STATE OF WISCONSIN

DEPARTMENT OF TRANSPORTATION

Supplemental Specifications

amending the1996 Edition of the

STANDARD SPECIFICATIONS

FOR

HIGHWAY AND STRUCTURE CONSTRUCTION

2001 Edition

INTRODUCTION

Supplemental specifications are issued annually. The supplement that applies to a proposal will be referenced in the "general" special provision of that proposal, but will not be bound into the proposal. Specification revisions made between the annual supplements will be issued as needed in interim supplemental specifications. The interim that applies to a proposal will be referenced in the "general" special provision of the proposal, but will not be bound into the proposal.

One copy of the annual supplement and each interim will be distributed at no charge, by a continuing update service, to prequalified contractors, eligible engineering consulting firms, and selected WisDOT employees. There is no updating service for other users.

Prequalified contractors are responsible for obtaining sufficient copies of this document for bidding and contract management. They also are responsible for notifying their subcontractors and suppliers about the supplement and interim that apply to a proposal.

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The following specifications have been issued:

	Effective From Letting	to Letting
1996 Standard Specifications	Oct. 1996	Until Superseded
1996 Supplemental Specifications	Oct. 1996	Oct. 1997
Interim Supplemental Specifications No. 1	Jan. 1997	Oct. 1997
1997 Supplemental Specifications	Oct. 1997	Oct. 1998
Interim Supplemental Specifications No. 1	June 1998	Oct. 1998
1998 Supplemental Specifications	Oct. 1998	Oct. 1999
Interim Supplemental Specifications No. 1	Feb. 1999	Oct. 1999
1999 Supplemental Specifications	Oct. 1999	Oct 2000
2000 Supplemental Specifications	Oct. 2000	Oct 2001
2001 Supplemental Specifications	Oct. 2001	Until Superseded

In this supplement we continue to use dual dimensioning for all new revisions while those changes published before the 1998 interim no. 1 still have the metric units only. For dual dimensioned provisions, primary values are given in the U.S. standard measure system while the SI metric system equivalents are shown in parentheses. Contracts with the plans and schedule of items developed under the U.S. standard measure system will be administered using the U.S. standard measure system values. Contracts with the plans and schedule of items developed under the SI metric system will be administered using the SI metric system values.

This supplement contains the following specification components identified by number and organized in a hierarchy as follows:

1. Parts, for example "Earthwork" referred to as: part 2.
2. Sections, for example "Bidding Requirements and Conditions" referred to as: section 102.
3. Subsections, potentially containing subordinate subsections, for example "Issuing Bidding Proposals" referred to as: 102.3 or "General" referred to as: 102.3.1.
4. Paragraphs, for example paragraph one of 102.3.2 referred to as: 102.3.2(1).
5. Numbered items, for example item one of 102.3.2(1) referred to as: item one of 102.3.2(1).

The current supplement and interim are included with each new standard specifications book issued or purchased. Address written requests for additional complimentary copies of supplements or interims to:

Wisconsin Department of Transportation
Bureau of Highway Construction, Room 601
P.O. Box 7916
Madison, WI 53707-7916

Obtain free copies of the supplements and interims in person, at:
Room 601, Hill Farms Transportation Building, 4802 Sheboygan Avenue, Madison, Wisconsin.

PREFACE

Wisconsin Department Of Transportation
Division Of Transportation Infrastructure Development
Bureau Of Highway Construction
Standards Development Section

August, 2001

To: Specification Users

Subject: 2001 Supplemental Specifications amending the 1996 Standard Specifications for Highway and Structure Construction

Issued By: Jerry H. Zogg, P.E.
Chief Standards Development Engineer
Bureau of Highway Construction

These 2001 supplemental specifications amend the Standard Specifications for Highway and Structure Construction, 1996 Edition, and are considered part of those standard specifications, superseding conflicting provisions applicable under the contract. Previously issued supplements and interims are incorporated in this document. The 2001 supplement has been approved by the Federal Highway Administration and becomes effective with the October 9, 2001 letting, remaining in effect until superseded. Previously issued supplements and interims will no longer be in effect after October 9, 2001 unless referenced in previously let contracts.

This document was prepared by**:** Michael Hall
Standards Specification Engineer
Bureau of Highway Construction

The following preface section is provided to briefly describe specification revisions made since the 2000 supplement. These descriptions are provided for the convenience of the user only, and are not contractually binding. Each new revision is listed by it's subsection number and title. Where a title has been revised, the listing gives the new title.

PREFACE

PART 1 GENERAL REQUIREMENTS AND COVENANTS

Replace the entire Part 1 and all previously published supplementals within Part 1 to implement new active voice-imperative mood language style. In addition to the style and format changes, this new Part 1 also contains may significant content changes. Provisions have been added, modified, deleted, and moved with this revision. Highlights of these changes are summarized by section as follows:

SECTION 101 GENERAL INFORMATION, DEFINITIONS, AND TERMS

Content New to Section 101

101.1 General

1. *Describes how the department defines responsibilities within the contract documents. Either the document language makes the responsible party clear, uses direct active voice-imperative mood commands to the contractor, or uses the words "will" for the department or "shall" for the contractor.*
2. *Describes the active voice-imperative mood language style used in this document.*
3. *Describes the structure of the document and the new paragraph numbering system.*
4. *Describes the restricted use of capitalization to highlight bid item names.*

101.2 References, Abbreviations, and Acronyms

1. *Combines new information with the existing acronyms.*
2. *Describes the new format for references made within the document.*

101.3 Definitions

1. *Includes definitions of the following new terms:*

Adjustment
Adverse weather day
Affiliated
Bid
Bidding proposal
Bureau
Business day
Consulting firm
Contract modification
Contract revision
District
Erosion control
Extra work
Holidays
Major and minor items
Materially unbalanced bid
Mathematically unbalanced
New material
Notice to contractors
Review panel
Schedule of items
Semi-final estimate
SI metric
Shop drawings
Special waste
Supplemental contract
Unacceptable work
US standard

Content Modified in Section 101

101.3 Definitions

1. *Includes the following redefined terms:*

   Contract change order: the contractor's signature is no longer required.

2. *Includes the following replacements for renamed terms:*

   Invitation for bids is replaced with Notice to contractors
   Proposal form is replaced with Bidding proposal
   Unbalanced bid is replaced with Materially unbalanced bid and Mathematically unbalanced bid
   Working drawing is replaced with Shop drawing

Content Deleted from Section 101

101.3 Definitions

1. *No longer includes the following terms:*

   Administrator

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SECTION 102 BIDDING REQUIREMENTS AND CONDITIONS

Content New to Section 102

102.1 Prequalifying Bidders

1. *Includes by reference the prequalification requirements contained in the department's "Policy on Prequalification of Bidders".*
2. *Contains the general content previously located in "Blue Book" 102.11 Competency of Bidders.*

102.3 Issuing Bidding Proposals

1. *Incorporates due process procedures that allow the contractor to appeal the department's refusal to issue a bidding proposal by referring to the department's prequalification policy and Trans 504 of the Wisconsin administrative code,.*
2. *Incorporates new language based on current practice requiring payment for previously issued plans in item 2 of 102.3.2(1).*
3. *Elevates language for affiliated bidders from the may not issue to the will not issue category.*

102.5 Examining Contract Documents and Work Site

1. *Holds the contractor responsible for site investigation information that could be determined from walking the project site.*

102.10 Withdrawing or Returning Proposals

1. *Allows the department to return a bidding proposal issued by mistake or if the department becomes aware of a change in the bidder's eligibility.*

102.13 Disqualification of Bidders

1. *Requires the department to notify the contractor in writing upon disqualification and explain the terms of the disqualification as well as how to reestablish qualification.*
2. *Incorporates due process procedures that allow the contractor to appeal the department's disqualification of the contractor by referring Trans 504 of the Wisconsin administrative code.*

Content Modified in Section 102

This section is extensively rewritten and restructured to reflect current department practice and policy. Several new subordinate subsections are added and the existing subsections are renumbered.

102.3 Issuing Bidding Proposals

1. *Is reorganized and expanded to include separate subsections defining the department's action.*
2. *Incorporates provisions for uncompleted work previously found in the department's prequalification policy and under "Blue Book" 102.12 Disqualification of Bidders.*
3. *Incorporates actions taken under Trans 504 of the Wisconsin administrative code.*

102.6 Preparing the Proposal

1. *Uses the terms unit price, bid amount, and total bid consistent with those used in the department's bidding proposal document.*

102.7 Irregular Proposals

1. *Is reorganized and expanded to include separate subsections defining the department's action.*
2. *Incorporates in item 5 of 102.7.2(1) language previously found in the department's prequalification policy.*
3. *Incorporates in item 6 of 102.7.2(1) and item 10 of 102.7.3(1) language previously found in "Blue Book" 103.1 Consideration of Proposals.*
4. *Incorporates in item 7 of 102.7.2(1) language previously included as disqualification criteria.*

102.13 Disqualification of Bidders

1. *Is reorganized and expanded to include separate subsections defining the department's action.*
2. *Consolidates existing items by reference to actions taken under Trans 504 for debarment or suspension.*

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3. *Incorporates in item 3 of 102.13.2(1) provisions previously found in the department's prequalification policy.*

Content Deleted from Section 102

102.13 Disqualification of Bidders

1. *Several items included in "Blue Book" 102.12 Disqualification of Bidders were eliminated by new language that includes those excluded items under potential debarment or suspension actions taken under Trans 504. This approach gives the bidder greater assurance that the department will consider the bidder's legal right to due process before disqualification.*

Content Moved from Section 102

102.6 Preparing the Proposal

1. *Language previously contained in "Blue Book" 102.6 Irregular Proposals is moved to 102.7.*

102.11 (Vacant)

1. *Language previously contained in "Blue Book" 102.11 Competency of Bidders is moved to 102.1.*

102.13 Disqualification of Bidders

1. *Previously contained language describing the department's action when the bidder has uncompleted work that is moved to 102.3 Issuing Bidding Proposals.*

SECTION 103 CONTRACT AWARD AND EXECUTION

Content New to Section 103

103.8 Nullifying the Award

1. *Incorporates language allowing the department, by written action, to accept the bidder's request to nullify the award.*

Content Modified in Section 103

Deadlines and time periods throughout this section are now explicitly expressed in terms of either business days or calendar days.

103.1 Consideration of Proposals

1. *Eliminates redundancy and better coordinates with section 102. Language referring to departmental corrections is included by reference to 102.7.1. Language referring to unbalanced bids is included by reference to 102.7.*
2. *Review of bidder qualification is included by reference to 102.13.*

Content Moved from Section 103

103.1 Consideration of Proposals

1. *Previously contained language describing the department's action when addition errors are encountered that is moved to 102.7.1 Department will Correct.*
2. *Previously contained language describing the department's action when the bidder submits an unbalanced bid that is moved to 102.7.3.*

SECTION 104 SCOPE OF WORK

Content New to Section 104

104.3 Contractor Notification

1. *Describes a new communication process to expedite the resolution of potential contract changes identified by the contractor. The potential contract change can be resolved at each step in the process.*

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Content Modified in Section 104

104.2 Revisions to the Contract

1. *Is referred to as our "Super Changes" Clause since it consolidates contract change language from a variety of previous locations in Sections 104, 108, and 109.*
2. *Include 6 reasons to issue contract change orders.*

104.6 Roadway Maintenance and Traffic Control

1. *Include 2 subsections on traffic control from 107 to consolidate this topic.*

104.8 Rights in the Use of Materials Found on the Project

1. *Clarifies that the contractor has rights to use materials found within the horizontal and vertical excavation limits of the project. The contractor does not have rights to material within the right-of-way that is beyond these excavation limits, unless the engineer gives written authorization.*

104.10 Cost Reduction Incentive

1. *Is rewritten to encourage use of CRI's.*
2. *Describes new two step process for CRI: a CRI Concept submittal for initial approval, and a CRI Proposal submittal which includes complete plans, estimates, and other information.*
3. *Includes payment for CRI Proposal submittal whether accepted or not.*
4. *Includes new cost sharing formula for CRI's constructed.*

Content Moved from Section 104

104.5 (Vacant)

1. *Language previously contained in "Blue Book" 104.5 Extra Work is moved to 101.3.*

SECTION 105 CONTROL OF THE WORK

Content New to Section 105

105.13 Claims Process for Unresolved Changes

1. *Former subsection 109.10 Additional Compensation is included here and expanded to describe the department's 3 phase process of resolving claims with reviews by: the district, the Bureau of Highway Construction, and the Review Panel. Contractor timing and content requirements are specified for filing the notice of claim, filing the claim itself, and responding to the department's decisions. Parallel timing and content requirements are also specified for the engineer's review of the claim and claim decisions. The option of an alternative dispute resolution process is added.*

Content Modified in Section 105

105.3 Conformity with the Contract

1. *Eliminates the $400 lump sum credit to the Department for administrative costs to process contract change orders for nonconforming work or materials.*
2. *Clarifies the definitions and establishes consistent use of the terms: nonconforming work and unacceptable work. Former subsection 105.10 Removal of Unauthorized and Unacceptable Work is now included here to consolidate this topic. Unacceptable work and unauthorized work are categories of nonconforming work.*

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105.6 Construction Staking

1. *Include language that coordinates with the new standardized special provisions on contractor staking currently being implemented.*

105.11 Inspection and Acceptance

1. *Combines former subsections 105.11 Partial Acceptance of Work and 105.12 Final Inspection and Acceptance to consolidate this topic.*
2. *Adds contract mechanism to allow the engineer to stop assessing contract time and stop charging liquidated damages(LD's) if the specified requirements for substantial completion are met. Engineer may restart contract time and LD's if the contractor is not responsive in completing the punch-list or cleanup.*

Content Moved from Section 105

105.10 (Vacant)

1. *Language previously contained in "Blue Book" 105.10 Removal of Unauthorized and Unacceptable Work is moved to 105.3.*

105.12 (Vacant)

1. *Language previously contained in "Blue Book" 105.12 Final Inspection and Acceptance is moved to 105.11.*

SECTION 106 CONTROL OF MATERIALS

Content New to Section 106

106.1 General

1. *Clearly defines the contractor's responsibility to provide conforming materials and monitor operations to prevent the incorporation of nonconforming materials.*

106.2 Supply Source and Quality

1. *Encourages the contractor to incorporate material from the WDNR list of special wastes, cited in section 895.58 of the Wisconsin statutes. The contractor is given legal liability protection for the use of these materials under the statutes.*
2. *Requires the contractor to provide the engineer with results of tests performed by the producer or contractor if inspection is required at a manufacturing source plant.*

106.3 Approval of Materials

1. *Provides for approval based on product acceptability lists (PAL's).*
2. *Provides for approval of materials based on contractor performed testing under the department's quality management program (QMP). Subordinate subsections are included for each of the following elements of the QMP testing program:*

Technician Certification	*Department Testing*
Contractor Quality Control	*Independent Assurance*
Documentation	*Dispute Resolution*

106.5 Nonconforming Materials

1. *Bases approval of materials on the definable standard, conformance with the contract requirements. The engineer may choose to approve nonconforming materials and potentially adjust payment accordingly.*

Content Modified in Section 106

This section is extensively rewritten and restructured to reflect current department practice. Several new subordinate subsections are added and the existing subsections are renumbered.

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106.2 Supply Source and Quality

1. *Is rewritten and restructured to include subordinate subsections.*
2. *Allows the two-way substitution between english and metric products.*

106.3 Approval of Materials

1. *Explicitly states that the department's approval of materials does not constitute acceptance of the work incorporating those materials.*
2. *Establishes an order of precedence to clarify the determination of the required sampling and testing methodology in 106.3.4.1(2).*

Content Deleted from Section 106

106.1 General

1. *Eliminates language that allowed the contractor to request courtesy testing from the department. The contractor is solely responsible for any preliminary testing they wish to do to assure that the materials conform to the contract when incorporated into the work.*

106.3 Approval of Materials

1. *Eliminates specific sampling requirements for products approved by certification. The department retains the right to review and approve the methods used.*
2. *Eliminates language that allowed the department to deduct payment for departmental testing, courtesy testing, performed on materials not used under the contract.*

Content Moved from Section 106

106.3 Approval of Materials

1. *Language previously contained in "Blue Book" 106.3 Samples and Tests is moved to 101.2. This language, that defines acronyms for referenced testing standards and states that the editions current at the time of letting control under the contract, now applies generally throughout the contract wherever outside standards are cited.*

SECTION 107 LEGAL RELATIONS AND RESPONSIBILITY TO THE PUBLIC

Content New to Section 107

107.9 Contractor's Use of the Highway Right-of-Way

1. *Contains new content to clarify that the contractor's right to use the right-of-way is granted by the engineer in the contract.*

107.13 Third Party Beneficiary

1. *Contains new content codifying current practice that the only two parties with any rights under the contract are the department and the contractor. The contract doesn't give third parties the right to any benefits or the right to maintain an action for damages.*

Content Modified in Section 107

107.14 Contractor's Responsibility for Work

1. *Redefines work within this subsection to clarify what the contractor is responsible to protect and what the contractor isn't liable for.*

107.17 Railroad-Highway Grade Separations and Approaches, New Railroad Crossings, and Operations on Railroad Right-of-Way

1. *Now requires 12 foot of horizontal clearance for temporary construction.*
2. *Codifies current practice on the contractor submitting evidence of railroad insurance to both the department and the railroad company.*

107.25 Archeological and Historical Findings

1. *Clarifies that the contractor and engineer have different responsibilities to coordinate with state agencies depending on whether findings are encountered within the project or on private property.*

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Content Moved from Section 107

107.5 (Vacant)

1. *Language previously contained in "Blue Book" 107.5 Restoration of Surfaces Opened by Permit is moved as follows:*
    a. *The content alerting the contractor that the engineer may direct the contractor to assist with utility work is moved to 105.5.1.*
    b. *The content addressing a municipality's authority to issue utility permits is moved to 107.22.*

107.7 (Vacant)

1. *Language previously contained in "Blue Book" 107.7 Safety, Health, and Sanitation is moved to 107.1(2).*

107.9 Contractor's Use of the Highway Right-of-Way

1. *Language previously contained in "Blue Book" 107.9 Barricades, Warning Signs and Flaggers is moved to 104.6.1. The cross-reference to 104.6.1 for this information is included in 107.8(1).*

107.13 Third Party Beneficiary

1. *Language previously contained in "Blue Book" 107.13 Opening of Section of Highway to Traffic is moved to 104.6.5. The cross-reference to 104.6.5 for this information is included in 107.8(2).*

SECTION 108 PROSECUTION AND PROGRESS

Content New to Section 108

108.2 Start of Work

1. *Contains the content of the third paragraph from "Blue Book" 108.7 Determination and Extension of Contract Time for Completion. The Department will standardize procedures and revise STSP's to issue a Notice to Proceed on all projects regardless of contract type.*

108.4 Progress Schedules

1. *Provides specifications for 3 types of progress schedules. The default schedule is a bar chart schedule very similar to those used in the past and is incidental to the work. Computer generated schedules called relationship bar chart (RBC) schedules and critical path method (CPM) schedules must be required in the special provisions and are bid items.*
2. *Indicates the engineer will not make progress payments, except for the value of materials, until the initial progress schedule is accepted.*

108.10 Determining Payment and Contract Time Extensions for Excusable Delays

1. *Adds a new subsection for excusable compensable delays where the engineer may grant additional time and compensation for a delay.*
2. *Adds new mechanisms of a chart for adverse weather and severe weather requirements to address weather delays on calendar day and completion date contracts. These new mechanisms are not applicable to working day contracts.*
3. *Requires progress schedule documentation to support all requests for time extensions.*

Content Modified in Section 108

Virtually all of the Section 108 subsections are renumbered from the "Blue Book," due to the addition of 2 new subsections at the beginning of 108 and the moving of other subsections.

108.10 Determining Payment and Contract Time Extensions for Excusable Delays

1. *Renames unavoidable delays as excusable non-compensable delays and clarifies that the engineer may grant a time extension for these delays, but will not provide compensation for the delay.*
2. *Clarifies which third party and utility delays are compensable and which are non-compensable depending on wording of utility special provisions.*

108.11 Liquidated Damages

1. *Revise this subsection to reflect the results of the 2000 survey of the actual daily costs incurred by WisDOT for administrative and engineering personnel on construction projects.*

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Content Moved from Section 108

108.6 Character of Workers

1. *Language previously contained in "Blue Book" 108.6 Suspensions of Work Ordered by the Engineer is moved as follows:*
    a. *The engineer's authority to suspend work is moved to 105.1(2).*
    b. *The possibility of a related contact change order is moved to 104.2.2.3.*
2. *Contains the content on character of workers previously located in 108.4.*

108.9 Contract Time for Working Day, Calendar Day, and Completion Date Contracts

1. *Language previously contained in "Blue Book" 108.9 Default on the Contract is moved to 108.12.*
2. *Contains and expands the content on the determination of and the assessment of contract time previously located in 108.7, 108.12, and 108.13.*

108.10 Determining Payment and Contract Time Extensions for Excusable Delays

1. *Language previously contained in "Blue Book" Termination of the Contractor's Responsibility is moved to 108.14.*
2. *Contains and expands the content on time extensions and delays previously located in 108.7, 108.12, and 108.13.*

SECTION 109 MEASUREMENT AND PAYMENT

Content New to Section 109

109.1.2 Area

1. *Allows the engineer to weigh or determine a volume and convert to area for payment of bid items paid by area if the contractor approves the conversion factor used.*

109.1.3 Volume

1. *Incorporates the general requirements for vehicles used for in-vehicle volume measurement. These requirements were previously in section 617.*

109.4 Price Adjustments for Contract Revisions

1. *Contains a 4-step sequence to price all contract revisions. If the contract revision extends contract time, the price adjustment includes both the cost of the revised work and the cost of the delay.*
2. *Provides a list of items the department will not pay for as part of a contract revision.*
3. *Contains new markups and formulas to compute the cost of force account work.*
4. *Includes a new subsection to pay for contractor-incurred costs resulting from certain delays the department is responsible for.*

109.7 Acceptance and Final Payment

1. *Adds requirements the contractor must satisfy to submit an acceptable statement of disagreement with the semi-final estimate.*

Content Modified in Section 109

109.4 Price Adjustments for Contract Revisions

1. *Is modified and expanded to cover pricing all contract revisions.*
2. *Was previously titled "Extra Work" in the "Blue Book" and addressed just the payment of extra work.*

109.5 Eliminated Items

1. *Previously addressed both the engineer's authority to eliminate an item and how to pay for an eliminated item. The engineer's authority to eliminate an item is moved to 104.2.2.5.*
2. *Describes the contractor-incurred costs and a new markup that will be paid for an eliminated item.*

109.6 Progress Payments

1. *Was previously titled "Partial Payments" in the "Blue Book".*
2. *Indicates the engineer must first prepare an estimate before making a progress payment.*
3. *Restricts the engineer from making progress payments, except for the value of materials, until the engineer accepts the contractor's progress schedule.*
4. *Allows for an increased frequency of payments by reducing the minimum payment.*

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Content Moved from Section 109

The content of several subsections included in the "Blue Book" is moved and those existing "Blue Book" subsections are eliminated.

The content of "Blue Book" 109.9 Differing Site Conditions is moved to 104.2.2.2.

The content of "Blue Book" 109.10 Additional Compensation is moved to 105.13 and expanded to more fully describe the claims resolution process.

The content of "Blue Book" 109.11 Equipment Expense Rates is moved to 109.4.5.5, is rewritten, and expanded to aid in computing force account work.

