result of this solicitation, or by any negligent or strictly liable act or omission of the Bidder, its officers, agents, employees, or subcontractors, in the performance of an awarded contract; except that the indemnity provided for in this paragraph shall not apply to any liability resulting from the sole negligence or fault of the County, its officers, agents or employees, and in the event of joint and concurrent negligence or fault of the Bidder and County, responsibility and indemnity, if any, shall be apportioned comparatively in accordance with the laws of the State of Texas, without waiving any governmental immunity available to the County under Texas law and without waiving any defenses of the parties under Texas law. The provisions of this paragraph are solely for the benefit of the parties hereto and are not intended to create or grant any rights, contractual or otherwise, to any other person or entity.

****THE REMAINDER OF THIS PAGE LEFT BLANK INTENTIONALLY****

IN SUBMITTING A RESPONSE TO THIS RFB, THE RESPONDENT AGREES THAT IT WAIVES ANY CLAIMS IT HAS OR MAY HAVE AGAINST THE COUNTY, THE COUNTY'S EMPLOYEES, OFFICERS, AGENTS, REPRESENTATIVES, AND THE MEMBERS OF THE COUNTY'S GOVERNING BODY IN CONNECTION WITH OR ARISING OUT OF THIS RFB, INCLUDING, THE ADMINISTRATION OF THE RFB, THE BASIS FOR SELECTION, THE EVALUATIONS OF THE RESPONSES, THE METHOD USED FOR SELECTION, AND ANY DISCLOSURE OF INFORMATION REGARDING THE RESPONSES OR EVALUATIONS. THE SUBMISSION OF A BID CONSTITUTES THE ACCEPTANCE BY THE RESPONDENT OF THE EVALUATION TECHNIQUE DESCRIBED IN THIS RFB. THE PERSON SIGNING ON BEHALF OF BIDDER CERTIFIES THAT THE SIGNER HAS AUTHORITY TO SUBMIT THE BID ON BEHALF OF THE BIDDER AND TO BIND THE BIDDER TO ANY RESULTING CONTRACT

I ACKNOWLEDGE THAT I HAVE READ AND UNDERSTAND ALL REQUIREMENTS SETFORTH IN THIS REQUEST FOR BIDS:

_____ _____

Authorized Signatory for Contractor: Name of Company:

_____

Date:

CONFLICT OF INTEREST QUESTIONNAIRE

FORM CIQ

For vendor doing business with local governmental entity

This questionnaire reflects changes made to the law by H.B. 23, 84th Leg., Regular Session.

This questionnaire is being filed in accordance with Chapter 176, Local Government Code, by a vendor who has a business relationship as defined by Section 176.001(1-a) with a local governmental entity and the vendor meets requirements under Section 176.006(a).

By law this questionnaire must be filed with the records administrator of the local governmental entity not later than the 7th business day after the date the vendor becomes aware of facts that require the statement to be filed. *See* Section 176.006(a-1), Local Government Code.

A vendor commits an offense if the vendor knowingly violates Section 176.006, Local Government Code. An offense under this section is a misdemeanor.

OFFICE USE ONLY

Date Received

1 **Name of vendor who has a business relationship with local governmental entity.**

2 ☐ **Check this box if you are filing an update to a previously filed questionnaire.** (The law requires that you file an updated completed questionnaire with the appropriate filing authority not later than the 7th business day after the date on which you became aware that the originally filed questionnaire was incomplete or inaccurate.)

3 **Name of local government officer about whom the information is being disclosed.**

_____

Name of Officer

4 **Describe each employment or other business relationship with the local government officer, or a family member of the officer, as described by Section 176.003(a)(2)(A). Also describe any family relationship with the local government officer. Complete subparts A and B for each employment or business relationship described. Attach additional pages to this Form CIQ as necessary.**

A. Is the local government officer or a family member of the officer receiving or likely to receive taxable income, other than investment income, from the vendor?

☐ Yes ☐ No

B. Is the vendor receiving or likely to receive taxable income, other than investment income, from or at the direction of the local government officer or a family member of the officer AND the taxable income is not received from the local governmental entity?

☐ Yes ☐ No

5 **Describe each employment or business relationship that the vendor named in Section 1 maintains with a corporation or other business entity with respect to which the local government officer serves as an officer or director, or holds an ownership interest of one percent or more.**

6 ☐ Check this box if the vendor has given the local government officer or a family member of the officer one or more gifts as described in Section 176.003(a)(2)(B), excluding gifts described in Section 176.003(a-1).

7

_____ _____

Signature of vendor doing business with the governmental entity Date

CONFLICT OF INTEREST QUESTIONNAIRE
For vendor doing business with local governmental entity

A complete copy of Chapter 176 of the Local Government Code may be found at http://www.statutes.legis.state.tx.us/Docs/LG/htm/LG.176.htm. For easy reference, below are some of the sections cited on this form.

Local Government Code § 176.001(1-a): "Business relationship" means a connection between two or more parties based on commercial activity of one of the parties. The term does not include a connection based on:

(A) a transaction that is subject to rate or fee regulation by a federal, state, or local governmental entity or an agency of a federal, state, or local governmental entity;

(B) a transaction conducted at a price and subject to terms available to the public; or

(C) a purchase or lease of goods or services from a person that is chartered by a state or federal agency and that is subject to regular examination by, and reporting to, that agency.

Local Government Code § 176.003(a)(2)(A) and (B):

(a) A local government officer shall file a conflicts disclosure statement with respect to a vendor if:

***

(2) the vendor:

(A) has an employment or other business relationship with the local government officer or a family member of the officer that results in the officer or family member receiving taxable income, other than investment income, that exceeds $2,500 during the 12-month period preceding the date that the officer becomes aware that

(i) a contract between the local governmental entity and vendor has been executed; or

(ii) the local governmental entity is considering entering into a contract with the vendor;

(B) has given to the local government officer or a family member of the officer one or more gifts that have an aggregate value of more than $100 in the 12-month period preceding the date the officer becomes aware that:

(i) a contract between the local governmental entity and vendor has been executed; or

(ii) the local governmental entity is considering entering into a contract with the vendor.

Local Government Code § 176.006(a) and (a-1)

(a) A vendor shall file a completed conflict of interest questionnaire if the vendor has a business relationship with a local governmental entity and:

(1) has an employment or other business relationship with a local government officer of that local governmental entity, or a family member of the officer, described by Section 176.003(a)(2)(A);

(2) has given a local government officer of that local governmental entity, or a family member of the officer, one or more gifts with the aggregate value specified by Section 176.003(a)(2)(B), excluding any gift described by Section 176.003(a-1); or

(3) has a family relationship with a local government officer of that local governmental entity.

(a-1) The completed conflict of interest questionnaire must be filed with the appropriate records administrator not later than the seventh business day after the later of:

(1) the date that the vendor:

(A) begins discussions or negotiations to enter into a contract with the local governmental entity; or

(B) submits to the local governmental entity an application, response to a request for proposals or bids, correspondence, or another writing related to a potential contract with the local governmental entity; or

(2) the date the vendor becomes aware:

(A) of an employment or other business relationship with a local government officer, or a family member of the officer, described by Subsection (a);

(B) that the vendor has given one or more gifts described by Subsection (a); or

(C) of a family relationship with a local government officer.

Implementation of House Bill 1295

Certificate of Interested Parties (Form 1295):

In 2015, the Texas Legislature adopted House Bill 1295, which added section 2252.908 of the Government Code. The law states that a governmental entity or state agency may not enter into certain contracts with a business entity unless the business entity submits a disclosure of interested parties to the governmental entity or state agency at the time the business entity submits the signed contract to the governmental entity or state agency.

The law applies (with a few exceptions) only to a contract between a business entity and a governmental entity or state agency that either (1) requires an action or vote by the governing body of the entity or agency before the contract may be signed or (2) has a value of at least $1 million. The disclosure requirement applies to a contract entered into on or after January 1, 2016.

Changed or Amended Contracts:

Form 1295 is only required for a change made to an existing contract in certain circumstances: (1) if a Form 1295 was not filed for the existing contract, then a filing is only required if the changed contract either requires an action or vote by the governing body or the value of the changed contract is at least $1 million; or (2) if a Form 1295 was filed for the existing contract, then another filing is only required for the changed contract if there is a change to the information disclosed in the Form 1295, the changed contract requires an action or vote by the governing body, or the value of the changed contract increases by at least $1 million.

As required by law, the Commission adopted the Certificate of Interested Parties form (Form 1295) on October 5, 2015. The Commission also adopted rules (Chapter 46) to implement the law. The Commission does not have any additional authority to enforce or interpret section 2252.908 of the Government Code.

Filing Process:

A business entity must use the Form 1295 filing application the Commission created to enter the required information on Form 1295 and print a copy of the completed form. Once entered into the filing application, the completed form will include a unique certification number, called a "certification of filing."

An authorized agent of the business entity must sign the printed copy of the form affirming under the penalty of perjury that the completed form is true and correct.

The completed, printed, and signed Form 1295 bearing the unique certification of filing number must be filed with the governmental body or state agency with which the business entity is entering into the contract.

Acknowledgement by State Agency or Governmental Entity:

The governmental entity or state agency must acknowledge receipt of the filed Form 1295 with the certification of filing, using the Commission's filing application, not later than the 30th day after the date the governing body or state agency receives the Form 1295. The Commission will post the completed Form 1295 to its website within seven business days after the governmental entity or state agency acknowledges receipt of the form.

Changes to Form 1295

Changes to the law requiring certain businesses to file a Form 1295 are in effect for contracts entered into or amended on or after January 1, 2018. The changes exempt businesses from filing a Form 1295 for certain types of contracts and replace the need for a completed Form 1295 to be notarized. Instead, the person filing a 1295 needs to complete an "unsworn declaration."

What type of contracts are exempt from the Form 1295 filing requirement under the amended law?

The amended law adds to the list of types of contract exempt from the Form 1295 filing requirement. A completed Form 1295 is not required for:

- A sponsored research contract of an institution of higher education;
- An interagency contract of a state agency or an institution of higher education;

- A contract related to health and human services if: o the value of the contract cannot be determined at the time the contract is executed; and o any qualified vendor is eligible for the contract;
- A contract with a publicly traded business entity, including a wholly owned subsidiary of the business entity;*
- A contract with an electric utility, as that term is defined by Section 31.002, Utilities Code;* or
- A contract with a gas utility, as that term is defined by Section 121.001, Utilities Code.*

The newly exempt contract types are marked with an asterisk.

Why do I need to include my date of birth and address when I sign Form 1295? Was this always the case?
In 2017, the legislature amended the law to require Form 1295 to include an "unsworn declaration" which includes, among other things, the date of birth and address of the authorized representative signing the form. The change in the law applies to contracts entered into, renewed, or amended on or after January 1, 2018. The unsworn declaration, including the date of birth and address of the signatory, replaces the notary requirement that applied to contracts entered into before January 1, 2018.

Will my date of birth and address appear on the TEC's website when I file the form?
No. The TEC filing application does not capture the date of birth or street address of the signatory and it will not appear on forms that are filed using the TEC filing application. Although the TEC does not capture the date of birth and street address of the signatory, the contracting state agency or governmental agency will have a physical copy of the form that includes the date of birth and address of the signatory. The TEC cannot answer whether the contracting state agency or governmental agency may release such information. Questions regarding the Texas Public Information Act may be directed to the Office of the Attorney General. See also Paxton v. City of Dall., No. 03-13-00546-CV, 2015 Tex. App. LEXIS 5228, at *10-11 (App.—Austin May 22, 2015) (mem. op.) (pet. denied) (available here).

CERTIFICATE OF INTERESTED PARTIES

FORM 1295

Complete Nos. 1 - 4 and 6 if there are interested parties.
Complete Nos. 1, 2, 3, 5, and 6 if there are no interested parties.

OFFICE USE ONLY

1 Name of business entity filing form, and the city, state and country of the business entity's place of business.

2 Name of governmental entity or state agency that is a party to the contract for which the form is being filed.

3 Provide the identification number used by the governmental entity or state agency to track or identify the contract, and provide a description of the services, goods, or other property to be provided under the contract.

4

Name of Interested Party	City, State, Country (place of business)	Nature of Interest (check applicable)	
		Controlling	Intermediary

5 Check only if there is NO Interested Party. ☐

6 UNSWORN DECLARATION

My name is _____, and my date of birth is _____.

My address is _____, _____, _____, _____, _____.
(street) (city) (state) (zip code) (country)

I declare under penalty of perjury that the foregoing is true and correct.

Executed in _____ County, State of _____ , on the _____ day of _____, 20_____.
(month) (year)

_____
Signature of authorized agent of contracting business entity
(Declarant)

ADD ADDITIONAL PAGES AS NECESSARY

Must file online at www.ethics.state.tx.us/File

House Bill 89 VERIFICATION

I, _____, the undersigned representative of _____ (hereafter referred to as company) being an adult over the age of eighteen (18) years of age, after being duly sworn by the undersigned notary, do hereby depose and verify under oath that the company named-above, under the provisions of Subtitle F, Title 10, Government Code Chapter 2270::

1. **Does not boycott Israel currently; and**
2. **Will not boycott Israel during the term of the contract the above-named Company, business or individual with Bastrop County, Texas.**

Pursuant to Section 2270.001, Texas Government Code:

1. *"Boycott Israel" means refusing to deal with, terminating business activities with, or otherwise taking any action that is intended to penalize, inflict economic harm on, or limit commercial relations specifically with Israel, or with a person or entity doing business in Israel or in an Israeli-controlled territory, but does not include an action made for ordinary business purposes; and*
2. *"Company" means a for-profit sole proprietorship, organization, association, corporation, partnership, joint venture, limited partnership, limited liability partnership, or any limited liability company, including a wholly owned subsidiaryt, majority-owned subsidiary, parent company or affiliate of those entities or business associations that exist to make a profit.*

_____ _____

DATE SIGNATURE OF COMPANY REPRESENTATIVE

ON THIS THE _____ day of _____, 20____, personally appeared _____, the above-named person, who after by me being duly sworn, did swear and confirm that the above is true and correct.

NOTARY SEAL _____

NOTARY SIGNATURE

RESOLUTION

AN AMENDMENT TO A RESOLUTION OF THE COMMISSIONERS' COURT OF THE COUNTY OF BASTROP, TEXAS DATED APRIL 22, 2013 AUTHORIZING THE COUNTY JUDGE OR HIS DESIGNEE TO IMPLEMENT A SECTION 3 PROGRAM, WHICH TO THE GREATEST EXTENT FEASIBLE, WILL PROVIDE JOB TRAINING, EMPLOYMENT, AND CONTRACTING OPPORTUNITIES FOR SECTION 3 BUSINESSES OF THE AREA IN WHICH THE TEXAS COMMUNITY DEVELOPMENT BLOCK GRANT (TXCDBG} PROGRAM/PROJECT IS BEING CARRIED OUT.

WHEREAS; Section 3 of the Housing and Urban Development Act of 1968 (12 U.S.C. 1701u), as amended, requires that Bastrop County ensure that training, employment and other economic opportunities generated by certain HUD financial assistance for housing and Community Development Programs shall, to the greatest extent feasible, be given to low- and very low- income persons, particularly those who are recipients of governmental assistance for housing, and to businesses that provide economic opportunities for these persons, and

WHEREAS; the County of Bastrop has been grant funded for various projects under the Texas Community Development Block Grant Program (CDBG), and

WHEREAS; the County of Bastrop is required to adopt a Section 3 Program as part of the requirements of the grant(s), and

WHEREAS; a Section 3 resident is defined as a public housing resident and/or a low to very-low income person who lives in an area where a CDBG assisted project is located, and

WHEREAS; a Section 3 business is defined as a business that has a Section 3 resident own at least 51 percent or more of the business or have at least 30 percent of the permanent, full-time employees of the business identified as Section 3 residents, and

WHEREAS; the County of Bastrop will strive to attain goals for compliance with Section 3 regulations;

NOW THEREFORE BE IT RESOLVED BY THE COMMISSIONERS' COURT OF BASTROP COUNTY, TEXAS:

1. The COMMISSIONERS' COURT has reviewed and hereby agrees to Implement the following steps, which, to the greatest extent feasible, will provide job training, employment and contracting opportunities for Section 3 residents and Section 3 businesses of the area in which the CDBG program/project is being carried out.

2. The COMMISSIONERS' COURT hereby agrees to strive to attain goals for compliance with Section 3 regulations by increasing opportunities for employment and contracting with Section 3 residents and businesses where feasible.

3. The COMMISSIONERS' COURT hereby agrees to assign duties related to implementation of this plan to the designated Section 504 and Equal

Opportunity/Fair Housing Officer.

4. The COMMISSIONERS COURT hereby delegates to the County Judge the authority to implement measures that comply with the Section 3 goals and to assign duties for carrying out these measures to County personnel and/or third party consultant(s).

5. The COMMISSIONERS' COURT hereby agrees that the County will Notify Section 3 residents and business concerns of potential new employment and contracting opportunities as they are triggered by CDBG grant awards through the use of: public notices; bidding advertisements and bid documents; local advertising media including public signage; and Including Section 3 clauses In all CDBG solicitations and contracts.

6. The COMMISSIONERS' COURT hereby agrees to maintain a list of those businesses that have identified themselves as Section 3 businesses for utilization in CDBG funded procurements, notify those businesses of pending contractual opportunities, and make this list available for general Grant Recipient procurement needs.

7. The COMMISSIONERS' COURT hereby agrees to maintain a list of those persons who have identified themselves as Section 3 residents and contact those persons when hiring/training opportunities are available through either the Grant Recipient or contractors.

8. The COMMISSIONERS' COURT hereby agrees to require that all Prime contractors and subcontractors on CDBG projects commit to this plan as part of their contract work; monitor the contractors' performance with respect to meeting Section 3 requirements, and require that they submit reports as may be required to the Bastrop County.

9. The COMMISSIONERS' COURT hereby agrees to submit reports as required by the CDBG program regarding contracting with Section 3 businesses and/or employment as they occur; and submit reports within 20 days of calendar year end which identify and quantify Section 3 businesses and employees.

10. The COMMISSIONERS' COURT hereby agrees to maintain records for the CDBG program, including copies of correspondence, memoranda, etc., which document all actions taken to comply with Section 3 regulations.

11. The COMMISSIONERS COURT hereby orders that the following procedures will be implemented to assure compliance with the intent of this Resolution:
    a. The County Judge will appoint one or more county employees to coordinate the Section 3 responsibilities for compliance and monitoring of all Section 3 activities for CDBG Disaster Recovery Program funded projects. The County may also engage the services of third party consultants to assist.

    b. Preference shall be awarded to Section 3 Business Concerns according to the following system:

1) Where the Section 3 Covered Contract is to be awarded to the lowest responsible bidder, then to the extent permitted by applicable law, the contract, if awarded, shall be awarded to the qualified Section 3 Business Concern with the lowest bid, if it is reasonable and no more than 10 percent higher than the lowest bid from any qualified source. If no bid by a qualified Section 3 Business Concern is within 10 percent of the lowest bid from any qualified source, then any contract award shall be made to the source with the lowest bid.

