

**STATE OF LOUISIANA
DEPARTMENT OF TRANSPORTATION AND
DEVELOPMENT**

CONSTRUCTION PROPOSAL



**STATE PROJECT NOS. 023-10-0036 AND 023-11-0025
DUBACH – BERNICE
ROUTE US 167
LINCOLN AND UNION PARISHES**

FOR INFORMATION ONLY

STATE PROJECT NOS. 023-10-0036 AND 023-11-0025

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NOTICE TO CONTRACTORS (01/06)

Sealed bids for the following project will be received by the Louisiana Department of Transportation and Development (DOTD), 1201 Capitol Access Road, Headquarters Administration Building, Room 405-L, Baton Rouge, Louisiana 70802 until 8:00 a.m. on **Wednesday, June 28, 2006**. After 8:00 a.m., bids will be received in the Headquarters Auditorium until 10:00 a.m., at which time and place bids will be publicly opened and read. No bids will be received after 10:00 a.m. Any person requiring special accommodations shall notify the Department of Transportation and Development (DOTD) at (225) 379-1111 not less than 3 business days before bid opening.

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DESCRIPTION: **DUBACH - BERNICE**

ROUTE: **US 167**

PARISHES: **LINCOLN AND UNION**

LENGTH: **6.022 miles.**

TYPE: **GRADING, DRAINAGE STRUCTURES, LIME TRMT, SUBGRADE LAYER, CLASS II BC, SUPERPAVE ACP (ALT. A-1), PCCP (ALT. A-2), CONCRETE SLAB SPAN BRIDGES AND RELATED WORK.**

LIMITS: State Project No. 023-10-0036: **ON US 167, APPROX 0.3 MIL N OF NCL OF BERNICE TO UNION PARISH LINE.**

LIMITS: State Project No. 023-11-0025: **LINCOLN PARISH LINE TO BERNICE (SCL)**

ESTIMATED COST RANGE: **\$20,000,000 to \$30,000,00**

PROJECT ENGINEER: **ICENOGLA, GARY, LA TIMED MANAGERS, RUSTON AREA OFFICE, 2590 HIGHWAY 33, RUSTON, LA 71270, (225) 906-3306.**

DOTD COORDINATOR: **TAYLOR, GENE, 2538 HIGHWAY 33 NORTH, RUSTON, LA 71270, (318) 251-4117.**

PROJECT MANAGER: **LOHMANN, JEROME, (225) 906-1300.**

COST OF PROPOSAL FORMS: **\$25.00**

COST OF PLANS: **\$61.50**

Bids must be submitted in accordance with Section 102 of the 2000 Louisiana Standard Specifications for Roads and Bridges as amended by the project specifications, and must include all information required by the proposal.

FOR INFORMATION ONLY

NOTICE TO CONTRACTORS (CONTINUED)

Plans and/or proposals may be obtained in Room 101-A of the DOTD Headquarters Administration Building, 1201 Capitol Access Road in Baton Rouge, or by contacting the DOTD; Email: sknight@dotd.louisiana.gov, Phone (225) 379-1111, FAX: (225) 379-1714, or by written requests sent to the Louisiana Department of Transportation and Development, Contracts Management Section, P. O. Box 94245, Baton Rouge, LA 70804-9245. Proposals will not be issued later than 24 hours prior to the time set for opening bids. Purchase price for plans and proposals is non-refundable. Plans and specifications may be seen at the Project Engineer's office or in Room 101-A of the DOTD's Headquarters Administration Building in Baton Rouge. Upon request, the Project Engineer will show the work.

The U. S. Department of Transportation (DOT) operates a toll free "Hotline" Monday through Friday, 8:00 a.m. to 5:00 p.m., eastern time. Anyone with knowledge of possible bid rigging, bidder collusion, or other fraudulent activities should call 1-800-424-9071. All information will be treated confidentially and caller anonymity will be respected.

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GENERAL BIDDING REQUIREMENTS (01/06): The specifications, contract and bonds governing the construction of the work are the 2000 Edition of the Louisiana Standard Specifications for Roads and Bridges, together with any supplementary specifications and special provisions attached to this proposal.

Bids shall be prepared and submitted in accordance with Section 102 of the Standard Specifications.

The plans herein referred to are the plans approved and marked with the project number, route and Parish, together with all standard or special designs that may be included in such plans. The bidder declares that the only parties interested in this proposal as principals are those named herein; that this proposal is made without collusion or combination of any kind with any other person, firm, association, or corporation, or any member or officer thereof; that careful examination has been made of the site of the proposed work, the plans, Standard Specifications, supplementary specifications and special provisions above mentioned, and the form of contract and payment, performance, and retainage bond; that the bidder agrees, if this proposal is accepted, to provide all necessary machinery, tools, apparatus and other means of construction and will do all work and furnish all material specified in the contract, in the manner and time therein prescribed and in accordance with the requirements therein set forth; and agrees to accept as full compensation therefore, the amount of the summation of the products of the quantities of work and material incorporated in the completed project, as determined by the engineer, multiplied by the respective unit prices herein bid.

It is understood by the bidder that the quantities given in this proposal are a fair approximation of the amount of work to be done and that the sum of the products of the approximate quantities multiplied by the respective unit prices bid shall constitute gross sum bid, which sum shall be used in comparison of bids and awarding of the contract.

The bidder further agrees to perform all extra and force account work that may be required on the basis provided in the specifications.

The bidder further agrees that within 15 calendar days after the contract has been transmitted to him, he will execute the contract and furnish the Department satisfactory surety bonds.

If this proposal is accepted and the bidder fails to execute the contract and furnish bonds as above provided, the proposal guaranty shall become the property of the Department; otherwise, said proposal guaranty will be returned to the bidder; all in accordance with Subsection 103.04.

TRANSPORTATION INFRASTRUCTURE MODEL FOR ECONOMIC DEVELOPMENT (TIMED) PROJECT (06/05): This project is a Transportation Infrastructure Model for Economic Development (TIMED) project as defined in Act No. 16 of the 1989 First Extraordinary Session of the Legislature which enacted Part V of Chapter 7 of Subtitle II of Title 47 of Louisiana Revised Statutes of 1950, comprised of R.S. 47:820.1 through 820.6.

The contractor understands and agrees that compliance with Louisiana R.S.47:820.3 is mandatory as stated below:

820.3 EMPLOYMENT OF LOUISIANA RESIDENTS

At least eighty percent of the employees employed on any Transportation Infrastructure Model for Economic Development (TIMED) project must be Louisiana residents. A "Louisiana resident" shall be defined for the purposes of this Part as a person who has resided in this state for at least one hundred eighty consecutive days at the time of initial employment, as evidenced by a valid Louisiana motor vehicle operator's license or bill for utility services.

The contractor shall maintain sufficient records to ensure compliance herewith and shall submit by the end of the first estimate period, copies of valid Louisiana Motor Vehicle Operator's

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License or bill for utility services for all project personnel. Proof of residency must be submitted for each new employee hired or assigned to the project until completion. The contractor shall submit proof of residency to the project engineer. The project engineer will forward proof to the Compliance Programs Section at P.O. Box 94245, Baton Rouge, LA 70804-9245.

SPECIAL NOTICES TO CONTRACTOR:

ASBESTOS INVESTIGATION REPORT: The Contractor may obtain a report entitled “Asbestos Site Investigation Report, 023-10-0036 (Dubach – Bernice), Lincoln and Union Parishes, Louisiana” from Louisiana Timed Managers, 6300 Corporate Boulevard, Suite 200, Baton Rouge, LA 70809-1000, phone (225) 906-1300; fax (225) 906-1400. The report may also be reviewed online at ftp://66.135.25.121/asbestos_reports. The name of the report is 023-10-0036-Dubach - Bernice Asbestos Inspection Report.pdf. This report is for informational purposes only.

RIGHT-OF-WAY: The Department is still in the process of purchasing Right-of-Way. The following Right-of-Way Parcels are expected to be vacated as follows:

<u>Parcel Number</u>	<u>Expected Date of Vacancy</u>
05-03	July 30, 2006
14-01	September 30, 2006
21-04	September 30, 2006
22-04	September 30, 2006

ELECTRONIC BIDDING (04/06). The 2000 Louisiana Standard Specifications for Roads and Bridges and supplemental specifications thereto are amended as follows.

SECTION 101 - GENERAL INFORMATION, DEFINITIONS AND TERMS:

Subsection 101.03 - Definitions.

Revise the following definitions.

Bid. The binding offer of a responsible bidder that was submitted to the Department on the bid forms or via approved electronic media, in accordance with the bidding documents.

Bid Forms. The portion of the bidding documents, either paper or electronic, required to be submitted, in accordance with the bidding documents, in order to constitute a bid.

Add the following definitions.

Bid Express. An on-line service provided by Bidx.com, an Info Tech company, which is under contract to DOTD to facilitate two-way Internet electronic bidding.

Bidx.com. The subsidiary company owned by Info Tech that provides the Bid Express service.

Electronic Bidding. The process by which the Department and the bidder can utilize the Internet to facilitate the bidding process.

Electronic Bid Bond. An instrument by which a contractor and surety can submit a bid guarantee with a bid electronically in lieu of a written, signed paper.

Electronic Signature. A secure and verifiable alpha-numeric code assigned to an individual, replacing or acting instead of a traditional signature.

Expedite. Software developed for AASHTO by Info Tech that enables and facilitates electronic bidding.

SECTION 102 – BIDDING REQUIREMENTS.

Subsection 102.02 - Contractor’s Licensing Laws.

Delete the first sentence of the third paragraph and substitute the following.

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When the estimated project cost is greater than \$50,000 and no FHWA funds are involved, the contractor shall show his license number on the bid envelope unless the contractor submits the bid via the DOTD approved electronic bidding process.

Subsection 102.03 - Contents of Bidding Documents.

Amend the first paragraph to include the following.

The prospective bidder may use the Bid Express services through Bidx.com. The use of these services will require payment by the contractor of additional fees to the service provider.

Delete the first sentence of the third paragraph and substitute the following.

Unless the contractor properly submits the bid forms electronically, the bid forms bound with or attached to the construction proposal should be detached, completed, and returned by the bidder.

Subsection 102.04 - Issuance of Bid Documents.

Delete the first sentence of the first paragraph and substitute the following.

The Department may refuse to issue bid documents to a bidder or allow a bidder access to Bid Express for bidding purposes, for any of the following reasons:

Subparagraphs (b), (c), (f), and (g) are reinstated.

Subsection 102.06 - Examination of Bid Documents and Site of Work.

Amend this subsection to include the following.

Written instructions necessary to use the electronic bidding service and prepare and submit a bid electronically are provided on the Bidx.com Internet site. Fees payable to Bidx.com are required of the contractor to use the service and to establish electronic signatures. The contractor is advised to timely make all necessary arrangements with Bidx.com and to familiarize himself with system and process requirements prior to using the service to submit a bid.

Subsection 102.07 - Preparation of Bid.

Delete the first sentence of the first paragraph and substitute the following.

For paper bids, bids shall be submitted on bid forms provided by the Department or obtained through Bidx.com.

Delete the first sentence of the second paragraph and substitute the following.

A unit bid price, in English and U.S. dollars, shall be specified in the Schedule of Items in words or numerals, either typed or printed in ink, or computer printed in the spaces provided for each pay item or alternate pay item.

Delete the first sentence of the third paragraph and substitute the following.

The Construction Proposal Signature and Execution Form shall be signed either with an authorized electronic signature or with ink by the individual; or a member of the partnership; or an officer of one of the firms representing a joint venture; or an officer of a corporation; or an agent of the contractor legally qualified and acceptable to the state.

Add the following paragraph.

Bid bonds may be furnished and completed by a DOTD approved electronic bond verification service if the contractor elects to prepare and submit an electronic bid.

Subsection 102.08 - Irregular Bids.

Delete Subparagraph (a) and substitute the following.

(a) If the bid, except for legible facsimiles, is on a form other than that furnished by the Department or Bidx.com, or if the bid forms are materially altered.

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Delete Subparagraph (j) and substitute the following.

(j) If the portion of the construction proposal form designated as Bid Forms is not properly executed either by hand or electronically and submitted with the bid.

Subsection 102.09 - Proposal/Bid Guaranty.

Delete the fourth paragraph and substitute the following.

All signatures required on the bid bond may be original, mechanical reproductions, facsimiles or electronic. Electronic bonds issued in conjunction with electronic bids must have Departmental approval prior to use. The Department will make a listing of approved electronic sureties providers on the Bidx.com site.

Subsection 102.10 - Delivery of Bids.

Delete this subsection and substitute the following.

Unless delivered electronically through the approved electronic bid submission service, each bid should be submitted in the envelope furnished by the Department. The blank spaces on the envelope shall be filled in correctly to clearly indicate its content. When an envelope other than the one furnished by the Department is used, it shall be the same general size and shape and be similarly marked to indicate its contents. Bids shall be received no later than the time and at the place specified in the Notice to Contractors. Paper bids received after the time set for opening bids will be returned to bidders unopened. Electronic bids shall be submitted via the Internet in accordance with Subsection 102.07. Electronic bids transmitted by the bidder, after the time set for bid opening will not be accepted.

A proposal guarantee and all other required returnables not submitted electronically with an electronic bid must be delivered by the contractor to the Department in a sealed envelope as specified above prior to the date and time of the bid opening.

Subsection 102.11 - Withdrawal or Revision of Bids.

Delete this subsection and substitute the following.

A bidder may withdraw or revise a bid after it has been deposited with the Department, provided the request for such withdrawal or revision is received by the Department in person or in writing before the time set for opening bids and at the location set forth in the Notice to Contractors. Electronic bids submitted to Bid Express may be withdrawn prior to the specified bid opening time by the authorized bidder.

Subsection 102.12 - Public Opening of Bids.

Delete this subsection and substitute the following.

Paper or electronic bids will be publicly opened and read or presented at the time and place indicated in the Notice to Contractors.

SECTION 103 – AWARD AND EXECUTION OF CONTRACT

Subsection 103.01 - Consideration of Bids.

Delete the first paragraph and substitute the following.

After paper or electronic bids are opened and read, they will be compared on the basis of summation of the products of the quantities and the unit bid prices in the Schedule of Items. Results of such comparisons will be available to the public.

Subsection 103.04 - Return of Proposal/Bid Guaranty.

Amend this subsection to include the following.

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Electronic bid bonds of unsuccessful bidders will not be returned but will be deemed by the Department to have no force or effect after sixty days.

COST-PLUS TIME PLUS LIFE CYCLE COST BIDDING PROCEDURE (A+B+C METHOD)(12/04): The 2000 Standard Specifications, as amended elsewhere herein, are further amended as follows:

General. There are two (2) pavement alternates under consideration for this project. Each contractor should choose his preferred alternate to bid. The process for bidding and the award of this project will take into account not only the contract amount bid, but also the bidders stated contract time and the life cycle cost adjustment factor (life cycle cost adjustment factors are provided by the Department). This method will only be used to determine the successful bidder. It will not be used to determine the award amount nor final payment to the contractor.

Definition of terms. For this project the following definitions apply:

- (a) Calendar day- Refer to Subsection 101.03.
- (b) Contract Amount - The summation of the products of the quantities shown in the Schedule of Items multiplied by the unit bid prices.
- (c) Contract Time – The number of calendar days for the bidder’s preferred pavement alternate stated in the proposal to complete the project to final acceptance as adjusted by authorized extensions.
- (d) Daily Road User Cost – The amount which represents the average daily cost of delay and inconvenience to the road user. The Department has assigned a daily road user cost of \$1,000 per calendar day for this project.
- (e) Life Cycle Cost Adjustment Factor – a dollar amount to be added to each bid which is based on costs for future rehabilitation needs of the alternate pavements over the 40 year analysis period. These values are determined by the Department, based on anticipated performance and engineering judgment.
- (f) Final Acceptance - Refer to Subsection 105.17(b).

Preparation of Proposal. In addition to all other bidding requirements of the project specifications, the bidder shall state his required time in the space provided on the “CONTRACT TIME” form contained elsewhere herein. The proposed completion time shall be based on the construction phases shown in the plans in their respective order. The completion time and the Life Cycle Cost Adjustment amount will be factors used in considering bids for award.

The stated number of calendar days required for completion of the selected pavement alternate will be the contract time for this project should the bidder be successful. The total number of days stated by the bidder to complete the project shall not exceed the maximum allowable contract time stated on the “Contract Time” form contained elsewhere herein.

Bids not including a contract time, or showing time to completion in excess of the maximum amount will be considered irregular and will be rejected.

Consideration of bids. After bids are opened and read, they will be compared based on the Total Bid Amount as determined by the following formula. In case of equal total bid amounts between qualified bidders, award will be made to the bidder proposing the shortest contract time.

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Total Bid amount = A +B+ C

Where:

A = the contract amount as defined herein:

Base Bid + Alternate A1 (Superpave Asphaltic Concrete Pavement), or

Base Bid + Alternate A2 (Portland Cement Concrete Pavement).

B = the product of the required number of calendar days of contract time as stated by the bidder for his preferred pavement alternate, and the daily road user cost contained herein.

C = the lump sum Life Cycle Cost Adjustment Factor for the relevant pavement alternate.

C1 Superpave Asphaltic Concrete Pavement = \$

C2 Portland Cement Concrete Pavement = \$

(see Life Cycle Cost Analysis contained elsewhere herein).

Late Completion. Should the contractor fail to complete the project to final acceptance price to expiration of the contract time, stipulated damages will be charged in accordance with the special provision entitled “**FAILURE TO COMPLETE ON TIME**” contained elsewhere herein.

AWARD OF CONTRACT (04/04): Section 103 of the Standard Specifications is amended as follows.

Subsection 103.02, Award of Contract is amended to include the following.

The award of contract, if awarded, will be made to the lowest responsible bidder on the total of one of the following combinations:

General Items (Base Bid) plus Alternate (A1), plus the product of the number of calendar days of contract time stated by the bidder for Alternate (A1) and the daily road user cost contained herein, plus the life cycle cost adjustment factor for Superpave Asphaltic Concrete Pavement (C1) assigned by the Department; or

General Items (Base Bid) plus Alternate (A2), plus the product of the number of calendar days of contract time stated by the bidder for Alternate (A2) and the daily road user cost contained herein, plus the life cycle cost adjustment factor for Portland Cement Concrete Pavement (C2) assigned by the Department.

INTENT OF CONTRACT (11/95): Subsection 104.01, Intent of Contract, is amended to include the following.

(a) Covenant of Good Faith and Fair Dealing.

This contract imposes an obligation of good faith and fair dealing in its performance and enforcement.

The contractor and the Department agree from the beginning to focus on creative cooperation, to avoid adverse confrontation, and to foster mutual respect, along with a positive commitment to honesty and integrity, and agree to the following mutual duties.

- (1) Each will function within the laws and statutes applicable to their duties and responsibilities.
- (2) Each will communicate in an open and candid manner.
- (3) Each will assist in the other's performance.
- (4) Each will avoid hindering the other's performance.
- (5) Each will proceed to fulfill its obligations diligently.
- (6) Each will cooperate in the common endeavor of the contract.

(b) Voluntary Partnering.

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The Louisiana Department of Transportation and Development intends to encourage the foundation of a cohesive partnership with the contractor and its principal subcontractors and suppliers. This partnership will be structured to draw on the strengths of each organization to identify and achieve reciprocal goals. The objective is a cooperative approach to contract management that will reduce costs, litigation, and "stress" while completing the project in accordance with the plans and specifications.

This partnership will be bilateral in makeup, and participation in partnering will be totally voluntary and is not a requirement of the contract.

A partnering conference is to be implemented and held prior to beginning construction. The contractor's management personnel and the Project Engineer will initiate a partnering development conference. They, working with the assistance of the District Construction Engineer, will make arrangements to determine the facilitator, the attendees at the conference, agenda of the conference, duration, and location. Persons required to be in attendance will be the Project Engineer and key project personnel; the contractor's on-site project manager and key project supervision personnel of both the prime and principal subcontractors and suppliers. The project design engineers, FHWA, key company representatives, and key local government personnel will also be invited to attend as necessary. The contractor and DOTD will also be required to have Regional/District and Corporate/State level managers on the project team.

Any cost associated with effectuating this partnering will be agreed to by both parties and will be shared equally and will be paid for in accordance with Subsection 109.04. The contractor, DOTD, FHWA and all others invited to the partnering conference will be responsible for any expenses incurred by their respective employees which includes salaries, travel, and lodging.

Follow-up conferences may be held periodically throughout the duration of the contract as agreed by the contractor and the DOTD.

The establishment of a partnership charter on a project will not change the legal relationship of the parties to the contract nor relieve either party from any of the terms of the contract. This partnership charter is intended only to establish an environment of cooperation and communication between all parties involved with the completion of the project.

MAINTENANCE OF TRAFFIC (02/06): Subsection 104.03 of the Standard Specifications is amended to include the following requirements.

The contractor shall provide for and maintain through and local traffic at all times and shall conduct his operations in such manner as to cause the least possible interference with traffic at junctions with roads, streets and driveways.

In order to maintain traffic, the contractor shall construct temporary detours as required by the contract.

When asphaltic concrete pavement is cold planed to a depth of 2 inches (50 mm) or less, the contractor will be permitted to cold plane in one lane for a full day; the adjacent lane may be cold planed the following workday. When the depth of cold planing is greater than 2 inches (50 mm), the contractor shall cold plane approximately 1/2 of each day's production in one lane and the remainder in the adjacent lane.

All asphaltic concrete pavement new construction, overlays, and shoulder surfacing operations open to traffic shall be conducted in accordance with the following requirements.

1. Shoulder Subgrade Preparation: Any required embankment widening shall be completed before placement of the asphaltic concrete overlay. All vegetation shall be removed from existing shoulders before beginning temporary or final shoulder construction.

2. Temporary Shoulder Construction: Temporary shoulder construction described herein shall be completed at the end of each day's operations for all asphaltic concrete courses except the final wearing course. There shall be no drop-off from the pavement edge to the shoulder. The contractor shall blade and shape existing shoulder material against, and approximately level with,

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the top of the pavement surfacing to form a temporary shoulder with a uniform slope from the pavement edge to the existing shoulder line, or to a point 10 feet (3 m) from the pavement edge. If existing shoulder materials are insufficient, the contractor shall furnish, place and shape additional shoulder surfacing materials to form the temporary shoulder. Existing and/or additional materials for temporary shoulders shall be to the satisfaction of the engineer. Compaction shall be by approved methods.

No direct payment will be made for constructing and subsequently reshaping temporary shoulders, except payment for additional materials under appropriate pay items.

All lane closures, including ramps, shall be authorized by the engineer, unless otherwise shown on the plans or specified. Unless otherwise authorized, lane closures will only be allowed while work is being performed. The contractor shall provide the engineer a five calendar day notice, prior to any lane closure unless a shorter notification period is allowed by the engineer. A late lane opening rental will be charged to the contractor for any lane closure on any roadway or ramp that extends beyond the allowed closure times. The rental shall be computed in hourly increments only, with fractions of an hour rounded up to the next whole hour. The rental will also apply to any unauthorized lane closures by the contractor, whether short term or long term. Any monies assessed as a late lane opening rental or for an unauthorized lane closure will be deducted from payments due the contractor, or in case no money is due, the surety bond may be held until such rental is paid to the Department. The late lane opening rental or unauthorized lane closure rental will be in accordance with the following table for a maximum of four continuous hours.

Unauthorized Lane Closure or Late Lane Opening Rental	
Current ADT	Hourly Rate (\$/Hour)
<10,000	250
10,000 - 20,000	1,250
20,000 - 35,000	5,000
35,000 - 50,000	11,500
>50,000	15,000

NIGHTTIME CONSTRUCTION OPERATIONS (02/06): Section 105, Control of Work, of the 2000 Standard Specifications is amended to add the following.

105.20 NIGHTTIME CONSTRUCTION OPERATIONS.

(a) Description: This work consists of furnishing, installing, operating, maintaining, moving, and removing portable light towers and equipment-mounted fixtures for nighttime construction operations. Nighttime construction operations are defined as work performed after sunset and before sunrise.

(b) Equipment Requirements: Materials and equipment shall be in good operating condition and in compliance with applicable OSHA, NEC, and NEMA codes.

The contractor shall furnish, to the engineer, two light meters capable of measuring the level of illuminance. These light meters will be used by the engineer to check the adequacy of illumination throughout the nighttime construction operations. The light meters will become the property of the contractor after final acceptance.

Suitable brackets and hardware shall be provided to mount lighting fixtures on equipment and machinery. Mountings shall be designed so that light fixtures can be positioned as necessary to reduce glare and provide the required illumination. Mounting brackets and fixtures shall not

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interfere with the equipment operator or any overhead structures and shall be securely connected to the fixtures to insure minimum vibration.

Equipment-mounted systems shall be attached to construction equipment to provide Level II and Level III illuminance. Equipment mounted lighting shall be designed and positioned to be operated independently of general illumination.

Portable systems may consist of ground-mounted, trailer-mounted, or equipment mounted light towers. Portable light towers shall be sturdy and free-standing without the aid of guy wires or bracing. Towers shall be capable of being moved as necessary to keep pace with the construction operation. Extreme caution shall be used when moving portable light towers in the vicinity of overhead utilities. Portable lighting systems shall be positioned to minimize the risk of being impacted by traffic on the roadway or by construction equipment.

Conventional vehicle headlights shall not be permitted as the sole means of illumination while working. All motorized vehicles shall be equipped with conventional vehicle headlights to permit safe movement in non-illuminated areas. Use of strobe lights on vehicles and equipment is prohibited. Use of flashing lights shall be kept to a minimum to prevent motorist distraction. Flashing lights shall not be used behind barrier protection systems

Switches shall be provided to adequately control the various lights. All wiring shall be weatherproof and installed according to local, state, federal, and OSHA requirements. Ground fault circuit interrupters shall be provided for electrical outlets used for electrical tools and extension cords. The contractor shall provide sufficient fuel, spare lamps, generators and qualified personnel to ensure that all required lights operate continuously during nighttime construction operations. In the event of any failure of the lighting system, the construction operation shall be discontinued until the required level of illumination is restored. In residential areas, generator systems shall be selected to comply with local noise ordinances. A supply of emergency flares shall be maintained by the contractor for use in the event of emergency or unanticipated situations.

(c) Illumination Requirements: All operations that are performed during nighttime hours shall be properly illuminated to allow for the safe performance and inspection of the work.

Work area is defined as a minimum of 50 feet (15 m) ahead and behind the employee, where work is to be performed. A minimum of 5 foot-candles (54 lux) shall be maintained throughout the work area during nighttime construction operations, and during the setup and removal of lane or roadway closures.

Lighting shall be adequate to meet the required level of illuminance and uniformity over the work area as follows:

(1) Level I (5 foot-candles, 54 lux): This level of illuminance shall be provided for all work areas of general construction operations, such as excavation and embankment; cleaning and sweeping; landscaping; planting and seeding. Stockpiles shall also be illuminated to Level I to enhance safety and improve work efficiency.

(2) Level II (10 foot-candles, 108 lux): This level of illuminance is required for areas on or around construction equipment such as that used for drainage installations, striping, base course construction, milling, asphalt paving operations, and concrete placement and removal. This level is necessary for safe operation of equipment and for obtaining an acceptable level of accuracy.

(3) Level III (20 foot-candles, 215 lux): This level of illuminance is required for tasks requiring a higher level of visual performance or for tasks with a higher level of difficulty. Such tasks include, pavement or structural crack filling, joint repair, joint cleaning, joint sealing, pavement patching and repairs, saw-cutting, installation of signal equipment or other electrical/mechanical equipment, and other tasks involving fine details or intricate parts and equipment.

(d) Glare Control: All lighting provided under this item shall be designed, installed, and operated to avoid glare interference with roadway traffic or discomfort for residences adjoining the roadway. The contractor shall locate, aim, and adjust the lights to provide the required level of

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illuminance and uniformity in the work area without the creation of objectionable glare. The engineer shall determine when glare exceeds acceptable levels, either for traffic or adjoining residences. The contractor shall provide shields, visors, or louvers on luminaries as necessary to reduce objectionable levels of glare.

At a minimum, the following requirements shall be met to avoid objectionable glare to oncoming traffic:

(1) Tower-mounted luminaries shall generally be aimed either parallel or perpendicular to the roadway.

(2) All luminaries shall be aimed such that the center of the beam axis is no greater than 60 degrees from the vertical.

(3) Luminous intensity of any luminary shall not exceed 20,000 candela at an angle of 72 degrees from the vertical.

(e) Operational Requirements: Thirty days prior to the start of night time operations, the contractor shall submit a lighting plan to the engineer for approval. The contractor shall select appropriate lighting systems and design a lighting plan to achieve the required illuminance levels.

The lighting plan shall include location of lights necessary for every aspect of work; description of light equipment to be used; description of power source; attachment and mounting details for lights to be attached to equipment; technical details pertaining to the lighting fixtures; details on hoods, louvers, shields, or other glare control methods; and lighting calculations confirming that the illumination requirements will be met by the layout plan.

Lighting inspection will include (1) light meter measurements to determine illumination levels, (2) subjective observation of the lighting setup to evaluate glare potential for drivers and workers, and (3) a physical check of the lighting equipment to ensure that it complies with the specification requirements included in the contractor's lighting plan.

Prior to the first night of operation, the engineer will check the adequacy of the installed lighting using a light meter. A summary of these measurements will be noted in the inspection records to provide a basis for comparing subsequent measurements. If the required illuminance levels are not met, the contractor shall make the necessary adjustments before any work proceeds.

Operational checks shall be made when construction phasing changes and lighting plan changes are required to accommodate different phases of construction. Periodic checks will be made throughout the duration of nighttime operations. If the required illuminance levels are not met, the contractor shall make the necessary adjustments to the lighting plan before work continues.

During construction operations, in the event of any failure of the lighting system, the operations shall be discontinued until the required level of illumination is restored.

CONTRACTOR QUALITY CONTROL: Subsection 106.05 of the 2000 Standard Specifications is amended as follows:

The second paragraph is deleted and the following substituted.

Quality Control requirements shall be as specified in the appropriate specification section and as specified in the latest edition of the Department's "Quality Control/Quality Assurance Manual". In case of a discrepancy, the project specification shall govern over the manual.

The contractor shall perform sufficient testing to assure that his processes are providing work in accordance with the plans and specifications. The minimum frequency of quality control testing shall be equal to or greater than the minimum frequencies shown for acceptance in the DOTD Materials Sampling Manual. The results of the contractor's tests shall be furnished to the engineer on a routine basis, usually daily, and upon completion of an item of work, a summary of the quality control tests shall be provided to the engineer.

PUBLIC CONVENIENCE AND SAFETY (09/05 and 2/06): Subsection 107.07 of the Standard Specifications is amended to include the following.

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The third paragraph is deleted and the following substituted.

When the contractor works at night, adequate artificial lighting shall be provided in accordance with Subsection 105.20. Signs, flaggers or other traffic controls shall also be provided to protect workers, the work and the traveling public. When such work affects traffic safety, the contractor shall submit to the engineer for approval a plan of lighting, signing, flagmen or other traffic controls. If the approved plan proves inadequate after work begins, the contractor shall make such changes as directed. If the engineer finds that the night work is so hazardous as to preclude the beginning or require the discontinuing of such work, the contractor shall immediately cease all such operations.

Subsection 107.07, Public Convenience and Safety of the 2000 Standard Specification is amended as follows.

The procurement of police officers for public safety during construction shall be in accordance with the Department's Policy for Use of Police Officers in Construction/Maintenance Work Zones. The DOTD project engineer shall determine the need for police officers to assist in controlling traffic in a particular work zone. The number of officers needed, the tasks they will perform, and their location within the work zone will vary as a function of the zone type. Police officers shall be placed at strategic locations at times during construction as determined by the DOTD project engineer.

The three types of law enforcement services are Police Presence, Police Enforcement and Police Traffic Control. Police Presence is defined as the use of police officers at the beginning of the active work zone area utilizing their blue lights to gain the attention of drivers. Police Enforcement is utilized when enforcement is required to enhance the safe operation of the work zone. Police Traffic Control is to be used in detour / diversion situations.

The DOTD project engineer will extend an invitation to the appropriate Louisiana State Police (LSP) Troop Commander to attend the pre-construction conference.

Prior to commencing the work on the project, the contractor shall contact the LSP Troop Commander to obtain law enforcement services of police officers during construction. If the LSP Troop is unable to provide law enforcement services for the project work zone, the LSP Troop Commander or the contractor will extend the invitation to the appropriate local law enforcement authorities.

Police officers will report directly to the contractor. However, the contractor will not have the authority to direct the placement of the police officer or the patrol vehicle in situations that are contrary to established procedures and/or could endanger the police officer. The DOTD project engineer will make the final determination on all issues regarding police officer responsibility in work zones.

Prior to the beginning of the shift, the contractor shall provide a daily work zone briefing to the police officer. For major changes in traffic patterns, advanced notification shall be provided to the police agency working the detail. This information should also be provided to the motoring public through the DOTD district and / or the LSP Troop.

The contractor shall pay for law enforcement services provided by the police officers based on the hourly wage and vehicle rate fee schedule below. The Department will reimburse the contractor monthly for the incurred cost. The contractor shall furnish time record documentation with the request for reimbursement. The provisions of Subsection 109.04 shall not apply to this reimbursement.

The agreed upon fee schedule for police officers in the work zone is as follows:

\$25 per vehicle per day - vehicle use fee

\$40 per hour per officer (one officer per vehicle) (minimum 2 hours).

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NAVIGABLE WATERS AND WETLANDS (07/05): Subsection 107.09 of the Standard Specifications is amended to include the following.

The Department has obtained a Class B Natural and Scenic Stream System Permit or other approval from the Louisiana Department of Wildlife and Fisheries, for work within the Louisiana Natural and Scenic Stream System.

Bidders shall comply with the permit requirements. Bidders may obtain a copy of these permits by contacting the Department's Environmental Section at (225) 379-1317.

ENVIRONMENTAL PROTECTION (01/04): Subsection 107.14 of the 2000 Standard Specifications is amended to include the following paragraphs at the end of this subsection.

The contractor, by signing this contract, certifies under penalty of law that he understands and will abide by the terms and conditions of the Storm Water Pollution Prevention Plan (SWPPP) and the National Pollution Discharge Elimination System (NPDES) General Permit that requires the discharges from construction sites be managed to prevent pollutants from entering waters of the United States in accordance with the Environmental Protection Agency's (EPA) regulations for storm water discharges with respect to 33 U.S.C. § 1342 (Sections 402 (p) and 405 of Public Law 100-4).

The Notice of Intent (NOI) will be submitted by the Department to the Louisiana Department of Environmental Quality (LADEQ) prior to the project letting. The project engineer will complete and submit the Notice of Termination (NOT) to the LADEQ after final stabilization of the site, in accordance with the terms of the permit.

The use of erosion control features or methods other than those in the contract shall be as directed.

The Storm Water Pollution Prevention Plan shall be comprised of Section 204 of the standard specifications along with applicable supplemental specifications and special provisions, and Standard Plan EC-01, "Temporary Erosion Control Details."

DAMAGE CLAIMS: Subsection 107.17 of the 2000 Standard Specifications is amended as follows:

Subsection 107.17, Damage Claims, is deleted and the following substituted.

The contractor shall indemnify the Department, its officers and employees and its program management consultant (LTM), from all suits, actions, or claims brought because of injuries or damage sustained by any person or property due to operations of the contractor; due to negligence in safeguarding the work; or use of unacceptable materials in constructing the work; or any negligent act, omission, or misconduct of the contractor; or claims or amounts recovered from infringements of patent, trademark, or copyright; or from claims or amounts arising or recovered under the Workmen's Compensation Act or other law, ordinance, order, or decree; any money due the contractor as considered necessary by the Department for such purpose may be retained for use of the State; or in case no money is due, the surety bond may be held until such suits, actions, claims for injuries or damages have been settled and suitable evidence to that effect furnished to the Department; except that money due to the contractor will not be withheld when the contractor produces satisfactory evidence that adequate Workmen's Compensation, Public Liability, and Property Damage Insurance are in effect.

SUBLETTING OF CONTRACT (1/83): In accordance with Subsection 108.01 of the Standard Specifications, the following items are designated as "Specialty Items":

Item 202-02-01, Removal of 9 m x 6.5 m Wood Frame Residence (Rt. of Sta. 61+270)(Contains Non-Friable Asbestos)

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- Item 202-02-06, Removal of 20 m x 12.5 m Metal Building (Lt. of Sta. 63+081)(Contains Non-Friable Asbestos)
- Item 202-02-07, Removal of 15 m x 8.5 m Wood Frame Residence (Lt. of Sta. 67+507)(Contains Non-Friable Asbestos and Asbestos Transite Siding)
- Item 202-02-08, Removal of 16.5 m x 12 m Wood Frame Residence (Lt. of Sta. 67+635)(Contains Asbestos Transite Siding)
- Item 202-02-13, Removal of 14 m x 13 m Wood Frame Residence (Lt. of Sta. 67+957)(Contains Non-Friable Asbestos and Asbestos Transite Siding)
- Item 202-02-16, Removal of 12 m x 10 m Wood Frame Residence (Lt. of Sta. 68+350)(Contains Asbestos Transite Siding)
- Item 202-02-16, Removal of 16 m x 10 m Wood Frame Residence (Lt. of Sta. 68+425)(Contains Non-Friable Asbestos)
- Item 202-02-18, Removal of 6 m x 6 m Wood Carport (Lt. of Sta. 68+522)(Contains Asbestos Transite Siding)
- Item 202-02-20, Removal of 19 m x 9 m Wood Frame Residence (Rt. of Sta. 69+047)(Contains Asbestos Transite Siding)
- Item 202-02-23, Removal of 11 m x 9 m Wood Frame Residence (Lt. of Sta. 69+299)(Contains Asbestos Transite Siding)
- Item 202-02-24, Removal of 11.5 m x 10.5 m Brick Residence (Lt. of Sta. 69+368)(Contains Non-Friable Asbestos)
- Item 202-02-25, Removal of 13 m x 12 m Wood Frame Residence (Lt. of Sta. 69+575)(Contains Non-Friable Asbestos)
- Item 202-02-26, Removal of 20 m x 13 m Wood Frame Residence (Rt. of Sta. 69+725)(Contains Asbestos Transite Siding)
- Item 704-03, Blocked Out Guard Rail
- Item 704-08-B, Guard Rail Transitions (Double Thrie Beam)
- Item 704-11-A, Guard Rail End Treatment
- Item 705-01, Barbed Wire Fence
- Item 705-06-C, Chain Link Fence (1800 mm Height)
- Item 729-16-C, Object Marker Assembly (Type 3)
- Item 731-02, Reflectorized Raised Pavement Markers
- Item 732-02-A, Plastic Pavement Striping (Solid Line)(100 mm Width)
- Item 732-03-A, Plastic Pavement Striping (Broken Line)(100 mm Width)
- Item 732-04-A, Plastic Legends and Symbols (Arrow)
- Item 732-04-C, Plastic Legends and Symbols (Only)
- Item 732-05, Removal of Existing Markings
- Item 741-05-A, Water Service Line (19 mm)(PE-Class 200, SDR-9)
- Item 741-08, Relocating Water Meter

CASH MANAGEMENT PLAN - "PHASE FUNDED" CONSTRUCTION (07/04)

This project has been selected by the Department to be implemented under the cash management plan, "phase funding," authorized by LSA-R.S. 48:251 and LAC 70:101 et seq., for certain long-term construction contracts. This construction project will be segmented by fiscal year, and only those funds necessary to carry out planned construction activities in each fiscal year will be appropriated by the Legislature and budgeted by the Department.

The continuation of this contract is contingent upon the continuation of an appropriation of funds by the Legislature to fulfill the requirements of the contract. If the Legislature fails to appropriate sufficient monies to provide for the continuation of this contract or if such appropriation is reduced by the veto of the governor or by any means provided in the Capital Outlay Act, Title 39 of the Louisiana Revised Statutes of 1950, or any other applicable laws to prevent the total

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appropriations for the year from exceeding revenues for that year or for any other lawful purpose and the effect of such reduction is to provide insufficient monies for the continuation of the contract, the contract shall terminate on the date of the beginning of the first fiscal year for which funds are not appropriated. When a contract, or portion thereof, is terminated for the reasons enumerated herein, the Louisiana Standard Specifications for Roads and Bridges, Subsection 108.11, Termination of Contract, shall govern.

In order to insure adequate funds are budgeted each year for this phase-funded project, the contractor shall comply with the special provision, "Critical Path Method (CPM) For Construction Progress Scheduling", contained elsewhere herein.

Nothing herein shall relieve the contractor from any other requirement or obligation as set forth in the standard specifications, special provisions, supplemental provisions or any other contract requirement.

CRITICAL PATH METHOD (CPM) FOR CONSTRUCTION PROGRESS SCHEDULING (01/06): Critical Path Methods (CPM) as described and with terms as defined in the Associated General Contractors of America (AGC) publication, *Construction Planning and Scheduling*, latest edition, shall be used in construction scheduling, establishing the critical items of work, and measuring progress of the work. In case of discrepancy between these specifications and *Construction Planning and Scheduling*, these specifications shall govern.

Subsection 108.03, Construction Progress Schedule: This subsection is deleted and the following substituted.

The contractor shall submit to the project engineer for approval, CPM Construction Schedules, Summary of Activities tabulations, and Scheduled Earnings tabulations, all as described hereinafter, and altogether defined as "Construction Progress Schedule" or "Construction Schedule". The Construction Progress Schedule shall be based on the planned and specified finished work, the maintenance of traffic restrictions, and other design requirements given in the plans and specifications. Each sheet or page of each submittal shall be identified with the contractor's company name, state project number, project name, date prepared, revision dates, and sheet or page number. If the submittals are not prepared by the contractor's own staff, the company name of the preparer shall be shown on each sheet or page.

The critical activities as shown on the approved Construction Schedule will be considered in establishing the controlling item of work. Scheduled Earnings will be the basis for measurement of contractor's progress.

Approved Construction Progress Schedules and approved associated data shall become part of the contract documents. Un-approved Construction Progress Schedules and associated data shall not be considered relevant or applicable for any purposes during or after completion of the project and shall not be binding on the Department. The sequence of work as represented on the Construction Progress Schedule and subsequent updates shall be interpreted as being the intention of the contractor at the time that the schedule was made.

(a) Construction Schedule: The Construction Schedule shall be a Critical Path Method (CPM) graphic diagram, computer prepared, utilizing the Precedence Diagramming Method (PDM). For the calendar day contract, the Gregorian calendar shall be used.

The schedule shall show and describe the various activities of work required to complete the contract in sufficient detail so that all activities are readily identifiable and progress on the activities can be readily measured. Sufficient detail in bridge work means each element of work (piles, footings, columns, caps, rebar, cure time, etc.) of individual bents; each element of work in individual spans (girders, strip seal joints, Class AA, rebar, cure time, etc.); individual approach slabs; railings; rebar for all of the above as separate activities; and, miscellaneous other bridge work. Sufficient detail in road work means individual runs of pipe in drainage structures; individual box culverts; individual detour roads; the embankment, excavation, base and paving layers within

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definable geometric limits (e.g., from station to station, within a single ramp, etc.) It shall include submittals and approvals of critical samples, shop drawings, procedures, order lists (pilings for example), or other things that could have a significant schedule impact.

Relatively minor items of work, similar or non-similar, may be grouped together into one activity (or more). Activities to be performed by subcontractors shall be included and identified. The schedule shall show the sequence in which the activities are to be accomplished and their dependency relationships. The estimated contract earnings and pay item quantities associated with each activity shall be included, and the sum of the estimated earnings shall equal the current contract amount.

The duration of activities shall be in whole calendar days and no activity shall have duration of less than one calendar day or more than 30 calendar days. The ending event of the schedule shall be a finish milestone identified as "Contract Completion Date". Its sole predecessor shall be "Reserved Float". The sole predecessor of "Reserved Float" shall be "Final Inspection" which shall be a finish milestone and shall have as predecessors all of the activities that must be completed prior to the Department's final inspection of the work. The duration of "Reserved Float" is the difference between "Final Inspection" and "Contract Completion Date". "Reserved Float" is defined as that part of the shared float reserved exclusively for the contractor's use. The contract date for stipulated damages will be adjusted by change order to the beginning date of the activity "Reserved Float".

The Construction Schedule shall be computer plotted on sheets not larger than 22 inches x 36 inches and shall show a continuous flow of information from left to right with no arrows from right to left and shall be drawn to a time scale of calendar days. The critical path shall be clearly identified. Resource constraints shall be identified, as shall scheduled starts or completions imposed on the schedule by the contractor.

The contractor shall submit color-coded graphics in the required multiple copies. The choice of the color coding must remain in effect for the life of the contract.

The contractor shall provide the Department with the means to electronically translate the Construction Schedule data into a configuration that can be read and processed by the Department or its consultants' hardware and Primavera software. If the contractor elects to use SureTrak Project Manager software, the following defaults must be placed: (1) resources shall be non-driving; (2) default activity type shall be "Task"; (3) activity type shall not be "Independent"; (4) duration display style shall be "Day (d)"; (5) float style shall be "Days"; and, (6) dates time format shall be "Don't show time". The revenue feature in SureTrak Project Manager does not translate to Primavera Project Planner (P3), so in SureTrak Project Manager the earnings must be entered as cost data. In both the SureTrak Project Manager and in the Primavera Project Planner (P3) "Back up" menu selection, the contractor will ensure that the option "Remove access list during backup" is checked. In addition, the project must be saved in SureTrak as a "Concentric P3" Type project.

(b) Summary of Activities: The Summary of Activities shall be a tabulation of all activities shown on the Construction Schedule, and shall accurately reflect the data used in preparation of the Construction Schedule. The summary shall be computer generated and sequenced by activity number. Each activity shall include as a minimum the following, in calendar days:

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1. Activity numbers.
2. Activity description.
3. Estimated duration of activity.
4. Early start.
5. Late start.
6. Constrained start, if constrained.
7. Early finish.
8. Late finish.
9. Constrained finish, if constrained.
10. Status (whether critical).
11. Free float.
12. Total float.
13. Monetary value of the activity.
14. Remaining duration and calendar days used.