211.4.5.3 Asphaltic Treated Surfaces and Pavements

Revise this subsection to require the contractor to remove joint filler protruding from cracks and remove excess joint filler and sealant materials from the surface of existing asphaltic pavements before overlaying with new asphalt.

304.4.2 Hauling and Spreading

Revise this subsection to update the reference for haul vehicles when using in-vehicle volume measurement. These provisions were moved from section 617 to subsection 109.1.3 in this supplement.

See also 109.1.3 Volume and 617 Hauling.

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407 ASPHALTIC CONRETE PAVEMENT

Revise this section to update the specification previously published in the supplement. Substantive content changes were made to the following subsections:

407.3.2.3 Add a new subsection called "Waiving Density Testing". The engineer may waive density testing where it is not practical to determine density by the lot system or the contract contains less than 750 tons of a given mixture.

407.5.1.1 The department will waive the incentive and disincentive pay adjustments if the engineer waives density testing.

407.5.1.3 The department will restrict incentive payments for integrally paved shoulders and where part of a lot is paved on a day with air voids that significantly differ from the target value.

415.5.9.6.3 Design Speed-65 KM/H Plus

Revise this subsection to formally implement the department's long-standing policy of random tining prescribed for several years in the C&M manual construction notes. This specification also incorporates the results of Marquette University's study on noise and texture for PCC Pavements. Marquette's research demonstrated that skewed transverse tining, with a random tine spacing, minimizes whine without sacrificing friction.

The required dimensions and random tine spacings for machine rakes are in the department's C&M manual. The specification requires a rake built to these dimensions but does not specify the spacing of the grooves created in the pavement.

See also C&M 8.10.

PRELIMINARY

501.3.9 Pozzolans

Add this new subsection to allow the contractor to use other pozzolans, instead of fly ash, as a partial replacement for portland cement in concrete mixes. The department maintains a list of approved pozzolans on the Approved Product Lists found on the dotnet (dotnet/dtidcons/apprvdlst.htm). Currently only one material has been approved for use on WisDOT projects, Badger Pozz, an industrial by-product distributed by Minergy Products LLC of Milwaukee, WI.

502.2.6 Non-Bituminous Joint Sealer

Revise this subsection to update obsolete references to the national standards for non-bituminous joint sealers. The new standards are in ASTM C920.

503.2.1 General

Add paragraph two to require the contractor to rustproof form bracket attachments and other construction related hardware that will be permanently incorporated in the finished structure.

503.2.2 Concrete

Revise paragraph one to allow the contractor 56 days, instead of the standard 28 days, to attain the compressive strength requirements specified throughout section 503 for prestressed concrete I-type girders if the plans show a design ultimate compressive stress of 8000 psi or higher for those girders. Also add both English and metric bid items for Prestressed Girder, I Type, 54W-Inch (1370W mm).

See also Bid Items Added.

505.2.6 Dowel Bars and Tie Bars

Revise this subsection, previously published in the supplement, to allow dowel bars to be sheared as well as cut to length.

611.6 Adjusting Catch Basin, Manhole, and Inlet Covers

Revise paragraph one to allow the contractor to use risers, grade rings, for adjusting castings from the department's approved products list. The department maintains a list of approved grade rings on the Approved Product Lists found on the dotnet (dotnet/dtidcons/apprvdlst.htm).

617 HAULING

Revise this section to clarify that the general requirements for vehicles used for in-vehicle volume measurement have been moved to subsection 109.1.3. Section 617 is now only relevant in contracts that include Hauling bid items.

See also 109.1.3 Volume and 304.4.2 Hauling and Spreading.

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623 DUST CONTROL SURFACE TREATMENT

Retitle this section and replace the entire content to allow the contractor the option to use either calcium chloride or magnesium chloride as a dust control surface treatment. Retire the existing bid item, 62301 Calcium Chloride Surface Treatment, and replace with the new bid item, 62302 Dust Control Surface Treatment.

The new item is measured by the square yard instead of by the ton. The unit of measure was changed so the department can add more dust control products in the future. Some of these potential products may be impractical to weigh before mixing with water.

The new specification, however, allows the engineer to calculate the square yards for payment using measured volume or weight and applying a conversion factor. The conversion factor must be pre-approved by the contractor as specified in 109.1.2(2).

See also Bid Items Added and Bid Items Retired.

641.2.9 Overhead Sign Supports

Revise paragraph one, previously published in the supplement, to eliminate the engineer's review of shop drawings. Revise paragraph three to provide for department designed bases if the plans include SDD 15C15-1 "Monotube Overhead Sign Support Base" or SDD 15C16-1 "Monotube Cantilever Sign Support Base". The criteria for determining if the SDD's should be included in the contract are published on the back sides of the SDD's. Those criteria address the following:

1. *Total area of signs mounted on structure.*
2. *The maximum horizontal span or length of cantilevered arm.*
3. *The maximum sign depth.*
4. *The maximum height of the horizontal arm.*

If the plans do not show base design details, the contractor must submit a base design with the sign support shop drawings. That design must include the base and roadway elevations necessary to check the sign clearance. Also, for contractor-designed bases, add the design requirements specified in the department's SDD's for the top-of-pad above grade dimension, the compressive strength of concrete, the reinforcing steel strength, and the AASHTO anchor bolt designation.

See also new SDD's 15C15-1 and 15C16-1.

641.5 Basis of Payment

Revise subsection 641.5.2, previously published in the supplement, to clarify that the sign support base design is included if the plans do not provide design details for the sign support base.

See also new SDD's 15C15-1 and 15C16-1.

643.2.1 General

Revise this subsection, previously published in the supplement, to specify in more detail the quality of traffic control devices, based on language in the “Quality Standards for Work Zone Traffic Control Devices” booklet, printed by the American Traffic Safety Services Association.

643.2.2.1 General

Revise paragraph one, previously published in the supplement, to update the MUTCD arrow board reference to section 6F.53, figure 6F-3 of the MUTCD 2000 Edition.

DRAFT

643.2.4 Drums

Revise this subsection, previously published in the supplement, to incorporate active voice-imperative mood language style changes. The content has not changed.

643.2.5 Barricades

Revise this subsection, previously published in the supplement, to require barricades used on National Highway System routes to meet new federal crashworthy requirements, according to the department's phase-in schedule. Also revise the subsection to include the department's practice of using 8-foot Type III barricades, except when the barricade is required to have a sign attached. For Type III barricades required to have an attached sign, the minimum barricade length is revised to 4 feet in order to allow compliance with new crashworthy criteria. Designers will no longer need to include a special provision or note on the plans to specify the standard equivalent barricade lengths.

643.2.8.1 General

Revise paragraph one to allow sign message overlays on two lines of lane(s) closed advance warning signs.

643.2.12.1 General

Revise paragraph two, previously published in the supplement, to reduce the minimum thickness of sheet aluminum sign base material for some temporary traffic control signs mounted on barricades. This revision will allow more options to meet new federal crashworthy requirements for signs mounted on barricades.

643.3.4 Signs

Revise paragraph two, previously published in the supplement, to update the height requirements for post-mounted temporary traffic control signs to the standards specified in the MUTCD 2000 Edition.

643.3.5.2 Types A (Low Intensity Flashing) and C (Steady Burn)

Revise paragraph one to require compliance with new federal crashworthy requirements, according to the department's phase-in schedule, for warning light attachments on all traffic control drums and for warning light attachments on barricades used on National Highway System routes.

643.3.12 Fixed Message Signs

Revise paragraph two, previously published in the supplement, to update the height requirements for post-mounted fixed message signs to the standards specified in the MUTCD 2000 Edition.

PREVIEW

PREFACE

BID ITEMS ADDED

New items are introduced as required to support changes to the standard specifications. The department is now also creating new bid items, with standard numbers, to support changes introduced in the standardized special provisions (STSP's). These items are available to designers using the associated STSP's and are designed to smooth the transition from STSP to standard spec for selected provisions. We will retire the associated existing items and the STSP's upon implementation as supplemental spec. Designers are encouraged to use the STSP's and new bid items on all new PS&E's.

Add these additional standard specification bid items effective with the 2001 supplement:

10843	*RBC Progress Schedule*
10844	*CPM Progress Schedule*
50308	*Prestressed Girder, I Type, 54W-Inch (1370W mm)*
62302	*Dust Control Surface Treatment*
62828	*Erosion Mat, Delivered, Class I, Urban Type B*
62829	*Erosion Mat, Installed, Class I, Urban Type B*
64780	*Pavement Marking, Diagonal, 6-Inch, Epoxy (150 mm)*
64792	*Pavement Marking, Diagonal, 18-Inch, Epoxy (450 mm)*

Add these standardized special provision bid items effective with the 2001 supplement:

20335	*Removing Small Pipe Culvert*
20371-20390 et seq.	*Removing Old Structure, Station ____*
40729	*Profile Index Incentive, Asphaltic Concrete Pavement*
61410	*Steel Plate Beam Guard, Class A, Over Low Fill Culverts*
62873	*Inlet Protection, Type D*

BID ITEMS RETIRED

Retire these additional bid items effective with the 2001 supplement:

62301	*Calcium Chloride Surface Treatment*
65001	*Construction Staking, Storm Sewer*
65002-65009 et seq.	*Construction Staking, Storm Sewer, Project ____*
65010	*Construction Staking, Subgrade*
65011-65019 et seq.	*Construction Staking, Subgrade, Project ____*
65020	*Construction Staking, Crushed Aggregate Base Course*
65021-65029 et seq.	*Construction Staking, Crushed Aggregate Base Course, Project ____*
65030	*Construction Staking, Curb, Gutter, and Curb and Gutter*
65031-65039 et seq.	*Construction Staking, Curb, Gutter, and Curb and Gutter, Project ____*

ERRATA SHEET

When the specifications were converted to metric units, grades 40 and 60 steel were given the designations of grades 300 and 400. Later, AASHTO modified the grade 400 designation to grade 420 for a more exact conversion. Replace all references to grade 400 steel throughout the specifications with grade 420.

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SCHEDULE OF BID ITEMS ADDED AND RETIRED BY THE 2000 SUPPLEMENTAL SPECIFICATIONS

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ERRATA

Errata Sheet ..... Inside back cover

PART I
GENERAL REQUIREMENTS AND COVENANTS

PART I GENERAL REQUIREMENTS AND COVENANTS
Replace the entire text of part 1 with the following:

SECTION 101 GENERAL INFORMATION, DEFINITIONS, AND TERMS

101.1 General

(1) The department defines the contractor's and department's responsibilities within the contract documents in one of the following ways:

1. Taken in context, the contract language makes the responsibility party clear.
2. Direct commands written to the contractor in the active voice-imperative mood.
3. Using "shall" to indicate contractor responsibility and "will" to indicate department responsibility. For example, "Aggregates shall be stored in stockpiles" or "Sampling and testing will be in accordance with the following AASHTO methods...".

(2) If the contractor thinks the responsibility for an action under the contract is unclear or is given to the wrong party, the contractor should seek clarification from the department.

(3) Part 1 of these standard specifications for highway and structure construction is written to the bidder before award of the contract and to the contractor after award of the contract. The sentences that direct the contractor to perform work are written in the active voice-imperative mood. These directions to the contractor are written as commands. For example, a requirement to provide cold-weather protection would be expressed as, "Provide cold-weather protection for concrete," rather than "The contractor shall provide cold-weather protection for concrete. In the imperative mood, the subject "the bidder" or "the contractor" is understood.

(4) Within Part 1, all requirements to be performed by others are written in the active voice. Sentences written in the active voice identify the party responsible for performing the action. For example, "The engineer will determine the density of the compacted material." Certain requirements of the contractor may also be written in the active voice, rather than the active voice-imperative mood, if the sentence includes requirements for others in addition to the contractor. For example, a sentence that involves action by both the contractor and the engineer would be expressed as, "After the contractor provides initial written notice, the engineer will revise the contract as specified in 104.2."

(5) Sentences that define terms, describe a product or desired result, or describe a condition that may exist are written in neither the active voice nor the imperative mood. These types of sentences that describe a condition use verbs requiring no action. For example, "The characteristics of the soils actually encountered in the subgrade may affect the quality of cement and depth of treatment necessary."

(6) The document contains the following components identified by number and organized in a hierarchy as follows:

1. Parts, for example "Earthwork" referred to as: part 2.
2. Sections, for example "Bidding Requirements and Conditions" referred to as: section 102.
3. Subsections, potentially containing subordinate subsections, for example "Issuing Bidding Proposals" referred to as: 102.3 or "General" referred to as: 102.3.1.
4. Paragraphs, for example paragraph one of 102.3.2 referred to as: 102.3.2(1).
5. Numbered items, for example item one of 102.3.2(1) referred to as: item one of 102.3.2(1).

(7) In addition to the identifying numbers shown in the document, parts, sections, and subsections have descriptive titles. These titles provide reference only, not interpretation. If a subsection contains a subordinate subsection entitled "General," the provisions of that general subsection apply to all subsections in the parent subsection.

(8) Bid item names are capitalized as are all proper names and acronyms. Capitalization of other words not beginning a sentence is avoided.

101.2 References, Abbreviations, and Acronyms

(1) References made within these specifications use the conventions specified in paragraph 4 of subsection 101.1. For example, 101.1(4) is used to make the reference in the previous sentence. References to parts or sections include the words "part" or "section", references to subsections or paragraphs use only the identifying numbers, and references to numbered items use the words "item number __ of " and the identifying paragraph number. Occasionally a subsection will contain a reference to itself to avoid possible confusion due to the nesting of subsections. Imprecise references like: "in this subsection," "above," "below," "elsewhere in the contract," etc. are eliminated.

(2) Unless specified by year or date, cited publications refer to the most recent issue, including interim publications, in effect on the bid closing date.

(3) The department identifies acronyms used throughout the contract here in 101.2. The department may also identify acronyms, used in a more limited scope, within individual parts of the contract. Interpret acronyms used throughout the contract as follows:

AASHTO	American Association of State Highway and Transportation Officials
AISI	American Iron and Steel Institute
ANSI	American National Standards Institute, Inc.
AREA	American Railway Engineering Association
ASTM	American Society for Testing and Materials
AWPA	American Wood Preservers' Association
AWS	American Welding Society
AWWA	American Water Works Association
ECIP	Erosion Control Implementation Plan
FHWA	Federal Highway Administration
IES	Illuminating Engineering Society
IPCEA-NEMA	Insulated Power Cable Engineer's Association - National Electrical Manufacturer's Association
ITE	Institute of Transportation Engineers
MIL	Military Specification
MUTCD	Manual on Uniform Traffic Control Devices for Streets and Highways
NACE	National Association of Corrosion Engineers
NCHRP	National Cooperative Highway Research Program
NEC	National Electrical Code
NEMA	National Electrical Manufacturers Association
NTPEP	AASHTO's National Transportation Product Evaluation Program
OSHA	Occupational Safety and Health Administration

SAE Society of Automotive Engineers

SI International System of Units

SSPC Steel Structures Painting Council

UL Underwriters' Laboratory

USACE United States Army Corps of Engineers

WDNR Wisconsin Department of Natural Resources

101.3 Definitions

(1) The department defines terms used throughout the contract here in 101.3. The department may define, or redefine, terms within individual parts of the contract where those terms are used in a more limited scope. Interpret these terms, used throughout the contract, as follows:

Addenda Revisions to the plans or the proposal form developed before opening of proposals.

Adjustment A modification in the contract price or contract time as specified in 108.10 or 109.4.

Adverse weather day For calendar date or completion date contracts, a day the contractor is scheduled to work when weather, or job conditions caused by recent weather, cause the contractor to lose 4 or more hours of work on the controlling item.

Advertisement See also notice to contractors

Affiliated Having a relationship where one business concern or individual directly or indirectly controls or can control the others.

Auxiliary lane The portion of the roadway adjoining the traveled way for parking, change of speed, or for other purposes supplementary to through traffic movement.

Award The department's acceptance of a bid.

Base course The layer or layers of specified or selected material of designed thickness placed on a subbase or subgrade to support a surface course.

Bid See proposal

Bidder An individual, partnership, joint venture, corporation, limited liability company, limited liability partnership, or a combination of any or all jointly, submitting a proposal (bid) for the work advertised in the invitation for bids, acting directly or through a duly authorized representative.

Bidding proposal The approved form on which the department requires bids to be prepared and submitted for the work. The bidding proposal is further described in 102.2.

Bridge A structure having a span of more than 20 feet from face to face of abutments or end bents, measured along the centerline of the roadway, spanning a water course or other opening or obstruction, such as a highway or railroad, including the substructure, superstructure, and trestle work approaches.

Bureau The department's bureau of highway construction. Other department bureaus are specifically identified.

Business day Every day shown on the calendar, excluding Saturdays, Sundays, and department-specified holidays.

Calendar day Every day shown on the calendar, including Saturdays, Sundays, and department-specified holidays.

Certificate of compliance A document, provided by a manufacturer, producer, or supplier of a product, stating that the product as furnished to the contractor complies with the pertinent specifications and contract requirements.

Certified report of test or analysis A certified test report, provided by a manufacturer, producer, or supplier of a product, indicating that actual results of tests or analyses comply with the elements of the specification requirements.

Completion date The calendar date shown in the proposal on or before which the work contemplated under the contract shall be completed.

Construction limits The limits of grading or other work generally defined by slope stakes offset from the actual slope intercepts or limits of the work.

Consulting firm The individual, partnership, joint ventures, corporation, or agency contracted by the department to act directly or as a duly authorized construction representative providing services for the department.

Contract The written agreement between the department and the contractor setting forth the obligations of the parties to the contract, including, but not limited to, performance of the work, furnishing of labor and materials, and basis of payment.

The contract includes the notice to contractors, proposal, contract form, contract bond, standard specifications, supplemental specifications, interim supplemental specifications, special provisions, addenda, general plans, detailed plans, notice to proceed, and contract change orders and agreements required to complete the construction of the work in an acceptable manner, including authorized extensions, all of which constitute one instrument.

Contract bond The approved form of security, executed by the contractor and the contractor's surety or sureties, guaranteeing the performance of the contract work, completion of the contract requirements, and the payment of claims as provided in 779.14 of the Wisconsin statutes.

Contract change order A written order or authorization executed by the engineer covering work not otherwise provided for in the contract, revisions in or amendments to the contract, or conditions specifically prescribed in the specifications as requiring contract change orders. The change order document becomes a part of the contract when executed by the department.

Contract modification Any change to the contract made after it is executed, including but not limited to, the following:

- A contract change order.
- A supplemental contract agreement.
- An administrative change adding a non-bid item.
- A general administrative change.

Contract period The period from the specified date of commencing work to the date that the specified number of calendar or working days has elapsed, both dates inclusive, or from the specified date of commencing work to the specified completion date, both dates inclusive; as specified in the contract.

Contract revision See: contract modification

Contract time The number of calendar or working days shown in the proposal representing the time allowed for the completion of the work contemplated in the contract.

Contractor The individual, partnership, joint venture, corporation, limited liability company, limited liability partnership, or agency undertaking the performance of the work under the terms of the contract and acting directly or through a duly authorized representative.

Controlling item of work An activity shown on the project schedule, that if delayed, delays completion of the project.

Culvert A structure not classified as a bridge that provides an opening under a roadway.

Department The Wisconsin Department of Transportation.

Detour An existing, permanent road designated as a temporary route to carry vehicular traffic around a section of a highway closed to through traffic.

District The department's transportation district office.

Divided highway A highway with separate roadways for traffic in opposite directions.

Engineer The secretary of the department of transportation or the secretary's authorized representative limited by the particular duties assigned to the representative.

Equipment All machinery and articles necessary for the proper construction and acceptable completion of the work. This includes the supplies, tools, and apparatus for upkeep and maintenance of the equipment.

Erosion control implementation plan The erosion control implementation plan, or ECIP, as required under Trans 401 of the Wisconsin administrative code.

Extra work All work performed by the contractor, with approval of the engineer, that does not appear in the proposal or contract as a specific bid item accompanied by a unit price, and that is not included under the price bid for other bid items in the contract. Extra work may also consist of additions to, or changes in, design of contract bid items or portions of contract bid items, if additions are wholly disassociated from or outside the scope of work in the contract, and if the work caused by these additions or changes must be performed under conditions or in a manner materially different from the conditions and manner existent for contract bid items under the original scope of work.

Force account A method of payment based on the cost of labor, equipment, materials furnished, and consideration for overhead and profit as specified in 109.4.5.

Frontage road or street A local road or street auxiliary to and located along the side of an arterial highway for service to abutting property and adjoining areas and for control of access.

Hazardous substance A substance or combination of substances, including waste of a solid, semisolid, liquid, or gaseous form, that may cause or significantly contribute to an increase in mortality or an increase in serious, irreversible, or incapacitating, reversible illness, or that may pose a substantial present or potential hazard to human health or the environment.

Highway, street, or road A public way for the purpose of vehicular travel, including the entire area within the right-of-way.

Highway separation A structure carrying highway traffic over or under another highway or street.

Holidays The following days are department-specified holidays for use in determination of working days:

New Year's day	Labor day
New Year's Eve day	Thanksgiving day
Martin Luther King Jr. day	Christmas Eve day
Memorial day	Christmas day
Independence day	

Inspector The authorized representative of the engineer assigned to make inspection of all portions of the work or materials.

Interchange A highway separation with access connections between the highways.

Interim supplemental specifications Written directions and requirements adopted subsequent to the publication of the supplemental specifications that amend the supplemental specifications.

Laboratory The materials testing laboratory of the department or other testing laboratory designated by the engineer.

Local road or street A street or road used primarily for access to residences, businesses, or other abutting property.

Local traffic Passage of vehicles, people, and goods originating within, or having a destination on, the portion of the highway closed to through traffic as specified in the contract.

Major and minor bid items A major bid item is a bid item whose total cost, determined by multiplying the bidding schedule quantity and the contract unit price, is equal to or greater than 5 percent of the total amount of the original contract. All other bid items are minor bid items. A minor bid item, when its quantity is increased, becomes a major bid item if it meets this 5 percent criterion.

Materially unbalanced bid A bid that generates a reasonable doubt that award to the bidder submitting a mathematically unbalanced bid will result in the lowest ultimate cost to the department.

Mathematically unbalanced bid A bid containing lump sum or unit price bid items that do not reflect reasonable anticipated actual costs of labor, equipment, materials, plus a reasonable proportionate share of the bidder's anticipated profit, overhead costs, and other indirect costs.

Materials Substances specified for use in the construction of the work.

See also: new material, reclaimed asphaltic pavement material, recovered material, recycled material, salvaged asphaltic pavement material, and special waste.

Median The portion of a divided highway separating the traveled ways for traffic in opposite directions.

New material Material not used for another purpose before incorporation into the work.

Notice to contractors The advertisement for proposals for all work or materials on which bids are required. Such advertisement will indicate with reasonable accuracy the quantity and location of the work to be done, or the character and quantity of the material to be furnished, and the time and place of submitting and opening the proposals.

Notice to proceed A written notice from the engineer to the contractor of the time period within which the prosecution of the work shall begin.