2) Where the Section 3 Covered Contract is to be awarded based on factors in addition to price, a request for proposals shall be issued by developing the particulars of the solicitation, including a rating system for the assignment of points to evaluate the merits of each response. The solicitation shall identify all factors to be considered, including price or cost. The rating system shall provide for a range of 15 to 25 percent of the total number of available rating points to be set aside for the award to respondents who have demonstrated a commitment to meet Section 3 requirements set out below in Section 11 c. If an award is made, the contract shall be awarded to the responsible firm whose proposal provides the best value to the County, considering price and all other factors specified in the rating system.

c. In responding to a solicitation (Request for Bids, Request for Proposals, etc.) for a Section 3 covered contract, all contractors and subcontractors are required to comply with the Bastrop County Section 3 Plan. The contractor and the County will review the Section 3 Plan procedures and applicable forms that the contractor will use to report progress toward Section 3 goals. The Section 3 requirements also apply to contracts with consultants for a Section 3 covered contract.

d. All general contractors and/or sub-contractors shall set a goal that 30 percent of new hires will be Section 3 residents. Contractors should provide job opportunities for skilled and unskilled workers. All Contractors and Subcontractors will be required to post all new hire opportunities with the local Workforce Solutions Center, WorkinTexas.com, and Bastrop County.

e. Bastrop County will analyze and evaluate the contractor's compliance with requirements and obligations set forth in the contract. In the event that a review reveals a contractor has not complied with Section 3 requirements, the County will undertake efforts to help the contractor achieve compliance.

f. The contractor and or sub-contractor shall submit monthly

reports regarding the status of each Section 3 participant. An annual report will also be requested from each contractor and/or subcontractor in connection to the performance of each project. This Annual Report will document the efforts and success of all Section 3 participants and subcontractors working under the general contractor, in reaching the percentage goals for employment and business opportunities established in these policies.

g. The contractor and/or subcontractor shall submit weekly-certified payroll reports to Bastrop County. This report shall be submitted weekly and clearly identify Section 3 Hires.

h. Bastrop County or its consultant will conduct periodic site visits to the worksite. The Coordinator shall visibly notice each Section 3 hire on site. The general contractor will sign a monitoring form verifying that a Section 3 worker is present.

i. Complaints regarding the County's Section 3 Program must be submitted in writing. All complaints must include the complainant's name, address, telephone number, and a brief narrative detailing the complaint, including but not limited to, the date of the alleged violation and the date the alleged violation was discovered. Complaints shall be filed within 30 calendar days after the complainant becomes aware of any alleged violation. Bastrop County will investigate every complaint. All parties involved will have the opportunity to submit testimony and/or evidence as may be available and relevant to the complaint, and a written determination will be issued within 30 days after the filing of the complaint. Filing a complaint does not terminate a contractor's Section 3 requirements. Contractors remain accountable for fulfilling the agreed upon Section 3 requirements.

As officers and representatives of the County of Bastrop, we the undersigned have read and fully agree and become a party to the full implementation of this program.

PASSED AND ADOPTED at a regular meeting of the CQMMISSIONERS' COURT of the County held on the 22nd day of June 2015.

Paul Pape, County Judge

ATTEST:
Rose Pietsch

Rose Pietsch, County Clerk

Item 341
Dense-Graded Hot-Mix Asphalt

1. DESCRIPTION

Construct a hot-mix asphalt (HMA) pavement layer composed of a compacted, dense-graded mixture of aggregate, asphalt binder, and additives mixed hot in a mixing plant. Payment adjustments will apply to HMA placed under this Specification unless the HMA is deemed exempt in accordance with Section 341.4.9.4., "Exempt Production."

2. MATERIALS

Furnish uncontaminated materials of uniform quality that meet the requirements of the plans and specifications.

Notify the Engineer of all material sources and before changing any material source or formulation. The Engineer will verify that the specification requirements are met and document all material source changes when the Contractor makes a source or formulation change. The Engineer may sample and test project materials anytime during the project to verify specification compliance in accordance with Item 6, "Control of Materials."

2.1. **Aggregate**. Furnish aggregates from sources that conform to the requirements shown in Table 1 and this Section. Aggregate requirements in this Section, including those shown in Table 1, may be modified or eliminated when shown on the plans. Additional aggregate requirements may be specified when shown on the plans. Provide aggregate stockpiles that meet the definitions in this Section for coarse, intermediate, or fine aggregate. Aggregate from reclaimed asphalt pavement (RAP) is not required to meet Table 1 requirements unless otherwise shown on the plans. Supply aggregates that meet the definitions in Tex-100-E for crushed gravel or crushed stone. The Engineer will designate the plant or the quarry as the sampling location. Provide samples from materials produced for the project. The Engineer will establish the Surface Aggregate Classification (SAC) and perform Los Angeles abrasion, magnesium sulfate soundness, and Micro-Deval tests. Perform all other aggregate quality tests shown in Table 1. Document all test results in the mixture design report. The Engineer may perform tests on independent or split samples to verify Contractor test results. Stockpile aggregates for each source and type separately. Determine aggregate gradations for mixture design and production testing based on the washed sieve analysis in accordance with Tex-200-F, Part II.

2.1.1. **Coarse Aggregate**. Coarse aggregate stockpiles must have no more than 20% material passing the No. 8 sieve. Aggregates from sources listed in the Department's *Bituminous Rated Source Quality Catalog* (BRSQC) are preapproved for use. Use only the rated values for HMA listed in the BRSQC. Rated values for surface treatment (ST) do not apply to coarse aggregate sources used in HMA.

For sources not listed in the Department's BRSQC:

- build an individual stockpile for each material;
- request the Department test the stockpile for specification compliance;
- allow 30 calendar days for the Engineer to sample, test, and report results;
- use only when tested and approved; and
- once approved, do not add additional material to the stockpile unless otherwise allowed by the Engineer.

Provide coarse aggregate with at least the minimum SAC shown on the plans. SAC requirements apply only to aggregates used on the surface of travel lanes, unless otherwise shown on the plans. The SAC for sources in the Department's *Aggregate Quality Monitoring Program* (AQMP) (Tex-499-A) is listed in the BRSQC.

2.1.1.1. **Blending Class A and Class B Aggregates**. Class B aggregate meeting all other requirements shown in Table 1 may be blended with a Class A aggregate to meet requirements for Class A materials, unless otherwise shown on the plans. When blending Class A and Class B aggregates to meet a Class A requirement, ensure that at least 50% by weight, or volume if required, of the material retained on the No. 4 sieve comes from the Class A aggregate source, unless otherwise shown on the plans. Blend by volume if the bulk specific gravities of the Class A and Class B aggregates differ by more than 0.300. Coarse aggregate from RAP and recycled asphalt shingles (RAS) will be considered as Class B aggregate for blending purposes.

The Engineer may perform tests anytime during production, when the Contractor blends Class A and Class B aggregates to meet a Class A requirement. The Engineer will use the Department's mix design template, when electing to verify conformance, to calculate the percent of Class A aggregate retained on the No. 4 sieve by inputting the bin percentages shown from readouts in the control room at the time of production and stockpile gradations measured at the time of production. The Engineer may determine the gradations based on either washed or dry sieve analysis from samples obtained from individual aggregate cold feed bins or aggregate stockpiles. The Engineer may perform spot checks to verify the percent of Class A aggregate retained on the No. 4 sieve. The Engineer will use the gradations supplied by the Contractor in the mixture design report as an input for the template. A failing spot check will require confirmation with a stockpile gradation determined by the Engineer.

2.1.1.2. **Micro-Deval Abrasion**. The Engineer will perform at least one Micro-Deval abrasion test in accordance with Tex-461-A for each coarse aggregate source used in the mixture design that has a rated source soundness magnesium (RSSM) loss value greater than 15 as listed in the BRSQC. The Engineer will perform testing before the start of production and may perform additional testing anytime during production. The Engineer may obtain the coarse aggregate samples from each coarse aggregate source or may require the Contractor to obtain the samples. The Engineer may waive all Micro-Deval testing based on a satisfactory test history of the same aggregate source.

The Engineer will estimate the magnesium sulfate soundness loss for each coarse aggregate source, when tested, using the following formula:

$$Mg_{est.} = (RSSM)(MD_{act.}/RSMD)$$

where:
$Mg_{est.}$ = magnesium sulfate soundness loss
$RSSM$ = rated source soundness magnesium
$MD_{act.}$ = actual Micro-Deval percent loss
$RSMD$ = rated source Micro-Deval

When the estimated magnesium sulfate soundness loss is greater than the maximum magnesium sulfate soundness loss specified, the coarse aggregate source will not be allowed for use unless otherwise approved. The Engineer will consult the Materials and Tests Division, and additional testing may be required before granting approval.

2.1.2. **Intermediate Aggregate**. Aggregates not meeting the definition of coarse or fine aggregate will be defined as intermediate aggregate. Supply intermediate aggregates, when used, that are free of organic impurities. Supply intermediate aggregate from coarse aggregate sources, when used, that meet the requirements shown in Table 1, unless otherwise approved.

Test the stockpile if 10% or more of the stockpile is retained on the No. 4 sieve, and verify that it meets the requirements in Table 1 for crushed face count (Tex-460-A) and flat and elongated particles (Tex-280-F).

2.1.3. **Fine Aggregate**. Fine aggregates consist of manufactured sands, screenings, and field sands. Fine aggregate stockpiles must meet the fine aggregate properties in accordance with Table 1 and the gradation requirements in accordance with Table 2. Supply fine aggregates that are free of organic impurities. The Engineer may test the fine aggregate in accordance with Tex-408-A to verify the material is free of organic impurities. Unless otherwise shown on the plans, at most 10% of the total aggregate may be field sand or other uncrushed fine aggregate. Use fine aggregate, except field sand, from coarse aggregate sources that meet the requirements shown in Table 1, unless otherwise approved.

Test the stockpile if 10% or more of the stockpile is retained on the No. 4 sieve and verify that it meets the requirements in Table 1 for crushed face count (Tex-460-A) and flat and elongated particles (Tex-280-F).

Table 1
Aggregate Quality Requirements

Property	Test Method	Requirement
Coarse Aggregate		
SAC	Tex-499-A (AQMP)	As shown on the plans
Deleterious material, %, Max	Tex-217-F, Part I	1.5
Decantation, %, Max	Tex-217-F, Part II	1.5
Micro-Deval abrasion, %	Tex-461-A	Note [1]
Los Angeles abrasion, %, Max	Tex-410-A	40
Magnesium sulfate soundness, 5 cycles, %, Max	Tex-411-A	30
Crushed face count,[2] %, Min	Tex-460-A, Part I	85
Flat and elongated particles @ 5:1, %, Max	Tex-280-F	10
Fine Aggregate		
Linear shrinkage, %, Max	Tex-107-E	3
Sand equivalent, %, Min	Tex-203-F	45[3]
Organic impurities	Tex-408-A	Note [4]

1. Used to estimate the magnesium sulfate soundness loss in accordance with Section 341.2.1.1.2., "Micro-Deval Abrasion."
2. Only applies to crushed gravel.
3. The Department may perform Tex-252-F on fine aggregates not meeting this minimum requirement. Fine aggregates with a methylene blue value of 10.0 mg/g or less may be used.
4. Optional test.

Table 2
Gradation Requirements for Fine Aggregate

Sieve Size	% Passing by Wt. Or Volume
3/8"	100
#8	70–100
#200	0–30

2.2. **Mineral Filler**. Mineral filler consists of finely divided mineral matter such as agricultural lime, crusher fines, hydrated lime, or fly ash. Mineral filler is allowed unless otherwise shown on the plans. Use no more than 2% hydrated lime or fly ash, unless otherwise shown on the plans. Use no more than 1% hydrated lime if a substitute binder is used, unless otherwise shown on the plans or allowed. Test all mineral fillers except hydrated lime and fly ash in accordance with Tex-107-E to ensure specification compliance. The plans may require or disallow specific mineral fillers. Provide mineral filler, when used, that:

- is dry enough, free-flowing, and free of clumps and foreign matter as determined by the Engineer;
- does not exceed 3% linear shrinkage when tested in accordance with Tex-107-E; and
- meets the gradation requirements shown in Table 3, unless otherwise shown on the plans.

Table 3
Gradation Requirements for Mineral Filler

Sieve Size	% Passing by Wt. or Volume
#8	100
#200	55–100

2.3. **Baghouse Fines**. Fines collected by the baghouse or other dust-collecting equipment may be reintroduced into the mixing drum.

2.4. **Asphalt Binder**. Furnish the type and grade of performance-graded (PG) asphalt binder shown on the plans that meets the requirements of Item 300, "Asphalts, Oils, and Emulsions."

2.5. **Tack Coat**. Furnish CSS-1H, SS-1H, EBL, or a PG binder with a minimum high-temperature grade of PG 58 for tack coat binder in accordance with Item 300. Specialized tack coat materials on the MPL for *Tracking Resistant Asphalt Interlayer* (TRAIL) will be allowed or required when shown on the plans. Do not dilute emulsified asphalts at the terminal, in the field, or at any other location before use, unless required in conformance with the manufacturer's recommendation for approved TRAIL products on the MPL.

2.6. **Additives**. Use the type of additive specified when shown on the plans. Use the rate of additive specified in conformance with the manufacturer's recommendation. Additives that facilitate mixing and compaction or improve the quality of the mixture are allowed when approved. Provide the Engineer with documentation such as the bill of lading showing the quantity of additives used in the project unless otherwise directed.

2.6.1. **Lime and Liquid Antistripping Agent**. Lime or liquid antistripping agent is required when shown on the plans. When lime or a liquid antistripping agent is used, add in accordance with Item 301, "Asphalt Antistripping Agents." Do not add lime directly into the mixing drum of any plant where lime is removed through the exhaust stream unless the plant has a baghouse or dust collection system that reintroduces the lime into the drum.

2.6.2. **Warm-Mix Asphalt (WMA)**. WMA is defined as HMA that is produced within a target temperature discharge range of 215°F and 275°F using approved WMA additives or processes from the MPL.

WMA is allowed for use on all projects and is required when shown on the plans. When WMA is required, the maximum placement or target discharge temperature for WMA will be set at a value at or below 275°F.

Department-approved WMA additives or processes may be used to facilitate mixing and compaction of HMA produced at target discharge temperatures above 275°F; however, such mixtures will not be defined as WMA.

2.6.3. **Compaction Aid**. Compaction aid is defined as a Department-approved chemical warm-mix additive, denoted as "chemical additive" on the MPL, that is used to facilitate mixing and compaction of HMA at a discharge temperature greater than 275°F.

Compaction aid is allowed for use on all projects. Compaction aid is required when shown on the plans or as required in Section 341.4.7.1., "Weather Conditions."

Warm-mix foaming processes, denoted as "foaming process" on the MPL, may be used to facilitate mixing and compaction of HMA at target discharge temperatures greater than 275°F; however, warm-mix foaming processes are not defined as a compaction aid.

2.7. **Recycled Materials**. Use of RAP and RAS is permitted unless otherwise shown on the plans. Use of RAS is restricted to only intermediate and base mixes unless otherwise shown on the plans. Do not exceed the maximum allowable percentages of RAP and RAS in accordance with Table 4. The allowable percentages in accordance with Table 4 may be decreased or increased when shown on the plans. Determine the asphalt binder content and gradation of the RAP and RAS stockpiles for mixture design purposes in accordance with Tex-236-F, Part I. The Engineer may verify the asphalt binder content of the stockpiles anytime during

production. Perform other tests on RAP and RAS when shown on the plans. Asphalt binder from RAP and RAS is designated as recycled asphalt binder. Calculate and ensure that the ratio of the recycled asphalt binder to total binder does not exceed the percentages in accordance with Table 5 during mixture design and HMA production when RAP or RAS is used. Use a separate cold feed bin for each stockpile of RAP and RAS during HMA production. Surface, intermediate, and base mixes referenced in Table 4 and Table 5 are defined as follows, unless otherwise shown on the plans.

- **Surface**. The final HMA lift placed at the top of the pavement structure.
- **Intermediate**. Mixtures placed below an HMA surface mix and less than or equal to 8.0 in. below the riding surface.
- **Base**. Mixtures placed greater than 8.0 in. below the riding surface. Unless otherwise shown on the plans, mixtures used for bond breaker are defined as base mixtures.

2.7.1. **RAP**. RAP is salvaged, milled, pulverized, broken, or crushed asphalt pavement. Fractionated RAP is defined as a stockpile that contains RAP material with at least 95.0% passing the 1/2-in. sieve, before burning in the ignition oven, unless otherwise approved. The Engineer may allow the Contractor to use an alternate to the 1/2-in. screen to fractionate the RAP.

Use of Contractor-owned RAP, including HMA plant waste, is permitted unless otherwise shown on the plans. Department-owned RAP stockpiles are available for the Contractor's use when the stockpile locations are shown on the plans. If Department-owned RAP is available for the Contractor's use, the Contractor may use Contractor-owned fractionated RAP and replace it with an equal quantity of Department-owned RAP. Department-owned RAP generated by required work on the Contract is available for the Contractor's use when shown on the plans. Perform any necessary tests to ensure Contractor- or Department-owned RAP is appropriate for use. The Department will not perform any tests or assume any liability for the quality of the Department-owned RAP unless otherwise shown on the plans. The Contractor will retain ownership of RAP generated on the project when shown on the plans.

Do not use Department- or Contractor-owned RAP contaminated with dirt or other objectionable materials. Do not use Department- or Contractor-owned RAP if the decantation value exceeds 5% and the plasticity index is greater than 8. Test the stockpiled RAP for decantation in accordance with Tex-406-A, Part I. Determine the plasticity index in accordance with Tex-106-E if the decantation value exceeds 5%. The decantation and plasticity index requirements do not apply to RAP samples with asphalt removed by extraction or ignition.

Do not intermingle Contractor-owned RAP stockpiles with Department-owned RAP stockpiles. Remove unused Contractor-owned RAP material from the project site upon completion of the project. Return unused Department-owned RAP to the designated stockpile location.

Table 4
Max Allowable Amounts of RAP[1]

Max Allowable Fractionated RAP (%)		
Surface	**Intermediate**	**Base**
20.0	30.0	35.0

1. Must also meet the recycled binder to total binder ratio shown in Table 5.

2.7.2. **RAS**. RAS is defined as processed asphalt shingle material from manufacturing of asphalt roofing shingles or from re-roofing residential structures. Post-manufactured RAS is processed manufacturer's shingle scrap byproduct. Post-consumer RAS is processed shingle scrap removed from residential structures. Use of post-manufactured RAS or post-consumer RAS (tear-offs) is not permitted in surface mixtures unless otherwise shown on the plans. RAS may be used in intermediate and base mixtures unless otherwise shown on the plans. Up to 3% RAS may be used separately or as a replacement for fractionated RAP in accordance with Table 4 and Table 5. RAS may be used separately or in conjunction with RAP. Comply with all regulatory requirements stipulated for RAS by TCEQ.

Process the RAS by ambient grinding or granulating such that 100% of the particles pass the 3/8-in. sieve when tested in accordance with Tex-200-F, Part I. Perform a sieve analysis on processed RAS material before extraction (or ignition) of the asphalt binder.

Add sand meeting the requirements of Table 1 and Table 2, or fine RAP, to RAS stockpiles if needed to keep the processed material workable. Any stockpile that contains RAS will be considered a RAS stockpile and be limited to no more than 3.0% of the HMA mixture in accordance with Table 4.

Certify compliance of the RAS with DMS-11000, "Evaluating and Using Nonhazardous Recyclable Materials Guidelines." Treat RAS as an established nonhazardous recyclable material if it has not come into contact with any hazardous materials. Use RAS from shingle sources on the MPL. Remove all materials that are not part of the shingle, such as wood, paper, metal, plastic, and felt paper, before use. Determine the deleterious content of RAS material for mixture design purposes in accordance with Tex-217-F, Part III. Do not use RAS if deleterious materials are more than 0.5% of the stockpiled RAS, unless otherwise approved. Submit a sample for approval before submitting the mixture design. The Department will perform the testing for deleterious material of RAS to determine specification compliance.

2.8. **Substitute Binders**. No binder substitution will be allowed when shown on the plans. The Contractor may use a substitute PG binder shown in Table 5 instead of the PG binder originally specified, if using recycled materials, and if the substitute PG binder and mixture made with the substitute PG binder meet the following.

- The substitute binder meets the specification requirements for the substitute binder grade in accordance with Section 300.2.11., "Performance-Graded Binders."
- The mixture has less than 10.0 mm of rutting on the Hamburg wheel test (Tex-242-F) after the number of passes required for the originally specified binder. Use of substitute PG binders may be allowed only at the discretion of the Engineer if the Hamburg wheel test results are between 10.0 mm and 12.5 mm.

Table 5
Allowable PG Binders and Max Recycled Binder Ratios

Originally Specified PG Binder	Allowable Substitute PG Binder for Surface Mixes	Allowable Substitute PG Binder for Intermediate and Base Mixes	Maximum Ratio of Recycled Binder[1] to Total Binder (%)		
			Surface	Intermediate	Base
76-22	70-22	70-22	15.0	25.0	30.0
70-22	Note [2]	64-22	15.0	25.0	30.0
64-22	Note [2]	Note [2]	15.0	25.0	30.0
76-28	70-28	70-28	15.0	25.0	30.0
70-28	Note [2]	64-28	15.0	25.0	30.0
64-28	Note [2]	Note [2]	15.0	25.0	30.0

1. Combined recycled binder from RAP and RAS. RAS is not permitted in surface mixtures unless otherwise shown on the plans.
2. No binder substitution is allowed.