(c) **Scheduled Earnings:** The Scheduled Earnings shall be a product of the software creating the Construction Schedule and shall be a tabulation of accumulated scheduled contract earnings, based on late starts, measured in accumulated dollars for all activities, for each monthly partial estimate. The tabulation shall be prepared from the Construction Schedule and shall be computer generated. The Schedule of Earnings will not include advanced payments for stockpiled materials.

(d) **Cash Management Document:** When designated as a Cash Management Project, prior to the issuance of the Notice to Proceed, the contractor shall provide to the Department and obtain approval from the Department of the Scheduled Earnings report as described above, except that it shall be based on early starts. The Department will use this report for its cash management purposes. Failure of the contractor to provide and obtain approval of the Scheduled Earnings Report will result in withholding of any funds due the contractor.

(e) **Submittal:** Prior to or at the preconstruction conference the contractor shall submit to the project engineer for approval, in triplicate, a Construction Schedule giving a proposed schedule of operations that provides for completion of the work, a Summary of Activities tabulation, a Scheduled Earnings tabulation, and a Forty-Five Day Look-Ahead task list. The contractor shall also submit the Construction Schedule data electronically capable of being processed with the hardware and software being used by the Department or its consultants.

Within 7 calendar days after receipt of the submittal, the project engineer and contractor shall meet and review the proposed schedules and tabulations. Any revisions resulting from the review shall be submitted, in triplicate, for approval within 7 calendar days after the meeting. This procedure will be repeated as necessary. The approved final schedule shall be called the "Baseline Schedule".

Failure to have obtained approval of a Baseline Schedule and tabulations within 20 calendar days after the Notice to Proceed will result in withholding twenty-five percent of the amount of partial estimates until such schedules and tabulations are submitted and approved.

(f) **Construction Schedule Updates:** The contractor shall update and submit each month, within 7 calendar days after the partial estimate is submitted, the Construction Schedule critical path diagram, Summary of Activities tabulation, Scheduled Earnings tabulation, a Forty-Five Day Look-Ahead task list, and a current Turnaround Document as follows:

- (1) The updated Construction Schedule critical path diagram will be in the same form as that submitted in (e) Submittal. It will be updated for progress through the estimate closing date, recalculated and plotted. The Construction Schedule critical path diagram will show both the look ahead critical path for the duration of the project and the look back critical path as reported in the prior months.

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- (2) The updated Summary of Activities and Scheduled Earnings tabulation will be in the same form as that submitted in (e) Submittal. It will be updated for progress through the estimate closing date, recalculated and printed.
- (3) The Forty-Five Day Look-Ahead task list will show all incomplete activities which the logic has determined either should be or may be active during the next forty-five days. It will be plotted in a graphic form similar to that of the Construction Schedule critical path diagram.
- (4) The Turnaround Document will be a listing of the log record of a new activity added monthly to the schedule for the purpose of keeping a current presentation of the following information:
 - a. The original contract completion date presented as actual calendar date.
 - b. The number of days added to the contract by approved change order (if any, if none, so state).
 - c. The present computed completion date presented as an actual calendar date and as a workday number, if applicable.
 - d. A list of activities deleted and added (if any, if none, so state), including their descriptions.
 - e. A list of logic changes (if any, if none, so state).
 - f. A list of budget changes (if any, if none, so state).
 - g. A narrative description of any other changes to the Construction Schedule critical path diagram.

Failure to submit the monthly updates of the Construction Progress Schedules within 7 calendar days after the partial estimate was submitted will result in withholding of twenty-five percent of the amount of partial estimate payments until such schedules are submitted and approved.

(g) CPM Reviews: The project engineer will designate the time and location for review of construction progress. The contractor's representative designated under Subsection 105.05 will be required to attend the construction progress review or a contractor's representative directed by the project engineer shall attend. The current approved Construction Schedule, Summary of Activities and Scheduled Earnings tabulations shall be reviewed, and required or desired changes discussed and documented.

As a minimum the following shall be discussed: contractor's compliance with approved schedules and tabulations, delays, proposed and approved contract quantity increases and decreases, proposed and approved extra work, actual starts, durations and finishes, and actual contract earnings.

If requested by the project engineer, within 7 calendar days following the review meeting the contractor shall submit to the project engineer for approval, in triplicate, a revised Construction Schedule, Summary of Activities tabulation, and Scheduled Earnings tabulation, and Forty-Five Day Look-Ahead, all in accordance with paragraph (e) Submittal, and all brought up to date to reflect agreements made at the review meeting. Failure to submit the revision of the Construction Progress Schedules within 7 calendar days after the request will result in withholding of twenty-five percent of the amount of partial estimate payments until such schedules are submitted and approved.

(h) The CPM Construction Schedule will be provided at no direct pay.

Subsection 108.04, Prosecution of Work: Heading (b), Disqualification, is deleted and the following is substituted.

(b) Disqualification. The contractor's progress will be determined monthly at the time of each partial estimate, and will be based on the total amount of money earned by the contractor, excluding advanced stockpiled material, as shown by the partial estimate compared to scheduled earnings as shown by the approved Scheduled Earnings tabulation, as of the end of the partial estimate period. If the contractor's progress is more than 10 percent behind scheduled earnings, the contractor may be notified that disqualification will occur if progress becomes delinquent by more

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than the percentages specified hereinafter, and additional notifications will be made, as the engineer deems necessary.

Prior to the elapsing of 55 percent of the contract time, the contractor will be disqualified if progress is more than 20 percent behind scheduled earnings. After 75 percent of the contract time has elapsed, the contractor will be disqualified if progress is more than 10 percent behind scheduled earnings. Disqualification will be applied between 55 and 75 percent contract time elapsed on a pro-rata basis; for example, when 65 percent of the contract time has elapsed, the contractor will be disqualified if progress is more than 15 percent behind scheduled earnings.

During the period of disqualification, the contractor will not be permitted to bid on contracts nor be approved as a subcontractor on contracts. Any bid submitted by the contractor during the period of disqualification will not be considered and will be returned. The period of disqualification will continue until the completed work on the contract is within the foregoing percentages or until all work on the contract has been satisfactorily completed.

Subsection 108.07, Determination and Extension of Contract Time: This subsection is amended as follows.

The ninth and tenth paragraphs are deleted and the following substituted.

The contract time for the work as awarded is based on the original quantities as defined in Subsection 102.05 and includes time to procure material, equipment and an adequate labor force to complete the work. If satisfactory fulfillment of the contract requires performance of work in greater quantities than those specified, or requires performance of extra work in accordance with Subsection 104.02 and the contractor requests additional contract time, the contractor shall submit a proposed CPM schedule based on the latest approved CPM schedule showing the increased time and revised completion date for approval by the Department. When the contract is altered in accordance with Subsection 104.02 and the engineer determines that a reduction in contract time is warranted due to decreased effort, the contractor shall submit a proposed CPM schedule based on the latest approved CPM schedule showing the reduced time and revised completion date for approval by the Department. A CPM schedule will be required for the engineer to process a change order that either increases or decreases the contract time.

If the contractor finds it impossible, for reasons beyond the contractor's control, to complete the work within the contract time as specified or as extended in accordance with the provisions of this subsection, the contractor may, at any time prior to the expiration of the contract time as extended, make written request to the engineer for an extension of time setting forth therein the reasons which justify granting the request. The contractor's plea that insufficient time was specified is not a valid reason for extension of time. If the engineer finds that the work was delayed because of conditions beyond the control and without the fault of the contractor, the engineer may extend the contract time in such amount as conditions justify. The contractor's written request to the engineer for an extension of contract time shall include a proposed CPM schedule based on the latest approved CPM schedule update showing the increased time and revised completion date for approval by the Department. This CPM schedule document will be required for the engineer to process a change order that changes the contract time.

DETERMINATION AND EXTENSION OF CONTRACT TIME (1/04): Subsection 108.07 Determination and Extension of Contract Time is amended to include the following.

The contractor shall document for each month of scheduled construction, the occurrence of adverse weather conditions having an impact on controlling items of work. An adverse weather day is one on which rainfall or wet soil conditions will prevent construction operations from proceeding for at least 5 continuous hours of the day or 65 percent of the normal work day, whichever is greater, with the normal working force engaged in performing the controlling item of work. If the contractor submits a written request for additional contract time due to adverse weather conditions, the contractor's request will be considered only for adverse weather days in excess of the allowable

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number of days per month stated below. An equitable adjustment in contract time will be made at the conclusion of the project by comparing the total number of excess adverse weather days requested by the contractor to the number of adverse weather days that were included in the construction schedule but were not used. Contract time will not be reduced due to the adjustments for adverse weather. An adjustment in the contract time due to adverse weather will not be cause for an adjustment in the contract amount.

The following are anticipated adverse weather days that the contractor shall include in each month of his calendar day construction schedule.

January	9 days	May	4 days	September	<u>4</u> days
February	8 days	June	5 days	October	<u>3</u> days
March	6.days	July	5 days	November	<u>5</u> days
April	5 days	August	4 days	December	7 days

FAILURE TO COMPLETE ON TIME: Subsection 108.08 of the Standard Specification is amended as follows:

Table 108-1, Stipulated Damages, is amended as follows: The Daily Charge (Dollars) for Calendar Day is deleted, and the following substituted. Daily Charge (Dollars) for Calendar Day shall equal the Daily Road User Cost stated herein.

PAYMENT ADJUSTMENT (08/05): Section 109, Measurement and Payment of the 2000 Standard Specifications is amended to add the following.

This project is designated for payment adjustment for asphalt cements and fuels in accordance with Subsection 109.10 as follows.

109.10 PAYMENT ADJUSTMENT (ASPHALT CEMENTS AND FUELS).

(a) General: Payment for contract items indicated herein will be adjusted to compensate for cost differentials of Performance Graded (PG) asphalt cements, gasoline, and diesel fuel when such costs increase or decrease more than 5 percent from the Department's established base prices for these items. The base price indices for asphalt cements and fuels will be the monthly price indices in effect at the time bids are opened for the project. The base price indices for asphalt cements will be as stated in paragraph (b) below. The base price index for fuels will be as stated in paragraph (c) below.

Payment adjustments will be made each monthly estimate period when a price index for this period varies more than 5 percent from its respective base price index. The monthly price indices to be used with each monthly estimate will be the price indices for the month in which the estimate period begins.

If the project is placed in default, payment adjustments will be based on the monthly price indices used for the last monthly estimate period prior to the project being placed in default, unless a monthly price index decreases in which case the lower monthly price index will be used.

If it is determined after completion of work on any eligible item that the total quantity paid to date must be adjusted to reflect more accurate quantity determinations, the Department will prorate the additional quantity to be added or subtracted over all previous estimate periods in which the item of work was performed in order to determine additional payment adjustments. If payment adjustments were made during any of these partial estimate periods, this added or subtracted quantity that has been prorated will likewise have payment adjustments calculated and included.

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(b) Performance Graded (PG) Asphalt Cements: The base price index will be the monthly price index in effect at the time of bid opening as shown elsewhere herein. The monthly price indices will be the average of the unit prices for PG 64-22, the average of the unit prices for PG 70-22m, and the average of the unit prices for PG 76-22m. The monthly prices for each of these asphalt materials will be F.O.B. refinery or terminal as determined from the quoted prices effective on the first calendar day of each month from major suppliers of these materials. These suppliers and materials shall be listed on the Department's Qualified Products List (QPL 41) and must be marketed in Louisiana.

Payment adjustments will be made in accordance with the following formulas:

If Monthly Price Index exceeds Base Price Index,

$$P_a = (A - 1.05B) \times C \times D \times (1.00 + T)$$

If Base Price Index exceeds Monthly Price Index,

$$P_a = (0.95B - A) \times C \times D \times (1.00 + T)$$

Where:

- P_a = Price adjustment (increase or decrease) for asphalt cement.
- A = Monthly Price Index for respective PG 64-22, PG 70-22m, or PG 76-22m in dollars per ton/megagram.
- B = Base Price Index for respective PG 64-22, PG 70-22m, or PG 76-22m in dollars per ton/megagram.
- C = Tons/megagrams of asphaltic concrete.
- D = Percent of respective asphalt cement, per job mix formula, in decimals.
- T = Louisiana sales tax percentage and local sales tax percentage, in decimals.

The engineer will furnish the weights (mass) of asphaltic concrete placed during the monthly estimate period with the respective asphalt cement content. If the asphalt cement content changes during the estimate period, the respective weight (mass) of asphaltic concrete produced at each cement content will be reported.

Item 724-02, Pavement Widening, and all contract pay items under Sections 501, 502, and 508, will be eligible for payment adjustments of asphalt materials. No payment adjustment will be made for other asphalt materials, including emulsions and cutbacks.

The base price indices in dollars per ton/megagram of asphalt cement to be used for payment adjustments for this project are as follows:

GRADE OF ASPHALT CEMENT	BASE PRICE INDEX	
	\$/TON	\$/Mg
PG 64-22	\$295	\$325
PG 70-22m	\$357	\$304
PG 76-22m	\$383	\$422

(c) Fuels: The base price index for this project will be the monthly price index in effect when bids are opened for the project. The monthly price index will be the minimum price quotations for unleaded gasoline and No. 2 diesel fuel listed for the New Orleans area in *Platt's Oilgram and Price Report* effective on the first calendar day of each month.

Payment adjustment will be made in accordance with the following formulas:

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If Monthly Price Index exceeds Base Price Index,

$$P_a = (A - 1.05B) \times Q \times F$$

If Base Price Index exceeds Monthly Price Index,

$$P_a = (0.95B - A) \times Q \times F$$

Where:

P_a	=	Price adjustment
A	=	Monthly Price Index in dollars per gallon/liter.
B	=	Base Price Index in dollars per gallon/liter.
Q	=	Pay Item Quantity (Pay Units)
F	=	Fuel Usage Factor Gal(L)/Pay Unit

The following is a listing of contract pay items that are eligible for payment adjustment and the fuel usage factors that will be used in making such adjustment. Contract items that expand the items listed herein by use of letter designations are also eligible for fuel price adjustments; for example:

Item 601-01-G, Portland Cement Concrete Pavement 8 inches (200 mm) thick.

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**ELIGIBLE CONTRACT PAY ITEMS & FUEL USAGE FACTORS FOR FUEL PAYMENT
ADJUSTMENT**

ITEM NO.	PAY ITEM	UNITS	MIN. ORIGINAL CONTRACT QUANTITY FOR PAY ADJUSTMENT	FUEL USAGE FACTORS	
				Diesel ²	Gasoline
203-01 ¹	General Excavation	gal/cu yd	10,000 cu yd	0.29	0.15
203-02	Drainage Excavation	gal/cu yd	10,000 cu yd	0.29	0.15
203-03	Muck Excavation	gal/cu yd	10,000 cu yd	0.29	0.15
203-04 ¹	Embankment	gal/cu yd	10,000 cu yd	0.29	0.15
203-05	Nonplastic Embankment	gal/cu yd	10,000 cu yd	0.29	0.15
203-08	Borrow (Vehicular Measurement)	gal/cu yd	10,000 cu yd	0.29	0.15
301-01	Class I Base Course	gal/cu yd	3,000 cu yd	0.88	0.57
301-02	Class I Base Course (" Thick)	gal/sq yd	50,000 sq yd	0.04	0.03
302-01	Class II Base Course	gal/cu yd	3,000 cu yd	0.88	0.57
302-02	Class II Base Course (" Thick)	gal/sq yd	50,000 sq yd	0.04	0.03
303-01	In-Place Cement Stabilized Base Course	gal/sq yd	50,000 sq yd	0.04	0.03
304-02	Lime Treatment (Type B)	gal/sq yd	50,000 sq yd	0.04	0.03
304-03	Lime Treatment (Type C)	gal/sq yd	50,000 sq yd	0.04	0.03
304-04	Lime Treatment (Type D)	gal/sq yd	50,000 sq yd	0.04	0.03
305-01	Subgrade Layer (" Thick)	gal/sq yd	50,000 sq yd	0.04	0.03
401-01	Aggregate Surface Course (Net Section)	gal/cu yd	3,000 cu yd	0.88	0.57
401-02	Aggregate Surface Course (Adjusted Vehicular Measurement)	gal/cu yd	3,000 cu yd	0.88	0.57
501-01	Asphaltic Concrete	gal/ton	1,000 ton	2.40 ³	0.2
501-02	Asphaltic Concrete	gal/cu yd	500 cu yd	4.80 ⁴	0.4
501-03	Asphaltic Concrete (" Thick)	gal/sq yd	10,000 sq yd	0.13 ^{5,6}	0.01 ⁶
502-01	Superpave Asphaltic Concrete	gal/ton	1000 ton	2.40 ³	0.2
502-02	Superpave Asphaltic Concrete	gal/cu yd	500 cu yd	4.80 ⁴	0.4
502-03	Superpave Asphaltic Concrete (" Thick)	gal/sq yd	10,000 sq yd	0.13 ^{5,6}	0.01 ⁶
508-01	Asphaltic Concrete (SMA)	gal/ton	1000 ton	2.40 ³	0.2
601-01	Portland Cement Concrete Pavement (" Thick)	gal/sq yd	15,000 sq yd	0.11	0.15
724-02	Pavement Widening	gal/sq yd	3,000 sq yd	0.86	0.24

1 If project has both 203-01 & 203-04, only the item with larger quantity is eligible.

2 For fuel adjustment purposes, the term "diesel" shall represent No. 2 or No. 4 fuel oils or any of the liquified petroleum gases, such as propane or butane.

3 If natural gas or coal is used instead of diesel for aggregate drying and heating the fuel usage factor shall be 0.50 gal/ton.

4 If natural gas or coal is used instead of diesel for aggregate drying and heating the fuel usage factor shall be 1.00 gal/cu yd.

5 If natural gas or coal is used instead of diesel for aggregate drying and heating the fuel usage factor shall be 0.03 gal/sq yd.

6 Per inch of thickness.

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ELIGIBLE CONTRACT PAY ITEMS & FUEL USAGE FACTORS FOR FUEL
PAYMENT ADJUSTMENT (METRIC)

ITEM NO.	PAY ITEM	UNITS	MIN. ORIGINAL CONTRACT QUANTITY FOR PAY ADJUSTMENT	FUEL USAGE FACTORS	
				Diesel ²	Gasoline
203-01 ¹	General Excavation	l/m ³	7,600 m ³	1.44	0.74
203-02	Drainage Excavation	l/m ³	7,600 m ³	1.44	0.74
203-03	Muck Excavation	l/m ³	7,600 m ³	1.44	0.74
203-04 ¹	Embankment	l/m ³	7,600 m ³	1.44	0.74
203-05	Nonplastic Embankment	l/m ³	7,600 m ³	1.44	0.74
203-08	Borrow (Vehicular Measurement)	l/m ³	7,600 m ³	1.44	0.74
301-01	Class I Base Course	l/m ³	2,300 m ³	4.36	2.82
301-02	Class I Base Course (mm Thick)	l/m ²	41,800 m ²	0.007 ⁶	0.005 ⁶
302-01	Class II Base Course	l/m ³	2,300 m ³	4.36	2.82
302-02	Class II Base Course (mm Thick)	l/m ²	41,800 m ²	0.007 ⁶	0.005 ⁶
303-01	In-Place Cement Stabilized Base Course	l/m ²	41,800 m ²	0.18	0.14
304-02	Lime Treatment (Type B)	l/m ²	41,800 m ²	0.18	0.14
304-03	Lime Treatment (Type C)	l/m ²	41,800 m ²	0.18	0.14
304-04	Lime Treatment (Type D)	l/m ²	41,800 m ²	0.18	0.14
305-01	Subgrade Layer (mm Thick)	l/m ²	41,800 m ²	0.007 ⁶	0.005 ⁶
401-01	Aggregate Surface Course (Net Section)	l/m ³	2,300 m ³	4.36	2.82
401-02	Aggregate Surface Course (Adjusted Vehicular Measurement)	l/m ³	2,300 m ³	4.36	2.82
501-01	Asphaltic Concrete	l/Mg	900 Mg	10.01 ³	0.83
501-02	Asphaltic Concrete	l/m ³	400 m ³	23.77 ⁴	1.98
501-03	Asphaltic Concrete (mm Thick)	l/m ²	8,400 m ²	0.023 ^{5,6}	0.002 ⁶
502-01	Superpave Asphaltic Concrete	l/Mg	900 Mg	10.01 ³	0.83
502-02	Superpave Asphaltic Concrete	l/m ³	400 m ³	23.77 ⁴	1.98
502-03	Superpave Asphaltic Concrete (mm Thick)	l/m ²	8,400 m ²	0.023 ^{5,6}	0.002 ⁶
508-01	Asphaltic Concrete (SMA)	l/Mg	900 Mg	10.01 ³	0.83
601-01	Portland Cement Concrete Pavement (mm Thick)	l/m ²	12,500 m ²	0.5	0.68
724-02	Pavement Widening	l/m ²	2,500 m ²	3.89	1.09

- 1 If project has both 203-01 & 203-04, only the item with larger quantity is eligible.
- 2 For fuel adjustment purposes, the term "diesel" shall represent No. 2 or No. 4 fuel oils or any of the liquified petroleum gases, such as propane or butane.
- 3 If natural gas or coal is used instead of diesel for aggregate drying and heating the fuel usage factor shall be 2.09 l/mg.
- 4 If natural gas or coal is used instead of diesel for aggregate drying and heating the fuel usage factor shall be 4.95 l/m³.
- 5 If natural gas or coal is used instead of diesel for aggregate drying and heating the fuel usage factor shall be 0.005 l/m².
- 6 Per mm of thickness.

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REMOVING OR RELOCATING STRUCTURES AND OBSTRUCTIONS (07/05): Section 202 of the 2000 Standard Specifications and the supplemental specifications thereto is amended as follows.

Subsection 202.02, General Construction Requirements is amended to include the following. The contractor shall provide a DEQ accredited asbestos inspector to inspect any structure that is to be removed or relocated for the existence of asbestos and the condition thereof. Copies of the inspection report for each structure shall be provided to the project engineer.

The second paragraph of Heading (f) is deleted and the following substituted. Unless otherwise directed or shown on the plans, substructures shall be removed to natural stream bottom and those parts outside the stream shall be removed to 1 foot (0.3 m) below natural ground surface. Existing structures within the limits of a new structure shall be removed as necessary to accommodate construction of the new structure.

Subsection 202.05, Measurement is amended as follows. The fourth paragraph is deleted and the following substituted. When an item is included for the removal of bridges, the removal of the approach slabs, superstructure, and substructure will be considered part of the work unless otherwise shown on the plans.

Subsection 202.06, Payment is amended as follows. Add the following to the second paragraph. Payment for removal of bridges will include removal of the approach slabs, superstructure and substructure.

Add the following. Payment for inspection to determine the presence and condition of asbestos by DEQ certified asbestos abatement contractors or subcontractors will be included in the appropriate pay items for the removal or relocation of structures.

Delete the last sentence of the third paragraph and substitute the following. When a structure is found to contain friable or non-friable asbestos and it has not been identified on the plans as containing asbestos, payment for the removal and disposal of the asbestos will be made in accordance with Subsection 109.04, including the cost of all testing.

SUPERPAVE ASPHALTIC CONCRETE MIXTURES (01/05): Section 502 of the 2000 Standard Specifications and the supplemental specifications thereto is amended as follows.

Subsection 502.01, Description.

The fourth paragraph is amended to include the following. A mixture of any design level, including Level A, may be used on the shoulders at the contractor's option.

Subsection 502.12, Quality Control and Acceptance.

The third and fourth paragraphs of Heading (b) are deleted and the following substituted.

Pavement density and surface tolerance requirements will not be applied for short irregular sections, such as drives, aprons and turnouts; however, hot mix shall be placed to provide a neat, uniform appearance and shall be compacted by satisfactory methods. Any mixtures used for shoulders, curbs, driveways, turnouts, crossovers, joint repair, leveling, guardrail widening, islands, bike paths, patching, widening, and miscellaneous handwork will be paid separately in 1000 ton sublots, or portions thereof, in accordance with Section 502.12(c) and Table 502-8.

The first paragraph of Heading (f)(2) is deleted and the following substituted.

Acceptance testing for pavement density will be conducted by the Department. Three pavement samples for each mix use shall be obtained from each subplot within 24 hours after placement. When this falls on a day the contractor is not working, sampling shall be done within 3 calendar days. Sampling shall be performed using the random number tables shown in DOTD S605. If there are different mix uses within the same subplot, i.e. shoulder and roadway, then an additional core may be taken to ensure that there is at least one core per mix use. The density requirement for each lot will be as shown in Table 502-3 determined in accordance with DOTD TR 304. Payment will be made in accordance with Table 502-6 using the total number of cores for the

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lot in accordance with Subsection 502.12(g). Payment for small quantity lots will be made in accordance with Table 502-8.

Subsection 502.13, Measurement.

The first sentence of the second paragraph of Heading (a) is deleted and the following substituted. Estimated quantities of asphaltic concrete shown on the plans are based on 110 lb/sq yd/inch (2.35 kg/sq m/mm) thickness.

ASPHALTIC CONCRETE EQUIPMENT AND PROCESSES (11/04): Section 503 of the 2000 standard specifications is amended as follows.

Subsection 503.02 Plant Equipment.

Heading (c) Anti-Strip Additive Equipment is amended to include the following. The anti-strip delivery system shall ensure that the proper amount of material is delivered continuously. This system may be a paddle-type no-flow indicator, which triggers a light or alarm in the control room and an alarm in the plant lab when the anti-strip material is not flowing. Other similar systems may be allowed with approval by the District Laboratory Engineer. In either system, if the anti-strip flow is not restored within 15 minutes, production shall be discontinued until the system is repaired.

CULVERTS AND STORM DRAINS (09/05): Section 701 of the 2000 Standard Specifications and the supplemental specifications thereto is amended as follows.

Subsection 701.08, Backfilling, is deleted and the following substituted.

701.08 BACKFILLING.

(a) General: Prior to backfilling, pipes found to be damaged or out of alignment or grade shall be removed and reinstalled, or replaced.

Type A backfill material shall be stone, recycled portland cement concrete, or flowable fill.

Type B backfill material shall be stone, recycled portland cement concrete, flowable fill, selected soils, or granular material.

When Type A backfill material is used, geotextile fabric shall be placed in accordance with plan details prior to placing backfill material. Care shall be taken to prevent damage to geotextile fabric during placement of backfill material.

Adjacent rolls of fabric shall be overlapped or sewn. When rolls are overlapped, the overlap shall be a minimum of 18 inches (450 mm), including the ends of the rolls. The top layer of the fabric shall be parallel with adjacent rolls and in the direction of backfill materials placement. When rolls are sewn, the contractor shall join adjacent rolls by sewing with polyester, or Kevlar thread. Field sewing shall employ the "J" seam or "Butterfly" seam with the two pieces of geotextile fabric mated together, turned in order to sew through 4 layers of fabric and sewn with 2 rows of Type 401, two-threaded locking chain stitch. Factory seams other than specified shall be submitted to the Materials and Testing Section for approval.

Damaged fabric shall be either removed and replaced with new fabric or covered with a second layer of fabric extending 2 feet (0.6 m) in each direction from the damaged area.

(b) Backfill Applications:

(1) Paved Areas: Cross drains and side drains in paved areas subject to traffic loads such as roadway travel lanes, shoulders, and turnouts shall be backfilled with Type A material. Type B backfill material shall be used in all other paved areas including driveways, detour roads and similar installations. Selected soils will not be allowed as backfill material. Placement and compaction shall be as specified in Heading (c) below.

(2) Nonpaved Areas: Pipe backfill material, except for plastic pipe, shall be Type B backfill material placed by approved methods and compacted to the density of surrounding soil. Plastic pipe shall be backfilled with granular material or Type A backfill Material.

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(c) Placement and Compaction: When corrugated metal pipe is used, the backfill material shall be tested and shall have a resistivity greater than 1500 ohm-cm and a pH greater than 5 when tested in accordance with DOTD TR 429 and DOTD TR 430 respectively.

If the top of pipe is even with or below the top of the trench, backfill material shall be brought up evenly on both sides of pipe for its full length to an elevation of 12 inches (300 mm) above the top of pipe [or to subgrade if less than 12 inches (300 mm)] or to natural ground elevation, whichever is greater.

When the top of the pipe is above the top of the trench, backfill material shall be brought up evenly on both sides of pipe for its full length to 12 inches (300 mm) above the top of pipe or to subgrade if less than 12 inches (300 mm). Material in the trench and above the top of the trench for a distance on each side of the pipe equal to the horizontal outside diameter for corrugated metal or plastic pipe and 18 inches (450 mm) for concrete pipe, and to 12 inches (300 mm) above the top of pipe or to subgrade if less than 12 inches (300 mm) shall be backfill material.

The embankment shall be constructed to a minimum of 24 inches (600 mm) over the pipe before heavy construction equipment is allowed to cross the installation. Where practical, installations with less than 24 inches (600 mm) of cover over the top of the pipe shall be constructed after heavy hauling is completed over the pipe location. After completion of hauling operations, the contractor shall remove excess cover material. Pipe damaged by hauling and backfilling operations shall be removed and reinstalled, or replaced, at no direct pay.

(1) Backfill Methods:

a. General: Compaction by flooding will not be allowed.

b. Selected Soils: Backfill shall be placed at or near optimum moisture content determined in accordance with DOTD TR 415 or TR 418 in layers not exceeding 8 inches (200 mm) compacted thickness. Backfill material shall be thoroughly compacted under the haunches of the pipe. Each layer shall be compacted by approved methods to at least 95 percent of maximum dry density prior to placement of a subsequent layer.

c. Granular Material: Backfill shall be placed at or near optimum moisture content determined in accordance with DOTD TR 415 or TR 418. Backfill material shall be thoroughly compacted under the haunches of the pipe and then compacted in layers not exceeding 12 inches (300 mm) compacted thickness. Each layer shall be compacted by approved methods to at least 95 percent of maximum dry density prior to placement of a subsequent layer. Exposed slopes at the pipe ends shall be covered by at least 12 inches (300 mm) compacted thickness of plastic soil blanket.

d. Flowable Fill: Flowable fill shall be in accordance with Section 710.

e. Stone or Recycled Portland Cement Concrete: Backfill shall be placed at or near optimum moisture content determined in accordance with DOTD TR 415 or TR 418. Backfill material shall be thoroughly compacted under the pipe haunches and then compacted in layers not exceeding 8 inches (200 mm) compacted thickness. With approval of the engineer, layer thickness may be increased to 12 inches (300 mm) with verification of satisfactory installation and performance. Each layer shall be compacted by approved methods to at least 95 percent of maximum dry density prior to placement of a subsequent layer. The contractor shall control placement operations so as not to damage protective coatings on metal pipes. The contractor shall repair damaged coatings at no additional pay.

(2) Density Requirements: Maximum dry density will be determined in accordance with DOTD TR 415 or TR 418 and in-place density determined in accordance with DOTD TR 401.

TEMPORARY SIGNS, BARRICADES, BARRIERS AND PAVEMENT MARKINGS (01/06): Section 713 of the 2000 Standard Specifications and the Supplemental Specifications is amended as follows:

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Subsection 713.02, Materials is amended as follows. Heading (b)(1) is deleted and the following substituted.

(1) Temporary Signs and Barricades: On the mainline of freeways and expressways, the initial sequence of advanced warning construction signs shall be fabricated using ASTM D 4956 Type X fluorescent orange reflective sheeting. Reflective sheeting for all other temporary signs and barricades shall comply with the requirements of ASTM D 4956, Type III.

Subsection 713.04, Temporary Signs and Barricades, is amended to include the following:

(d) Project Signs: The contractor shall furnish, install, maintain, and upon completion of the project remove "project signs" in accordance with the following requirements.

Project signs shall conform to the requirements of Section 713 and the project sign detail contained elsewhere herein. Shop drawings will be furnished to the successful bidder by contacting the Department's Traffic Services Sign Shop at (225) 935-0121 or 935-0142.

Project signs shall be required at the beginning and end of the project and shall follow sign G-20-1, "Road Work Next 'X' Miles", or as directed by the engineer.

Payment for project signs shall be included in the contract unit price for Item 713-01 Temporary Signs and Barricades.

Subsection 713.07 Measurement is renumbered to 713.08.

Subsection 713.07 is added as follows.

713.07 Portable Work Zone Traffic Control Devices. All Category I, II, and III portable work zone traffic control devices, as described below, shall be crashworthy as determined by evaluations through the National Cooperative Highway Research Program (NCHRP) 350 for Test Level 3 (TL-3).

(1) Category I devices are low-mass, single-piece traffic cones, tubular markers, single-piece drums and flexible delineators and are, by definition, considered crashworthy devices meeting NCHRP Report 350 TL-3 criteria. Drum and light combinations with Type A or C warning lights and fastener hardware consisting of vandal resistant 1/2 inch (13 mm) diameter cadmium plated steel bolts and nuts used with 1 1/2 inch (38 mm) diameter by 3/4 inch (19 mm) cup washers are included as Category I devices. In lieu of testing for crashworthiness, acceptance of Category I devices for compliance with NCHRP 350 will be allowed based on self-certification by the supplier. The supplier shall certify that the product is crashworthy in accordance with the evaluation criteria of NCHRP 350. This certification may be a one-page affidavit signed by the supplier, with supporting documentation kept on file to be furnished if requested.

(2) Category II devices include other low mass traffic control devices such as portable barricades either with or without lights and or signs, portable sign stands, portable vertical panel assemblies, and drums with lights not meeting the drum and light combination requirements for Category I. Individual crash testing is required for Category II devices. FHWA letters of approval shall serve as verification that these devices comply with the crash testing requirements of NCHRP Report 350 TL-3. The contractor shall provide the engineer a listing of all the Category II devices to be used on the project prior to installation including a reference to the FHWA Work Zone letter number for each device. The contractor shall also certify that each device has been crash tested and meets the NCHRP 350 requirements.

(3) Category III devices include massive devices such as concrete barriers, water filled barriers and portable attenuators. Individual crash testing is required for Category III devices. FHWA letters of approval shall serve as verification that these devices comply with the crash testing requirements of NCHRP Report 350 TL-3. The contractor shall provide the engineer a listing of all the Category III devices to be used on the project prior to installation including a reference to the FHWA Work Zone letter number for each device. The contractor shall also certify that each device has been crash tested and meets the NCHRP 350 requirements.

Subsection 713.08 Payment is renumbered to 713.09, and amended as follows.

Table 713-2 Payment Schedule is deleted and the following substituted.

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**Table 713-2
Payment Schedule
Temporary Signs, Barricades and Related Devices**

Percent of Total Contract Amount Earned	Allowable Percent of Lump Sum Price for Temporary Signs and Barricades
Initial Erection	20
25	40
50	60
75	80
100	100

The third sentence of the second paragraph is deleted and the following substituted. The concrete in temporary precast barriers furnished by the contractor will be identified by lots and shall be subject to pay adjustments in accordance with Table 901-3 and Note 1 therein.

A pay item is added as follows.

Pay Item	
713-10	Temporary Portable Barrier (Type), Each

PROJECT SITE LABORATORY (EQUIPPED): Subsection 722 of the 2000 Standard Specifications is amended as follows:

Subsection 722.02 General Requirements. The first sentence of the second paragraph is deleted and the following substituted.

Each laboratory shall have a minimum floor space of 160 square feet, or other approved size that provides sufficient space with a minimum ceiling of 7 feet.

The following is added to the second paragraph.

The contractor shall be required to furnish, install and maintain the following equipment in satisfactory condition, as needed, throughout the life of the project.

- 1.) An automatic soil compaction hammer capable of compacting both standard and modified proctors, with arrangement for both 12" and 18" drop and also accommodates 4" and 6" molds with adjustable hammer weight from 5.5 to 10 pounds. The specifications for the hammer shall be in accordance with TR415, Field Moisture-Density Relationships, and TR 418, Moisture Density Relationships, and shall have a striking face which is a 3.1416 in² (2026,83mm²) sector face as specified for each mold diameter. The equipment shall include two (2) molds of each size (1/30 ft³ and 1/33.33 ft³ or 1/10ft³).
- 2.) A compaction block or pedestal composed of Portland cement concrete shall be supplied for use with the automatic compaction hammer. The block shall weigh a minimum of 200 pounds. The hammer shall be secured to the block.
- 3.) An electronic scale capable of measuring in both English and metric units and shall have a capacity of 13.6 kgs or more with a sensitivity of 5 grams.
- 4.) An electronic scale capable of measuring in metric units and shall be capacity of 2 kilograms or more with a sensitivity of 0.1 grams.
- 5.) Two (2) electric or gas hot plates. An open flame hot plate shall be equipped with suitable shield to disperse heat evenly and to prevent direct contact of the flame with the drying pan. The hot plates shall be of sufficient size to accommodate the drying pans.

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Note: The automatic soil compaction hammer and scales noted above shall be calibrated by an independent laboratory on an annual basis and shall be verified by the project engineer's personnel on each project.

- 6.) An approved nuclear device (Troxler Model 3440) with a transport case, locks and keys. Also, included shall be an operator's manual, referenced standard block, scraper plate/drill rod guide, and 3/4" auger.
The nuclear device shall be wiped test every 6 months and calibrated every 2 years by an independent laboratory and shall be verified by the project engineer's personnel on each project.

TRAFFIC SIGNS AND DEVICES (01/06): Section 729 of the 2000 Standard Specifications is amended as follows.

Subsection 729.02, subheading (a) Sign and Marker Sheeting. The second paragraph and table 729-1 is deleted and the following substituted.
Reflective sheeting for the permanent signs of Table 729-1 shall meet the requirements of ASTM D 4956 Type IX.

**Table 729-1
Permanent Signs for Use with ASTM D 4956
Type IX Reflective Sheeting**

Sign	MUTCD Number
Stop	R1-1
Yield	R1-2
4-Way	R1-3
All Way	R1-4
Do Not Enter	R5-1
Wrong Way	R5-1a
Chevrons	W1-8
No Passing Zone Pennants	W14-3
Type 3 Object Marker	OM-3 (Right & Left)
Type 2 Object Marker	-----
Guardrail End Decals	-----

Subsection 729.04, subheading (c) Sheeting Application. The third paragraph is deleted and the following substituted.

ASTM D 4956 Type IX reflective sheeting shall be applied with an orientation determined by the engineer to obtain the optimum entrance angle performance. Fabricated vertical splices in ASTM D 4956 Type IX reflective sheeting will be allowed only when the horizontal dimension of the sign face or attached shield is in excess of the maximum manufactured width of the sheeting. Fabricated vertical splices in ASTM D 4956 Type IX reflective sheeting will also be allowed when the specified orientation will create excessive sheeting waste.

PORTLAND CEMENT CONCRETE (12/05): Section 901 of the 2000 Standard Specifications and the supplemental specifications thereto is amended to include the following.

Subsection 901.08 is amended as follows.

The second paragraph of Heading (a) is deleted and the following substituted.

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For concrete placements having a least dimension of 48 inches (1200 mm) or greater, or if designated on the plans or the project specifications as being mass concrete, the allowable cement type shall be Type II portland cement, Type IP portland-pozzolan cement, or Type IS portland blast furnace slag cement. The cement or combination of cement and fly ash or ground granulated blast furnace slag, shall be certified to generate a heat of hydration of not more than 70 calories/gram (290 kJ/kg) at 7 days.

REINFORCING STEEL AND WIRE ROPE (07/05): Section 1009 of the 2000 Standard Specifications is amended as follows.

Subsection 1009.01 General. Headings (b) and (c) are deleted and the following substituted.

(b) Rail-Steel and Axle-Steel Deformed and Plain Bars shall comply with ASTM A 996 (A 996M).

SIGNS AND PAVEMENT MARKINGS (01/06): Section 1015 of the Standard Specifications and the Supplemental Specifications thereto is amended as follows.

Subsection 1015.05, Reflective Sheeting is amended as follows.

DOTD type VII (Fluorescent Orange) is deleted

Add the following:

Type-X (Fluorescent Orange)- A super high-intensity retroreflective sheeting having highest retroreflectivity characteristics at medium distances. This sheeting is typically an unmetalized microprismatic retroreflective element material.

Heading (c) Alternate Sheeting Type is deleted.

Tables 1015-1 and 1015-2 are deleted.

Table 1015-3 is amended as follows:

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SPECIAL PROVISIONS**

**Table 1015-3
Accelerated Weathering Standards²**

Type	Retroreflectivity ¹				Colorfastness ³	
	Orange		All colors, except orange		Orange	All colors, except orange
I	Not used		2 years	50 ⁴	Not used	2 years
II	1 year	65 ⁵	Not used		1 year	3 years
III	1 year	80 ⁶	3 years	80 ⁶	1 year	3 years
III (for drums)	1 year	80 ⁶	1 year	80 ⁶	1 year	1 year
VI	1/2 year	50 ⁷	1/2 year	50 ⁷	1/2 year	1/2 year
IX	Not used		3 years	80 ⁸	Not used	3 years
X (Fluorescent Orange)	1 year	80 ⁹	Not used		1 year	Not used

¹Percent retained retroreflectivity of referenced table after the outdoor test exposure time specified.

²At an angle of 45° from the horizontal and facing south in accordance with ASTM G7.

³Colors shall conform to the color specification limits of ASTM D 4956 after the outdoor test exposure time specified.

⁴ASTM D 4956, Table 5.

⁵ASTM D 4956, Table 7.

⁶ASTM D 4956, Table 8.

⁷ASTM D 4956, Table 13.

⁸ASTM D 4956, Table 3.

⁹ASTM D 4956, Table 4.

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Table 1015-4 is amended as follows:

**Table 1015-4
Reflective Sheeting Performance Standards**

Type	Retroreflectivity ¹ -- Durability ²			Colorfastness ³	
	Orange	All colors, except orange			
I	Not used	7 years	50 ⁴	3 years	
II	3 years	65 ⁵	Not used	3 years	
III	3 years	80 ⁶	10 years	80 ⁶	3 years
IX	Not used	7years	80 ⁷	3 years	
X (Fluorescent Orange)	3 years	80 ⁸	Not used	3 years	

¹Percent retained retroreflectivity of referenced table after installation and the field exposure time specified.

²All sheeting shall maintain its structural integrity, adhesion and functionality after installation and the field exposure time specified.

³All colors shall conform to the color specification limits of ASTM D 4956 after installation and the field exposure time specified.

⁴ASTM D 4956, Table 5.

⁵ASTM D 4956, Table 7.

⁶ASTM D 4956, Table 8.

⁷ASTM D 4956, Table 3.

⁸ASTM D 4956, Table 4.

Heading (f) is deleted and the following substituted.

(f) Temporary Signs, Barricades, Channelizing Devices, Drums and Cones: Reflective sheeting for temporary signs, barricades and channelizing devices, shall meet the requirements of ASTM D 4956, Type III except that the initial sequence of temporary advanced warning construction signs used on the mainline of freeways and expressways shall meet the requirements of ASTM D 4956 Type X (Fluorescent Orange).

Reflective sheeting for vertical panels shall meet the requirements of ASTM D 4956, Type III.

Reflective sheeting for drums shall be a minimum of 6 inches (150 mm) wide and shall meet the requirements of ASTM D 4956, Type III, and the Supplementary Requirement S2 for Reboundable Sheeting as specified in ASTM D 4956. Reflective sheeting for traffic cone collars shall meet the requirements of ASTM D 4956, Type VI.

Table 1015-5 is amended as follows:

**STATE PROJECT NOS. 023-10-0036 AND 023-11-0025
SPECIAL PROVISIONS**

Table 1015-5

Manufacturer's Guaranty-Reflective Sheeting

Type	Manufacturer shall restore the sign face in its field location to its original effectiveness at no cost to the Department if failure occurs during the time period ¹ as specified below		Manufacturer shall replace the sheeting required to restore the sign face to its original effectiveness at no cost to the Department if failure occurs during the time period ¹ as specified below
	Orange	All colors, except orange	All colors, except orange
I	Not used	<5 years	5-7 years
II	<3 years	<5 years	5-10 years
III	<3 years	<7 years	7-10 years
IX	Not used	<5 years	5-10 years
X (Fluorescent Orange)	<3 years	Not used	Not used

¹From the date of sign installation.

PRECAST REINFORCED CONCRETE DRAINAGE UNITS (09/05): Section 1016 of the 2000 Standard Specifications and the supplemental specifications thereto is amended as follows.

Subsection 1016.01 General. Heading (a) is deleted and the following substituted.

(a) Portland Cement and Portland-Pozzolan Cement: Portland cement shall comply with Subsection 1001.01. Portland-pozzolan cement shall comply with Subsection 1001.02.

Subsection 1016.02 Precast Reinforced Concrete Box Culverts. The first sentence is deleted and the following substituted.

Precast reinforced concrete box culverts shall be approved products listed on QPL 77. The compressive strengths of the box culverts shall comply with ASTM C 76 (ASTM C 76M). Precast reinforced concrete box culverts shall comply with ASTM C 1433 (ASTM C 1433M) amended as follows:

COOPERATION WITH UTILITIES: Subsection 105.06 of the Standard Specifications is amended to include the following.

Utility facilities will be removed, relocated, adjusted or abandoned in accordance with agreements between the Department and utility owners listed below. Starting dates for such work will be determined by the engineer and may be different for each utility and may not be underway concurrently with the contractor's work or with other utility relocations.

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SPECIAL PROVISIONS**

UTILITY OWNER	Estimated Calendar Days After Right-Of- Way Is Clear*
BellSouth 301 Catalpa Street Monroe, LA 71202 Phone: (318) 388-8494 Attn.: Walter Huffman	180
Center Point Energy D 2444 Levy Street Shreveport, LA 71103 Phone: (318) 429-4223 Attn.: Huey Nunn	60
D'Arbonne H ₂ O System 104 Holly Street Dubach, LA 71235 Phone: (318) 285-9218 Attn.: Eddie Lee	90
Entergy Electric District 2901 Cypress Street West Monroe, LA 71294 Phone: (318) 329-5404 Cell: (318) 376-1510 Attn.: Ellis Alford	180
Gulf South Pipeline 111 Park Place, Suite 100 Covington, LA 70433 Phone: (985) 898-1044 Attn.: Dave Carver	90
Hico H ₂ O 162 Herman Road Dubach, LA 71235 Phone: (318) 777-3698 Attn.: David Fowler	60
Rapid Cable 515 East Longview Arp, Tx 75750 Phone: (903) 859-6492 Attn.: Mike Taylor	60 Days After Entergy Electrical is Finished
Texas Gas Transmission 3800 Frederica Street Owensboro, KY 42301 Phone: (270) 688-6362 Cell: (270) 316-0339 Attn.: Bill Long	60

FOR INFORMATION ONLY

**STATE PROJECT NOS. 023-10-0036 AND 023-11-0025
SPECIAL PROVISIONS**

UTILITY OWNER	Estimated Calendar Days After Right-Of- Way Is Clear*
Town of Bernice P. O. Box 186 Bernice, LA 71222 Phone: (318) 285-9071 Attn.: Minor Patton	14
XTO 1256 Marathon Road Cotton Valley, LA 71018 Phone: (318) 832-4215, Ext. 2326 Cell: (318) 422-6655 Attn.: Terry Dobbins	45

*For purposes of utility relocation, right of way is considered clear after all clearing necessary for utility relocation is sufficiently complete for total relocations. If the contractor wishes to accelerate relocations, drawings will be available upon request showing utility corridors necessary for utilities to relocate. Immediately upon satisfactory completion of this clearing, utility companies will have been issued a notice to proceed and the calendar day count will begin.