Pavement structure	The combination of subbase, base course, and surface course placed on a subgrade to support the traffic load and distribute it to the roadbed.
Plans	The approved plans, profiles, typical cross-sections, working drawings, and supplemental drawings that show the location, character, dimensions, and details of the work to be done.
Plant names and labels	The plant names and labels used in the nomenclature references listed in the current edition of the American Standard for Nursery Stock.
Project	The designated physical area together with all improvements to be constructed under the contract.
Project engineer	The authorized representative of the engineer having direct supervision of the administration of the contract.
Proposal	The written offer of the bidder, submitted on the prescribed proposal form, to perform the work at the prices quoted by the bidder; also commonly known as the "bid."
Proposal guaranty	The security furnished with a bid to guarantee that the bidder will enter into the contract if the bid is accepted.
Reclaimed asphaltic pavement material	A recovered material from existing asphaltic pavement.
Recovered material	A product recovered from solid waste in a form identical to the original form, for a use that is the same or similar to the original use.
Recycled material	A product manufactured from previously used products.
Review panel	The department's claims review panel.
Responsible bidder	A bidder determined by the department to possess the ability to perform the contract work and complete the contract requirements.
Right-of-way	Land, property, or interest in land or property acquired for or devoted to transportation purposes.
Roadbed	The graded portion of a highway, within top slopes and side slopes, prepared as a foundation for the pavement structure and shoulders.
Roadside	The area adjoining the outer edge of the roadway. Areas between the roadways of a divided highway may also be considered roadside.
Roadway	The portion of a highway within the limits of construction. A divided highway has 2 roadways.
Salvaged asphaltic pavement material	A recovered material from existing asphaltic pavement located within the project.
Schedule of items	The prepared schedule, included as a part of the proposal form, containing the estimated quantities of the pay items for which unit bid prices are invited.
Secretary	The secretary of the Wisconsin Department of Transportation.
Semi-final estimate	A tentative final estimate indicating that the engineer has measured and reported all quantities. The department prepares and submits a semi-final estimate for the contractor's review before issuing a final estimate.
SI metric	The International System of Units for metric measure.
Shoulders	The portions of the roadway contiguous with the traveled way for accommodation of stopped vehicles, emergency use, and lateral support of base and surface courses.

Shop drawings Stress sheets, working drawings, erection plans, falsework plans, framework plans, cofferdam plans, bending diagrams for reinforcing steel, or other supplementary plans, computations, or similar data that the contractor is required to submit to the engineer.

Sidewalk The portion of the roadway constructed primarily for the use of pedestrians.

Special provisions Written directions and requirements applicable to a specific project and not otherwise thoroughly or satisfactorily detailed or prescribed in the standard specifications or supplemental specifications.

Special waste Solid waste characterized for beneficial use in public works projects by the Wisconsin Department of Natural Resources under section 895.58 of the Wisconsin statutes.

Specifications Written directions, provisions, and requirements contained in the standard specifications, supplemental specifications, interim supplemental specifications, or special provisions, together with written agreements and documents referenced in the contract, pertaining to the method or manner of performing the work, the quantities of work, and the quality of materials to be furnished under the contract; as made part of the contract and contained in or referenced in the proposal.

See also: interim supplemental specifications, special provisions, standard specifications, and supplemental specifications

Stabilization Modification of soils or aggregates by incorporating materials that will increase load bearing capacity, firmness and resistance to weathering or displacement.

Standard specifications Written directions and requirements approved for general application and repetitive use as contained herein for highway and structures construction and for administration of the contract.

State The state of Wisconsin.

Subbase The layer or layers of specified or selected material of designed thickness placed on a subgrade to support a base course.

Subcontractor The individual, partnership, corporation, limited liability company, or joint venture to which the contractor, with the department's written consent, sublets part of the contract.

Subgrade The top surface of a roadbed upon which the pavement structure and shoulders are constructed.

Substructure All of the bridge below the bridge seats or below the tops of the caps of piling or framed trestles, including the wing walls, backwalls, and parapets of abutments.

Superintendent The contractor's authorized representative in responsible charge of the work.

Superstructure All of the bridge above the bridge seats or above the tops of caps of piling or framed trestles, including flooring, but excluding wing walls, backwalls, and parapets of abutments.

Supplemental contract agreement A written agreement between the engineer and contractor to pay for a particular bid item using the plan quantity rather than measure the actual quantity of work acceptably completed.

Supplemental specifications Written directions and requirements adopted subsequent to the publication of the standard specifications that amend the standard specifications.

Surety The company executing a contract bond with the contractor.

Surface course One or more layers of a pavement structure, the top layer of which resists skidding, traffic abrasion, and the disintegrating effects of climate.

Traffic lane The portion of a traveled way for the movement of a single line of vehicles.

Traveled way The portion of the roadway for the movement of vehicles, exclusive of shoulders and auxiliary lanes.

Unacceptable work Work that does not conform to the contract and results in a product that is insufficient to fulfill the needs of the project.

Unbalanced bid See: materially unbalanced bid and mathematically unbalanced bid

US standard The U.S Standard Measure system of units for english measure.

Work The furnishing of all labor, materials, equipment, and incidentals and the performing of all tasks needed to complete the project or a specific part of the project as specified in the contract, together with fulfillment of all associated obligations and duties required by the contract.

Working day A calendar day, except Saturdays, Sundays, department-specified holidays, and the period from November 16 to March 31, both dates inclusive, on which weather or other conditions not under the control of the contractor will permit construction operations to proceed for at least 8 hours of the day with the normal working force engaged in performing the controlling item of work which would be in progress at this time.

SECTION 102 BIDDING REQUIREMENTS AND CONDITIONS

102.1 Prequalifying Bidders

(1) The department will provide, upon request, information regarding departmental policy and procedures for prequalification of a bidder.

(2) Furnish a dated prequalification statement on the department's form at least 5 calendar days before the time set for opening proposals. Include certificates for insurance Types 1, 2 and 3 as required in 107.26.

(3) The prequalification statement establishes proof of the prospective bidder's competency and responsibility to perform work. The department will evaluate each prospective bidder based on verified information in the prequalification statement and on other relevant information the department may have. The department will assign ratings, honoring all limitations requested by the bidder, as provided in the departmental policy. The department will maintain the bidder's ratings for a period of time provided in the departmental policy.

(4) The department will indicate, in the notice to contractors, if a contract does not require prequalification.

102.2 Bidding Proposal Content

(1) The bidding proposal is the department-required form the prospective bidder must use to prepare and submit bids for the work. The department will provide the bidding proposal that includes:

1. The name and bidder identification number of the prospective bidder.
2. Location and description of the project.
3. Estimate of quantities and type of work to be performed or materials to be furnished.
4. Time to complete the work.
5. Amount of the proposal guaranty.
6. Department's deadline for receiving completed proposals.
7. Schedule of items.
8. Contract requirements not contained in the standard specifications.
9. Special provisions.

(2) Documents bound with or attached to the bidding proposal are a part of the proposal. Do not detach or alter bound documents when submitting the proposal. The plans, interim supplemental specifications, supplemental specifications, standard specifications, and other documents designated in the bidding proposal are a part of the proposal, whether attached or not, and need not be returned when the proposal is submitted.

102.3 Issuing Bidding Proposals

102.3.1 General

(1) The department will provide, upon request, information regarding departmental policy and procedures for obtaining bidding information, submitting a bid, obtaining sample proposal forms, and purchasing plans.

(2) To obtain the bidding proposal, the prospective bidder shall prequalify as specified in 102.1 unless the department indicates in the notice to contractors that prequalification will not be required. Submit a written request for a bidding proposal on the department's request for proposal form.

102.3.2 Department May Not Issue

(1) The department may refuse to issue bidding proposals to a prospective bidder for one or more of the following reasons:

1. The department's estimate of the cost of the proposal, together with the value of the prospective bidder's uncompleted contract work, exceeds the prospective bidder's established ratings, as determined in 102.1, at the time set for receiving proposals.
2. The prospective bidder owes the department for previously issued plans.
3. The prospective bidder has work under way or has performed work not up to the proper standard of progress or quality. The prospective bidder may request, in writing, that the department review its refusal to issue a bidding proposal as provided in the department's prequalification policy.
4. The award of additional work, in the department's opinion, would preclude the satisfactory performance of the additional work or work already under way. The prospective bidder may request, in writing, that the department review its refusal to issue a bidding proposal as provided in the department's prequalification policy.
5. Any of the causes for disqualification of a bidder specified in 102.13.1.

102.3.3 Department Will Not Issue

(1) The department will refuse to issue bidding proposals to 2 or more prospective bidders on the same contract who are affiliated with each other, or for one or more of the following reasons:

1. The prospective bidder has been suspended or debarred from bidding on department contracts under Trans 504 of the Wisconsin administrative code.
2. The prospective bidder does not supply, on the department's request for proposal form, the required information on all incomplete work.

102.4 Interpreting Bid Proposal Quantities

(1) Submit unit bid prices for the estimated quantities as given in the schedule of items. These quantities are approximate and the department only uses them for the comparison of bids. Do not plead misunderstanding or deception because of these quantities as to the character, location, or other conditions pertaining to the work.

(2) The department will only pay the contractor for the actual quantities of the work performed or materials furnished under the contract. The department may increase or decrease the contractor’s scheduled quantities of work as provided in 109.3 without invalidating the bid prices.

102.5 Examining Contract Documents and Work Site

(1) Carefully examine the contract documents and perform a reasonable site investigation before submitting a proposal. Submitting a proposal is an affirmative statement that the bidder has investigated the site and is satisfied as to the character, quality, quantities, and the conditions to be encountered in performing the work that could be determined from walking the project site. A reasonable site investigation also includes investigating borrow sites, hauling routes, and all other locations related to the performance of the work.

(2) Before the department's execution of the contract, obtain a permit from the department before performing excavations, borings, or other activities within the highway right-of-way. Obtain the necessary permit request forms from the district operations engineer.

(3) The department may include in the contract documents, or make available for the bidder's review at the department's district or other offices, one or more of the following:

1. As built drawings.
2. Available information relative to subsurface exploration, borings, soundings, water levels, elevations, or profiles.
3. The results of other preliminary investigations.

(4) The department provides information under 102.5(3) for the bidder's general knowledge only. This information is not a substitute for the bidder's own investigation, interpretation, or judgment. The information provided is applicable only to the locations and at the times indicated.

102.6 Preparing the Proposal

(1) Submit completed proposals on the department's bidding proposal described in 102.2. Submit legible information only. Write everything in ink, by typewriter, or by computer-controlled printer. Provide all dollar amounts in dollars and cents, in numerals. Attach all addenda to the submitted proposal.

(2) Properly execute the proposal. Place the required signatures, in ink, in the space provided on the bidding proposal as indicated below:

ENTITY SUBMITTING PROPOSAL	REQUIRED SIGNATURE
Individual	The individual or a duly authorized agent.
Partnership	A partner or a duly authorized agent.
Joint Venture	A member or a duly authorized agent of at least one of the joint venture firms.
Corporation	An authorized officer or duly authorized agent of the corporation. Also show the name of the state chartering that corporation and affix the corporate seal.
Limited Liability Company	A manager, a member, or a duly authorized agent.

(3) Instead of using the schedule of items provided on the department's bidding proposal, the bidder may submit a substitute schedule with the proposal. Use a format for the substitute schedule conforming to the department’s guidelines for approval of a bidder-generated schedule of items. Obtain the department’s written approval before using a substitute schedule.

(4) Provide a unit price for each bid item listed in the schedule of items. Calculate and show, in the bid amount column, the products of the respective unit prices and quantities. For a lump sum bid item, show the same price in the unit price column and in the bid amount column pertaining to that bid item. Show the total bid obtained by adding the values entered in the bid amount column for the listed bid items.

(5) If a unit price or lump sum bid already entered in the proposal needs to be altered, cross out the entered unit price or lump sum bid with ink or typewriter and enter the new price above or below and initial it in ink.

(6) A change that the bidder makes in the proposal is not an alteration if the bidder makes that change as directed in a specific instruction contained in an addendum.

102.7 Irregular Proposals

102.7.1 Department Will Correct

102.7.1.1 All Schedules of Items

(1) The department will correct arithmetic errors or omissions found in the completed schedule of items as follows:

1. Discrepancy between a unit price and the corresponding bid amount, or in the absence of a bid amount: the department will use the unit price to determine the correct bid amount.
2. Bidder leaves the unit price column or the bid amount column blank for a lump sum bid item: the department will use the single value shown to obtain the correct unit price and the correct bid amount for that bid item.
3. Discrepancy between the total bid and the sum of the correct bid amounts, or in the absence of a total bid: the department will use the correct bid amounts to determine the correct total bid.

102.7.1.2 Bidder-Generated Schedules of Items

(1) The department will also correct errors in bidder-generated schedules of items as follows:

1. Quantity is incorrect, and both the bid item number and description are correct: the department will correct the quantity and recalculate the bid amount.
2. Item number is correct and the description is incorrect: the department will correct the description.
3. Item number is incorrect and the description is correct: the department will correct the bid item number.
4. Item number is correct but out of sequence and the description is correct: the department will ignore the error.

102.7.2 Department May Reject

(1) Proposals are irregular and the department may reject them for one or more of the following reasons:

1. The proposal contains unauthorized alterations of format, words, or figures.
2. The schedule of items contains errors, alterations, or omissions in, bid item numbers, quantities, descriptions, or units of measure, that cannot be corrected as specified in 102.7.1.
3. The proposal is not prepared as specified in 102.6.
4. There are unauthorized alterations, additions, conditional or alternate bids, amendments, attachments, or irregularities that may tend to make the proposal incomplete, indefinite, or ambiguous as to its meaning.
5. There are unauthorized erasures or alterations appearing on the designation of the party to whom the department issued the bidding proposal.
6. The award of the bid, together with the value of the bidder's uncompleted contract work, exceeds the bidder's established ratings, as determined in 102.1, at the time set for awarding the work.
7. A single entity, under the same or different names, or affiliated entities submit more than one proposal for the same work. The submitting entity may be an individual, partnership, joint venture, corporation, or limited liability company.

102.7.3 Department Will Reject

(1) Proposals are irregular and the department will reject them if the bidder:

1. Does not furnish the required proposal guaranty in the proper form and amount as specified in 102.8.
2. Does not submit a unit price for each bid item listed, except for lump sum bid items where the bidder may show the price in the bid amount column for that bid item.
3. Includes conditions or qualifications not provided for in the department-supplied bidding proposal.
4. Submits a bid on a bidding proposal issued to a different bidder without obtaining departmental authorization to do so.
5. Submits a bid that contains unauthorized revisions in the name of the party to whom the bidding proposal was issued.
6. Submits a schedule of items with illegibly printed bid item numbers, descriptions, or unit prices.
7. Submits a schedule of items for the wrong contract.
8. Submits a bidder-generated schedule of items with an incorrect bid item number and incorrect description for a single bid item.
9. Omits a bid item or bid items on a bidder-generated schedule of items.
10. Submits a materially unbalanced bid.
11. Does not sign the proposal.

102.8 Proposal Guaranty

(1) The department will reject and will not read a proposal submitted without a proposal guaranty in the amount designated and payable to the party designated in the notice to contractors. Submit the required proposal guaranty in one of the following forms:

1. Properly executed project bid bond submitted on the department's form.
2. Properly executed annual bid bond submitted on the department's form.
3. Certified check drawn on the account of the bidder submitting the proposal.
4. Bank's check.
5. Cashier's check.
6. Postal money order.

(2) When submitting a bid bond, ensure that the surety is licensed to do business in Wisconsin and has an equivalent A.M. Best rating of A- or better.

(3) If the department invites alternate bids and the bidder elects to bid more than one alternate, the bidder may submit one proposal guaranty in the amount required for a single alternate. The proposal guaranty covers each individual proposal bid.

(4) If the department invites combined bids and the bidder elects to bid one or more individual proposal in addition to the combined proposal, the bidder must submit a proposal guaranty in the amount required for the combined proposal. The combined proposal guaranty covers each individual proposal bid.

102.9 Proposal Delivery

(1) Place each proposal, together with the proposal guaranty, in a sealed envelope, furnished by the department. On each envelope, indicate the proposal number and the name of the bidder. For mailed submittals, mark the sealed proposal as indicated above and enclose in an additional envelope. The department will accept proposals at the place, until the hour, on the date designated in the notice to contractors. The department will return proposals received after the designated time to the bidder unopened.

102.10 Withdrawing or Returning Proposals

(1) Provide a written request to withdraw a proposal already filed with the department. Submit the withdrawal request before the deadline set for receiving proposals. The bidder named on a withdrawn proposal cannot subsequently bid on that contract unless the department issues a new invitation for bids.

(2) The department may withdraw a bidding proposal already issued or return unopened a proposal already filed with the department if, after issuing the bidding proposal, the bidder is found to be ineligible to bid on that contract.

102.11 (Vacant)

102.12 Public Opening of Proposals

(1) The department will publicly open proposals at the time and place indicated in the notice to contractors. The department will read the total bid for each proposal except as specified in 102.8. If a proposal has no total bid shown, the department will announce "no total."

(2) Bidders or their authorized agent and other interested persons are invited to be present.

(3) The department may postpone the receipt of bids time or the opening of bids time due to emergencies or unforeseen conditions. If the department changes the hour or the date of the receipt of bids time or the opening of bids time, the department will issue an addendum or public notice to notify prospective bidders.

102.13 Disqualification of Bidders

102.13.1 General

(1) If the department disqualifies a bidder, the department will notify that bidder in writing. The department will give the reason for disqualification, the term of disqualification, and instructions for reestablishing eligibility to bid on departmental contracts.

102.13.2 Department May Disqualify

(1) The department may disqualify the bidder from further bidding for a period of time determined by the department for one or more of the following reasons:

1. The department has notified the bidder that it has initiated a debarment or suspension action against the bidder under Trans 504 of the Wisconsin administrative code.
2. Developments, subsequent to establishment of a bidder's competency and qualifications, which in the department's judgment affect the responsibility of the bidder.
3. Not complying, within a reasonable time, with the department's request to update a prequalification statement.

102.13.3 Department Will Disqualify

(1) The department will disqualify the bidder from further bidding, for a period of time the department determines, if the bidder has been suspended or debarred from bidding on department contracts under Trans 504 of the Wisconsin administrative code.

SECTION 103 CONTRACT AWARD AND EXECUTION

103.1 Consideration of Proposals

(1) Following the public opening and reading of the proposals received, the department will compare them on the basis of the summation of the products of the quantities of work listed and the contract unit prices offered. In case of discrepancies, errors, or omissions, the department will make corrections as specified in 102.7.1. In awarding contracts, the department, in addition to considering the amounts stated in the proposals, may consider one or more of the following:

1. The responsibility of the various bidders as determined from a study of the data required under 102.1.
2. The information required on the bidding proposal.
3. Information from other investigations that the department may make.

(2) The department will also review the proposals for the irregularities described in 102.7 and review the eligibility of the bidder as specified in 102.13.The department will determine whether irregularities are matters of form rather than substance and can be waived without prejudice to other bidders or the public interest.

(3) The bidder may submit individual proposals for more than one contract being let. Although each individual proposal may not exceed the bidder's rating, a combination of more than one proposal and incomplete work currently under contract may exceed the bidder's rating. If the bidder exceeds its rating, the department may award a proposal or combination of proposals that are within the bidder's rating and most advantageous to the department.

(4) The department may reject any or all proposals, or waive technicalities. The department, in its own interest, may re-advertise for bids or proceed with the work in another manner.

103.2 Awarding the Contract

(1) Unless rejecting all proposals, the department will award the contract to the lowest responsible bidder whose proposal complies with 103.1.

(2) The bidder, by written notice before the time set for opening of bids, may limit the bidder's total dollar volume of work or number of contracts to be awarded in a letting, and the department will determine which contract or contracts to award.

(3) If the department does not make an award within 30 calendar days after opening the proposals, the lowest responsible bidder, after those 30 days, may request, in writing, that the department make the award. Stipulate a deadline of 10 business days or more, after the date of the request, for the department to make the award. If the department does not make the award within the stipulated time, the bidder is relieved of its obligation to execute a contract and contract bond.

103.3 Canceling the Award

(1) The department may cancel a contract award before execution without liability.

103.4 Returning Proposal Guaranty

(1) The department will return the proposal guaranties of all except the lowest responsible bidder within 5 business days after determining the lowest qualified bidder. The department will return the lowest responsible bidder's proposal guaranty as soon as the bidder executes and submits in the proper form the contract, contract bond, and other required documents.

(2) If the department does not make the award within the time stipulated by the lowest responsible bidder as specified in 103.2(3), the department will return their proposal guaranty within 5 business days after that deadline.

103.5 Contract Bond

(1) At the time of submitting the contract for execution by the department, deposit a valid surety bond with the department in the amount designated on the bond form covering both performance and payment.

(2) Submit the contract bond on a department furnished form. The surety is subject to the department's approval, and to the governor's approval, if required by law.

103.6 Executing and Approving the Contract

(1) The bidder shall execute the contract. The principal and the sureties shall execute the contract bond. Present the contract, the contract bond, and all other department-required forms within 14 calendar days after the date of notice of the award of the contract.

(2) The contract is not binding on the department until the final execution of the contract. The contract final execution date is the date the final signer signs the contract.

103.7 Failure to Execute Contract

(1) The department may cancel the award if, within 14 calendar days after the date of notice of the award of the contract, the successful bidder does not do the following:

1. Return required forms or supply other department requested information.
2. Execute a contract and contract bond, as provided in 103.6.

(2) If the department cancels the award, the department may retain the proposal guaranty, not as a penalty, but in payment of liquidated damages the department sustains due to the bidder's failure to execute.

103.8 Nullifying the Award

(1) The department will accept the bidder's request to nullify and will nullify the bidder's acceptance of the contract if the following conditions are met:

1. The bidder files the required contract documents in proper form and order.
2. The department does not execute the contract within 30 calendar days after the bidder files the required contract documents.
3. The bidder files a written request to nullify with the department. Wait the 30 days specified in item 2 before filing that request. Stipulate in the request a deadline for the department to execute the contract. This deadline must be 10 business days or more after the filing date of the request.
4. The department does not execute the contract within the stipulated deadline.

(2) The department will notify the bidder, in writing, if the department agrees to nullify the award. The department's failure to act within the stipulated deadline also constitutes nullification.

(3) The request to nullify is a voluntary act of the bidder. The department's nullification relieves the bidder, the bidder's surety, and the department of all obligations under the award.

(4) Unless and until the bidder files a request to nullify, and until the department nullifies, the department may execute the contract without prejudice to any contract terms and conditions.

SECTION 104 SCOPE OF WORK

104.1 Intent of the Contract

(1) The intent of the contract is to provide for the construction, execution, and completion of the work. Perform the work as specified in the contract.

104.2 Revisions to the Contract

104.2.1 General

(1) The department reserves the right to revise the contract at any time. These revisions do not invalidate the contract or release the surety. The contractor agrees to complete the contract as revised. Do not proceed with the revised work without the engineer's prior written approval. Upon receiving written approval, proceed immediately with the revised work.

(2) The contractor shall notify the engineer if the contractor believes a revision to the contract is necessary. Whenever the words notice, notification, or notify are used in 104.2 with reference to the contractor, the contractor shall provide notice as specified in 104.3. The engineer will determine whether or not a potential contract revision is necessary and will inform the contractor of its determination in writing. The contractor must proceed with the engineer's direction.

(3) If the engineer determines that a revision is necessary, the engineer will revise the contract time as specified in 108.10 and will revise the contract price as specified in 109.4. The contractor is entitled to no reimbursement for loss of anticipated profit.

(4) If the engineer decides that a potential contract revision identified by the contractor is not necessary, and the contractor does not agree with the engineer's decision, the contractor may pursue a claim under 105.13.

104.2.2 Issuing Contract Change Orders

104.2.2.1 Change Orders for Extra Work

(1) The department will issue a contract change order to accomplish extra work as defined in 101.3.