3. EQUIPMENT

Provide required or necessary equipment in accordance with Item 320, "Equipment for Asphalt Concrete Pavement."

4. CONSTRUCTION

Produce, haul, place, and compact the specified paving mixture. In addition to tests required in accordance with the Specification, the Contractor may perform other QC tests as necessary. Anytime during the project, the Engineer may perform production and placement tests as necessary in accordance with Item 5, "Control of the Work." Schedule and participate in a mandatory pre-paving meeting with the Engineer on or before the first day of paving unless otherwise shown on the plans.

4.1. **Certification**. Personnel certified by the Department-approved HMA certification program must conduct all mixture designs, sampling, and testing in accordance with Table 6. Supply the Engineer with a list of certified personnel and copies of their current certificates before beginning production and when personnel changes are made. Provide a mixture design developed and signed by a Level 2-certified specialist. Provide Level 1A-certified specialists at the plant during production operations. Provide Level 1B-certified specialists to conduct placement tests. Provide Level AGG101-certified specialists for aggregate testing.

Table 6
Test Methods, Test Responsibility, and Min Certification Levels

Test Description	Test Method	Contractor	Engineer	Level[1]
Aggregate and Recycled Material Testing				
Sampling	Tex-221-F	✓	✓	1A/AGG101
Dry sieve	Tex-200-F, Part I	✓	✓	1A/AGG101
Washed sieve	Tex-200-F, Part II	✓	✓	1A/AGG101
Deleterious material	Tex-217-F, Part I and Part III	✓	✓	AGG101
Decantation	Tex-217-F, Part II	✓	✓	AGG101
Los Angeles abrasion	Tex-410-A	–	✓	Department
Magnesium sulfate soundness	Tex-411-A	–	✓	Department
Micro-Deval abrasion	Tex-461-A	–	✓	AGG101
Crushed face count	Tex-460-A	✓	✓	AGG101
Flat and elongated particles	Tex-280-F	✓	✓	AGG101
Linear shrinkage	Tex-107-E	✓	✓	AGG101
Sand equivalent	Tex-203-F	✓	✓	AGG101
Methylene blue test	Tex-252-F	–	✓	Department
Bulk-specific gravity	Tex-201-F	✓	✓	AGG101
Organic impurities	Tex-408-A	✓	✓	AGG101
Asphalt Binder and Tack Coat Sampling				
Asphalt binder sampling	Tex-500-C, Part II	✓	✓	1A/1B
Tack coat sampling	Tex-500-C, Part III	✓	✓	1A/1B
Mix Design and Verification				
Design and job-mix formula (JMF) changes	Tex-204-F	✓	✓	2
Mixing	Tex-205-F	✓	✓	2
Molding (Superpave gyratory compactor [SGC])	Tex-241-F	✓	✓	1A
Laboratory-molded density	Tex-207-F, Part I and Part VI	✓	✓	1A
Rice gravity	Tex-227-F, Part II	✓	✓	1A
Ignition oven correction factors[2]	Tex-236-F, Part II	✓	✓	1A
Indirect tensile strength	Tex-226-F	✓	✓	1A
Hamburg wheel test	Tex-242-F	✓	✓	1A
Witnessing mixing of correction factors	Tex-236-F, Part III	–	✓	Department
Boil test	Tex-530-C	✓	✓	1A
Production Testing				
Selecting production random numbers	Tex-225-F, Part I	–	✓	1A
Mixture sampling	Tex-222-F	✓	✓	1A/1B
Molding (SGC)	Tex-241-F	✓	✓	1A
Laboratory-molded density	Tex-207-F, Part I and Part VI	✓	✓	1A
Rice gravity	Tex-227-F, Part II	✓	✓	1A
Gradation and asphalt binder content[2]	Tex-236-F, Part I	✓	✓	1A
Control charts	Tex-233-F	✓	✓	1A
Moisture content	Tex-212-F, Part II	✓	✓	1A/AGG101
Hamburg wheel test	Tex-242-F	✓	✓	1A
Micro-Deval abrasion	Tex-461-A	–	✓	AGG101
Boil test	Tex-530-C	✓	✓	1A
Abson recovery	Tex-211-F	–	✓	Department

Test Description	Test Method	Contractor	Engineer	Level[1]
Placement Testing				
Selecting placement random numbers	Tex-225-F, Part II	–	✓	1B
Trimming roadway cores	Tex-251-F, Part I and Part II	✓	✓	1A/1B
In-place air voids	Tex-207-F, Part I and Part VI	✓	✓	1A
In-place density (nuclear method)	Tex-207-F, Part III	✓	–	1B
Establish rolling pattern	Tex-207-F, Part IV	✓	–	1B
Control charts	Tex-233-F	✓	✓	1A
Ride quality measurement	Tex-1001-S	✓	✓	Note[3]
Segregation (density profile)	Tex-207-F, Part V	✓	✓	1B
Longitudinal joint density	Tex-207-F, Part VII	✓	✓	1B
Thermal profile	Tex-244-F	✓	–	1B
Shear bond strength test	Tex-249-F	–	✓	Department

1. Levels 1A, 1B, AGG101, and 2 are certification levels provided by the Hot Mix Asphalt Center certification program.
2. Refer to Section 341.4.9.2.3., "Production Testing," for exceptions to using an ignition oven.
3. Profiler and operator are required to be certified at the Texas A&M Transportation Institute facility when surface test Type B is specified.

4.2. **Reporting and Responsibilities**. Use Department-provided templates to record and calculate all test data, including mixture design, production and placement QC and QA, control charts, thermal profiles, segregation density profiles, and longitudinal joint density. Obtain the current version of the templates from the Department's website or from the Engineer. The Engineer and the Contractor will provide any available test results to the other party when requested. The maximum allowable time for the Contractor and Engineer to exchange test data is as shown in Table 7, unless otherwise approved. The Engineer and the Contractor will immediately report to the other party any test result that requires suspension of production or placement, or a payment adjustment less than 1.000, or that fails to meet the specification requirements. Record and electronically submit all test results and pertinent information on Department-provided templates.

Subsequent sublots placed after test results are available to the Contractor, which require suspension of operations, may be considered unauthorized work. Unauthorized work will be accepted or rejected at the discretion of the Engineer in accordance with Article 5.3., "Conformity with Plans, Specifications, and Special Provisions."

Table 7
Reporting Schedule

Description	Reported By	Reported To	To Be Reported Within
Production Quality Control			
Gradation[1]	Contractor	Engineer	1 working day of completion of the sublot
Asphalt binder content[1]			
Laboratory-molded density[2]			
Moisture content[3]			
Boil test[4]			
Production Quality Assurance			
Gradation[3]	Engineer	Contractor	1 working day of completion of the sublot
Asphalt binder content[3]			
Laboratory-molded density[1]			
Hamburg wheel test[5]			
Boil test[4]			
Binder tests[5]			

Description	Reported By	Reported To	To Be Reported Within
Placement Quality Control			
In-place air voids[2]	Contractor	Engineer	1 working day of completion of the lot
Segregation[1]			
Longitudinal joint density[1]			
Thermal profile[1]			
Placement Quality Assurance			
In-place air voids[1]	Engineer	Contractor	1 working day after receiving the trimmed cores6
Segregation[3]			1 working day of completion of the lot
Longitudinal joint density[3]			
Thermal profile[3]			
Aging ratio[5]			
Shear bond strength test[5]			5 working days after receiving the cores
Payment adjustment summary	Engineer	Contractor	2 working days of performing all required tests and receiving Contractor test data

1. These tests are required on every sublot.
2. Optional test. When performed on split samples, report the results as soon as they become available.
3. To be performed at the frequency shown in Table 16 or as shown on the plans.
4. When shown on the plans.
5. To be reported as soon as the results become available.
6. Two days are allowed if cores cannot be dried to constant weight within 1 day.

The Engineer will use the Department-provided template to calculate all payment adjustment factors for the lot. Sublot samples may be discarded after the Engineer and Contractor sign off on the payment adjustment summary documentation for the lot.

Use the procedures described in Tex-233-F to plot the results of all QC and QA testing. Update the control charts as soon as test results for each sublot become available. Make the control charts readily accessible at the field laboratory. The Engineer may suspend production for failure to update control charts.

4.3. **Quality Control Plan (QCP)**. Develop and follow the QCP in detail. Obtain approval for changes to the QCP made during the project. The Engineer may suspend operations if the Contractor fails to comply with the QCP.

Submit a written QCP before the mandatory pre-paving meeting. Receive approval of the QCP before beginning production. Include the following items in the QCP.

4.3.1. **Project Personnel**. For project personnel, include:

- a list of individuals responsible for QC with authority to take corrective action,
- current contact information for each individual listed, and
- current copies of certification documents for individuals performing specified QC functions.

4.3.2. **Material Delivery and Storage**. For material delivery and storage, include:

- the sequence of material processing, delivery, and minimum quantities to assure continuous plant operations;
- aggregate stockpiling procedures to avoid contamination and segregation;
- frequency, type, and timing of aggregate stockpile testing to assure conformance with material requirements before mixture production; and
- procedure for monitoring the quality and variability of asphalt binder.

4.3.3. **Production**. For production, include:

- loader operation procedures to avoid contamination in cold bins;
- procedures for calibrating and controlling cold feeds;
- procedures to eliminate debris or oversized material;
- procedures for adding and verifying rates of each applicable mixture component (e.g., aggregate, asphalt binder, RAP, RAS, lime, liquid antistrip, compaction aid, foaming process, and WMA);
- procedures for reporting job control test results; and
- procedures to avoid segregation and drain-down in the silo.

4.3.4. **Loading and Transporting**. For loading and transporting, include:

- type and application method for release agents, and
- truck-loading procedures to avoid segregation.

4.3.5. **Placement and Compaction**. For placement and compaction, include:

- proposed agenda for mandatory pre-paving meeting, including date and location;
- proposed paving plan (e.g., production rate, paving widths, joint offsets, and lift thicknesses);
- type and application method for release agents in the paver and on rollers, shovels, lutes, and other utensils;
- procedures for the transfer of mixture into the paver while avoiding physical and thermal segregation and preventing material spillage;
- process to balance production, delivery, paving, and compaction to achieve continuous placement operations and good ride quality;
- paver operations (e.g., speed, operation of wings, and height of mixture in auger chamber) to avoid physical and thermal segregation and other surface irregularities; and
- procedures to construct quality longitudinal and transverse joints.

4.4. **Mixture Design**.

4.4.1. **Design Requirements**. Use the dense-graded design procedure provided in Tex-204-F, unless otherwise shown on the plans. Design the mixture to meet the requirements shown in Tables 1, 2, 3, 4, 5, 8, 9, and 10.

Design the mixture using an SGC, and 50 gyrations as the design number of gyrations (Ndesign). Use a target laboratory-molded density of 96.0% to design the mixture; however, adjustments can be made to the Ndesign value as shown in Table 9. The Ndesign level may be reduced to at least 35 gyrations at the Contractor's discretion.

Use a Department-approved laboratory on the MPL to perform the Hamburg wheel test and provide results with the mixture design, or provide the laboratory mixture and request that the Department perform the Hamburg wheel test. Upon receiving the sample from the Contractor, the Engineer will be allowed 10 working days to provide the Contractor with Hamburg wheel test results on the laboratory mixture design.

The Engineer will provide the mixture design when shown on the plans. The Contractor may submit a new mixture design anytime during the project. The Engineer will verify and approve all mixture designs (JMF1) before the Contractor can begin production.

Provide the Engineer with a mixture design report using the Department-provided template. Include the following items in the report:

- the combined aggregate gradation, source, specific gravity, and percent of each material used;
- the binder source and optimum design asphalt content;
- asphalt binder content and aggregate gradation of RAP and RAS stockpiles;
- the Ndesign level used on the SGC;

- results of all applicable tests;
- the mixing and molding temperatures;
- the signature of the Level 2 person or persons who performed the design;
- the date the mixture design was performed; and
- a unique identification number for the mixture design.

Table 8
Master Gradation Limits (% Passing by Wt. or Volume) and Void in Mineral Aggregate (VMA) Requirements

Sieve Size	DG-B Fine Base	DG-C Coarse Surface	DG-D Fine Surface	DG-F Fine Mixture
2"	–	–	–	–
1-1/2"	100.0[1]	–	–	–
1"	98.0–100.0	100.0[1]	–	–
3/4"	84.0–98.0	95.0–100.0	100.0[1]	–
1/2"	—	—	98.0–100.0	100.0[1]
3/8"	60.0–80.0	70.0–85.0	85.0–100.0	98.0–100.0
#4	40.0–60.0	43.0–63.0	50.0–70.0	70.0–90.0
#8	29.0–43.0	32.0–44.0	35.0–46.0	38.0–48.0
#30	13.0–28.0	14.0–28.0	15.0–29.0	12.0–27.0
#50	6.0–20.0	7.0–21.0	7.0–20.0	6.0–19.0
#200	2.0–7.0	2.0–7.0	2.0–7.0	2.0–7.0
Design (VMA), % Min				
–	13.0	14.0	15.0	16.0
Production (Plant-Produced) (VMA), % Min				
–	12.5	13.5	14.5	15.5

1. Defined as Max sieve size. No tolerance allowed.

Table 9
Laboratory Mixture Design Properties

Mixture Property	Test Method	Requirement
Target laboratory-molded density, %	Tex-207-F	96.0
Design gyrations (Ndesign)	Tex-241-F	50[1]
Indirect tensile strength (dry), psi	Tex-226-F	85–200[2]
Boil test[3]	Tex-530-C	–

1. Adjust within a range of 35–100 gyrations when shown on the plans, in accordance with the specification, or when mutually agreed between the Engineer and Contractor.
2. The Engineer may allow the indirect tensile test strength to exceed 200 psi if the corresponding Hamburg wheel rut depth is >2.5 mm and <12.5 mm.
3. When shown on the plans. Used to establish baseline for comparison to production results.

Table 10
Hamburg Wheel Test Requirements

High-Temperature Binder Grade	Test Method	Min # of Passes at 12.5-mm[1] Rut Depth, Tested at 50°C
PG 64 or lower	Tex-242-F	10,000[2]
PG 70		15,000[3]
PG 76 or higher		20,000

1. The Hamburg wheel test will have a minimum rut depth of 2.5 mm.
2. May be decreased to at least 5,000 passes when shown on the plans.
3. May be decreased to at least 10,000 passes when shown on the plans.

4.4.2. **Job-Mix Formula Approval**. The JMF is the combined aggregate gradation, Ndesign level, and target asphalt percentage used to establish target values for hot-mix production. JMF1 is the original laboratory mixture design used to produce the trial batch. When WMA is used, JMF1 may be designed and submitted to the

Engineer without including the WMA additive, foaming process, or compaction aid. When WMA or a compaction aid is used, document the additive or process used and recommended rate in the JMF1 submittal. The Engineer and the Contractor will verify JMF1 based on plant-produced mixture from the trial batch, unless otherwise approved. The Engineer may accept an existing mixture design previously used on a Department project and may waive the trial batch to verify JMF1. The Department may require the Contractor to reimburse the Department for verification tests if more than two trial batches per design are required.

4.4.2.1. **Contractor's Responsibilities**.

4.4.2.1.1. **Providing Superpave Gyratory Compactor**. Provide an SGC in accordance with Item 504, "Field Office and Laboratory," and make the SGC available to the Engineer for use in molding production samples.

4.4.2.1.2. **Gyratory Compactor Correlation Factors**. Use Tex-206-F, Part II, to perform a gyratory compactor correlation when the Engineer uses a different SGC. Apply the correlation factor to all subsequent production test results.

4.4.2.1.3. **Submitting JMF1**. Furnish a mix design report (JMF1) with representative samples of all component materials and request approval to produce the trial batch. Provide approximately 25 lb. of the design mixture if opting to have the Department perform the Hamburg wheel test on the laboratory mixture, and request that the Department perform the test.

4.4.2.1.4. **Supplying Aggregates**. Provide approximately 40 lb. of each aggregate stockpile unless otherwise directed.

4.4.2.1.5. **Supplying Asphalt**. Provide at least 1 gal. of the asphalt material and enough quantities of any additives proposed for use.

4.4.2.1.6. **Ignition Oven Correction Factors**. Notify the Engineer before performing Tex-236-F, Part II. Allow the Engineer to witness the mixing of ignition oven correction factor sample. Determine the aggregate and asphalt correction factors from the ignition oven in accordance with Tex-236-F, Part II.

If the Engineer witnesses the mixing of the ignition oven correction factor samples, provide the Engineer with identically prepared samples of the mixtures before the trial batch production, including all additives (except water), and blank samples used to determine the correction factors for the ignition oven used for QA testing during production.

Correction factors established from a previously approved mixture design may be used for the current mixture design if the mixture design and ignition oven are the same as previously used, unless otherwise directed. Correction factors must be performed every 12 mo.

4.4.2.1.7. **Boil Test**. When shown on the plans, perform the test and retain the tested sample from Tex-530-C until completion of the project or as directed. Use this sample for comparison purposes during production.

4.4.2.1.8. **Trial Batch Production**. Provide a plant-produced trial batch upon receiving conditional approval of JMF1 and authorization to produce a trial batch. If applicable, include the WMA additive, foaming process, or compaction aid for verification testing of JMF1 and development of JMF2. Produce a trial batch mixture that meets the requirements shown in Tables 4, 5, and 11. The Engineer may accept test results from recent production of the same mixture instead of a new trial batch.

4.4.2.1.9. **Trial Batch Production Equipment**. Use only equipment and materials proposed for use on the project to produce the trial batch.

4.4.2.1.10. **Trial Batch Quantity**. Produce enough quantity of the trial batch to ensure that the mixture meets the specification requirements.

4.4.2.1.11. **Number of Trial Batches**. Produce trial batches as necessary to obtain a mixture that meets the specification requirements.

4.4.2.1.12. **Trial Batch Sampling**. Obtain a representative sample of the trial batch and split it into three equal portions in accordance with Tex-222-F. Label these portions as "Contractor," "Engineer," and "Referee." Deliver samples to the appropriate laboratory as directed.

4.4.2.1.13. **Trial Batch Testing**. Test the trial batch to ensure the mixture produced using the proposed JMF1 meets the mixture requirements shown in Table 11. Ensure the trial batch mixture is also in compliance with the Hamburg wheel requirement shown in Table 10. Use a Department-approved laboratory listed on the MPL to perform the Hamburg wheel test on the trial batch mixture, or request that the Department perform the Hamburg wheel test. Provide approximately 25 lb. of the trial batch mixture if opting to have the Department perform the Hamburg wheel test, and request that the Department perform the test. Upon receiving the sample from the Contractor, the Engineer will be allowed 10 working days to provide the Contractor with Hamburg wheel test results on the trial batch. Provide the Engineer with a copy of the trial batch test results.

4.4.2.1.14. **Development of JMF2**. After the Engineer grants full approval of JMF1, evaluate the trial batch test results, determine the optimum mixture proportions, and submit as JMF2. Adjust the asphalt binder content or gradation to achieve the specified target laboratory-molded density. The asphalt binder content established for JMF2 is not required to be within any tolerance of the optimum asphalt binder content established for JMF1; however, mixture produced using JMF2 must meet the VMA requirements for production shown in Table 8. If the optimum asphalt binder content for JMF2 is more than 0.5% lower than the optimum asphalt binder content for JMF1, the Engineer may perform or require the Contractor to perform Tex-226-F on Lot 1 production to confirm the indirect tensile strength does not exceed 200 psi. Verify that JMF2 meets the mixture requirements shown in Table 4 and Table 5.

4.4.2.1.15. **Mixture Production**. Use JMF2 to produce Lot 1 in accordance with Section 341.4.9.3.1.1., "Lot 1 Placement," after receiving approval for JMF2 and a passing Hamburg wheel result on the trial batch from a laboratory listed on the MPL. Once JMF2 is approved, and without receiving the results from the Department's Hamburg wheel test on the trial batch, the Contractor may proceed to Lot 1 production at their own risk.

Notify the Engineer if electing to proceed without Hamburg wheel test results from the trial batch. Note that the Engineer may require up to the entire sublot of any mixture failing the Hamburg wheel test to be removed and replaced at the Contractor's expense.