ITEM S-001, RUMBLE STRIPS (GROUND-IN)(04/01): This item consists of cutting 1/2 inch (13 mm) deep depressions into asphaltic concrete shoulders in accordance with plan details, this special provision, and as directed.

The cutting tool shall be equipped with a rotary type cutting head and a power unit. The cutting head shall have the cutting tips arranged in a pattern to provide a relatively smooth cut (approximately 1/16 inch (1.5 mm) between peaks and valleys). The cutting head shall be suspended independently from the power unit to allow the cutting head to self-align with the slope of the shoulder and any irregularities in the shoulder surface. The cutting tool shall be equipped with guides to provide a consistent alignment of each cut in relation to the roadway and to provide uniformity and consistency throughout the project.

The rumble strips shall be cut into the finished shoulders after the final wearing course has been placed.

Solid residue resulting from cutting operations shall be removed from pavement and shoulder surfaces by the contractor before such residue is blown by traffic or wind.

The contractor shall demonstrate to the project engineer the ability to achieve the desired surface inside each depression without tearing or snagging the asphalt prior to beginning the work.

Acceptance measurements will be performed by the Department on a random basis to ensure conformance with the specifications.

Rumble strips (ground-in) will be measured by the mile (km), plan quantity, constructed and accepted in accordance with these specifications. The plan quantity is based on the roadway length minus bridge lengths for each shoulder on which ground-in rumble strips are constructed.

Payment for rumble strips (ground-in) will be made at the contract unit price in accordance with Subsection 109.02.

Payment will be made under:

Item S-001, Rumble Strips (Ground-in), per mile (km).

STATE PROJECT NOS. 023-10-0036 AND 023-11-0025

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ITEM S-101, RETROREFLECTIVE SHEETING PANELS: This item consists of installing aluminum signs with Type III retroreflective adhesive sheeting on the exterior piles of bents as shown on the plan details. Aluminum panels shall conform to ASTM B-209 and retroreflective sheeting shall conform to Section 1015 of the 2000 Standard Specifications and the Supplemental Specifications thereto, and as directed by the engineer.

Payment for the retroreflective sheeting panels will be made at the contract unit price per lump sum, which all labor, materials, tools and equipment necessary to complete the item of work.

Payment will be made under:

Item S-101, Retroreflective Sheeting Panels, per lump sum.

ITEM S-102, SETTLEMENT PLATE INSTALLATION AND MONITORING: This item consists of supplying, installing, and monitoring settlement plates.

The settlement plates shall be constructed as shown in the plans. The piping shall be Schedule 40, ASTM A53 Grade B sized as shown on the plan detail.

One settlement plate shall be installed on an inside shoulder edge or as directed by the engineer at the locations shown in the plans. The settlement plates shall be installed prior to placement of any fill. The settlement plates shall be placed on top of the geotextile fabric if shown in the plans, otherwise, the settlement plates shall be placed on natural ground. Care must be taken during embankment placement and compaction so as to maintain a vertical and undamaged riser pipe. The contractor shall take the initial settlement plate elevation readings immediately after installation. The contractor shall be responsible for monitoring the settlement plate as follows: elevation readings must be taken immediately after the final embankment lift placement, immediately after placement of the surcharge, biweekly for the first month, and monthly for **6 months** thereafter at each bridge end. This sequence shall begin again if any fill placement or additional surcharge is required. The contractor shall note for each settlement plate reading the embankment elevation, surcharge height, etc. The contractor shall be responsible for replacing any settlement plates damaged during construction. The engineer, to determine if additional settlement readings are required, shall review all settlement plate monitoring results as they become available. The settlement plate readings shall be transmitted immediately to the DOTD District Construction Engineer and to the Pavement and Geotechnical Design Engineer Administrator.

Payment will be made for supplying, installing, and monitoring the settlement plates at the contract unit price.

Payment will be made under:

Item S-102, Settlement Plate Installation and Monitoring, per each.

CONTRACT TIME (03/05): The entire contract shall be completed in all details and ready for final acceptance in accordance with Subsection 105.17(b) within the time specified by the contractor, which shall not exceed the maximum allowable contract time stated on the "Contract Time" form contained elsewhere herein.

Prior to assessment of contract time, the contractor will be allowed 30 calendar days from the date stipulated in the Notice to Proceed to commence with portions of the contract work including but not limited to assembly periods, preparatory work for materials fabrications such as test piles, or other activities which hinder progress in the beginning stages of construction. Prior to issuance of the Notice to Proceed, the Department will consider extending the assembly period, upon written request from the contractor justifying the need for additional time.

The contractor shall be responsible for maintenance of traffic from the beginning of the assembly period. During the assembly period, the contractor will be allowed to do patching and other maintenance work necessary to maintain the roadway with no time charges when approved by the engineer.

STATE PROJECT NOS. 023-10-0036 AND 023-11-0025
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If the contractor begins regular construction operations prior to expiration of the assembly period, the assessment of contract time will commence at the time construction operations are begun.

The contractor is directed to the special provisions and the plans for any restrictions that may affect work schedules.

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SUPPLEMENTAL SPECIFICATIONS
(FOR 2000 STANDARD SPECIFICATIONS)

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SUPPLEMENTAL SPECIFICATIONS

The 2000 Louisiana Standard Specifications for Roads and Bridges and supplemental specifications thereto are amended as follows.

SECTION 101 – GENERAL INFORMATION, DEFINITIONS AND TERMS

Subsection 101.03 – Definitions (11/04), Pages 3 – 12.

Delete the third paragraph and substitute the following.

Assembly Period. Time the contractor is given to acquire approvals of required drawings, brochures, and other submittals, assemble or relocate asphaltic concrete plants or portland cement concrete plants, begin the purchase and assembly of materials, perform maintenance patching only, perform selective clearing or structural removal if utility relocations are involved, perform construction layout, perform pile tests, erect or install a project site laboratory, conduct preexisting site survey, install erosion control items, install fencing if existing fencing is removed during clearing, and perform bleeder ditching to prevent water table rise during winter months. The contractor will not be charged contract time during an assembly period.

SECTION 102 – BIDDING REQUIREMENTS:

Subsection 102.03 – Contents of Bidding Documents (05/02), Pages 14 and 15.

Delete the second sentence of the second paragraph and substitute the following.

The construction proposal will state the time in which the work must be completed, and the date, time and place of opening bids.

Subsection 102.04 – Issuance of Bid Documents (02/04), Pages 15 and 16.

Delete subparagraphs (b), (c), (f), and (g).

Subsection 102.08 – Irregular Bids (02/04), Pages 17 and 18.

Add the following subparagraphs.

(m) If the bidder is disqualified in accordance with Subsection 108.04.

(n) If the bidder is debarred in accordance with Part XIII-B of Chapter I of LRS 48.

(o) If the bidder is disqualified for Proposal/Bid Guaranty forfeiture or non-payment in accordance with Subsection 103.07.

Subsection 102.09 – Proposal/Bid Guaranty (05/02), Pages 18 and 19.

Delete the text of this subsection and substitute the following:

Each bid shall be accompanied by a proposal/bid guaranty in an amount not less than five percent of the total bid amount when the bidder's total bid amount as calculated by the Department in accordance with Subsection 103.01 is greater than \$250,000. No proposal/bid guaranty is required for projects when the bidder's total bid amount as calculated by the Department is \$250,000 or less. The official total bid amount for projects that include alternates is the total of the bidder's base bid and all alternates bid on and accepted by the Department. The

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proposal/bid guaranty submitted by the bidder shall either be a certified check, cashier's check, bidder's company check, postal money order, bank money order or bid bond made payable to the Louisiana Department of Transportation and Development or as specified.

When the proposal/bid guaranty submitted by the bidder is a bid bond, this bond shall be on the "Bid Bond" form provided in the construction proposal; on a form that is materially the same in all respects to the "Bid Bond" form provided, or an electronic form that has received Department approval prior to submission. The bid bond shall be filled in completely, shall be signed by an authorized officer, owner or partner of the bidding entity, or each entity representing a joint venture; shall be signed by the surety's agent or attorney-in-fact; and shall be accompanied by a notarized document granting general power of attorney to the surety's signer. The bid bond shall not contain any provisions that limit the face amount of the bond.

When a bid bond is used it will be written by a surety or insurance company that is in good standing and currently licensed to write surety bonds in the State of Louisiana by the Louisiana Department of Insurance and also conform to the requirements of LSA-R.S. 48:253.

All signatures required on the bid bond may be original, mechanical reproductions, facsimiles or electronic. Electronic signatures must have written Departmental approval prior to use.

Subsection 102.13 – Withdrawal of Bids Due to Mistake (05/02), Pages 19 – 21.

Delete Heading (a) and substitute the following:

(a) Criteria:

(1) Withdrawal of Bid: The Department may allow a bidder to withdraw a bid after the scheduled time of bid opening in accordance with state law upon a determination that:

- a. A mistake was in fact made in preparation of the bid; and,
- b. The mistake in the bid is of a mechanical, clerical or mathematical nature and not one of bad judgment, careless inspection of the work site, or in reading the plans and specifications; and,
- c. The mistake is found to be in good faith and was not deliberate or by reason of gross negligence; and,
- d. The mistake is patently obvious on the face of the bid; and,
- e. The notice of the mistake, request for withdrawal of the bid by reason of the mistake, and written evidence of the mistake, is delivered to the DOTD Chief Engineer within 72 hours after the bid opening, excluding Saturdays, Sundays, and legal holidays. The written evidence of the mistake supplied to the DOTD Chief Engineer shall be duly sworn before a Notary Public as original, unaltered documents used in the preparation of the bid or any other facts relevant to the bidder's request to withdraw the bid as evidence of the existence of a mistake; and,
- f. The sworn, written evidence furnished to the DOTD Chief Engineer within 72 hours of the bid opening, excluding Saturdays, Sundays, and legal holidays, constitutes clear and convincing evidence of the bidder's mistake.

(2) Other bid protests: The Department may also allow a bidder to protest any matter regarding the bidding or award of a contract after the scheduled time of bid opening in accordance with the following provisions:

- a. The protest of a bidder must be submitted in writing and, specifically set forth the grounds and/or reasons for the protest; and,
- b. The written protest must be delivered to the DOTD Chief Engineer within 72 hours after notice of bid rejection, irregularity or any other action regarding the bidding of the contract, excluding Saturdays, Sundays, and legal holidays.

SECTION 103 – AWARD AND EXECUTION OF CONTRACT:

Subsection 103.05 – Payment, Performance, and Retainage Bonds (01/02), Pages 23 and 24.

Delete the text of this subsection and substitute the following:

At the time of execution of the contract, the successful bidder shall furnish the following bonds on the forms provided by the Department.

- (a) Payment bond in a sum equal to one hundred percent (100%) of the contract amount.
- (b) Performance bond in a sum equal to one hundred percent (100%) of the contract amount.
- (c) Retainage bond in a sum equal to five percent (5%) of the contract amount for contract amounts greater than \$500,000 unless an election is made to have the Department withhold five percent (5%) of the contract amount; and, retainage bond in a sum equal to ten percent (10 %) of the contract amount for contract amounts equal to or less than \$500,000 unless an election is made to have the Department withhold ten percent (10 %) of the contract amount.

The bonds shall be written by a surety or insurance company that is in good standing and currently licensed to write surety bonds in the State of Louisiana by the Louisiana Department of Insurance and also conform to the requirements of LSA-R.S. 48:255.

All signatures required on the "Bond Form" shall be original signatures, in ink, and are not to be mechanical reproductions or facsimiles.

Subsection 103.07 – Failure to Execute Contract (01/02), Pages 24 and 25.

Delete the text of this subsection and substitute the following:

Failure by the bidder to comply with Subsection 103.06 will be cause for cancellation of the award and forfeiture of the proposal/bid guaranty. For those projects wherein a proposal/bid guaranty was not provided with the bid, failure to comply with Subsection 103.06 will be cause for cancellation of the award and bidder to be disqualified from bidding or subcontracting for a period of one year from the award date. Awards, which were cancelled, may then be made to the next lowest responsible bidder or the work may be readvertised for bids, at the Department's discretion.

Should a proposal/bid guaranty be required to be forfeited by the bidder to the Department or other named obligee, and if for any reason the full amount of the proposal/bid guaranty is not collected or collectable by the Department upon demand, the bidder will be disqualified from bidding or subcontracting for a period of one year from the date of non-payment.

SECTION 104 – SCOPE OF WORK:

Subsection 104.03 – Maintenance of Traffic (06/01), Page 27.

Delete the third sentence of the third paragraph and substitute the following:

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The contractor shall maintain existing drainage and also provide and maintain in a safe condition all temporary approaches or crossings, intersections with roads, streets, businesses, parking lots, residences, garages and farms, at no direct pay.

SECTION 105 – CONTROL OF WORK:

Subsection 105.05 – Cooperation by Contractor (04/01), Page 33.

Delete the third paragraph and substitute the following:

The contractor shall have on the work site at all times, as the contractor's agent, a competent representative capable of reading and understanding the plans and project specifications and experienced in the type of work being performed, who shall receive and execute directions from the engineer. At the preconstruction conference or upon request, the contractor shall furnish the engineer written notice of the name and home telephone number of the representative. The representative shall have authority to execute orders or directions of the engineer without delay and to promptly supply such materials, equipment, tools, labor and incidentals as required. The representative shall be furnished regardless of the amount of work sublet.

Subsection 105.15 – Maintenance During Construction (05/02), Page 38.

Add the following:

The contractor shall maintain the roadway in a satisfactory condition to allow traffic to safely travel through the work zone at the posted speed limit.

Subsection 105.16 – Failure to Maintain Roadway or Structure (05/02), Page 39.

Delete the text of this subsection and substitute the following.

If the contractor fails to comply with Subsections 104.03 and 105.15, the engineer will immediately notify the contractor in writing of such noncompliance. If the contractor fails to remedy the condition within 24 hours after receipt of the written notice, the Department will have the option to immediately remedy the condition with its own in-house forces or by another contractor, and the cost thereof will be deducted from payments for the work.

When the condition requires more immediate remedy due to hazard to life, health and property, the engineer will immediately remedy the condition as above and the costs thereof will be deducted from payments for the work.

Subsection 105.19 – Value Engineering Proposals (03/05), Pages 40 - 44.

Delete the fifth sentence of the seventh paragraph and substitute the following.

Proposed changes in basic configuration and design of a bridge, hydraulic capacity of drainage facilities, typical roadway section, type or minimum thickness of pavements, or changes in grade or alignment which do not meet the geometric standards of the project as conceived, will not be considered as acceptable VE Proposals. Typically, changes in materials for roadway sections will not be considered as acceptable VE proposals.

SECTION 108 – PROSECUTION AND PROGRESS:

Subsection 108.04 – Prosecution of Work (03/05). Pages 69 and 70.

Delete the third paragraph of Heading (b) and substitute the following.

During the period of disqualification, the contractor will not be permitted to bid on contracts nor be approved as a subcontractor on contracts. Any bid submitted by the contractor during the period of disqualification will be considered irregular under Subsection 102.08. The period of disqualification shall continue until the contractor completes the work on the contract within the foregoing percentages or until all work on the contract has been satisfactorily completed. Should the surety or the Department take over prosecution of the work, the contractor shall remain disqualified for a period of one year from the completion of the project, unless debarment proceedings are instituted.

When the Department of Transportation and Development is not the contracting agency on the project, the second paragraph under Heading (c) is deleted.

Subsection 108.09 – Default and Termination of Contract (09/04), Pages 73 – 75.

Delete the second sentence of subparagraph (c) and substitute the following.

Within thirty days of receipt of such notification, the surety shall present to the Department either a plan to assume performance of the contract and procure completion of the project, or provide the Department in writing with a reasonable response for the contractor's default.

SECTION 109 – MEASUREMENT AND PAYMENT:

Subsection 109.04 – Compensation for Alterations of the Contract (11/02), Pages 80 – 82.

Delete Heading (f) and substitute the following.

When the Department authorizes the work to be performed by an approved subcontractor(s), the contractor will be paid the actual and reasonable cost of such subcontracted work computed as outlined above, plus an additional allowance of 10 percent of the first \$50,000 of the total cost of all subcontracted work and 5 percent of the total cost of all subcontracted work that exceeds \$50,000. Reimbursement for bond costs will be in accordance with Heading (b).

SECTION 201 – CLEARING AND GRUBBING:

Subsection 201.02 General Construction Requirements (06/02), Page 88.

Delete the fifth sentence and substitute the following.

The contractor shall, at no direct pay, use a licensed landscape arborist to repair damage to bark, trunks, limbs or roots of vegetation marked to remain using horticultural and tree surgery practices published by the American Association of Nurserymen (AAN).

SECTION 202 – REMOVING OR RELOCATING STRUCTURES AND OBSTRUCTIONS:

Subsection 202.02 – General Construction Requirements (11/02), Pages 91 – 95.

Add the following to Heading (c).

When underground storage tanks (UST) have been filled with concrete, sand, or other such material and are designated on the plans for removal, the contractor or certified UST subcontractor shall remove, transport and dispose of such tanks in accordance with the recommendations of the American Petroleum Institute (API) and the requirements of the Louisiana Department of Environmental Quality (DEQ) or other regulatory agency of jurisdiction. When such UST are discovered during construction and removal is necessary to achieve soil compaction or to meet other construction requirements, the contractor shall stop construction activity in the immediate vicinity of the UST and notify the project engineer in accordance with this subsection elsewhere in the standard specifications. The DOTD Materials and Testing Section will verify the closure status of such filled UST discovered during construction prior to any UST site activity by the contractor or certified UST subcontractor.

The contractor or certified UST subcontractor shall collect and submit for laboratory analysis, a representative sample of the storage tank fill material for landfill acceptance. The results of the laboratory analysis shall be used to determine the disposition of the UST fill material. The contractor or certified UST subcontractor shall provide a copy of all laboratory analyses to the Department's Materials and Testing Section for verification prior to profiling materials for landfill acceptance.

Add the following to Heading (h).

When the existing shoulder underdrain at the pavement edge is to remain in place and in service and removal of the shoulder surfacing and base is required, the work shall be done in such manner as to avoid damaging the existing shoulder underdrains. Damaged shoulder underdrains shall be satisfactorily repaired at no direct pay.

Add the following headings.

(i) Paint Containing Lead or Other Hazardous Materials on Metal Surfaces: Steel members of structures protected by paint containing lead or other hazardous materials as shown on the plans or as discovered in the field shall be removed and prepared for transport by methods approved by the Department.

Such steel members shall be delivered to a licensed recycling center capable of processing steel members coated with paint identified by the Resource Conservation and Recovery Act (RCRA) as hazardous.

Prior to removal, transport, treatment or disposal of any steel members, the contractor shall submit the following to the engineer.

- (1) Plan of removal of steel members.
- (2) Plan for transport of steel members.
- (3) Name and address of the licensed recycling center.

All steel members shall be transported in accordance with all federal, state and local laws. Certificates of Disposal, Chain of Custody forms, or other applicable documents shall be provided within 21 days following each shipment.

(j) Treated Timber: Creosoted and other treated timber or lumber shown on the plans or discovered in the field shall be removed and prepared for transport by methods approved by the Department. All materials that are not designated to be salvaged by the Department or salvaged by the contractor are to be disposed of in an appropriate landfill. Certificates of Disposal, Chain

of Custody Forms, or other applicable documents shall be provided within 21 days following each shipment.

(k) Universal Wastes. Universal wastes are hazardous wastes defined in LAC Title 33, Part V, Chapter 38, Section 3813 to include batteries, pesticides, thermostats, lamps and antifreeze. Universal wastes shall be removed by the contractor in accordance with the plans and shall be stored and prepared for transport as specified in LAC Title 33, Part V, Chapter 38 and herein.

A lamp is the bulb or tube portion of an electric lighting device. Universal waste lamps include, but are not limited to, fluorescent, high intensity discharge, neon, mercury vapor, high pressure sodium, and metallic halide. Such lamps shall be removed and stored in containers or packages that are structurally sound, adequate to prevent breakage, and compatible with the contents of the lamps. Such containers shall remain closed and lack evidence of leakage, spillage or damage that could cause releases of mercury or other hazardous constituents to the environment under reasonably foreseeable conditions. The containers shall be clearly labeled or marked with the words "Universal Waste – Lamps" and with the earliest date that any lamp in the container was discarded as waste. If a container develops a leak, it shall be placed into an over-pack container. The contractor shall immediately clean up any leakage and place in a container any lamp that shows evidence of breakage, leakage, or damage.

Universal waste lamps will not be allowed to accumulate for a period longer than one year from the date the lamps were discarded. The waste lamps shall be delivered to a universal waste disposal site or destination facility by a Universal Waste Transporter in accordance with the applicable U.S. Department of Transportation Regulations, 49 CFR, Parts 172-180.

The contractor shall be responsible for informing all employees who handle universal wastes of the proper handling and emergency procedures appropriate to the type of waste.

Subsection 202.05 – Measurement (11/02), Page 97.

Add the following.

Removing steel members of structures protected by paint containing lead or other hazardous materials, or creosoted timbers or lumber, and transporting them to the designated recycling center or landfill will be considered part of the work when shown on the plans and will not be measured for payment.

When a structure to be removed or relocated is shown on the plans to contain universal wastes, the removal, storage and transport of the universal waste to an approved disposal site or destination facility will not be measured for payment but will be included in the structure to be removed or relocated.

Subsection 202.06 – Payment (11/02), Pages 97 – 99.

Add the following:

Payment for removing steel members of a structure identified on the plans as being protected by paint containing lead or other hazardous materials, or creosoted timbers or lumber, and transporting them to the designated recycling center or landfill, will be included in the bid price for removal or relocation of the structure. When a structure is found to have steel members protected by paint containing lead or other hazardous materials, or creosoted timber or lumber,

and it has not been identified on the plans as such, payment for removal and transport of the members to a licensed recycling center or landfill will be made in accordance with Subsection 109.04.

When the plans show that a structure to be removed or relocated contains a universal waste, payment for the removal of the universal waste will be included in the contract unit price for the removal or relocation of the structure which will also include all equipment, labor, and materials required for the removal, storage, and transport of the universal waste in accordance with LAC Title 33, Part V, Chapter 38. When a structure to be removed or relocated is found to contain a universal waste and it is not identified as such on the plans, payment for the removal, storage and transport of such universal waste in accordance with LAC Title 33, Part V, Chapter 38 will be made in accordance with Subsection 109.04.

SECTION 203 – EXCAVATION AND EMBANKMENT:

Subsection 203.04 – Muck Excavation (06/01), Page 101.

Delete the text

of this subsection and substitute the following:

Muck excavation consists of the removal of saturated or unsaturated mixtures of soils, organic matter, and debris that are unsuitable for foundation material. Materials, which will decay or produce subsidence in the embankment, or materials containing decaying stumps, roots, logs, humus or other material are not satisfactory for use in the embankment. The engineer will determine the material to be classified as muck and to be removed. Material, which cannot be used, shall be removed and disposed of in accordance with Subsection 202.02.

Subsection 203.05 – Borrow (12/04), Pages 101 and 102.

Add the following.

Soils contaminated with hazardous or toxic materials shall not be used for borrow material.

Subsection 203.06 – Soil Usage (11/02) Pages 102 – 104.

Delete Headings (a) and (b) and substitute the following:

(a) Usable Soils: Usable soils shall have a maximum PI of 25 and a maximum organic content of 5 percent. Soils with a silt content of 50 percent or greater and also a PI of 10 or less will not be allowed.

(b) Selected Soils: Selected soils are natural soils with a maximum PI of 20, maximum Liquid Limit of 35, and a maximum organic content of 5 percent. Soils with a silt content of 50 percent or greater and also a PI of 10 or less will not be allowed. Soils to be used for in-place cement stabilization shall be in accordance with Subsection 302.02(a).

Subsection 203.07 – General Requirements (12/04), Pages 104 – 107.

Delete the term “maximum dry weight density” and substitute “maximum dry density”.

Delete the fifth sentence of the third paragraph and substitute the following:

The moisture content at the time of compaction, tested in accordance with DOTD TR 403, shall be within a range of ± 2.0 percent of optimum established in accordance with DOTD TR 418 or the lifts shall be reprocessed and recompact until these requirements are met.

Add the following paragraph:

When construction progress is being hampered by wet conditions, the engineer may require the contractor to establish a working table by applying Type D lime treatment conforming to Section 304 to accelerate drying of the embankment material. The percent lime will be determined by the engineer. Spreading and mixing of the lime mixture shall be to the satisfaction of the engineer. Compaction shall be in accordance with Section 203. The contractor will be paid the invoice price of the lime. Spreading, mixing, and compacting of the lime mixture will be at no additional cost to the Department.

Subsection 203.09 – Nonplastic Embankment (05/01), Pages 108 and 109.

Delete the term “maximum dry weight density” from Heading (d) and substitute “maximum dry density”.

Subsection 203.14 – Measurement (03/02), Pages 111 – 113.

Delete the first and second paragraphs of Heading (b) and substitute the following.

The measurement of quantities will be computed by the average end area method and will be that area bound by (1) the original ground line established by location (plan) cross sections (if accurate) or new original cross sections obtained by the contractor, and (2) the final theoretical pay line as shown on the plans, or established by the engineer, adjusted for field changes.

After clearing and grubbing operations, the contractor will take original cross sections for the entire length of the project. All original cross section shall be taken in the presence of a designated DOTD employee. Cross sections shall be taken at sufficient intervals to accurately determine earthwork quantities, not to exceed 100 linear feet (30 lin m). The cross sections shall be taken in accordance with DOTD procedures, and results must be furnished to the Department in a format satisfactory to the engineer. The Department reserves the right to take additional cross sections as needed to verify the contractor’s cross sections. In the event the cross sections do not verify, the contractor will investigate and reconcile any differences.

The original cross sections will be used to determine the accuracy of the location cross sections by using random sections not farther apart than 1000 linear feet (300 lin m) and centerline elevations at intervals of 100 linear feet (30 lin m). The location cross sections will be considered to be usable if the average of the differentials do not exceed ± 0.3 foot (± 0.1 m). For significant portions of the project with obvious errors between location and original cross sections, the contractor's original field cross sections will be used, and will not be part of the verification process. In all cases where location sections are unavailable, new originals are to be taken and used.

Add the following to Heading (b)(1):

No payment will be made to the contractor to recompute new plan quantities.

SECTION 301 – CLASS I BASE COURSE:

Subsection 301.06 – Mixing of Soil Cement, Cement Stabilized Sand Shell, and Cement Stabilized Sand Clay Gravel (04/02), Page 130.

Delete the first sentence of the fourth paragraph and substitute the following:

Optimum moisture of the mixture will be determined in accordance with DOTD TR 415 or TR 418.

Subsection 301.16 – Acceptance Requirements (11/02), Pages 136 – 140.

Delete the third sentence of the second paragraph and substitute the following:

The percent cement being incorporated into the mixture shall not be more than 0.1 percent by weight (mass) of the total material below the approved percent cement, or operations shall be discontinued until corrections have been made.

Delete the sentence in Heading (a)(3) and substitute the following.

When any test value is less than that required in Table 301-1, compaction shall continue until the specified density is obtained.

SECTION 302 – CLASS II BASE COURSE:

Subsection 302.02 – Materials (01/03), Page 143.

Add the following to the first paragraph:

Geotextile Fabric

203.11 & 1019

Delete the seventh sentence of Heading (a) and substitute the following:

Soils may be blended to adjust the percentages of sand or silt to meet specification requirements; however, in-place blending will not be allowed. The District Laboratory Engineer will approve materials prior to blending and the final product. Soils that do not meet PI requirements shall not be blended or treated to reduce PI.

Subsection 302.04 – General Construction Requirements (12/04), Page 144.

Add the following:

If an aggregate base course is to be placed on untreated or lime-treated soils, a Class D geotextile separator fabric will be required.

Subsection 302.05 – Mixing (04/02), Pages 144 – 146.

Delete the term “maximum dry weight density” from Heading (a)(1) and substitute “maximum dry density”.

Subsection 302.13 – Measurement (09/02), Pages 153 and 154.

Add the following:

Geotextile fabric used beneath the base course will not be measured for payment.

Subsection 302.14, - Payment (09/02), Page 154.

Add the following:

Payment for geotextile fabric will be included in the contract unit price for base course.

SECTION 303 – IN-PLACE CEMENT STABILIZED BASE COURSE:

Subsection 303.02 – Materials (05/01), Page 155.

Delete the third paragraph and substitute the following:

Soils or soil-aggregate combinations furnished by the contractor for stabilization in accordance with this section shall comply with the requirements of Subsection 302.02(a).

Subsection 303.04 – Preparation of Roadbed (05/01), Pages 156 and 157.

Delete the term “maximum dry weight density” and substitute “maximum dry density”.

Subsection 303.05 – Mixing (05/01), Pages 157 and 158.

Delete the first sentence of the fourth paragraph and substitute the following:

Optimum moisture of the mixture will be determined in accordance with DOTD TR 415 or TR 418.

SECTION 304 – LIME TREATMENT:

Subsection 304.07 – Compacting and Finishing (05/01), Pages 167 and 168.

Delete the term “maximum dry weight density” from Heading (a) and substitute “maximum dry density”.

SECTION 305 –SUBGRADE LAYER:

Subsection 305.02 – Materials (09/02), Pages 173 and 174.

Add the following to the first paragraph:

Geotextile Fabric

203.11 & 1019

Subsection 305.04 – Construction Requirements (12/04), Pages 174 and 175.

Add the following sentence to Heading (a)(2):

The bid price for pay item 305-01, Subgrade Layer, will be adjusted for the actual percentage of cement required.

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Add the following to Heading (b):

If an aggregate subgrade layer is used, a Class D geotextile fabric will be required to separate the aggregate subgrade layer from untreated soil.

Delete the term “maximum dry weight density” from Heading (d) and substitute “maximum dry density”.

Subsection 305.05 – Measurement (12/02), Page 175.

Add the following:

Geotextile fabric used beneath the subgrade layer will not be measured for payment.

Subsection 305.06 – Payment (12/02), Pages 175 and 176.

Add the following:

Payment for geotextile fabric will be included in the contract unit price for subgrade layer.

SECTION 306 – SCARIFYING AND COMPACTING ROADBED:

Subsection 306.02 – Construction Requirements (05/01), Page 177.

Delete the term “maximum dry weight density” and substitute “maximum dry density”.

SECTION 401 – AGGREGATE SURFACE COURSE:

Subsection 401.04 – Shoulder Construction (05/01), Pages 184 and 185.

Delete the term “maximum dry weight density” from Headings (b) and (c) and substitute “maximum dry density”.

SECTION 402 – TRAFFIC MAINTENANCE AGGREGATE:

Subsection 402.02 – Materials (05/02), Page 188.

Delete the text of this subsection and substitute the following.

Aggregate for maintenance of traffic shall be stone, wash gravel, recycled portland cement concrete, reclaimed asphaltic pavement (RAP), or shell satisfactory to the engineer.

SECTION 507 – ASPHALTIC SURFACE TREATMENT:

Subsection 507.02 – Materials (07/02), Pages 278 and 279.

Delete the last paragraph and substitute the following.

Hot asphalt shall be smooth and homogeneous and shall comply with the specifications for gelled asphalt or PAC-15 as shown in Table 1002-11.

Delete Tables 507-1 and 507-2 and substitute with Tables 507-1 and 507-2 contained elsewhere herein.

Delete Table 507-3.

Table 507-1
Asphaltic Surface Treatment (AST) Requirements
(Emulsion)

TYPE AST	Course No.	TYPE A ¹		TYPE B ¹		TYPE C ¹	TYPE D			TYPE E ² (Interlayer)
Agg. Friction Rating		I, II		I, II, III		I, II, III	I, II, III, IV			I, II, III, IV
Asphalt Emulsion		CRS-2P		CRS-2P		CRS-2P	CRS-2P			CRS-2P
Application Temp. Minimum Maximum		160°F (70°C) 175°F (80°C)		160°F (70°C) 175°F (80°C)		160°F (70°C) 175°F (80°C)	160°F (70°C) 175°F (80°C)			160°F (70°C) 175°F (80°C)
Number of Applications		2	1	2	1	1	3	2	1	2
Asphalt Emulsion ³ Application Rates Per Course	1	0.39 (1.77)	0.41 (1.86)	0.39 (1.77)	0.31 (1.40)	0.41 (1.86)	0.46 (2.08)	0.39 (1.77)	0.31 (1.40)	0.39 (1.77)
	2	0.29 (1.31)	---	0.29 (1.31)	---	---	0.36 (1.63)	0.29 (1.31)	---	0.29 (1.31)
	3	---	---	---	---	---	0.26 (1.18)	---	---	---
Aggregate ⁴ Application Rates Per Course	1	S2-0.0111 (S2-0.010)	S2-0.0111 (S2-0.010)	S2-0.0111 (S2-0.010)	S3-0.0075 (S3-0.007)	S2-0.0111 (S2-0.010)	S1-0.0200 (S1-0.018)	S2-0.0111 (S2-0.010)	S3-0.0075 (S3-0.007)	S2-0.0111 (S2-0.010)
	2	S3-0.0075 (S3-0.007)	---	S3-0.0075 (S3-0.007)	---	---	S2-0.0111 (S2-0.010)	S3-0.0075 (S3-0.007)	---	S3-0.0075 (S3-0.007)
	3	---	---	---	---	---	S3-0.0075 (S3-0.007)	---	---	---

¹ Only lightweight aggregate, crushed slag or crushed stone shall be used for Types A, B or C Asphaltic Surface Treatment.

² Lightweight aggregate will not be allowed.

³ Application rates are in gallons of asphalt emulsion per square yard (liters of asphalt emulsion per sq m) of AST.

⁴ Size aggregate and application rates. For example, S2 is Size 2 aggregate and 0.0111 is the application rate in cubic yards of aggregate per square yard (0.010 cu m of aggregate per sq m) of AST.

Table 507-2
Asphaltic Surface Treatment (AST) Requirements
(Hot Application)

TYPE AST	Course No.	TYPE A ¹		TYPE B ¹		TYPE C ¹	TYPE D			TYPE E ² (Interlayer)
Agg. Friction Rating		I, II		I, II, III		I, II, III	I, II, III, IV			I, II, III, IV
Asphalt Cement ³		Gelled Asphalt or PAC-15		Gelled Asphalt or PAC-15		Gelled Asphalt or PAC-15	Gelled Asphalt or PAC-15			Gelled Asphalt or PAC-15
Application Temp. Minimum Maximum		300°F (149°C) 360°F (182°C)		300°F (149°C) 360°F (182°C)		300°F (149°C) 360°F (182°C)	300°F (149°C) 360°F (182°C)			300°F (149°C) 360°F (182°C)
Number of Applications		2	1	2	1	1	3	2	1	2
Asphalt Cement ⁴ Application Rates Per Course	1 2 3	0.30 (1.36) 0.23 (1.04) ---	0.31 (1.40) --- ---	0.30 (1.36) 0.23 (1.04) ---	0.24 (1.09) --- ---	0.31 (1.40) --- ---	0.36 (1.63) 0.28 (1.27) 0.20 (0.91)	0.30 (1.36) 0.23 (1.04) ---	0.24 (1.09) --- ---	0.30 (1.36) 0.23 (1.04) ---
Aggregate ⁵ Application Rates Per Course	1 2 3	S2-0.0111 (S2-0.010) S3-0.0075 (S3-0.007) ---	S2-0.0111 (S2-0.010) --- ---	S2-0.0111 (S2-0.010) S3-0.0075 (S3-0.007) ---	S3-0.0075 (S3-0.007) --- ---	S2-0.0111 (S2-0.010) --- ---	S1-0.0200 (S1-0.018) S2-0.0111 (S2-0.010) S3-0.0075 (S3-0.007) ---	S2-0.0111 (S2-0.010) S3-0.0075 (S3-0.007) ---	S3-0.0075 (S3-0.007) --- ---	S2-0.0111 (S2-0.0010) S3-0.0075 (S3-0.007) ---

¹ Only lightweight aggregate, crushed slag or crushed stone shall be used for Types A, B or C Asphaltic Surface Treatment.

² Lightweight aggregate will not be allowed.

³ See Table 1002-11.

⁴ Application rates are in gallons of asphalt cement per square yard (liters of asphalt cement per sq m) of AST.

⁵ Size aggregate and application rates. For example, S2 is Size 2 aggregate and 0.0111 is the application rate in cubic yards of aggregate per square yard (0.010 cu m of aggregate per sq m) of AST.

SECTION 508 – STONE MATRIX ASPHALT:

Subsection 508.01, Description (03/03), Page 288.

Delete the fourth sentence and substitute the following.
Mineral filler and/or fibers shall be used to control draindown.

Subsection 508.02, Materials (03/03), Pages 288 and 289.

Delete the sentence in Heading (a), Asphaltic Cement, and substitute the following.
Asphalt cement shall be PG76-22m as listed on QPL 41 and complying with Section 1002.

Delete the first sentence of Heading (c), Additives, and substitute the following.
Additives shall meet the requirements of Subsection 502.02(b) except mineral filler and/or fibers will be required.

Delete the sentence in Heading (c)(2), Mineral Filler, and substitute the following.
Mineral filler shall comply with Subsection 1003.06(a)(6).

Delete the first sentence of Heading (c)(3), Fibers, and substitute the following.
A cellulose or mineral fiber, pre-approved by the Department, shall be used to prevent draindown or to serve as a filler.

Subsection 508.03, Job Mix Formula (JMF)(03/03), Page 289.

Delete the fifth sentence of the first paragraph and substitute the following.
An anti-strip additive shall be included in accordance with Section 502.
Delete Heading (a), Marshall Design.

Subsection 508.04, Validation (03/03), Page 290.

Delete the second sentence and substitute the following.
Validation will be on the first subplot and will include the QC and QA results on mixture gradation, percent asphalt cement, volumetrics, asphalt draindown, percent anti-strip additive, and moisture susceptibility testing.

Subsection 508.05, Quality Control (03/03), Page 290.

Delete the first sentence of the first paragraph and substitute the following.
Percent asphalt cement, gradation, G_{mm} , and volumetrics shall be measured in accordance with Section 502. A lot size shall be 5000 tons (5000 Mg) and a subplot size shall be 1000 tons (1000 Mg).
Delete Heading (b), Marshall Design.

Subsection 508.06, Acceptance Testing (03/03), Pages 290 and 291.

Delete the fifth sentence of the first paragraph and substitute the following.
Plant acceptance tests will include, percent anti-strip, air voids, VMA and gradation [No. 4 and No. 200 (4.75 mm and 75 μ m) sieves].
Delete Heading (b), Marshall Design.
Delete the sentence in Heading (f), Surface Tolerance and substitute the following.
Surface tolerance will be measured in accordance with Section 502.

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Subsection 508.07, Acceptance for Pay (03/03), Pages 291-293.

Delete the second sentence of the first paragraph and substitute the following.

Acceptance is based on Plant Acceptance Tests and Roadway Acceptance Tests as follows:

Delete Heading (a), Asphalt Cement Properties.

Delete the first sentence of Heading (c)(2), Surface Tolerance, and substitute the following.

The percent payment reported for surface tolerance will be for the entire lot in accordance with Section 502.

Delete the second sentence of Heading (d), Total Percent Payment.

Subsection 508.10, Compaction (03/03), Page 293.

Add the following.

Excessive rippling of the mat surface will not be accepted. Ripples are small bumps in the pavement surface, which usually appear in groups in a frequent and regular manner. Specifically, a ripple is visible on the profilograph trace, but does not necessarily appear above or below the 0.2 inch (5 mm) blanking band required by DOTD TR 641. There shall be no more than 12 ripples or peaks in any 100-foot (30 m) section. Rippling indicates a problem with the paving operation or mix that requires immediate corrective action by the contractor; otherwise operations shall cease. Unacceptable areas shall be corrected at no direct pay.

Subsection 508.11, Measurement (03/03), Page 293.

Delete the first sentence and substitute the following.

SMA will be measured by the ton (Mg) lot in accordance with Subsection 502.13(a) and as amended herein.

Subsection 508.12, Payment (03/03), Pages 293 and 294.

Delete the second sentence and substitute the following.

Payment will be made at an adjusted contract unit price per lot in accordance with Table 508 -2.

Delete Tables 508-1 and 508-2 and substitute with Tables 508-1 and 508-2 contained herein.

**Table 508-1
Stone Matrix Asphalt (SMA) Mix Properties**

A. MIXTURE REQUIREMENTS					
GRADATION			VOLUMETRICS		
US Sieve (Metric Sieve)	Percent Passing	JMF Tolerance, %	Properties	Requirements	Tolerance
3/4 inch (19 mm)	100	±4	Air Voids, % Superpave Gyrotory Compactor (@ 100 revolutions)	4.0	±1.0
1/2 inch (12.5 mm)	90 - 100	±4			
3/8 inch (9.5 mm)	75 Max.	±4	VMA, % VFA, %	16.0 minimum For Info. Only	
No.4 (4.75 mm)	24 - 34	±4			
No.8 (2.36 mm)	16 - 28	±4	G _{mb} (Control Only) G _{mm} (Control Only)	Per JMF	±0.022
No. 30 (600 μm)	12 - 25	±3			
No. 50 (300 μm)	11 - 22	±3		Per JMF	±0.020
No. 200 (75 μm)	7 - 13	±1			
B. PAVEMENT DENSITY REQUIREMENTS					
Density, Minimum 94.0 % (Percent of Theoretical Maximum Specific Gravity, AASHTO T 209) Travel Lanes					
Density, Minimum 92.0 % (Percent of Theoretical Maximum Specific Gravity, AASHTO T 209) Shoulders					
C. SURFACE TOLERANCE REQUIREMENTS					
Surface Tolerance Variation - Refer to Section 502, Table 502-3					

**Table 508-2
Payment Adjustment Schedules**

Values shall be based on average of sublots unless otherwise noted:	Percent of Contract Unit Price Per Lot			
	100	95	80	50 or Remove ¹
A. Asphalt Properties, % (Reference Table 1002-1)	---	---	---	---
B. Plant Acceptance:				
Anti-Strip Additive, % Below JMF per Sublot	---	0.2 or More Below	---	---
% Air Voids, Average Sublot % Deviation from JMF Limits/Lot	0.0 - 0.1	0.2 - 0.3	0.4 - 0.5	0.6 and Greater
% VMA, Average Sublot % Deviation from JMF Below the Minimum Limit/Lot	0.0 - 0.2	0.3 - 0.5	0.6 - 0.8	0.9 and Greater
Aggregate Gradation, Average Sublot % Deviation from JMF Limits/Lot No. 4 (4.75 mm)	0.0 - 1.0	1.1 - 2.0	2.1 - 3.0	3.1 and Greater
No. 200 (75 µm)	0.0 - 0.5	0.6 - 1.0	1.1 - 2.0	2.1 and Greater
C. Roadway Acceptance:				
Roadway Density, Average Individual Sublot % Deviation from Minimum	0.0	0.1 - 1.0	1.1 - 2.5	2.6 and Greater
Surface Tolerance, Profilograph Reading in inches/mile (mm/km) (Reference Table 502-7)	---	---	---	---

¹ At the option of the engineer.

SECTION 509 – COLD PLANING ASPHALTIC PAVEMENT

Subsection 509.03, Construction Requirements (03/02), Pages 297-299.

Delete the eighth paragraph of Heading (a), General, and substitute the following.

The DOTD encourages reclamation and recycling of all materials obtained within the project limits. All reclaimed asphaltic pavement (RAP) material to be retained by the DOTD for its recycling program, or by other government entities, shall be hauled by the contractor to the storage facility indicated on the plans and stockpiled as directed. The contractor may also be required to retain a specified percentage or quantity of the RAP generated by the project. When so specified, the bidder shall indicate in his bid the value of the retained material that he used in calculating his bid.

Delete Heading (b) and substitute the following.

(b) The surface tolerance requirements of the cold planed surface for single lift overlays shall meet the requirements for binder course in Sections 501 and 502.

Subsection 509.04, Measurement (03/02), Page 299.

Delete this subsection and substitute the following.

Measurement of cold planing will be made by the square yard (sq m) of asphaltic concrete surfacing satisfactorily removed. The quantity of asphaltic concrete surfacing to be removed from a project and retained by the contractor will be measured by the cubic yard (cu m), theoretical in-place plan quantity, and will be credited to the Department by treating it as a negative quantity in the Schedule of Pay Items.

Subsection 509.05, Payment (03/02), Page 299.

Delete this subsection and substitute the following.

Payment for cold planing of asphaltic pavement will be made at the contract unit price per square yard (sq m), which includes the costs for removing, hauling and stockpiling of RAP material retained by either the Department or the contractor. The value of the RAP material retained by the contractor will be credited to the Department at the contract unit price for the retained material.

Payment for temporary pavement markings will be included under appropriate pay items.

Payment will be made under:

Item No	Pay Item	Pay Unit
509-01	Cold Planing Asphaltic Pavement	Square Yard (Sq m)
509-02	Contractor Retained Reclaimed Asphaltic Pavement	Cubic Yard (Cu m)

SECTION 601 – PORTLAND CEMENT CONCRETE PAVEMENT:

Subsection 601.02 - Materials (06/05), Page 302.

Add the following to the first paragraph.