104.2.2.2 Change Orders for Differing Site Conditions

(1) During the progress of the work, if one or more of the following differing conditions are encountered at the site, the party discovering the condition shall promptly notify the other party in writing of the specific condition before disturbing the site and before performing the affected work.

1. A subsurface or latent physical condition, differing materially from those indicated in the contract.
2. An unknown physical condition of an unusual nature, differing materially from those ordinarily encountered and generally recognized as inherent in the work specified in the contract.

(2) If the contractor discovers the differing condition, the contractor shall provide oral notification as specified in 104.3.2, of the specific differing condition before further disturbing the site and before further performing the affected work.

(3) The engineer will investigate the conditions. If the engineer determines that the conditions materially differ and cause an increase or decrease in the cost, time, or both, required to perform the work under the contract, the engineer will adjust the contract price, time, or both, and modify the contract in writing accordingly. The engineer will respond to the contractor as to whether or not an adjustment is warranted. The engineer will follow the contractor notification procedures specified in 104.3.

(4) The department will not allow a contract adjustment unless the contractor has provided the required notice as specified in 104.3.

104.2.2.3 Change Orders for Engineer-Ordered Suspensions

(1) If the engineer suspends or delays the performance of all or any portion of the work in writing for an unreasonable period of time (not originally anticipated, customary, or inherent to the construction industry) and the contractor believes that additional payment, contract time, or both, is due because of the suspension or delay, the contractor shall submit a written request for adjustment within 7 calendar days of receipt of the engineer's directive to resume work. Ensure that the content of the request conforms to 104.3.5.

(2) The engineer will evaluate the contractor's request. If the engineer agrees that the cost, time, or both, required for the performance of the contract has increased due to the suspension or delay and the suspension or delay was caused by conditions beyond the control of and not the fault of the contractor, its suppliers, or subcontractors at any approved tier, and not caused by weather, the engineer will make an adjustment and modify the contract in writing accordingly. The engineer will respond to the contractor as to whether or not an adjustment is warranted as specified in 104.3.6.

(3) The engineer will not consider a contract adjustment unless the contractor submits the request for adjustment within the time specified above.

(4) The engineer will not consider a contract adjustment under this clause to the extent that the performance would have been suspended by any other cause, or for which an adjustment is provided or excluded under any other term or condition of this contract.

104.2.2.4 Change Orders for Significant Changes in the Character of the Work

(1) If alterations or changes in quantities significantly change, as defined in 104.2.2.4(3), the character of the work under contract, the department will adjust the contract. Before performing the significantly changed work, reach agreement with the department concerning the basis for the adjustment as specified in 109.4.4. If the department does not acknowledge that the work has significantly changed, follow the notification procedures as specified in 104.3.

(2) If the alterations or changes in quantities do not significantly change, as defined below, the character of the work to be performed under the contract, the department will pay for the altered work at the contract price.

(3) The department defines each of the following as a significant change:

1. The character of the work as altered differs materially in kind or nature from that involved or included in the original proposed construction.
2. The quantity of a major bid item, as defined in 101.3, is increased in excess of 125 percent or decreased below 75 percent of the original contract quantity. Any allowance for an increase in quantity applies only to that portion in excess of 125 percent of the original contract bid item quantity, or in case of a decrease below 75 percent, to the actual amount of work performed.
3. The quantity of a minor bid item is increased to become a major bid item. An adjustment in the contract unit price for that bid item applies only to the quantity of that bid item having a contract value, determined from the contract unit price, in excess of 6.25 percent of the total amount of the original contract.
4. The quantity of a minor bid item that is part of an approved subcontract and that exceeds 10 percent of the original value of that subcontract is decreased more than 50 percent from the original contract quantity for that bid item. Either party to the contract may submit a request for a revision to the contract unit price for that bid item. The department's total payment for the final reduced quantity will not exceed 75 percent of the original contract quantity at the contract price.
5. The quantity of a minor bid item that is part of an approved subcontract and that exceeds 10 percent of the original value of that subcontract is increased more than 50 percent from the original contract quantity for that bid item and which as increased does not qualify for adjustment as a major bid item. Either party to the contract may submit a request to the other for a revision of the contract unit price for that quantity of the bid item that is in excess of 125 percent of the original contract quantity.

104.2.2.5 Change Orders for Eliminated Bid Items

(1) The department has the right to partially eliminate or completely eliminate a bid item the engineer finds to be unnecessary for the project. If the engineer partially eliminates or completely eliminates a bid item, the engineer will issue a contract change order for a fair and equitable amount as specified in 109.5.

104.2.2.6 Change Orders for Revisions to Contract Time

(1) The department will issue a contract change order to revise the contract time as specified in 108.10.

104.3 Contractor Notification

104.3.1 General

(1) Subsection 104.3 specifies the step-by-step communication process to be followed to expedite the resolution of potential contract revisions identified by the contractor. Both contractor actions and department responses are outlined. The contractor's non-compliance with the requirements of 104.3 may constitute a waiver of entitlement to a pay adjustment under 109.4 or a time extension under 108.10.

104.3.2 Contractor Initial Oral Notification

(1) If required by 104.2, or if the contractor believes that the department’s action, the department's lack of action, or some other situation results in or necessitates a contract revision, the contractor must promptly provide oral notification to the engineer. Upon notification, the engineer will attempt to resolve the identified issue.

104.3.3 Contractor 2-Day Written Notice

(1) If the engineer has not resolved the identified issue within 2 business days after receipt of oral notification, provide a contractor 2-day written notice to the engineer. At a minimum, provide the following:

1. A written description of the nature of the issue.
2. The time and date of discovering the problem or issue.
3. If appropriate, the location of the issue.

(2) The contractor is encouraged to provide the additional information specified in 104.3.5 as early as possible to assist the engineer in the timely resolution of an identified issue. The engineer will not require, in subsequent submissions, duplication of information already provided.

104.3.4 Engineer One-Day Written Acknowledgment

(1) Within one business day after the contractor provides initial written notice, the engineer will provide an engineer one-day written acknowledgment to the contractor. The engineer will continue to resolve the issue.

104.3.5 Contractor 5-Day Written Statement

(1) If the engineer has not resolved the issue within 5 business days from the date of the initial written notice, augment the original written notice with an additional contractor 5-day written statement to resolve the issue. In the written statement:

1. State why the issue is a change to the original contract.
2. Refer to the contract to show what has changed from the original contract.
3. Provide all perceived adjustments to contract price(s), delivery schedule(s), phasing, and contract time.
4. Provide an estimate of the time within which the department must respond to the notice to minimize cost, delay, or disruption.

(2) The department understands that the contractor's estimates of the time required and additional costs may be based on incomplete information. The department will attempt to comprehend and resolve the potential change as quickly as possible. The contractor can help the department in this process by providing the requested information as quickly as possible.

104.3.6 Engineer 5-Day Written Response

(1) Within 5 business days after receiving the contractor 5-day written statement, the engineer will consider the statement and provide an engineer 5-day response in writing to the contractor with one or more of the following responses:

1. The engineer will confirm that a contract change order is necessary as specified in 104.2. The engineer will give direction concerning the potential change.
2. The engineer will deny that the contract has to be revised. The engineer will provide a statement as to why the issue is not a change to the contract. At a minimum, the engineer will respond to the contractor's issue(s) and refer to the contract to show why the issue(s) are not a change from the original contract.
3. The engineer will request additional information to allow the engineer to decide whether item one or 2 of 104.3.6(1) applies. The engineer will state the information needed and date it is to be received for further review.

(2) Once the contractor believes that the engineer has no further basis to request additional information as described in item 3 of 104.3.6(1) or disagrees with the engineer's decision in item 2 of 104.3.6(1), the contractor may pursue a claim as specified in 105.13.

104.4 (Vacant)

104.5 (Vacant)

104.6 Roadway Maintenance and Traffic Control

104.6.1 General

(1) The contractor is not liable for damages to or failure of existing facilities unless the damage or failure results from the contractor's own operations, negligence, or noncompliance with the contract.

(2) The contractor shall maintain only those facilities or portions of facilities, including the roadbed surfaces, on which construction has begun or been completed, or has been damaged by the contractor's operations or has been damaged due to the contractor's negligence or noncompliance with the requirements of the contract.

(3) The contractor is not responsible for snow removal or ice control operations to maintain traffic on highways open to traffic or closed to through traffic.

(4) Maintain the safety of the traveling public and control traffic using barricades, signs, and flaggers as prescribed in the latest revision of Part VI, Traffic Controls for Construction and Maintenance Operations of the Wisconsin Manual of Traffic Control Devices. Furnish, erect, and maintain traffic control devices and facilities as specified in section 643,or as the engineer directs, throughout the life of the contract. Adequately train flaggers in the methods prescribed in the department's Flagger's Handbook and associated video tape before allowing them to control traffic. These provisions do not relieve the contractor of responsibility for injury or damage caused by the contractor's negligence in properly safeguarding public travel. Costs for flagging and guidance services, and signs associated with flagging and guidance, are incidental to the contract.

(5) The contractor is responsible for all damages to the work due to failure of barricades, signs, lights, flaggers, and watchers to protect it. The engineer may order the contractor to immediately remove and replace or otherwise repair the damaged work at no additional expense to the department.

104.6.2 Temporary Roads

(1) Construct and maintain temporary roads necessary to maintain traffic as specified in the contract or as the engineer orders. Excavate and remove those portions of temporary roads not incorporated into the final roadway section, and restore disturbed areas outside the construction limits to their original condition.

(2) The department will pay for the construction and removal of temporary roads, included in the contract or as the engineer orders, and the associated restoration of disturbed areas. The department will pay for this construction, removal, and restoration work at the contract unit prices of the bid items used, or as extra work, if the necessary bid items are not included in the contract.

(3) Maintain temporary roads, included in the contract or as the engineer orders, in a safe and adequate condition. The cost of maintaining these temporary roads is incidental to the contract cost, except during suspensions under 104.6.7.

(4) The cost of constructing, maintaining, and removing temporary roads not shown in the contract or ordered by the engineer, is incidental to the contract cost.

104.6.3 Road Closed to Traffic

(1) If the contract provides, or if the engineer orders, that the road or portions of the road be closed to all traffic, furnish, erect, and maintain the traffic control devices at the project termini and at intersecting roads along the project as specified in the contract or as the engineer directs. Unless specifically required in the contract, the contractor is not responsible to maintain the pavement structure or traffic signs of the detour that may be provided for the accommodation of traffic around the portion of the road closed to traffic.

(2) Never close a public road or portion of a public road without the engineer's specific written permission. If the contract specifies, or if the engineer orders, that a road or a portion of road is to be closed, notify the engineer at the earliest possible date of when the closure is needed so the department can make arrangements to close the road and provide detours.

104.6.4 Road Closed to Through Traffic

(1) If the contract provides that the road or portions of the road be closed to through traffic, furnish, erect, and maintain the traffic control devices at the project termini and at intersecting roads along the project as specified in the contract or required by the engineer. Also furnish, erect, and maintain those traffic control devices within the project limits as may be required for the safe accommodation of local traffic as defined in 101.3. At all times conduct the work in a manner to provide safe, reasonably-direct, all-weather, 24-hour pedestrian and vehicular access to abutting properties along the highway being improved.

(2) Unless specifically required in the contract, the contractor is not responsible to maintain the pavement structure or traffic signs of the detour that may be provided for the accommodation of traffic around the portion of the road closed to through traffic. The department will pay for surfacing and base materials that the engineer deems necessary to maintain the roadway at contract unit prices, or as extra work.

104.6.5 Opening Section of Closed Road to Traffic before Work is Completed

(1) For contracts with the road or portions of the road closed to traffic during construction, the engineer may direct or authorize the contractor to open sections of the road to public traffic before the work is completed. The engineer may direct the contractor to open sections of the road for the convenience of the traveling public. The engineer may authorize the contractor to open sections of the road to public traffic due to the contractor's request. Do not open the road to public traffic without the engineer's written direction or written authorization. By opening sections to public traffic, the contractor is not relieved of performing the maintenance. However, the department will assume all costs for repair and maintenance solely attributable to public traffic use, and beyond the control and without fault of the contractor. These maintenance expenses include costs associated with those traffic control devices or facilities specified in this section. The engineer's direction or authorization

to open sections of the road to public traffic does not constitute partial acceptance under 105.11.1 and waives no other contract provisions.

(2) Furnish, erect, and maintain those traffic control devices as may be required for the safe accommodation of the traffic.

(3) The contractor is not liable for injuries or damages sustained by a person using the opened highway except for injuries or damages resulting from the contractor's own operations, negligence, or noncompliance with the requirements for traffic control under 104.6.1.

(4) Whenever opening the road or a portion of the road to traffic, conduct the remainder of the construction operations in a manner that causes the least obstruction to traffic.

104.6.6 Road Open to All Traffic

(1) If the contract provides for the maintenance of all traffic over or along the road while undergoing improvement or reconstruction, keep the road open to all traffic. Furnish, erect, and maintain those traffic control devices as may be required to keep the portions of the road being used by public traffic in such condition to safely and adequately accommodate pedestrian and vehicular traffic. The department will pay for necessary work and materials to maintain the roadway at the contract unit prices of the bid items used or as extra work if the necessary bid items are not included in the contract.

104.6.7 Traffic Control and Maintenance During Suspensions of the Work

(1) During a suspension of work as specified in 105.1, the contractor shall make passable and open to traffic portions of the highway under improvement and temporary roads or portions thereof as the contractor and the engineer may agree upon for temporary accommodation of necessary traffic during the period of suspension. During the period of suspension, maintain the surface of the traveled way of the temporary route or line of travel agreed upon.

(2) When resuming work, replace or renew all work or material lost or damaged because of temporary use of the highway under improvement. Remove temporary roads and restore disturbed areas outside the construction limits to their original condition, as the engineer directs. Complete the improvements in every respect as though prosecution had been continuous and without interference, except as the contractor and the engineer may otherwise have agreed upon at the time the arrangement was made for the temporary accommodation of necessary traffic during the anticipated period of suspension.

(3) If the reason for the suspension is beyond the control and without the fault of the contractor, the department will pay for the following at the contract unit prices of the bid items used, or as extra work if the necessary bid items are not included in the contract.

1. The replacement of materials and additional work made necessary because of the temporary use of the highway.
2. The construction and removal of temporary roads needed for public travel during the suspension, and the corresponding restoration of disturbed areas outside the construction limits.
3. Maintaining the surface of the traveled way of temporary roads used by the public during the period of suspension.
4. The furnishing, erecting, and maintenance of those traffic control devices and facilities needed to safely accommodate public travel during the suspension.

104.7 Removal of Structures and Obstructions

(1) Remove from within the roadway all or parts of existing culverts, bridges, and miscellaneous structures designated for replacement or that interfere with new construction.

(2) Within the limits of the roadway, the department will pay for the removal of existing culverts, except pipe culverts, and the removal of bridges as extra work, unless the department accepts a separate bid for the removal of these culverts and bridges, or unless the contract specifies their removal, or unless portions of existing structure units fall within the limits of Excavation for Structures.

(3) Removal of existing miscellaneous structures is roadway excavation. The department will provide payment under 204.4, unless the contract provides for a separate bid for the removal of these structures, or unless portions of these structures fall within the limits of Excavation for Structures.

(4) Remove all or parts of existing culverts, bridges, and other structures from beyond the roadway, but within the highway, if specified in the contract. Within 104.7, the term "highway" means the entire highway right-of-way, including abutting portions of existing highways. The cost of removal is incidental to other bid items unless the contract provides a separate bid for the removal of these structures. The department will pay for the removal of these structures or parts of these structures, if not specified in the contract but subsequently required, as extra work, unless the cost of removal of miscellaneous structures is included in and incidental to section 214.

(5) Leave structures beyond the limits of the highway in place.

104.8 Rights in the Use of Materials Found on the Project

(1) The contractor may use on the project stone, gravel, sand, or other material found within the vertical and horizontal excavation limits shown on the plans. Ensure that the engineer determines the material's suitability before using it. The department will pay for both the excavation of these materials at the corresponding contract bid price and the bid item for which the excavated material is used. The department will not charge the contractor for the materials found within the above described excavation limits and so used. Replace, at no expense to the department, with other acceptable material all of the excavation material so removed and used for embankments, backfills, approaches or otherwise.

(2) Do not excavate or remove material from within the right-of-way that is not within the vertical and horizontal excavation limits shown on the plans without the engineer's written authorization. Do not base bids on the anticipated approval of a request to excavate or remove material that is not within the above described excavation limits.

(3) Take ownership of all materials required to be removed and not necessary for the work.

104.9 Final Cleanup

(1) Upon completion of the work and before the department accepts the work as specified in 105.11.2 and makes final payment as specified in 109.7, the contractor shall remove from the right-of-way, and to the extent that the contractor is responsible therefor, from the adjacent property, all surplus and discarded materials, rubbish, and temporary structures. Leave the right-of-way in a neat and presentable condition. The contractor shall restore, at no expense to the department and in general conformity with the contract for the bid item or bid items involved, all work completed under previous contracts that the contractor has damaged.

(2) If the contractor procures or produces material from a pit, quarry, or deposit which is not an active commercial source or is not naturally submerged, the contractor shall do work as necessary and practical to shape, slope, and trim and drain the site, including associated haul roads and adjacent areas disturbed by the contractor's operations, so that it presents a stable, neat, trimmed appearance and that no water collects or stands therein. In special cases, the contractor may present a written request and written evidence that the owner of the property has a valid and practical plan for creating or enlarging a body of impounded water for soil or water conservation, irrigation, wild life propagation, agriculture, recreation, or other purposes. The officials of local government and of other agencies must approve the plan with respect to area development. Ensure that the plan complies with the applicable ordinances or regulations. If the engineer deems the creation of a body of impounded water is not contrary to the public interest and will not create a public nuisance or hazard, the department may authorize the contractor to procure material below the elevation of drainability by surface water flow as described in a plan mutually agreed to by the contractor and the owner of the property and meeting with the engineer's approval.

(3) The cost of final cleanup is incidental to the contract. The department will not allow separate or additional payment for final cleanup.

104.10 Cost Reduction Incentive

104.10.1 General

(1) Subsection 104.10 specifies a 2-step process for contractors to follow in submitting a cost reduction incentive (CRI) for modifying the contract in order to reduce construction costs. The initial submittal is referred to as a CRI concept and the second submittal is a CRI proposal. The contractor and the department will equally share all savings generated to the contract due to a CRI as specified in 104.10.4.2(1). The department encourages the contractor to submit CRI concepts for the following situations:

1. The contractor generates the original cost savings idea and formulates it into a concept.
2. The department generates the original cost savings idea and obtains the contractor's assistance to formulate the idea into a concept.

(2) Follow the procedures specified in 104.10.2 for submitting a CRI concept. If the department determines that the CRI concept has merit, the department will encourage the contractor to submit a CRI proposal. Follow the procedures specified in 104.10.3 for submitting a CRI proposal.

(3) The contractor may submit a CRI concept from a subcontractor. The department will reimburse the contractor. Subcontractors may not submit a CRI except through the contractor.

(4) The contractor may submit a CRI concept only after the execution of the contract. Do not base bid prices on the anticipated approval of a CRI proposal. If the department rejects a CRI proposal, complete the contract as specified in the original terms or as otherwise modified.

(5) The department will consider a CRI that changes but does not impair the essential functions or characteristics of the project. These functions or characteristics include, but are not limited to, appearance, service life, economy of operations, ease of maintenance, design and safety of structures and pavements, construction phasing or procedures, or other contract requirements.

(6) The department will decide whether or not to approve a CRI. The department will bear no liability for causing a delay to the project in considering a CRI or for refusing to approve a CRI. The department may consider a noncompensable time extension as specified in 104.10.2(3). The department will consider no contractor claims for additional costs related to the acceptance or rejection of a CRI, including loss of anticipated profits, or increased material or labor costs. The department will reimburse the contractor for the development costs of CRI proposals as specified in 104.10.4.1(3).

(7) A CRI, approved or not approved by the department, applies only to the contract for which the contractor submits it. Impose no restrictions on the CRI for its use or disclosure. The department has the right to use, duplicate, and disclose in whole or in part all data necessary for the utilization of the CRI. The department may use an accepted CRI or part of an accepted CRI on other projects without obligation to the contractor. This provision does not deny rights granted by law with respect to patented materials or processes. The department will not use this provision as the basis for rejecting the contractor's submittal of a CRI concept from past projects.

(8) Continue to perform the work as specified in the contract until receipt of the engineer's written acceptance or rejection of the CRI Proposal.

(9) Work produced under an approved CRI contract change order is subject to the provisions of 105.3.2 for nonconforming work.

104.10.2 Submittal and Review of a CRI Concept

(1) Initially submit a brief letter with graphics as necessary to the engineer to describe and illustrate the CRI concept. Estimate the overall CRI savings and the costs to develop the CRI proposal that are specified in 104.10.3. The engineer will use the contractor's estimate of the CRI proposal development costs as specified in 104.10.4.1(3). Indicate whether adequate time is available in the project schedule for submitting a complete CRI proposal and for the department's review before implementation.

(2) The department will review the CRI concept and, within 5 business days of the contractor's initial submittal, inform the contractor in writing whether the CRI concept has merit and whether the contractor should submit it as a CRI proposal. The contractor and the department can mutually agree to extend this 5-day review requirement. The department will inform the contractor if a professional engineer should seal the CRI proposal. If the department informs the contractor to submit the CRI proposal, the department will share in the cost for developing the CRI proposal as specified in 104.10.4.1(3).

(3) If the department determines that the time for response indicated in the CRI concept letter is insufficient for review, the department may choose to evaluate the need for a noncompensable time extension to the contract. The department will base its evaluation on the additional time that the department needs for its review of the CRI proposal and the effect on the contractor's schedule caused by the added review time.

(4) If the department has already taken action to implement revisions to the contract that are subsequently proposed in a CRI concept, the department may reject the CRI concept and revise the contract without obligation to the contractor.

(5) The department may reject a CRI concept if it addresses a potential contract change situation as specified in 104.2.

(6) The savings generated by the CRI must be sufficient to warrant its review and processing and offset the level of risk. The department will assess the risk of the CRI relative to departmental design policies and criteria for the project. The department may reject a CRI concept for the following reasons:

1. It requires excessive time or costs for the contractor to develop the CRI proposal.
2. It requires excessive time or costs for review, evaluation, investigation, or implementation.
3 It introduces an inappropriate level of risk.

104.10.3 Submittal of the CRI Proposal

(1) Within 10 business days after the department has determined that the CRI concept has merit, submit the CRI proposal. The contractor and department can mutually agree to extend this 10-day submittal requirement. Ensure that the CRI proposal includes sufficient data for the department to make an informed decision regarding the proposal and includes, at a minimum, the following information:

1. A statement that the proposal is submitted as a CRI.
2. A description of the difference between the existing contract and the proposed change and the advantages and disadvantages of each, which may include effects on service life, economy of operations, ease of maintenance, benefits to the traveling public, desired appearance, and safety.
3. A complete set of plans and specifications showing the proposed revisions relative to the original contract features and requirements. Support the proposed revisions with design computations as necessary for a thorough and expeditious evaluation.
4. A complete analysis indicating the final estimated costs and quantities to be replaced by the CRI compared to the new costs and quantities generated by the CRI. The department will use these costs as specified in 104.10.4.2(1) to compute the proposed net savings.