4.4.2.1.16. **Development of JMF3**. Evaluate the test results from Lot 1, determine the optimum mixture proportions, and submit as JMF3 for use in Lot 2.

4.4.2.1.17. **JMF Adjustments**. If JMF adjustments are necessary to achieve the specified requirements, make the adjustments before beginning a new lot. The adjusted JMF must:

- be provided to the Engineer in writing before the start of a new lot,
- be numbered in sequence to the previous JMF,
- meet the mixture requirements in accordance with Table 4 and Table 5,
- meet the master gradation limits in accordance with Table 8, and
- be within the operational tolerances of JMF2 in accordance with Table 11.

4.4.2.1.18. **Requesting Referee Testing**. Use referee testing, if needed, in accordance with Section 341.4.9.1., "Referee Testing," to resolve testing differences with the Engineer.

Table 11
Operational Tolerances

Description	Test Method	Allowable Difference Between JMF2 and JMF1 Target[1]	Allowable Difference Between Current JMF and JMF2[2]	Allowable Difference Between Contractor and Engineer[3]
Individual % retained on #8 sieve and larger	Tex-200-F or Tex-236-F	Must be Within Master Gradation Limits in Table 8	±5.04	±5.0
Individual % retained on sieves smaller than #8 and larger than #200			±3.04	±3.0
% passing the #200 sieve			±2.04	±1.6
Asphalt binder content, %	Tex-236-F	±0.5	±0.3	±0.3
Laboratory-molded density, %	Tex-207-F	±1.0	±1.0	±1.0
In-place air voids, %		–	–	±1.0
Laboratory-molded bulk specific gravity		–	–	±0.020
VMA, %, Min	Tex-204-F	Note[5]	Note[5]	–
Theoretical maximum specific (Rice) gravity	Tex-227-F	–	–	±0.020

1. JMF1 is the approved laboratory mixture design used for producing the trial batch. JMF2 is the approved mixture design developed from the trial batch used to produce Lot 1.
2. Current JMF is JMF3 or higher. JMF3 is the approved mixture design used to produce Lot 2.
3. Contractor may request referee testing when values exceed these tolerances.
4. When within these tolerances, mixture production gradations may fall outside the master gradation limits; however, the % passing the #200 will be considered out of tolerance when outside the master gradation limits.
5. Verify that Table 8 requirements are met for VMA.

4.4.2.2. **Engineer's Responsibilities**.

4.4.2.2.1. **Superpave Gyratory Compactor**. The Engineer will use a Department SGC, calibrated in accordance with Tex-241-F, to mold samples for laboratory mixture design verification. For molding trial batch and production specimens, the Engineer will use the Contractor-provided SGC at the field laboratory or provide and use a Department SGC at an alternate location.

4.4.2.2.2. **Conditional Approval of JMF1 and Authorizing Trial Batch**. The Engineer will review and verify conformance with the following information within 2 working days of receipt:

- the Contractor's mix design report (JMF1);
- the Contractor-provided Hamburg wheel test results;
- all required materials including aggregates, asphalt, additives, and recycled materials; and
- the mixture specifications.

The Engineer will grant the Contractor conditional approval of JMF1 if the information provided on the paper copy of JMF1 indicates that the Contractor's mixture design meets the specifications. When the Contractor does not provide Hamburg wheel test results with laboratory mixture design, 10 working days are allowed for conditional approval of JMF1. The Engineer will base full approval of JMF1 on the test results on mixture from the trial batch.

Unless waived, the Engineer will determine the Micro-Deval abrasion loss in accordance with Section 341.2.1.1.2., "Micro-Deval Abrasion." If the Engineer's test results are pending after 2 working days, conditional approval of JMF1 will still be granted within 2 working days of receiving JMF1. When the Engineer's test results become available, they will be used for specification compliance.

The Contractor is authorized to produce a trial batch after the Engineer grants conditional approval of JMF1.

4.4.2.2.3. **Hamburg Wheel Testing of JMF1**. If the Contractor requests the option to have the Department perform the Hamburg wheel test on the laboratory mixture, the Engineer will mold samples in accordance with Tex-242-F to verify compliance with the Hamburg wheel test requirement shown in Table 10. Upon receiving the sample from the Contractor, the Engineer will be allowed 10 working days to provide the Contractor with Hamburg wheel test results on the laboratory mixture design.

4.4.2.2.4. **Ignition Oven Correction Factors**. The Engineer will determine ignition oven correction factors by one of the following options.

- Witness the mixing of ignition oven correction factor samples by the Contractor in accordance with Tex-236-F, Part III. The Engineer will use the identically prepared samples provided by the Contractor to determine the aggregate and asphalt correction factors for the ignition oven in accordance with Tex-236-F, Part II.
- If the Engineer does not witness the mixing of ignition oven correction factor samples, the Engineer will prepare the samples to determine the aggregate and asphalt correction factors for the ignition oven in accordance with Tex-236-F, Part II. Notify the Contractor before performing Tex-236-F, Part II. Allow the Contractor to witness the Engineer performing Tex-236-F, Part II.

Correction factors must be performed every 12 mo. to be used for QA testing during production.

4.4.2.2.5. **Testing the Trial Batch**. Within 1 full working day, the Engineer will sample and test the trial batch to ensure that the mixture meets the requirements shown in Table 11. If the Contractor requests the option to have the Department perform the Hamburg wheel test on the trial batch mixture, the Engineer will mold samples in accordance with Tex-242-F to verify compliance with the Hamburg wheel test requirement shown in Table 10.

The Engineer will have the option to perform the following tests on the trial batch.

- Tex-226-F, to verify that the indirect tensile strength meets the requirement shown in Table 9.
- Tex-530-C, to retain and use for comparison purposes during production.

4.4.2.2.6. **Full Approval of JMF1**. The Engineer will grant full approval of JMF1 and authorize the Contractor to proceed with developing JMF2 if the Engineer's results for the trial batch meet the requirements shown in Tables 8, 9, and 10. The Engineer will notify the Contractor that an additional trial batch is required if the trial batch does not meet these requirements.

4.4.2.2.7. **Approval of JMF2.** The Engineer will approve JMF2 within 1 working day if the mixture meets the requirements shown in Table 5 and Table 8. The asphalt binder content established for JMF2 is not required to be within any tolerance of the optimum asphalt binder content established for JMF1; however, mixture produced using JMF2 must meet the VMA requirements shown in Table 8. If the optimum asphalt binder content for JMF2 is more than 0.5% lower than the optimum asphalt binder content for JMF1, the Engineer may perform or require the Contractor to perform Tex-226-F on Lot 1 production to confirm the indirect tensile strength does not exceed 200 psi.

4.4.2.2.8. **Approval of Lot 1 Production**. The Engineer will authorize the Contractor to proceed with JMF2 for Lot 1 production after a passing Hamburg wheel test result on the trial batch is achieved from a laboratory listed on the MPL. The Contractor may proceed at their own risk with Lot 1 production without the results from the Hamburg wheel test on the trial batch.

If the Department-approved laboratory's sample from the trial batch fails the Hamburg wheel test, the Engineer will suspend production until further Hamburg wheel tests meet the specified values. The Engineer may require up to the entire sublot of any mixture failing the Hamburg wheel test be removed and replaced at the Contractor's expense.

4.4.2.2.9. **Approval of JMF3 and Subsequent JMF Changes**. JMF3 and subsequent JMF changes are approved if they meet the mixture requirements shown in Table 4 and Table 5, and the master gradation limits shown in Table 8, and they are within the operational tolerances of JMF2 shown in Table 11. The addition of a WMA additive to facilitate mixing or as a compaction aid does not require a new laboratory mixture design or trial batch. Current JMF changes that exceed the operational tolerances of JMF2 in accordance with Table 11 may require a new laboratory mixture design, trial batch, or both.

4.5. **Production Operations**. Perform a new trial batch when the plant or plant location is changed. All source changes for asphalt will require a passing Hamburg wheel test result from a laboratory listed on the MPL. The Contractor may proceed at their own risk with Lot 1 production without the results from the Hamburg wheel test on the trial batch. All aggregate source changes will require a new laboratory mixture design and trial batch. Take corrective action and receive approval to proceed after any production suspension for noncompliance with the specification. Submit a new mix design and perform a new trial batch when the asphalt binder content of:

- any RAP stockpile used in the mix is more than 0.5% higher than the value shown in the mixture design report, or
- RAS stockpile used in the mix is more than 2.0% higher than the value shown in the mixture design report.

4.5.1. **Storage and Heating of Materials**. Do not heat the asphalt binder above the temperatures specified in Item 300, or outside the manufacturer's recommended values. Provide the Engineer with daily records of asphalt binder and HMA discharge temperatures (in legible and discernible increments) in accordance with Item 320, unless otherwise directed. Do not store mixture for a period long enough to affect the quality of the mixture, nor in any case longer than 12 hr. unless otherwise approved.

4.5.2. **Mixing and Discharge of Materials.** Notify the Engineer of the target discharge temperature and produce the mixture within 25°F of the target. Monitor the temperature of the material in the truck before shipping to ensure that it does not exceed the maximum production temperatures shown in Table 12. The Department will not pay for or allow placement of any mixture produced above the maximum production temperatures shown in Table 12.

Table 12
Max Production Temperature

High-Temperature Binder Grade[1]	Max Production Temperature (°F)
PG 64	325[2]
PG 70	335[2]
PG 76	345[2]

1. The high-temperature binder grade refers to the high-temperature grade of the virgin asphalt binder used to produce the mixture.
2. The Max production temperature of WMA is 275°F.

Produce WMA within the target discharge temperature range of 215–275°F when WMA is required. Take corrective action anytime the discharge temperature of the WMA exceeds the target discharge range. The Engineer may suspend production operations if the Contractor's corrective action is not successful at controlling the production temperature within the target discharge range. Note that when WMA is produced, it may be necessary to adjust burners to ensure complete combustion such that no burner fuel residue remains in the mixture.

Control the mixing time and temperature so that substantially all moisture is removed from the mixture before discharging from the plant. Determine the moisture content, if requested, by oven-drying in accordance with Tex-212-F, Part II, and verify that the mixture contains no more than 0.2% of moisture by weight. Obtain the sample immediately after discharging the mixture into the truck and perform the test promptly.

4.6. **Hauling Operations**. Clean all truck beds before use to ensure that mixture is not contaminated. Use a release agent listed on the MPL to coat the inside bed of the truck when necessary. Do not use diesel or any release agent not listed on the MPL.

Use equipment for hauling as defined in Section 341.4.7.3.3., "Hauling Equipment." Use other hauling equipment only when allowed.

4.7. **Placement Operations**. Collect haul tickets from each load of mixture delivered to the project and provide the Department's copy to the Engineer approximately every hour, or as directed. Use a handheld thermal camera or infrared thermometer, when a thermal imaging system is not used, to measure and record the internal temperature of the mixture as discharged from the truck or material transfer device (MTD) before or as the mix enters the paver. Measure the mixture temperature at a minimum frequency of one per ten trucks, or as approved. Include an approximate station number or Global Positioning System coordinates of the location where the temperature was taken on each ticket. Ensure the mixture meets the temperature requirements shown in Table 12. Calculate the daily yield and cumulative yield for the specified lift and provide to the Engineer at the end of paving operations for each day unless otherwise directed. The Engineer may suspend production if the Contractor fails to produce and provide haul tickets and yield calculations by the end of paving operations for each day.

Prepare the surface by removing raised pavement markers and objectionable material such as moisture, dirt, sand, leaves, and other loose impediments from the surface before placing mixture. Remove vegetation from pavement edges. Place the mixture to meet the typical section requirements and produce a smooth, finished surface with a uniform appearance and texture. Offset longitudinal joints of successive courses of hot mix by at least 6 in. Place mixture so that longitudinal joints on the surface course coincide within 6 in. of lane lines, are not placed in the wheel path, or will not be covered with pavement markings, or as directed. Ensure that all finished surfaces will drain properly. Place the mixture at the rate or thickness shown on the plans. The Engineer will use the guidelines shown in Table 13 to determine the compacted lift thickness of each layer when multiple lifts are required. The thickness determined is based on the rate of 110 lb. per square yard for each inch of pavement, unless otherwise shown on the plans.

Table 13
Compacted Lift Thickness and Required Core Height

Mixture Type	Compacted Lift Thickness Guidelines		Min Untrimmed Core Height Eligible for Testing (in.)
	Min (in.)	Max (in.)	
DG-B	2.50	5.00	1.75
DG-C	2.00	4.00	1.50
DG-D	1.50	3.00	1.25
DG-F	1.25	2.50	1.25

4.7.1. **Weather Conditions**.

4.7.1.1. **When Using a Thermal Imaging System**. Place mixture when the roadway surface is dry and the roadway surface temperature is at or above the temperatures shown in Table 14A, unless otherwise approved or as shown on the plans. Place mixtures only when weather conditions and moisture conditions of the roadway surface are suitable as determined by the Engineer. Provide output data from the thermal imaging system to demonstrate to the Engineer that no recurring severe thermal segregation exists in accordance with Section 341.4.7.3.1.2., "Thermal Imaging System."

Table 14A
Min Pavement Surface Temperatures

High-Temperature Binder Grade[1]	Min Pavement Surface Temperatures (°F)	
	Subsurface Layers	Surface Layers
PG 64	35	40
PG 70	45[2]	50[2]
PG 76	45[2]	50[2]

1. The high-temperature binder grade refers to the high-temperature grade of the virgin asphalt binder used to produce the mixture.
2. The Contractor may pave at temperatures 10°F lower than these values when a chemical WMA additive is used as a compaction aid in the mixture or when using WMA.

4.7.1.2. **When Not Using a Thermal Imaging System**. When using a thermal camera instead of the thermal imaging system, place mixture when the roadway surface temperature is at or above the temperatures shown in

Table 14B, unless otherwise approved or as shown on the plans. Measure the roadway surface temperature using a handheld thermal camera or infrared thermometer. The Engineer may allow mixture placement to begin before the roadway surface reaches the required temperature if conditions are such that the roadway surface will reach the required temperature within 2 hr. of beginning placement operations. Place mixtures only when weather conditions and moisture conditions of the roadway surface are suitable as determined by the Engineer.

Table 14B
Min Pavement Surface Temperatures

High-Temperature Binder Grade[1]	Min Pavement Surface Temperatures (°F)	
	Subsurface Layers	Surface Layers
PG 64	45	50
PG 70	55[2]	60[2]
PG 76	60[2]	60[2]

1. The high-temperature binder grade refers to the high-temperature grade of the virgin asphalt binder used to produce the mixture.
2. The Contractor may pave at temperatures 10°F lower than these values when a chemical WMA additive is used as a compaction aid in the mixture, when using WMA, or when using a paving process with equipment that eliminates thermal segregation. In such cases, for each sublot and in the presence of the Engineer, use a handheld thermal camera operated in accordance with Tex-244-F to demonstrate to the satisfaction of the Engineer that the uncompacted mat has no more than 10°F of thermal segregation.

4.7.2. **Tack Coat**.

4.7.2.1. **Application.** Clean the surface before placing the tack coat. The Engineer will set the rate between 0.04 and 0.10 gal. of residual asphalt per square yard of surface area. Apply a uniform tack coat at the specified rate unless otherwise directed. Apply the tack coat in a uniform manner to avoid streaks and other irregular patterns. Apply the tack coat to all surfaces that will come in contact with the subsequent HMA placement, unless otherwise directed. Apply adequate overlap of the tack coat in the longitudinal direction during placement of the mat to ensure bond of adjacent mats, unless otherwise directed. Allow adequate time for emulsion to break completely before placing any material. Prevent splattering of tack coat when placed adjacent to curb, gutter, and structures. Do not dilute emulsified asphalts at the terminal, in the field, or at any other location before use, unless required in conformance with the manufacturer's recommendation for approved TRAIL product use, or when shown on the plans.

4.7.2.2. **Sampling.** The Engineer will obtain at least one sample of the tack coat binder per project per source in accordance with Tex-500-C, Part III, and test it to verify compliance with Item 300. The Engineer will notify the Contractor when the sampling will occur and will witness the collection of the sample from the asphalt distributor immediately before use. Label the can with the corresponding lot and sublot numbers, producer, producer facility location, grade, district, date sampled, all applicable bills of lading (if available), and project information, including highway and control-section-job (CSJ) number. For emulsions, the Engineer may test as often as necessary to ensure the residual of the emulsion is greater than or equal to the specification requirement in Item 300.

4.7.3. **Lay-Down Operations**. Use the placement temperatures shown in Table 15 to establish the minimum placement temperature of the mixture delivered to the paving operation.

Table 15
Min Mixture Placement Temperature

High-Temperature Binder Grade[1]	Min Placement Temperature[2,3,4] (°F)
PG 64	260
PG 70	270
PG 76	280

1. The high-temperature binder grade refers to the high-temperature grade of the virgin asphalt binder used to produce the mixture.
2. The mixture temperature must be measured using a handheld thermal camera or infrared thermometer immediately before entering MTD or paver.
3. Min placement temperatures may be reduced 20°F if using a chemical WMA additive as a compaction aid, MTD with remixing capabilities, or paver hopper insert with remixing capabilities.
4. When using WMA, the minimum placement temperature is 215°F.

4.7.3.1. **Thermal Profile**. Use a handheld thermal camera or a thermal imaging system to obtain a continuous thermal profile in accordance with Tex-244-F. Thermal profiles are not applicable in areas described in Section 341.4.9.3.1.4., "Miscellaneous Areas."

4.7.3.1.1. **Thermal Segregation**.

4.7.3.1.1.1. **Moderate**. Any areas that have a temperature differential greater than 25°F, but not exceeding 50°F.

4.7.3.1.1.2. **Severe**. Any areas that have a temperature differential greater than 50°F.

4.7.3.1.2. **Thermal Imaging System**. Review the output results when a thermal imaging system is used, and provide the automated report described in Tex-244-F to the Engineer daily, unless otherwise directed. Modify the paving process as necessary to eliminate any recurring (moderate or severe) thermal segregation identified by the thermal imaging system.

The Engineer may suspend paving operations if the Contractor cannot successfully modify the paving process to eliminate recurring severe thermal segregation. Density profiles are not required and not applicable when using a thermal imaging system.

Provide the Engineer with electronic copies of all daily data files that can be used with the thermal imaging system software to generate temperature profile plots daily or as requested.

4.7.3.1.3. **Thermal Camera**. Provide the Engineer with the thermal profile of every sublot within 1 working day of the completion of each lot. When requested by the Engineer, provide the thermal images generated using the thermal camera. Report the results of each thermal profile in accordance with Section 341.4.2., "Reporting and Responsibilities." The Engineer will use a handheld thermal camera to obtain a thermal profile at least once per project.

Take immediate corrective action to eliminate recurring moderate thermal segregation when a handheld thermal camera is used.

Suspend operations and take immediate corrective action to eliminate severe thermal segregation unless otherwise directed. Resume operations when the Engineer determines that subsequent production will meet the requirements of this Section. No production or placement payment adjustments greater than 1.000 will be paid for any sublot that contains severe thermal segregation. Evaluate areas with severe thermal segregation by performing density profiles in accordance with Section 341.4.9.3.3.3., "Segregation (Density Profile)." Remove and replace the material in any areas that have severe thermal segregation and a failing result for segregation (density profile), unless otherwise directed. The sublot in question may receive a production and placement payment adjustment greater than 1.000, if applicable, when the defective material is successfully removed and replaced.

4.7.3.2. **Windrow Operations**. Operate windrow pickup equipment so that when hot mix is placed in windrows, substantially all the mixture deposited on the roadbed is picked up and loaded into the paver.

4.7.3.3. **Hauling Equipment**. Use belly dump, live-bottom, or end dump trucks to haul and transfer mixture. Except for paving miscellaneous areas, end dump trucks are allowed only when used in conjunction with an MTD with remixing capability or when a thermal imaging system is used, unless otherwise approved.

4.7.3.4. **Screed Heaters**. Turn off screed heaters to prevent overheating of the mat if the paver stops for more than 5 min. The Engineer may evaluate the suspect area in accordance with Section 341.4.9.3.3.5., "Recovered Asphalt Dynamic Shear Rheometer (DSR)," if the screed heater remains on for more than 5 min. while the paver is stopped.