Aggregates 1003.

Delete the second paragraph and substitute the following.

The contractor shall furnish either Type B or D concrete. The same type of concrete shall be used throughout the project, unless otherwise authorized in writing.

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Subsection 601.09 – Joints (06/05), Pages 310 – 317.

Delete the fourth paragraph of Heading (i) and substitute the following.

Dowel bars with slightly damaged coatings may be used with the approval of the engineer provided the bars are lightly oiled or greased prior to placement.

Delete the first sentence of the fourth paragraph of Heading (k) and substitute the following.

The concrete used for full depth pavement patching repair shall be the same type used throughout the project. If approved by the engineer, full depth patching can be substituted with Type E concrete.

Add the following paragraph to Heading (k).

Concrete used for panel replacement repair shall be the same type used throughout the project. If approved by the engineer, Class A concrete can be substituted for panel replacement pavement repair.

Subsection 601.17 - Opening to Traffic (09/02), Page 331.

Delete the text of this subsection and substitute the following.

The pavement shall not be opened to traffic until standard test specimens complying with Subsection 601.07 have attained a compressive strength of 3,000 psi (21.0 MPa) when tested in accordance with DOTD TR 230. For regular portland cement concrete, if the compressive strength tests are not conducted, the pavement shall not be opened to traffic until 14 days after concrete has been placed. For concrete containing fly ash or ground granulated blast-furnace slag, the pavement shall be closed to all traffic, including vehicles of the contractor, until the test specimens have attained a compressive strength of 3,000 psi (21.0 MPa). The pavement shall be cleaned and joints sealed in accordance with Subsection 601.13 prior to opening to traffic.

SECTION 602 – PORTLAND CEMENT CONCRETE PAVEMENT REHABILITATION:
Subsection 602.07 - Full Depth Corner Patching of Jointed Concrete Pavement (06/05), Pages 339 – 341.

Delete the first sentence of the seventh paragraph and substitute the following.

Concrete for pavement patching shall be Type E complying with Section 901.

Subsection 602.08, Full Depth Patching of Jointed Concrete Pavement (06/05), Pages 341 and 342.

Delete the first sentence of the eighth paragraph and substitute the following.

Concrete for pavement patching shall be Type E complying with Section 901.

Subsection 602.09, Partial Depth Patching of Jointed Concrete Pavement (06/05), Pages 343 – 345.

Delete the first sentence of the first paragraph of Heading (b)(1) and substitute the following.

Portland cement concrete for pavement patching shall be Type E complying with Section 901, except that a Grade F aggregate shall be used.

Subsection 602.10, Patching Continuously Reinforced Concrete Pavement (06/05), Pages 345 – 347.

Delete the first sentence of the eighth paragraph and substitute the following.
Concrete for pavement patching shall be Type E complying with Section 901.

Subsection 602.18, Payment (06/01), Page 358.

Delete Pay Item No. 602-15, Cross-Stitching Longitudinal Joints.

Delete Pay Item No. 602.16, Cross-Stitching Random Longitudinal Joints and substitute the following.

Item No. 602-16	Cross-Stitching Random Longitudinal Cracks	Linear	Foot
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(lin m)

SECTION 701 – CULVERTS AND STORM DRAINS:

Subsection 701.02 – Materials (08/04), Pages 361 – 363.

Delete the text of this subsection and substitute the following.
701.02 Materials. Materials shall comply with the following:

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Usable Soil	203.06(a)
Selected Soil	203.06(b)
Plastic Soil Blanket	203.10
Flowable Fill	710
Mortar	702.02
Portland Cement Concrete	901
Granular Material	1003.07
Bedding Material	1003.08
Concrete Sewer Pipe	1006.02
Reinforced Concrete Pipe	1006.03
Reinforced Concrete Pipe Arch	1006.04
Gasket Materials	1006.06
Plastic Pipe	1006.07
Sewer Pipe	1006.07
Split Plastic Coupling Bands	1006.07(d)(4)
Plastic Yard Drain Pipe	1006.09
Bituminous Coated Corrugated Steel Pipe and Pipe Arch	1007.02
Structural Plate for Pipe and Pipe Arch	1007.04
Corrugated Aluminum Pipe and Pipe Arch	1007.05
Coupling Bands	1007.09
Reinforcing Steel	1009
Geotextile Fabric	1019

(a) Quality Assurance: Manufacturing plants will be periodically inspected for compliance with specified manufacturing methods, and material samples will be randomly obtained for laboratory testing for verification of manufacturing lots. Materials approved at the manufacturing plant will be subject to visual acceptance inspections at the jobsite or point of delivery.

(b) Side Drain Pipe or Side Drain Pipe Arch: When the item for Side Drain Pipe or Side Drain Pipe Arch is included in the contract, the contractor has the option of furnishing reinforced concrete pipe or reinforced concrete pipe arch, corrugated metal pipe or corrugated metal pipe arch, or plastic pipe, unless otherwise specified.

(c) Cross Drain Pipe or Cross Drain Pipe Arch: When the item for Cross Drain Pipe or Cross Drain Pipe Arch is included in the contract, the contractor has the option of furnishing reinforced concrete pipe or reinforced concrete pipe arch, corrugated metal pipe or corrugated metal pipe arch, or plastic pipe, unless otherwise specified.

(d) Storm Drain Pipe or Storm Drain Pipe Arch: When the item for Storm Drain Pipe or Storm Drain Pipe Arch is included in the contract, the contractor has the option of furnishing reinforced concrete pipe or reinforced concrete pipe arch, or plastic pipe, unless otherwise specified.

(e) Material Type Abbreviations:

(1) Reinforced Concrete Pipe:

RCP	Reinforced Concrete Pipe
RCPA	Reinforced Concrete Pipe Arch

(2) Corrugated Metal Pipe:

CAP	Corrugated Aluminum Pipe
CAPA	Corrugated Aluminum Pipe Arch
CMP	Corrugated Metal Pipe
CMPA	Corrugated Metal Pipe Arch
CSP	Corrugated Steel Pipe
CSPA	Corrugated Steel Pipe Arch
BCCSP	Bituminous Coated Corrugated Steel Pipe
BCCSPA	Bituminous Coated Corrugated Steel Pipe Arch

(3) Plastic Pipe:

PP (or PCP)	Plastic Pipe
PVCP (or PVC)	Polyvinyl Chloride Pipe
RPVCP (or RPVCCP)	Ribbed Polyvinyl Chloride Pipe
CPEPDW (or CPECP)	Corrugated Polyethylene Pipe (Double Wall)

(f) Joint Type Abbreviations:

T1	Type 1 Joint
T2	Type 2 Joint
T3	Type 3 Joint

(g) Yard Drain Pipe: When the item for Yard Drain Pipe is included in the contract, the contractor has the option of furnishing concrete sewer pipe, plastic yard drain pipe or plastic pipe in accordance with Section 1006 unless otherwise specified.

Subsection 701.06 – Joining Pipe, (07/02), Pages 364 – 366.

Delete the second sentence of the second paragraph in Heading (b) and substitute the following.

For pipe equal to or less than 36 inches (900 mm) in diameter, any approved method for joining pipe may be used which does not damage the pipe.

Subsection 701.08 – Backfilling (06/01), Pages 366 and 367.

Delete Heading (c)(1) b and substitute the following:

b. Selected Soils: Backfill shall be placed at or near optimum moisture content determined in accordance with DOTD TR 415 or TR 418 in layers not exceeding 8 inches (200 mm) compacted thickness. Backfill material shall be thoroughly compacted under the haunches of the pipe. Each layer shall be compacted by approved methods to at least 95 percent of maximum dry density prior to placement of a subsequent layer. Density tests will be made for each 100 feet (30 m) of pipe, or per location for shorter lengths, at 1/3 the pipe height and then every 3 feet (1 m) of backfill depth.

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Delete Heading (c)(1) c and substitute the following:

c. Granular Material: Backfill shall be placed at or near optimum moisture content determined in accordance with DOTD TR 415 or TR 418. Backfill material shall be thoroughly compacted under the haunches of the pipe and then compacted in layers not exceeding 12 inches (300 mm) compacted thickness. Each layer shall be compacted by approved methods to at least 95 percent of maximum dry density prior to placement of a subsequent layer. Exposed slopes at the pipe ends shall be covered by at least 12 inches (300 mm) compacted thickness of plastic soil blanket.

Delete Heading (c)(2) and substitute the following:

(2) Density Requirements: Maximum dry density will be determined in accordance with DOTD TR 415 or TR 418 and in-place density determined in accordance with DOTD TR 401.

Subsection 701.09 – Inspection of Pipe (07/02), Pages 367 and 368.

Delete the fifth paragraph of Heading (a) and substitute the following.

The mandrel shall be a rigid, nonadjustable, odd-numbered legged (minimum 9 legs) mandrel having a length not less than its nominal diameter or 24 inches (600 mm), whichever is less. The minimum diameter at any point shall be 5.0 percent less than the base inside diameter of the pipe being tested. The mandrel shall be fabricated of steel, aluminum or other approved material fitted with pulling rings at each end. The nominal pipe size and outside diameter of the mandrel shall be stamped or engraved on some segment other than a runner. A suitable carrying case shall be furnished.

Subsection 701.13 – Payment (08/04), Page 370.

Add the following to Heading (a), Payment.

When plastic pipe is specified on the plans or elected to be used by the contractor, payment will be made at the contract unit price per linear foot (lin m) of the types and sizes specified in accordance with the payment schedule of Table 701-1.

Table 701-1
Payment Schedule for Plastic Pipe

Percent Payment	Stage of Completeness
75	After placement and backfill has been completed
25	After the pipe has met vertical deflection requirements in accordance with Subsection 701.09(a)

Add the following pay item to the second paragraph of Heading (e).

Item No.	Pay Item	Pay Unit
701-16	Plastic Pipe (Extension)	Linear Foot (Lin m)

SECTION 702 – MANHOLES, JUNCTION BOXES, CATCH BASINS, AND END TREATMENTS:

Subsection 702.02 – Materials (06/02), Page 371.

Delete “Manholes, Frames, Grates and Covers” from the first paragraph and substitute the following.

Frames, Grates and Covers for Manholes, Catch Basins
and Junction Boxes 1018.04.

Delete the second sentence of the second paragraph.

Subsection 702.03 – Quality Assurance (06/02), Page 371.

Delete the second sentence of the first paragraph and substitute the following.

Material samples will be randomly obtained for laboratory testing for verification of manufacturing lots.

Subsection 702.07 – Payment (06/01), Page 374.

Delete the first sentence of the second paragraph and substitute the following:

The concrete in cast-in-place manholes, junction boxes, catch basins, and culvert end treatments and safety ends will be identified by lots and shall be subject to pay adjustments in accordance with Table 901-4 and Note 1 therein.

SECTION 704 – GUARD RAIL

Subsection 704.03 – General Construction Requirements (01/05), Pages 380 and 381.

Add the following to subparagraph (d), Guard Rail End Treatments.

All end treatments shall bear a label indicating the manufacturer and exact product name of the end treatment along with its assigned NCHRP 350 test level. This label shall resist weathering and shall be permanently affixed to the railing in such a way as to be readily visible.

SECTION 705 – FENCES:

Subsection 705.06 - Chain Link Fence and Gates (06/01), Pages 384 and 385.

Delete the second sentence of the first paragraph of Heading (a) and substitute the following:

Portable mixing of concrete in accordance with Subsection 901.10(g) will be permitted for small quantities of concrete.

SECTION 706 – CONCRETE WALKS, DRIVES AND INCIDENTAL PAVING:

Subsection 706.01 – Description (12/03), Page 387.

Delete this subsection and substitute the following.

This work consists of furnishing and constructing portland cement concrete walks, handicapped curb ramps, drives and incidental paving slabs in accordance with these specifications and in conformity with lines, grades and dimensions shown on the plans or established.

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Subsection 706.03 – Construction Requirements (12/03), Pages 387 and 388.

Add the following.

(g) Detectable Warning Surface for Handicap Ramps: Handicapped curb ramps installed shall be equipped with a detectable surface warning system consisting of raised truncated domes as a transition between the sidewalk and the street as required by the Americans with Disabilities Act, 28 CFR Part 36, ADA Standards for Accessible Design. These standards are further described in the Americans with Disabilities Act Accessibility Guidelines (ADAAG), Section 4.29.2.

Detectable warnings (truncated domes) shall be installed on the ramp surface over the full width of the ramp throat for a distance of 24 inches (600 mm) in the direction of travel from the back of the curb. Truncated domes shall be laid out on a square or triangular grid in order to allow enough space for wheelchairs to roll between the domes.

Light reflectance of the truncated domes and the underlying surface must meet the 70 percent contrast requirement of ADAAG.

Subsection 706.04 – Measurement (12/03), Page 388.

Add the following.

Handicapped curb ramps included in the construction of a concrete walk, including the detectable surface warning system, will not be measured for payment.

SECTION 707 – CURBS AND GUTTERS:

Subsection 707.12 – Payment (06/01), Pages 392 and 393.

Delete the first sentence of Heading (b) and substitute the following:

The concrete in the curbs and/or gutters will be identified by lots and shall be subject to pay adjustments per linear foot (lin m) in accordance with Table 901-4.

SECTION 709 – STEEL CATTLE GUARDS:

Subsection 709.05 – Payment (06/01), Page 397.

Delete the second sentence and substitute the following:

The concrete placed in cattle guards will be identified by lots and shall be subject to pay adjustments in accordance with Table 901-4 and Note 1 therein.

SECTION 713 – TEMPORARY SIGNS, BARRICADES, BARRIERS AND PAVEMENT MARKINGS:

Subsection 713.08 – Payment (06/01), Pages 414 and 415.

Delete the third sentence of the second paragraph and substitute the following:

The concrete in temporary precast barriers furnished by the contractor will be identified by lots and shall be subject to pay adjustments in accordance with Table 901-3 and Note 1 therein.

SECTION 714 – SLAB SODDING

Subsection 714.08 – Measurement (07/03), Page 417.

Delete Heading (b), Water.

Subsection 714.09 – Payment (07/03), Page 417.

Delete the first sentence of the first paragraph and substitute the following.
Payment for slab sodding will be made at the contract unit price.
Delete Pay Item No. 714-02, Water.

SECTION 717 – SEEDING:

Subsection 717.06 – Temporary Seeding (06/01), Page 423.

Add the following to Table 717-1, Temporary Seeding. Type G, Seed Mixtures, is amended to add Unhulled Bermuda.

Subsection 717.08 – Measurement (07/03), Page 424.

Delete the second sentence and substitute the following.
Topsoil, fertilizer, and agricultural lime will be measured in accordance with Sections 715 and 718.

Subsection 717.09 – Payment (07/03), Page 424.

Delete the second sentence of the first paragraph and substitute the following.
Payment for topsoil, fertilizer, and agricultural lime will be made in accordance with Sections 715 and 718.

SECTION 719 – LANDSCAPING:

Subsection 719.07 – Period of Establishment and Replacement (05/05), Pages 433 – 435.

Delete the first paragraph of Heading (a) and substitute the following.
The contractor shall care for planted and mulched areas for a period of establishment, which shall be one full growing season, after provisional acceptance is made. A growing season shall begin April 16 and extend one full year until April 16 of the next year. The contractor can complete planting any time during the planting season specified in Subsection 719.06(a) prior to April 16. If the contractor completes planting prior to April 16, the growing season shall begin at provisional acceptance and extend to April 16 of the following year. Any extension of the planting season past April 15 shall result in an extension of the period of establishment to October 31 of the following year. During the period of establishment, the contractor shall preserve plants in a healthy, growing condition. Such plant establishment work shall include cultivation, weeding, watering, pruning, controlling insects, pests and disease and other work determined necessary by the engineer to ensure healthy plant growth.

Subsection 719.08 – Measurement (07/03), Page 435.

Delete the second paragraph.

SECTION 723 – GRANULAR MATERIAL:

Subsection 723.03 – Construction Requirements (06/01), Page 442.

Delete the text of this subsection and substitute the following:
Materials shall be placed, properly shaped and uniformly compacted by approved methods to a minimum of 95 percent of maximum dry density. Maximum dry density will be

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determined in accordance with DOTD TR 415 or TR 418 and in-place density will be determined in accordance with DOTD TR 401. Granular materials shall not be displaced during subsequent operations.

SECTION 724 – PAVEMENT PATCHING, WIDENING AND JOINT REPAIR:

Subsection 724.02 – Materials (09/02), Page 444.

Delete the second paragraph and substitute the following.

Asphaltic concrete for patching and widening may be any type mixtures listed in Section 501 or 502, except that the 1/2-inch (12.5 mm) nominal size mixture shall not be used. Asphaltic concrete for joint repair shall be incidental paving wearing course complying with Section 501 or 502. Asphalt tack coat shall comply with Section 504.

SECTION 729 – TRAFFIC SIGNS AND DEVICES:

Subsection 729.03 – General Requirements (08/02), Pages 458 and 459.

Delete Heading (c) and substitute the following.

(c) Material Sampling and Certification: Material sampling and certification for sign faces, sign mountings and U-channel posts shall be in accordance with the Materials Sampling Manual.

Subsection 729.09 – Payment (06/01), Pages 465 – 467.

Delete the second sentence of Heading (f) and substitute the following:

The concrete in footings will be identified by lots and shall be subject to pay adjustments in accordance with Table 901-4 and Note 1 therein.

SECTION 730 – ELECTRICAL SYSTEMS:

Subsection 730.02 – Equipment and Materials (05/04), Pages 468 and 469.

Delete the third line of the seventh paragraph and substitute the following.

Portland Cement Concrete (Classes M and S) 901

Subsection 730.09 – Payment (06/01), Page 474.

Delete the second sentence and substitute the following:

The concrete in foundations for light poles, high mast poles, and other electrical equipment will be identified by lots and shall be subject to pay adjustments in accordance with Table 901-4 and Note 1 therein.

SECTION 732 – PLASTIC PAVEMENT MARKINGS:

Subsection 732.02 – Materials, (05/02), Page 478.

Delete the fourth sentence of the second paragraph in Heading (a) and substitute the following.

Glass beads used on drop-on application to molten plastic shall be shipped in moisture resistant sacks (packages).

Subsection 732.03 – Construction Requirements (05/02), Pages 478 – 484.

Delete the eighth sentence of the first paragraph of Heading (a) and substitute the following.

Glass beads shall be applied to the molten surface of completed stripes by either a single drop or a double drop application depending on the thickness of the thermoplastic striping as shown in Table 1015-15. The first bead drop shall be applied by a gravity bead dispenser attached to the striping machine in such a manner that beads are dispensed simultaneously with the thermoplastic material at a controlled rate of flow on installed lines. The second bead drop shall be applied immediately after the first bead drop by a gravity bead dispenser attached to the striping machine.

Delete the second sentence of the second paragraph of Heading (d)(1) and substitute the following.

Immediately after application of the markings, glass beads for a single drop application shall be applied at a minimum rate of 300 pounds per mile (85 kg/km) for a 4-inch (100 mm) solid line stripe. Glass beads for a double drop application shall be applied at a rate of 211 pounds per mile (60 kg/km) for the first drop on a 4-inch (100 mm) solid line and 211 pounds per mile (60 kg/km) for the second drop.

Subsection 732.04 – Measurement (05/02), Pages 484 and 485.

Delete Heading (c) and substitute the following.

Removal of existing pavement markings for undivided highways will be measured by the linear mile (km) of full roadway width including shoulders. For divided highways, the full roadway width including shoulders and ramps will be measured separately for each direction of travel. Removal of pavement markings will include removal of lane lines, edge lines, gore markings, symbols, and raised pavement markings.

SECTION 733 – CONCRETE ROADWAY BARRIERS:

Subsection 733.05 – Payment (06/01), Page 487.

Delete the second and third sentences of the first paragraph and substitute the following:

The concrete in cast-in-place roadway barriers will be identified by lots and shall be subject to pay adjustments in accordance with Table 901-4 and Note 1 therein. The concrete in precast roadway barriers will be identified by lots and shall be subject to pay adjustments in accordance with Table 901-3 and Note 1 therein.

SECTION 736 – TRAFFIC SIGNALS:

Subsection 736.13 – Vehicle and Pedestrian Signal Heads (04/04), Page 498.

Add the following.

A 12-inch (300 mm) light emitting diode (LED) traffic signal lamp unit shall be provided as part of a new traffic signal head or as a retrofitted replacement into a new or existing signal housing in accordance with Section 1020, the plans and these specifications including all materials, tools, equipment, labor and incidentals necessary to complete the work.

Installation of a retrofitted replacement LED traffic signal lamp unit into a new or existing signal housing shall only require removal of the existing lens and incandescent lamp,

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fitting of the new unit securely in the housing door, and connecting the new unit to existing electrical wiring or terminal block by means of simple connectors. The LED retrofit shall not require the removal of the reflector. The existing wiring for the incandescent socket shall remain in place, but shall be disconnected from the terminal block, and neatly coiled adjacent to the terminal block with connectors taped with electrical tape to prevent accidental short circuits.

If proper orientation of the LED traffic signal lamp unit is required for optimum performance, prominent and permanent directional marking(s), such as an "UP arrow", for correct indexing and orientation shall exist on the unit.

The contractor shall neatly inscribe the installation date on the back of each LED traffic signal lamp unit.

Each LED traffic signal lamp unit shall be provided with the following documentation:

1. Complete and accurate installation wiring guide.
2. Contact name, address, and telephone number for the representative, manufacturer, or distributor for warranty replacement.

Each LED traffic signal lamp unit shall be individually packaged, and delivered securely bound on pallets. Each package shall be labeled with the manufacturer's name, individual serial number, manufactured date, model, and batch or lot number.

Subsection 736.21 – Measurement (04/04), Pages 502 and 503.

Delete Heading (c), Jacking or Boring Conduit, and substitute the following.

(c) Jacked or Bored Conduit: Jacked or bored conduit will be measured by the linear foot (lin m) of conduit furnished and installed. Measurement will include the conduit, fittings, excavation, backfilling and duct markers.

Delete Heading (e), Signal Heads, and substitute the following.

Signal heads will be measured per each head installed and/or retrofitted, and accepted. Measurement will include disconnect hangers, traffic signal wiring attached to overhead span, closure caps, mounting hardware, LED traffic signal lamp units, head programming, mounting connections and hardware.

Subsection 736.22 – Payment (07/03), Pages 503 and 504.

Delete the first sentence of the second paragraph and substitute the following:

The concrete in foundations for signal supports, signal controllers, and other signal equipment will be identified by lots and shall be subject to pay adjustments in accordance with Table 901-4 and Note 1 therein.

Delete Pay Item No. 736-03, Jacking or Boring Conduit (Size & Type), and substitute the following.

736-03	Jacked or Bored Conduit (Size & Type)	Linear Foot (lin. m)
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SECTION 737 – PAINTED TRAFFIC STRIPING:

Subsection 737.03 – Equipment (03/02), Page 505.

Delete Heading (d) and substitute the following.

(d) Equipment shall provide a gravity bead dispenser for drop-on application of glass beads.

Subsection 737.06 – Application (03/02), Page 506.

Delete the first sentence of the second paragraph of Heading (b) and substitute the following.

Glass beads shall be applied at the same time, but in a separate operation, at the rate of 12 pounds of beads per gallon of paint (1.44 kg/L). Beads shall be applied at a rate of 10 miles per hour (16 km/h) or less.

SECTION 738 – MULCH SODDING

Subsection 738.06 – Payment (07/03), Page 509.

Delete the second sentence of the first paragraph.

SECTION 739 – HYDRO-SEEDING

Subsection 739.03 – Hydro-Seeding General (12/04), Pages 510 and 511.

Delete the first paragraph and substitute the following.

Hydro-seeding shall consist of mixing and applying seed, commercial fertilizer, water management gel, polyacrylamide tackifier, and mycorrhizal inoculum with paper or wood fiber and water. Seed and commercial fertilizer shall be uniformly spread over the area at the rates specified in Table 717-1 and Table 718-1. Paper or wood fiber shall be mixed and applied with the seed in accordance with the manufacturer's recommendations and as approved by the engineer. The contractor will be permitted to include fertilizer and lime in the seeding slurry for application during hydro-seeding operations.

SECTION 740 – CONSTRUCTION LAYOUT:

Subsection 740.01 – Description (07/04), Page 512.

Delete the second sentence and substitute the following.

The work consists of establishing lines and grades, taking all cross sections, and staking out the construction work in accordance with these specifications, plan details, and as directed.

Add the following.

This work also includes assistance in the coordination of utility relocation activities to ensure that the placement of relocated facilities will not conflict with required construction.

Subsection 740.02 – Construction Requirements (07/04), Pages 512 and 513.

Add the following.

The contractor shall provide sufficient qualified staff, of at least one employee, on site during relocation periods. The contractor shall provide any necessary survey work to ensure there are no utility conflicts with required construction. The contractor shall provide daily documentation of utility relocation activities for incorporation into the project diaries.

Subsection 740.03 – Measurement (07/04), Page 513.

Add the following.

Utility Oversight and Coordination will be measured as a lump sum which will include all labor, materials, and incidentals required to complete the work.

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Subsection 740.04 – Payment (07/04), Page 513.

Add the following.

Payment for Utility Oversight and Coordination will be made at the contract lump sum price.

Payment will be made under:

Item No.	Pay Item	Pay Unit
740-02	Utility Oversight and Coordination	Lump Sum

SECTION 801 – GENERAL REQUIREMENTS FOR STRUCTURES:

Subsection 801.04 – Temporary Bridge Works (04/02), Page 522.

Delete the text of this subsection and substitute the following:

Guidance on the design and construction of all temporary bridge works is contained in two AASHTO publications: “Guide Design Specifications for Bridge Temporary Works” 1995 and “Construction Handbook for Bridge Temporary Works” 1995. These specifications should be followed to ensure the safe design and construction of temporary bridge works.

All field welding of temporary works shall be done by certified welders.

SECTION 805 – STRUCTURAL CONCRETE:

Subsection 805.02 – Materials (12/02), Pages 559 and 560.

Delete Table 805-1, Classes and Uses of Concrete and substitute the following:

Table 805-1
Classes and Uses of Concrete

Concrete Class	Use
A or A(M)	Concrete exposed to sea water, and all other concrete except as listed herein.
AA or AA(M)	Cast-in-place bridge superstructure
D	Pier footings
F	Dams and flood control structures
P or P(M)	Precast bridge members
P(X)	Precast-prestressed bridge girders
R	Nonreinforced sections
S	Underwater sections

Subsection 805.03 – Handling and Placing Concrete and Precast Units (12/02), Pages 560 – 564.

Add the following to the second paragraph of Heading (a):

For concrete containing fly ash or ground granulated blast-furnace slag, the deck shall be closed to all traffic, including vehicles of the contractor, until the test specimens have attained a compressive strength of 3,200 psi (22.0 MPa).

Subsection 805.11 – Removal of Falsework and Forms (12/02), Pages 569 and 570.

Add the following to the second paragraph:

For concrete containing fly ash or ground granulated blast-furnace slag, only Method 1 shall be used.

Subsection 805.14 – Prestressed Concrete (12/02), Pages 576 – 585.

Add the following to the fourth paragraph of Heading (a):

This office shall also contain two separate telephone lines, one dedicated to the telephone and the other dedicated to a computer.

Subsection 805.18 – Payment (06/01), Pages 588 and 589.

Add the following to Heading (d):

Acceptance and payment for bridge superstructure and substructure will be made on a lot basis at the contract unit price per span, adjusted in accordance with the following provisions. A lot will be considered an identifiable pour as described in Heading (a) of this subsection. Acceptance and payment for each cast-in-place bridge superstructure and substructure lot will be in accordance with Table 901-3 and Note 1 therein. Acceptance for each precast bridge superstructure and substructure lot will be in accordance with Table 901-2.

Add the following to Heading (e):

Acceptance and payment for reinforced concrete box culverts will be made on a lot basis at the contract unit price per linear foot (linear meter), adjusted in accordance with the following provisions. A lot will be considered an identifiable pour as described in Heading (a) of this subsection. Acceptance and payment for each cast-in-place reinforced concrete box culvert lot will be in accordance with Table 901-3 and Note 1 therein. Acceptance for each precast reinforced concrete box culvert will be in accordance with ASTM C 1433 (C 1433M).

SECTION 807 – STRUCTURAL METALS:

Subsection 807.04 – Minimum Shop Requirements for Fabrication of Major Bridge Members (04/02), Pages 597 and 598.

Delete the heading and text of this subsection and substitute the following:

MINIMUM SHOP REQUIREMENTS FOR FABRICATION OF STEEL STRUCTURES.

The contractor (fabricator) shall provide sufficient lifting capacity, physical plant and equipment for the fabrication of structural steel. The cranes in each working area shall have a combined rated capacity equal to the lifting weight of the heaviest assembly fabricated for shipment unless alternate lifting and turning facilities are approved.

Lifting chains shall be provided with adequate softeners to prevent damage to the corners of material during lifting and turning. When hooks are used for lifting, they shall have sufficient width of jaw and throat to prevent damage to the flanges or to the web-to-flange welds.

Spreader beams, or multiple cranes, shall be provided for lifting plates and long slender members to prevent overstress and distortion from handling.

Shops shall have sufficient enclosed floor spaces to allow oxygen cutting, air carbon arc gouging, assembly and welding to be performed inside, except that shop assembly of field connections for trusses, girders and arches may be performed outside the shop buildings. The

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fabrication of major steel bridge components (includes all bridge structures other than unspliced rolled beam bridges) shall only be by fabrication shops having a current AISC Certification for Major Steel Bridges. Current AISC Certification for Simple Steel Bridges will be required for fabrication of highway sign structures, secondary members of bridges (such as cross frames), and unspliced rolled beam bridges. Structures that have fracture critical members shall require an AISC Fracture Critical Endorsement to the fabricator's Simple or Major Steel Bridge Certification. The contractor will be required to provide the engineer with documentation of the certification prior to beginning fabrication.

The engineer may approve limited fabrication and welding outside the shop, provided the fabricator has made provisions to ensure that the quality of the work produced outside the shop buildings will not be adversely affected by weather or other conditions.

All cutting, fitting and welding shall be done in areas that are kept dry. Areas for automatic and semiautomatic welding shall be kept at a temperature not lower than 40°F (5°C) for at least 1 hour before work begins and at all times when work is being performed.

Subsection 807.05 – Inspection (04/02), Pages 598 and 599.

Add the following to the sixth paragraph of Heading (a).

This office shall also contain two separate telephone lines, one dedicated to the telephone and the other dedicated to a computer. The contractor or fabricator shall be responsible for paying all utility bills.

SECTION 810 – BRIDGE RAILINGS AND BARRIERS:

Subsection 810.09 – Payment (06/01), Pages 659 and 660.

Delete the fourth sentence and substitute the following:

Payment for each lot will be subject to adjustments in accordance with Table 901-3 and Note 1.

SECTION 811 – PAINTING AND PROTECTIVE COATINGS:

Subsection 811.03 – Materials (04/02), Page 661.

Add the following:

(d) Corrosion Inhibiting Alkyd Paint shall comply with Subsection 1008.06.

Subsection 811.04 – Painting Metal (04/02), Pages 661 and 662.

Add the following:

(c) Corrosion Inhibiting Alkyd Paint System: Corrosion Inhibiting Alkyd Paint shall be a non-polluting pigmented alkyd paint to be used in a three-coat paint system on properly prepared structural steel surfaces to be permanently exposed. The contractor has the option of using either System A or System B, however, whichever system is selected shall be used on the entire project. The primer and intermediate coats shall be tinted for color contrast.

The minimum dry film thickness of the coatings shall be as follows:

Prime Coat	-	2.0 mils (50 µm)	
Intermediate Coat	-	2.0 mils (50 µm)	
Aluminum Topcoat	-	2.0 mils (50 µm)	- AASHTO M69, Type I

SECTION 813 – CONCRETE APPROACH SLABS:

Subsection 813.10 – Payment (06/01), Page 677.

Delete the last sentence of the second paragraph and substitute the following:

Acceptance and payment for each lot will be made in accordance with Table 901-3 and Note 1.

SECTION 814 – DRILLED SHAFT FOUNDATIONS:

Subsection 814.23 – Payment (06/01), Pages 703 and 704.

Delete the fifth sentence of the second paragraph of Heading (a) and substitute the following:

Acceptance and payment for each lot will be made in accordance with Table 901-3 and Note 1.

SECTION 901 – PORTLAND CEMENT CONCRETE:

The term “Ground Iron Blast-Furnace Slag is deleted and replaced by the term “Ground Granulated Blast Furnace Slag” throughout Section 901.

Subsection 901.06 – Quality Control of Concrete (03/04), Pages 713 - 715

Add the following to Heading (a).

In developing mix designs for portland cement concrete pavement Types B and D, the proportions of the aggregate sizes to be used shall meet the requirements of Subsection 1003.02(c). All gradation calculations shall be based on percent of dry weight (mass). The percent of the total aggregates retained on each sieve shall be determined mathematically based on the proportions of the combined aggregate blend, and checked for conformance with Table 1003-1A.

Add the following to Heading (b).

When producing concrete for Types B and D pavements, gradations shall be determined daily on each stockpile of aggregate to be used. All gradation calculations shall be based on percent of dry weight (mass). Upon determination of the gradation of each stockpile, the percent of the total aggregates retained shall be determined mathematically based on the proportions of the combined aggregate blend, and checked for conformance with Table 1003-1A.

Delete the first paragraph of Heading (c) and substitute the following.

The contractor may vary the proportions of the aggregate sizes as reviewed and accepted, but in no case shall they be varied so as to materially affect the volume of concrete. If the proportions of the aggregate sizes used do not satisfy the gradation requirements of Subsection 1003.02(c) due to changes in the gradation of one or more stockpiles, the proportions shall be adjusted to bring the combined aggregates back within specification limits. These minor adjustments for gradation will not require a new mix design. The mix produced shall be uniform and within the specification limits of Table 901-2. When plant operations do not produce a uniform mix, plant operations will be discontinued.

Delete the first sentence in the third paragraph of Heading (c) and substitute the following.

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Adjustments to the proportions of the sizes of aggregates shall not cause the minimum cement factor to deviate from that accepted on the mix design.

Add the following Heading (d).

(d) Acceptance and Verification for Types B and D Pavements: Sampling and testing for acceptance and verification for concrete for Types B and D pavements shall be in accordance with the provisions of the Materials Sampling Manual, except as follows:

(1) Gradation testing for acceptance will not be required.

(2) Verification tests will be performed by the District Laboratory to assure conformance to the gradation of the total combined aggregates shown in Table 1003-1A at the frequency of one sample per aggregate size per lot, with a maximum of one sample per aggregate size per day. Samples are to be obtained from the aggregate feed (conveyor) belt as described in the Materials Sampling Manual, DOTD Designation S101, Aggregates and Aggregate Mixtures.

(3) Upon determination of the gradation of each aggregate size sampled, the percent retained based on the dry weight (mass) of the total combined aggregates will be determined mathematically based on the proportions of the combined aggregate blend, and checked for conformance with Table 1003-1A.

(4) If the results of the verification sample indicate that the combination of aggregates being used does not meet the requirements of Subsection 1003.02(c), the aggregates shall be re-sampled and tested again. If the results of the second verification sample indicate that the combination of aggregates being used does not meet the requirements of Subsection 1003.02(c), the contractor will be notified and required to make adjustments to his operations to produce a mix meeting these specifications. No concrete from this plant shall be placed on DOTD projects until the adjustments are made and approved by the District Laboratory Engineer. An additional verification sample may be required prior to resuming operations.

Subsection 901.07 – Substitutions (06/05), Pages 715 and 716.

Delete this subsection and substitute the following.

901.07 SUBSTITUTIONS. Mixtures may be substituted with approval in accordance with Table 901-1.

Table 901-1
 Portland Cement Concrete Mixture Substitutions

Structural Class ¹	Substitute
AA(M) AA A(M) A D F P(X) P(M) P S	No Substitutions AA(M) AA(M), AA AA(M), AA, A(M) No Substitutions No Substitutions No Substitutions No Substitutions P(M) No Substitutions
Minor Structure Class ¹	
M R Y	AA(M), AA, A(M), A, B AA(M), AA, A(M), A, B, M No Substitutions
Pavement Type ^{1,2}	
B D E	D B No Substitutions

¹The mixture being substituted shall meet the requirements of Table 901-2 and the mix design for its class or type. The compressive strength of the substituted mix shall meet the strength requirements of the original mixture specified.

²When justified in writing and approved by the engineer, small irregular areas of paving projects using Types B or D concrete may be substituted with Class A concrete.

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Subsection 901.08 – Composition of Concrete (03/04), Pages 716 – 719.

Delete the fourth paragraph of Heading (a) and substitute the following:

The contractor will be permitted partial substitution on a pound (kilogram) for pound (kilogram) basis of fly ash, grade 100 or grade 120 ground granulated blast-furnace slag for portland cement in concrete mixes only when using Type I, I(B) or II portland cement. The contractor may use a maximum of 25 percent fly ash by weight (mass) of cement for concrete pipe, up to 20 percent fly ash by weight (mass) of cement for other minor structures and concrete pavement, and up to 15 percent fly ash by weight (mass) of cement for structural concrete. When substituted at the ready-mix plant, the contractor may use the substitution rate of grade 100 or grade 120 ground granulated blast-furnace slag conforming to Subsection 1018.28 up to 45 percent by weight (mass) of cement for minor structures (including concrete pipe), structures, and pavement. If the producer wants to increase the substitution rate of grade 100 or grade 120 ground granulated blast-furnace slag above 45 percent up to a maximum of 50 percent, the cement and slag must be blended at the cement plant or terminal. The blended cement containing over 45 percent of grade 100 or grade 120 ground granulated blast-furnace slag must be in compliance with Subsection 1001.04 for portland blast-furnace slag cement.

Delete the third sentence of the fifth paragraph of Heading (b) and substitute the following:

When the ambient air temperature is 85°F (30°C) or above, the water-reducing admixture shall be the set-retarding type, except for concrete containing fly ash or ground granulated blast furnace slag where this choice is optional.

Delete the first sentence of the second paragraph of Heading (c) and substitute the following:

Because of the absorptive nature of lightweight aggregate and the inability to obtain a true saturated surface dry condition for determining free moisture, a maximum amount of water cannot be specified for Class Y concrete.

Delete Heading (d) and substitute the following.

(d) Aggregate: All aggregates for use in portland cement concrete shall meet the requirements of Subsection 1003.01.

(1) Coarse Aggregate: Coarse aggregate, except for gradations for Types B and D pavements, shall be the grade specified in Table 901-2 and shall comply with the requirements of Subsection 1003.02(b).

(2) Fine Aggregate: Fine aggregate, except for gradations for Types B and D pavements, shall comply with the requirements of Subsection 1003.02(a).

(3) Aggregates for Types B and D Pavements: Aggregates shall comply with the requirements of Subsection 1003.02(c).

Subsection 901.11 – Temperature Limitations, (12/02), Pages 726 and 727.

Delete Heading (c) and substitute the following:

(c) Cold Weather Limitations: Mixing and concreting operations for concrete mixes not containing ground granulated blast-furnace slag or Type IS cement shall be discontinued when a descending air temperature in the shade and away from artificial heat reaches 40°F (5°C), and shall not be resumed until an ascending air temperature in the shade and away from artificial heat reaches 35°F (2°C) provided the high temperature forecasted by the U.S. Weather Service is above 40°F (5°C). For concrete mixes containing ground granulated blast-furnace slag or Type IS cement, operations shall be discontinued at a descending air temperature in the shade and away from artificial heat of 55°F (13°C) and can resume at a temperature of 50°F (10°C) and rising provided the high temperature forecasted by the U.S. Weather Service is above 55°F (13°C). Production shall not begin until the temperature at the point of placement is within the above limitations. Concrete shall not be placed if the temperature is forecasted by the U.S. Weather Service to be less than 35°F (2°C) within the 24 hour period following placement.

When concrete placement at lower air temperatures is authorized in writing, aggregates may be heated by either steam or dry heat prior to being placed in the mixer. The apparatus used shall heat the mass uniformly and shall be arranged to prevent occurrence of overheated areas. If the air temperature is less than 35°F (2°C) at the time of placing concrete, the engineer may require water or aggregates to be heated to not less than 70°F (20°C) nor more than 150°F (65°C). After placement the concrete shall be protected by additional covering, insulating materials, or other methods approved by the engineer.

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Table 901-2, Master Proportion Table for Portland Cement Concrete (06/05), Page 728.
Delete this table and substitute the following.

Table 901-2
Master Proportion Table for Portland Cement Concrete

	Average Compressive Strength, psi (MPa) at 28 days	Grade of Coarse Aggregate	Min. Cement, lb/yd ³ (kg/m ³) of Concrete ⁹	Maximum Water/Cement ratio, lb/lb(kg/kg) ^{1,9}	Total Air Content (Percent by volume) ⁴	Slump Range ¹⁰ , inches (mm)		
						Non-Vibrated	Vibrated	Slip Form Paving ²
Structural Class ¹¹								
AA(M)	4400 (30.4)	A, P	560 (332)	0.44	5±1	2-5 (50-125)	2-4 (50-100)	N.A.
AA	4200 (29.0)	A, P	560 (332)	0.44	5±1	2-5 (50-125)	2-4 (50-100)	N.A.
A(M)	4400 (30.4)	A, P	510 (302)	0.53	5±2	2-5 (50-125)	2-4 (50-100)	N.A.
A	3800 (26.2)	A, F ⁸ , P	510 (302)	0.53	5±2	2-5 (50-125)	2-4 (50-100)	1-2.5 (25-65)
D	3300 (22.8)	A, B, D, P	420 (249)	0.58	5±2	2-5 (50-125)	1-3 (25-75)	N.A.
F	3400 (23.5) ⁵	A, P	460 (273)	0.44	5±1	2-5 (50-125)	2-4 (50-100)	N.A.
P(X)	7500 (51.7) ⁵	A, F ⁸ , P	700 (415)	0.40	5±2	N.A.	2-10 (50-250)	N.A.
P(M)	6000 (41.4) ⁵	A, F ⁸ , P	600 (356)	0.44	5±2	N.A.	2-6 (50-150) ⁷	N.A.
P	5000 (34.5) ⁵	A, F ⁸ , P	560 (332)	0.44	5±2	N.A.	2-6 (50-150) ⁷	N.A.
S	3800 (26.2)	A, P	650 (385)	0.53	5±2	6-8 (150-200)	N.A.	N.A.
Minor Structure Class ¹¹								
M	3000 (20.7)	A, B, P	470 (279)	0.53	5±2	2-5 (50-125)	2-4 (50-100)	1-2.5 (25-65)
R	1800 (12.4)	A, B, D, P	370 (219)	0.70	5±2	2-5 (50-125)	2-4 (50-100)	N.A.
Y	3000 (20.7)	Y	560 (332)	- ³	6-9	N.A.	1-3 (25-75)	N.A.
Pavement Type ¹¹								
B	4000 (27.6) ⁶	N/A ¹³	475 (282)	0.53	5±2	N.A.	2-4 (50-100)	1-2.5 (25-65)
D	4000 (27.6) ⁶	N/A ¹³	450 (267)	0.53	5±2	N.A.	2-4 (50-100)	1-2.5 (25-65)
E	4000 (27.6) ⁶	A, F ¹² , P	600 (356)	0.40	5±2	N.A.	2-4 (50-100)	1-2.5 (25-65)

N.A. – Not Applicable

¹ Except for Class AA, AA(M), or F concrete, the maximum volume of water; gal. (L), shall be reduced 5 percent when a water-reducing admixture is used, and 10 percent when an air-entraining admixture, or air-entraining and water-reducing admixtures, is used. When the coarse aggregate portion of the mix is 100 percent crushed aggregate, the water may be increased by 5 percent provided the maximum water listed in Table 901-2 is not exceeded.

² Also slump range for other concrete placed by extrusion methods.

³ Refer to Subsection 901.08(c).

⁴ Total air content ranges when air-entrainment is allowed or specified. Air content shall be designed at midrange.

⁵ Values shown represent the minimum compressive strengths allowed.

⁶ Average compressive strengths for Pavement Type concrete shall be 3600 psi (24.8 MPa) when air-entrainment is used.

⁷ No more than a 2 inch (50 mm) slump differential for any design pour.

⁸ Grade F coarse aggregate shall be used only when specified or permitted. The minimum cement content shall be increased when this aggregate is used.

⁹ For mixes including partial replacement of cement with fly ash or ground granulated blast furnace slag, the minimum cement and maximum water contents shown apply to the total cement and fly ash or ground granulated blast furnace slag content of the mix. Additional cement may be required to achieve minimum compressive strength.

¹⁰ When a slump range is specified in other sections, that range shall govern.

¹¹ See Subsection 901.08(a) for allowable types of cement.

¹² For use in partial depth patching.

¹³ Aggregate grading shall comply with the requirements of Subsection 1003.02(c).

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Tables 901-3E and 901-3M, Acceptance and Payment Schedules for Cast-In-Place Structural Concrete (03/04), Pages 729 and 730.

Delete these tables and substitute the following.

Table 901-3E
Acceptance and Payment Schedules
Cast-In-Place Structural Concrete

Average Compressive Strength per Lot, psi (28 to 31 days)					
Class A or S	Class AA	Class A(M) or AA(M)	Class D	Class F	Percent of Contract Price ¹
3800 & above	4200 & above	4400 & above	3300 & above	3400 & above	100
3400-3799	3800-4199	4200-4399	3000-3299	---	98
3000-3399	3500-3799	4000-4199	2500-2999	---	90
below 3000	below 3500	below 4000	below 2500	below 3400	50 or remove and replace ²

Table 901-3M
Acceptance and Payment Schedules
Cast-In-Place Structural Concrete

Average Compressive Strength per Lot, MPa (28 to 31 days)					
Class A or S	Class AA	Class A(M) or AA(M)	Class D	Class F	Percent of Contract Price ¹
26.2 & above	29.0 & above	30.4 & above	22.8 & above	23.5 & above	100
23.5-26.1	26.2-28.9	29.0-30.3	20.7-22.7	---	98
20.7-23.4	24.1-26.1	27.6-28.9	17.2-20.6	---	90
below 20.7	below 24.1	below 27.6	below 17.2	below 23.5	50 or remove and replace ²

¹When concrete is part of an item or not a direct pay item, lot sizes, sampling and acceptance testing for the required quantities will be in accordance with Subsection 805.18. The value for each cubic yard (cu m) required will be assessed at \$250 (\$330) for the purpose of applying payment adjustment percentages. The amount of payment adjustment for the quantity of concrete involved will be deducted from payment.