5. A statement specifying the time within which the department must make a decision.
6. A statement detailing the effect the CRI will have on interim completion dates and the time for completing the contract.
7. A description of a previous use or testing of the CRI and the conditions and results. If the contractor previously submitted the CRI on another department project, the contractor shall indicate the date, contract number, and action taken by the department.
8. A detailed statement that indicates the costs for developing the CRI proposal and implementing the changes. The department will use these costs as the contractor's CRI development and implementation costs as specified in 104.10.4.1(3) and 104.10.4.2(1).
9. Ensure that a registered professional engineer seals the CRI proposal if the department requires it as specified in 104.10.2(2).
10. If proposing design changes, the contractor may include with the additional information, results of field investigations and surveys, design computations, and field change sheets.

104.10.4 Acceptance, Rejection, and Payment

104.10.4.1 Acceptance, Rejection, and Payment of a CRI Proposal

(1) Within 10 business days of the contractor's submission of the CRI proposal, the department will accept or reject the CRI proposal in writing. The contractor and the department can mutually agree to extend this 10-day review requirement. Provide requested additional information needed to evaluate the CRI proposal in a timely manner. The department may reject a CRI proposal for untimely submittal of additional information.

(2) After accepting the CRI proposal, the department will execute a change order reimbursing the contractor for the cost of preparing the CRI proposal. The department will limit reimbursement to the contractor's estimate of the CRI proposal development costs provided in the CRI concept submittal. The change order will also state the conditions for the department's acceptance and which of the following the net savings will be based on:

1. Agreed lump sum prices before the contractor performs the CRI.
2. Agreed unit prices before the contractor performs the CRI in conjunction with quantities that the department will measure after the contractor completes the CRI.

(3) If the department informs the contractor to submit a CRI proposal as specified in 104.10.2 and later rejects the CRI proposal, the department will execute a contract change order to adjust the contract for the contractor's development costs as listed in item 8 of 104.10.3(1). The department will limit the contract revision amount to the contractor's estimate of the CRI proposal development costs provided in the CRI concept submittal. The contract change order will terminate the department's review of the CRI.

(4) Rejection of a CRI proposal is not an allowable basis for a claim against the department for delay or for other costs.

104.10.4.2 Payment for the CRI Work

(1) The department will pay for completed CRI work as specified for progress payments under 109.6. When all CRI costs are determined, the department will execute a contract change order that does the following:

1. Adjusts the contract time, interim completion dates, or both.
2. Pays the contractor for the unpaid balance of the CRI work.
3. Pays the contractor 50 percent of the net savings resulting from the CRI, calculated as follows:

$$NS = CW - CRW - CC - DC$$

Where:

NS = Net Savings

CW = The cost of the work required by the original contract that is revised by the CRI. CW is computed at contract bid prices if applicable.

CRW = The cost of the revised work, computed at contract bid prices if applicable.

CC = The contractor's cost of developing the CRI proposal.

DC = The department's cost for investigating, evaluating, and implementing the CRI proposal.

(2) The department is the sole judge of the acceptability of a CRI proposal and of the agreed net savings in construction costs from the adoption of all or part of the CRI proposal.

SECTION 105 CONTROL OF THE WORK

105.1 Engineer's Authority

(1) The engineer decides all questions regarding:

1. Interpretation of the contract.
2. The quantity, quality, and acceptability of materials furnished and work performed.
3. Rate of progress of the work.
4. Payment, contract administration, and the acceptable fulfillment of the contract.
5. Disputes.
6. Mutual rights under the contract.

(2) The engineer may suspend the work in writing for any reason at any time during the contract. Except as specified in 104.2.2.3 for engineer-ordered suspensions, the department will allow no additional payment or time extension due to a suspension of work.

(3) The engineer will determine estimated quantities for progress payments as specified in 109.6.

105.2 Supplemental Plans and Drawings

(1) Submit to the engineer supplements to the approved contract plans, shop drawings, and the computations necessary to control the work. Do not change the approved contract plans without the engineer's written authorization.

(2) If sufficient detail is not provided on the structure plans produced by the department, submit to the engineer plans, shop drawings, and the computations required to successfully prosecute the work.

(3) If required in the contract, submit plans for temporary structures, cribs, cofferdams, falsework, shoring, and form work. Ensure that these plans and accompanying drawings and computations are signed and sealed by a registered professional engineer.

(4) Include a transmittal letter with each submittal made under 105.2. Indicate on shop drawings all deviations from the contract drawings and itemize these deviations in the transmittal letter. The department will file and may review these submittals. The department’s review does not relieve the contractor of the responsibility for obtaining satisfactory results, for the accuracy of dimensions and details, or for conformity of these drawings with the contract. The contractor may begin work on associated items without the department's review.

(5) Include the cost of furnishing all shop drawings in the unit price for one or more associated bid item.

105.3 Conformity with the Contract

105.3.1 General

(1) Perform all work as specified in the contract. Produce quality work within limits of precision reasonably expected of good construction. Produce work conforming to the lines, grades, cross-sections, dimensions, and material requirements the contract specifies or the engineer establishes. Monitor construction operations to identify potential unacceptable work as defined in 101.3. Promptly remove and replace, or otherwise correct, unacceptable work at no expense to the department.

(2) The contractor may request a plan dimension change between US standard and SI metric dimensions for a portion of the work. The engineer will only consider this dimension change if the modified work is essentially equivalent to the specified work. The department will pay for this modified work as specified in item 4 of 109.1.1(2). Do not proceed with the modified work without the engineer's written permission.

(3) The contract may specify specific values with allowable tolerances, ranges, minimums, or maximums. Control operations to produce work that falls within the specified tolerance or range, falls above a specified minimum, or falls below a specified maximum. If the contract does not specify a tolerance, range, minimum, or maximum value, control operations to produce work conforming to the contract within accepted manufacturing or construction industry standards.

(4) The contract may specify standard manufactured items such as fences, wire, plates, rolled shapes, pipe conduit, etc. If these items are identified by gage, unit weight, section, dimensions, etc., these identifications are nominal weights or dimensions.

105.3.2 Nonconforming Work

105.3.2.1 Engineer-Accepted Nonconforming Work

(1) If the work does not conform to the contract, the engineer will determine the circumstances under which that nonconforming work may be accepted and allowed to remain in place. The engineer will document the basis of acceptance and may execute a contract change order to adjust the contract unit prices for the nonconforming work. If the contract does not specify a price adjustment, the engineer will adjust the price.

105.3.2.2 Unacceptable Work

(1) The engineer will issue a written order to remove and replace or otherwise correct nonconforming work that the engineer deems unacceptable, as defined in 101.3. If the contractor does not comply with the engineer's written order, the engineer may effect a remedy and deduct the cost from payments due the contractor.

105.3.2.3 Unauthorized Work

(1) Unauthorized work is work performed as follows:

1. Without the lines and grades being given.
2. Beyond the lines and grades shown in the contract or provided by the engineer.
3. Without the engineer's prior approval.
4. After the inspector has temporarily suspended the work in writing as specified in 105.8.
5. In violation of a written direction issued by the engineer.

(2) The department may elect to not measure or pay for unauthorized work. The engineer may issue a written directive to remove unauthorized work at no expense to the department. If the contractor does not comply with the engineer's written directive, the engineer may remove unauthorized work and deduct the cost from payments due the contractor.

105.4 Coordination of the Contract Documents

(1) All documents included under the definition of contract in 101.3 are essential parts of the contract. A requirement occurring in one is binding as though occurring in all. These documents provide for and describe the complete contract. These documents are available to the contractor at no cost.

(2) During the progress of the work, the contractor may request that the engineer interpret or provide information relative to the contract.

(3) If there is a discrepancy between documents, the governing order is as follows:

1. Addenda.
2. Special Provisions.
3. Plans.
4. Interim Supplemental Specifications.
5. Supplemental Specifications.
6. Standard Specifications.

(4) If there is a discrepancy on a drawing, the dimensions shown on the drawing, unless obviously incorrect, govern over scaled dimensions. If there is a discrepancy in the plans, the typical sections or details govern over the standard detail drawings.

(5) Neither the contractor nor the department may take advantage of an apparent error or omission in the contract. Inform the engineer immediately as specified in 104.3 upon discovering an error or omission. The engineer will offer an interpretation and make the necessary corrections.

105.5 Coordination with the Contractor

105.5.1 Contractor Obligations

(1) Give the work the constant attention necessary to promote the progress of the work. Promptly supply the materials, tools, plant, equipment, labor, and incidental items required to perform the work.

(2) Cooperate with the engineer and with third parties engaged upon or near the work. If the department grants a third party a permit to do utility work, the engineer may issue a change order directing the contractor to make or repair required roadway openings. The department will pay the contractor as specified in 104.2 for extra work.

(3) Maintain one copy each of the plans and specifications at the site of work at all times. The engineer will supply the contractor with copies of the contract. If the department has electronically computed estimated grading quantities, the department will furnish that information to the contractor upon request.

(4) Supervise and direct the work competently and efficiently. Devote the attention and apply the expertise necessary to perform the work as specified in the contract. Monitor the work in progress to assure that the work conforms to the contract. The contractor is solely responsible for the means, methods, techniques, sequences, and procedures of construction. The contractor is not responsible for the negligence of others in the design or specification of specific means, methods, techniques, sequences, or procedures of construction described in and expressly required by the contract.

(5) Employ a competent superintendent or designate a representative capable of reading and understanding the contract and experienced in the type of work being performed. The superintendent or designated representative shall be the authorized agent of the contractor and shall have full authority to execute the engineer's directions or instructions without delay. Ensure that the superintendent or designated representative is on the project or accessible to the engineer during all hours of each work day. Notify the engineer promptly when replacing the superintendent or designated representative.

105.5.2 Cooperation Between Contractors

(1) The department may, at any time, contract for or perform other work on or near the work covered by the contract. Cooperate with other contractors engaged upon or near the work.

(2) The contractor shall, or the engineer may, direct the contractor to:

1. Schedule and conduct the work to avoid interference with the operations of other contractors engaged upon or near the work.
2. Perform the work in the proper sequence in relation to that of other work in the area.
3. Join the work to that of others in a manner consistent with accepted manufacturing or construction industry practices.
4. Conduct operations and maintain the work so that adequate drainage is provided at all times.

(3) The contractor is responsible for damage done by the contractor or the contractor's agents to work performed by other contractors. The engineer will resolve disputes between 2 or more contractors, engaged upon or near the work, regarding the rights of each under their respective contracts.

105.6 Construction Staking

105.6.1 General

(1) The department is responsible for errors or discrepancies found in previous surveys, plans, specifications, special provisions, or work constructed under other contracts. The department will pay for further studies and redesign required due to these errors or discrepancies.

(2) The department will furnish and set original horizontal and vertical control points. Prosecute the work using these points for field control. Maintain all required stakes and marks. The department will deduct, from payment due the contractor, $100 per hour for the cost of the work required to replace engineer's stakes or marks destroyed or disturbed. Furnish and set additional stakes or markings to facilitate layout or construction of the work.

(3) The engineer and contractor shall agree on the meaning of all stakes, measurements, and marks before the contractor begins work.

105.6.2 Department Performed Staking

(1) The department will perform the staking required to lay out and construct the work except for the staking required under contractor staking bid items the contract includes.

(2) The department is responsible for the accuracy of lines, slopes, and grades it provides under 105.6.2.

(3) During construction, the contractor may submit requests for staking to the engineer. The department is responsible for staking delays only if the engineer receives that request at least 72 hours before related work begins.

105.6.3 Contractor Performed Staking

(1) Perform the construction staking required to lay out and construct the work for contractor staking bid items the contract includes.

(2) Furnish, set, reference, and maintain all stakes necessary to establish the alignment, location, benchmarks, elevations, slopes, and continuous profile-grades for all road work. Set additional and replacement control points. Supervise and coordinate construction staking.

(3) The contractor is responsible for the accuracy of the line and grade of all work. Notify the engineer immediately when finding errors or discrepancies in previous surveys, plans, specifications, special provisions, or work constructed under other contracts. Suspend related operations until the engineer gives approval to proceed.

(4) The engineer may check the control of work, as established by the contractor, at any time. The engineer will provide the results of these checks to the contractor, but by doing so in no way relieves the contractor of the responsibility for the accuracy of their layout work.

(5) Correct or replace deficient layout and construction work resulting from:

1. Inaccuracies in the contractor's staking operations.
2. Not reporting inaccuracies found in work done by the department or by others.

(6) If, due to these inaccuracies, the department is required to make further studies, redesign, or both, the department will deduct all expenses incurred from the payment due the contractor.

105.7 Authority and Duties of Project Engineer

(1) As the engineer's direct representative, the project engineer has immediate charge of the engineering details of each construction project. The project engineer is responsible for field administration of the project. The engineer authorizes the project engineer to reject defective material and to suspend all work being improperly performed. The engineer may delegate additional authority, granted under 105.1, to the project engineer.

105.8 Authority and Duties of Inspectors

(1) As the engineer's authorized representatives, inspectors may inspect all work done and all materials furnished.

(2) The department authorizes inspectors to:

1. Call the contractor's attention to work or materials that do not conform to the contract.
2. Reject materials until the engineer is notified and decides all questions at issue.
3. Temporarily suspend work, in writing, until the engineer is notified and decides all questions at issue.

(3) The department does not authorize inspectors to do the following unless specifically delegated by the engineer:

1. Revoke, alter, or waive any requirements of the contract.
2. Approve or accept any portion of the completed project.
3. Act as foreperson or perform other duties for the contractor.

(4) The engineer may delegate additional authority to the inspector.

105.9 Inspecting Work

(1) The engineer may inspect, at any time, all materials and all parts of the work. This inspection may include the preparation, fabrication, or manufacture of materials or components on or off the project site. Allow the engineer safe access to all parts of the work. Furnish the information and assistance needed to make a complete inspection.

(2) If requested by the engineer, uncover or remove portions of finished work for inspection. After inspection, restore that work to the contract requirements. If the department finds the work acceptable, the department will pay for uncovering, removing, and restoring that work as extra work. If the department finds the work unacceptable, the contractor shall pay for uncovering, removing, and restoring that work.

(3) Failure to reject defective work or materials does not prevent the department from rejecting defective work once it is discovered.

105.10 (Vacant)

105.11 Inspection and Acceptance

105.11.1 Partial Acceptance

(1) Upon completion of a portion of the work, the contractor may request partial acceptance of that work. The engineer will conduct an inspection to determine if the contractor has satisfactorily completed operations in that area. Within 5 business days and in writing, the engineer will grant partial acceptance for that portion of the work or reject the contractor's request. If the engineer grants partial acceptance, the engineer will, in writing, designate what portion of the work is partially accepted and the effective date for that partial acceptance.

(2) Partial acceptance will relieve the contractor of maintenance responsibility for the designated portion of the work. By relieving the contractor of maintenance, the department does not relieve the contractor of responsibility for defective work or damages caused by the contractor's operations. Do not construe partial acceptance to be final inspection, final acceptance of any part of the work, or a waiver of any legal rights specified under 107.16.

105.11.2 Final Acceptance

105.11.2.1 Inspection

(1) Notify the engineer when the project is substantially complete as defined in 105.11.2.3. As soon as it is practical, the engineer will inspect the work and categorize it as one of the following:

1. Unacceptable or not complete.
2. Substantially complete.
3. Complete and accepted as final.

105.11.2.2 Unacceptable or Not Complete

(1) The engineer will identify, in writing, work that is unacceptable or not complete. Immediately correct or complete that work. The engineer will assess contract time until the work is corrected or completed.

(2) Proceed as specified in 105.11.2.1 until the work is complete and accepted as final.

105.11.2.3 Substantially Complete

(1) The project is substantially complete and the engineer will no longer assess contract time if the contractor has completed all contract bid items and change order work, except punch-list and cleanup work. As applicable, all of the following must have occurred:

1. All lanes of traffic are open on a finished surface.
2. All signage and traffic control devices are in place and operating.
3. All drainage, erosion control, excavation, and embankments are completed.
4. All safety appurtenances are completed.

(2) The engineer will identify in writing the punch-list, required cleanup work as specified in 104.9, and required document submittals. Immediately correct or complete that work. The engineer may restart assessing contract time if the contractor does not complete the punch-list and cleanup work within 5 business days of receiving the engineer's written notice. The engineer and contractor may mutually agree to extend this 5-day requirement.

(3) Proceed as specified in 105.11.2.1 until the work is complete and accepted as final.

105.11.2.4 Complete and Accepted as Final

(1) When the engineer determines that the project is complete and accepted as final, the engineer will give the contractor written notice of final acceptance effective on the date of the final inspection. If the contractor has not submitted the required documents or materials tests are not complete at the time of the final inspection, the engineer will grant conditional acceptance subject to receipt of the required documents and satisfactory test reports. Failure to discover defective work or materials at the time of final inspection does not prevent the department from rejecting defective work once it is discovered. The department may revoke its final acceptance if the department discovers defective work after it has accepted the work.

105.12 (Vacant)

105.13 Claims Process for Unresolved Changes

105.13.1 Notice of Claim

(1) If the contractor has followed the procedures for revising the contract specified in 104.2 and provided the notification specified in 104.3, but still disagrees with the engineer, the contractor may pursue the issue as a claim. File a notice of claim with the engineer concerning the disagreement within 10 business days of receiving the engineer’s 5-day written response described in 104.3.6. Update the previously submitted information if something has changed that may affect the engineer’s previous decision.

(2) The engineer may deny the applicable portion of a claim if the contractor does not do the following:

1. File the notice of claim within 10 business days as specified in 105.13.1(1).
2. Give the engineer sufficient access to keep a record of the actual labor, materials, and equipment used to perform the claimed work.

(3) Upon filing the notice of claim, maintain records as specified for force account statements in 109.4.5.1(3). Unless the engineer issues a suspension, the contractor shall continue to perform the disputed work. The department will continue to make progress payments to the contractor as specified in 109.6.

105.13.2 Submission of Claim

(1) Submit the claim to the project engineer as promptly as possible following the submission of the Notice of Claim, but in no event later than 60 calendar days after final acceptance of the project as specified in 105.11.2. If the contractor does not submit the claim within those 60 calendar days, the department may deny the claim. The contractor and the project engineer can mutually agree to extend this 60-day submittal requirement.

105.13.3 Content of Claim

(1) Include the following 5 items in the claim.

1. A concise description of the claim.
2. A clear contractual basis for the claim. This should include reference to 104.2 on revisions to the contract and as appropriate, specific reference to contract language regarding the bid items in question.
3. Other facts the contractor relies on to support the claim.
4. A concise statement of the circumstances surrounding the claim and reasons why the department should pay the claim. Explain how the claimed work is a change to the contract work.
5. A complete breakdown of the costs used to compile the claim. Include copies of all blue book equipment rental rate sheets used, with the applicable number highlighted.

(2) The department may refer the claimant of a false claim to the appropriate authority for criminal prosecution. Certify the claim using the following form:

The undersigned is duly authorized to certify this claim on behalf of (the contractor).

(The contractor) certifies that this claim is made in good faith, that the supporting data are accurate and complete to the best of (the contractor's) knowledge and belief, and that the amount requested accurately reflects the contract adjustment for which (the contractor) believes that the department is liable.

(THE CONTRACTOR)

By:_____

(Name and Title)

Date of Execution:_____

105.13.4 Review by the District

(1) In the initial review phase, the contractor and the district will have up to 30 calendar days, from the contractor's submission of the claim, for the contractor to submit all additional information required and for the district to review the claim and conduct all meetings. The district may request, in writing, that the contractor submit additional information related to the claim. The contractor shall submit that additional information, or notify the district in writing to base its decision on the information previously submitted. Either party may request a meeting to present their views. Before the meeting, the district will distribute written ground rules for the meeting to both parties.

(2) The contractor and the district can mutually agree to extend this 30-day initial review period. Upon completion of the initial review phase, the district will notify the contractor in writing that it has begun the decision phase.

(3) In the decision phase, the district will have up to 30 calendar days to render a written decision. The district will consider both parties' written and oral submissions and may consider other relevant information in the project records. The district and contractor can mutually agree to extend this 30-day decision period. The district will provide the following in its decision:

1. A concise description of the claim.
2. A clear, contractual basis for its decision that includes a reference to 104.2 on revisions to the contract and as appropriate, specific reference to language regarding the bid items in question.
3. Other facts the district relies on to support its decision.
4. A concise statement of the circumstances surrounding the claim and reasons for its decision. If the district rejects the claim in whole or in part, the district will explain why the claimed work is not a change to the contract work.
5. The amount of money or other relief, if any, the district will grant the contractor.

(4) In the appeal phase, the contractor will have up to 30 calendar days from the date of the district's decision to appeal to the bureau. If the contractor does not file a written appeal within those 30 days, the district's decision is final. If the district does not render a decision within the 30 calendar days specified in 105.13.4(3), the claim will be automatically appealed to the bureau for review as if the district had rejected the contractor's claim.

(5) In lieu of review by the bureau, the department and contractor can mutually agree to an alternate dispute resolution process.

105.13.5 Review by the Bureau

(1) If the contractor appeals the district's decision or if the district does not act on the contractor's claim, the bureau will review the claim. The district will forward the claim to the bureau and give the bureau all documents and evidence regarding the claim previously submitted to the district. At this point or a subsequent point in the bureau's review, the department may waive the bureau's review and refer the claim directly to the review panel.

(2) In the initial review phase, the contractor and the bureau will have up to 30 calendar days, from the date of the appeal, to submit all additional information required to review the claim and to conduct all meetings. The bureau may request, in writing, that the contractor submit additional information related to the claim. The contractor shall submit that additional information, or notify the bureau in writing to base its decision on the information previously submitted. Either party may request a meeting to present their views. Before the meeting, the bureau will distribute written ground rules for the meeting to both parties.

(3) The contractor and the bureau can mutually agree to extend this 30-day initial review period. Upon completion of the initial review phase, the bureau will notify the contractor in writing that it has begun the decision phase.

(4) In the decision phase, the bureau will have up to 30 calendar days to render a written decision. The bureau will consider both parties' written and oral submissions, and may consider other relevant information in the project records. The bureau may affirm, overrule, or modify, in whole or in part, the district's decision. The bureau and contractor can mutually agree to extend this 30-day decision period.

(5) In the appeal phase, the contractor will have up to 30 calendar days, from the date of the bureau's decision, to appeal to the review panel. If the contractor does not file a written appeal within those 30 days, the bureau's decision is final. If the bureau does not render a decision within the 30-day period specified in 105.13.5(4), the claim will be automatically appealed to the review panel for review as if the bureau had rejected the contractor's claim.

105.13.6 Review Panel

(1) If the contractor appeals the bureau's decision, the bureau waives its review, or the bureau does not act on the contractor's claim, the review panel will review the claim. The bureau will forward the claim to the review panel. The district will give the review panel all documents and evidence regarding the claim previously given to the bureau. The review panel may request that the contractor and the district submit additional evidence or documents related to the claim. The review panel will consider both parties' written and oral submissions, and may consider other relevant information in the project records.

(2) The review panel will conduct a hearing with the contractor and the district. Before the hearing, the department will distribute written ground rules for the hearing to both parties.

(3) The review panel may affirm, overrule, or modify, in whole or in part, the district's decision or the bureau's decision. The review panel will render a decision within 60 calendar days from the date of the appeal. Within 14 calendar days of the review panel's decision, the contractor shall accept or reject their decision in writing. If the contractor does not respond within those 14 calendar days, the review panel’s decision is final. The review panel and contractor can mutually agree to extend this 14-day response period.

(4) If the contractor disagrees with the review panel's decision, the contractor may initiate a legal action pursuant to state statutes.

SECTION 106 CONTROL OF MATERIALS

106.1 General

(1) Provide materials conforming to the contract. Use materials the contract specifies unless the engineer authorizes substitutes under 108.8. Monitor construction operations to identify potential nonconforming materials and prevent their incorporation into the work.