4.8. **Compaction**. Compact the pavement uniformly to contain between 3.8% and 8.5% in-place air voids. Take immediate corrective action to bring the operation within 3.8% and 8.5% when the in-place air voids exceed the range of these tolerances. The Engineer will allow paving to resume when the proposed corrective action is likely to yield between 3.8% and 8.5% in-place air voids.

Obtain cores in areas placed under exempt production, as directed, at locations determined by the Engineer. The Engineer may test these cores and suspend operations or require removal and replacement if the in-place air voids are less than 2.7% or more than 9.9%. Areas defined in Section 341.4.9.3.1.4., "Miscellaneous Areas," are not subject to in-place air void determination.

Furnish the type, size, and number of rollers necessary to ensure desired compaction. Use additional rollers as required to remove any roller marks. Use only water or an approved release agent on rollers, tamps, and other compaction equipment unless otherwise directed.

Use the control strip method shown in Tex-207-F, Part IV, on the first day of production to establish the rolling pattern that will produce the desired in-place air voids, unless otherwise directed.

Use tamps to thoroughly compact the edges of the pavement along curbs, headers, and similar structures and in locations that will not allow thorough compaction using rollers. The Engineer may require rolling using a trench roller on widened areas, in trenches, and in other limited areas.

Complete all compaction operations using breakdown rollers before the pavement temperature drops below 180°F, unless otherwise allowed. Compaction using a pneumatic or light finish roller operated in static mode is allowed for pavement temperatures above 160°F.

Allow the compacted pavement to cool to 160°F or lower before opening to traffic, unless otherwise directed. Sprinkle the finished mat with water or limewater, when directed, to expedite opening the roadway to traffic.

4.9. **Acceptance Plan**. Payment adjustments for the material will be in accordance with Article 341.6., "Payment."

Sample and test the hot mix on a lot and sublot basis. Suspend production if the production payment factor shown in Section 341.6.1., "Production Payment Adjustment Factors," or the placement payment factor shown in Section 341.6.2., "Placement Payment Adjustment Factors," for two consecutive lots is below 1.000. Resume production once test results or other information indicates to the satisfaction of the Engineer that the next material produced or placed will result in payment factors of at least 1.000.

4.9.1. **Referee Testing**. The Materials and Tests Division is the referee laboratory. The Contractor may request referee testing if a "remove and replace" condition is determined based on the Engineer's test results, or if the differences between Contractor and Engineer test results exceed the maximum allowable difference in accordance with Table 11 and the differences cannot be resolved. The Contractor may also request referee testing if the Engineer's test results require suspension of production and the Contractor's test results are within specification limits. Make the request within 5 working days after receiving test results and cores from the Engineer. Referee tests will be performed only on the sublot in question and only for the tests in question.

Allow 10 working days from the time the referee laboratory receives the samples for test results to be reported. The Department may require the Contractor to reimburse the Department for referee tests if more than three referee tests per project are required and the Engineer's test results are closer to the referee test results than the Contractor's test results.

The Materials and Tests Division will determine the laboratory-molded density based on the molded specific gravity and the maximum theoretical specific gravity of the referee sample. The in-place air voids will be determined based on the bulk specific gravity of the cores, as determined by the referee laboratory, and the Engineer's average maximum theoretical specific gravity for the lot. Except for "remove and replace" conditions, referee test results are final and will establish payment adjustment factors for the sublot in question. The Contractor may decline referee testing and accept the Engineer's test results when the placement payment adjustment factor for any sublot results in a "remove and replace" condition. Placement sublots subject to be removed and replaced will be further evaluated in accordance with Section 341.6.2.2., "Placement Sublots Subject to Removal and Replacement."

4.9.2. **Production Acceptance**.

4.9.2.1. **Production Lot**. A production lot consists of four equal sublots. The default quantity for Lot 1 is 1,000 ton; however, when requested by the Contractor, the Engineer may increase the quantity for Lot 1 to no more than 4,000 ton. The Engineer will select subsequent lot sizes based on the anticipated daily production such that approximately three–four sublots are produced each day. The lot size will be between 1,000 ton and 4,000 ton. The Engineer may change the lot size before the Contractor begins any lot.

If the optimum asphalt binder content for JMF2 is more than 0.5% lower than the optimum asphalt binder content for JMF1, the Engineer may perform or require the Contractor to perform Tex-226-F on Lot 1 to confirm the indirect tensile strength does not exceed 200 psi. Take corrective action to bring the mixture within specification compliance if the indirect tensile strength exceeds 200 psi, unless otherwise directed.

4.9.2.1.1. **Incomplete Production Lots**. If a lot is begun but cannot be completed, such as on the last day of production or in other circumstances deemed appropriate, the Engineer may close the lot. Adjust the payment for the incomplete lot in accordance with Section 341.6.1., "Production Payment Adjustment Factors." Close all lots within 5 working days unless otherwise allowed.

4.9.2.2. **Production Sampling**.

4.9.2.2.1. **Mixture Sampling**. The Engineer will perform or witness the sampling of production sublots from trucks at the plant in accordance with Tex-222-F The sampler will split each sample into three equal portions in accordance with Tex-200-F and label these portions as "Contractor," "Engineer," and "Referee." The Engineer will perform or witness the sample splitting and take immediate possession of the samples labeled "Engineer" and "Referee." The Engineer will maintain the custody of the samples labeled "Engineer" and "Referee" until the Department's testing is completed.

4.9.2.2.1.1. **Random Sample**. At the beginning of the project, the Engineer will select random numbers for all production sublots. Determine sample locations in accordance with Tex-225-F. Take one sample for each sublot at the randomly selected location. The Engineer will perform or witness the sampling of production sublots.

4.9.2.2.1.2. **Blind Sample**. For one sublot per lot, the Engineer will sample, split, and test a "blind" production sample instead of the random sample collected by the Contractor. The location of the Engineer's "blind" sample will not be disclosed to the Contractor before sampling. The Engineer's "blind" sample may be randomly selected in accordance with Tex-225-F for any sublot or selected at the discretion of the Engineer. The Engineer may sample and test an additional blind sample when the random sampling process does not result in obtaining a sample.

For one sublot per lot, the Contractor must obtain from the Engineer a "blind" production sample collected by the Engineer. If desired, the Contractor may witness the collection of blind samples. Test either the "blind" or

the random sample; however, referee testing for the sublot (if applicable) will be based on a comparison of results from the "blind" sample.

4.9.2.2.2. **Asphalt Binder Sampling**. The Engineer will witness the Contractor obtain a 1-qt. sample of the asphalt binder for each lot of mixture produced. The Contractor will notify the Engineer when the sampling will occur. Obtain the sample at approximately the same time the mixture random sample is obtained. Sample from a port located immediately upstream from the mixing drum or pug mill and upstream from the introduction of any additives in accordance with Tex-500-C, Part II. Label the can with the corresponding lot and sublot numbers, producer name, producer facility, grade, District, date sampled, all applicable bills of lading (if available), and project information, including highway and CSJ number. The Engineer will retain these samples for 1 yr. The Engineer may also obtain independent samples. If obtaining an independent asphalt binder sample and upon request of the Contractor, the Engineer will split a sample of the asphalt binder with the Contractor.

At least once per project, the Engineer will collect split samples of each binder grade and source used. The Engineer will submit one split sample to the Materials and Tests Division to verify compliance with Item 300, and will retain the other split sample for 1 yr.

4.9.2.3. **Production Testing**. The Contractor and Engineer must perform production tests shown in Table 16. The Contractor has the option to verify the Engineer's test results on split samples provided by the Engineer. Determine compliance with operational tolerances shown in Table 11 for all sublots.

Take immediate corrective action if the Engineer's laboratory-molded density on any sublot is less than 95.0% or greater than 97.0% to bring the mixture within these tolerances. The Engineer may suspend operations if the Contractor's corrective actions do not produce acceptable results. The Engineer will allow production to resume when the proposed corrective action is likely to yield acceptable results.

The Engineer may allow alternate methods for determining the asphalt binder content and aggregate gradation if the aggregate mineralogy is such that Tex-236-F, Part I does not yield reliable results. Provide evidence that results from Tex-236-F, Part I are not reliable before requesting permission to use an alternate method unless otherwise directed. Use the applicable test procedure as directed if an alternate test method is allowed.

Table 16
Production and Placement Testing Frequency

Description	Test Method	Min Contractor Testing Frequency	Min Engineer Testing Frequency
Individual % retained on #8 sieve and larger	Tex-200-F or Tex-236-F	1 per sublot	1 per 12 sublots[1]
Individual % retained on sieves smaller than #8 and larger than #200			
% passing #200 sieve			
Laboratory-molded density	Tex-207-F	–	1 per sublot[1]
Laboratory-molded bulk specific gravity			
In-place air voids			
VMA	Tex-204-F		
Segregation (density profile)	Tex-207-F, Part V	1 per sublot[2]	1 per project
Longitudinal joint density	Tex-207-F, Part VII	1 per sublot[3]	1 per project
Moisture content	Tex-212-F, Part II	When directed	1 per project
Theoretical maximum specific (Rice) gravity	Tex-227-F	–	1 per sublot[1]
Asphalt binder content	Tex-236-F	1 per sublot	1 per lot[1]
Thermal profile	Tex-244-F	1 per sublot[2]	1 per project
Hamburg wheel test	Tex-242-F	–	
Deleterious in RAS[4]	Tex-217-F, Part III	–	
Asphalt binder sampling and testing[4,5]	Tex-500-C, Part II	–	
Tack coat sampling and testing	Tex-500-C, Part III	–	
Boil test[6]	Tex-530-C	1 per lot	
Shear bond strength test[7]	Tex-249-F	–	

1. For production defined in Section 341.4.9.4., "Exempt Production," the Engineer will perform one test per day if 100 ton or more is produced. For exempt production, no testing is required when < 100 ton is produced.
2. To be performed in the presence of the Engineer when not using the thermal imaging system, unless otherwise approved.
3. To be performed in the presence of the Engineer.
4. Testing performed by the Materials and Tests Division or designated laboratory.
5. Sampling performed by the Contractor. The Engineer will witness sampling and retain the samples for 1 yr.
6. When shown on the plans.
7. Testing performed by the Materials and Tests Division or District for informational purposes on a sample obtained by the Contractor within the first four lots of the project.

4.9.2.4. **Operational Tolerances**. Control the production process within the operational tolerances shown in Table 11. When production is suspended, the Engineer will allow production to resume when test results or other information indicates the next mixture produced will be within the operational tolerances.

4.9.2.4.1. **Gradation**. Suspend operation and take corrective action if any aggregate is retained on the maximum sieve size shown in Table 8. A sublot is defined as out of tolerance if either the Engineer's or the Contractor's test results are out of operational tolerance. Suspend production when test results for gradation exceed the operational tolerances shown in Table 11 for three consecutive sublots on the same sieve or four consecutive sublots on any sieve, unless otherwise directed. The consecutive sublots may be from more than one lot.

4.9.2.4.2. **Asphalt Binder Content**. A sublot is defined as out of operational tolerance if either the Engineer's or the Contractor's test results exceed the values shown in Table 11. No production or placement payment adjustments greater than 1.000 will be paid for any sublot that is out of operational tolerance for asphalt binder content. Suspend production and shipment of the mixture if the Engineer's or the Contractor's asphalt binder content deviates from the current JMF by more than 0.5% for any sublot.

4.9.2.4.3. **VMAs**. The Engineer will determine the VMA for every sublot. For sublots when the Engineer does not determine asphalt binder content, the Engineer will use the asphalt binder content results from QC testing performed by the Contractor to determine VMA.

Take immediate corrective action if the VMA value for any sublot is less than the minimum VMA requirement for production shown in Table 8. Suspend production and shipment of the mixture if the Engineer's VMA results on two consecutive sublots are below the minimum VMA requirement for production shown in Table 8. No production or placement payment adjustments greater than 1.000 will be paid for any sublot that does not meet the minimum VMA requirement for production shown in Table 8 based on the Engineer's VMA determination.

Suspend production and shipment of the mixture if the Engineer's VMA result is more than 0.5% below the minimum VMA requirement for production shown in Table 8. In addition to suspending production, the Engineer may require removal and replacement or may allow the sublot to be left in place without payment.

4.9.2.4.4. **Hamburg Wheel Test**. The Engineer may perform a Hamburg wheel test on plant-produced mixture anytime during production. Suspend production until further Hamburg wheel tests meet the specified values when the production samples fail the Hamburg wheel test criteria shown in Table 10. The Engineer may require up to the entire sublot of any mixture failing the Hamburg wheel test to be removed and replaced at the Contractor's expense.

If the Department-approved laboratory's Hamburg wheel test on plant-produced mixture results in a "remove and replace" condition, the Contractor may request that the Materials and Tests Division determine the final disposition of the material in question by re-testing the failing material.

4.9.2.5. **Individual Loads of Hot Mix**. The Engineer may reject individual truckloads of hot mix. When a load of hot mix is rejected for reasons other than temperature, contamination, or excessive uncoated particles, the Contractor may request that the rejected load be tested. Make this request within 4 hr. of rejection. The Engineer will sample and test the mixture. If test results are within the operational tolerances shown in Table 11, payment will be made for the load. If test results are not within operational tolerances, no payment will be made for the load.

4.9.3. **Placement Acceptance**.

4.9.3.1. **Placement Lot**. A placement lot consists of four placement sublots. A placement sublot consists of the area placed during a production sublot.

4.9.3.1.1. **Lot 1 Placement**. Placement payment adjustments greater than 1.000 for Lot 1 will be in accordance with Section 341.6.2., "Placement Payment Adjustment Factors"; however, no placement adjustment less than 1.000 will be assessed for any sublot placed in Lot 1 when the in-place air voids are greater than or equal to 2.7% and less than or equal to 9.9%. Remove and replace any sublot with in-place air voids less than 2.7% or greater than 9.9%.

4.9.3.1.2. **Incomplete Placement Lots**. An incomplete placement lot consists of the area placed as described in Section 341.4.9.2.1.1., "Incomplete Production Lots," excluding areas defined in Section 341.4.9.3.1.4., "Miscellaneous Areas." Placement sampling is required if the random sample plan for production resulted in a sample being obtained from an incomplete production sublot.

4.9.3.1.3. **Shoulders, Ramps, Etc**. Shoulders, ramps, intersections, acceleration lanes, deceleration lanes, and turn lanes are subject to in-place air void determination and payment adjustments unless shown on the plans as not eligible for in-place air void determination. Intersections may be considered miscellaneous areas when determined by the Engineer.

4.9.3.1.4. **Miscellaneous Areas**. Miscellaneous areas include areas that typically involve significant handwork or discontinuous paving operations, such as temporary detours, driveways, mailbox turnouts, crossovers, gores, spot level-up areas, pavement repair sections less than 300 ft., and other similar areas. Temporary detours are subject to in-place air void determination when shown on the plans. Miscellaneous areas also include level-ups and thin overlays when the layer thickness shown on the plans is less than the minimum untrimmed core height eligible for testing in accordance with Table 13. The specified layer thickness is based

on the rate of 110 lb. per square yard for each inch of pavement unless another rate is shown on the plans. When "Level Up" is listed as part of the bid item description, a payment adjustment factor of 1.000 will be assigned for all placement sublots as described in Article 341.6., "Payment." Miscellaneous areas are not eligible for random placement sampling locations. Compact miscellaneous areas in accordance with Section 341.4.8., "Compaction." Miscellaneous areas are not subject to in-place air void determination, thermal profiles testing, segregation (density profiles), or longitudinal joint density evaluations.

4.9.3.2. **Placement Sampling**. The Engineer will select random numbers for all placement sublots at the beginning of the project. The Engineer will provide the Contractor with the placement random numbers only immediately after the sublot is completed. Mark the roadway location at the completion of each sublot and record the station number. Determine one random sample location for each placement sublot in accordance with Tex-225-F. Adjust the random sample location by no more than necessary to achieve a 2-ft. clearance if the location is within 2 ft. of a joint or pavement edge.

Shoulders, ramps, intersections, acceleration lanes, deceleration lanes, and turn lanes are always eligible for selection as a random sample location; however, if a random sample location falls on one of these areas and the area is shown on the plans as not subject to in-place air void determination, cores will not be taken for the sublot and a 1.000 pay factor will be assigned to that sublot.

Provide the equipment and means to obtain and trim roadway cores onsite. Onsite is defined as in close proximity to where the cores are taken. Obtain the cores within 1 working day of the time the placement sublot is completed, unless otherwise approved. Obtain two 6-in. diameter cores side-by-side from within 1 ft. of the random location provided for the placement sublot. Mark the cores for identification, measure and record the untrimmed core height, and provide the information to the Engineer. The Engineer will witness the coring operation and measurement of the core thickness. Visually inspect each core and verify that the current paving layer is bonded to the underlying layer. Take corrective action if an adequate bond does not exist between the current and underlying layer to ensure that an adequate bond will be achieved during subsequent placement operations.

Trim the cores immediately after obtaining them from the roadway in accordance with Tex-251-F if the core heights meet the minimum untrimmed value in accordance with Table 13. Trim the cores onsite in the presence of the Engineer. Use a permanent marker or paint pen to record the lot and sublot numbers on each core, as well as the designation as Core A or Core B. The Engineer may require additional information to be marked on the core and may choose to sign or initial the core. The Engineer will take custody of the cores immediately after witnessing the trimming of the cores and will retain custody of the cores until the Department's testing is completed. Before turning the trimmed cores over to the Engineer, the Contractor may wrap the trimmed cores or secure them in a manner that will reduce the risk of possible damage occurring during transport by the Engineer. After testing, the Engineer will return the cores to the Contractor.

The Engineer may have the cores transported back to the Department's laboratory at the HMA plant via the Contractor's haul truck or other designated vehicle. In such cases where the cores will be out of the Engineer's possession during transport, the Engineer will use Department-provided security bags and the Protocol for Roadway Core Custody located on the Department's website to provide a secure means and process that protect the integrity of the cores during transport.

Decide whether to include the pair of cores in the air void determination for that sublot if the core height before trimming is less than the minimum untrimmed value shown in Table 13. Trim the cores in accordance with Tex-251-F before delivering to the Engineer if electing to have the cores included in the air void determination. If electing to not have the cores included in air void determination, inform the Engineer of the decision, and deliver untrimmed cores to the Engineer. The placement pay factor for the sublot will be 1.000 if cores will not be included in air void determination.

Instead of the Contractor trimming the cores onsite immediately after coring, the Engineer and the Contractor may mutually agree to have the trimming operations performed at an alternate location, such as a field laboratory or other similar location. In such cases, the Engineer will take possession of the cores immediately

after they are obtained from the roadway and will retain custody of the cores until testing is completed. Either the Department or Contractor representative may perform trimming of the cores. The Engineer will witness all trimming operations in cases where the Contractor representative performs the trimming operation.

Dry the core holes and tack the sides and bottom immediately after obtaining the cores. Fill the hole with the same type of mixture and properly compact the mixture. Repair core holes using other methods when approved.

4.9.3.3. **Placement Testing**. Perform placement tests in accordance with Table 16. After the Engineer returns the cores, the Contractor may test the cores to verify the Engineer's test results for in-place air voids. The allowable differences between the Contractor's and Engineer's test results are shown in Table 11.

4.9.3.3.1. **In-Place Air Voids**. The Engineer will measure in-place air voids in accordance with Tex-207-F and Tex-227-F. Before drying to a constant weight, cores may be pre-dried using a CoreDry or similar vacuum device to remove excess moisture. The Engineer will average the values obtained for all sublots in the production lot to determine the theoretical maximum specific gravity. The Engineer will use the average air void content for in-place air voids.

The Engineer will use the vacuum method to seal the core if required in accordance with Tex-207-F. The Engineer will use the test results from the unsealed core to determine the placement payment adjustment factor if the sealed core yields a higher specific gravity than the unsealed core. After determining the in-place air void content, the Engineer will return the cores and provide test results to the Contractor.

4.9.3.3.2. **Informational Shear Bond Strength Testing**. The Engineer will select one random sublot within the first four lots of the project for shear bond strength testing. Obtain full-depth cores in accordance with Tex-249-F unless the HMA is being placed directly on concrete pavement. Label the cores with lot and sublot numbers and provide to the Engineer. Inspector must use pertinent Department form to document the CSJ number, producer of the tack coat, mix type, and shot rate. The Engineer will ship the cores to the Materials and Tests Division or District laboratory for shear bond strength testing. Results from these tests will not be used for specification compliance.