Acceptance and payment schedules shall apply to the contract item itself for cast-in-place piling.

²When the average compressive strength of any batch in a lot is less than 4000 psi (27.6 MPa) for Class A(M) or AA(M), less than 3500 psi (24.1 MPa) for Class AA, less than 3000 psi (20.7 MPa) for Class A or S, less than 2500 psi (17.2 MPa) for Class D, or less than 3400 psi (23.5 MPa) for Class F, an investigation will be made. If concrete is allowed to remain in place, payment will be based on the average compressive strength for the lot. If concrete is not allowed to remain in place, the identifiable deficient areas shall be removed and replaced at no direct pay.

When the average compressive strength for a lot is less than 4000 psi (27.6 MPa) for Class A(M) or AA(M), less than 3500 psi (24.1 MPa) for Class AA, less than 3000 psi (20.7 MPa) for Class A or S, less than 2500 psi (17.2 MPa) for Class D, or less than 3400 psi (23.5 MPa) for Class F, an investigation will be made. If concrete is allowed to remain in place, payment for the lot will be based on 50 percent of the contract price.

Any cores obtained in these investigations will be used for evaluation purposes only and payment will be based on original acceptance samples.

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Tables 901-4E and 901-4M, Acceptance and Payment Schedules for Cast-In-Place Minor Structure Concrete (06/05), Pages 729 and 730.

Delete these tables and substitute the following.

Table 901-4E

Acceptance and Payment Schedules
 Cast-In-Place Minor Structure Concrete

Average Compressive Strength, psi (28 to 31 days)		
Class M or Y	Class R	Percent of Contract Price ¹
3000 & Above Below 3000	1800 & Above Below 1800	100 50 or Remove ²

Table 901-4M

Acceptance and Payment Schedules
 Cast-In-Place Minor Structure Concrete

Average Compressive Strength, MPa (28 to 31 days)		
Class M or Y	Class R	Percent of Contract Price ¹
20.7 & Above Below 20.7	12.4 & Above Below 12.4	100 50 or Remove ²

¹When concrete is part of an item or not a direct pay item, sampling and acceptance testing for the required quantities shall be in accordance with this section. The value for each cubic yard (cu m) of concrete required will be assessed at \$250 (\$330) for the purpose of applying payment adjustment percentages. The amount of payment adjustment for the quantity of concrete involved will be deducted from payment.

²When the average compressive strength is less than 3,000 psi (20.7 MPa) for Class M or Y, and 1,800 psi (12.4 MPa) for Class R, an investigation will be made. If concrete is allowed to remain in place, payment will be based on 50 percent of the contract price.

Any cores obtained in these investigations will be used for evaluation purposes only. Payment will be based on original acceptance samples.

SECTION 1001 – HYDRAULIC CEMENT:

Subsection 1001.01 – Portland Cement (11/04), Page 733.

Add the following subheading.

(c) Process Additions: Process additions may be used in amounts not to exceed 3 percent by weight (mass) of portland cement clinker provided it meets the requirements for the cement portion of ASTM C 465 and the test results are submitted to the Department for review and approval.

Subsection 1001.04 – Portland Blast-Furnace Slag Cement (09/02), Page 734.

Delete the fourth sentence and substitute the following:

Grade 100 and grade 120 ground granulated blast-furnace slag for use in Type IS cement shall comply with AASHTO M 302.

SECTION 1002 – ASPHALT MATERIALS AND ADDITIVES:

Subsection 1002.01 – Asphalt (03/03), Page 735.

Delete the second sentence of the third paragraph.

Delete the fifth paragraph and substitute the following.

When asphalt materials sampled at the point of delivery do not comply with specification requirements, and in the opinion of the engineer have resulted in an unsatisfactory product based on an investigation, the materials shall be removed and replaced or otherwise corrected at no direct pay.

Subsection 1002.02 – Asphalt Material Additives (03/03). Pages 735-744.

Delete Tables 1002-01, 1002-02, 1002-05, and 1002-11 and substitute the following.

Table 1002-1 (03/03)
Performance Graded Asphalt Cements

Property	AASHTO Test Method	PG76-22m ¹	PG70-22m ¹	PG64-22 ¹	PG58-28 ¹
Test on Original Binder					
Rotational Viscosity @ 135°C, Pa·s ²	T 316	3.0	3.0	3.0	3.0
Dynamic Shear, 10 rad/s, G*/Sin Delta, kPa	T 315	1.00+ @ 76°C	1.00+ @ 70°C	1.30+ @ 64°C	1.00+ @ 58°C
Flash Point, °C	T 48	232+	232+	232+	232+
Solubility, % ³	T 44	99.0+	99.0+	99.0+	99.0+
Separation of Polymer, 163°C, 48 hours, °C difference in R & B from top to bottom	DOTD TR 326	2-	2-	---	---
Force Ductility Ratio (f ₂ /f ₁ , 4°C, 5 cm/min., f ₂ @ 30 cm elongation)	T 300	0.30+	---	---	---
Force Ductility, 4°C, 5 cm/min, 30 cm elongation, kg	T 300	---	0.23+	---	---
Tests on Rolling Thin Film Oven Residue	T 240				
Mass loss, %	T 240	1.00-	1.00-	1.00-	1.00-
Dynamic Shear, 10 rad/s, G*/Sin Delta, kPa	T 315	2.20+ @76°C	2.20+ @ 70°C	2.20+ @ 64°C	2.20+ @ 58°C
Elastic Recovery, 25°C, 10 cm elongation, % ⁴	T 301	60+	40+	---	---
Ductility, 25°C, 5 cm/min, cm	T 51	---	---	100+	---
Test on Pressure Aging Vessel Residue	R 28				
Dynamic Shear, @ 25°C, 10 rad/s, G* Sin Delta, kPa	T 315	5000-	5000-	5000-	5000- @ 19°C
Bending Beam Creep Stiffness, S, MPa @ -12°C.	T 313	300-	300-	300-	300- @ -18°C
Bending Beam Creep Slope, m value,@ -12°C	T 313	0.300+	0.300+	0.300+	0.300+ @ -18°C

¹ PG76-22m or PG70-22m shall be required in the top two lifts of all hot mix asphalt construction for roadways; PG64-22 may be used in base course and incidentals; When 20-30% RAP is used in the base course PG 58-28 is required.

² The rotational viscosity will be measured to determine product uniformity. The rotational viscosity measured by the supplier shall be noted on the Certificate of Delivery. A binder having a rotational viscosity of 3.0 Pa·s or less will typically have adequate mixing and pumping capabilities. Binders with rotational viscosity values higher than 3.0 Pa·s should be used with caution and only after consulting with the supplier as to any special handling procedures and guarantees of mixing and pumping capabilities.

³ Not all polymers are soluble in the specified solvents. If the polymer modified asphalt digested in the solvent will not pass the filter media, a sample of the base asphalt used in making the polymer modified asphalt should be tested for solubility. If the solubility of the base asphalt is at least 99.0%, the material will be considered as passing.

⁴ AASHTO T 301 except the standard v-shaped sides for the specimen mold shall be replaced by straight-sided inserts of the same length, so that the specimen will contain a section 1 cm x 1 cm x 3 cm.

Table 1002-2 (03/03)
PG 70-22m Alternate¹

Property	AASHTO Test Method	PG 70-22m Alternate ²
		Specification
Test on Original Binder:		
Rotational Viscosity @ 135°C, Pa·s ³	T 316	3.0-
Dynamic Shear, @ 70°C and 10 rad/s, G*/Sin Delta, kPa	T 315	1.50+
Flash Point, °C	T 48	232+
Solubility, % ⁴	T 44	99.0+
Softening Point, Ring & Ball, °C	T 53	70.0+
Tests on Rolling Thin Film Oven Residue:	T 240	
Mass Loss, %	T 240	1.00-
Dynamic Shear, @ 70°C and 10 rad/s, G*/Sin Delta, kPa	T 315	2.20+
Tests on Pressure Aging Vessel Residue:	R 28	
Dynamic Shear, @ 25°C and 10 rad/s, G*Sin Delta, kPa	T 315	5000-
Bending Beam Creep Stiffness, S, @ -12°C, MPa	T 313	300-
Bending Beam Creep Slope, @ -12°C, m value	T 313	0.300+

¹ Use only with Superpave asphaltic concrete Level 1 and Level A mixes with less than 2500 ADT.

² Handling of all samples for testing shall be in accordance with ASTM D 4957, Section 7.2, which requires heating the sample in an oven maintained at 190° ± 2°C. Stir the sample occasionally until homogenous and pour in suitable container for testing. Pouring temperatures shall be 180° ± 2°C for all tests.

³ The rotational viscosity will be measured to determine product uniformity. The rotational viscosity measured by the supplier shall be noted on the Certificate of Delivery. A binder having a rotational viscosity of 3.0 Pa·s or less will typically have adequate mixing and pumping capabilities. Binders with rotational viscosity values higher than 3.0 Pa·s should be used with caution and only after consulting with the supplier as to any special handling procedures and guarantees of mixing and pumping capabilities.

⁴ Not all polymers are soluble in the specified solvents. If the polymer modified asphalt digested in the solvent will not pass the filter media, a sample of the base asphalt used in making the polymer modified asphalt should be tested for solubility. If the solubility of the base asphalt is at least 99.0%, the material shall be considered as passing.

Table 1002-5 (10/01)
Emulsified Polymerized Asphalt (CRS-2P)1

Test Method		Percent of Contract Unit Price/Liter or Shipment ²		
		Specifications		Deviatons
		100	80	50 or Remove ³
Viscosity, Saybolt Furol @ 50°C	AASHTO T 59	100-400	56-99	55-
Storage Stability Test, 24 h, %	AASHTO T 59		401-444	445+
Settlement, 5 Day, %	AASHTO T 59	1.0-	---	---
Classification Test	AASHTO T 59	5.0-	---	---
Particle Charge Test	AASHTO T 59	Pass	---	Fail
Sieve Test (Retained on 850 µm), %	AASHTO T 59	Pos.	---	Neg.
Distillation:	AASHTO T 59	0.1-	---	---
Oil Distillate by Vol. of Emulsion, %				
Residue from Distillation, %		3.0-	---	---
Tests on Residue by Distillation:		65+	61-64	60-
Penetration, 25°C, 100 g, 5 s, dmm	AASHTO T 49			
Softening Point (Ring & Ball), °C	AASHTO T 53	100-200	80-99	79-
			201-225	226+
Solubility, %	AASHTO T 44	38.0-52.0	32.1-37.9	32.0-
Tests on Residue by Evaporation ⁴ :			52.1-58.9	59.0+
Force Ductility Ratio		97.5+	---	---
(f_2/f_1 , 4°C, 5 cm/min, f_2 at second peak)	AASHTO T 300			
Elastic Recovery, 10°C,		0.30+	0.21-0.29	0.20-
20 cm elongation, %	AASHTO T 301 ⁵			
		58+	51-57	50-

¹ The addition of latex, rubber or other additives to emulsified polymerized asphalt will not be allowed.

² When the unit of pay is not based on the liter, the deduction will be applied to the contract unit price.

³ At the Department's option.

⁴ The residue asphalt for running ductility tests, tensile stress test and elastic recovery test shall be obtained by means of residue by evaporation (Oven) rather than residue by distillation (Aluminum-alloy Still). The material supplier shall certify by independent testing that the Tensile Stress requirements have been attained.

⁵ AASHTO T 301 except the standard v-shaped sides for the specimen mold shall be replaced by straight-sided inserts of the same length, so that the specimen will contain a section 1 cm x 1 cm x 3 cm.

**Table 1002-11 (03/03)
Hot Applied Modified Asphalt Cements for Asphalt Surface Treatment¹**

Property	AASHTO Test Method	Gelled Asphalt		PAC 15	
		Spec.	Deviation	Spec.	Deviation
		100	90 or Remove	100	90 or Remove
Tire Rubber Content, %	---	---	---	5+	---
Penetration @ 25°C, 100 g., 5 s, dmm	T 49	55-100	54- 101+	75-125	74- 126+
Viscosity, @ 60°C, Pa·s	T 202	100+	99-	150+	149-
Rotational Viscosity @ 135°C, Pa·s ²	T 316	0.7-3.0	0.6- 3.1+	3.0-	3.1+
Force Ductility Ratio, f_2/f_1 , 4°C, 5cm/min, f_2 @ 30 cm elongation	T 300	---	---	0.30+	0.29-
Softening Point, °C	T 53	53+	52-	45+	44-
Flash Point, °C	T 48	230+	228-	230+	228-
Solubility, %	T 44	99.0+	---	---	---
Separation of Rubber, 163°C, 48 hours difference in R & B from top to bottom sample, °C	DOTD TR 326	---	---	2-	---
Tests on Residue from Rolling Thin Film Oven Test:	T 240				
Elastic Recovery, 25°C, 10 cm elongation, %	T 301 ³	---	---	55+	54-
Penetration Retention 25°C, RTFO/Original	T 49	---	---	0.60+ 1.00-	0.59- 1.01+
Viscosity Ratio, 60°C, RTFO/ Original	T 202	2.5-	2.6+	---	---

¹Handling of all samples for testing shall be in accordance with ASTM D 4957, Section 7.2, which requires heating the sample in an oven maintained at $195^\circ \pm 2^\circ\text{C}$. Stir the sample occasionally until homogenous and pour in suitable container for testing. Pouring temperatures shall be $180^\circ \pm 2^\circ\text{C}$ for all tests.

²The rotational viscosity will be measured to determine product uniformity. The rotational viscosity measured by the supplier shall be noted on the Certificate of Delivery. A binder having a rotational viscosity of 3.0 Pa·s or less will typically have adequate mixing and pumping capabilities. Binders with rotational viscosity values higher than 3.0 Pa·s should be used with caution and only after consulting with the supplier as to any special handling procedures and guarantees of mixing and pumping capabilities.

³AASHTO T 301 except the standard v-shaped sides for the specimen mold shall be replaced by straight-sided inserts of the same length, so that the specimen will contain a section 1 cm x 1 cm x 3 cm.

SECTION 1003 – AGGREGATES:

Subsection 1003.02 – Aggregates for Portland Cement Concrete and Mortar (06/05), Pages 746-749.

Delete the first paragraph and substitute the following.

All aggregates for use in portland cement concrete shall comply with the requirements of Subsection 1003.01. Aggregates for use in Types B and D pavement concrete shall also conform to the requirements of Subsection 1003.02(c).

Delete the first sentence of Heading (a) and substitute the following.

Sand shall be a natural silica sand from a source listed in QPL 2.

Delete the second paragraph of Heading (a) and substitute the following.

Fine aggregate for all portland cement concrete except Types B and D pavements shall conform to the following gradations:

Concrete Sand

<u>U.S. Sieve</u>	<u>Metric Sieve</u>	<u>Percent Passing</u>
3/8 inch	9.5 mm	100
No. 4	4.75 mm	95-100
No. 16	1.18 mm	45-90
No. 50	300 µm	7-30
No. 100	150 µm	0-7
No. 200	75 µm	0-3

Mortar Sand

<u>U.S. Sieve</u>	<u>Metric Sieve</u>	<u>Percent Passing</u>
No. 4	4.75 mm	100
No. 8	2.36 mm	95-100
No. 100	150 µm	0-25
No. 200	75 µm	0-10

Delete Heading (b)(1) and substitute the following.

(1) Uncrushed Coarse Aggregate: Uncrushed coarse aggregate for all portland cement concrete except Types B and D pavements shall comply with Table 1003-1.

Delete Table 1003-1, Portland Cement Concrete Aggregates and substitute the following:

**Table 1003-1
Portland Cement Concrete Aggregates**

Percent Passing						
U.S. Sieve	Metric Sieve	Grade A (Size 57)	Grade B (Size 467)	Grade D (Size 357)	Grade F ---	Grade P (Size 67)
2 1/2 inch	63 mm	---	---	100	---	---
2 inch	50 mm	---	100	90-100	---	---
1 1/2 inch	37.5 mm	100	85-100	---	---	---
1 inch	25.0 mm	90-100	---	35-70	---	100
3/4 inch	19.0 mm	---	35-70	---	100	80-100
1/2 inch	12.5 mm	25-60	---	10-30	90-100	---
3/8 inch	9.5 mm	---	10-30	---	---	20-55
No. 4	4.75 mm	0-10	0-5	0-5	15-60	0-10
No. 8	2.36 mm	0-5	---	---	0-15	0-5
No. 16	1.18 mm	---	---	---	0-5	---
No. 200	75 µm	0-1	0-1	0-1	0-1	0-1

Delete the first sentence of Heading (b)(2) and substitute the following.

Crushed coarse aggregate for all portland cement concrete except Types B and D pavements shall comply with the uncrushed coarse aggregate gradations, except that when the material finer than the No. 200 (75 µm) sieve consists of the dust fraction from crushing, essentially free of clay or shell, this percentage shall be 0-2 percent.

Add the following.

(c) Aggregates for Types B and D Pavements:

For the combined aggregates for the proposed portland cement concrete pavement mix, the percent retained based on the dry weight (mass) of the total aggregates shall meet the requirements of Table 1003-1A for the type of pavement specified in the plans. Additionally, the sum of the percents retained on any two adjacent sieves so designated in the table shall be at least 13 percent of the total combined aggregates. The maximum amounts by weight (mass) of deleterious materials for the total aggregate shall be the same as shown in Subsection 1003.02(b).

Table 1003-1A
Aggregates for Types B and D Pavements

U.S. Sieve	Metric Sieve	Percent Retained of Total Combined Aggregates	
		Pavement Type	
		Type B	Type D
2 1/2 inch	63 mm	0	0
2 inch	50 mm	0	0-20
1 1/2 inch	37.5 mm	0-20	0-20
1 inch	25.0 mm	0-20	5-20
3/4 inch	19.0 mm	5-20	5-20
1/2 inch	12.5 mm	5-20	5-20
3/8 inch	9.5 mm	5-20	5-20
No. 4	4.75 mm	5-20	5-20
No. 8	2.36 mm	5-20	5-20
No. 16	1.18 mm	5-20	5-20
No. 30	600 μm	5-20	5-20
No. 50	300 μm	0-20	0-20
No. 100	150 μm	0-20	0-20
No. 200	75 μm	0-5	0-5

Note: For the sieves in the shaded areas, the sum of any two adjacent sieves shall be a minimum of 13 percent of the total combined aggregates.

Each type of aggregate to be used in the proposed mixture shall be sampled and tested individually. The percent of total combined aggregates retained shall be determined mathematically based on the proportions of the combined aggregate blend. All gradation calculations shall be based on percent of dry weight (mass).

Subsection 1003.03 – Base Course Aggregates (05/01), Pages 749 – 751.

Delete the second paragraph of Heading (d) and substitute the following:

To facilitate meeting these gradation requirements, a calcium carbonate additive approved by the Materials and Testing Section may be added to the stone. The additive shall be thoroughly blended with the stone by approved methods prior to placement on the project. When tested according to DOTD TR 428, the fraction passing the No. 40 (425 μm) sieve, including any additive, shall have a liquid limit no greater than 25, and a plasticity index of no greater than 4.

Delete Heading (e) and substitute the following:

(e) Recycled Portland Cement Concrete: Recycled portland cement concrete shall be crushed portland cement concrete. After being crushed, recycled portland cement concrete may contain a minimal amount of other base course materials resulting from normal construction methods and shall conform with the following gradation.

<u>U.S. Sieve</u>	<u>Metric Sieve</u>	<u>Percent Passing</u>
1 1/2 inch	37.5 mm	100
1 inch	25.0 mm	90-100
3/4 inch	19.0 mm	70-100
No. 4	4.75 mm	35-65
No. 40	425 µm	12-32
No. 200	75 µm	0-8

The fraction of recycled portland cement concrete passing the No. 40 (425 µm) sieve shall be non-plastic.

Delete the last sentence of Heading (f)

Subsection 1003.06, Aggregates for Asphaltic Mixtures (02/02), Pages 754 – 757.

Delete the first word of the second sentence of Heading (a) and substitute “Coarse”.

Delete the first sentence of Heading (a)(2) and substitute the following:

Fine aggregates shall comply with the requirements of Sections 501, 502, or 508 as applicable. Fine aggregates for Superpave mixtures shall also comply with the specification requirements for angularity and sand equivalent as shown in Section 502, Table 502-4.

Delete the first sentence of Heading (a)(2)b and substitute the following:

Sand equivalent shall be determined in accordance with DOTD TR120.

Add the following to Heading (a)(3):

For non-Superpave mixtures, the sand equivalent of the portion of the natural sand in the mixture passing the No. 4 (4.75mm) sieve shall not be less than 35 when tested in accordance with DOTD TR120. For Superpave mixtures, the sand equivalent of the portion of the natural sand in the mixture passing the No. 4 (4.75mm) sieve shall be as shown in Section 502, Table 502-4 when tested in accordance with DOTD TR120.

SECTION 1005 – JOINT MATERIALS FOR PAVEMENTS AND STRUCTURES:

Subsection 1005.02 – Poured and Extruded Joint Sealant (6/02), Pages 763 and 764.

Delete Heading (a) and substitute the following.

(a) Hot Poured Rubberized Asphaltic Type: This material shall comply with ASTM D6690, Type II. The sealant and backer materials shall be approved products listed in QPL 67. Backer materials of the appropriate size shall comply with ASTM D5249, Type I.

Subsection 1005.04 – Combination Joint Former/Sealer (11/02), Pages 765 and 766.

Delete Headings (b)(2) and (b)(3) and substitute the following:

(2) Bond of Elastomer to Plastic: The force required to shear the elastomer from the plastic shall be a minimum of 5.0 pounds per linear inch (90 g/mm) of sealer when tested in accordance with DOTD TR 636.

(3) Bond of Plastic to Cement Mortar: This bond will be evaluated and shall meet the following requirements:

The force required to separate the cement mortar from the plastic shall be a minimum of 5.0 pounds per linear inch (90 g/mm) of sealer when tested in accordance with DOTD TR 636.

SECTION 1006 – CONCRETE AND PLASTIC PIPE:

Subsection 1006.01 – General (09/02), Page 768.

Delete Heading (a)(4) and substitute the following:

(4) Portland cement with ground granulated blast-furnace slag 1018.28.

Delete the second paragraph of Heading (a) and substitute the following:

The concrete pipe manufacturer may use up to 45 or 50 percent grade 120 ground iron blast-furnace slag as a substitution for portland cement on a pound-for-pound (kilogram for kilogram) basis in accordance with Subsection 901.08. Fly ash may be substituted up to 25 percent.

Delete Heading (h) and substitute the following.

Regardless of the ASTM specifications utilized, if concrete pipe is to be accepted based upon cored samples, all samples shall meet the minimum concrete strengths specified. No more than three (3) joints of pipe shall be tested per maximum of 300 joints or three (3) days consecutive production, whichever is less, unless approved by the engineer. All coring shall be performed by the manufacturer as directed by the engineer.

Subsection 1006.03 – Reinforced Concrete Pipe (07/02), Page 769.

Delete the first sentence and substitute the following.

Reinforced concrete pipe shall be from an approved product source listed in QPL 77, and shall comply with ASTM C 76, amended as follows:

Subsection 1006.04 Reinforced Concrete Pipe Arch (07/02), Page 769.

Delete the first sentence and substitute the following.

Reinforced concrete pipe arch shall be from an approved product source listed in QPL 77, and shall comply with ASTM C 506, amended as follows:

Subsection 1006.06 Gasket Materials (07/02), Pages 770 – 772.

Delete Heading (b) and substitute the following.

(b) Flexible Plastic Gaskets: Flexible plastic gaskets for pipe joints shall comply with AASHTO M 198. The hydrostatic test shall be performed using AASHTO M 315. Flexible plastic gasket material and primer shall be approved products listed in QPL 4.

Subsection 1006.07 – Plastic Culvert Pipe (08/04), Pages 770 – 772.

Delete this subsection and substitute the following.

1006.07 Plastic Pipe: Plastic pipe and joint systems shall be approved products listed in QPL 66.

(a) Storm Drains: Plastic pipe for storm drains shall be Ribbed Polyvinyl Chloride Pipe (RPVCP). Ribbed Polyvinyl Chloride Pipe shall comply with ASTM F 794 or ASTM F 949, Series 46 with UV inhibitors. The resin shall have a minimum cell classification of 12454-C in accordance with ASTM D 1784.

(b) Cross Drains: Plastic pipe for cross drains shall be Ribbed Polyvinyl Chloride Pipe (RPVCP). Ribbed Polyvinyl Chloride Pipe shall comply with ASTM F 794 or ASTM F 949, Series 46 with UV inhibitors. The resin shall have a minimum cell classification of 12454-C in accordance with ASTM D 1784.

(c) Side Drains: Plastic pipe for side drains shall be one of the following:

(1) Ribbed Polyvinyl Chloride Pipe (RPVCP): Ribbed Polyvinyl Chloride Pipe shall comply with ASTM F 794 or ASTM F 949, Series 46 with UV inhibitors. The resin shall have a minimum cell classification of 12454-C in accordance with ASTM D 1784.

(2) Corrugated Polyethylene Pipe (Double Wall) (CPEPDW): Corrugated Polyethylene Pipe (Double Wall) shall comply with AASHTO M 294, Type S. The minimum cell classification shall be 335400C in accordance with ASTM D 3350.

(d) Joints for Plastic Pipe: Joints shall be approved by the DOTD Materials Engineer Administrator and listed on the QPL. Joint gasket materials shall comply with Subsection 1006.06. Joint requirements are as follows:

(1) Type 1 Joints (T1): These joints shall provide a soil tight joint.

(2) Type 2 Joints (T2): These joints shall pass a 5 psi (35 kPa) hydrostatic pressure test.

(3) Type 3 Joints (T3): These joints shall pass a 10 psi (70 kPa) hydrostatic pressure test.

(4) Joints With Split Coupling Bands: Split coupling bands shall be one piece and composed of the same material as the pipe. The bands shall be the same thickness as the base pipe. The width of the band shall be equal to one-half the diameter of the pipe but shall be a minimum of 12 inches (300 mm) wide. The band shall be secured to the pipe with a minimum of five stainless steel or other approved corrosion resistant circumferential bands.

Subsection 1006.08 – Plastic Underdrain Pipe (08/04), Page 772

Delete this subsection and substitute the following.

1006.08 Plastic Underdrain Pipe: Plastic pipe for underdrains shall be perforated or nonperforated, as specified, and shall be an approved product listed on QPL 73 and one of the following.

(a) Corrugated Polyethylene Pipe (Single Wall) (CPEPSW): Corrugated Polyethylene Pipe (Single Wall) shall be perforated and shall comply with AASHTO M 252, Type C. Perforations shall comply with AASHTO M 252. Corrugated Polyethylene Pipe (Single Wall) shall not be used as shoulder outlet underdrain pipe.

(b) Polyvinyl Chloride Pipe (PVCP): Polyvinyl Chloride Pipe shall comply with AASHTO M 278 or ASTM D 3034, SDR 35. Perforations, if specified, shall comply with AASHTO M 252.

(c) Corrugated Polyethylene Pipe (Double Wall) (CPEPDW): Corrugated Polyethylene Pipe shall comply with AASHTO M 252, Type S. Perforations, if specified, shall comply with AASHTO M 252.

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Subsection 1006.09 – Plastic Yard Drain Pipe (08/04), Page 773.

Delete this subsection and substitute the following.

1006.09 Plastic Yard Drain Pipe:

(a) Pipe: Plastic pipe for yard drains shall be an approved product listed on QPL 73 and one of the following:

(1) Polyvinyl Chloride Pipe (PVCP): Polyvinyl Chloride Pipe shall comply with AASHTO M 278 or ASTM D 3034, SDR 35.

(2) Corrugated Polyethylene Pipe (Double Wall) (CPEPDW): Corrugated Polyethylene Pipe (Double Wall) shall comply with AASHTO M 252, Type S, with a resin of minimum cell classification of 324420C in accordance with ASTM D 3350 or AASHTO M 294, Type S, with a resin of minimum cell classification of 335400C in accordance with ASTM D 3350.

(3) Ribbed Polyvinyl Chloride Pipe (RPVCP): Ribbed Polyvinyl Chloride Pipe shall comply with ASTM F 794 or ASTM F 949.

(b) Joints: Gaskets for joining plastic yard drain pipe shall comply with the requirements of Subsection 1006.06.

SECTION 1007 – METAL PIPE:

Subsection 1007.07 – Polymer Coated Corrugated Steel or Aluminum Pipe and Pipe Arch (05/04), Page 776.

Delete this subsection.

SECTION 1008 – PAINTS:

Subsection 1008.02 – Three-Coat Waterborne Paint System (Two Primers And One Topcoat) (04/02), Pages 780 – 782.

Delete the text of this subsection and substitute the following:

The Three-Coat Waterborne Paint System (Two Primers and One Topcoat), shall be an approved system listed on QPL 68. Each system shall be tested for a minimum of 1500 hours in a salt spray (fog) apparatus and fluorescent UV-Condensation Exposure Apparatus in accordance with ASTM B 117 and G 53. The paint system shall show no rusting, checking, cracking, delamination or undercutting. There shall be only slight chalking or discoloration and there shall be no blisters larger than number 8 when rated in accordance with ASTM D 714.

Standard X-ray and infrared curves will be made of all approved coatings in accordance with ASTM D 5380 and DOTD TR 610. When the project sample deviates from these curves, the material represented by the sample will be rejected.

The following specification is not a formula. The manufacturer assumes all responsibility in formulating products which meet these specification requirements in laboratory testing, field application, and performance.

Each paint system shall comply with the following requirements.

(a) Primer:

(1) System A

a. Pigment: The pigment shall be composed of the following materials:

	Percent By Weight (mass)
Zinc Phosphate Dihydrate, Min.	22
Red Iron Oxide (ASTM D 3722), Min.	10
Barium Sulfate (ASTM D 602), Min.	50

The balance of the pigment shall include any application aids, thixotropes, tinting pigments, etc. which may enhance the performance of the material.

b. Vehicle: The vehicle shall be composed of a minimum of 80 percent resin solution with the balance being water, surfactants, antifoam additives, stabilizers, pH adjusters, etc. The resin shall be of vinyl acrylic copolymer latex having a pH between 1 and 2 and a chlorine content of 64 percent based on latex solids.

c. Mixed Paint: The mixed paint shall have the following properties:

<u>PROPERTY</u>	<u>TEST METHOD</u>	<u>REQUIREMENT</u>
Pigment, % by wt., Min.	ASTM D 3723	23
Weight/gallon, pounds, Min.	ASTM D 1475	12
Solids, % by wt. Min.	ASTM D 3723	60
Non-volatile in Vehicle, % by wt., Min.	ASTM D 3723	49
Viscosity, Ku	ASTM D 562	70 - 90
Fineness of Grind, Hegman Scale, Min.	ASTM D 1210	5
Dry to Touch, Minutes, Max.	ASTM D 1640	30
Dry Through, Hours, Max.	ASTM D 1640	1
PH	ASTM E 70	4.5 - 5.5
Sag, Lenetta, Mils, Min.	ASTM D 4400	12

(2) System B (Color Contrasting Primers)

a. First Coat Primer: See heading 1008.02(a)(1)a.

b. Second Coat Primer: The second coat primer shall meet the vehicle requirements of the first coat primer. The second coat primer pigmentation shall be changed to allow for color contrast between the first coat red primer, second coat primer and gray topcoat.

(b) Topcoat:

(1) Pigment: The pigment shall be composed of 95 percent by weight of Titanium Dioxide (TiO₂) in accordance with ASTM D 476. The balance of the pigments shall include any application aids, thixotropes, tinting pigments, etc., which may enhance the performance of the material.

(2) Vehicle: The vehicle shall be composed of a minimum of 87 percent solution with the balance being water, dispersant, rheological modifiers, stabilizers, etc. The resin shall be a 41.5 percent solids small particle size aqueous dispersion copolymer consisting of acrylic,

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acrylonitrile and styrene monomers. The resin shall have a glass transition temperature between 38°C and 42°C and a pH between 7.2 and 7.8.

(3) The topcoat shall be tinted to match the standard "Louisiana Gray" topcoat available from the Materials and Testing Section. The paint shall have the following properties:

<u>PROPERTY</u>	<u>TEST METHOD</u>	<u>REQUIREMENT</u>
Pigment, % by wt., Min.	ASTM D 3723	13
Weight/gallon, pounds, Min.	ASTM D 1475	9.2
Solids, % by wt. Min.	ASTM D 3723	46
Non-volatile in Vehicle, % by wt., Min.	ASTM D 3723	39
Viscosity, Ku	ASTM D 562	90 - 110
Fineness of Grind, Hegman Scale, Min.	ASTM D 1210	5
Dry to Touch, Minutes, Max.	ASTM D 1640	30
Dry Through, Hours, Max.	ASTM D 1640	2
Sag, Resistance, Lenetta, Mils, Min.	ASTM D 4400	12

Subsection 1008.06 – Corrosion Inhibiting Alkyd Paint System (04/02), Page 783.

Add the following:

1008.06 CORROSION INHIBITING ALKYD PAINT SYSTEM. The Corrosion Inhibiting Alkyd Paint System shall be a three-coat paint system applied to properly prepared structural steel surfaces that are permanently exposed to weather. The paint shall be compatible with basic lead silico chromate paint. Either System A or System B can be used, however, whichever system is selected shall be used on the entire project. The corrosion inhibiting pigment in System A shall be zinc hydroxy phosphite and the corrosion inhibiting pigment in System B shall be calcium borosilicate. The primer and the intermediate coats shall be tinted for color contrast. An aluminum topcoat in accordance with AASHTO M69, Type I shall be applied in both systems.

SPECIFIC REQUIREMENTS: Test methods shall be the latest in effect. The manufacturer assumes all responsibility in formulating products which meet these specifications requirements.

Systems A and B shall comply with the following requirements.

<u>PROPERTY</u>	<u>TEST METHOD</u>	<u>REQUIREMENT</u>			
		<u>SYSTEM A</u>		<u>SYSTEM B</u>	
		<u>MIN</u>	<u>MAX</u>	<u>MIN</u>	<u>MAX</u>
<u>PRIMER</u>					
Pigment, % by wt	ASTM D 2371	50	--	53	--
Vehicle, % by wt	ASTM D 2371	--	50	--	47
Weight/gallon, pounds @ 77°F	ASTM D 1475	12.3	--	11.4	--
Water, %		--	0.5	--	0.25
Coarse Particle and Skins (Total Residue Retained on No. 325 Sieve Based on Paint), %	ASTM D 185	--	1.0	--	1.0
Fineness of Grind (North Std)	ASTM D 1210	5	--	5	--
Viscosity (Stormer-Krebs Units) @ 77°F	ASTM D 562	70	80	75	85
Dry Through, Hours	ASTM D 1640	18	--	18	--
Non-volatile in Vehicle, % by wt	ASTM D 2369 & ASTM D 2372	66	--	57	--

<u>PROPERTY</u>	<u>TEST METHOD</u>	<u>REQUIREMENT</u>			
		<u>SYSTEM A</u>		<u>SYSTEM B</u>	
		<u>MIN</u>	<u>MAX</u>	<u>MIN</u>	<u>MAX</u>
<u>INTERMEDIATE COAT</u>					
Pigment, % by wt	ASTM D 2371	50	--	44	--
Vehicle, % by wt	ASTM D 2371	--	50	--	56
Weight/gallon, pounds @ 77°F	ASTM D 1475	12.3	--	10.2	--
Water, %		--	0.25	--	0.25
Coarse Particle and Skins (Total Residue Retained on No. 325 Sieve Based on Paint), %	ASTM D 185	--	1.0	--	1.0
Fineness of Grind (North Std)	ASTM D 1210	5	--	5	--
Viscosity (Stormer-Krebs Units) @ 77°F	ASTM D 562	70	80	75	85
Dry Through, Hours	ASTM D 1640	--	18	--	10
Non-volatile in Vehicle, % by wt	ASTM D 2369 & ASTM D 2372	66	--	45	--

SYSTEM A

Vehicle: The vehicle shall consist of not less than 66.0 percent non-volatile vehicle. The balance shall be combined drier and thinner.

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The non-volatile vehicle shall be composed of raw linseed oil and alkyd resin combined in the approximate proportions of 1:1 respectively by weight. The alkyd resin furnished as a solution shall meet the requirements of Federal Specifications TT-R-266C Type I, Class A. The raw linseed oil shall meet the requirements of ASTM D234.

The volatile vehicle shall be mineral spirits meeting the requirements of Rule 66.

	<u>PERCENT BY</u>	
	<u>WEIGHT</u>	
<u>PRIMER PIGMENT</u>	<u>MIN</u>	<u>MAX</u>
Zinc hydroxy phosphite, ASTM D 4462	73.0	75.0
Red Iron Oxide (98% Fe ₂ O ₃)	24.0	26.0
Organo Montmorillonite	0.75	--
	PERCENT	BY
	WEIGHT	
<u>INTERMEDIATE PIGMENT</u>	<u>MIN</u>	<u>MAX</u>
Zinc hydroxy phosphite, ASTM D 4462	75.0	77.0
Titanium Dioxide, Rutile		
Non Chalking, ASTM D476	19.0	21.0
Organo Montmorillonite	0.75	--
Tinting Pigments*	--	--
Yellow Oxide	--	--
Red Oxide	3.0	3.5
Lampblack	--	--

*Tinting pigment may be added as predispersion pigment.

SYSTEM B

PRIMER

<u>PIGMENT</u>	<u>MIN</u>	<u>MAX</u>
Calcium Boro-Silicate, ASTM D 4288	80.0%	--
Synthetic Iron Oxide, ASTM D 84, Class I	16.0%	18.0%
Organo Montmorillonite	1.0%	2.0%

VEHICLE

Alkyd Resin Solution, Fed. Spec TT-R-266, Type I, Class A	43.0%	50.0%
Linseed Oil, ASTM D 234	20.0%	27.0%
Mineral Spirits, Fed. Spec TT-T-291E, Type II*	--	28.0%
Driers	1.0%	2.0%

* Small quantities of alcohols or alcohol/water mixtures may replace some mineral spirits where such materials are used as polar additives for the suspending aid.

INTERMEDIATE COAT

<u>PIGMENT</u>	<u>MIN</u>	<u>MAX</u>
Calcium Boro-Silicate, ASTM D 4288	80.0%	--
Synthetic Iron Oxide, ASTM D 84, Class I	17.5%	18.5%
Organo Montmorillonite	1.5%	2.5%
Lampblack	--	2.0%

VEHICLE

Alkyd Resin Solution, Fed. Spec TT-R-266, Type I, Class A	65.0%	--
Mineral Spirits, Fed. Spec TT-T-291E, Type II*	--	34.0%
Driers	1.0%	1.5%

*Small quantities of alcohols or alcohol/water mixtures may replace some mineral spirits where such materials are used as polar additives for the suspending aid.

SECTION 1010 – FENCE AND GUARD RAIL:

Subsection 1010.06 – Gates for Field and Line Type Fence (01/02), Page 792.

Delete Heading (a) and substitute the following.

- (a) Gates: Steel used in fabricating gates shall be galvanized in accordance with ASTM A 653 Coating Designation G60 (A653M Coating Designation Z180).

SECTION 1014 – TIMBER AND TIMBER PRESERVATIVES

Subsection 1014.06 – Quality Assurance (08/03), Page 811.

Delete Table 1014-2 and substitute the following.

Table 1014-2
Minimum Retention of Preservative
(Pounds Per Cubic Foot (kg/cu m) of Wood)

Material and Usage	Creosote	Creosote-Solutions	Pentachloro-phenol	CCA ¹
Timber & Lumber				
Above Ground:				
Southern Pine or Douglas Fir	12.0 (192)	12.0 (192)	0.60 (9.6)	0.60 (9.6)
Land and Fresh Water:				
Southern Pine or Douglas Fir	16.0 (256)	16.0 (256)	N/A	0.80 (12.8)
Coastal Water:				
Southern Pine or Douglas Fir	20.0 (320)	20.0 (320)	N/A	2.50 (40.0)
Piles³				
Non-Foundation				
Land & Fresh Water:				
Southern Pine	16.0 (256)	16.0 (256)	N/A	0.80 (12.8)
Douglas Fir	17.0 (272)	17.0 (272)	N/A	1.00 (16.0)
Coastal Water:				
Southern Pine or Douglas Fir	20.0 (320)	20.0 (320)	N/A	2.50 (40.0)
Foundation				
Land & Fresh Water:				
Southern Pine	12.0 (192)	12.0 (192)	0.60 (9.6)	0.80 (12.8)
Douglas Fir	17.0 (272)	17.0 (272)	0.85 (13.6)	N/A
Coastal Water:				
Southern Pine or Douglas Fir	20.0 (320)	20.0 (320)	N/A	2.50 (40.0)
Poles				
Southern Pine	12.0 (192)	N/A	0.60 (9.6)	0.60 (9.6)
Douglas Fir	15.0 (240)	N/A	0.80 (12.8)	0.80 (12.8)
Fence				
Gate Posts/Braces	8.0 (128)	8.0 (128)	0.40 (6.4)	0.40 (6.4)
Guard Rail Posts/Spacer Blocks, Bridge Rails & Dead End Road Installations	12.0 ² (192)	N/A	0.60 (9.6)	0.60 (9.6)

¹ Material treated with Chromated Copper Arsenate (CCA) shall be conditioned by kiln drying prior to treatment.

² Timber guard rail posts, spacer blocks, bridge rails, poles and dead end road installations treated with creosote shall be steam flushed for a minimum of 1 hour at 240°F (116°C) after treatment.

³ A foundation pile is one which is embedded in the ground and capped with concrete. Pile supported approach slab piles are classified as non-foundation.

SECTION 1015 – SIGNS AND PAVEMENT MARKINGS:

Subsection 1015.04 – Sign Panels, (05/02), Pages 813 and 814.

Delete the first sentence of Heading (b) and substitute the following.

Substrate for barricade panels shall be either wood or rigid thermoplastic. Substrate for portable signs shall be aluminum, wood or plastic. Substrate for post mounted signs shall be aluminum, wood, rigid thermoplastic or aluminum clad low density polyethylene plastic.

Delete Heading (b)(2).

Delete Heading (b)(4) and substitute the following.

(4) Plastic: Plastic substrate for barricade panels and signs shall be as follows.

a. Fiber Reinforced Vinyl (PVC): The substrate shall have a nominal composite thickness of 0.04 inches (1 mm) and be bonded to an approved retroreflective material by the manufacturer.

b. Rigid Thermoplastic: Rigid thermoplastic substrate shall consist of either High Density Polyethylene (HDPE) or High Density Polycarbonate (HDPC). The rigid thermoplastic for barricade panels shall be hollow core HDPE or HDPC with a minimum thickness of 0.625 inch (16 mm). The thermoplastic for sign panels shall be either 0.40 inch (10 mm) thick thin wall, fluted substrate or 0.625 inch (16 mm) thick blow molded substrate. Substrates shall be sufficiently rigid to maintain a flat face and shall be capable of attachment to the sign mounting in such a manner as not to crush or otherwise deform the substrate. Reflectorized sheeting applied to rigid thermoplastic shall have its manufacturer's approval for use on the substrate.

c. Aluminum Clad Low Density Polyethylene (AL/LDPE) Plastic: The aluminum clad low density polyethylene plastic substrate shall be 0.080 inch (2 mm) thick. The substrates shall be sufficiently rigid to maintain a flat face and shall be capable of attachment to the sign mounting in such a manner as not to crush or otherwise deform the substrate. Reflectorized sheeting applied to aluminum clad low density polyethylene shall have its manufacturer's approval for use on this substrate.

Subsection 1015.05 – Reflective Sheeting (02/03), Pages 814-819.

Delete this subsection and substitute the following.

1015.05 Reflective Sheeting. Reflective sheeting shall be one of the following types as specified on the plans and complying with ASTM D 4956 except as modified herein. The sheeting shall be an approved product listed in QPL 13.

Type I - A medium-intensity retroreflective sheeting referred to as "engineering grade" and typically enclosed lens glass-bead sheeting.

Type II - A medium-high-intensity retroreflective sheeting sometimes referred to as "super engineering grade" and typically enclosed lens glass-bead sheeting.

Type III A high-intensity retroreflective sheeting, that is typically encapsulated glass-bead retroreflective material.

Type VI - An elastomeric-high-intensity retroreflective sheeting without adhesive. This sheeting is typically a vinyl microprismatic retroreflective material.

DOTD Type VII (Fluorescent Orange)- A super-intensity retroreflective sheeting, that is typically an unmetalized microprismatic retroreflective element material.

Type IX - A very high-intensity retroreflective sheeting having highest retroreflectivity at short distances as determined by the R_A values at 1° observation angle. This sheeting is typically an unmetalized microprismatic retroreflective element material.

(a) Adhesive Classes: The adhesive required for retroreflective sheeting shall be Class 1 (pressure sensitive) or Class 2 (heat activated) as specified in ASTM D 4956.

(b) Identification Marks: Type II sheeting shall be distinguished by integral identification marks that cannot be removed or affected by physical or chemical methods without causing damage to the sheeting. The markings shall be inconspicuously placed on 12-inch (300-mm) centers and shall be visible from a distance of not more than 3 feet (1.0 m).

(c) Alternate Sheeting Type: DOTD Type VII (Fluorescent Orange): Minimum Coefficients of Retroreflection shall be as specified in Table 1015-1. Luminance factors and color requirements shall be as specified in Table 1015-2.

Table 1015-1
Coefficients of Retroreflection for DOTD Type VII (Fluorescent Orange) Sheeting¹

Observation Angle, degrees	Entrance Angle, degrees	Fluor. Orange
0.2	-4	180
0.2	+30	90
0.5	-4	72
0.5	+30	36

¹Minimum Coefficient of Retroreflection (R_A) ($\text{cd lx}^{-1}\text{m}^{-2}$)

Table 1015-2
Fluorescent Orange Color Specification Limits (Daytime)

Color	1		2		3		4		Luminance Factor, min.
	x	y	x	y	x	y	x	y	Y%
Fluor. Orange	0.583	0.416	0.535	0.400	0.595	0.351	0.645	0.355	25

(The four pairs of chromaticity coordinates determine the acceptable color in terms of the CIE 1931 Standard Colorimetric System measured with Standard Illuminant D65.)

d) Accelerated Weathering: Reflective sheeting, when processed, applied and cleaned in accordance with the manufacturer's recommendations shall perform in accordance with the accelerated weathering standards in Table 1015-3.