(2) All materials are subject to the engineer's approval before incorporation into the work. The engineer may inspect or test all materials at any time during their preparation, storage, and use. Notify the engineer of the proposed source of materials before delivering those materials to the project site. If the engineer requests, provide samples of material and access to facilities that the engineer needs to assess the acceptability of all materials. The department will, on request, share with the contractor available information on a source or material.

(3) For fabricated components, the materials and the fabricator are subject to the department's approval before delivery of those components to the project site. The engineer may require the contractor to obtain components from another approved source if the department determines that a fabricator's product does not conform to the contract.

(4) Do not incorporate materials into the work until the engineer approves those materials. The contractor may, however, request permission to incorporate materials not already approved. The engineer will grant this permission only if the contractor can provide convincing evidence that the engineer will subsequently find those materials conforming. Incorporation of materials before approval is at the contractor's risk and permission to do so does not imply that the department will subsequently approve those materials.

106.2 Supply Source and Quality

106.2.1 Waste Materials

(1) The department encourages the contractor to incorporate material from the WDNR list of special wastes, cited in section 895.58 of the Wisconsin statutes, into the work. The department encourages use of the maximum amount of special waste consistent with the contract and standard engineering practice.

(2) For materials used during construction but not incorporated into the work, use multiple-use or biodegradable products, if it is practical, to minimize the amount of solid waste generated during construction operations.

106.2.2 Preference for American-Made Materials

(1) If all other factors are substantially equal, furnish materials manufactured to the greatest extent in the United States as provided in Wisconsin statute 16.754.

106.2.3 Product Substitution

(1) Provide US standard or SI metric system products as specified in the contract. The department will allow substitutions for the specified product if both of the following conditions are met:

1. The substitute product is made from the same material as the original product, and complies with the corresponding specification requirements for the substitute product.
2. Dimensions of the substitute product are essentially equal to dimensions of the original product. The department will permit established manufacturing and fabrication tolerances unless the contract specifies absolute maximum or minimum dimensions.

(2) Certify to the engineer, in writing, that the substitute product complies with the requirements of 106.2.3(1). The contractor shall not furnish the substitute product until the engineer approves the substitution in writing. The department will pay for the installed quantity of the substitute product at the contract price for the original product.

106.2.4 Conditional Approval of Materials

(1) The department may require, by contract or at the discretion of the engineer, inspection of materials at the point of manufacture or source of supply. The department may conditionally approve materials found to be in compliance at the point of manufacture or source of supply.

(2) If inspection is required at a manufacturing or source plant, do the following:

1. Provide the engineer with the results of relevant tests the contractor or producer performs.
2. Cooperate with and assist the engineer.
3. Secure for the engineer full access to parts of the plant used to manufacture or produce materials when contract work is in progress.
4. If the engineer requires, secure acceptable working space in or near the plant.
5. Provide advance notice of production schedules as the engineer requests.
6. Provide and maintain adequate safety measures at the plant for the engineer.

(3) The engineer may prohibit project site delivery of materials requiring inspection at the point of manufacture or source of supply until the engineer grants conditional approval.

106.3 Approval of Materials

106.3.1 General

(1) The department will approve materials or components demonstrated to conform to the contract. The department will base its approval on conformance with the contract as close as it is practical to the point of incorporation into the work. The department approves materials based primarily on the engineer's tests, tests the contractor performs under the quality management program, or tests the manufacturer performs and certifies. For materials conditionally approved at the point of manufacture or source of supply, the engineer may:

1. Retest or re-inspect materials after delivery to the project site.
2. Reject material subsequently found to be non-complying.

(2) The department may augment test results with documented performance history or inspection of processing, storage, handling, and construction operations. If the contract requires or the engineer requests, the contractor shall provide written documentation of the origin, composition, or process of manufacture of a material.

(3) The department's approval of materials or components does not constitute acceptance of the work incorporating those materials or components.

106.3.2 Pre-approved Product Lists

(1) The department maintains product acceptability lists (PALs) and other lists of pre-approved products and pre-approved manufacturers or suppliers. The department includes products on these lists based on the results of prior testing and a satisfactory performance history on departmental projects. The department may retest or re-inspect pre-approved products after delivery to the project site to verify their conformance to the contract. A product is nonconforming if verification test results indicate the product does not meet the requirements specified in the department's pre-approved products list.

106.3.3 Approval by Certification

(1) For manufactured products or assemblies, the engineer may accept a certified report of test or analysis, or a certificate of compliance instead of performing tests on samples. If not designated in the contract for the specific material involved, the engineer will determine the form and distribution of the required documents. Submit the number of copies of each document that the engineer specifies.

(2) For testing documented by certificate, all sampling and testing procedures and testing facilities are subject to the review and approval of the department. The department may sample and test products to verify the certified test results.

(3) Create a file of manufacturers' certificates of compliance for the contract. Maintain these certifications on file for a period of 5 years after completing the contract work. If the department requests, provide the requested certification within 5 business days.

(4) Products are nonconforming if one or more of the following apply:

1. Certifications are not provided within the specified time or in the specified form.
2. Certified properties do not conform to the contract.
3. Verification test results indicate the products do not conform to the contract.

106.3.4 Approval By Sampling and Testing

106.3.4.1 General

(1) Except as specifically provided in the contract, the engineer will determine sampling and testing frequencies and sample locations, both on and off the project site.

(2) The department will determine the sampling and testing methodology using the following order of precedence. The department will:

1. Use the specific methods referenced in the contract.
2. Use methods specified in the department's C& M manual if specific methods are not referenced in the contract.
3. Use the department's standard practices if methods are not referenced in the contract or specified in the department's C& M manual.

(3) The department will maintain copies of all AASHTO, ASTM, and AREA sampling and testing standards referenced in the contract. Contractors, bidders, or the suppliers of materials may examine those standards at the department's central office in Madison. The department will also make available for examination all other standards referenced in the contract as well as the department's sampling and testing standard practices.

(4) All department and contractor personnel engaged in sampling and testing of materials to be incorporated into the work must be qualified under a department-accepted program for the specific tasks they are performing.

(5) All laboratory facilities employed in sampling and testing of materials to be incorporated into the work must be qualified, for the specific tests they are performing, by the department under its laboratory qualification program.

106.3.4.2 Department's Material Testing Program

(1) Furnish without charge all samples that the engineer requires and provide the facilities and staff required for collecting and forwarding them to the department. The department will, on request, share with the contractor test results obtained on contractor-furnished samples of materials.

106.3.4.3 Department's Quality Management Program

106.3.4.3.1 General

(1) If quality management program provisions are specified in the contract, the department will base approval of the covered materials on a combination of the results of the following:

1. Contractor quality control testing required under the contract.
2. Departmental verification testing.
3. Inspections of the materials production, storage, handling, and construction processes.

(2) Required sampling and testing methodologies and documentation procedures are specified in the department's QMP guide/procedure manual.

(3) If disputed, approval of materials and components, as well as the subsequent acceptance of the work incorporating those materials or components, is subject to review under a specified dispute resolution process.

106.3.4.3.2 Technician Certification

(1) If required in the individual quality management program specifications, both the department's and the contractor's sampling and testing personnel must be certified under the department's highway technician certification program.

106.3.4.3.3 Contractor Quality Control

(1) Provide the qualified quality control personnel required in the contract. Conduct process control inspections, sampling and testing, documentation, and process adjustments required to ensure that the materials incorporated into the work conform to the contract.

106.3.4.3.4 Documentation

(1) If the contract requires, provide: records, control charts, and a quality control plan documenting the reliable production of conforming materials and components.

106.3.4.3.5 Department Testing

(1) The department will periodically conduct independent verification tests to validate the quality of the materials incorporated into the work. If required in the contract and instead of independent verification testing, the department may base approval on departmental quality assurance tests.

106.3.4.3.6 Independent Assurance

(1) The department may evaluate all personnel engaged in sampling and testing of materials to be incorporated into the work. The department will base its evaluation on observation of procedures, review of control charts and other required documentation, and spilt-sample testing.

(2) The department may evaluate equipment the contractor uses to sample and test materials. The department will base its evaluation on visual inspection, calibration checks, or split sample or proficiency testing.

106.3.4.3.7 Dispute Resolution

(1) For potentially nonconforming materials, the contractor and department will thoroughly investigate substantive discrepancies in their respective test results. If this investigation does not identify the cause of those discrepancies, the department or the contractor may invoke the applicable quality management program dispute resolution provisions. The dispute resolution team will use these procedures to determine the acceptability of, disposition of, and payment for the affected material

106.4 Storing and Handling Materials

(1) Store and handle materials to preserve their quality and fitness for the work. Provide easy access for the department to inspect and test stored materials. Even if approved before storage, the engineer may find materials nonconforming based on re-inspection before incorporation into the work.

(2) Provide the engineer with the storage locations of materials intended for the work. If the engineer permits, the contractor may store materials on portions of the right-of-way not required for public travel. Provide additional off-site storage space at no additional expense to the department. Off-site storage areas for approved or conditionally approved materials are subject to the department's inspection and approval.

106.5 Nonconforming Materials

(1) For nonconforming materials identified before incorporation into the work, the engineer will do one of the following:

1. Reject those materials. Unless the engineer permits otherwise, the contractor shall remove rejected materials from the project site at no cost to the department. The engineer may permit the contractor to correct rejected materials. The contractor shall obtain the engineer's approval for previously rejected, but subsequently corrected, materials before incorporating those materials into the work.
2. Approve those materials subject to reduced payment. The engineer will determine the circumstances under which those nonconforming materials may be approved and allowed to remain in place. The engineer will document the basis of approval and may execute a contract change order to adjust the contract unit prices for the nonconforming materials. If the contract does not specify a price adjustment, the engineer will adjust the price.

(2) For materials incorporated in the work and subsequently found to be nonconforming, the engineer will do one of the following:

1. Reject those materials subject to the provisions of 105.3.2.2 for unacceptable work
2. Approve those materials and adjust the contract price as provided in 105.3.2.1 for engineer accepted nonconforming work.

SECTION 107 LEGAL RELATIONS AND RESPONSIBILITY TO THE PUBLIC

107.1 Laws to be Observed

(1) At all times, observe and comply with all applicable federal and state laws and administrative rules, local laws, ordinances, and regulations that affect the conduct of the work, and applicable orders or decrees of bodies or tribunals having jurisdiction or authority over the work. The department will consider no plea of misunderstanding or ignorance thereof. The contractor shall indemnify and save harmless the state and all of its officers, agents, and employees against any claim or liability arising from or based on the violation of any applicable law, ordinance, regulation, order, or decree, whether by the contractor or the contractor's employees, subcontractors, or agents.

(2) Comply with all applicable federal, state, and local health official rules and regulations governing safety, health, and sanitation. Provide all necessary safeguards, safety devices, and protective equipment. Take all other actions that are reasonably necessary to protect the life and health of employees on the project and the safety of the public.

107.2 Haul Road Notification

(1) Notify the engineer in writing at least 3 business days before hauling project materials over a public road or street not a part of the state trunk highway system. The department will subsequently survey the existing condition of that haul route to establish a baseline for assessing damage that the contractor's hauling operations might cause.

107.3 Permits and Licensing

(1) Procure all permits and licenses, pay all charges and fees, and give all notices necessary to perform the work. The contractor shall comply with all permit requirements whether the permit is issued to the contractor, the state, or the maintaining authority.

107.4 Patented Devices, Materials, and Processes

(1) Include in the bid prices royalties and costs arising from patents, trademarks, and copyrights. Before using a design, device, material, or process covered by letters, patents, or copyrights, provide for its use by suitable legal agreement with the patentee or owners. Provide proof of this agreement with the engineer if necessary. The contractor and the contractor's surety shall provide indemnification from all claims for infringement of patents, trademarks, or copyrights as specified in 107.12.

107.5 (Vacant)

107.6 Federal Participation

(1) If the federal government participates in the cost of the contract:

1. The work is subject to the inspection and approval of the proper officials of the federal government.
2. The work shall conform to the applicable federal statutes, rules, and regulations.

(2) The federal government is not a party to the contract and will not interfere with the rights of either party under the contract.

107.7 (Vacant)

107.8 Public Convenience and Safety

(1) Maintain the safety of the traveling public and control traffic using barricades, warning signs, and flaggers as specified in 104.6.1.

(2) If the contract provides that the road or portions of the road are closed to public traffic during construction, the engineer may direct or authorize the contractor to open sections of the road to public traffic before the work is completed as specified in 104.6.5.

(3) When hauling materials on public roads or streets, equip vehicles subject to spillage with tailgates and adequate sideboards. Use covers and other protective devices necessary to prevent spillage. The contractor is responsible for removing spillage from the entire area within the right-of-way of the haul route. Immediately remove spillage that interferes with or creates a hazard for traffic.

(4) Notify the responsible fire department and police department at least 24 hours before closing a road, street, or highway.

(5) If excavating adjacent to a building or wall, give the property owner sufficient written notice of the impending excavation. The contractor and the contractor's surety shall hold the state and the municipality in which the work is done harmless from damage to the building or wall.

(6) Check for and comply with local ordinances governing the hours for operation of construction equipment. Obtain the engineer's written approval for operations from 10:00 P.M. until 6:00 A.M.

107.9 Contractor's Use of the Highway Right-of-Way

(1) The department has sole authority to grant the contractor permission to occupy and use the right-of-way. All activity within the right-of-way is subject to the engineer's approval.

(2) If the engineer permits, the contractor may store materials and equipment or place the plant on portions of the right-of-way not required for public travel. Do not park vehicles or equipment not in immediate use, store materials, or create obstructions that may unduly distract motorists traveling through construction areas. Minimize hazards to motorists, pedestrians, and workers.

107.10 Use of Explosives

(1) Observe the utmost care when using explosives so as not to endanger life and property. Use, store, and handle explosives and highly inflammable materials as specified in applicable federal, state, and local laws and regulations including the rules of the Wisconsin Department of Commerce.

107.11 Protection and Restoration of Property and Property Marks

(1) Notify, in writing, all property owners whose property interferes with the work. Advise them of the nature of the interference, and arrange with them for the disposition of the property. Upon request, furnish the engineer with copies of all notifications and final agreements.

(2) Use every reasonable precaution to prevent damage to or destruction of all property including poles, trees, shrubbery, crops, and fences adjacent to or interfering with the work; all overhead structures including wires, cables, etc.; and all underground structures including water or gas shut-off boxes, water meters, pipes, conduits, etc.; within or outside the right-of-way. Protect and carefully preserve all known property and survey marks and land monuments, and notify the engineer of the nature and location of these markers. Do not disturb or destroy markers until the engineer has arranged for their referencing or perpetuation.

(3) Assume liability for all damage to public or private property or property marks resulting from defective work or materials, or non-execution of the contract. Restore property or property marks to a condition similar or equal to that existing before causing the damage or injury. Restore property or property marks as directed, or otherwise make good all damage or destruction in an acceptable manner. If the contractor does not make restoration within 48 hours after receiving the engineer's written notice, the engineer may restore the property or property marks as deemed necessary. The department will deduct the restoration cost from payments due the contractor under the contract.

(4) Do not start fires without first securing the necessary permits and the approval of the local authority having jurisdiction, or the county forest ranger, or the WDNR Bureau of Forestry. Comply with applicable requirements of the WDNR's air pollution control rules, including the limitations on open burning. When burning brush, stumps, or rubbish, take care not to damage standing trees, shrubs, or other property. Assume liability for all damage caused by fires.

107.12 Responsibility for Damage and Tort Claims

(1) The contractor and the contractor's insurer shall defend, indemnify, and save harmless the following entities:

1. The state, its officers, agents, and employees. In this context, agents exclude consulting firms, Wisconsin counties and municipalities, and their respective officers and employees.
2. The county, town, or municipality in which the improvement is made, each of them separately or jointly, and their officers, agents, and employees.

(2) Defend, indemnify, and save harmless all entities in 107.12(1) from all suits, actions, or claims of any character brought because of one or more of the following:

1. Injuries or damages received or sustained by a person, persons, or property resulting from the contractor's operations.
2. Neglect in safeguarding the work.
3. Use of unacceptable materials in constructing the work.
4. Acts or omissions, neglect, or misconduct of the contractor.
5. Claims or amounts recovered for an infringement by the contractor of patent, trademark, or copyright.
6. Claims or amounts arising or recovered under the workers compensation act, relating to the contractor's employees.
7. The contractor's noncompliance with a law, ordinance, order, or decree relating to the contract.

(3) The department may retain payments due the contractor in amounts sufficient to cover the cost of suits, actions, or claims caused by the reasons specified in 107.12(2). The department will not release this retainage until the contractor furnishes satisfactory evidence of one of the following:

1. The contractor is adequately protected from the suits, actions, or claims with the insurance coverages specified in 107.26 or other insurance.
2. The parties have settled the suits, actions, or claims.

(4) The state is not liable to the contractor for damages or delays resulting from third party work, except for excusable delays as specified in 108.10.2 and 108.10.3. The state also is exempt from liability to the contractor for damages or delays resulting from injunctions or other restraining orders obtained by third parties except where the damage or delay is a direct result of an injunction or restraining order obtained by a citizen's action alleging violations of 42 U.S.C. 4331-4332, 23 U.S.C. 138, or public law 91-646.

107.13 Third Party Beneficiary

(1) This contract does not create anyone as a third party beneficiary. This contract does not authorize non-parties to the contract to maintain actions for damages under the contract.

107.14 Contractor's Responsibility for Work

(1) Until the engineer accepts the work as specified in 105.11 or opens the road before the work is completed as specified in 104.6.6, the contractor shall maintain charge and care of the work. Within 107.14, the term "work" is redefined to mean "the work product that is completed in its final position and is incorporated in the project." Protect all of the work against injury or damage caused by the action of the elements, or from any other cause, whether arising from the execution or non-execution of the work. Rebuild, repair, restore, and make good all injuries or damages to any portion of the work occasioned by the above causes at no additional cost to the department. However, the contractor shall not bear the expense for damage to the work caused by abnormal and unforeseeable occurrences beyond the control of, and without the fault or negligence of, the contractor for one or more of the following reasons:

1. Cataclysmic phenomena of nature.
2. Acts of the public enemy.
3. Acts of government authorities.

(2) Before suspending the work, take the necessary precautions to prevent damage to the project, prevent traffic accidents, and provide for normal drainage. Erect necessary temporary barricades, signs, or other facilities at no expense to the department except as specified in 104.6.

(3) The contractor is responsible for all damages to equipment and supplies regardless of the circumstances.

107.15 Personal Liability of Public Officials

(1) In carrying out contract provisions, or in exercising power or authority granted to them by or within the scope of the contract, the department, the engineer, or their authorized representatives have no liability, either personally or as officials of the state. In all of these matters, they act solely as agents and representatives of the state. The contractor waives all rights of action against the department, its agents, or employees.

107.16 No Waiver of Legal Rights

(1) The department may correct a measure, estimate, or certificate at any time before or after final acceptance. The department may recover from the contractor, surety, or both, overpayments upheld for a breach (failure to fulfill contract obligations). A waiver on the part of the department of a breach of a part of the contract is not a waiver of another or subsequent breach.

(2) The following department actions do not waive the department's rights or power under the contract:

1. Payment for or acceptance of all or portions of the work.
2. Extension of contract time.
3. Possession of the work.

(3) Assume liability for latent defects, fraud, gross mistakes as may amount to fraud, or as regards to the department’s rights under a warranty or guaranty without prejudice to the terms of the contract.

107.17 Railroad-Highway Grade Separations and Approaches, New Railroad Crossings, and Operations on Railroad Right-of-Way

107.17.1 General

(1) The railroad's chief engineering officer may inspect the work and contractor operations on grade separations and their approaches, grade crossings, or on railroad right-of-way. Perform the work in a manner satisfactory to the railroad's chief engineering officer.

(2) Perform all work within the railroad's right-of-way in a manner that does not interfere with the safe and uninterrupted operation of railroad traffic. Maintain clearances during construction as follows:

1. Do not operate equipment closer than 25 feet (7.6 m) horizontally from a track centerline or 22 feet (6.7 m) vertically above the top of a rail, except under the protection of railroad flaggers.
2. Do not store materials or equipment closer than 25 feet (7.6 m) horizontally from a track centerline.
3. Provide an obstruction-free work zone adjacent to a track extending 12 feet (3.6 m) or more horizontally on both sides of the track centerline. Keep this work zone free of construction debris.
4. Unless the railroad's chief engineering officer approves otherwise in writing, maintain minimum clearances from falsework, forms, shoring, and other temporary fixed objects as follows:

    4.1 Provide 12 feet (3.6 m), plus 1.5 inches (38 mm) per degree of track curvature, measured horizontally from the track centerline.

    4.2 Provide 21 feet (6.4 m), plus compensation for superelevated track, measured vertically above the top of the highest rail.

(3) Comply with the railroad's rules and regulations regarding operations on railroad right-of-way. If the railroad's chief engineering officer requires, arrange with the railroad to obtain the services of qualified railroad employees to protect railroad traffic through the work. Bear the cost of these services and make payment directly to the railroad. Notify the railroad's chief engineering officer in writing at least 3 business days before starting work near a track. Provide the specific time planned to start the operations.

(4) Do not blast on the railroad's right-of-way without the written permission of the railroad's chief engineering officer. At least 3 business days before blasting, inform the responsible railroad official if explosives will be detonated within 100 yards (91 m) of a track. Provide specific dates, times, and locations for all blasting.

(5) Develop shop drawings, with detailed plans and computations, for the following temporary construction:

1. Falsework and forms of highway structures spanning a track.
2. Forms for piers and abutments adjacent to a track.
3. Shoring, if the contract requires shoring of an excavation near a track.

(6) Have a registered professional engineer sign and seal the shop drawings. At least 30 calendar days before starting falsework, form, or shoring construction; submit 3 sets of shop drawings to the railroad's chief engineering officer and one set to the engineer. The engineer and the railroad may review the shop drawings. If the engineer or the railroad finds the shop drawings unsatisfactory, the contractor shall make the required changes. A satisfactory shop drawing review does not relieve the contractor of responsibility and liability for the structural integrity and proper functioning of the falsework, forms, or shoring.

(7) Make all necessary arrangements for crossing a railroad's track at a location other than an existing public crossing. Bear all costs incident to that crossing, including flagging costs.

107.17.2 Work by Railroad

(1) The railroad company may undertake certain work or operations incident to the project that are the subject of an agreement between the department and the railroad company. Do not alter this work without the consent of the railroad company. Should the railroad company elect to have contractor-requested alterations made with railroad company forces, the contractor shall bear the cost of the alterations and make payment directly to the railroad company.

(2) Bear the cost of the movement or adjustment of telegraph, telephone, or signal facilities owned, operated, or maintained by the railroad company and not otherwise provided for in the contract or in agreements between the department and the railroad company.

107.17.3 Railroad Insurance Requirements

(1) If required by the special provisions, provide or arrange for a subcontractor to provide railroad protective liability insurance in addition to the types and limits of insurance required in 107.26. Keep railroad protective liability insurance coverage in force until completing all work, under or incidental to the contract, on the railroad right-of-way or premises of the railroad and until the department has accepted the work as specified in 105.11.2.4.

(2) Provide railroad protective liability insurance coverage written as specified in 23 CFR part 646 subpart A. Provide a separate policy for each railroad owning tracks on the project. Ensure that the railroad protective liability insurance policies provide the following minimum limits of coverage:

1. Coverage A, bodily injury liability and property damage liability; $2 million per occurrence.
2. Coverage B, physical damage to property liability; $2 million per occurrence.
3. An annual aggregate amount of $6 million that shall apply separately to each policy renewal or extension.