4.9.3.3.3. **Segregation (Density Profile)**. Test for segregation using density profiles in accordance with Tex-207-F, Part V. Density profiles are not required and are not applicable when using a thermal imaging system. Density profiles are not applicable in areas described in Section 341.4.9.3.1.4., "Miscellaneous Areas."

Perform at least one density profile per sublot. Perform additional density profiles when any of the following conditions occur, unless otherwise approved:

- areas that are identified by either the Contractor or the Engineer with severe thermal segregation,
- any visibly segregated areas that exist,
- the paver stops due to lack of material being delivered to the paving operations and the temperature of the uncompacted mat before the initial breakdown rolling is less than the temperatures shown in Table 17.

Table 17
Min Uncompacted Mat Temperature Requiring Segregation Profile[1]

High-Temperature Binder Grade[2]	Min Temperature of Uncompacted Mat Allowed Before Initial Breakdown Rolling[3,4,5] (°F)
PG 64	<250
PG 70	<260
PG 76	<270

1. Applicable only to paver stops that occur due to lack of material being delivered to the paving operations and when not using a thermal imaging system.
2. The high-temperature binder grade refers to the high-temperature grade of the virgin asphalt binder used to produce the mixture.
3. The surface of the uncompacted mat must be measured using a handheld thermal camera or infrared thermometer.
4. Min uncompacted mat temperature requiring a segregation profile may be reduced 20°F if using a chemical WMA additive as a compaction aid, MTD with remixing capabilities, or paver hopper insert with remixing capabilities.
5. When using WMA, the Min uncompacted mat temperature requiring a segregation profile is 215°F.

Provide the Engineer with the density profile of every sublot in the lot within 1 working day of the completion of each lot. Report the results of each density profile in accordance with Section 341.4.2., "Reporting and Responsibilities."

The density profile is considered failing if it exceeds the tolerances shown in Table 18. When a thermal imaging system is not used, the Engineer will measure the density profile at least once per project. The Engineer's density profile results will be used when available. The Engineer may require the Contractor to remove and replace the area in question if the area fails the density profile and has surface irregularities as defined in Section 341.4.9.3.3.6., "Irregularities." The sublot in question may receive a production and placement payment adjustment greater than 1.000, if applicable, when the defective material is successfully removed and replaced.

Investigate density profile failures and take corrective actions during production and placement to eliminate the segregation. Suspend production if two consecutive density profiles fail unless otherwise approved. Resume production after the Engineer approves changes to production or placement methods.

Table 18
Segregation (Density Profile) Acceptance Criteria

Mixture Type	Max Allowable Density Range (highest to lowest, pcf)	Max Allowable Density Range (average to lowest, pcf)
DG-B	8.0	5.0
DG-C, DG-D, and DG-F	6.0	3.0

4.9.3.3.4. **Longitudinal Joint Density**.

4.9.3.3.4.1. **Informational Tests**. Perform joint density evaluations while establishing the rolling pattern and verify that the joint density is no more than 3.0 pcf below the density taken at or near the center of the mat. Adjust the rolling pattern, if needed, to achieve the desired joint density. Perform additional joint density evaluations, at least once per sublot, unless otherwise directed.

4.9.3.3.4.2. **Record Tests**. Perform a joint density evaluation for each sublot at each pavement edge that is or will become a longitudinal joint. Joint density evaluations are not applicable in areas described in Section 341.4.9.3.1.4., "Miscellaneous Areas." Determine the joint density in accordance with Tex-207-F, Part VII. Record the joint density information and submit results on Department forms to the Engineer. The evaluation is considered failing if the joint density is more than 3.0 pcf below the density taken at the core random sample location and

the correlated joint density is less than 90.0%. The Engineer will make independent joint density verification at least once per project and may make independent joint density verifications at the random sample locations. The Engineer's joint density test results will be used when available.

Provide the Engineer with the joint density of every sublot in the lot within 1 working day of the completion of each lot. Report the results of each joint density in accordance with Section 341.4.2., "Reporting and Responsibilities."

Investigate joint density failures and take corrective actions during production and placement to improve the joint density. Suspend production if the evaluations on two consecutive sublots fail, unless otherwise approved. Resume production after the Engineer approves changes to production or placement methods.

4.9.3.3.5. **Recovered Asphalt Dynamic Shear Rheometer (DSR)**. The Engineer may take production samples or cores from suspect areas of the project to determine recovered asphalt properties. Asphalt binders with an aging ratio greater than 3.5 do not meet the requirements for recovered asphalt properties and may be deemed defective when tested and evaluated by the Materials and Tests Division. The aging ratio is the DSR value of the extracted binder divided by the DSR value of the original unaged binder. Obtain DSR values in accordance with AASHTO T 315 at the specified high-temperature PG of the asphalt. The Engineer may require removal and replacement of the defective material at the Contractor's expense. The asphalt binder will be recovered for testing from production samples or cores in accordance with Tex-211-F.

4.9.3.3.6. **Irregularities**. Identify and correct irregularities, including segregation, rutting, raveling, flushing, fat spots, mat slippage, irregular color, irregular texture, roller marks, tears, gouges, streaks, uncoated aggregate particles, or broken aggregate particles. The Engineer may also identify irregularities, and in such cases, the Engineer will promptly notify the Contractor. If the Engineer determines that the irregularity will adversely affect pavement performance, the Engineer may require the Contractor to remove and replace (at the Contractor's expense) areas of the pavement that contain irregularities. The Engineer may also require the Contractor to remove and replace (at the Contractor's expense) areas where the mixture does not bond to the existing pavement.

If irregularities are detected, the Engineer may require the Contractor to immediately suspend operations or may allow the Contractor to continue operations for no more than 1 day while the Contractor is taking appropriate corrective action.

4.9.4. **Exempt Production**. The mixture may be deemed as exempt production when mutually agreed upon between the Engineer and the Contractor, or when shown on the plans. Exempt production may be used for the following conditions.

- Anticipated daily production is less than 500 ton.
- Total production for the project is less than 5,000 ton.
- Pavement repair sections are equal to or greater than 300 ft. For pavement repair sections less than 300 ft., refer to Section 341.4.9.3.1.4., "Miscellaneous Areas."

Exempt production is not eligible for referee testing. For exempt production, the Contractor is relieved of all production and placement QC and QA sampling and testing requirements, except for coring operations when required by the Engineer. When mutually agreed upon between the Engineer and the Contractor, production sampling will be allowed at the point of delivery. When 100 ton or more per day is produced, the Engineer must perform acceptance tests for production and placement in accordance with Table 16. If the specification requirements listed below are met, the production and placement pay factors are 1.000:

- produce, haul, place, and compact the mixture in compliance with the specification and as directed;
- control mixture production to yield a laboratory-molded density that is within ±1.0% of the target laboratory-molded density as tested by the Engineer;
- compact the mixture in accordance with Section 341.4.8., "Compaction;"

- when a thermal imaging system is not used, the Engineer may perform segregation (density profiles) and thermal profiles in accordance with the specification; and
- all other specification requirements.

4.9.5. **Ride Quality**. Measure ride quality in accordance with Item 585, "Ride Quality for Pavement Surfaces," unless otherwise shown on the plans.

5. MEASUREMENT

5.1. **Dense-Graded HMA**. Hot mix will be measured by the ton of composite hot mix, which includes asphalt, aggregate, and additives. Measure the weight on scales in accordance with Item 520, "Weighing and Measuring Equipment."

5.2. **Tack Coat**. Tack coat will be measured at the applied temperature by strapping the tank before and after road application and determining the net volume in gallons from the calibrated distributor. The Engineer will witness all strapping operations for volume determination. All tack, including emulsions, will be measured by the gallon applied.

The Engineer may allow the use of a metering device to determine asphalt volume used and application rate if the device is accurate within 1.5% of the strapped volume.

6. PAYMENT

The work performed and materials furnished in accordance with this Item and measured as provided under Section 341.5.1., "Dense-Graded HMA," will be paid for at the unit price bid for "Dense-Graded Hot-Mix Asphalt" of the mixture type, SAC, and binder specified. These prices are full compensation for surface preparation, materials, placement, equipment, labor, tools, and incidentals.

The work performed and materials furnished in accordance with this Item and measured as provided under Section 341.5.2., "Tack Coat," will be paid for at the unit price bid for "Tack Coat" of the tack coat provided. These prices are full compensation for materials, placement, equipment, labor, tools, and incidentals. Payment adjustments will be applied as determined in accordance with this Item; however, a payment adjustment factor of 1.000 will be assigned for all placement sublots for level-ups only when "Level Up" is listed as part of the bid item description. A payment adjustment factor of 1.000 will be assigned to all production and placement sublots when "Exempt" is listed as part of the bid item description, and all testing requirements are met.

Payment for each sublot, including applicable payment adjustments greater than 1.000, will be paid only for sublots when the Contractor supplies the Engineer with the required documentation for production and placement QC and QA, thermal profiles, segregation density profiles, and longitudinal joint densities in accordance with Section 341.4.2., "Reporting and Responsibilities." When a thermal imaging system is used, documentation is not required for segregation density profiles on individual sublots; however, the thermal imaging system automated reports described in Tex-244-F are required.

Trial batches will not be paid for unless they are included in pavement work approved by the Department.

Payment adjustment for ride quality will be determined in accordance with Item 585.

6.1. **Production Payment Adjustment Factors**. The production payment adjustment factor is based on the laboratory-molded density using the Engineer's test results. The bulk specific gravities of the samples from each sublot will be divided by the Engineer's maximum theoretical specific gravity for the sublot. The individual sample densities for the sublot will be averaged to determine the production payment adjustment factor in accordance with Table 19 for each sublot, using the deviation from the target laboratory-molded

density in accordance with Table 9. The production payment adjustment factor for completed lots will be the average of the payment adjustment factors for the four sublots sampled within that lot.

Table 19
Production Payment Adjustment Factors for Laboratory-Molded Density[1]

Absolute Deviation from Target Laboratory-Molded Density	Production Payment Adjustment Factor (Target Laboratory-Molded Density)
0.0	1.050
0.1	1.050
0.2	1.050
0.3	1.044
0.4	1.038
0.5	1.031
0.6	1.025
0.7	1.019
0.8	1.013
0.9	1.006
1.0	1.000
1.1	0.965
1.2	0.930
1.3	0.895
1.4	0.860
1.5	0.825
1.6	0.790
1.7	0.755
1.8	0.720
>1.8	Remove and replace

1. If the Engineer's laboratory-molded density on any sublot is <95.0% or >97.0%, take immediate corrective action to bring the mixture within these tolerances. The Engineer may suspend operations if the Contractor's corrective actions do not produce acceptable results. The Engineer will allow production to resume when the proposed corrective action is likely to yield acceptable results.

6.1.1. **Payment for Incomplete Production Lots**. Production payment adjustments for incomplete lots, described under Section 341.4.9.2.1.1., "Incomplete Production Lots," will be calculated using the average production payment factors from all sublots sampled.

A production payment factor of 1.000 will be assigned to any lot when the random sampling plan did not result in collection of any samples within the first sublot.

6.1.2. **Production Sublots Subject to Removal and Replacement**. If after referee testing the laboratory-molded density for any sublot results in a "remove and replace" condition as shown in Table 19, the Engineer may require removal and replacement or may allow the sublot to be left in place without payment. The Engineer may also accept the sublot in accordance with Section 5.3.1., "Acceptance of Defective or Unauthorized Work." Replacement material meeting the requirements of this Item will be paid for in accordance with this Section.

6.2. **Placement Payment Adjustment Factors**. The placement payment adjustment factor is based on in-place air voids using the Engineer's test results. The bulk specific gravities of the cores from each sublot will be divided by the Engineer's average maximum theoretical specific gravity for the lot. The individual core densities for the sublot will be averaged to determine the placement payment adjustment factor in accordance with Table 20 for each sublot that requires in-place air void measurement. A placement payment adjustment factor of 1.000 will be assigned to the entire sublot when the random sample location falls in an area shown on the plans as not subject to in-place air void determination. A placement payment adjustment factor of 1.000 will be assigned to quantities placed in areas described in Section 341.4.9.3.1.4., "Miscellaneous Areas." The placement payment adjustment factor for completed lots will be the average of the placement payment adjustment factors for up to four sublots within that lot.

Table 20
Placement Payment Adjustment Factors for In-Place Air Voids

In-Place Air Voids	Placement Pay Adjustment Factor	In-Place Air Voids	Placement Payment Adjustment Factor
<2.7	Remove and replace	6.4	1.042
2.7	0.710	6.5	1.040
2.8	0.740	6.6	1.038
2.9	0.770	6.7	1.036
3.0	0.800	6.8	1.034
3.1	0.830	6.9	1.032
3.2	0.860	7.0	1.030
3.3	0.890	7.1	1.028
3.4	0.920	7.2	1.026
3.5	0.950	7.3	1.024
3.6	0.980	7.4	1.022
3.7	0.998	7.5	1.020
3.8	1.002	7.6	1.018
3.9	1.006	7.7	1.016
4.0	1.010	7.8	1.014
4.1	1.014	7.9	1.012
4.2	1.018	8.0	1.010
4.3	1.022	8.1	1.008
4.4	1.026	8.2	1.006
4.5	1.030	8.3	1.004
4.6	1.034	8.4	1.002
4.7	1.038	8.5	1.000
4.8	1.042	8.6	0.998
4.9	1.046	8.7	0.996
5.0	1.050	8.8	0.994
5.1	1.050	8.9	0.992
5.2	1.050	9.0	0.990
5.3	1.050	9.1	0.960
5.4	1.050	9.2	0.930
5.5	1.050	9.3	0.900
5.6	1.050	9.4	0.870
5.7	1.050	9.5	0.840
5.8	1.050	9.6	0.810
5.9	1.050	9.7	0.780
6.0	1.050	9.8	0.750
6.1	1.048	9.9	0.720
6.2	1.046	>9.9	Remove and replace
6.3	1.044	–	–

6.2.1. **Payment for Incomplete Placement Lots**. Payment adjustments for incomplete placement lots described under Section 341.4.9.3.1.2., "Incomplete Placement Lots," will be calculated using the average of the placement payment factors from all sublots sampled and sublots where the random location falls in an area shown on the plans as not eligible for in-place air void determination.

If the random sampling plan results in production samples, but not in placement samples, the random core location and placement adjustment factor for the sublot will be determined by applying the placement random number to the length of the sublot placed.

If the random sampling plan results in placement samples, but not in production samples, no placement adjustment factor will apply for that sublot placed.

A placement payment adjustment factor of 1.000 will be assigned to any lot when the random sampling plan did not result in collection of any production samples.

6.2.2. **Placement Sublots Subject to Removal and Replacement**. If after referee testing the placement payment adjustment factor for any sublot results in a "remove and replace" condition as shown in Table 20, the Engineer will choose the location of two cores to be taken within 3 ft. of the original failing core location. The Contractor must obtain the cores in the presence of the Engineer. The Engineer will take immediate possession of the untrimmed cores and submit the untrimmed cores to the Materials and Tests Division, where they will be trimmed, if necessary, and tested for bulk specific gravity within 10 working days of receipt.

The bulk specific gravity of each core from each sublot will be divided by the Engineer's average maximum theoretical specific gravity for the lot. The individual core densities for the sublot will be averaged to determine the new payment adjustment factor of the sublot in question. If the new payment adjustment factor is 0.720 or greater, the new payment adjustment factor will apply to that sublot. If the new payment adjustment factor is less than 0.720, no payment will be made for the sublot. Remove and replace the failing sublot, or the Engineer may allow the sublot to be left in place without payment. The Engineer may also accept the sublot in accordance with Section 5.3.1., "Acceptance of Defective or Unauthorized Work." Replacement material meeting the requirements of this Item will be paid for in accordance with this Section.

6.3. **Total Adjusted Pay (TAP) Calculation**. TAP will be based on the applicable payment adjustment factors for production and placement for each lot.

TAP = (A+B)/2

where:
A = Bid price × production lot quantity × average payment adjustment factor for the production lot
B = Bid price × placement lot quantity × average payment adjustment factor for the placement lot + (bid price × quantity placed in miscellaneous areas × 1.000)

Production lot quantity = Quantity actually placed - quantity left in place without payment

Placement lot quantity = Quantity actually placed - quantity left in place without payment - quantity placed in miscellaneous areas

Item 351
Flexible Pavement Structure Repair

1. DESCRIPTION

Repair localized sections of flexible pavement structure, including subgrade, base, and surfacing, as shown on the plans.

2. MATERIALS

Furnish materials unless otherwise shown on the plans. Provide materials of the type and grade as shown on the plans and in accordance with the following.

- Item 132, “Embankment”
- Item 204, “Sprinkling”
- Item 247, “Flexible Base”
- Item 260, “Lime Treatment (Road-Mixed)”
- Item 275, “Cement Treatment (Road-Mixed)”
- Item 276, “Cement Treatment (Plant-Mixed)”
- Item 292, “Asphalt Treatment (Plant-Mixed)”
- Item 310, “Prime Coat”
- Item 316, “Seal Coat”
- Item 330, “Limestone Rock Asphalt Pavement”
- Item 334, “Hot-Mix Cold-Laid Asphalt Concrete Pavement”
- Item 341, “Dense-Graded Hot-Mix Asphalt”
- Item 344, “Superpave Mixtures”

For asphalt concrete materials, Contractor testing and payment adjustment provisions will be waived unless otherwise shown on the plans.

3. EQUIPMENT

Furnish equipment in accordance with pertinent Items. Use of a motor grader will be permitted for asphalt concrete pavement unless otherwise shown on the plans.

4. WORK METHODS

Repair using one or more of the following operations as shown on the plans. For Contracts with callout work, begin physical repair within 24 hr. of notification unless otherwise shown on the plans. Cut neat vertical faces around the perimeter of the work area when removing pavement structure layers. Removed materials are the property of the Contractor unless otherwise shown on the plans. Dispose of removed material in conformance with federal, state, and local regulations. Provide a smooth line and grade conforming to the adjacent pavement.

4.1. **Removing Pavement Structure**. Remove adjacent soil and vegetation if necessary to prevent contamination of the repair area and place it in a windrow. Do not damage adjacent pavement structure during repair operations. Remove flexible pavement structure layers from work area if subgrade work is required.

4.2. **Preparing Subgrade**. Fill holes, ruts, and depressions using approved material. Wet, reshape, and compact the subgrade thoroughly as directed.

Remove unstable subgrade material to the depth directed and replace with an approved material where subgrade has failed.

4.3. **Mixing and Placing Base Material**. Place, spread, and compact material in conformance with the applicable Item to the required or directed depth. Pulverize bituminous material to a maximum dimension of 2-1/2 in., and uniformly mix with existing base to the depth shown on the plans when the material is to remain in pavement structure.

4.3.1. **Flexible Base**. Use existing base and add new flexible base as required in accordance with Item 247 and details shown on the plans to achieve required section.

4.3.2. **Lime-Stabilized Base**. Use existing base, add new flexible base, and stabilize with a minimum lime content of 3% by weight of the total mixture. Construct in accordance with Item 260 and details shown on the plans to achieve required section.

4.3.3. **Cement-Stabilized Base**. Use existing base, add flexible base, and stabilize with a minimum cement content of 4% by weight of the total mixture. Construct in accordance with Item 275 or Item 276 and details shown on the plans to achieve required section.

4.3.4. **Asphalt-Stabilized Base**. Place asphalt-stabilized base in accordance with Item 292 or Item 341 and details shown on the plans to achieve required section.

4.3.5. **Limestone Rock Asphalt**. Place in accordance with Item 330 and details shown on the plans to achieve required section.

4.4. **Curing Base**. Cure in conformance with the appropriate Item unless otherwise directed or approved. Maintain completed base sections until surfacing.

4.5. **Surfacing**. Apply surfacing to the completed base section using materials shown on the plans.

4.5.1. **Prime Coat**. Protect the compacted, finished, and cured flexible, lime-stabilized, or cement-stabilized base mixtures with a prime coat of the type and grade shown on the plans. Apply the prime coat at the rate shown on the plans.

4.5.2. **Surface Treatments**. Apply surface treatment with the type and grade of asphalt and aggregate as shown on the plans in accordance with Item 316.

4.5.3. **Asphalt Concrete Pavement**. Apply tack coat of the type and grade and at the rate shown on the plans unless otherwise directed. Construct in accordance with Item 330, Item 334, Item 341, or Item 344 to achieve required section.