**Table 1015-3
Accelerated Weathering Standards²**

Type	Retroreflectivity ¹				Colorfastness ³	
	Orange		All colors, except orange		Orange	All colors, except orange
I	Not used		2 years	50 ⁴	Not used	2 years
II	1 year	65 ⁵	Not used		1 year	3 years
III	1 year	80 ⁶	3 years	80 ⁶	1 year	3 years
III (for drums)	1 year	80 ⁶	1 year	80 ⁶	1 year	1 year
VI	1/2 year	50 ⁷	1/2 year	50 ⁷	1/2 year	1/2 year
DOTD Type VII (Fluor. Orange)	1 year	80 ⁸	Not used		1 year	Not used
IX	Not used		3 years	80 ⁹	Not used	3 years

¹Percent retained retroreflectivity of referenced table after the outdoor test exposure time specified.

²At an angle of 45° from the horizontal and facing south in accordance with ASTM G7.

³Colors shall conform to the color specification limits of ASTM D4956 and Table 1015-2 herein after the outdoor test exposure time specified.

⁴ASTM D4956, Table 4.

⁵ASTM D4956, Table 6.

⁶ASTM D4956, Table 7.

⁷ASTM D4956, Table 12.

⁸Table 1015-1.

⁹ASTM D4956, Table 3.

(e) Performance: Reflective sheeting for signs, when processed, applied and cleaned in accordance with the manufacturer's recommendations shall perform outdoors in accordance with the performance standards in Table 1015-4.

**Table 1015-4
Reflective Sheeting Performance Standards**

Type	Retroreflectivity ¹ -- Durability ²			Colorfastness ³	
	Orange	All colors, except orange			
I	Not used	7 years	50 ⁴	3 years	
II	3 years	65 ⁵	Not used	3 years	
III	3 years	80 ⁶	10 years	80 ⁶	3 years
DOTD Type VII (Fluor. Orange)	3 years	80 ⁷	Not used	3 years	
IX	Not used	7 years	80 ⁸	3 years	

¹Percent retained retroreflectivity of referenced table after installation and the field exposure time specified.

²All sheeting shall maintain its structural integrity, adhesion and functionality after installation and the field exposure time specified.

³All colors shall conform to the color specification limits of ASTM D4956 and Table 1015-2 herein after installation and the field exposure time specified.

⁴ASTM D4956, Table 4.

⁵ASTM D4956, Table 6.

⁶ASTM D4956, Table 7.

⁷Table 1015-1.

⁸ASTM D4956, Table 3.

(f) Temporary Signs, Barricades, Channelizing Devices, Drums and Cones: Reflective sheeting for temporary signs, barricades and channelizing devices, shall meet the requirements of ASTM D 4956, Type III except that the initial sequence of temporary advanced warning construction signs used on the mainline of freeways and expressways shall meet the requirements of DOTD Type VII (Fluorescent Orange).

Reflective sheeting for vertical panels shall meet the requirements of ASTM D 4956, Type III.

Reflective sheeting for drums shall be a minimum of 6 inches (150 mm) wide and shall meet the requirements of ASTM D 4956, Type III, and the Supplementary Requirement S2 for Reboundable Sheeting as specified in ASTM D 4956. Reflective sheeting for traffic cone collars shall meet the requirements of ASTM D 4956, Type VI.

(g) Sheeting Guaranty. The contractor shall provide the Department with a guaranty from the sheeting manufacturer stating that if the retroreflective sheeting fails to comply with the performance requirements of this subsection, the sheeting manufacturer shall do the following:

**Table 1015-5
Manufacturer's Guaranty-Reflective Sheeting**

Type	Manufacturer shall restore the sign face in its field location to its original effectiveness at no cost to the Department if failure occurs during the time period ¹ as specified below		Manufacturer shall replace the sheeting required to restore the sign face to its original effectiveness at no cost to the Department if failure occurs during the time period ¹ as specified below
	Orange	All colors, except orange	All colors, except orange
I	Not used	<5 years	5-7 years
II	<3 years	<5 years	5-10 years
III	<3 years	<7 years	7-10 years
DOTD Type VII (Fluor. Orange)	<3 years	Not used	Not used
IX	Not used	<5 years	5-10 years

¹From the date of sign installation.

(1) Replacement sheeting for sign faces, material, and labor shall carry the unexpired guaranty of the sheeting for which it replaces.

(2) The sign fabricator shall be responsible for dating all signs with the month and year of fabrication at the time of sign fabrication. This date shall constitute the start of the guaranty obligation period.

Subsection 1015.09 - Raised Pavement Markers (10/03), Pages 821 and 822.

Delete Heading (b) and substitute the following.

(b) Reflectorized Markers: Reflectorized markers shall comply with ASTM D 4280, Designation H and Designation F. The type and color shall be in accordance with the plans and the MUTCD. The markers shall be either standard having approximate base dimensions of 4-by-4-inches (100-by-100-mm) and a maximum height of 0.80 inches (20 mm) or low profile having approximate base dimensions of 4-by-2-inches (100-by-50-mm) and a maximum height of 0.60 inches (15 mm).

Subsection 1015.13 – Glass Beads for Drop-on Application (05/02), Pages 829 and 830.

Delete this subsection and substitute the following.

1015.13 Large Embedment Coated Glass Beads for Pavement Markings. Large embedment coated glass beads for use with painted traffic striping and flat thermoplastic striping shall be transparent, clean, colorless glass, smooth and spherically shaped, free from milkiness, pits, or excessive air bubbles and conform to the specific requirements for the class designated. The beads shall be non-flotation, embedment coated and conform to the following specific requirements.

(a) Gradation: The testing for gradation of the beads shall be in accordance with ASTM D 1214 and shall meet the gradation requirements specified below.

(1) Painted Traffic Striping: Glass beads for painted traffic striping shall meet the gradation requirements of Table 1015-14.

TABLE 1015-14
Gradation of Large Embedment Coated Glass Beads for
Painted Traffic Striping

U.S. SIEVE (METRIC SIEVE)	PERCENT RETAINED
No. 12 (1.7 mm)	0
No. 14 (1.4 mm)	0-5
No. 16 (1.18 mm)	5-20
No. 18 (1.00 mm)	40-80
No. 20 (850 µm)	10-40
No. 25 (710 µm)	0-5
PAN	0-2

(2) Flat Profile Thermoplastic Striping: Drop-on beads for flat profile thermoplastic striping shall meet the gradation requirements of Table 1015-15 as determined by the thickness of the striping.

TABLE 1015-15
Gradation of Embedment Coated Glass Beads for
Flat Profile Thermoplastic Striping

THICKNESS	NUMBER OF BEAD DROPS	APPLICATION #1	APPLICATION #2
40 mils	Single Drop	See Table 1015-14	N/A
90 mils or greater	Double Drop	See Table 1015-16	AASHTO M 247 Type I

TABLE 1015-16
 Gradation of Large Embedment Coated Glass Beads for
 First Drop on Flat Thermoplastic Striping

U.S. SIEVE (METRIC SIEVE)	PERCENT RETAINED
No. 10 (2.0 mm)	0
No. 12 (1.7 mm)	0-5
No. 14 (1.4 mm)	5-20
No. 16 (1.18 mm)	40-80
No. 18 (1.00 mm)	10-40
No. 20 (850 μm)	0-5
PAN	0-2

(b) Roundness: The beads shall have a minimum of 80 percent rounds per screen for the two (2) highest sieve quantities. The remaining sieve fractions shall have no less than 75 percent rounds as determined by microscopic examination.

(c) Angular Particles: The beads shall have no more than three (3) percent angular particles per screen.

(d) Refractive Index: The beads shall have a refractive index of 1.50 to 1.52 when tested by the liquid immersion method.

(e) Embedment Coating: The large beads for thermoplastic striping shall be coated with an adhesion assuring coating. The smaller AASHTO M247 Type I beads shall be coated to provide free flowing characteristics when tested in accordance with AASHTO M247 Section 4.4.1. and assure adhesion. Glass beads shall be properly coated and conform to the requirements when tested as described in DOTD TR 530 Determination of Embedment Coating on Large Embedment Coated Glass Beads for Pavement Markings.

(f) Packaging and Marking: The beads shall be packaged in moisture proofed containers. Each container shall be stamped with the following information: Name and address of manufacturer, shipping point, trademark or name, the wording "Large Embedment Coated Glass Beads", class, weight, lot number and the month and year of manufacture. The container for the AASHTO M 247 Type I beads shall be similarly stamped except that the wording shall be "Glass Beads".

SECTION 1016 – PRECAST REINFORCED CONCRETE DRAINAGE UNITS:

Subsection 1016.01 – General (06/02), Page 831.

Delete the first paragraph and substitute the following.

This specification covers the manufacture of precast reinforced concrete box culverts, manhole sections, catch basins, junction boxes, and safety ends.

Delete Heading (e) and substitute the following.

The name or trademark of the manufacturer, the date of casting, the structure number or the station number as shown on the plans, and the lot number shall be indented into the concrete or painted thereon with waterproof paint on each unit on the inside and outside of the unit in such a manner as to be legible at time of delivery.

Subsection 1016.02 – Precast Reinforced Concrete Box Culverts (06/02), Pages 831 and 832.

Delete the first sentence and substitute the following.

Precast reinforced concrete box culverts shall comply with ASTM C 1433 amended as follows:

Delete the first sentence of Heading (f) and substitute the following.

Culvert units shall be cured by one of the methods listed in ASTM C 1433.

Subsection 1016.03 – Precast Reinforced Concrete Manhole Sections (06/02), Page 832.

Delete the text of this subsection and substitute the following.

See Subsection 1016.04.

Subsection 1016.04 Precast Reinforced Concrete Catch Basins and Junction Boxes (06/02), Pages 832 and 833.

Delete this subsection and heading and substitute the following.

Precast Reinforced Concrete Manholes, Catch Basins, Junction Boxes, and Safety Ends. Precast reinforced concrete manholes, catch basins, junction boxes, and safety ends shall comply with the dimensions shown on the plans, and shall meet the following requirements:

(a) Materials:

(1) Precast reinforced concrete manholes, catch basins and junction boxes shall comply with the following Sections and Subsections:

Portland Cement Concrete, Class M	901
Reinforcing Steel	1009
Frames, Grates and Covers	1018.04

Portland cement concrete shall attain a minimum compressive strength of 4000 psi (27.5 MPa) before shipping of the units.

(2) Precast safety ends shall comply with Subsection 702.04(c).

(b) Casting Concrete: When multiple castings are to be made using the same forms, the engineer may require the use of metal forms. Concrete in each sectional unit shall be placed without interruption and shall be consolidated by the use of an approved vibrator, supplemented by hand-tamping as necessary, to force the concrete into the corners of forms and prevent formation of stone pockets or cleavage planes.

(c) Reinforcement: Reinforcement shall be as shown on the plans, and shall not vary more than 1/4 inch (6 mm) from the positions shown, except at pipe connections. At pipe connections no variance from the positions shown is allowed. Cover on reinforcement shall not be less than that shown on the plans.

(d) Curing: Units shall be cured in accordance with Subsection 805.10 or Subsection 805.14(e).

(e) Form Removal: Forms shall remain in place for 1 curing day in accordance with Subsection 805.11, Method 2.

(f) Joints and gasket material shall comply with Subsection 1006.06(b).

(g) Workmanship: Units shall be true to shape, and surfaces shall be smooth, dense and uniform in appearance. Units will be rejected for defeats in workmanship for any of the following:

(1) Fractures or cracks passing through the wall, except for a single end crack that does not exceed the depth of the joint.

(2) Surface defects indicating honeycombed or open texture that would adversely affect the function of the unit.

(3) Damaged or cracked ends, where such damage would prevent making a satisfactory joint.

(4) Any continuous crack having a surface width of 0.01 inch (0.25 mm) or more and extending for a length of 12 inches (300 mm) or more, regardless of position.

When approved, minor surface cavities or irregularities which do not impair the service value of the unit and which can be corrected without marring its appearance shall be pointed with approved patching material listed in QPL 49 as soon as forms are removed.

(h) Quality Assurance: Acceptability of units will be determined by results of compression tests on concrete cylinders and by inspection during manufacture to determine their compliance with the design and workmanship prescribed in these specifications and on the plans. Units will be rejected for defects in workmanship in accordance with Subsection 1016.04(g).

A minimum of four cylinders for source approval and verification shall be made and cured in accordance with DOTD TR 226 or DOTD TR 227 and tested in accordance with DOTD TR 230 for each pour. Additional cylinders shall be made in pairs and used to determine the strength for moving within the plant.

SECTION 1018 – MISCELLANEOUS MATERIALS:

Subsection 1018.04 – Manhole Frames, Grates and Covers (09/02), Page 838.

Delete the Heading name and substitute the following.

Frames, Grates and Covers for Manholes, Catch Basins, and Junction Boxes.

Subsection 1018.13 – Roofing Pitch (05/01), Page 843.

Delete the first sentence and substitute the following:

Roofing pitch shall comply with ASTM D 4586.

Subsection 1018.20 – Fiber Glass Roving (05/01), Pages 847 and 848.

Delete this subsection.

Subsection 1018.22 – Hardware Cloth (06/02), Page 848.

Delete the text of this subsection and substitute the following.

Hardware cloth shall comply with the requirements of ASTM A 740, have a minimum wire diameter of 0.041 inch (1.04 mm), and be constructed of 1/2 inch x 1/2 inch (12.5 mm x 12.5 mm) mesh galvanized in accordance with ASTM A 153.

Subsection 1018.28 – Grade 120 Ground Iron Blast-Furnace Slag (09/02), Page 850.

Delete this subsection and substitute the following.

Ground Granulated Blast-Furnace Slag: Grade 100 and grade 120 ground granulated blast-furnace slag shall be from an approved source listed on QPL 70 and shall comply with AASHTO M 302, except alkali content calculated as sodium oxide equivalent shall not exceed 0.60 percent by weight.

SECTION 1019 – GEOTEXTILE FABRIC AND GEOCOMPOSITE SYSTEMS:

Subsection 1019.01 – Geotextile Fabric (09/02), Pages 851 and 852.

Add the following the Heading (b)(2).

<u>Use</u>	<u>Classes</u>
Base Course	D
Subgrade Layer	D

SECTION 1020 – TRAFFIC SIGNALS:

Subsection 1020.01 – Traffic Signal Heads (04/04), Pages 854 – 861.

Delete sub-heading (c)(1).

Delete sub-heading (c)(3) and substitute the following.

(3) 12-Inch (300 mm) LED Traffic Signal Lamp Unit (Mast Arm and Span Wire Mount):

a. General: The 12-inch (300 mm) LED traffic signal lamp unit shall be used in new traffic signal heads or as a retrofitted replacement for existing incandescent signal lamps. No special tools will be required for installation. When used as a retrofitted replacement for existing incandescent signal lamps, the 12-inch (300 mm) LED traffic signal lamp unit shall fit into existing traffic signal housings without modifications.

If proper orientation of the LED traffic signal lamp unit is required for optimum performance, prominent and permanent directional marking(s), such as an “UP arrow”, for correct indexing and orientation shall exist on the unit.

The manufacturer’s name, individual serial number, manufactured date, model number, and batch number shall be permanently marked on the backside of the LED traffic signal lamp unit. A label shall be placed on the unit certifying compliance to ITE standards.

b. Physical and Mechanical Requirements: The LED traffic signal lamp unit shall be a single, self-contained device, not requiring on-site assembly for installation into a new or existing traffic signal housing.

The assembly and manufacturing process for the LED traffic signal lamp unit assembly shall be such as to assure all internal LED and electronic components are adequately supported to withstand mechanical shock and vibration from high winds and other sources.

Each LED traffic signal lamp unit shall be comprised of a UV stabilized polymeric outer shell, multiple LED light source, and a regulated power supply. LEDs are to be mounted on a polycarbonate positioning plate or conformally coated printed circuit (PC) board.

The external lens shall be smooth on the outside to prevent excessive dirt/dust buildup. The optical lens/appearance of the lamp shall reflect a light distribution look similar to that of an incandescent lamp.

c. Optical and Light Output Requirements: The LEDs shall be manufactured using AlInGaP (Aluminum-Indium-Gallium-Phosphide) technology or other LEDs with lower

susceptibility to temperature degradation than AlGaAs (Aluminum-Gallium-Arsenide). AlGaAs LEDs will not be allowed.

Each LED traffic signal lamp shall meet minimum laboratory light intensity values, color (chromaticity), and light output distribution as described in ITE VTCSH (Vehicle Traffic Control Signal Head Standard) part 2 of the specifications 6.4.2.1, 6.4.4.1, 6.4.4.2, 6.4.4.3, 6.4.5 and 6.4.6 as a minimum. The LED traffic signal lamp units shall be certified by the laboratory to meet initial luminous values that are at least 115 percent of the required minimum values in the tables below. The tables below replace the values in Table 1 of Section 4.1.1 of the ITE VTCSH. The 6.4.2.1 test shall include an expanded view with the following minimums:

Grid Specification for 12-Inch (300 mm) Red
 (Minimum Luminous Intensity Values (candelas))
 (Shaded area is ITE requirements for light intensity)

Degrees	27.5	22.5	17.5	12.5	7.5	2.5	-2.5	-7.5	-12.5	-17.5	-22.5	-27.5
22.5U												
17.5U			3			10	10			3		
12.5U			14			20	20			14		
7.5U			20			54	54			20		
2.5U			58			220	220			58		
2.5D			77	141	251	339	339	251	141	77		
7.5D	16	38	89	145	202	226	226	202	145	89	38	16
12.5D	16	22	34	44	48	50	50	48	44	34	22	16
17.5D	16	20	22	22	22	22	22	22	22	22	20	16
22.5D			7			10	10			7		
27.5D												

Grid Specification for 12-Inch (300 mm) Green and Yellow

(Minimum Luminous Intensity Values (candelas))

(Shaded area is ITE requirements for light intensity)

Degrees	27.5	22.5	17.5	12.5	7.5	2.5	-2.5	-7.5	-12.5	-17.5	-22.5	-27.5
22.5U												
17.5U			7			20	20			7		
12.5U			27			41	41			27		
7.5U			41			108	108			41		
2.5U			115			441	441			115		
2.5D			154	283	501	678	678	501	283	154		
7.5D	32	77	178	291	404	452	452	404	291	178	77	32
12.5D	32	44	69	89	97	101	101	97	89	69	44	32
17.5D	32	41	44	44	44	44	44	44	44	44	41	32
22.5D			14			20	20			14		
27.5D												

Arrow Indications (candelas/m²)

	Red	Yellow	Green
Arrow Indication	5 500	11 000	11 000

LEDs for arrow indications shall be spread evenly across the illuminated portion of the arrow area. Arrow LED traffic signal lamp units shall be tested in conformance with California Test 3001.

Measured chromaticity coordinates of LED traffic signal lamp units shall conform to the chromaticity requirements of the following table, for a minimum period of 60 months, over an operating temperature range of -40°F (-40°C) to 165°F (74°C). Each LED traffic signal lamp unit shall meet the minimum requirements for light output for the entire range from 80 to 135 volts.

Chromaticity Standards

Red	Y: not greater than 0.308, or less than 0.998x
Yellow	Y: not less than 0.411, nor less than 0.995 - x, nor greater than 0.452
Green	Y: not less than 0.506 - 0.519x, nor less than 0.150 + 1.068x, nor greater than 0.730 - x

LED traffic signal lamp units tested shall be representative of typical production units. Optical testing shall be performed with LED traffic signal lamp units mounted in standard traffic signal section without visors or hood attached to the signal sections.

After burn-in, LED traffic signal lamp units shall be tested for rated initial luminous intensity in conformance with the provisions contained herein above. Before measurement, LED traffic signal lamp units shall be energized at rated voltage, with 100 percent on-time duty cycle,

for a time period of 30 minutes. Test results for this testing shall record the current, voltage, total harmonic distortion (THD) and power factor (PF) associated with each measurement.

Photometric, luminous intensity and color measurements for yellow LED traffic signal lamp units shall be taken immediately after the units are energized. The ambient temperature for these measurements shall be 77°F (25°C). Test results for this testing shall record the current, voltage, total harmonic distortion (THD) and power factor (PF) associated with each measurement.

d. Electrical: Each LED traffic signal lamp unit shall incorporate a regulated power supply designed to electrically protect the LEDs and maintain a safe and reliable operation. The power supply shall provide capacitor filtered DC regulated current to the LEDs in accordance with the LED manufacturer's specification. Design of the power supply shall be such that the failure of an individual component or any combination of components cannot cause the LED traffic signal lamp unit to be illuminated after AC power is removed. The power supply must be current regulated.

The LED traffic signal lamp unit shall operate on a 60Hz AC line voltage ranging from 80 volts RMS to 135 volts RMS. The circuitry shall prevent flickering over this voltage range. Nominal rated voltage for all measurements shall be 117 volts RMS.

The LED traffic signal lamp unit shall be operationally compatible with all TS1, TS2, and 2070 controllers, conflict monitors with plus features, and malfunction management units. In the case of conflicts between specifications, the latest LADOTD specifications will control.

A circuitry shall be provided that will shutdown the LED traffic signal lamp unit and power supply when 85 percent ITE light intensity specifications as amended herein are not satisfied. The manufacturer may be required to effectively demonstrate this feature.

Each shipment shall be accompanied with a certified test report from an independent testing lab. Random testing of average production units shall be conducted to ensure compliance with specifications.

Two, color coded, 36 in. long, 600 V, 18 AWG minimum jacketed wires, properly terminated to the LED traffic signal lamp unit to prevent moisture, dust, and other environmental substances from entering the unit, conforming to the National Electric Code, and rated for service at 221°F (105°C), shall be provided for an electrical connection.

Individual LED's shall be wired so that a catastrophic failure of one LED light source will result in the loss of only one LED light source.

The LED traffic signal lamp unit shall operate with a minimum 0.90 power factor.

Total harmonic distortion (current and voltage) induced into an AC power line by an LED traffic signal lamp unit shall not exceed 20 percent.

LED traffic signal lamp units and associated on-board circuitry shall conform to the requirements in Federal Communications Commission (FCC) Title 47, SubPart B, Section 15 regulations concerning the emission of electronic noise.

e. Environmental Requirements: The LED traffic signal lamp unit shall be rated for use in the ambient operating temperature range of -40°F (-40°C) to 165°F (74°C). The unit shall consist of a housing that is a sealed watertight enclosure that eliminates dirt contamination and allows for safe handling in all weather conditions. Moisture resistance testing shall be performed on LED traffic signal lamp units in conformance with the requirements in NEMA Standard 250-

1991 for Type 4 enclosures. Evidence of internal moisture after testing shall be cause for rejection.

f. Production Testing Requirements: Each new LED traffic signal lamp unit shall be energized for a minimum of 24 hours at an operating temperature of 140°F (60°C) in order to cause any electronic infant mortality to occur, and to ensure electronic component reliability prior to shipment. After the burn-in procedure is completed, each LED traffic signal lamp unit shall be tested by the manufacturer for rated initial intensity at rated operating voltage.

g. Certifications: The contractor shall submit a test report certified by an independent laboratory that is certified to test in accordance with ITE standards that the LED traffic signal lamp unit model to be furnished meets ITE Standards for light distribution as amended herein, chromaticity, and power (consumption, power factor and harmonic distortion).

h. Warranty: The manufacturer shall provide a written warranty against defects in material, workmanship, or intensity for LED traffic signal lamp units for a period of 60 months after their installation. The traffic signal lamp units shall be warranted to maintain, throughout the warranty period, minimum luminous intensity values that are shown in the tables in paragraph c above. During the warranty period the manufacturer may be required to test any LED traffic signal lamp unit that is suspected to not meet the minimum intensity requirements at no cost to the Department. Any LED traffic signal lamp unit that fails during the warranty period shall be replaced. Replacement LED traffic signal lamp units shall be provided within 5 days after receipt of failed LED traffic signal lamp units at no cost to the Department.

The measured chromaticity coordinates of light emitting diode traffic signal lamp units shall conform to the requirements for chromaticity in Section 8.04 and Figure 1 of the ITE VTCSH over the temperature range of -40°F (-40°C) to 165°F (74°C).

LOUISIANA
DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
SUPPLEMENTAL SPECIFICATIONS

SECTION 502
SUPERPAVE ASPHALTIC CONCRETE MIXTURES

Section 502 of the 2000 Standard Specifications is deleted and substituted with the following.

502.01 DESCRIPTION. These specifications are applicable to Superpave asphaltic concrete wearing, binder and base course mixtures of the plant mix type.

This work consists of furnishing and constructing one or more courses of asphaltic concrete mixture applied hot in conformance with these specifications and in conformity with the lines, grades, thicknesses and typical sections shown on the plans or established. The mixture shall consist of aggregates and asphalt with additives combined in proportions which meet the requirements of this section including Tables 502-2, 502-3 and 502-4. Equipment and processes shall conform to Section 503.

Changes in design level will not be allowed, however, substitutions will be allowed for mixes within the same design level without requiring a plan change as follows. Wearing course [0.75 inch (19 mm)] may be substituted for binder course. Binder course [1 inch (25 mm)] may be substituted for base course. Wearing course shall not be substituted for base course.

When any substitution is made, all specification requirements for the mixture used shall apply with the following exceptions. When wearing course is substituted for binder course, RAP will be allowed in accordance with binder course requirements in Table 502-4. The lift thickness placed shall be as specified in Subsection 502.07 and Table 502-4 for the mix type used.

Quality assurance requirements and design procedures shall be as specified herein elsewhere and in the latest edition of the Department's publication entitled "Application of Quality Assurance Specifications for Asphaltic Concrete Mixtures" which is hereby made a part of this contract by reference.

502.02 MATERIALS. The contractor shall keep accurate records, including proof of deliveries of materials for use in asphaltic concrete mixtures. Copies of these records shall be furnished to the engineer upon request. Materials shall comply with the following Subsections:

Asphalt	1002.01
Silicone and Anti-Strip Additives	1002.02
Aggregates	1003.01 & 1003.06
Reclaimed Asphaltic Pavement (RAP)	1003.01 & 1003.06
Hydrated Lime	1018.03(a)
Mix Release Agent	1018.26

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(a) Asphalt: The asphalt cement grades used shall be as specified in Table 502-1 using the design traffic load levels shown on the plans.

Asphalt cement shall be sampled in accordance with the Materials Sampling Manual and shall meet the requirements of Section 1002. If the asphalt cement does not comply with the requirements of Section 1002, mix production shall cease until proper asphalt material is supplied.

**Table 502-1
Superpave Asphalt Cement Usage**

Current Traffic Load Level	Mixture Type	Grade of Asphalt Cement
Level 1	Wearing Course	PG 70-22m
	Binder Course	PG 70-22m
	Base Course	PG 64-22
Level 2 and 3	Wearing Course	PG 76-22m
	Binder Course	PG 76-22m
	Base Course	PG 64-22
Level A	Incidental Paving	PG 70-22m

Base course mixtures containing 20 to 30 percent RAP shall use PG 58-28 asphalt cement.

When mixtures are specified for pavement patching, pavement widening, pavement joint repair, driveways, curbs, guardrail widening, islands, bike paths, parking lots, or temporary detour roads, PG 64-22 asphalt cement may be used in lieu of the modified asphalts.

Leveling courses shall use the same grade of asphalt cement as in the layer immediately above except when blade leveling is directed by the engineer, a PG 64-22 will be allowed.

PG 76-22m asphalt cement may be substituted for PG 70-22m or PG 64-22 asphalt cements at no increase in price. PG 70-22m asphalt cement may be substituted for PG 64-22 at no increase in price. When average daily traffic (ADT) is less than 2500, PG 70-22m Alternate asphalt cement may be substituted for PG 70-22m asphalt cement for Level 1 and Level A mixes at no increase in price.

If a wearing course is substituted for a binder course, or if a binder course is substituted for a base, the grade of asphalt cement required will be in accordance with the original mixture type shown in the plans and as specified in Table 502-1.

(b) Additives:

(1) Silicone: Silicone additives, when needed, shall be dispersed into the asphalt by methods and in concentrations given in QPL 22.

(2) Anti-Strip (AS): An anti-strip additive shall be added at the minimum rate of 0.5 percent by weight (mass) of asphalt and thoroughly mixed in-line with the asphalt cement at the plant. Additional anti-strip shall be added up to 1.2 percent by weight (mass) of asphalt in accordance with Subsection 502.03(b).

When the amount of anti-strip additive is not in accordance with the approved job mix formula, production shall be discontinued until satisfactory adjustments are made.

(3) Hydrated Lime: Hydrated lime additive may be incorporated into all asphaltic concrete mixtures at the rate specified in the approved job mix formula. The minimum rate shall not be less than 1.5 percent by weight (mass) of the total mixture. Hydrated lime additive shall be added to and thoroughly mixed with aggregates in conformance with Subsection 503.02(e). Hydrated lime may be added as a mineral filler in accordance with Heading (c)(3).

(c) Aggregates: Aggregates shall meet the requirements of Table 502-4 and Section 1003.

(1) Friction Ratings: Friction ratings for coarse aggregates shall be determined in accordance with Subsection 1003.06. The friction ratings and allowable usage of aggregates shall be as shown in Table 502-2. Friction rating requirements shall apply only to the final lift of the travel lane wearing course.

**Table 502-2
Aggregate Friction Rating**

Friction Rating	Allowable Usage
I	All mixtures
II	All mixtures
III	All mixtures, except travel lane wearing courses with plan ADT greater than 7000 ¹
IV	All mixtures, except travel lane wearing courses ²

¹ When plan current average daily traffic (ADT) is greater than 7000, blending of Friction Rating III aggregates and Friction Rating I and/or II aggregates will be allowed for travel lane wearing courses at the following percentages. At least 30 percent by weight (mass) of the total aggregates shall have a Friction Rating of I, or at least 50 percent by weight (mass) of the total aggregate shall have a Friction Rating of II. The frictional aggregates used to obtain the required percentages shall not have more than 10 percent passing the No. 8 (2.36 mm) sieve.

² When the average daily traffic (ADT) is less than 2500, blending of Friction Rating IV aggregates with Friction Rating I and/or II aggregates will be allowed for travel lane wearing courses at the following percentages. At least 50 percent by weight (mass) of the total aggregate in the mixture shall have a Friction Rating of I or II. The frictional aggregates used to obtain the required percentages shall not have more than 10 percent passing the No. 8 (2.36 mm) sieve.

(2) Reclaimed Asphaltic Pavement (RAP): Reclaimed asphaltic pavement shall be stockpiled separate from other materials at the plant and will be subject to approval prior to use. Such stockpiles shall be uniform and free of soil, debris, foreign matter and other contaminants. Reclaimed materials that cannot be broken down during mixing or that adversely affect paving operations shall be screened or crushed to pass a 2 inch (50 mm) sieve prior to use.

(3) Mineral Filler: Mineral filler complying with the requirements of Subsection 1003.06(a)(6) may be used in all mixtures.

(4) Natural Sand: Natural sand shall meet the requirements of Table 502-4 and Subsection 1003.06(a)(3).

502.03 DESIGN AND VALIDATION OF MIXTURES.

(a) General: It is the intent of these specifications that the mixtures produced and placed meet the requirements for 100 percent payment. The contractor shall be responsible for design, production, transportation and laydown of mixtures. Work shall meet the requirements of this section and be subject to acceptance by the Department.

The contractor shall exercise quality control over materials and their assembly, design, processing, production, hauling, laydown and associated equipment. Quality control is defined as the constant monitoring of equipment, materials and processes to ensure that mixtures produced and placed are uniform, within control limits, and meet specification requirements. When these specifications are not being met and satisfactory control adjustments are not being made, operations shall be discontinued until proper adjustments and uniform operations are established. Control shall be accomplished by a program independent of the Department's testing and shall ensure that the requirements of the job mix are being achieved and that necessary adjustments provide the specified results.

The contractor shall conduct such tests as necessary, in addition to the required tests, to design, control and place mixtures within specifications.

The quality of mixtures will be evaluated during two phases, mixture produced at the plant, and mixture hauled, placed and compacted. Quality of both phases will be evaluated continuously as stated herein elsewhere. A lot is a segment of continuous production of asphaltic concrete mixture from the same job mix formula produced for the Department at an individual plant. Plant quality control testing shall be conducted continuously throughout production independent of delivery points. Project site quality control testing shall be conducted on each project for the mix placed on that project.

When the plant is in operation, the contractor shall have a Certified Asphaltic Concrete Plant Technician at the plant or jobsite who is capable of designing asphaltic concrete mixes, conducting any test or analysis necessary to put the plant into operation and producing a mixture meeting specifications. Daily plant operations shall not begin unless the Certified Asphaltic Concrete Plant Technician is at the plant. The Asphaltic Concrete Technician certification will be awarded by the Department upon satisfactory completion of the Department's requirements.

(b) Job Mix Formula: The contractor shall design the mixtures for optimum asphalt content and comply with requirements of the Superpave Mix Design for the level of mixture in Table 502-4 in accordance with AASHTO PP 28. The job mix formula shall include the recommended formula, extracted gradation, and supporting design data. The recommended formula shall be submitted for approval to the District Laboratory Engineer on a properly completed Superpave Asphaltic Concrete Job Formula form with all supporting design data. No mixture shall be produced until the proposed job mix formula has been approved.

The contractor's proposed job mix formula shall indicate a single anti-strip additive rate which is 0.1 percent greater than the percentage which will yield a minimum Tensile Strength

Ratio (TSR) of 80 percent up to a maximum of 1.2 percent anti-strip additive when tested in accordance with DOTD TR 322.

Permeability shall be tested by the contractor and reported on the job mix formula. Permeability tests shall be performed on 6 inch diameter by 4 inch tall (150 mm by 100 mm) specimens compacted to 93% \pm 1% of theoretical maximum specific gravity (G_{mm}). The maximum coefficient of permeability shall be 3.5 ft./day (125 x 10⁻⁵ cm/second) as measured in accordance with ASTM PS 129. These same specimens may be used in moisture sensitivity testing.

The job mix formula shall indicate a single rate of hydrated lime additive when used. The job mix formula rate of hydrated lime additive shall not be less than 1.5 percent by weight (mass) of total mixture.

The job mix formula shall indicate the optimum mixing temperature. The job mix formula limits for mix temperature will be \pm 25°F (\pm 14°C) from the optimum mixing temperature.

The job mix formula is to be inside the control points as detailed in Table 502-3. Blending of aggregates, i.e., gravel and stone, will be allowed provided the final composite mixture and final product meets or exceeds all specifications requirements.

The plant shall be operated to produce, on a continuing basis, a mixture uniformly conforming to the approved job mix formula. When this is not the case, the contractor shall make satisfactory adjustments or cease operations. The District Laboratory Engineer may permit the contractor to submit a new Asphaltic Concrete Job Mix Formula form for approval. The contractor shall submit a new job mix formula whenever a plant begins initial operations for the Department in a specific location or whenever a plant experiences a change in materials or source of materials. A new job mix formula will also be required whenever there are significant changes in equipment, such as the introduction of a new crusher, drum mixer, burner, etc.

When reclaimed asphaltic pavement (RAP) is used in a roadway mix, the quantity of RAP shall be designated in the job mix formula and meet the requirements of Table 502-4. The engineer may require the contractor to reduce the percentage of RAP to meet acceptance requirements.

When the contractor changes a source of RAP, the new mix design shall be submitted, validated and approved if the type of aggregate changes (e.g. gravel to limestone) or the source change causes a change in acceptance tolerances. If the contractor determines that the source change will not cause a change in acceptance tolerances, the contractor may elect to integrate the new RAP source into the existing approved mix design provided the contractor submits a revised job mix formula cover sheet which shows the new source of RAP and other changes. A new validation will not be required. If subsequent acceptance tests indicate that the mix is out of tolerance, a new design will be required and appropriate payment adjustments will apply.

(c) Job Mix Formula (JMF) Validation: The first day's production or a maximum of 2000 tons (2000 Mg) of mix shall be used to validate a new JMF. The contractor and the Department, using the stratified random sampling approach, shall jointly take five (5) samples, one per subplot, during the first day's production or a maximum of 2000 tons (2000 Mg) of mix. The contractor may elect to exclude test results representing the first 250 tons (250 Mg) from the

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validation analysis in order to make slight adjustments to the mix. The remaining validation lot, up to 1750 tons (1750 Mg), shall be divided into five (5) equal sublots and tested for validation analysis. If excluded from validation, the 250 tons (250 Mg) will be paid in accordance with Table 502-8. Minimum testing shall include one theoretical maximum specific gravity (G_{mm}), one gyratory specimen compacted to N_{design} , one gyratory specimen compacted to N_{max} , and one oven extraction. As approved by the district laboratory engineer, the contractor and the Department shall jointly analyze the test results for the following parameters:

- (1) Extracted Gradation
- (2) Percent Extracted Asphalt Cement
- (3) Percent Crushed Aggregate, (from cold feed blends)
- (4) Theoretical Maximum Specific Gravity (G_{mm}) (aged for one hour)

The following parameters apply to samples aged for one hour in an oven at gyratory compaction temperature and compacted to N_{design} .

- (5) Bulk Specific Gravity (G_{mb}) at N_{design}
- (6) Percent G_{mm} at $N_{initial}$
- (7) Percent Air Voids, VMA and VFA

The following parameters apply to samples aged for one hour in an oven at gyratory compaction temperature and compacted to N_{max} .

- (8) Bulk Specific Gravity (G_{mb}) at N_{max} measured and estimated
- (9) Percent G_{mm} at N_{max} and Corrected percent G_{mm} at N_{design}
- (10) Slope of the Gyratory Compaction Curve

The mean, standard deviation, Quality Index and percent within limits (PWL) of the test results shall be calculated in accordance with Subsection 502.12(g), Quality Level Analysis. The test data will be used to validate the JMF.

A JMF is considered validated if the following parameters are 90 percent within limits of the JMF and meet the specifications requirements.

- (1) Extracted Gradations for the No. 8 and No. 200 (2.36 mm and 75 μ m) sieves
- (2) Theoretical Maximum Specific Gravity (G_{mm})
- (3) Percent G_{mm} at $N_{initial}$ and N_{max}
- (4) Percent Air Voids at N_{design}

Also for validation, all other parameters shall be within the specifications limits.

Should the JMF validate on all but one parameter, the contractor may make adjustments to the production and repeat the validation testing using the next day's production or a maximum of 2000 tons (2000 Mg). Should the JMF fail to validate on more than one parameter, the JMF will be considered non-valid, and the contractor will be required to submit a new JMF for approval. A previously approved JMF may be produced in lieu of the disapproved JMF. Upon validation of the JMF, the validation averages will be used for JMF target values. Payment for

validation lots will be in accordance with acceptance pay parameters, except that five cores shall be obtained to determine density pay. After validating the JMF for mix properties, the contractor, witnessed by the Department, shall sample the next day's production and perform validation testing at the plant for DOTD TR 322 and AASHTO TP 4 specimens. When the validation results are less than 80 percent, no further production for that job mix formula or any proposed job mix formula substituted for that mix type will be accepted on any DOTD project having DOTD TR 322 requirements until a passing plant-produced Tensile Strength Ratio (TSR) value is verified by the Department. A previously validated and approved JMF may be produced in lieu of the disapproved JMF.

Validation is not required for mixture designs used solely for curbs, driveways, turnouts, crossovers, joint repair, leveling, guardrail widening, islands, bike paths, patching, widening, shoulders less than 10 feet (3.0 m) wide, and miscellaneous handwork, but the mixture must meet specifications requirements.

502.04 WEATHER LIMITATIONS. Asphaltic concrete mixtures shall not be applied on a wet surface or when the ambient temperature is below 50°F (10°C) for wearing courses and 40°F (5°C) for base and binder courses, except that material in transit, or a maximum of 50 tons (45 Mg) in a surge bin or silo used as a surge bin at the time plant operation is discontinued may be placed; however, mixture placed shall perform satisfactorily and meet specification requirements. Inclement weather will be sufficient reason to terminate or not begin production.

When base course materials are placed in plan thicknesses of 2 3/4 inches (70 mm) or greater, these temperature limitations shall not apply provided all other specification requirements are met. When a wearing course is substituted for a binder course mixture the temperature limitation for binder course shall apply.

502.05 SURFACE PREPARATION. The surface to be covered shall be approved prior to placing mixtures. The contractor shall maintain the surface until it is covered.

(a) Cleaning: The surface to be covered shall be swept clean of dust, dirt, caked clay, caked material and loose material by revolving brooms or other mechanical sweepers supplemented with hand equipment as directed. When mixtures are to be placed on portland cement concrete pavement or overlaid portland cement concrete, the contractor shall remove excess joint filler from the surface by an approved burning method. The contractor shall remove any existing raised pavement markers prior to asphaltic concrete overlay operations.

When brooming does not adequately clean the surface, the contractor shall wash the surface with water in addition to brooming to clean the surface.

When liquid asphalt is exposed to traffic for more than 2 calendar days, becomes contaminated, or degrades due to inclement weather, the liquid asphalt shall be reapplied at the initial recommended rate at no direct pay.

(b) Applying Liquid Asphalt Materials:

(1) Existing Pavement Surfaces: Before constructing each course, an approved asphalt tack coat shall be applied in accordance with Section 504. The contractor shall protect the tack coat and spot patch as required.

(2) Raw Aggregate Base Course and Raw Embankment Surfaces: The contractor shall apply an approved asphalt prime coat to unprimed surfaces, or protect in place prime coat and spot patch as required with asphalt prime coat, in accordance with Section 505.

(3) Cement and Lime Stabilized or Treated Embankment and Base Course Surfaces: The contractor shall apply an approved asphalt curing membrane when none is in place, or protect the in place curing membrane and spot patch, as required, with asphalt material in accordance with Section 506.

(4) Other Surfaces: Contact surfaces of curbs, gutters, manholes, edges of longitudinal and transverse joints, and other structures shall be covered with a uniform coating of an approved asphalt tack coat complying with Section 504 before placing asphaltic mixtures.

502.06 JOINT CONSTRUCTION.

(a) Longitudinal Joints: Longitudinal joints shall be constructed by setting the screed to allow approximately 25 percent fluff and also overlapping the paver approximately 2 inches (50 mm) onto the adjacent pass. Prior to rolling, the overlapped mix shall be pushed back to the uncompacted side, without scattering loose material over the uncompacted mat, to form a vertical edge above the joint. The vertical edge shall then be compacted by rolling to form a smooth, sealed joint. Longitudinal joints in one layer shall offset those in the layer below by a minimum of 3 inches (75 mm); however, the joint in the top layer shall be offset 3 inches (75 mm) to 6 inches (150 mm) from the centerline of pavement when the roadway comprises two lanes of width, or offset 3 inches (75 mm) to 6 inches (150 mm) from lane lines when the roadway is more than two lanes. The narrow strip shall be constructed first.

Where adjacent paving strips are to be placed, the longitudinal edge joint of the existing strip shall be tacked.

(b) Transverse Joints: Transverse joints shall be butt joints formed by cutting back on the previously placed mixture to expose the full depth of the lift. An approved 10 foot (3.0 m) static straightedge shall be used to identify the location at which the previously placed mixture is to be cut back to maintain no greater than a 1/8 inch (3 mm) deviation in grade. The cut face of the previously placed mat shall be lightly tacked before fresh material is placed. The screed shall rest on shims that are approximately 25 percent of plan thickness placed on the compacted mat. Transverse joints shall be formed by an adequate crew. Transverse joints shall be checked by the engineer for surface tolerance using a stringline extended from a point 10 feet (3 m) before the joint to a point approximately 40 feet (12 m) beyond the joint. Any deviation in grade from the stringline in excess of 3/16 inch (5 mm) for roadway wearing courses and 1/4 inch (6 mm) for other courses shall be immediately corrected prior to the paving operation continuing beyond 100 feet (30 m) of the transverse joint. Additionally, the transverse joint shall meet the surface tolerance requirements of Table 502-3. The contractor shall make necessary corrections to the joint before continuing placement operations.

Transverse joints in succeeding lifts shall be offset at least 3 feet (1.0 m).

502.07 HAULING, PAVING AND FINISHING. Mixtures shall be transported from the plant and delivered to the paver at a temperature no cooler than 25°F (14°C) below the lower limit of

the approved job mix formula. The temperature of the mix going through the paver shall not be cooler than 250°F (120°C).

No loads shall be sent out so late in the day that completion of spreading and compaction of the mixture cannot be completed during daylight, unless artificial lighting has been approved.

When segregation occurs, haul trucks shall be loaded with a minimum of three drops of mix, the last of which shall be in the middle.

Each course of asphaltic mixture shall be placed in accordance with the specified lift thickness. When no lift thickness is specified, or when substitute mixtures are utilized as specified in Subsection 502.01, mixtures shall be placed in accordance with Table 502-4.

With the engineer's approval, motor patrols may be used to fill isolated depressions in the initial layer, provided this construction does not result in unsatisfactory subsequent lifts.

(a) Coordination of Production: The contractor shall coordinate and manage plant production, transportation of mix and placement operations to achieve a high quality pavement and shall have sufficient hauling vehicles to ensure continuous plant and roadway operations. The engineer will order a halt to operations when sufficient hauling vehicles are not available.

On final wearing course construction under traffic with pavement layers of 2 inches (50 mm) compacted thickness or less, the contractor will be permitted to pave one travel lane for a full day. The contractor shall pave the adjacent travel lane the next work day. When the adjacent travel lane is not paved the next calendar day and the longitudinal joint is exposed to traffic for more than 3 calendar days, and it has been determined that the subsequent roadway edge is not true to line and grade as previously constructed, the entire length of exposed longitudinal joint shall be cut back to plan thickness to a vertical edge and heavily tacked. When pavement layers are greater than 2 inches (50 mm) compacted thickness, the contractor shall place approximately 1/2 of each day's production in one lane and the remainder in the adjacent lane.

Pavement shall be protected from traffic until it has sufficiently hardened to the extent the surface is not damaged.