(3) Submit the following to each railroad owning tracks on the project as evidence of that railroad's respective coverage:

1. A certificate of insurance for the types and limits of insurance specified in 107.26.
2. The railroad protective liability insurance policy or other acceptable documentation to the railroad company.

(4) Submit the following to the department as evidence of the required coverage:

1. A copy of the letter to the railroad company transmitting the submittal documents specified in 107.17.3(3).
2. A certificate of insurance for the required railroad protective liability coverages.

(5) The contractor shall not begin work on the right-of-way or premises of the railroad company until the department receives the submittals specified in 107.17.3(4) and notification from the railroad company that the contractor has provided sufficient insurance information to begin work.

(6) Notify the department at least 60 calendar days before a cancellation or material change in coverage. Only obtain coverage from insurance companies licensed to do business in Wisconsin that have an A.M. Best rating of A- or better. The cost of providing the required insurance coverage and limits is incidental to the contract cost. The department will make no additional or special payment for providing insurance.

107.18 Environmental Protection

(1) Comply with all applicable federal, state, and local laws and regulations that control the prevention of pollution of the environment.

(2) Comply with the pertinent requirements of laws relating to solid waste disposition and air pollution. Control and minimize the dispersion of dust and particulate matter and other pollutants into the atmosphere.

(3) Take all necessary precautions to prevent pollution of streams, lakes, wetlands, and reservoirs with fuels, oils, bitumens, calcium chloride, magnesium chloride, paint, or other harmful materials. Conduct and schedule work operations to avoid or minimize siltation of streams, lakes, and reservoirs. Protect drainage ways, culverts, and drainage structures from debris caused by a contractor operation.

(4) Do not ford live streams unless a plan for the fording operation meets the engineer's approval and results in minimum siltation to the streams. Do not operate machinery on the bed of live streams.

(5) Remove existing structures over live streams in large pieces, minimizing the number of smaller pieces that may drop into the water or wetlands. Remove from the water or wetlands all steel and all concrete pieces or other debris larger than 5 inches (127 mm) in any dimension.

(6) If work areas or pits are located in or adjacent to live streams, lakes, or wetlands, separate the work areas or pits from the stream, lake, or wetland by a dike, silt fence, or other barrier to keep sediment from entering these locations. Take care during the construction and removal of these barriers to minimize the siltation or filling of the stream, lake, or wetland.

(7) Treat water from aggregate washing or other sediment producing operations by filtration, a settling basin, or other means sufficient to reduce the sediment content to not more than that of the stream or lake into which the water is discharged.

107.19 Construction Over or Adjacent to Navigable Waters

(1) Within 107.19, the term "governmental authority" shall mean the U.S. Army Corps of Engineers, the U.S. Coast Guard, the WDNR, or other agency having jurisdiction over the navigable waters within the project limits and empowered to take the actions specified in 107.19.

(2) Conduct all work over, on, or adjacent to navigable waters so that free navigation of the waterways is not impeded and existing navigable depths are not impaired except as allowed by permit issued by the governmental authority. Obtain all permits before beginning construction.

(3) Procure all permits required by 107.3. Submit applications for U.S. Coast Guard and WDNR permits to the boating law administrator of the WDNR bureau of law enforcement. Provide one copy of each permit to the project engineer for posting in the field office before construction activities affecting navigation begin.

(4) The governmental authority may supervise all construction and related operations as is customary for operations in navigable waters. Conform to special requirements or directions from the governmental authority.

(5) Ascertain from the governmental authority the minimum horizontal and vertical clearance requirements for navigation during construction, and maintain those clearances during the period of construction.

(6) If the governmental authority during progress of the work issues directions or orders affecting the contractor's operations or order of procedure, the contractor shall promptly file with the engineer a written copy of the directions or orders.

(7) Should the contractor during the progress of the work lose, dump, throw overboard, sink, or misplace material or equipment, which in the opinion of the governmental authority may interfere with or obstruct navigation, the contractor shall promptly recover or remove the same. Give immediate notice with descriptions and locations of possible obstructions to the governmental authority. If the governmental authority requires, mark or buoy the obstructions until their removal. Should the contractor refuse, neglect, or delay compliance with the above requirements, the governmental authority may remove the obstructions. The department may deduct the cost of this removal from payments due to the contractor, or may recover the cost under the bond deposited by the contractor.

(8) During construction, provide temporary lights, waterway markers, other devices, or combination thereof as the governmental authority specifies and requires.

(9) All expenses the contractor incurs to maintain navigation are incidental to the contract cost. The department will allow no additional payment for this work.

107.20 Erosion Control

(1) Perform the temporary and permanent erosion control measures and the storm water management measures required by Trans 401 of the Wisconsin administrative code, the contract, and as the engineer directs.

(2) Coordinate temporary erosion control measures with the permanent erosion control measures to ensure economical, effective, and continuous erosion control.

(3) Prepare and submit an ECIP for the project, including borrow sites and material disposal sites, according to Trans 401 of the Wisconsin administrative code. Perform the work according to the ECIP.

(4) The engineer may limit the area of erosive land that the contractor may expose to the elements by grubbing, excavation, borrow, or fill operations at any one time. Provide the shortest duration that is practical for this exposure before final trimming, finishing, and seeding, or application of temporary erosion control measures.

(5) Perform construction in and adjacent to rivers, streams, lakes, or other waterways in a manner to avoid washing, sloughing, or deposition of materials into the waterways that would obstruct or impair the flow of the waterways and thus endanger the roadway or stream banks, or that would result in undue or avoidable contamination, pollution, or siltation of these waterways.

(6) The engineer has full authority to suspend or limit grading and other operations pending adequate performance of permanent erosion control measures, such as finish grading, topsoiling, mulching, matting, and seeding, and all temporary erosion control measures that the engineer orders.

(7) Perform grubbing and grading operations in sequence with other work to minimize erosion. Construct intercepting ditches or dikes as soon as it is practical after completing clearing and grubbing operations and before or during the operations of excavating the cuts. Where erosion is likely to be a problem, provide the permanent erosion control measures immediately after performing grading operations, unless the engineer authorizes temporary erosion control measures.

(8) Except as limited by 628.4.12 and 628.5.12 for borrow sites and material disposal sites, the engineer will measure, and the department will pay for, temporary and permanent erosion control as provided for by the various bid items included for such control as specified in the contract or as extra work, if this work is not specified in the contract. However, the department will not pay for this work if the engineer requires temporary erosion control because of the contractor's negligence, carelessness, or failure to install permanent controls.

107.21 Use of Fire Hydrants

(1) If the contractor desires to use water from public hydrants, the contractor shall make application to the proper authorities and shall conform to their ordinances, rules, and regulations concerning fire hydrant use.

(2) Ensure that fire hydrants are accessible at all times to the fire department. Do not place material or other obstructions closer to a fire hydrant than permitted by ordinances, rules, or regulations, or within 5 feet (1.5 m) of a fire hydrant in the absence of specific ordinances, rules, or regulations.

107.22 Contractor's Responsibility for Utility Facilities, Property, and Services

(1) The department expressly reserves for the proper authorities of the municipality in which the work is done the right to construct utility services in the highway or street, or to grant permits for the same, at any time. Coordinate and cooperate with utilities in the removal and rearrangement of existing facilities to minimize their service interruption and duplication of work by the utilities. At least 3 business days before breaking ground, the contractor shall notify the proper utility authorities that the contractor's operations may affect their facilities including: streets, gas and water pipes, electric and other conduits, railroads, poles, manholes, catch basins, sewers, and other property. Never hinder or interfere with utility representatives in the protection or operation of their facilities. Obtain all necessary information regarding existing facilities. Protect existing facilities from damage and unnecessary exposure.

(2) Obtain all necessary information regarding the planned installation of new facilities identified in the contract. Make proper provision and give proper notification so the utilities can install new facilities at the proper time without delay or unnecessary inconvenience. Do not pave over the location of a new underground facility, planned for installation concurrently with this contract, before installing the facility.

(3) If the contractor damages or interrupts service, the contractor shall notify the utility promptly. Coordinate and cooperate with the utility in the repair of the facility. The department will determine who is responsible for repair costs as specified in Wisconsin statutes 66.047 and 182.0175(2).

(4) If the contractor finds facilities not identified in the contract, the engineer will determine whether adjustment or relocation of the facility is necessary to accommodate contract work. The engineer will make arrangements with the utility or the contractor to adjust or relocate the facility. If deemed necessary, the engineer will revise the contract as specified in 104.2.

(5) If specified in the contract, the contractor and the department will comply with administrative rule, Trans 220 of the Wisconsin administrative code.

107.23 Antitrust Assignment Clause

(1) The contractor hereby assigns to the department all claims for overcharges resulting from antitrust violations as to goods and materials purchased in connection with this contract, except as to overcharges that result from antitrust violations commencing after the price is established under this contract and any change order. In addition, the contractor warrants and represents that each of the contractor's first tier suppliers and subcontractors shall assign all antitrust violation claims to the state subject to the aforementioned exception.

107.24 Hazardous Substances

(1) Whenever the construction operations encounter or expose an abnormal condition that may indicate the presence of a hazardous substance, immediately discontinue construction operations in the vicinity of the abnormal condition and notify the engineer. Treat all abnormal conditions with extreme caution. Abnormal conditions include, but are not limited to, the following:

1. The presence of a tank or barrel.
2. An obnoxious odor.
3. Excessively hot earth.
4. Smoke.
5. Visible fumes.
6. Discolored earth or sheen on groundwater.

(2) Do not resume construction operations in this area until the engineer so directs. The contractor may continue work in other areas of the project unless the engineer otherwise directs.

(3) Take actions to prevent the hazardous substance from spreading into an uncontaminated area.

(4) Dispose of hazardous substances as specified in the requirements and regulations of the responsible state or federal agencies. If the engineer requires the contractor to dispose of the hazardous substance and the contract does not provide for this work, the work is extra work as specified in 104.2. If the responsible state or federal agency requires special procedures for the disposal, the department will arrange with qualified persons to dispose of the substance.

107.25 Archeological and Historical Findings

(1) For construction operations on the project, if encountering human remains or if encountering artifacts of potential archeological or historical significance, immediately cease operations at the encounter site and notify the engineer. Cooperate, as necessary, by moving construction operations from the encounter site and complying with the engineer's directions. The contractor may continue work elsewhere on the project unless the engineer directs otherwise. Do not resume operations at the encounter site without the engineer's permission.

(2) For construction operations on private property, if encountering human remains or if encountering artifacts of potential archeological or historical significance, immediately cease operations at the encounter site and notify the engineer and the responsible state agencies. Cooperate, as necessary, by moving construction operations from the encounter site and complying with the responsible state agencies' directions. Do not resume operations at the encounter site without the responsible state agencies' permission.

107.26 Standard Insurance Requirements

(1) Maintain the following types and limits of commercial insurance in force until completing and obtaining the department's acceptance of all work as specified in 105.11.2.4.

TYPE OF INSURANCE	MINIMUM LIMITS REQUIRED[1]
1. Commercial general liability insurance; shall be endorsed to include blanket contractual liability coverage.	$2 Million Combined single limits per occurrence; may be subject to an annual aggregate limit of not less than $4 Million.
2. Workers' compensation and employers' liability insurance.	Workers' compensation limits: statutory limits Employers' liability limits: Bodily injury by accident: $100,000 each accident Bodily injury by disease: $500,000 each accident $100,000 each employee
3. Commercial automobile liability insurance; shall cover all contractor-owned, non-owned, and hired vehicles used in carrying out the contract.	$1 million-combined single limits per occurrence.

[1] The contractor may satisfy these requirements through primary insurance coverage or through excess/umbrella policies.

(2) Each bidder shall provide the department with certificates of insurance as evidence that required coverages for insurance types 1, 2, and 3 are in force. The bidder shall provide certificates of insurance in their prequalification statement as specified in 102.1.

(3) Notify the department at least 60 calendar days before a cancellation or material change in coverage. Only obtain coverage from insurance companies licensed to do business in the state that have an A.M. Best rating of A- or better. The cost of providing the required insurance coverage and limits is incidental to the contract cost. The department will make no additional or special payment for providing insurance.

(4) The above insurance requirements shall apply with equal force whether the contractor or a subcontractor, or anyone directly or indirectly employed by either, performs the work under the project.

SECTION 108 PROSECUTION AND PROGRESS

108.1 Subletting the Contract

(1) Do not sublet, sell, transfer, assign, or otherwise dispose of the contract, a portion of the contract, or a right, title, or interest in the contract without the engineer's written consent. If the engineer consents to the contractor subletting a portion of the contract, the contractor is relieved of no responsibility for the fulfillment of the contract or of no liability under the contract and bond. Do not allow a subcontractor to proceed with work until the engineer consents.

(2) Request permission in writing to sublet a portion of the contract. If the engineer requires, submit evidence that the proposed subcontractor is experienced and equipped for the work. The engineer may also require submission of a copy of the proposed subcontract. Submit all subsequent changes in the terms of a subcontract for the engineer's consent.

(3) The contractor shall perform at least 30 percent of the original contract amount with the contractor's own organization. In computing the amount of work performed by the contractor, the department will exclude the cost of materials not used by the contractor's own organization to perform work. If the contractor sublets specialty items of contractor staking, electrical work, landscaping, or traffic control, the department will deduct the cost of those specialty items sublet before computing the contractor's share of the work.

(4) If proposing to have a party other than a subcontractor perform work, inform the engineer and submit details of this arrangement in writing. The engineer will determine if that arrangement constitutes subcontracting. The engineer may also require the contractor to file, with the engineer, copies of all other agreements between any parties regarding the performance of work under the contract.

108.2 Start of the Work

(1) For the purpose of determining contract time, the contract starting date is defined as follows:

If the contract provides for starting work not later than 10 calendar days after the date of written notification from the engineer, the contract starting date will be the date construction operations are started or the tenth calendar day following the date of that notification, whichever is earlier.

108.3 Prosecution of the Work

(1) Do not begin or resume work before receiving the engineer's written notification. Notify the engineer at least 3 business days before starting or resuming work. Notify the engineer at least one business day before changing the schedule of work, such as working on Saturdays, Sundays, and department-specified holidays.

(2) Employ an ample force of workers and provide a construction plant properly adapted to the work and of sufficient capacity and efficiency to accomplish the work in a safe and skillful manner as provided in the contractor's progress schedule. Maintain all plants in good working order and make provisions for immediate emergency repairs.

(3) Take precautions necessary to protect the work as specified in 107.14. Include in the contract price the cost for taking precautions and protecting the work. The cost of taking precautions and protecting the work is incidental to the cost of the work as specified in 109.2 and 109.6.1.

108.4 Progress Schedules

108.4.1 General

(1) Submit a bar chart progress schedule as specified in 108.4.2. The contractor may alternatively submit one of the following:

1. A linear schedule conveying all the information specified in 108.4.2 for a bar chart.
2. A relationship bar chart (RBC) schedule as specified in 108.4.3.
3. A critical path method (CPM) schedule as specified in 108.4.4.

(2) If special provisions require, submit an RBC schedule as specified in 108.4.3 or a CPM schedule as specified in 108.4.4, and do not submit a bar chart schedule.

(3) Plan and execute the work to meet the contract-required interim completion dates and the specified contract time or completion date. The engineer will use the schedule to monitor the progress of the work. The schedule is not part of the contract.

108.4.2 Bar Chart Progress Schedule

108.4.2.1 Initial Bar Chart Progress Schedule

(1) At least 14 calendar days before the preconstruction meeting, submit to the engineer for review an initial bar chart progress schedule that meets the following minimum requirements:

1. Include activities that describe essential features of the work and activities that might potentially delay contract completion. Identify activities that are controlling items of work.
2. Identify the contemplated start and completion dates for each activity. Provide a duration, ranging from one to 15 working days, for each activity. Break longer activities into 2 or more activities distinguished by the addition of a location or some other description. Specify the sequencing of all activities.
3. Provide the quantity and the estimated daily production rate for controlling items of work.
4. Include a narrative that lists the work days per week, department-specified holidays, number of shifts per day, and number of hours per shift. For calendar day and completion date contracts, provide the estimated number of adverse weather days for each month consistent with the monthly anticipated adverse weather days shown in 108.10.2.2.
5. Show completing the work within interim completion dates and the specified contract time or completion date.

(2) In addition to the required activities, the contractor is encouraged to include other activities such as:

1. The procurement of materials, equipment, articles of special manufacture, etc.
2. The furnishing of drawings, plans, and other data required in the contract for the engineer's review.
3. The department’s inspections of structural steel fabrication, etc.
4. Third party activities related to the contract.

(3) Hand drawn schedules are acceptable. If the contractor develops the initial schedule with scheduling software, the contractor is encouraged to provide the engineer a diskette of the schedule and the name of the scheduling software used.

(4) The engineer and contractor will review the initial schedule at the preconstruction meeting. Within 5 business days after the preconstruction meeting, the engineer will accept the contractor's initial schedule or request additional information. Make the appropriate adjustments and resubmit the revised initial schedule within 5 business days after the engineer's request. If the engineer requests justification for an activity duration, provide information that may include estimated manpower, equipment, unit quantities, and production rates used to determine the activity duration.

(5) The department will only make progress payments for the value of materials, as specified in 109.6.3.2, until the engineer accepts the initial schedule. The engineer accepts the contractor's initial schedule based solely on whether that schedule is complete as specified in 108.4.2.1(1). The engineer’s acceptance of the schedule does not modify the contract or validate the schedule.

108.4.2.2 Monthly Progress Meetings and Bar Chart Progress Schedule Updates

(1) The contractor and the engineer will meet monthly to assess progress and jointly add update information to the initial schedule. At a minimum, updates will include the actual start and finish of each activity, percentage complete, and remaining durations of activities started but not yet completed.

108.4.2.3 Engineer's Right to Request Bar Chart Progress Schedule Revisions

(1) The engineer will monitor the progress of the work and may request that the contractor revise the schedule if project completion or interim completion targets are delayed 14 calendar days or more for calendar day or completion date contracts, or 10 working days or more for working day contracts. Submit the revised schedule within 5 business days after the engineer's request.

108.4.2.4 Bar Chart Progress Schedule Documentation for Time Extensions

(1) Furnish documentation including schedule updates to support requests to extend interim completion dates, the specified contract time, or the completion date.

(2) If the contractor does not furnish documentation to support the additional time needed to complete work on increased quantities, the engineer may extend contract time, rounded to the nearest 1/2 day, as follows:

$$TE = OT \times (ATC - OC)/OC$$

Where:

TE = Time extension

OT = Original time (original contract time)

OC = Original cost (total bid amount)

ATC = Adjusted total cost (actual cost of all work minus the cost of change order work where contract time was determined)

108.4.2.5 Bar Chart Progress Schedule Measurement and Payment

(1) Include the cost for the schedule in the total bid. The schedule is incidental to the contract cost.

108.4.3 Relationship Bar Chart Progress Schedule

108.4.3.1 General

(1) If special provisions require, submit a RBC Progress Schedule.

108.4.3.2 Initial RBC Progress Schedule

(1) At least 14 calendar days before the preconstruction meeting, submit to the engineer for review an initial RBC schedule that meets the following minimum requirements:

1. Include activities that describe essential features of the work and activities that might potentially delay contract completion. Identify activities that are controlling items of work.
2. Identify the contemplated start and completion dates for each activity. Provide a duration, ranging from one to 15 working days, for each activity. Break longer activities into 2 or more activities distinguished by the addition of a location or some other description.
3. Provide a logic diagram that shows the sequence of activities and the scheduling interrelationships among activities. Alternatively, the contractor may identify the activity interrelationships in a tabular listing. Ensure all activity interrelationships are finish to start relationships with no leads or lags. Use only contractual constraints in the schedule logic. The engineer may accept requested exceptions.
4. Provide the quantity and the estimated daily production rate for controlling items of work.

5. Include a narrative that lists the work days per week, department-specified holidays, number of shifts per day, and number of hours per shift. For calendar day and completion date contracts, provide the estimated number of adverse weather days for each month consistent with the monthly anticipated adverse weather days shown in 108.10.2.2.
6. Show completing the work within interim completion dates and the specified contract time or completion date.
7. Develop the RBC schedule using computerized scheduling software. Provide the engineer with a paper copy of the information required in items 3 and 5 of 108.4.3.2(1). Submit a diskette of the schedule and identify the software used to prepare that schedule.

(2) In addition to the required activities, the contractor is encouraged to include other activities such as:

1. The procurement of materials, equipment, articles of special manufacture, etc.
2. The furnishing of drawings, plans, and other data required in the contract for the engineer's review.
3. The department's inspections of structural steel fabrication, etc.
4. Third party activities related to the contract.

(3) The contractor may augment the initial submittal of the RBC schedule by submitting a linear schedule. The linear schedule must be generated from the RBC schedule.

(4) The engineer and the contractor will review the initial schedule at the preconstruction meeting. Within 5 business days after the preconstruction meeting, the engineer will accept the contractor's initial schedule or request additional information. Make the appropriate adjustments and resubmit the revised initial schedule within 5 business days after the engineer's request. If the engineer requests justification for an activity duration, provide information that may include estimated manpower, equipment, unit quantities, and production rates used to determine the activity duration.

(5) The department will only make progress payments for the value of materials, as specified in 109.6.3.2, until the engineer accepts the initial schedule. The engineer accepts the contractor's initial schedule based solely on whether that schedule is complete as specified in 108.4.3.2(1). The engineer's acceptance of the schedule does not modify the contract or validate the schedule.

108.4.3.3 Monthly RBC Progress Schedule Updates and Progress Meetings

(1) Update the schedule monthly to show current progress. At a minimum, ensure that the update includes:

1. The actual start and finish of each activity, percentage complete, and remaining durations of activities started but not yet completed.
2. A narrative report that includes a listing of monthly progress, changes to the controlling items of work from the previous update, sources of delay, potential problems, work planned for the next 30 calendar days, and changes to the RBC schedule. Changes include, but are not limited to, changes in the method and manner of performing the work, changes in the contract, extra work, changes in an activity duration, and changes to relationships between activities.

(2) For each schedule update, submit a diskette and an updated paper copy meeting the requirements in 108.4.3.2(1).

(3) Within 5 business days after submitting the monthly update, hold a job-site meeting with the engineer to review the progress of the schedule. At that meeting, the department will confirm the actual start and actual finish dates of completed activities, remaining durations of uncompleted activities, and changes to the controlling items of work.

108.4.3.4 Engineer's Right to Request RBC Progress Schedule Revisions

(1) Between monthly updates, the engineer will monitor the progress of the work and may request that the contractor revise the schedule for one or more of the following reasons:

1. The project completion or interim completion targets are delayed 14 calendar days or more for calendar day or completion date contracts, or 10 working days or more for working day contracts.
2. The engineer determines that the progress of the work differs significantly from the current schedule.
3. A contract change order requires the addition, deletion, or revision of activities that causes a change in the contractor's work sequence or the method and manner of performing the work.

(2) Submit the revised schedule within 5 business days after the engineer's request.

(3) Within 5 business days after submitting the revised schedule, hold a job-site meeting to review the schedule revisions. At the meeting, the engineer will accept the contractor's schedule or request additional information. Make the appropriate adjustments and resubmit the newly revised schedule.

108.4.3.5 RBC Progress Schedule Documentation for Time Extensions

(1) Furnish documentation, including schedule updates, to support requests to extend interim completion dates, the specified contract time, or completion date.