4.6. **Finishing**. Regrade and compact disturbed topsoil. Clean roadway surface after repair operations.

4.7. **Ride Quality**. Use Surface Test Type A to determine the ride quality of the repaired areas, unless otherwise shown on the plans.

5. MEASUREMENT

This Item will be measured by the square yard. In areas where material is excavated, as directed, to depths greater than those specified on the plans, measurement will be made by dividing the actual depth of such area by the plan depth and then multiplying this figure by the area in square yard of work performed. Calculations for each repaired area will be rounded up to the nearest 1/10 sq. yd. At each repair location, the minimum area for payment purposes will be 1 sq. yd.

The minimum quantity for Contracts with callout work is 5 sq. yd. per callout unless otherwise shown on the plans.

6. PAYMENT

The work performed and materials furnished in accordance with this Item and measured as provided under "Measurement" will be paid for at the unit price bid for "Flexible Pavement Structure Repair" of the specified depth. This price is full compensation for scarifying, removing, hauling, spreading, disposing of, and stockpiling existing pavement structure; removing objectionable or unstable material; furnishing and placing materials; maintaining completed section before surfacing; applying tack or prime coat; hauling, sprinkling, spreading, and compacting; and equipment, labor, tools, and incidentals.

Item 666
Retroreflectorized Pavement Markings

1. DESCRIPTION

Furnish and place retroreflectorized, non-retroreflectorized (shadow) and profile pavement markings.

2. MATERIALS

2.1. **Type I Marking Materials**. Furnish in accordance with DMS-8220, "Hot Applied Thermoplastic."

Furnish pavement marking material used for Type I profile markings and shadow markings that have been approved by the Construction Division, and in accordance with DMS-8220, "Hot Applied Thermoplastic."

2.2. **Type II Marking Materials**. Furnish in accordance with DMS-8200, "Traffic Paint."

2.3. **Glass Traffic Beads**. Furnish drop-on glass beads in accordance with DMS-8290, "Glass Traffic Beads" or as approved. Furnish a double-drop of Type II and Type III drop-on glass beads where each type bead is applied separately in equal portions (by weight), unless otherwise approved. Apply the Type III beads before applying the Type II beads.

2.4. **Labeling**. Use clearly marked containers that indicate color, mass, material type, manufacturer, and batch number.

3. EQUIPMENT

3.1. **General Requirements**. Use equipment that:

- is maintained in satisfactory condition,
- meets or exceeds the requirements of the National Board of Fire Underwriters and the Texas Railroad Commission for this application,
- applies beads by an automatic bead dispenser attached to the pavement marking equipment in such a manner that the beads are dispensed uniformly and almost instantly upon the marking as the marking is being applied to the road surface. The bead dispenser must have an automatic cut-off control, synchronized with the cut-off of the pavement marking equipment,
- has an automatic cut-off device with manual operating capabilities to provide clean, square marking ends,
- is capable of producing the types and shapes of profiles specified, and
- can provide continuous mixing and agitation of the pavement marking material. The use of pans, aprons, or similar appliances which the die overruns will not be permitted for longitudinal striping applications.

Provide a hand-held thermometer capable of measuring the temperature of the marking material when applying Type I material.

When pavement markings are required to meet minimum retroreflectivity requirements on the plans:

- Use a mobile retroreflectometer approved by the Construction Division and certified by the Texas A&M Transportation Institute Mobile Retroreflectometer Certification Program.
- Use a portable retroreflectometer that:
  - uses 30-meter geometry and meets the requirements described in ASTM E1710;

- has either an internal global positioning system (GPS) or the ability to be linked with an external GPS with a minimum accuracy rating of 16 ft. 5 in., in accordance with the circular error probability (CEP) method (CEP is the radius of the circle with its origin at a known position that encompasses 50% of the readings returned from the GPS instrument);
- can record and print the GPS location and retroreflectivity reading for each location where readings are taken.

3.2. **Material Placement Requirements**. Use equipment that can place:

- at least 40,000 ft. of 4-in. solid or broken non-profile markings per working day at the specified thickness;
- at least 15,000 ft. of solid or broken profile pavement markings per working day at the specified thickness;
- linear non-profile markings up to 8 in. wide in a single pass;
- non-profile pavement markings other than solid or broken lines at an approved production rate;
- a centerline and no-passing barrier-line configuration consisting of 1 broken line and 2 solid lines at the same time to the alignment, spacing, and thickness for non-profile pavement markings shown on the plans;
- solid and broken lines simultaneously;
- white line from both sides;
- lines with clean edges, uniform cross-section with a tolerance of ±1/8 in. per 4 in. width, uniform thickness, and reasonably square ends;
- skip lines between 10 and 10-1/2 ft., a stripe-to-gap ratio of 10 to 30, and a stripe-gap cycle between 39-1/2 ft. and 40-1/2 ft., automatically;
- beads uniformly and almost instantly on the marking as the marking is being applied;
- beads uniformly during the application of all lines (each line must have an equivalent bead yield rate and embedment); and
- double-drop bead applications using both Type II and Type III beads from separate independent bead applicators, unless otherwise approved by the Engineer.

4. CONSTRUCTION

Place markings before opening to traffic unless short-term or work zone markings are allowed.

4.1. **General**. Obtain approval for the sequence of work and estimated daily production. Minimize interference to roadway operations when placing markings on roadways open to traffic. Use traffic control as shown on the plans or as approved. Protect all markings placed under open-traffic conditions from traffic damage and disfigurement.

Establish guides to mark the lateral location of pavement markings as shown on the plans or as directed, and have guide locations verified. Use material for guides that will not leave a permanent mark on the roadway.

Apply markings on pavement that is completely dry and passes the following tests:

- Type I Marking Application—Place a sample of Type I marking material on a piece of tarpaper placed on the pavement. Allow the material to cool to ambient temperature, and then inspect the underside of the tarpaper in contact with the pavement. Pavement will be considered dry if there is no condensation on the tarpaper.
- Type II Marking Application—Place a 1-sq. ft. piece of clear plastic on the pavement, and weight down the edges. The pavement is considered dry if, when inspected after 15 min., no condensation has occurred on the underside of the plastic.

Apply markings:

- that meet the requirements of Tex-828-B,
- that meet minimum retroreflectivity requirements when specified on the plans (applies to Type I markings only),
- using widths and colors shown on the plans,
- at locations shown on the plans,
- in proper alignment with the guides without deviating from the alignment more than 1 in. per 200 ft. of roadway or more than 2 in. maximum,
- without abrupt deviations,
- free of blisters and with no more than 5% by area of holes or voids,
- with uniform cross-section, density and thickness,
- with clean and reasonably square ends,
- that are retroreflectorized with drop-on glass beads, and
- using personnel skilled and experienced with installation of pavement markings.

Remove all applied markings that are not in alignment or sequence as stated on the plans, or in the specifications, at the Contractor's expense in accordance with Item 677, "Eliminating Existing Pavement Markings and Markers," except for measurement and payment.

4.2. **Surface Preparation**. Prepare surfaces in accordance with this Section unless otherwise shown on the plans.

4.2.1. **Cleaning for New Asphalt Surfaces and Retracing of All Surfaces**. Air blast or broom the pavement surface for new asphalt surfaces (less than 3 years old) and for retracing of all surfaces to remove loose material, unless otherwise shown on the plans. A sealer for Type I markings is not required unless otherwise shown on the plans.

4.2.2. **Cleaning for Old Asphalt and Concrete Surfaces (Excludes Retracing)**. Clean old asphalt surfaces (more than 3 years old) and all concrete surfaces in accordance with Item 678, "Pavement Surface Preparation for Markings," to remove curing membrane, dirt, grease, loose and flaking existing construction markings, and other forms of contamination.

4.2.3. **Sealer for Type I Markings**. Apply a pavement sealer to old asphalt surfaces (more than 3 years old) and to all concrete surfaces before placing Type I markings on locations that do not have existing markings, unless otherwise approved. The pavement sealer may be either a Type II marking or an acrylic or epoxy sealer as recommended by the Type I marking manufacturer unless otherwise shown on the plans. Follow the manufacturer's directions for application of acrylic or epoxy sealers. Clean sealer that becomes dirty after placement by washing or in accordance with Section 666.4.2.1., "Cleaning for New Asphalt Surfaces and Retracing of All Surfaces," as directed. Place the sealer in the same configuration and color (unless clear) as the Type I markings unless otherwise shown on the plans.

4.3. **Application**. Apply markings during good weather unless otherwise directed. If markings are placed at Contractor option when inclement weather is impending and the markings are damaged by subsequent precipitation, the Contractor is responsible for all required replacement costs.

4.3.1. **Type I Markings**. Place the Type I marking after the sealer cures. Apply within the temperature limits recommended by the material manufacturer. Flush the spray head if spray application operations cease for 5 min or longer by spraying marking material into a pan or similar container until the material being applied is at the recommended temperature.

Apply on clean, dry pavements passing the moisture test described in Section 666.4.1., "General," and with a surface temperature above 50°F when measured in accordance with Tex-829-B.

4.3.1.1. **Non-Profile Pavement Markings**. Apply Type I non-profile markings with a minimum thickness of:

- 0.100 in. (100 mils) for new markings and retracing water-based markings on surface treatments involving Item 316, "Seal Coat,"
- 0.060 in. (60 mils) for retracing on thermoplastic pavement markings, or
- 0.090 in. (90 mils) for all other Type I markings.

The maximum thickness for Type I non-profile markings is 0.180 in. (180 mils). Measure thickness for markings in accordance with Tex-854-B using the tape method.

4.3.1.2. **Profile Pavement Markings**. Apply Type I profile markings with a minimum thickness of:

- 0.060 in. (60 mil) for edgeline markings, or
- 0.090 in. (90 mil) for gore and centerline/no-passing barrier line markings.

In addition, at a longitudinal spacing indicated on the plans, the markings must be profiled in a vertical manner such that the profile is transverse to the longitudinal marking direction. The profile must not be less than 0.30 in. (300 mil) nor greater than 0.50 in. (500 mil) in height when measured above the normal top surface plane of the roadway. The transverse width of the profile must not be less than 3.25 in., and the longitudinal width not less than 1 in., when measured at the top surface plane of the profile bar. The profile may be either a 1 or 2 transverse bar profile. When the 2 transverse bar profile is used, the spacing between the bases of the profile bars must not exceed 0.50 in. The above transverse bar width is for each 4 in. of line width.

4.3.2. **Type II Markings**. Apply on surfaces with a minimum surface temperature of 50°F. Apply at least 20 gal. per mile on concrete and asphalt surfaces and at least 22 gal. per mile on surface treatments for a solid 4-in. line. Adjust application rates proportionally for other widths. When Type II markings are used as a sealer for Type I markings, apply at least 15 gal. per mile using Type II drop-on beads.

4.3.3. **Bead Coverage**. Provide a uniform distribution of beads across the surface of the stripe for Type I and Type II markings, with 40% to 60% bead embedment.

4.4. **Retroreflectivity Requirements**. When specified on the plans, Type I markings must meet the following minimum retroreflectivity values for edgeline markings, centerline or no passing barrier-line, and lane lines when measured any time after 3 days, but not later than 10 days after application:

- White markings: 250 millicandelas per square meter per lux (mcd/m^2/lx)
- Yellow markings: 175 mcd/m^2/lx

4.5. **Retroreflectivity Measurements**. Use a mobile retroreflectometer for projects requiring minimum retroreflectivity requirements to measure retroreflectivity for Contracts totaling more than 200,000 ft. of pavement markings, unless otherwise shown on the plans. For Contracts with less than 200,000 ft. of pavement markings or Contracts with callout work, mobile or portable retroreflectometers may be used at the Contractor's discretion.

4.5.1. **Mobile Retroreflectometer Measurements**. Provide mobile measurements averages for every 0.1 miles unless otherwise specified or approved. Take measurements on each section of roadway for each series of markings (i.e., edgeline, center skip line, each line of a double line, etc.) and for each direction of traffic flow. Measure each line in both directions for centerlines on two-way roadways (i.e., measure both double solid lines in both directions and measure all center skip lines in both directions). Furnish measurements in compliance with Special Specification, "Mobile Retroreflectivity Data Collection for Pavement Markings," unless otherwise approved. The Engineer may require an occasional field comparison check with a portable retroreflectometer meeting the requirements listed above to ensure accuracy. Use all equipment in accordance with the manufacturer's recommendations and directions. Inform the Engineer at least 24 hr. before taking any measurements.

A marking meets the retroreflectivity requirements if:

- the combined average retroreflectivity measurement for a one-mile segment meets the minimum retroreflectivity values specified, and
- no more than 30% of the retroreflectivity measurement values are below the minimum retroreflectivity requirements value within the one-mile segment.

The Engineer may accept failing one-mile segments if no more than 20% of the retroreflectivity measurements within that mile segment are below the minimum retroreflectivity requirement value.

The one-mile segment will start from the beginning of the data collection and end after a mile worth of measurements have been taken; each subsequent mile of measurements will be a new segment. Centerlines with 2 stripes (either solid or broken) will result in 2 miles of data for each mile segment. Each centerline stripe must be tested for compliance as a stand-alone stripe.

Restripe at the Contractor's expense with a minimum of 0.060 in. (60 mils) of Type I marking if the marking fails retroreflectivity requirements. Take measurements every 0.1 miles a minimum of 10 days after this second application within that mile segment for that series of markings.

If the markings do not meet minimum retroreflectivity after 10 days of this second application, the Engineer may require removal of all existing markings, a new application as initially specified, and a repeat of the application process until minimum retroreflectivity requirements are met.

4.5.2. **Portable Retroreflectometer Measurements**. Take a minimum of 20 measurements for each 1-mi. section of roadway for each series of markings (i.e., edgeline, center skip line, each line of a double line, etc.) and direction of traffic flow when using a portable reflectometer. Measure each line in both directions for centerlines on two-way roadways (i.e., measure both double solid lines in both directions and measure all center skip lines in both directions). The spacing between each measurement must be at least 100 ft. The Engineer may decrease the mileage frequency for measurements if the previous measurements provide satisfactory results. The Engineer may require the original number of measurements if concerns arise.

Restripe once at the Contractor's expense with a minimum of 0.060 in. (60 mils) of Type I marking material if the average of these measurements fails. Take a minimum of 10 more measurements after 10 days of this second application within that mile segment for that series of markings. Restripe again at the Contractor's expense with a minimum of 0.060 in. (60 mils) of Type I marking material if the average of these measurements fall below the minimum retroreflectivity requirements. If the markings do not meet minimum retroreflectivity after this third application, the Engineer may require removal of all existing markings, a new application as initially specified, and a repeat of the application process until minimum retroreflectivity requirements are met.

4.5.3. **Traffic Control**. Provide traffic control, as required, when taking retroreflectivity measurements after marking application. On low volume roadways (as defined on the plans), refer to the figure, “Temporary Road Closure” in Part 6 of the *Texas Manual on Uniform Traffic Control Devices* for the minimum traffic control requirements. For all other roadways, the minimum traffic control requirements will be as shown on the Traffic Control Plan (TCP) standard sheets TCP (3-1) and TCP (3-2). The lead vehicle will not be required on divided highways. The TCP and traffic control devices must meet the requirements listed in Item 502, “Barricades, Signs, and Traffic Handling.” Time restrictions that apply during striping application will also apply during the retroreflectivity inspections except when using the mobile retroreflectometer unless otherwise shown on the plans or approved.

4.6. **Performance Period**. All markings must meet the requirements of this specification for at least 30 calendar days after installation. Unless otherwise directed, remove pavement markings that fail to meet requirements, and replace at the Contractor’s expense. Replace failing markings within 30 days of notification. All replacement markings must also meet all requirements of this Item for a minimum of 30 calendar days after installation.

5. MEASUREMENT

This Item will be measured by the foot; by each word, symbol, or shape; or by any other unit shown on the plans. Each stripe will be measured separately.

This is a plans quantity measurement item. The quantity to be paid is the quantity shown in the proposal unless modified by Article 9.2., "Plans Quantity Measurement." Additional measurements or calculations will be made if adjustments of quantities are required.

Acrylic or epoxy sealer, or Type II markings when used as a sealer for Type I markings, will be measured by the foot; by each word, symbol, or shape; or by any other unit shown on the plans.

6. PAYMENT

The work performed and materials furnished in accordance with this Item and measured as provided under "Measurement" will be paid for at the unit price bid for "Pavement Sealer" of the size specified, "Retroreflectorized Pavement Markings" of the type and color specified and the shape, width, size, and thickness specified as applicable, "Retroreflectorized Pavement Markings with Retroreflective Requirements" of the types, colors, sizes, widths, and thicknesses specified or "Retroreflectorized Profile Pavement Markings" of the various types, colors, shapes, sizes, and widths specified.

This price is full compensation for application of pavement markings, materials, equipment, labor, tools, and incidentals.

Surface preparation of new concrete and asphalt concrete pavements more than 3 years old, where no stripe exists, will be paid for under Item 678, "Pavement Surface Preparation for Markings." Surface preparation of all other asphalt and old concrete pavement, except for sealing, will not be paid for directly but is subsidiary to this Item.

Work zone pavement markings (Type II, paint and beads) used as a sealer for Type I markings (thermoplastic) will be paid for under Item 662, "Work Zone Pavement Markings."

If the Engineer requires that markings be placed in inclement weather, repair or replacement of markings damaged by the inclement weather will be paid for in addition to the original plans quantity.

Item 672
Raised Pavement Markers

1. DESCRIPTION

Furnish and install raised pavement markers (RPMs).

2. MATERIALS

2.1. **Markers**. Furnish RPMs in accordance with the following Department Material Specifications:

- **Reflectorized Pavement Markers**. DMS-4200, "Pavement Markers (Reflectorized)," types I-A, I-C, I-R, II-A-A, and II-C- R.
- **Traffic Buttons**. DMS-4300, "Traffic Buttons," types I-A, I-C, I-R, II-A-A, II-C- R, W, Y and B. Round or oval unless otherwise specified on the plans.
- **Plowable Reflectorized Pavement Markers**. DMS-4210, "Snowplowable Pavement Markers," types I-A, I-C, I-R, II-A-A, and II-C- R.

The following are descriptions for each type of RPM:

- **Type I-A**. The approach face must retro-reflect amber light. The body, other than the retro-reflective face, must be yellow.
- **Type I-C**. The approach face must retro-reflect white light. The body, other than the retro-reflective face, must be white or silver-white.
- **Type I-R**. The trailing face must retro-reflect red light. The body, other than the retro-reflective face, must be white or silver-white, except for I-R plowable markers which may be black.
- **Type II-A-A**. The 2 retro-reflective faces (approach and trailing) must retro-reflect amber light. The body, other than the retro-reflective faces, must be yellow.
- **Type II-C-R**. Contain 2 retro-reflective faces with an approach face that must retro-reflect white light and a trailing face that must retro-reflect red light. The body, other than the retro-reflective faces, must be white or silver-white.
- **Type W**. Must have a white body and no reflective faces.
- **Type Y**. Must have a yellow body and no reflective faces.
- **Type B**. Must have a black body and no reflective faces.

2.2. **Adhesives**. Furnish adhesives that conform to the following requirements:

- DMS-6100, "Epoxies and Adhesives," Type II—Traffic Marker Adhesives.
- DMS-6130, "Bituminous Adhesive for Pavement Markers."
- The Contractor may propose alternate adhesive materials for consideration and approval.

2.3. **Sampling**. The Engineer will sample in accordance with Tex-729-I.

3. CONSTRUCTION

Remove existing RPMs in accordance with Item 677, "Eliminating Existing Pavement Markings and Markers," except for measurement and payment. Furnish RPMs for each class from the same manufacturer. Prepare all surfaces in accordance with Item 678, "Pavement Surface Preparation for Markings," when shown on the

plans. Ensure the bond surfaces are free of dirt, curing compound, grease, oil, moisture, loose or unsound pavement markings, and any other material that would adversely affect the adhesive bond.

Establish pavement marking guides to mark the lateral location of RPMs as shown on the plans and as directed. Do not make permanent marks on the roadway for the guides.

Place RPMs in proper alignment with the guides. Acceptable placement deviations are shown on the plans.