(b) Paving Operations: When placing the final two lifts of asphaltic concrete on the roadway travel lanes, a material transfer vehicle (MTV), as described in Subsection 503.10, will be required to deliver mixtures from the hauling equipment to the paving equipment, and to prevent segregation of the asphaltic concrete hot mix. The MTV is required regardless of ADT. All mixtures shall flow through the paver hopper. Mixtures dropped in front of the paver shall be either lifted into the hopper or rejected and cast aside. Delivery of material to the paver shall be at a uniform rate and in an amount within the capacity of paving and compacting equipment. The paver speed and number of trucks shall be adjusted to have one truck waiting in addition to the one at the paver in order to maintain continuous paving operations. The height of material in front of the screed shall remain uniform.

During mixture transfer, the paver shall not be jarred or moved out of alignment. The level of mix in the paver hopper shall not drop so low as to expose the hopper feed slats.

Pavers shall be designed and operated to place mixtures to required line, grade and surface tolerance without resorting to hand finishing.

Longitudinal joints and edges shall be constructed along lines established. Stringlines or other forms of longitudinal control shall be placed by the contractor for the paver to follow. The paver shall be positioned and operated to closely follow the established line. Irregularities in alignment shall be corrected by trimming or filling directly behind the paver.

After each load of material has been placed, the texture of the unrolled surface shall be checked to determine its uniformity. The adjustment of screed, tamping bars, feed screws, hopper feed, etc., shall be checked frequently and adjusted as required to assure uniform spreading of the mix to proper line and grade and adequate compaction. When segregation of materials or other deficiencies occur, paving operations shall be suspended until the cause is determined and corrected.

Surface irregularities shall be corrected directly behind the paver. Excess material forming high spots shall be removed. Indented areas shall be filled and finished smooth. Hand placement in accordance with Heading (c) for surface repair will be permitted. Material shall not be cast over the surface.

When paving and finishing operations are interrupted so that the mixture remaining in trucks, paver, paver hopper or on the pavement cools to such extent that it cannot be placed, finished or compacted to the same degree of smoothness and with the same texture and density as the uncooled mixture, the cooled mixture shall be removed and replaced at no direct pay.

When additional mix is required to increase superelevation in curves, the use of automatic slope control will be optional with the contractor.

The traveling reference plane method of construction will be required for airport runways unless designated otherwise on the plans. Pavers for roadway travel lanes shall be equipped with automatic screed and slope control devices used with an erected stringline, unless the contractor elects to use an approved automated base course grading machine. If the automated base course grading machine is used with an erected stringline, an approved traveling reference plane shall be used with the paver.

The following requirements shall apply for mechanical pavers:

(1) Traveling Reference Plane: An approved traveling reference plane shall be used. After the initial paving strip of each lift is finished and compacted, adjacent paving strips shall be placed to the grade of the initial paving strip using the traveling reference plane or shoe device to control grade and a slope control device to control cross slope.

On multilane pavements, the initial paving strip and the sequence of lane construction will be subject to approval.

When both outside edges of the paving strip being placed are flush with previously placed material, the slope control device shall not be used. A grade sensor is required for each side of the paver.

In superelevated curves, the cross slope shall be changed from that specified for tangents to that specified for superelevation in gradual increments while the paver is in motion so a smooth transition in grade is obtained. This change in cross slope shall be accomplished within the transition distance specified.

This is the minimum acceptable method and the contractor must meet or exceed current surface tolerance specifications.

(2) Erected Stringline: An erected stringline shall consist of a piano wire or approved equal stretched between stakes set at no greater than 25 foot (7.5 m) intervals tensioned between supports so that there is less than 1/8 inch (3 mm) variance between supports when the sensor is in place. The stringline elevation will be verified by the Department using standard surveying practices.

The initial paving strip of the first lift shall be constructed using an erected stringline referenced to established grade. When permitted, mixtures required to level isolated depressions may be placed without automatic screed control. Subsequent lifts may be constructed by use of the traveling reference plane, provided surface and grade tolerances are met on the previous lift.

Only one grade sensor and the slope control device are necessary for roadways with a normal crown on tangent alignment. Superelevated curves will require the use of two grade sensors and two erected stringlines to obtain proper grade and slope; however, when the automatic screed control device is equipped with a dial or other device which can be conveniently used to change the cross slope in small increments, superelevated curves may be constructed using this device and one erected stringline.

After the initial paving strip of the first lift is finished and compacted, adjacent paving strips shall be laid using an approved traveling reference plane.

(3) Without Automatic Screed Control: When permitted, pavers without automatic screed control may be used for pavement patching, pavement widening, paved drives and turnouts.

(c) Hand Placement: When the use of mechanical finishing equipment is not practical, the mix may be placed and finished by hand to the satisfaction of the engineer. No casting will be allowed including casting the mixture from the truck to the grade. During paving operations material shall be thoroughly loosened and uniformly distributed. Material that has formed into lumps and does not break down readily will be rejected. The surface shall be checked before rolling and irregularities corrected.

502.08 COMPACTION.

(a) General: After placement, mixtures shall be uniformly compacted, by rolling while still hot, to at least the density specified in Table 502-3. If continuous roller operation is discontinued, rollers shall be removed to cooler areas of the mat, where they will not leave surface indentations. The use of steel wheel rollers which result in excessive crushing of aggregate will not be permitted.

The rolling pattern established by the contractor shall be conducted by experienced operators in consistent sequences and by uniform methods that will obtain specified density and smoothness. Individual roller passes shall uniformly overlap preceding passes to ensure complete coverage of the paving area. The speed and operation of rollers shall not displace, tear or crack the mat. Nonvibrating steel wheel rollers shall be operated with drive wheels toward the paver. Any operations causing displacement, tearing or cracking of the mat shall be immediately corrected.

Equipment which leaves tracks or indented areas which cannot be corrected in normal operations or fails to produce a satisfactory surface shall not be used. Operation of equipment

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resulting in accumulation of material and subsequent shedding of accumulated material into the mixture or onto the mat will not be permitted.

To prevent adhesion of mixture, wheels of steel wheel rollers shall be kept properly moistened, but excess water will not be permitted.

Pneumatic tire rollers shall be operated so that tires will retain adequate heat to prevent mix from adhering to tires. The pneumatic tire roller shall be operated at a contact pressure which will result in a uniform, tightly knit surface. The pneumatic tire roller shall be kept approximately 6 inches (150 mm) from unsupported edges of the paving strip; however, when an adjacent paving strip is down, the roller shall overlap the adjacent paving strip approximately 6 inches (150 mm).

Vibratory rollers may be used provided they do not impair the stability of the pavement structure or underlying layers. Vibratory rollers shall not be used on the first lift of asphaltic concrete placed over the asphalt treated drainage blanket. When mix is placed on newly constructed cement or lime stabilized or treated layers, vibratory rollers shall not be used for at least 7 days after such stabilization or treatment.

It is the responsibility of the contractor to determine the number, size, and type of rollers to sufficiently compact the mixture to the specified density and surface smoothness. The rolling equipment shall be capable of maintaining the pace of the paver and shall conform to Subsection 503.06.

The surface of mixtures after compaction shall be smooth and true to cross slope and grade within the tolerances specified. Mixtures that become loose, broken, contaminated or otherwise defective shall be removed and replaced with fresh hot mixture compacted to conform with the surrounding mixture.

Excessive rippling of the mat surface will not be accepted. Ripples are small bumps in the pavement surface which usually appear in groups in a frequent and regular manner. There shall be no more than 12 ripples or peaks in any 100-foot (30 m) section. Rippling indicates a problem with the paving operation or mix that requires immediate corrective action by the contractor; otherwise operations shall cease. Unacceptable areas shall be corrected at no direct pay.

(b) Rolling: After rolling, newly finished pavements shall have a uniform, tightly knit surface free of cracks, tears, roller marks or other deficiencies. Deficiencies shall be corrected at no direct pay and the contractor shall adjust operations to correct the problem. This may require the contractor to adjust the mix or furnish additional or different equipment.

(c) Hand Compaction: Along forms, curbs, headers, walls and at other places inaccessible to rollers, mixture shall be uniformly compacted to the satisfaction of the engineer with approved hand tampers or mechanical tampers, conforming to Subsection 503.07.

502.09 PAVEMENT SAMPLES. Samples shall be cores approximately 4 inches (100 mm) or 6 inches (150 mm) in diameter taken by an approved core drill. The contractor shall furnish samples cut from the completed work. The removed pavement shall be replaced with hot or cold mixture and refinished during the work day coring is performed. No additional compensation will be allowed for furnishing test samples and replacing the areas with new pavement. Samples shall be taken by the contractor in the presence of the engineer's representative from areas

selected by the Department in accordance with Subsection 502.12(c)(3). When the design thickness is greater than 1.75 inches (45 mm), cores less than 1 3/8 inches (35 mm) thick shall not be used as pavement samples for payment determination.

Cores shall be transported to the plant in approved styrofoam transport containers or one gallon (4 L) friction top cans. Regardless of transport container used, the container will be sealed, signed, and dated by the inspector using an approved method. The individually wrapped core will also be sealed, signed, and dated by the inspector using an approved method. Any evidence of tampering with the core wrappings, sticker, or of opening the container or friction top can will result in the cores being rejected. Additional pavement samples will be required.

502.10 SURFACE TOLERANCE REQUIREMENTS.

(a) General: This subsection outlines the method of measuring surface tolerance and the acceptance limits for quality control and assurance, including corrective actions and/or payment adjustments for asphaltic concrete surface tolerance. Longitudinal surface profile shall be measured in inches per mile (mm per km) in accordance with DOTD TR 644 and reported as the International Roughness Index (IRI), as defined in the National Cooperative Highway Research Program (NCHRP) Report No. 228 and World Bank Technical Paper No. 46.

Control of transverse, cross slope and grade shall be measured in inches (millimeters) using an approved 10-foot (3.0 m) metal static straightedge. For shoulders, turnouts, crossovers, detour roads, parking areas and roadway sections less than 500 feet (150 mm) in length, the wearing course shall be tested and the surface deviations shall not exceed 1/2 inch (15 mm). Areas with surface deviations in excess of 1/2 inch (15 mm) shall be isolated and corrected by the contractor in accordance with Heading (e).

The contractor shall furnish an inertial profiler to measure both wheelpaths simultaneously with laser or infrared height sensing equipment. The contractor shall also furnish an approved 10 foot (3.0 m) metal static straightedge for transverse acceptance testing.

Surface tolerance testing will be required on wearing and binder courses for roadway travel lanes. It will be required on the wearing course only for shoulders, parking areas and airport runways and taxiways. For surface tolerance purposes, the wearing course is defined as the final lift placed. The binder course is defined as the last lift placed prior to the final lift.

Other lifts on which additional asphaltic concrete is to be placed shall be finished so that succeeding courses will meet the requirements of this subsection. Base courses on which portland cement concrete pavement is to be placed shall be finished so that the portland cement concrete pavement will meet the requirements of Section 601.

(b) Equipment: Inertial profilers shall be capable of testing the finished surface in the longitudinal direction for conformance to the surface tolerance requirements listed in this subsection.

The Department will evaluate and verify the accuracy of the inertial profiler annually using static and dynamic tests in accordance with DOTD TR 644. Approved profilers will have a DOTD decal indicating the date of profiler verification and profiler system parameter settings. These settings shall be verified by the inspector before the first day of binder course paving and randomly thereafter.

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For each project, a Department representative will observe the daily set up procedure and pre-operation tests which are performed by the contractor in accordance with the manufacturer's procedures and DOTD TR 644. A copy of the manufacturer's setup procedure, pre-operation procedures, and operating procedure for measuring surface tolerance shall be available at all times during measurement.

(c) Transverse, Cross Slope and Grade:

(1) Transverse Surface Tolerance: The contractor shall control the transverse surface finish. The Department will test the surface of the binder and wearing courses at selected locations in the transverse direction for conformance to the surface tolerance requirements of Table 502-3, which shall not be exceeded. The contractor shall make corrections as directed in accordance with Heading (e) "Correction of Deficient Areas."

(2) Cross Slope: When the plans require the section to be constructed to a specified cross slope, the contractor shall take measurements at selected locations, using a stringline, slope board or other comparable method. The contractor shall control the cross slope so that the values shown in Table 502-3 are not exceeded. Cross slope variations allowed in Table 502-3 shall apply to each lane constructed.

(3) Grade: When the plans require the pavement to be constructed to a grade, the contractor shall perform tests for conformance at selected locations, using a stringline or other comparable method. The contractor shall control grade variations so that the tolerances shown in Table 502-3 are not exceeded. Grade tolerances shall apply to only one longitudinal line, such as the centerline or outside edge of pavement. The contractor shall make corrections in accordance with Heading (e) of this subsection.

(d) Longitudinal Surface Tolerance:

(1) Quality Assurance:

a. Contractor Responsibilities: The contractor shall report an average IRI number in inches per mile (mm per km) and shall measure and report the average IRI value for each wheelpath on every 0.05-mile (0.08 km) segment of highway. The IRI values for the inside and outside wheelpaths shall be averaged and reported as the segment average and the mean of each segment average shall be reported as the subplot average. The contractor shall measure the top two lifts of the roadway travel lanes. Final acceptance will be based on the last measurement taken on the final wearing course of the travel lanes (the top or last lift placed). Measurement of the center two lanes will be required for airports.

b. Reporting: The average subplot values and individual IRI values shall conform to the requirements listed in Tables 502-7A and 502-7B. The contractor shall provide the engineer a copy of the IRI report. The contractor shall test the pavement during the first work day following placement, but in no case any later than 7 calendar days. The measurement of "short" segments, less than 264 feet (80 m) in length, shall be included in adjacent sublots. Isolated rough areas will not be allowed. Any 0.05-mile (0.08 km) segment and all individual wheelpath measurements of the binder and wearing courses shall meet the requirements of Table 502-7B. The contractor shall make corrections in accordance with Subsection 502.10(e). A DOTD inspector will be present for the final test run and will immediately receive a copy of the results.

(2) Acceptance: The Department will review each subplot report provided by the contractor. Acceptance of each subplot will be in accordance with Tables 502-7A and 502-7B, based on the IRI profile report provided by the contractor. The Department may elect to perform and utilize independent ride quality test results for acceptance at any time.

(e) Correction of Deficient Areas: The contractor shall correct areas not meeting Table 502-7B requirements for individual wheelpath measurements in a 0.05-mile (0.08 km) segment.

(1) Deficiencies in Wearing Course: The contractor shall correct deficiencies in the final wearing course by diamond grinding and applying a light tack coat, removing and replacing, or furnishing and placing a supplemental layer of wearing course mixture at least 1 1/2 inches (40 mm) compacted thickness for the full width of the roadway meeting specification requirements at no direct pay. If the supplemental layer does not meet specification requirements to the satisfaction of the engineer, the contractor shall remove and replace or correct it by other methods approved by the engineer.

(2) Deficiencies in Binder Courses: The contractor shall correct deficiencies in binder course, transverse, cross slope, and grade measurements to meet specification requirements at no direct pay. Corrections shall be made before subsequent courses are constructed.

(3) Deficiencies in Shoulder Transverse, Cross Slope and Grade: The contractor shall correct deficiencies in these areas by grinding at the project engineer's direction.

(f) Exceptions and Exclusions:

(1) Excluded Areas: The Department will review the profile report obtained for each binder and wearing course on a subplot basis. In special cases or extenuating circumstances, the engineer may isolate or exclude sections of the profile. These special cases or extenuating circumstances may be curb and gutter sections that require the adjustment of cross-slope in order to maintain adequate drainage, manholes, catch basins, valve and junction boxes, street intersections, or other structures located in the roadway which cause abrupt deviations in the profile. This specification exclusion will not be used to simply isolate sections of road that are in poor condition when the project is let.

(2) Areas Outside Travel Lanes: Ramps less than 1500 feet (460 m), tapers, shoulders and medians, or sections of pavement surfaces as directed by the engineer such as 300 feet (90 m) from bridge ends, will not be included in the ride quality index for payment purposes, but shall have a maximum IRI average of 110 or less in a subplot.

502.11 DIMENSIONAL REQUIREMENTS. Mixtures that are specified for payment on a cubic yard (cu m) or square yard (sq m) basis shall conform to the following dimensional requirements. Overthickness and overwidth will be waived at no direct pay.

(a) Thickness: Thickness of mixtures will be determined in accordance with DOTD TR 602. Underthickness shall not exceed 1/4 inch (6 mm).

When grade adjustments are permitted for all mixtures except the final wearing course, areas with underthickness in excess of 1/4 inch (6 mm) shall be corrected to plan thickness at no direct pay by furnishing and placing additional mixture in accordance with Subsection 502.10(e). For the final wearing course, areas with underthickness in excess of the 1/4 inch (6 mm) shall be

corrected to plan thickness at no direct pay by furnishing and placing a supplemental layer of wearing course mixture meeting specification requirements in accordance with Subsection 502.10(e) over the entire area for the full width of the roadway when grade adjustments are permitted.

When grade adjustments do not permit, the deficient underthickness area shall be removed and replaced at no direct pay.

(b) Width: The width of completed courses will be determined in accordance with DOTD TR 602. Underwidths shall be corrected by furnishing and placing additional mixture to a minimum width of 1 foot (0.3 m) and plan thickness at no direct pay.

502.12 QUALITY CONTROL AND ACCEPTANCE.

(a) Quality Control Requirements: For quality control purposes, the contractor shall obtain a minimum of two (2) samples of mixture from each subplot using a stratified random sampling approach. Test results for theoretical maximum specific gravity (G_{mm}) and measured bulk specific gravity (G_{mb}) at N_{max} and percent G_{mm} at $N_{initial}$, on samples of each subplot shall be reported. Control charts may be requested by the engineer if mixture problems develop. Quality control gyratory samples may be aged or unaged at the contractor's option, but the method chosen shall be used consistently throughout the project. If aged samples are used, report the measured G_{mb} @ N_{max} . If unaged samples are used, report the estimated G_{mb} @ N_{max} . One loose mix sample shall be taken from each subplot after placement of the mix in the truck. The mix shall be tested by the contractor at the plant for aggregate gradation, asphalt content and percent crushed aggregate. The mix shall be tested in accordance with DOTD TR 309, TR 323 and TR 306. The lot average and standard deviation shall be determined for aggregate gradation and asphalt content. The percent within limits (PWL) shall be determined on the Nos. 8 and 200 (2.36 mm and 75 μ m) sieves and for G_{mm} . Corrective action shall be taken if these parameters fall below 90 PWL. For each lot, the contractor shall report all quality control data to the DOTD Certified Plant Technician. The full range of gradation mix tolerances will be allowed even if they fall outside the control points. The percent moisture in loose mix shall be reported once per lot. The District Laboratory Engineer may require re-validation of the mix when the average of the Quality Control data indicates non-compliance with the specified limits or tolerances.

(b) Acceptance Requirements: All Department inspection procedures, including sampling and testing, form the basis for acceptance of the asphaltic concrete. Any section of pavement that is obviously deficient shall be satisfactorily corrected or replaced. Sampling and testing shall be accomplished following a stratified sampling plan in accordance with the Materials Sampling Manual and specified test procedures. Times and locations shall be established by the engineer.

Acceptance testing for air voids will be conducted on the total lot quantity. Acceptance testing for pavement density, surface tolerance and dimensional tolerances will be conducted on that portion of the lot placed on each contract.

Pavement density and surface tolerance requirements will not be applied for short irregular sections, such as drives, aprons and turnouts; however, hot mix shall be placed to provide a neat, uniform appearance and shall be compacted by satisfactory methods. If placed in a separate lot, mixtures used for shoulders which are less than 10 feet (3.0 m) wide, curbs,

driveways, turnouts, crossovers, joint repair, leveling, guardrail widening, islands, bike paths, patching, widening, and miscellaneous handwork will be paid in accordance with Section 502.12(c) and Table 502-8 as a small quantity lot. If placed at the same time and in the same lot as roadway travel lanes, then these items will be considered incidental to the roadway work and will be included in the roadway pay.

Shoulders that are 10 feet (3.0 m) wide or greater shall be placed in a lot separate from the roadway travel lanes and will be paid in accordance with Tables 502-4 and 502-6.

A standard lot is 5,000 tons (5000 Mg), of consecutive production of asphaltic concrete mix from the same job mix formula produced for the Department at an individual plant. A standard subplot is 1,000 tons (1000 Mg). Additional adjustments may be made to the standard lot size as specified in this subsection. The final subplot, at the end of a project lot, may be increased up to 150 percent to accommodate hauling unit capacity.

With good historical performance, and when agreed upon by the engineer and contractor, the subplot size may be increased to 2000 tons (2000 Mg). Twenty-four hour per day plant production usually necessitates such an increase.

(c) Small Quantity Lots: The engineer or contractor may decrease the size of an individual lot for any of the following conditions:

- (1) The interval between continuous production exceeds 2 days.
- (2) A new job mix formula is accepted.
- (3) The final lot is less than 5,000 tons (5000 Mg).
- (4) The total project quantity is less than 5000 tons (5000 Mg).

Only standard 1000 ton (1000 Mg) sublots will be allowed when determining pay for small quantity lots. For lots with less than 3000 tons (3000 Mg) of mix, each subplot will be paid individually in accordance with Table 502-8. For lots with 3 or 4 sublots, PWL calculations will be required in accordance with Table 502-6.

For projects, or separate locations within a project, requiring less than 250 tons (250 Mg), the job mix formula, materials, and plant and paving operations shall be satisfactory to the engineer. Sampling and testing requirements may be modified by the engineer and the payment adjustment for deviations waived.

(d) Inspection: Hot mix exhibiting deficiencies before placement such as segregation, contamination, lumps, nonuniform coating, excessive temperature variations or other deficiencies, apparent on visual inspection, shall not be placed.

Hot mix exhibiting deficiencies during placement, such as segregation, contamination, alignment deviations, variations in surface texture and appearance or other deficiencies, apparent on visual inspection, will not be accepted. Poor construction practices such as handwork, improper truck exchanges, improper joint construction, or other deficiencies, apparent on visual inspection, will not be accepted.

Deficiencies revealed by visual inspection after placement and before final acceptance shall be corrected at no direct pay.

(e) Sampling and Testing for Acceptance: The Department will take samples or perform tests as outlined in these specifications, to ensure that the asphaltic concrete conforms to Department standards, which include job mix limits, typical sections, material properties, and

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surface deviations. Plant acceptance tests will be performed for VFA and air voids in the specimen compacted to N_{design} to determine the acceptability of the asphaltic concrete at the plant unless directed otherwise by the engineer. If the average VFA for 5 samples is outside the specifications limits, satisfactory adjustments must be made or production shall be discontinued. The plant acceptance tests for air voids shall be subject to payment adjustments and sampling and testing in accordance with the requirements of Heading (f) below.

(f) Payment Adjustments: When the mix does not meet requirements in the areas listed in this section, the Payment Adjustment Schedule shown in Tables 502-6, 502-7 or 502-8 will be applied. Production of mix that is not eligible for 100 percent payment will not be allowed on a continuous basis. When test results demonstrate that payment adjustments are necessary, satisfactory adjustments shall be made, or production shall be discontinued.

The Department will pay the contractor at an adjusted rate as specified in Tables 502-6 or 502-8 for tests conducted by the Department on samples obtained from each lot of material, in accordance with the following Headings.

(1) Volumetric Properties: Testing for percent air voids will be conducted by the Department. Test results of mixture specimens compacted to N_{design} shall comply with Table 502-4 when tested in accordance with AASHTO TP 4 and DOTD TR 304. One sample will be taken from each of five (5) sublots. The data will be used to determine if the lot is outside acceptance limits shown in Table 502-4. If the lot is outside the acceptance limits, an adjustment in unit price for the lot will be made in accordance with Tables 502-6 or 502-8.

(2) Pavement Density: Acceptance testing for pavement density will be conducted by the Department. Three pavement samples for each mix use shall be obtained from each subplot within 24 hours after placement. Sampling shall be performed using the random number tables shown in DOTD S605. When this falls on a day the contractor is not working, sampling shall be done within 3 calendar days. The density requirement for each lot will be as shown in Table 502-3 determined in accordance with DOTD TR 304. Payment will be made in accordance with Table 502-6 using the total number of cores for the lot in accordance with Subsection 502.12(g). Payment for small quantity lots will be made in accordance with Table 502-8.

When the sampling location determined by random sampling falls within areas that are to be replaced or within 1 foot (0.3 m) of the unsupported pavement edge, another random sampling location will be used.

(g) Quality Level Analysis: The Quality Level Analysis is a statistical quality control/quality acceptance (QC/QA) method for validating Job Mix Formulas (JMF), contractors quality control, project acceptance and payment for all Superpave asphaltic concrete.

The mean (\bar{X}) is the average of a set of numbers. To determine the mean add the numbers (X_i) in the set and divide by the number of numbers (n) in the set.

$$\text{Mean} = \bar{X} = \frac{X_1 + X_2 + X_3 + \dots + X_n}{n} = \frac{\sum_{i=1}^n X_i}{n}$$

The standard deviation of a set of numbers measures the spread of the numbers in the set or the deviation from the mean. Calculate the standard deviation according to the following formula:

$$\begin{aligned} \text{Standard Deviation} = s &= \sqrt{\frac{(X_1 - \bar{X})^2 + (X_2 - \bar{X})^2 + \dots + (X_n - \bar{X})^2}{n - 1}} \\ &= \sqrt{\frac{\sum_{i=1}^n (X_i - \bar{X})^2}{n - 1}} \end{aligned}$$

A Quality Index is calculated using both the upper and lower specification limits (if applicable). The Quality Index calculated using the upper or higher specification limit is called the Upper Quality Index (Q_U). The Quality Index calculated using the lower specification limit is called the Lower Quality Index (Q_L).

To determine each Quality Index, the specification limits are added or subtracted from the mean of the test results and the result is divided by the standard deviation as shown below.

$$\text{Upper Quality Index} = Q_U = \frac{USL - \bar{X}}{s} \quad \text{Lower Quality Index} = Q_L = \frac{\bar{X} - LSL}{s}$$

Where: USL = upper specification limit
 LSL = lower specification limit

Table 502-5 is used to convert the Quality Index into the PWL value. A PWL is calculated for each Quality Index (upper and lower) and combined for a total PWL calculated in accordance with the formula:

$$PWL = PWL_L + PWL_U - 100$$

where: PWL_L = lower percent within limits
 PWL_U = upper percent within limits

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In using Table 502-5, the appropriate columns corresponding to the number of test results must be used.

If a specification requirement does not have both an upper and lower limit only one Quality Index and PWL, upper or lower as appropriate, is calculated and the other PWL is equal to 100 in the total PWL calculation.

502.13 MEASUREMENT. Asphalt tack coat, prime coat or curing membrane will not be measured for payment.

(a) Weight Measurement: Asphaltic concrete will be measured by the ton of 2,000 pounds (Mg (1000 kg)) from printed weights as provided in Section 503. Stamped printer tickets will be issued for each truckload of material delivered. Material lost, wasted, rejected or applied contrary to specifications will not be measured for payment.

Estimated quantities of asphaltic concrete shown on the plans are based on 115 lb/sq yd/inch (2.46 kg/sq m/mm) thickness. The measured quantity of asphaltic mixtures will be multiplied by the following adjustment factor to obtain the pay quantity.

Theoretical Maximum Specific Gravity, (G_{mm}) (DOTD TR 327)	Adjustment Factor
2.340 - 2.360	1.02
2.361 - 2.399	1.01
2.400 - 2.540	1.00
2.541 - 2.570	0.99
2.571 - 2.590	0.98

The adjustment factor for mixtures with theoretical maximum specific gravities less than 2.340 or more than 2.590 will be determined by the following formulas:

Theoretical maximum specific gravity less than 2.340:

$$F = \frac{2.400}{S}$$

Theoretical maximum specific gravity more than 2.590:

$$F = \frac{2.540}{S}$$

where,

F = quantity adjustment factor

S = theoretical maximum specific gravity of mixture from approved job mix formula

(b) Volume or Area Measurement: The quantities for payment will be the design quantities specified in the plans and adjustments thereto. Design quantities will be adjusted when the engineer makes changes to adjust to field conditions or when design changes are

necessary. Design quantities are based on the horizontal dimensions and compacted thickness of the completed course shown on the plans.

(c) Surface Tolerance Incentive Measurement: At the completion of construction of the wearing course travel lanes, the contractor, in the presence of a DOTD representative, shall measure a continuous profile from the start station to the end station of the construction project for the purpose of determining qualification for incentive pay under Subsection 502.14(e). Bridges and 300 feet (90 m) on each end of the bridge will be excluded from measurements for surface tolerance incentive pay.

502.14 PAYMENT. Payment for asphaltic concrete will be made at the contract unit price on a lot basis. When the mix does not conform to acceptance requirements, payment will be made at an adjusted price per unit of measurement in accordance with Subsection 502.12(f) and Tables 502-6 and 502-8 for both plant and roadway acceptance.

(a) General: Payment for asphaltic concrete will include furnishing all required materials, producing the mixtures, preparing the surfaces on which the mixtures are placed, hauling the mixtures to the work site, and placing and compacting the mixtures.

(b) Wearing Course Mixes: For wearing course travel lanes, adjustments in contract price for plant and roadway deficiencies or incentives will be based on the average of the percent payments for plant air voids, roadway density, and surface tolerance. For all other wearing course applications, payment adjustment will be based on the average of the percent payments for plant air voids and roadway density.

(c) Base, Binder and Shoulder Mixes: For base and binder courses for travel lanes and all shoulder mixes, adjustments in contract price for plant and roadway deficiencies or incentives will be based on the average of the percent payments for plant air voids and roadway density.

Final adjustments in unit price will be as described in Tables 502-6 and 502-8.

(d) Erected Stringline: When the use of an erected stringline is not specified, but directed by the engineer, an additional payment of \$500 per contract plus \$0.25 per linear foot (\$0.75 per lin m) will be made for mixtures placed by the erected stringline method. When the use of an erected stringline is specified, no additional payment will be made.

(e) Incentive Pay: A surface tolerance incentive payment equal to 5 percent of the contract unit price for the theoretical travel lane quantity of the wearing course item will be paid if the contractor achieves a project average IRI of 45 or less as measured at the completion of the project. No lot of wearing course on the project shall be less than 100 percent for surface tolerance. Only projects that have no areas of grinding are eligible for incentive pay.

Payment will be made under:

Item No.	Pay Item	Pay Unit
502-01	Superpave Asphaltic Concrete	Ton (Mg)
502-02	Superpave Asphaltic Concrete	Cubic Yard (Cu m)
502-03	Superpave Asphaltic Concrete, (in (mm) Thick)	Square Yard (Sq m)

Table 502-3
Superpave Requirements

A. REQUIREMENTS FOR EXTRACTED ASPHALT CEMENT AND AGGREGATE GRADATION					
U.S. (Metric) Sieve % Passing	1/2 inch (12.5 mm) Nominal	3/4 inch (19 mm) Nominal	1 inch (25 mm) Nominal	1.5 inch (37.5 mm) Nominal	Mix Tolerance ¹
2 inch (50 mm)	---	---	---	100	±4
1 1/2 inch (37.5 mm)	---	---	100	90-100	±4
1 inch (25 mm)	---	100	90-100	89 Max.	±4
3/4 inch (19 mm)	100	90-100	89 Max	---	±4
1/2 inch (12.5 mm)	90-100	89 Max	---	---	±4
3/8 inch (9.5 mm)	89 Max.	---	---	---	±4
No. 4 (4.75 mm)	---	---	---	---	±4
No. 8 (2.36 mm)	34-58	29-49	23-45	19-41	±3
No. 16 (1.18 mm)	---	---	---	---	±2
No. 30 (600 µm)	---	---	---	---	±2
No. 50 (300 µm)	---	---	---	---	±2
No 100 (150 µm)	---	---	---	---	±2
No. 200 (75 µm)	4.0-10.0	3.0-8.0	2.0-7.0	1.0-6.0	±0.7
Extracted Asphalt, %	---	---	---	---	±0.2
Mix Temperature	---	---	---	---	±25°F (±14°C)
B. PAVEMENT REQUIREMENTS					
Density, Min. 92.0 (% of Theoretical Maximum Specific Gravity, DOTD TR 327) Travel Lane Wearing, Binder and Base Courses					
Density, Min. 89.0 (% of Theoretical Maximum Specific Gravity, DOTD TR 327) Shoulders					
Surface Tolerance Variation, inches (mm) ²			Transverse ³	Cross Slope ³	Grade ⁴
Roadway Travel Lane Wearing Courses			1/8 (3)	3/8 (10)	1/2 (15)
Binder Courses			1/4 (6)	1/2 (15)	1/2 (15)
Shoulder Wearing Course			3/16 (5)	3/4 (20)	3/4 (20)

¹ Job Mix Formula based on validated mix design.

² For longitudinal surface tolerance requirements, see Subsection 502.10(d).

³ Based on 10 feet (3.0 mm).

⁴ Applicable only when grade is specified.

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Table 502-4
Superpave Design, Control and Acceptance Limits

Nominal Max., Size Agg.	0.5 inch ¹ (12.5 mm)	0.5 inch (12.5 mm)			0.75 inch (19 mm)			1.0 inch (25 mm)			1.5 inch (37.5 mm)		
Type of Mix	Incidental Paving	Wearing Course			Wearing or Binder Course			Binder or Base Course			Base Course		
Level ^{2,3} (10 ⁶ ESAL)	A <0.3	1 ⁴ <3	2 3-30	3 >30	1 ⁴ <3	2 3-30	3 >30	1 <3	2 3-30	3 >30	1 <3	2 3-30	3 >30
Asphalt Binder	Table 502-1												
Coarse Agg. Friction Rating ²	I,II,III	I,II,III			I,II,III			I,II,III,IV			I,II,III,IV		
Coarse Agg. Angularity, % Crushed, (Double Faced) + No. 4 (4.75 mm)	55	75	95	98	75	95	98	75	95	98	60	75	98
Fine Agg. Angularity, Min. % - No. 8 (2.36 mm)	40	40	45	45	40	45	45	40	45	45	40	40	45
Flat and Elongated Particles, % Max. (5:1)	10	10			10			10			10		
Sand Equivalent, Min. % (Fine Agg.) - No. 4 (4.75 mm)	40	40	45	50	40	45	50	40	45	50	40	45	50
Natural Sand - Max. %	NA	15			15			15			25		
RAP, Max. % ^{5,9}	15	15			15			20,30			30		
Compacted Mix Design													
VMA, Min. % ⁶	13	13			12			11			10		
Air Voids, % ^{6,10}	2.5-4.5	2.5-4.5			2.5-4.5			2.5-4.5			2.5-4.5		
VFA, % ⁶	68-78	68-78			68-78			68-78			68-78		
N _{initial} 89 % max. ⁷ (Gyrations)	7	7	8 ⁸	9	7	8 ⁸	9	7	8 ⁸	9	7	8 ⁸	9
N _{design} 96±1 % (Gyrations)	75	75	100 ⁸	125	75	100 ⁸	125	75	100 ⁸	125	75	100 ⁸	125
N _{max} 98 % max. (Gyrations)	115	115	160 ⁸	205	115	160 ⁸	205	115	160 ⁸	205	115	160 ⁸	205
Moisture Sensitivity, TSR Min.	80	80			80			80			80		
Dust/Effective Asphalt Ratio, %	0.6 - 1.6	0.6 - 1.6			0.6 - 1.6			0.6 - 1.6			0.6 - 1.6		
Lift Thickness, inch (mm)	1.0-2.0 (25-50)	1.5-2.0 (40-50)			1.5-2.0 (40-50)			2.0-4.0 ¹¹ (50-100)			4.0+ (100+)		

¹May be used for airports, joint repair, leveling, driveways, shoulders, curbs, guardrail widening, islands, bike paths, parking lots, turnouts, crossovers, detour roads, and other incidental items approved by the engineer.

²Mixtures designated as Level 1F, 2F, and 3F must meet the requirements for Level 1, 2, and 3 respectively. Additionally, Level 1F, 2F, and 3F must meet the friction rating requirements in Table 502-2 for travel lane wearing courses with ADT > 7000.

³Design ESALs are the anticipated project traffic level expected on the design lane over a 20 year design period. Regardless of the actual design life of the roadway, determine the design ESALs for 20 years and choose the appropriate N_{design} level.

⁴When Level 1 wearing course is specified, 1/2 inch (12.5 mm) nominal maximum size aggregate shall be used.

⁵Maximum 20 % Rap shall be allowed in all shoulder wearing course mixtures. RAP shall not be allowed for airports.

⁶Air voids, VMA and VFA are determined on samples compacted to N_{design}.

⁷For Level 1 mixtures, N_{initial} will be 90.5 % max. For Level A mixes, N_{initial} will be 91.5 % max.

⁸For 20 year ESAL counts from 3 to 10 million use 7, 75 and 115 gyrations for N_{initial}, N_{design} and N_{maximum} respectively.

⁹For 1.0 inch (25 mm) nominal maximum size aggregate the maximum percent RAP for binder course is 20 percent and the maximum percent RAP for base course is 30 percent.

¹⁰Air voids design target is 3.5%.

¹¹For 1.0 inch (25 mm) nominal maximum size aggregate the maximum lift thickness for base course is 4+ inches (100+ mm).

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Table 502-5
Quality Index Values for Estimating Percent Within Limits

PWL	n = 3	n = 4	n = 5 - 6	n = 7 - 9	n = 10 - 12	n = 13 - 15
99	1.16	1.47	1.68	1.89	2.04	2.14
98	1.15	1.44	1.61	1.77	1.86	1.93
97	1.15	1.41	1.55	1.67	1.74	1.80
96	1.15	1.38	1.49	1.59	1.64	1.69
95	1.14	1.35	1.45	1.52	1.56	1.59
94	1.13	1.32	1.40	1.46	1.49	1.51
93	1.12	1.29	1.36	1.40	1.43	1.44
92	1.11	1.26	1.31	1.35	1.37	1.38
91	1.10	1.23	1.27	1.30	1.32	1.32
90	1.09	1.20	1.23	1.25	1.26	1.27
89	1.08	1.17	1.20	1.21	1.21	1.22
88	1.07	1.14	1.16	1.17	1.17	1.17
87	1.06	1.11	1.12	1.12	1.13	1.13
86	1.05	1.08	1.08	1.08	1.08	1.08
85	1.03	1.05	1.05	1.05	1.04	1.04
84	1.02	1.02	1.02	1.01	1.00	1.00
83	1.00	0.99	0.98	0.97	0.96	0.96
82	0.98	0.96	0.95	0.94	0.93	0.92
81	0.96	0.93	0.92	0.90	0.89	0.89
80	0.94	0.90	0.88	0.87	0.85	0.85
79	0.92	0.87	0.85	0.83	0.82	0.82
78	0.89	0.84	0.82	0.80	0.79	0.78
77	0.87	0.81	0.79	0.77	0.76	0.75
76	0.84	0.78	0.76	0.74	0.72	0.72
75	0.82	0.75	0.73	0.71	0.69	0.69
74	0.79	0.72	0.70	0.67	0.66	0.66
73	0.77	0.69	0.67	0.64	0.63	0.62
72	0.74	0.66	0.64	0.61	0.60	0.59
71	0.71	0.63	0.60	0.58	0.57	0.56
70	0.68	0.60	0.58	0.55	0.54	0.54
69	0.65	0.57	0.55	0.53	0.51	0.51
68	0.62	0.54	0.52	0.50	0.48	0.48
67	0.59	0.51	0.49	0.47	0.46	0.45
66	0.56	0.48	0.46	0.44	0.43	0.42
65	0.53	0.45	0.43	0.41	0.40	0.40
64	0.49	0.42	0.40	0.38	0.37	0.37
63	0.46	0.39	0.37	0.35	0.35	0.34
62	0.43	0.36	0.34	0.33	0.32	0.31
61	0.39	0.33	0.31	0.30	0.30	0.29
60	0.36	0.30	0.28	0.27	0.26	0.26
59	0.32	0.27	0.25	0.24	0.24	0.23
58	0.29	0.24	0.23	0.21	0.21	0.21
57	0.25	0.21	0.20	0.19	0.18	0.18
56	0.22	0.18	0.17	0.16	0.16	0.15
55	0.18	0.15	0.14	0.13	0.13	0.13
54	0.14	0.12	0.11	0.11	0.10	0.10
53	0.11	0.09	0.08	0.08	0.08	0.08
52	0.07	0.06	0.06	0.05	0.05	0.05
51	0.03	0.03	0.03	0.03	0.03	0.03
50	0.00	0.00	0.00	0.00	0.00	0.00

Note 1: For negative values of Q_U or Q_L . PWL_U or PWL_L is equal to 100 minus the tabular PWL_U or PWL_L .

Note 2: If the value of Q_U or Q_L does not correspond exactly to a value in the table, use the next higher value.

FOR INFORMATION ONLY

Table 502-6
Payment Adjustments for Superpave

Payment adjustments will be based on specification limits.

A) PLANT ACCEPTANCE

Air Voids: The percent within limits (PWL) will be calculated for air voids for each lot and reported to the nearest whole number. Payment for plant acceptance will be in accordance with Table 502-6A.

Table 502-6A
Payment Adjustment Schedule for Plant Acceptance

Air Voids PWL	Percent Payment
100	103
88-99	100
71-87	98
51-70	90
21-50	80
≤20	50 or Remove ¹

¹At the option of the Department after investigation.

B) ROADWAY DENSITY

The percent within limits (PWL) will be calculated for pavement density for each lot and reported to the nearest whole number. Payment for roadway density will be in accordance with Table 502-6B.

Table 502-6B
Payment Adjustment Schedule for Roadway Density

Roadway Density PWL	Percent Payment
98-100	105
89-97	100
79-88	98
61-78	90
31-60	80
≤30	50 or Remove ¹

¹At the option of the Department after investigation.

C) SURFACE TOLERANCE (Final Wearing Course Travel Lanes Only)

Payment adjustments for surface tolerance for the final wearing course travel lanes will be based on the International Roughness Index (IRI) in accordance with Table 502-7 and Subsections 502.13 and 502.14. Percent payments will be determined for each subplot and averaged to determine payment for the lot.

D) TOTAL PAYMENT

The percent payment for the wearing course travel lanes will be the average of the percent payments for plant acceptance, roadway density, and surface tolerance for each lot. Incentive payment for surface tolerance will be in accordance with Subsection 502.14(e) and paid separately.

The percent payment for all other mix types will be the average percent payments for plant acceptance and roadway density for each lot.

All calculations for percent payment will be rounded to the nearest 1 percent.

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Table 502-7A
Payment Adjustment Schedules for Longitudinal
Surface Tolerance, Maximum International Roughness Index,
inches per mile (mm per km)

Percent of Contract Unit Price (by Sublot) ¹	103% ²	100%	90%	80%	50% or Remove ³
Category A Multi-Lift New Construction and Overlays of More than two Lifts and all Interstates	<55 (<870)	<65 (<1030)	65-75 (1030-1180)	NA	>75 (>1180)
Category B One or Two Lift Overlays Over Cold Planed Surfaces, and Two-Lift Overlays Over Existing Surfaces ⁴	<65 (1030)	<75 (<1180)	75-89 (1180-1400)	NA	>89 (>1400)
Category C Single-Lift Overlays Over Existing Surfaces	<75 (<1180)	<85 (<1340)	85-95 (1340-1500)	>95-110 (>1500-1740)	>110 (>1740)
Incentive Pay, Final Completion, Average of All Travel Lanes ⁵	≤45 (≤710)				

¹or portion of sublot placed on the project.

²Maximum payment for sublots with exception areas, exclusions or grinding is 100 percent.

³At the option of the engineer.

⁴Also applies to two-lift overlays on reconstructed bases without profile grade control.

⁵Only Category A projects with no grinding are eligible for incentive.

Table 502-7B
Individual Wheelpath Deficient Area Limits
Maximum International Roughness Index, inches per mile (mm per km)

Any 0.05 Mile (0.08 km) Segment	Wearing Course	Binder Course
Category A	89 (1400)	105 (1660)
Category B	99 (1560)	110 (1740)
Category C	110 (1740)	N/A

**Table 502-8
Payment Adjustment Schedule for Small Quantities of Superpave¹**

Parameter ²	Percent of Contract Unit Price/Sublot		
	100	95	50 or Remove ³
% Air Voids	2.5-4.5	1.5-2.4 or 4.6-5.5	<1.5 or >5.5
Average Roadway Density, % G _{mm}	≥ Lower limit	-0.1 to -0.9 below lower limit	-1.0 below Lower limit

¹See Subsection 502.12(c), Small Quantity Lots.

²For plant acceptance, use one sample for percent air voids to determine pay. For roadway acceptance, use the average of three cores to determine density and pay. Determine surface tolerance in accordance with Table 502-7. The total percent payment for small quantities of Superpave mixtures will be the average of the percent payments for plant acceptance (air voids), roadway acceptance (density) and surface tolerance.

³At the option of the engineer.

**LOUISIANA
DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
SUPPLEMENTAL SPECIFICATIONS**

**SECTION 741
WATER DISTRIBUTION SYSTEM**

The 2000 Standard Specifications are amended to include this Section 741.

741.01 DESCRIPTION: This work consists of furnishing the necessary materials and installing, relocating and adjusting water distribution systems in accordance with these specifications and in conformity with the lines and grades shown on the plans or established by the engineer.

741.02 MATERIALS: A certificate of compliance from the manufacturer showing the chemical and physical properties of the materials used and conformance with the specifications will be required for each item.

(a) Cast Iron and Ductile Iron Pipe:

(1) Cast Iron Pipe: Cast iron pipe shall be made of grey cast iron and shall conform to ANSI A 21.6 (centrifugally cast in metal molds) or A 21.8 (centrifugally cast in sand lined molds). Iron in the pipe shall have a bursting tensile strength of at least 21,000 psi (145 MPa) and the pipe shall have a ring modulus of rupture of at least 45,000 psi (310 MPa).

(2) Ductile Iron Pipe: Ductile iron pipe shall consist of ductile cast iron and shall conform to ANSI A 21.51 (centrifugally cast in metal or sand lined molds).

(3) Fittings: Fittings for cast iron or ductile iron pipe shall conform to ANSI A 21.10.

(4) Coating and Lining of Pipe: Cast iron and ductile iron pipe and fittings shall be asphalt or vinyl coated outside, as specified, and cement lined and seal coated inside in accordance with ANSI A 21.4.

(5) Joints: Pipe joints shall conform to ANSI A 21.11 with the following criteria used for joint selection.

- a. Mechanical Joint (Type III) with alloy steel bolts and nuts.
- b. Boltless single gasket push-on joint.
- c. Submarine, flexible, ball and socket joint.
- d. Flanged joint.

Pipe shall be installed with joint types (a) or (b) for mains under normal service conditions, joint type (c) for stream or canal crossings and when specified, joint type (d) for above ground installations such as pumps.

(b) Gate Valves and Valve Boxes:

(1) Valves shall be non-rising stem, iron body, bronze mounted, double-disk gate valves conforming to AWWA C 500. Valves shall have mechanical joint ends except that valves used with 2 inches (50 mm) or less diameter pipe, or galvanized iron pipe, shall have threaded ends. Valves shall open counterclockwise and shall be operated by nut method. Operating nuts shall conform to that used by the utility system.

(2) Valve boxes shall be approved cast iron, 2-piece, heavy roadway type. Valve boxes for 12 inches (300 mm) or larger valves shall be of the 3-piece type with oval base. The term "water" shall be cast on each valve box cover.

(c) Tapping Sleeves and Valves: Tapping sleeves shall be the split- sleeve, mechanical joint type. Gate valve connections shall be mechanical joint. Sleeves shall meet the requirements for cast iron fittings except the cement lining will not be required. Minimum working pressure shall be that specified for the system.

(d) Fire Hydrants: Fire hydrants shall conform to AWWA Designation: C 502 for 3-way type hydrants with working pressure of 150 psi (1.0 MPa). Hydrants shall be compression type and inlet connections shall be mechanical joint bell. Two 2 1/2 inches (65 mm) hose nozzles and one 4 1/2 inches (115 mm) pumper nozzle shall be provided; hose connections shall have National Standard threads. Hydrants shall have bronze seal rings, automatic drain openings and O-ring seals. Minimum valve openings of 4 inches shall be provided. Hydrants shall contain a breakaway feature at ground level consisting of breakaway bolts or flange and breakaway coupling on the rod. Main valve and valve seat shall be replaceable without digging up the hydrant. The hydrant exterior shall be painted with approved enamel and shall be repainted after installation (color: yellow).

(e) Plastic Pipe: Plastic pipe and tubing shall be polyvinyl chloride or polyethylene pipe and tubing.

(1) Polyvinyl chloride (PVC) pipe shall conform to ASTM D 2241 and be pressure rated at 200 psi (1.3 MPa) minimum. The pipe shall be made from polyvinyl chloride compounds conforming to Class 12454B (Type 1, Grade 1), ASTM D 1784.

(2) Polyethylene (PE) pipe and tubing shall conform to ASTM D 2239 (pipe) and D 2737 (tubing). Pipe or tubing shall be rated for use with water at 73.4°F (23°C) at a hydrostatic design stress of 630 psi (4.3 MPa). Pipe or tubing shall be made from polyethylene plastics conforming to Type III, Grade 3, ASTM D 1248.

(3) When specified, Schedule 40 PVC shall be in accordance with ASTM D 1785, Schedule 40, PVC 1120.

(4) Plastic pipe and fittings must bear the seal or "NSF" mark of the National Sanitation Foundation or other approved marking indicating approval for use in transporting potable water.

(5) Welding Solvent and Solvent Thinner shall conform to ASTM D 2564.

(f) Galvanized Steel Pipe: These pipes and fittings shall be galvanized steel seamless pipe conforming to ASTM A 53 (A 53M), standard weight. Fittings shall be malleable iron conforming to ANSI B 16.3 except the nipples and couplings shall be the same material as the pipe. Fittings shall be galvanized in accordance with ASTM A 53 (A 53M).

(g) Copper Pipe or Tubing: This pipe shall conform to ASTM B 88, Type K. Copper fittings shall be of the cast pattern or wrought pattern. Fittings for rigid copper pipe shall be of the solder joint type. Fittings for conceded soft draw pipe may be the flared mechanical type. Unions shall be the ground joint type.

(h) Detection Wire for Plastic Pipe: An approved electrically conductive insulated wire or tape shall be installed directly over and on the center of the plastic pipe for its entire length within highway right-of-way to facilitate locating of line with an electronic pipe locator. Wire or tape must be connected to all fixtures and appurtenances.

741.03 CONSTRUCTION REQUIREMENTS:

(a) General:

(1) Handling: Pipe, fittings and other materials shall be carefully handled to prevent breakage or damage, especially to the cement mortar lining in pipe and fittings.

(2) Existing Underground Utilities and Obstructions: All water lines, gas lines, telephone conduits, drainage structures, etc. shall be located and protected by the contractor during construction.

(b) Trench Excavation:

(1) Excavation: Excavation shall conform to Subsections 701.03 and 701.04, and the following requirements.

a. Protection of Excavation: Sheeting, shoring and hand excavation shall be used as necessary for protection of the work. Sheeting shall be withdrawn as backfilling is being done, except where the engineer directs that the sheeting and shoring be left in place, or where the engineer permits the sheeting to be left in place. The contractor shall cut off any sheeting left in place at least 18 inches (450 mm) below finished grade. Sheeting and bracing will not be paid for directly.

b. Trench Depth: Minimum bury (depth from grade to top of pipe) under pavement or surfacing shall be 4 feet (1.2 m). Minimum bury under ditches and in other non-paved areas shall be 2 feet (0.6 m).

c. Bell Holes: Bell holes of ample depth and width shall be excavated in pipe trenches at each joint location to permit the joint to be properly made and the pipe barrel to rest firmly on the trench bottom.

(2) Under Pavement:

a. Removing Pavement: The contractor shall remove existing pavement as necessary for trench excavation. Pavement shall be cut back from the top edges of trenches at least 24 inches (0.6 m) on each side of the trench. The requirements of Section 724 shall be followed for removing and replacing pavement except that no separate payment will be made for this work.

b. Jacking and Boring: The contractor may elect to jack or bore pipe under existing pavement where practical; however, separate payment for jacked or bored pipe will only be made when jacking or boring of pipe is specified. Jacked or bored pipe shall be installed in accordance with Section 728.

(c) Connection to Existing Mains: Connection to existing mains shall be made with appropriate fittings as shown on the plans or as directed. When it is necessary to make such connections under pressure (i.e., when normal water service must be maintained) a tapping sleeve and valve shall be used. The contractor shall furnish the valve tapping machine and other equipment required.

(1) Location: The contractor shall, before opening pipe line trenches, locate the points where connections are to be made to existing pipe lines and shall uncover as necessary for the engineer to prescribe the types of connections and fittings to be installed.

(2) Interruption of Service: Connections to existing pipe lines shall be made at such times and in such manner as will meet operating requirements. No cut shall be made in existing lines until permission has been obtained as to time and manner of making cuts and connections.

(d) Laying Water Mains and Appurtenances:

(1) Sequence of Work: Excavation, cleaning, laying, jointing and backfilling shall be kept up as closely as possible. Pipe shall not be left in the trench overnight without completely jointing and capping. The contractor shall backfill and compact the trench as soon as possible after laying, jointing and testing is complete. Each day at the close of work, and when laying is not in progress, the exposed end of the pipe line in the trench shall be closed with an approved barrier of wood or metal. If it is necessary to cover the end of an uncompleted pipe line with backfill, the end of the pipe shall be closed using a satisfactory cap or plug.

(2) Alignment and Gradient: Pipe line alignment and gradient shall be straight, or shall be deflected to follow true curves as nearly as practical. Deflection of pipe lines shall be within the allowable laying deflection angle, both horizontal and vertical.

(3) Installation:

a. Connections: Connections which are made inside roadway shoulders, or curbs and gutters, shall be made with flexible joints.

b. Cutting: Where pipe or special castings are required to be cut, cutting shall be done using pipe cutters.

c. Gate Valves: Gate valves shall be installed and jointed as specified above for water mains. Installation of gate valves shall include valve boxes, where required.

d. Fire hydrants: Hydrants shall be installed and jointed as specified above for water mains. Installation of hydrants shall include vertical extension sections if required, pipe straps, concrete blocking, aggregate drain and backfill.

e. Concrete Blocking: Concrete blocking shall be Class R concrete conforming to Section 901 and shall be formed and poured at the backs of fittings, including elbows, tees, pipe plugs, fire hydrants and other locations shown on the plans or directed by the engineer.

f. Backfilling: Backfilling shall conform to Subsection 701.08 and these requirements.

When testing for leaks in open trenches, backfilling shall not be done until testing has been completed and leaks eliminated.

Where adjacent pavements are to be retained, pavement removed for pipe line trenches shall be replaced in kind or when approved, with equal or better material. After backfilling, the contractor shall maintain a satisfactory riding surface until repaving is completed. No separate payment will be made for replaced pavement.

g. Testing and Disinfection:

1. Testing: When a section of pipe is approved for testing, the contractor shall furnish all materials, equipment and labor to properly carry out this operation. This shall include a test pump and means of accurate measurement of water necessary to maintain required pressure during testing. The contractor shall furnish, install and remove any temporary bulkheads, flanges, plugs and corporation stops at high points in pipe lines and at the test pump, as necessary.

A. Sequence of Testing: When conditions permit, pipe lines shall be tested before the trench is backfilled and before service lines are installed; however, if high pressure testing must be done after service lines are in place, they shall be shut off at the corporation stops.

After necessary joints, bulkheads, etc. have been installed, corporation stops, if no other means can be provided, shall be placed in the high points of the pipe line and at the pump as required, and the pipe blown free from air according to accepted procedure.

B. Test Pressure: Test pressure shall be 50 psi (0.3 MPa) higher than the designated class pressure of pipe and fittings. Leakage shall not exceed 15 gallons per inch (1.4 L/mm) of pipe diameter per mile (km) per 24 hours. The minimum test period shall be 2 hours. However, if additional testing is required the contractor shall perform the procedure at his expense. When service lines cannot be isolated (i.e., shut off from the section to be tested), or other conditions exist where pressure testing as described above may cause damage, the line may be tested under normal operating pressure when approved. This work shall be done in open trenches, where possible, and testing repeated until leaks are eliminated.

C. Leaks and Defective Materials or Workmanship: Joints which leak shall be remade. Cracked, broken or defective materials shall be replaced. Defective workmanship shall be corrected. After the above conditions have been corrected, the line shall be retested as described above until the line passes the requirements. The contractor shall receive no additional compensation for the corrections or retesting.

2. Disinfection: Pipe lines and appurtenances, both existing and new which are the responsibility of the contractor, shall be disinfected before being placed in service. The disinfection process may be done in conjunction with the pressure test and shall be in accordance with AWWA C 601 and these requirements.

A solution of calcium hypochlorite or sodium hypochlorite (such as HTH, Perchloron, Chlorox, etc.) liquid chlorine or other approved disinfectant shall be used to obtain a solution of at least 50 ppm of available chlorine throughout the pipe system. No chlorine shall be applied to pipe as lines are being laid.

For this work, the contractor shall furnish suitable corporation stops, plugs or caps for the pipe, injection pumps, pipe connections and other equipment, and all labor required, at no additional cost to the Department.

While disinfectant is being applied to any section of the system, the water shall be allowed to escape at all extremities of this section until an orthotolidine test shows a deep orange color. The disinfectant shall be allowed to remain in the pipe at least 6 hours and tests shall be made to determine that a chlorine residual of at least 5 ppm remains. If there is not sufficient residual chlorine, disinfection shall be repeated. After disinfection, lines shall be thoroughly flushed to remove the chlorine. If bacteriological tests indicate that the lines are not free of coliform organisms, the disinfection procedure shall be repeated on that part of the system until proven to be free of contamination.

Disinfection shall be made in the presence of the engineer. The contractor shall notify the engineer at least 48 hours prior to the time lines are to be disinfected. The contractor shall furnish taps, corporation stops, tubing and faucets, and furnish labor to obtain samples of water from disinfected lines. These shall be collected and submitted to a biological laboratory of the State Board of Health. Copies of laboratory reports shall be submitted to the engineer. Disinfection shall be considered acceptable when reports indicate lines to be free of contamination. Lines shall be disinfected as soon after completion of testing as possible.

When tests are completed, test risers shall be removed and corporation stops plugged with an approved brass plug.

(e) Laying Service Lines and Appurtenances: Except as modified below, construction and installation of service lines shall conform to the requirements for laying water mains. Service lines shall include complete installation of the new pipe from the water main to the final location of the meter, or to such points as directed to connect with existing or future service lines and abutting property. Installation of service line pipe shall include necessary connections, including unions, valves, fittings, corporation stops, goosenecks where permitted, and curb stops.

(1) Excavation and Backfill:

a. Excavation: Excavation shall be done as specified elsewhere herein.

b. Backfill: Backfilling shall be done as specified herein after leakage test has been made under normal operation pressure in open trenches and leaks eliminated.

(2) Laying and Jointing: Jointing of copper pipe, galvanized steel pipe and plastic pipe shall be in accordance with standard practice for jointing water pipe and approved installation methods. Plastic pipe shall be placed in the trench to allow at least 1 percent additional length of pipe for thermal connection, and selected backfill material shall be placed and compacted to 6 inches above pipe before proceeding with normal backfill operations.

(f) Relocations, Adjustments and Removals:

(1) Water Valves, including valve boxes and fire hydrants, shall be relocated, adjusted to grade or removed as shown on the plans or as designated. The contractor shall protect all parts during the removing and relocating operation and shall replace all items lost or damaged at his expense. All lead or composition joints shall be melted out and each joint disconnected before being removed from the trench.

Relocated gate valves or fire hydrants shall be installed as specified for new gate valves or fire hydrants. Concrete blocking will be required for fire hydrants. Leakage tests shall be performed as specified above. Backfilling shall be done as specified herein. Concrete blocking and any additional pipe required in resetting the gate valve or fire hydrant at its new location will be paid for separately. Valve boxes, when they exist, shall be considered to be a part of the valve assembly and shall be removed with the valve.

(2) Existing water meters and boxes shall be relocated as shown on the plans or as designated. Relocation shall include removing the existing meter, meter box, all required pipe, unions and appurtenances, storage, protection where necessary, and reinstalling the meter, meter box and curb stop in the existing service line as directed. The contractor, with the engineer, shall inspect each meter before its removal to determine its condition. If a meter is defective, the contractor will be furnished a replacement meter for the installation.

(3) Existing water service lines shall be adjusted to grade, by excavating for, and lowering or raising the existing service lines and backfilling at the same location, as shown on the plans or directed. Any new materials or fittings required for the adjustment shall be furnished by the contractor without additional compensation. He shall also make any required changes in the connection at the main which are the result of this work. All leaks and damage caused by the contractor's operations shall be repaired at his expense. If a water meter is to be retained at the same location in an existing service line that is to be adjusted, the meter and box shall also be adjusted to proper grade. No additional compensation will be allowed for this adjustment.

(4) Existing water meter and water valve boxes shall be lowered or raised to the grade established on the plans or by the engineer.

(5) Existing house connections shall be adjusted as required. New pipe and fittings required to adjust house connections shall be equal in quality to that of the existing installation and meet requirements of the utility and code.

741.04 MEASUREMENT:

(a) Water Mains: Water mains will be measured by the linear foot (lin m) along the center, parallel to the slope of the pipe, from end to end of each installation through all fittings.

(b) Fittings: Pipe fittings will be considered subsidiary to the water line in which they are used.

(c) Gate valves, including boxes when required, will be measured by the number of each size installed.

(d) Tapping sleeve and valve assembly will be measured by the number of each size installed.

(e) Fire hydrants will be measured by the number of each installed.

(f) Service Lines: Service lines will be measured by the linear foot (lin m) from end to end, and from center of lines to ends of branches, including valves and fittings.

(g) Relocating Fire Hydrants, Water Valves and Water Meters: Existing fire hydrants, water valves and water meters will be measured by the number of each relocated, including relocation of boxes for such valves and meters.

(h) Adjusting Meter Boxes and Valve Boxes: Existing meter boxes and valve boxes adjusted to grade in their original locations will be measured by the number adjusted.

(i) Removal of Water Valves and Fire Hydrants: Existing water valves, including boxes when necessary, and fire hydrants will be measured by the number of each removed.

(j) Excavation and Backfill: Excavation and backfill will not be measured for payment.

(k) Concrete Blocking: Concrete blocking will be measured by the cubic yard (cu m) of concrete used.

(l) Adjusting Water House Connections: This item will be measured by the number of house connections adjusted.

(m) Adjusting Service Lines to Grade: This item will be measured in linear feet (lin m) of service line pipe lowered or raised, including valves, fittings, meters, boxes and other appurtenances. Measurement will be made from end to end of adjusted service line.

(n) Incidentals: Pavement removed and replaced, including sawing, testing, disinfection and detection wire for plastic pipe, will not be measured for payment.

(o) Casing will be measured by the linear foot (lin m) along the center, parallel to the slope of the casing.

(p) Butterfly valves, including boxes when required, will be measured by the number of each installed.

(q) Double strap saddles will be measured by the number of each installed.

741.05 PAYMENT:

(a) Water main pipe will be paid for per linear foot (lin m) for each size of pipe installed, which includes fittings, excavation, backfilling, removal and replacement of pavement, testing, sterilizing, and laying pipe in casing when required.

(b) Gate valves will be paid for per each, which includes box if required, and joint connections.

(c) Tapping sleeve and valve assemblies will be paid for per each, which includes joint connections.

(d) Fire hydrants will be paid for per each, which includes vertical extensions, joint connections, pipe straps and stone drain.

(e) Service line pipe will be paid for per linear foot (lin m), which includes excavation, backfilling, removal and replacement of pavement, testing, sterilizing, corporation and curb stops, goosenecks where required, fittings, jointing, connecting to the main, and laying pipe in casing when required.

(f) Relocating fire hydrant will be paid for per each, which includes crushed stone drain.

(g) Relocating water valve including box will be paid for per each, which includes excavation and backfill.

(h) Relocating water meter including box will be paid for per each set, which includes excavation and backfill.

(i) Adjusting water house connections will be paid for per each, which includes necessary adjustment of service lines not exceeding 20 linear feet (6.1 lin m) per house connection, and required new pipe and fittings.

(j) Adjusting water service lines in excess of 20 linear feet (6.1 lin m) per house connection will be paid for per linear foot (lin m) of adjusted service line, which includes required new pipe and fittings.

(k) Adjusting meter boxes and valve boxes to grade will be paid for per each.

(l) Removal of water valves will be paid for per each, which includes valve box.

(m) Removal of fire hydrants will be paid for per each.

(n) Concrete blocking will be paid for per cubic yard (cu m).

(o) Casing will be paid for per linear foot (lin m), which includes excavation, backfilling, and removal and replacement of pavement.

(p) Butterfly valves will be paid for per each size, which includes box if required, and joint connections.

(q) Double strap saddles will be paid for per each, which includes joint connections.

(r) Payment will be made at the contract unit prices under:

<u>Item No.</u>	<u>Pay Item</u>	<u>Pay Unit</u>
741-01	Water Main (Size & Type)	Linear Foot (Lin m)
741-02	Gate Valve (Size)	Each
741-03	Tapping Sleeve and Valve Assembly (Size)	Each
741-04	Fire Hydrant	Each
741-05	Water Service Line (Size & Type)	Linear Foot (Lin m)
741-06	Relocating Fire Hydrant	Each
741-07	Relocating Water Valve	Each
741-08	Relocating Water Meter	Each
741-09	Adjusting Water House Connections	Each
741-10	Adjusting Water Service Lines	Linear Foot (Lin m)
741-11	Adjusting Water Valve and Meter Box	Each
741-12	Removing Water Valve Including Box	Each
741-13	Removing Fire Hydrant	Each
741-14	Concrete Blocking	Cubic Yard (Cu m)
741-15	Casing (Size & Type)	Linear Foot (Lin m)
741-16	Butterfly Valve (Size)	Each
741-17	Double Strap Saddle (Size)	Each

**LOUISIANA
DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
SUPPLEMENTAL SPECIFICATIONS**

**SECTION 744
TRAFFIC CONTROL MANAGEMENT**

The 2000 Standard Specifications are amended to include this Section 744.

744.01 DESCRIPTION: This work consists of providing traffic control management in compliance with the contract documents and the Manual on Uniform Traffic Control Devices (MUTCD), including the installation, inspection, maintenance, and removal of all traffic control devices on the project.

744.02 REQUIREMENTS: The contractor shall assign one or more authorized Traffic Control Supervisors (TCS) to provide traffic control management for the project. If the contractor assigns more than one TCS to provide traffic control management, then a weekly schedule identifying who will be in charge of providing traffic control management on a daily basis shall be submitted to the engineer by the contractor. The TCS shall have a set of all contract documents relating to traffic control or traffic staging and a current copy of the MUTCD and a current copy of Louisiana Work Zone Traffic Control Details readily available at all times.

Should the contractor utilize a subcontractor to provide traffic control management, the subcontractor's TCS shall meet all the requirements set forth herein.

The contractor may assign one or more Traffic Control Technicians (TCT) to assist the TCS in inspection and maintenance of Traffic Control Devices.

744.03 AUTHORIZATION: Prior to commencing work requiring traffic control management, the contractor shall submit to the engineer a copy of the TCS's and TCT's current authorization.

The Department will accept the TCS authorization of other approved agencies or firms only if all of the following minimum TCS requirements are met:

(a) Successful completion of a work zone traffic control supervisor course approved by the Department.

(b) Passing a written examination on the work zone traffic control supervisor course.

(c) After October 1, 2004, a minimum of one year full-time field experience, verified by the agency or firm, in work zone traffic control. This experience may be verified by the Department, at its discretion.

The Department will accept the TCT authorization of other approved agencies or firms only if all or the following minimum requirements are met.

(a) Successful completion of a work zone traffic control technician course approved by the Department.

(b) Passing a written examination on the work zone traffic control technician course.

744.04 DUTIES: The TCS's responsibility shall be traffic control management, and the TCS shall be available to the engineer to address traffic control management issues as needed. The following is a listing of the TCS's primary duties:

(a) The TCS shall personally provide traffic control management and supervision services at the project site. The TCS may have other assigned duties, but must be readily available at all times to perform TCS duties as required in the contract. A minimum of one TCT shall be required on site during working hours.

(b) The TCS shall be responsible for observing and evaluating both the day and night time performance of all traffic control devices installed on the project, in accordance with the Traffic Control Plan (TCP), to ensure that the devices are performing effectively as planned for both safety and traffic operations. This shall be done at the initial installation of the devices and when any modifications and/or changes are made, in addition to the inspection of traffic control required in Subsection 744.06.

(c) The TCS shall be responsible for revisions requested by the contractor to the traffic control plan established in the contract and shall submit the new traffic control plan as follows:

Requests for revision in the traffic control plan must be made in writing to the engineer a minimum of 14 calendar days in advance of the needed revision. If in the opinion of the engineer, the requested revision falls within the scope of the existing contract drawings, the engineer may approve the revision. If the engineer determines that the requested revision is outside the scope of the existing contract drawings, the contractor will be required to submit plan change drawings to incorporate into the contract drawings. The plan change drawings must conform to the DOTD standards described below.

(1) Letter size original contract drawings --The plan change drawings must be submitted on high quality white 8 1/2 x 11 inch letter size paper. The drawings may be hand drafted or computer drafted and arranged in landscape format on the page. The text and drawings must be legible after reproduction on standard reproduction equipment. Left, bottom and right hand margins shall be at least 1/2 inch and the top margin shall be 1 inch.

(2) Full size original contract drawings -- The plan change drawings must be submitted on high-quality, 4-mil, double-matte film using a plotting or reproduction process that fuses the graphics to ensure durability. Repeated handling and friction due to stacking of plans shall not smear, flake or rub off the graphics. Improper plotter settings and plotter wear may cause inconsistent durability of the drawings. The contractor shall test samples of the submitted drawings for durability. Advance samples of matte films may be submitted for approval; however, the contract plans will be tested separately. Failures will result in rejection of the submittal. Drawing sizes shall be in accordance with Subsection 801.03(a).

Lettering on plan change drawings shall be of adequate size to facilitate a 50 percent reduction of plans. Additions or changes shall be made with a permanent type of waterproof ink made for this purpose. If revised cross sections are required, the cross-sections shall be plotted on standard plate cross-section sheets. The ground line, centerline elevation, and station numbers, as a minimum, shall be drawn in ink; the remaining information may be in pencil.

Regardless of size, all plan change drawings and documents required shall be identified with the DOTD project title and project number. All plans and calculations shall be signed and sealed by a professional civil engineer currently registered to practice in Louisiana.

All plans submitted by the contractor shall conform to the quality standards adopted by DOTD, and the DOTD Chief Engineer may reject any plans not conforming to these standards.

Revisions to the TCP that are determined to be outside the scope of the original contract drawings must be approved by the DOTD District Traffic Engineering Division prior to implementation of the requested revision. In some cases on high traffic routes or high priority projects, the revisions must be approved by the HQ Traffic Operations Engineer.

(d) The TCS shall be responsible for the training of flagging personnel. This training will ensure that all flagging done on the project is in compliance with the MUTCD Part VI and Louisiana Work Zone Traffic Control Details.

(e) The TCS shall coordinate all traffic control operations for the duration of the contract, including those of subcontractors, utility companies, and suppliers, to ensure that all traffic control is in place and fully operational prior to the commencement of any work. The Department recognizes that the contractor does not have direct control over the traffic control operations of the utility companies. The coordination provided by the TCS when dealing with utility companies is specifically for the purpose of coordinating concurrent utility traffic control with any other construction traffic control to avoid conflicts.

(f) The TCS shall coordinate, in writing, all project activities with the appropriate law enforcement, fire control agencies, and other appropriate public agencies as determined at the pre-construction conference by the engineer. The TCS shall also invite the above agencies to the pre-construction conference.

(g) The TCS shall prepare and submit statements concerning road closures, delays, and other project activities to the news media on a weekly basis or more often as needed. News releases shall be submitted to the engineer for review and approval prior to the contractor's submittal to the news media.

(h) The TCS shall be responsible for notifying the engineer, or designee, immediately of all vehicular accidents and/or incidents related to the project traffic control. The time and date of notification shall be documented in the traffic control diary. The TCS shall also monitor and document queues that occur as necessary.

(i) The TCS assigned to the project shall attend the pre-construction conference and all project meetings.

(j) The TCS shall be responsible for the maintenance, cleanliness, replacement and removal of traffic control devices of the existing traffic control plan during working and non-working hours.

744.05 TRAFFIC CONTROL DIARY: The TCS shall maintain a project traffic control diary in a bound book. The contractor shall obtain a sufficient number of the diaries from the Louisiana Associated General Contractors (LAGC). The TCS shall keep the traffic control diary current on a daily basis, and shall sign each daily entry. Entries shall be made in ink in a standard format furnished by the engineer, and there shall be no erasures or white-outs. Incorrect entries shall be struck out and then replaced with the correct entry. Photographs and videotapes may be used to supplement the written text.

The traffic control diary shall be available at all times for inspection by the engineer; and the diary shall be reviewed with the engineer on a weekly basis and a copy submitted to the engineer on a monthly basis. Failure to submit the monthly copy of the diary to the engineer shall result in the withholding of the next partial payment until the past due copies of the diary are submitted. The traffic control diary shall become the property of the Department at the completion of the project.

744.06 INSPECTION OF TRAFFIC CONTROL: The TCS shall be responsible for the inspection of all traffic control devices every calendar day that traffic control devices are in use. This inspection may be delegated to the TCT. The “Quality Guidelines for Work Zone Traffic Control Devices” standard by the American Traffic Safety Services Association (ATSSA) shall be used to evaluate the condition of the traffic control devices to determine if acceptable for use. The TCS shall provide for the immediate repair, cleaning, or replacement of any traffic control devices not functioning as required to ensure the safety of the motorist and construction personnel and/or not meeting the ATSSA standard.

Inspection of the traffic control devices shall be conducted by the TCS at the beginning and end of each workday, and as scheduled or directed by the engineer during the workday. The traffic control devices shall be inspected by the TCS on weekends, holidays, or other non-work days at least once per day. Traffic control devices shall be inspected by the TCS at least once a week during nighttime periods and the same night after any modifications or changes have been made in the traffic control devices.

744.07 FAILURE TO COMPLY: The engineer may suspend all or part of the contractor’s operation(s) for failure to comply with the approved “Traffic Control Plan” or failure to correct unsafe traffic conditions within a reasonable period of time after such notification is given to the contractor in writing.

In the event that the contractor does not take appropriate action to bring the deficient traffic control into compliance with the approved traffic control plan or to correct the unsafe traffic conditions, the Department may proceed with the corrective action using its own forces, and such costs will be deducted from payments owed to the contractor.

If the contractor’s operations are suspended, the normal assessment of contract time will not cease for the period required to correct these unsafe conditions and traffic control deficiencies. The contractor shall not be relieved of the responsibility to provide traffic control safety to the traveling public when a project is under full or partial project suspension. When a project is under suspension due to the contractor’s failure to comply with this section, or when the contract is under stipulated damages, the contractor shall continue to provide traffic control management and no additional measurement or payment will be made. If suspensions or partial suspensions are requested by the contractor, the additional traffic control management costs will be at the contractor’s expense.

744.08 ENGINEER MODIFICATIONS: The provisions included in the plans and specifications for handling and controlling traffic during construction may be changed by the

engineer, with the approval of the DOTD District Traffic Operations Engineer, due to actual field conditions encountered. Such changes will be made by written instruction to the contractor and shall be considered an amendment to the plans and specifications as of the date of change.

744.09 MEASUREMENT: Traffic control management will be measured by the lump sum.

744.10 PAYMENT: Payment for traffic control management will be made at the lump sum contract price in accordance with the payment schedule of Table 744-1.

Table 744-1
Payment Schedule for Traffic Control Management

Percent of Total Contract Amount Earned	Allowable Percent of Lump Sum Price for Traffic Control Management
Initial Installation	20
25	40
50	60
75	80
100	100

Traffic control diaries will be incidental to traffic control management, and no separate measurement or payment will be made therefore.

Payment will be made under:

<u>Item No.</u>	<u>Pay Item</u>	<u>Pay Unit</u>
744-01	Traffic Control Management	Lump Sum

48" X 96"
 BACKGROUND BLUE
 BORDER SILVER

LOUISIANA
 9" YELLOW

LOUISIANA
 TIMED

LOUISIANA
 TIMED PROJECT

U.S. 171 (Gillis - Ragley)

TOTAL COST: \$16,283,000

YOUR 4¢ GAS TAX HARD AT WORK

LOUISIANA
 TIMED
 1.75 Tahoma Bold
 BLACK

TIMED
 2.5 Futura Extra
 Black Italic Bt
 ORANGE WITH
 BLACK AROUND IT

Program
 1.75 ABD-BOC
 BLACK

TIME IS NOW
 1.5" D Compacta Bt
 BLACK

La Shield
 High 15 3/8
 Wide 15 13/16
 GREEN

LOUISIANA
 9" YELLOW

43/4" Tahoma Bold
 SILVER

3" Highway C
 SILVER

TIMED
 ORANGE

5" FUTURE EXTRA BLACK
 CONDENSED ITALIC

SILVER SQUARE
 22"X19"

ARROW
 H 7.423
 W 20.678

FOR INFORMATION ONLY

**STATE OF LOUISIANA
DEPARTMENT OF TRANSPORTATION AND
DEVELOPMENT**



**CONSTRUCTION PROPOSAL
RETURNABLES
FOR**

**STATE PROJECT NOS. 023-10-0036 AND 023-11-0025
DUBACH – KINDER
ROUTE US 167
LINCOLN AND UNION PARISHES**

FOR INFORMATION ONLY

**CONTRACT TIME FORM
COST-PLUS-TIME PLUS LIFE CYCLE COST BIDDING PROCEDURE
(A + B + C) METHOD**

STATE PROJECT NOS. 023-10-0036 AND 023-11-0025

FEDERAL AID PROJECT NO(S). N/A

NAME OF PROJECT DUBACH - BERNICE

ROUTE US 167

PARISHES LINCOLN AND UNION

CONTRACT TIME

The bidder shall determine the number of calendar days required for completion and final acceptance of the project and shall state this required time, in words, in the space provided below. The maximum allowable contract time for this project is **one thousand one hundred calendar days (1100)** calendar days. The purposed completion time will be a factor used in considering bids for award of contract in accordance with the special provision, **COST-PLUS-TIME PLUS LIFE CYCLE COST BIDDING PROCEDURE (A+B+C METHOD)**. The stated number of calendar days required for completion will be the contract time for this project should the bidder be successful. Bids not including a contract time, or showing time to completion in excess or the maximum amount will be considered irregular and will be rejected.

CONTRACT TIME (Calendar Days To Completion, In Words)
_____ Calendar Days

BID BOND

A Proposal/Bid Guaranty is only required when the bidder's total bid amount as calculated by the Department in accordance with Subsection 103.01 is greater than \$250,000. (See Section 102 of the Project Specifications.)

_____, as Principal
(Bidder) and _____, as Surety,
are bound unto the State of Louisiana, Department of Transportation and Development, (hereinafter called the Department) in the sum of five percent (5%) of the bidder's total bid amount as calculated by the Department for payment, of which the Principal and Surety bind themselves, their heirs, executors, administrators, successors and assigns, as solidary obligors.

Signed and sealed this _____ day of _____, 20_____.

The condition of this obligation is such that, whereas the Principal has submitted a bid to the Department on a contract for the construction of **STATE PROJECT NOS. 023-10-0036 AND 023-11-0025, DUBACH – BERNICE, located in LINCOLN AND UNION PARISHES, ROUTE US 167**, if the bid is accepted and the Principal, within the specified time, enters into the contract in writing and gives bond with Surety acceptable to the Department for payment and performance of said contract, this obligation shall be void; otherwise to remain in effect.

Principal (Bidder or First Partner to Joint Venture)	If a Joint Venture, Second Partner
By	By
Authorized Officer-Owner-Partner	Authorized Officer-Owner-Partner
Typed or Printed Name	Typed or Printed Name
_____ Surety	
By _____ (Seal)	
Agent or Attorney-in-Fact	
_____ Typed or Printed Name	

To receive a copy of the contract and subsequent correspondence / communication from LA DOTD, with respect to the bid bonds, the following information must be provided:

Bonding Agency or Company Name	Address
Agent or Representative	Phone Number / Fax Number

CONSTRUCTION PROPOSAL SIGNATURE AND EXECUTION FORM

THIS FORM, THE SCHEDULE OF ITEMS, AND THE PROPOSAL GUARANTY MUST BE COMPLETED AS INDICATED AND SUBMITTED TO THE LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT (DOTD) TO CONSTITUTE A VALID BID

STATE PROJECT NOS. 023-10-0036 AND 023-11-0025

FEDERAL AID PROJECT NO(S). N/A

NAME OF PROJECT DUBACH - KINDER

I (WE) HEREBY CERTIFY THAT I (WE) HAVE CAREFULLY EXAMINED THE PROPOSAL, PLANS AND SPECIFICATIONS, INCLUDING ANY AND ALL ADDENDA, AND THE SITE OF THE ABOVE PROJECT AND AM (ARE) FULLY COGNIZANT OF ALL PROPOSAL DOCUMENTS, THE MASTER COPY OF WHICH IS ON FILE AT DOTD HEADQUARTERS IN BATON ROUGE, LA., AND ALL WORK, MATERIALS AND LABOR REQUIRED THEREIN, AND AGREE TO PERFORM ALL WORK, AND SUPPLY ALL NECESSARY MATERIALS AND LABOR REQUIRED FOR SUCCESSFUL AND TIMELY COMPLETION OF THE ABOVE PROJECT AND TO ACCEPT THE SUMMATION OF THE PRODUCTS OF THE UNIT PRICES BID ON THE SCHEDULE OF ITEMS ATTACHED HERETO AND MADE A PART HEREOF MULTIPLIED BY THE ACTUAL QUANTITY OF UNIT OF MEASURE PERFORMED FOR EACH ITEM, AS AUDITED BY DOTD, AS FULL AND FINAL PAYMENT FOR ALL WORK, LABOR AND MATERIALS NECESSARY TO COMPLETE THE ABOVE PROJECT, SUBJECT TO INCREASE ONLY FOR PLAN CHANGES (CHANGE ORDERS) APPROVED BY THE DOTD CHIEF ENGINEER OR HIS DESIGNEE. THIS BID IS SUBMITTED IN ACCORDANCE WITH THE GENERAL BIDDING REQUIREMENTS IN THE CONSTRUCTION PROPOSAL AND ALL SPECIAL PROVISIONS, PLANS, SUPPLEMENTAL SPECIFICATIONS, AND THE LOUISIANA STANDARD SPECIFICATIONS FOR ROADS AND BRIDGES (2000 EDITION). I (WE) UNDERSTAND THAT THE SUMMATION OF THE PRODUCTS OF THE UNIT PRICES BID ON THE SCHEDULE OF ITEMS MULTIPLIED BY THE ESTIMATED QUANTITY OF UNIT OF MEASURE FOR EACH ITEM, ALONG WITH ANY OTHER FACTORS SPECIFIED TO BE APPLICABLE SUCH AS CONSTRUCTION TIME AND/OR LANE RENTAL, SHALL BE THE BASIS FOR THE COMPARISON OF BIDS. I (WE) UNDERSTAND THAT THE SCHEDULE OF ITEMS MUST CONTAIN UNIT PRICES WRITTEN OUT IN WORDS AND THAT THE SCHEDULE OF ITEMS SUBMITTED AS PART OF THIS BID IS ON THE FORM SUPPLIED BY DOTD IN THE BID PROPOSAL. MY (OUR) PROPOSAL GUARANTY IN THE AMOUNT SPECIFIED FOR THE PROJECT IS ATTACHED HERETO AS EVIDENCE OF MY (OUR) GOOD FAITH TO BE FORFEITED IF THIS BID IS ACCEPTED BY DOTD AND I (WE) FAIL TO COMPLY WITH ANY REQUIREMENT NECESSARY FOR AWARD AND EXECUTION OF THE CONTRACT, AS WELL AS, SIGN AND DELIVER THE CONTRACT AND PAYMENT/PERFORMANCE/RETAINAGE BOND AS REQUIRED IN THE SPECIFICATIONS.

NONCOLLUSION DECLARATION (APPLICABLE TO FEDERAL-AID PROJECTS)

I (WE) DECLARE UNDER PENALTY OF PERJURY UNDER THE LAWS OF THE UNITED STATES AND THE STATE OF LOUISIANA THAT I (WE) HAVE NOT DIRECTLY OR INDIRECTLY, ENTERED INTO ANY AGREEMENT, PARTICIPATED IN ANY COLLUSION, OR OTHERWISE TAKEN ANY ACTION IN RESTRAINT OF FREE COMPETITIVE BIDDING IN CONNECTION WITH THE CONTRACT FOR THIS PROJECT NOR VIOLATED LA. R.S. 48:254.

BIDDER'S DBE GOAL STATEMENT (APPLICABLE TO DBE GOAL PROJECTS)

IF THIS PROJECT IS DESIGNATED BY SPECIAL PROVISION AS A DISADVANTAGED BUSINESS ENTERPRISE (DBE) GOAL PROJECT IN ACCORDANCE WITH THE DBE PROVISIONS OF THIS CONTRACT, THE BIDDER ASSURES DOTD THAT HE/SHE WILL MEET OR EXCEED THE DBE CONTRACT GOAL, OR IF THE BIDDER CANNOT MEET THE REQUIRED DBE GOAL, THE BIDDER ASSURES DOTD THAT HE/SHE HAS MADE AND CAN DOCUMENT GOOD FAITH EFFORTS MADE TOWARDS MEETING THE GOAL REQUIREMENT IN ACCORDANCE WITH THE CONTRACT AND DBE PROGRAM MANUAL INCORPORATED HEREIN BY REFERENCE.

THE APPARENT LOW BIDDER SHALL COMPLETE AND SUBMIT TO THE DOTD COMPLIANCE PROGRAMS OFFICE, FORM CS-6AAA AND ATTACHMENT(S) AND, IF NECESSARY, DOCUMENTATION OF GOOD FAITH EFFORTS MADE BY THE BIDDER TOWARD MEETING THE GOAL, WITHIN TEN BUSINESS DAYS AFTER THE OPENING OF BIDS FOR THIS PROJECT. RESPONSIVENESS OF INFORMATION SUPPLIED IN THIS SECTION OF THIS CONSTRUCTION PROPOSAL SIGNATURE AND EXECUTION FORM IS GOVERNED BY THE DBE REQUIREMENTS INCLUDED WITHIN THE SPECIFICATIONS AND DBE PROGRAM MANUAL.

CERTIFICATION OF EMPLOYMENT OF LOUISIANA RESIDENTS TRANSPORTATION INFRASTRUCTURE MODEL FOR ECONOMIC DEVELOPMENT (TIME) PROJECTS (APPLICABLE TO TIME PROJECTS)

IF THIS PROJECT IS DESIGNATED BY SPECIAL PROVISION AS A TRANSPORTATION INFRASTRUCTURE MODEL FOR ECONOMIC DEVELOPMENT (TIME) PROJECT AS DEFINED IN ACT NO. 16 OF THE 1989 FIRST EXTRAORDINARY SESSION OF THE LEGISLATURE WHICH ENACTED PART V OF CHAPTER 7 OF SUBTITLE II OF TITLE 47 OF THE LOUISIANA REVISED STATUTES OF 1950, COMPRISED OF R.S. 47:820.1 THROUGH 820.6.

THE BIDDER CERTIFIES THAT AT LEAST 80 PERCENT OF THE EMPLOYEES EMPLOYED ON THIS TIME PROJECT WILL BE LOUISIANA RESIDENTS IN ACCORDANCE WITH LOUISIANA R.S. 47:820.3.

NON PARTICIPATION IN PAYMENT ADJUSTMENT (ASPHALT CEMENT AND FUELS) STATEMENT

IF THIS PROJECT IS DESIGNATED BY SPECIAL PROVISION AS BEING SUBJECT TO PAYMENT ADJUSTMENT FOR ASPHALT CEMENT AND/OR FUELS, THE BIDDER HAS THE OPTION OF REQUESTING EXCLUSION FROM SAID PAYMENT ADJUSTMENT PROVISIONS THAT ARE ESTABLISHED BY SPECIAL PROVISION ELSEWHERE HEREIN.

IF THE BIDDER DESIRES TO BE EXCLUDED FROM THESE PAYMENT ADJUSTMENT PROVISIONS,

THE BIDDER IS REQUIRED TO MARK HERE

FAILURE TO MARK THIS BOX PRIOR TO BID OPENING WILL CONSTITUTE FORFEITURE OF THE BIDDER'S OPTION TO REQUEST EXCLUSION.

CS-14A
04/01

FOR INFORMATION ONLY

STATE PROJECT NOS. **023-10-0036 and 023-11-0025**

BIDDER SIGNATURE REQUIREMENTS (APPLICABLE TO ALL PROJECTS)

THIS BID FOR THE CAPTIONED PROJECT IS SUBMITTED BY:

(Name of Principal (Individual, Firm, Corporation, or Joint Venture))

(If Joint Venture, Name of First Partner)

(Louisiana Contractor's License Number of Bidder or First Partner to Joint Venture)

(Business Street Address)

(Business Mailing Address, if different)

(Area Code and Telephone Number of Business)

(Telephone Number and Name of Contact Person)

(Telecopier Number, if any)

(If Joint Venture, Name of Second Partner)

(Louisiana Contractor's License Number of Second Partner to Joint Venture)

(Business Street Address)

(Business Mailing Address, if different)

(Area Code and Telephone Number of Business)

(Telephone Number and Name of Contact Person)

(Telecopier Number, if any)

ACTING ON BEHALF OF THE BIDDER, THIS IS TO ATTEST THAT THE UNDERSIGNED DULY AUTHORIZED REPRESENTATIVE OF THE ABOVE CAPTIONED FIRM, CORPORATION OR BUSINESS, BY SUBMISSION OF THIS BID, AGREES AND CERTIFIES THE TRUTH AND ACCURACY OF ALL PROVISIONS OF THIS PROPOSAL, INCLUSIVE OF THE REQUIREMENTS, STATEMENTS, DECLARATIONS AND CERTIFICATIONS ABOVE AND IN THE SCHEDULE OF ITEMS AND PROPOSAL GUARANTY. EXECUTION AND SIGNATURE OF THIS FORM AND SUBMISSION OF THE SCHEDULE OF ITEMS AND PROPOSAL GUARANTY SHALL CONSTITUTE AN IRREVOCABLE AND LEGALLY BINDING OFFER BY THE BIDDER.

(Signature)

(Printed Name)

(Title)

(Date of Signature)

(Signature)

(Printed Name)

(Title)

(Date of Signature)

CONTRACTOR'S INFORMATIONAL BID

It is agreed that the total bid(s) shown below, determined by the bidder, are for informational purposes only and that the low bidder for this project will be determined in accordance with the special provision entitled **COST-PLUS-TIME-PLUS LIFE CYCLE COST BIDDING PROCEDURE (A+B+C METHOD)**, as determined by the Department.

A₁=Summation of products of the quantities shown in the Schedule of Items (BASE BID plus Superpave Asphaltic Concrete Pavement) (ALTERNATE A1) multiplied by the unit prices.

A₁= _____

B₁= Bidders proposed contract time for Base Bid and Alternate A1 items multiplied by the Daily User Cost (\$1,000).

B₁= _____ Calendar Days x \$1,000.

B₁= _____

C₁=Life Cycle Cost Adjustment Factor for Superpave Asphaltic Concrete Pavement, determined by the Department.

C₁= \$.

Contractors Total Bid (A₁+B₁+C₁) = _____

OR

A₂=Summation of products of the quantities shown in the Schedule of Items (BASE BID plus Portland Cement Concrete Pavement)(ALTERNATE A2) multiplied by the unit prices.

A₂= _____

B₂=Bidders proposed contract time for Base Bid and Alternate A2 items multiplied by the Daily User Cost (\$1,000).

B₂= _____ Calendar Days x \$1,000.

B₂= _____

C₂=Life Cycle Cost Adjustment Factor for Portland Cement Concrete Pavement, determined by the Department.

C₂= \$.

Contractor's Total Bid (A₂ + B₂+ C₂) = _____

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