Remove RPMs placed out of alignment or sequence, as shown on the plans or stated in this specification, at Contractor's expense, in accordance with Item 677, "Eliminating Existing Pavement Markings and Markers" (except for measurement and payment).

Use the following adhesive materials for placement of reflectorized pavement markers, and traffic buttons unless otherwise shown on the plans:

- standard or flexible bituminous adhesive for applications on bituminous pavements, and
- epoxy adhesive or flexible bituminous adhesive for applications on hydraulic cement concrete pavements.

Use epoxy adhesive for plowable reflectorized pavement markers.

Apply enough adhesives to:

- ensure that 100% of the bonding area of RPMs is in contact with the adhesive, and
- ensure that RPMs, except for plowable markers, are seated on a continuous layer of adhesive and not in contact with the pavement surface.

Apply adhesives in accordance with manufacturer's recommendations unless otherwise required by this Article. Apply bituminous adhesive only when pavement temperature and RPM temperature are 40°F or higher. Do not heat bituminous adhesive above 400°F. Machine agitate bituminous adhesive continuously before application to ensure even heat distribution.

Machine-mix epoxy adhesive. Apply epoxy adhesive only when pavement temperature is 50°F or higher.

Furnish RPMs free of rust, scale, dirt, oil, grease, moisture, and contaminants that might adversely affect the adhesive bond.

Place RPMs immediately after the adhesive is applied and ensure proper bonding. Do not use adhesives or any other material that impairs the functional retro-reflectivity of the RPMs.

Provide a 30-day performance period that begins the day following written acceptance for each separate location. The date of written acceptance will be the last calendar day of each month for the RPMs installed that month for the completed separate project locations. This written acceptance does not constitute final acceptance.

Replace all missing, broken or non-reflective RPMs. Visual evaluations will be used for these determinations. Upon request, the Engineer will allow a Contractor representative to accompany the Engineer on these evaluations.

The Engineer may exclude RPMs from the replacement provisions of the performance, provided the Engineer determines the failure is a result of causes other than defective material or inadequate installation procedures. Examples of outside causes are extreme wear at intersections, damage by snow or ice removal, and pavement failure.

Replace all missing or non-reflective RPMs identified during the performance period within 30 days after notification. The end of the performance period does not relieve the Contractor from the performance deficiencies requiring corrective action identified during the performance period.

4. MEASUREMENT

This Item will be measured by each RPM.

This is a plans quantity measurement Item. The quantity to be paid is the quantity shown in the proposal, unless modified by Article 9.2., "Plans Quantity Measurement." Additional measurements or calculations will be made if adjustments are required.

5. PAYMENT

The work performed and materials furnished in accordance with this Item and measured as provided under "Measurement" will be paid for at the unit price bid for "Reflectorized Pavement Marker," "Traffic Button," or "Plowable Reflectorized Pavement Marker" of the types specified. This price is full compensation for removing existing markers; furnishing and installing RPMs; and materials, equipment, labor, tools, and incidentals.

No additional payment will be made for replacement of RPMs failing to meet the performance requirements.

Special Specification 3007
Bonding Course

1. DESCRIPTION

Construct a bonding course using a Tracking-Resistant Asphalt Interlayer (TRAIL) or a Spray Applied Underseal Membrane before the placement of a new hot-mix asphalt concrete pavement.

2. MATERIALS

Furnish asphalt materials in accordance with Article 300.2., "Materials" for one of the following two options:

2.1. **TRAIL**. Furnish asphalt material described as "tack" for typical use in the TRAIL Material Producer List. Do not dilute emulsified asphalts at the terminal, in the field, or at any other location before use, unless required in conformance with the manufacturer's recommendation for approved TRAIL products on the MPL.

2.2. **Underseal Membrane**. Furnish asphalt material meeting the requirements of Special Specification 3005, "Spray Applied Underseal Membrane." Do not dilute emulsified asphalts at the terminal, in the field, or at any other location before use.

Furnish asphalt material for applying tack coat to all miscellaneous contact surfaces when approved by the Engineer:

2.3. **Miscellaneous Tack**. Furnish CSS-1H, SS-1H, EBL, or a PG binder with a minimum high-temperature grade of PG 58 for tack coat binder in accordance with Item 300, Asphalts, Oils, and Emulsions. Specialized tack coat materials on the MPL for Tracking Resistant Asphalt Interlayer (TRAIL) will be allowed or required when shown on the plans. Do not dilute emulsified asphalts at the terminal, in the field, or at any other location before use, unless required in conformance with the manufacturer's recommendation for approved TRAIL products on the MPL.

2.4. **Sampling**. The Engineer will obtain at least one sample of the tack coat binder per project per source in accordance with Tex-500-C, Part III, and test it to verify compliance with Item 300. The Engineer will notify the Contractor when the sampling will occur and will witness the collection of the sample from the asphalt distributor immediately before use. Label the can with the corresponding lot and sublot numbers, producer, producer facility location, grade, district, date sampled, all applicable bills of lading (if available), and project information, including highway and control-section-job (CSJ) number. For emulsions, the Engineer may test as often as necessary to ensure the residual of the emulsion is greater than or equal to the specification requirement in Item 300.

3. EQUIPMENT

3.1. **TRAIL**. Provide the equipment recommended by the producer.

3.2. **Underseal Membrane**. Provide in accordance with Special Specification 3005, "Spray Applied Underseal Membrane."

4. CONSTRUCTION

4.1. **Preparation**. Clean the surface before placing the bonding course. Apply bonding course uniformly at the approved rate, unless otherwise directed. The Engineer will set the rate between 0.04 – 0.14 gal. of residual asphalt per square yard of surface area. The Engineer may adjust the application rate, taking into

consideration the existing pavement surface conditions. Prevent splattering of the bonding course when placed adjacent to curb, gutter, and structures,

Apply a thin, uniform tack coat to all miscellaneous contact surfaces of curbs, structures, and joints. Prevent splattering of the tack coat when placed adjacent to curb, gutter, and structures.

4.2. **TRAIL**. Perform the following construction methods when applying a TRAIL for a bonding course:

4.2.2. **Test Strips**. When required by the Engineer, perform a test strip of TRAIL at a location on or near the project as directed. Allow the strip to cure for a maximum of 30 min. Drive over the test strip with equipment used during laid-down construction to simulate the effect of paving equipment. There should be no evidence of tracking or picking up of the TRAIL material on the wheels of the equipment.

4.2.3. **Placement**. Uniformly apply the TRAIL material to all areas where mix will be placed, including joints, at the rate shown on the plans or as directed, within 15°F of the approved temperature, and not above the maximum allowable temperature. Unless otherwise directed, uniformly apply the TRAIL material at a minimum rate specified on the plans. The Engineer will set the application rate between 0.06 – 0.14 gal. per square yard for emulsion TRAIL and the application rate between 0.08 – 0.12 gal. per square yard for hot-applied TRAIL.

4.3. **Underseal Membrane**. Place in accordance with Special Specification 3005, "Spray Applied Underseal Membrane."

4.3.2. **Placement**. Do not allow any loose mixture onto the prepared surface before application of the membrane. Unless otherwise directed, uniformly apply the membrane to all areas where mix will be placed, including joints, at the rate shown on the plans. Unless otherwise directed, uniformly apply the membrane at the minimum rate specified on the plans. The Engineer may adjust the application rate, taking into consideration the existing pavement surface conditions. The Engineer will set the application rate between 0.10 – 0.22 gal. per square yard for underseal membrane.

4.4. **Quality Control**. Stop application if it is not uniform due to streaking, ridging, pooling, or flowing off the roadway surface. Verify equipment condition, operating procedures, application temperature, and material properties. Determine and correct the cause of non-uniform application.

The Engineer may perform independent tests to confirm contractor compliance and may require testing differences or failing results to be resolved before resuming production.

The Engineer may stop the application and require construction of test strips at the Contractor's expense if any of the following occurs:

- non-uniformity of application continues after corrective action;
- evidence of tracking or picking up of the TRAIL;
- in three consecutive shots, application rate differs by more than 0.02 gal. per square yard from the rate directed; or
- any shot differs by more than 0.04 gal. per square yard from the rate directed.

The Engineer will approve the test strip location. The Engineer may require additional test strips until surface treatment application meets specification requirements.

5. MEASUREMENT

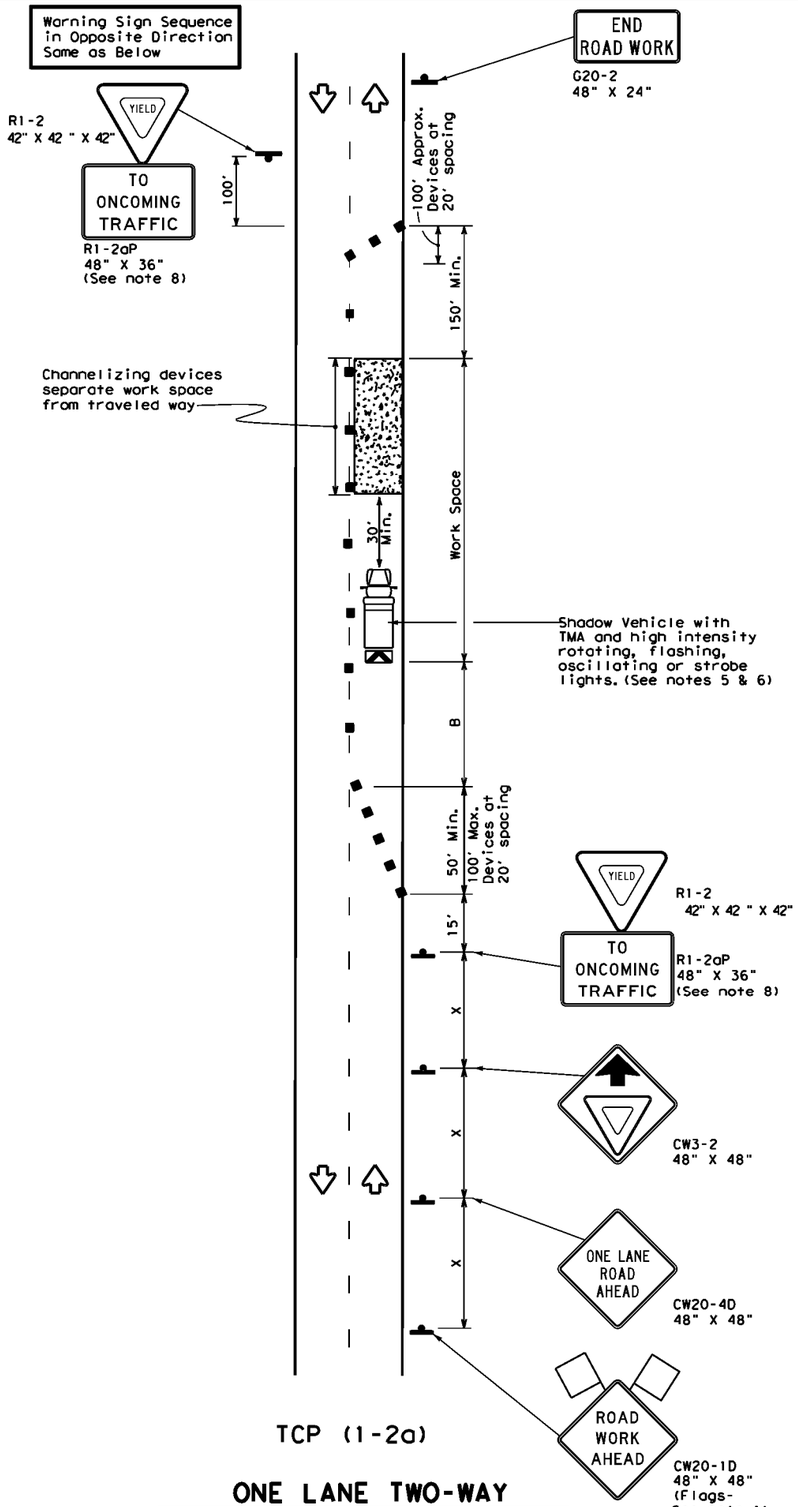
5.1. **Volume**. Asphalt material, including all components, will be measured at the applied temperature by strapping the tank before and after road application. The distributor calibrated strap stick will be used for measuring the asphalt level in the distributor asphalt tank. The certified tank chart will be used to determine the beginning gallons and the final gallons in the distributor tank. The quantity to be measured for payment will be the difference between the beginning gallons and the final gallons.

5. PAYMENT

The work performed and materials furnished in accordance with this Item and measured as provided under "Measurement" will be paid for at the unit price bid for "Bonding Course." These prices are full compensation for surface preparation; furnishing, preparing, hauling, Miscellaneous Tack used for all miscellaneous contact surfaces, and placing materials; removing existing pavement markers and excess aggregate; rolling; cleaning up stockpiles; and equipment, labor, tools, and incidentals.

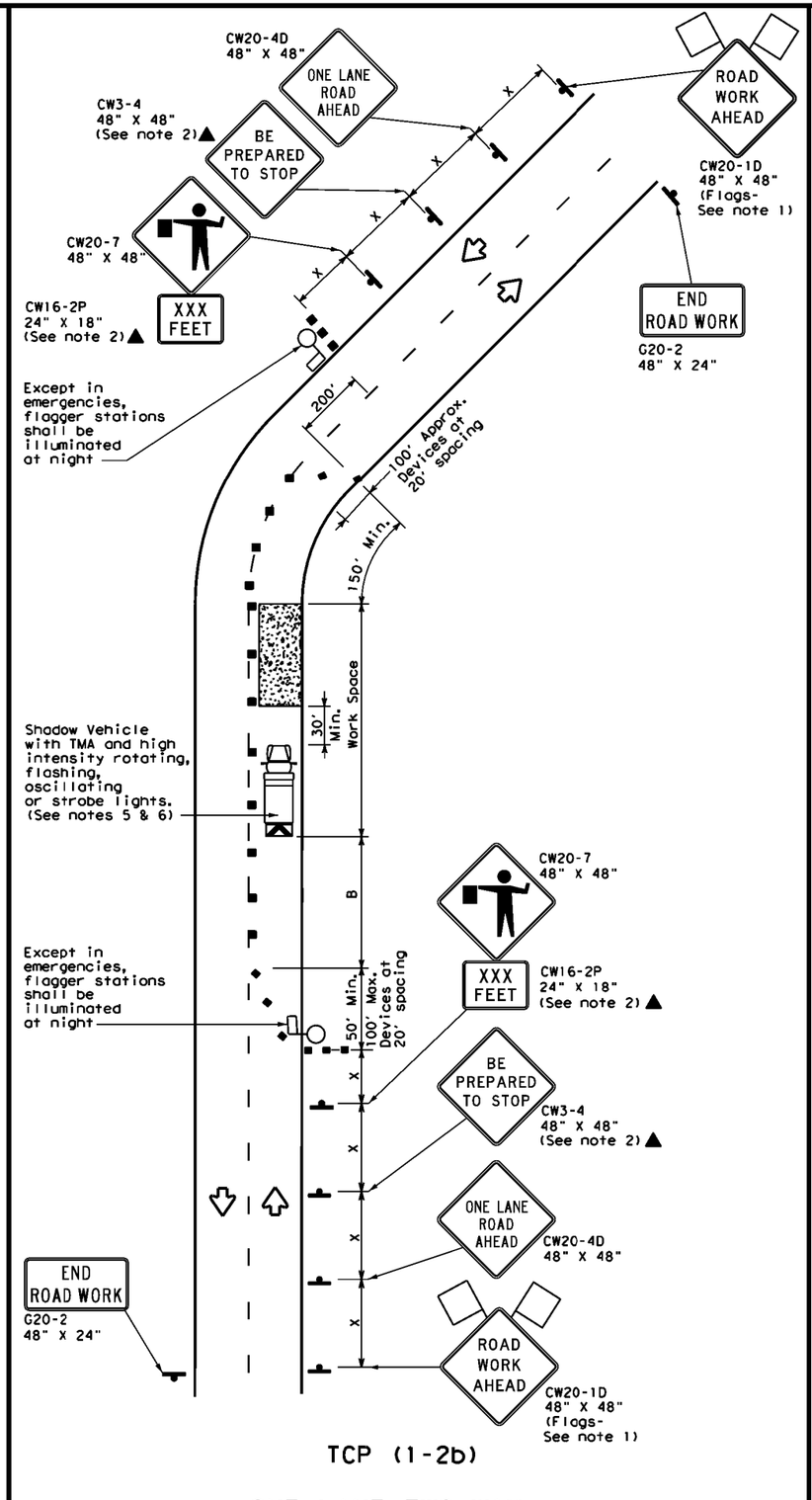
DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

DATE:
FILE:



TCP (1-2a)

ONE LANE TWO-WAY
CONTROL WITH YIELD SIGNS
(Less than 2000 ADT - See note 7)



TCP (1-2b)

ONE LANE TWO-WAY
CONTROL WITH FLAGGERS

LEGEND

	Type 3 Barricade		Channelizing Devices
	Heavy Work Vehicle		Truck Mounted Attenuator (TMA)
	Trailer Mounted Flashing Arrow Board	M	Portable Changeable Message Sign (PCMS)
	Sign		Traffic Flow
	Flag		Flagger

Posted Speed *	Formula	Minimum Desirable Taper Lengths ** 10' Offset	11' Offset	12' Offset	Suggested Maximum Spacing of Channelizing Devices: On a Taper	On a Tangent	Minimum Sign Spacing "X" Distance	Suggested Longitudinal Buffer Space "B"	Stopping Sight Distance
30	$L = \frac{WS^2}{60}$	150'	165'	180'	30'	60'	120'	90'	200'
35		205'	225'	245'	35'	70'	160'	120'	250'
40		265'	295'	320'	40'	80'	240'	155'	305'
45	L=WS	450'	495'	540'	45'	90'	320'	195'	360'
50		500'	550'	600'	50'	100'	400'	240'	425'
55		550'	605'	660'	55'	110'	500'	295'	495'
60		600'	660'	720'	60'	120'	600'	350'	570'
65		650'	715'	780'	65'	130'	700'	410'	645'
70		700'	770'	840'	70'	140'	800'	475'	730'
75		750'	825'	900'	75'	150'	900'	540'	820'

* Conventional Roads Only
** Taper lengths have been rounded off.
L=Length of Taper(FT) W=Width of Offset(FT) S=Posted Speed(MPH)

TYPICAL USAGE

MOBILE	SHORT DURATION	SHORT TERM STATIONARY	INTERMEDIATE TERM STATIONARY	LONG TERM STATIONARY
	✓	✓		

GENERAL NOTES

1. Flags attached to signs where shown are REQUIRED.
2. All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
3. The CW3-4 "BE PREPARED TO STOP" sign may be installed after the CW20-4D "ONE LANE ROAD AHEAD" sign, but proper sign spacing shall be maintained.
4. Sign spacing may be increased or an additional CW20-1D "ROAD WORK AHEAD" sign may be used if advance warning ahead of the flagger or R1-2 "YIELD" sign is less than 1500 feet.
5. A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA.
6. Additional Shadow Vehicles with TMAs may be positioned off the paved surface, next to those shown in order to protect wider work spaces.

TCP (1-2a)

7. R1-2 "YIELD" sign traffic control may be used on projects with approaches that have adequate sight distance. For projects in urban areas, work spaces should be no longer than one half city block. In rural areas on roadways with less than 2000 ADT, work spaces should be no longer than 400 feet.
8. R1-2 "YIELD" sign with R1-2aP "TO ONCOMING TRAFFIC" plaque shall be placed on a support at a 7 foot minimum mounting height.

TCP (1-2b)

9. Flaggers should use two-way radios or other methods of communication to control traffic.
10. Length of work space should be based on the ability of flaggers to communicate.
11. If the work space is located near a horizontal or vertical curve, the buffer distances should be increased in order to maintain adequate stopping sight distance to the flagger and a queue of stopped vehicles (see table above).
12. Channelizing devices on the center-line may be omitted when a pilot car is leading traffic and approved by the Engineer.
13. Flaggers should use 24" STOP/SLOW paddles to control traffic. Flags should be limited to emergency situations.

Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC CONTROL PLAN
ONE-LANE TWO-WAY TRAFFIC CONTROL

TCP(1-2)-18

FILE: tcp1-2-18.dgn	DN:	CK:	DW:	CK:
©TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS				
4-90 4-98	DIST	COUNTY		SHEET NO.
2-94 2-12				
1-97 2-18				