108.4.3.6 RBC Progress Schedule Measurement

(1) If special provisions require an RBC schedule, the department will measure RBC Progress Schedule as a single lump sum, acceptably completed.

108.4.3.7 RBC Progress Schedule Payment

(1) The department will pay for the measured quantity at the contract unit price under the following bid item:

ITEM NUMBER	DESCRIPTION	UNIT
10843	RBC Progress Schedule	LS

(2) Payment is full compensation for all work required under this bid item. The department will pay the contract lump sum in 3 payments as follows:

1. The department will make the first payment, equal to 50% of the amount bid for this bid item, after the department accepts the initial schedule.
2. The department will make the second payment, equal to 25% of the amount bid for this bid item, when the contractor completes work representing 40% of the total contract price, excluding the price for this bid item.
3. The department will make the third payment, equal to 25% of the amount bid for this bid item, when the contractor completes work representing 80% of the total contract price, excluding the price for this bid item.

108.4.4 Critical Path Method Progress Schedule

108.4.4.1 General

(1) If special provisions require, submit a CPM Progress Schedule.

108.4.4.2 Initial Work Plan

(1) At least 14 calendar days before the preconstruction meeting, submit an initial work plan that meets, as a minimum, the following requirements:

1. Include a detailed bar chart schedule, meeting the requirements of 108.4.2.1(1), for the first 60 calendar days of work. Ensure that all activities have durations of one to of 15 working days, unless the engineer accepts requested exceptions. Show additional activities that require department review or approval.
2. Include a summary bar chart schedule for the balance of the project. Summary activities may be greater than 15 working days.
3. Ensure the bar chart schedules show completing the work within the interim completion dates and specified contract time or completion date.

(2) The engineer and the contractor will review the initial work plan at the preconstruction meeting. Within 5 business days after the preconstruction meeting, the engineer will accept the contractor's initial work plan or request additional information. The engineer will use the detailed bar chart schedule to monitor the progress of the work until accepting the initial CPM schedule.

(3) Maintain and submit on a bi-weekly basis an updated version of the detailed bar chart schedule until the department accepts the initial CPM schedule. Ensure that each schedule update includes the actual start and finish of each activity, percentage complete, and the remaining durations of activities started but not yet completed.

108.4.4.3 Initial CPM Progress Schedule

(1) Within 30 calendar days after the notice to proceed, submit to the engineer for review an initial CPM schedule, beginning at the start of work date, that meets the following minimum requirements:

1. Include activities that describe essential features of the work and activities that might potentially delay contract completion. Identify activities that are controlling items of work.
2. Identify the contemplated start and completion dates for each activity. Provide a duration, ranging from one to 15 working days, for each activity. Break longer activities into 2 or more activities distinguished by the addition of a location or some other description.
3. Provide a logic diagram having a maximum of 50 activities for each 11 in. by 17 in. sheet. Ensure that each sheet includes title, match data for diagram correlation, and a key to identify all components used in the diagram. Show the sequence of activities and the scheduling interrelationships among activities. Ensure all activity interrelationships are finish to start relationships with no leads or lags. Use only contractual constraints in the schedule logic. The engineer may accept requested exceptions.
4. Provide the quantity and the estimated daily production rate for controlling items of work.
5. Include a narrative that lists the work days per week, department-specified holidays, number of shifts per day, and number of hours per shift. For calendar day and completion date contracts, provide the estimated number of adverse weather days for each month consistent with the monthly anticipated adverse weather days shown in 108.10.2.2.
6. Provide tabular sorts by:
   - Activity Identification/Early Start.
   - Total Float.
   - Predecessor/Successor.
   - Responsibility/Early Start.
   - Area/Early Start.
7. Provide 60-day look-ahead bar charts by early start.

8. Show completing the work within interim completion dates and the specified contract time or completion date.
9. Develop the CPM schedule using computerized scheduling software. Provide the engineer with a paper copy of the information required in items 3, 5,6, and 7 of 108.4.4.3(1). Submit a diskette of the schedule and identify the software used to prepare that schedule.

(2) In addition to the required activities, the contractor is encouraged to include other activities such as:

1. The procurement of materials, equipment, articles of special manufacture, etc.
2. The furnishing of drawings, plans, and other data required in the contract for the engineer's review.
3. The department's inspections of structural steel fabrication, etc.
4. Third party activities related to the contract.

(3) Float is defined as the amount of time between the date when an activity "can start" (the early start) and the date when an activity "must start" (the late start). The department and the contractor agree that float is a shared commodity, and is not for the exclusive use or financial benefit of either party. Either party has the full use of the float until it is depleted.

(4) The contractor may augment the initial submittal of the CPM schedule by submitting a linear schedule. The linear schedule must be generated from the CPM schedule.

(5) Attend a meeting to review the schedule. The engineer will schedule the meeting within 10 business days after receiving the contractor's initial CPM schedule submittal. Within 5 business days after the meeting, the engineer will accept the contractor's initial CPM schedule or request additional information. Make the appropriate adjustments and resubmit the revised initial CPM schedule within 10 business days after the engineer's request. If the engineer requests justification for an activity duration, provide information that may include estimated manpower, equipment, unit quantities, and production rates used to determine the activity duration.

(6) The department will only make progress payments for the value of materials, as specified in 109.6.3.2, until the contractor has submitted the initial CPM schedule. The department will retain 10 percent of each estimate until the department accepts the initial CPM schedule.

(7) The engineer accepts the contractor's initial CPM schedule based solely on whether that schedule is complete as specified in 108.4.4.3(1). The engineer's acceptance of the schedule does not modify the contract or validate the schedule.

108.4.4.4 Monthly CPM Progress Schedule Updates and Progress Meetings

(1) Update the schedule monthly to show current progress. At a minimum, ensure that the update includes:

1. The actual start and finish of each activity, percentage complete, and remaining durations of activities started but not yet completed.
2. A narrative report that includes a listing of monthly progress, changes to the controlling items of work from the previous update, sources of delay, potential problems, work planned for the next 30 calendar days, and changes to the CPM schedule. Changes include, but are not limited to, changes in the method and manner of performing the work, changes in the contract, extra work, changes in an activity duration, and changes to relationships between activities.

(2) For each schedule update, submit a diskette and an updated paper copy of the following:

1. Tabular sorts by:
   - Activity Identification/Early Start.
   - Total Float.
2. If applicable, updated logic diagram as the engineer requires.
3. If augmenting the CPM schedule with a linear schedule, provide an update of the linear schedule.

(3) Within 5 business days after submitting the monthly update, hold a job-site meeting with the engineer to review the progress of the schedule. At that meeting, the department will confirm the actual start and actual finish dates of completed activities, remaining durations of uncompleted activities, changes to the controlling items of work, and the logic changes.

108.4.4.5 Engineer's Right to Request CPM Progress Schedule Revisions

(1) Between monthly updates, the engineer will monitor the progress of the work and may request that the contractor revise the schedule for one or more of the following reasons:

1. The project completion or interim completion targets are delayed 14 calendar days or more for calendar day or completion date contracts, or 10 working days or more for working day contracts.
2. The engineer determines that the progress of the work differs significantly from the current schedule.
3. A contract change order requires the addition, deletion, or revision of activities that causes a change in the contractor's work sequence or the method and manner of performing the work.

(2) Submit the revised schedule within 10 business days after the engineer’s request.

(3) Within 5 business days after submitting the revised schedule, hold a job-site meeting to review the schedule revisions. At the meeting, the engineer will accept the contractor's schedule or request additional information. Make the appropriate adjustments and resubmit the newly revised schedule.

108.4.4.6 CPM Progress Schedule Documentation for Time Extensions

(1) Furnish documentation, including schedule updates, to support requests to extend interim completion dates, the specified contract time, or completion date.

108.4.4.7 CPM Progress Schedule Measurement

(1) If special provisions require a CPM schedule, the department will measure CPM Progress Schedule as a single lump sum, acceptably completed.

108.4.4.8 CPM Progress Schedule Payment

(1) The department will pay for the measured quantity at the contract unit price under the following bid item:

ITEM NUMBER	DESCRIPTION	UNIT
10844	CPM Progress Schedule	LS

(1) Payment is full compensation for all work required under this bid item. The department will pay the contract lump sum in 3 payments as follows:

1. The department will make the first payment, equal to 50% of the amount bid for this bid item, after the department accepts the initial schedule.
2. The department will make the second payment, equal to 25% of the amount bid for this bid item, when the contractor completes work representing 40% of the total contract price, excluding the price for this bid item.
3. The department will make the third payment, equal to 25% of the amount bid for this bid item, when the contractor completes work representing 80% of the total contract price, excluding the price for this bid item.

108.5 Limiting Operations

(1) Limit operations to prevent undue inconvenience to the traveling public. If the engineer concludes that the extent of the contractor's work zone unnecessarily inconveniences the public, the engineer will require the contractor to finish sections in progress before allowing the contractor to start work on additional sections.

108.6 Character of Workers

(1) Provide personnel necessary to supervise and complete all contract work as specified. Ensure workers have the experience and skills necessary to perform assigned work.

(2) Remove from the project all personnel performing in an unskilled manner or who are intemperate or disorderly. If the engineer concludes that personnel are performing in an unskilled manner or are intemperate or disorderly, the engineer may direct the contractor, in writing, to remove them from the project. Do not allow removed personnel to return to the project without the engineer's written consent.

(3) The engineer may suspend the work in writing, withhold progress payments due the contractor, or both for the following reasons:

1. The contractor does not furnish suitable and sufficient personnel to perform the work.
2. The contractor does not remove personnel from the project as specified in 108.6(2).

108.7 Methods and Equipment

108.7.1. General

(1) Use equipment of the capacity and mechanical condition necessary to perform work conforming to the contract. Ensure that the equipment does not harm the roadway, pavement, structures, adjacent property, other highways, workers, or the public. Use equipment conforming to the specific contract requirements for individual bid items or classes of work.

(2) If the contractor does not provide adequate equipment, properly maintained, the engineer may:

1. Order the contractor to remove the equipment.
2. Suspend specific operations until the contractor provides adequate equipment.
3. Determine that the contractor is in default of the contract.

(3) Equip each unit of motorized construction equipment with a muffler constructed to the equipment manufacturer’s specifications. The contractor may substitute other mufflers producing equivalent results. Maintain mufflers and exhaust systems in good operating condition, free from leaks and holes.

108.7.2 Moving Heavy Loads

(1) For all vehicles operated on completed subgrade, base course, pavement, or structures that will remain a permanent part of the project, do not exceed the legal loading defined in Wisconsin statutes for Class A highways without the engineer's written permission. Adhering to these requirements, or permitted variations, does not relieve the contractor of liability for damage caused by those operations.

108.8 Substituting Equipment, Methods, and Materials

(1) Use the equipment, methods, or materials specified in the contract unless the engineer authorizes substitutes. If the contract does not specify equipment, methods, or materials, the contractor may use those the contractor demonstrates, to the engineer's satisfaction, to produce conforming work.

(2) Obtain the engineer's authorization before substituting for equipment, methods, or materials specified in the contract. Submit a written request to the engineer describing the equipment, methods, or materials proposed and the reasons for the change. The engineer's authorization of a substitution does not relieve the contractor of the obligation to produce work conforming to the contract as specified in 105.3.1.

(3) If after use of substituted equipment, methods, or materials, the engineer finds the work nonconforming, the contractor shall complete the remaining work with the specified equipment, methods, or materials. The nonconforming work is subject to the provisions of 105.3.2.

(4) The department will pay for a substitute made under 108.8 at the contract price for the original work. The Department will not extend contract time for a substitute made under 108.8, except as may result from a cost reduction incentive as provided in 104.10.

108.9 Contract Time for Working Day, Calendar Day, and Completion Date Contracts

108.9.1 General

(1) Complete all or any portion of the project called for in the contract within the time or times for completion of the contract. All time limits in the contract are crucial elements of the contract.

(2) The proposal will specify the time for completion as a specific number of working days, calendar days, or as a given completion date.

108.9.2 Assessing Time Charges for Working Day Contracts

(1) For working day contracts, contract time is the number of working days specified for completion excluding:

1. Saturdays, Sundays, and department-specified holidays.
2. Engineer-ordered suspensions for reasons other than contractor negligence or non-compliance.
3. Contract-identified, non-work days during the construction season.
4. Days from November 16 through March 31.
5. Days during the winter shutdown period.

(2) The engineer will continue to assess working days after November 15 if the contractor has not completed the work to the stage the contract requires to be completed by November 16.

(3) If the engineer determines that the contractor shall not work during the period from November 16 through March 31, the contractor is not entitled to claim for a time extension or other related damages.

(4) The engineer will assess a whole working day, excluding the days listed above, for all days on which the contractor can work on the controlling item for 8 hours or more with full and normal efficiency.

(5) The engineer will assess a fractional working day in 1/2-day increments if one or more of the following prevent the prosecution of the work on the controlling item of work for at least 8 hours with full and normal efficiency. If one or more of the following prevent the contractor from working on the controlling item for at least 4 hours, the engineer will not assess a fractional working day.

1. Earthquakes and other cataclysmic phenomena of nature the contractor cannot foresee and avoid.
2. Weather conditions.
3. Job conditions caused by weather.
4. Non-compensable delays as specified in Items 2 through 8 of 108.10.2.1(3).
5. Compensable delays as specified in Items 2 through 4 of 108.10.3(2).

(6) The engineer will assess working days if the contractor is not performing work on the controlling item of work, and that non-performance is due to delays the contractor can foresee, control, or prevent.

(7) The engineer will prepare a weekly statement showing days charged for the preceding week and days remaining on the contract. The engineer will make this statement available to the contractor in a mutually agreeable location within 5 business days after the week covered in the statement. If the contractor disagrees with the time assessed, the contractor may give notice as specified in 104.3.

108.9.3 Contract Time for Calendar Day Contracts

(1) For calendar day contracts, contract time is the number of calendar days specified for completion, including Saturdays, Sundays, and department-specified holidays, counted from the starting date specified in 108.2. Contract time includes contract-identified non-work days during the construction season, but excludes contract-identified winter shut-down periods.

108.9.4 Contract Time for Completion Date Contracts

(1) For completion date contracts, contract time is the specified completion date. Complete the contract by that date.

108.10 Determining Contract Time Extensions and Payment for Excusable Delays

108.10.1 General

(1) The department may extend contract time by contract change order. The department will only extend contract time if an excusable delay affects the controlling item of work. Excusable delays are unforeseen and unanticipated delays not resulting from the contractor's fault or negligence. Provide documentation and schedule updates to support requested time extensions as specified:

1. In 108.4.2.4 for bar chart progress schedules.
2. In 108.4.3.5 for RBC progress schedules.
3. In 108.4.4.6 for CPM progress schedules.

(2) The department may choose not to consider time extensions for delays unless the contractor notifies the engineer as specified in 104.3 and updates the schedule. The engineer will evaluate the facts, pay adjustment, and time extension for the delay. The engineer's findings are final and conclusive.

108.10.2 Excusable, Non-Compensable Delays

108.10.2.1 General

(1) Non-compensable delays are excusable delays that are not the contractor's or the department's fault. The engineer will not pay for the delay costs listed in 109.4.7 for non-compensable delays.

(2) For non-compensable delays under calendar day and completion date contracts, the engineer will extend contract time if the conditions specified in 108.10.1 are met. The department will relieve the contractor from associated liquidated damages, as specified in 108.11, if the engineer extends time under 108.10.1.

(3) The following are non-compensable delays:

1. Delays due to earthquakes, other cataclysmic phenomena of nature the contractor cannot foresee and avoid, severe weather as specified in 108.10.2.2, or job conditions caused by recent weather.
2. Extraordinary delays in material deliveries the contractor or their suppliers cannot foresee and forestall resulting from strikes, lockouts, freight embargoes, governmental acts, or sudden disasters.
3. Delays due to acts of the government, a political subdivision other than the department, or the public enemy.
4 Delays from fires or epidemics.
5. Delays from strikes beyond the contractor's power to settle that are not caused by improper acts or omissions of the contractor, their subcontractors, or their suppliers.
6. Delays caused by non-completion of work by utilities or other third parties, if the contract does not specify time requirements for the work.
7. Altered quantities as specified in 109.3.

108.10.2.2 Extension of Contract Time for Severe Weather

(1) The engineer will award a time extension for severe weather on calendar day and completion date contracts. Submit a request for severe weather days if the number of adverse weather days, as defined in 101.3, exceeds the anticipated number of adverse weather days tabulated below.

Total Anticipated Adverse Weather Days for Each Calendar Month[2]

January - 31[1]	February - 28[1]	March - 31[1]	April - 5	May - 4	June - 4	July - 3	August - 3
September - 4	October - 5	November 1 through 15 - 2	November 16 through 30 - 15[1]	December –31[1]			

[1] Includes an anticipated winter shut-down from November 16 through March 31.

[2] The number of days will be modified in the special provisions for year-round and painting contracts.

(2) Submit the request to the engineer at the end of the month. Indicate the number of adverse weather days that occurred during that month. Provide progress schedule documentation to show that the controlling item of work was delayed. Show that the delay was beyond the control of the contractor. The engineer will assess the contractor's submittal and indicate how many adverse weather days are confirmed.

(3) For each calendar month, the engineer will grant a severe weather day for each confirmed adverse weather day that exceeds the number of anticipated adverse weather days shown in 108.10.2.2(1). When the contractor requests severe weather days, the engineer will give the contractor a monthly written statement showing the number of days credited for severe weather. At the end of the project, the engineer will extend time on calendar day and completion date contracts for the cumulative number of severe weather days credited each month.

108.10.3 Excusable Compensable Delays

(1) Compensable delays are excusable delays that are due to the department's actions or lack of actions, or determined by judicial proceeding to be the department's sole responsibility. The engineer will grant a time extension for a compensable delay if the conditions specified in 108.10.1 are met.

(2) The following are compensable delays:

1. A contract change for revised work as specified for extra work under 104.2.2.1, for a differing site condition under 104.2.2.2, or for significant changes in the character of the work under 104.2.2.4.
2. A contract change for an engineer ordered suspension under 104.2.2.3.
3. The unexpected discovery of human remains, an archeological find, or historical find consistent with 107.25.
4. The unexpected discovery of a hazardous substance consistent with 107.24.
5. The non-completion of work that utilities or other third parties perform, if the contract specifies a number of days or a completion date for that work. For delays covered under Trans 220 of the Wisconsin administrative code, the contractor must seek recovery of delay costs from the utility.

(3) If the engineer extends time, the department will relieve the contractor from associated liquidated damages under 108.11, and will pay the contractor for delay costs determined as follows:

1. Adjust the contract price as specified in 109.4.2 through 109.4.5 for delays under item 1 of 108.10.3(2).
2. Adjust the contract price as specified in 109.4.7 for delays under items 2 through 5 of 108.10.3(2).

108.11 Liquidated Damages

(1) If the contractor does not complete the work within the contract time or within the extra time allowed under engineer-granted time extensions, the department will assess liquidated damages. The department will deduct a specified sum from payments due the contractor for every calendar day on calendar day contracts and completion date contracts, or for every working day on working day contracts, that the work remains uncompleted.

(2) This deducted sum is not a penalty but is a fixed, agreed, liquidated damage due the department from the contractor by reason of inconvenience to the public, the added cost of engineering and supervision, maintenance of detours, and other items that have caused an expenditure of public funds resulting from the contractor's failure to complete the work within the contract time.

(3) Unless modified in the special provisions, the department will assess the following daily liquidated damages. The values shown reflect only the cost of engineering and supervision.

LIQUIDATED DAMAGES

ORIGINAL CONTRACT AMOUNT		DAILY CHARGE	
FROM MORE THAN	TO AND INCLUDING	CALENDAR DAY	WORKING DAY
$0	$100,000	$205	$410
$100,000	$300,000	$270	$540
$300,000	$500,000	$460	$920
$500,000	$1,000,000	$680	$1360
$1,000,000	_____	$1115	$2230

(4) If the engineer allows the contractor to continue and finish the work or any part of it after the contract time expires, the department waives no rights under the contract.

108.12 Terminating the Contract for Default

(1) The engineer, after giving written notice to the contractor and the contractor's surety, may take the prosecution of the work out of the hands of the contractor or the contractor's surety, or both, for one or more breach of the contract the contractor commits, as follows:

1. Failing to begin the work under the contract within the time specified.
2. Failing to perform the work with sufficient workers, equipment, or materials to complete the work within the specified time.
3. Failing to complete the contract within the contract time specified, as extended by the engineer.
4. Performing the work unsuitably, or not obeying an engineer directive to remove and replace or otherwise correct unacceptable work.
5. Discontinuing the prosecution of the work before completion without the engineer's permission.
6. Failing to resume work that the engineer discontinued within a reasonable time after notice to do so.
7. Insolvency or bankruptcy, or committing an act of bankruptcy or insolvency.
8. Allowing a final judgment against the contractor to stand unsatisfied for a period of 48 hours.
9. Making an assignment for the benefit of creditors.
10. Failing to comply with the provisions of the contract relative to hours of labor, wages, equal opportunity, character and classification of workers employed.
11. Failing to acquire or maintain the required insurance.
12. Failing to carry on the work in an acceptable manner.

(2) The engineer will give the contractor and the contractor's surety written notice specifying the delay, neglect, or default and the action required. If the contractor or the contractor's surety, within a period of 10 calendar days after such notice, fails to proceed satisfactorily in compliance therewith, the department then has full power and authority to take the work out of the hands of the contractor or the contractor's surety, or both; to use any or all suitable materials and equipment on the project; or to enter into contract, or use such other methods that the department requires to complete the work.

(3) If the department takes over the incomplete work under 108.12, the department will deduct all additional costs and damages and the costs and charges of completing the work under contract from payments due the contractor. If the total of those damages, costs, and charges is less than the sum that would have been payable under the contract if the contractor had completed the work, then the contractor is entitled to receive the difference subject to all claims for liens thereon that may be filed with the department. If such total exceeds the sum that would have been payable under the contract, the department will consider the contractor and the contractor's surety liable, and the contractor and the contractor's surety shall pay to the department the amount of such excess.

(4) The department will not relieve the contractor and the contractor's surety of the liability for the assessment of liquidated damages under 108.11 because of the contractor's default.

(5) The rights and remedies of the department are in addition to all other rights and remedies provided by law or under the contract and the bonds.

(6) If, after the engineer gives notice of default as specified in 108.12(1), it is determined that the contractor was not in default, the rights and obligations of the parties are the same as if the notice of termination had been issued as specified in 108.13.

(7) If a court finds the department's default of the contractor under 108.12 to be legally improper, the department will treat the contract as if the department had terminated the contractor for convenience as specified in 108.13. The department will pay the contractor as specified in 108.13.

108.13 Terminating the Contract for Convenience of the Department

(1) The department may terminate the contract or any part of the contract for reasons beyond the control of the department or contractor after determining that termination is in the department's or the public interest. Reasons for termination include, but are not limited to, one or more of the following:

1. A national emergency that creates a shortage of materials, labor, or equipment by: reason of war conditions involving the United States; reason of orders of the federal government or its duly authorized agencies; or executive orders with respect to prosecution of war or national defense.
2. Orders from duly constituted authorities relating to energy conservation.
3. An injunction or restraining order obtained by a citizen's action alleging violations of 42 U.S.C. 4331-4332, 23 U.S.C. 138, or public law 91-646.

(2) The department will deliver to the contractor a termination notice specifying the extent of termination and the effective date.

(3) Upon receipt of a termination notice, do not proceed with the affected bid items unless directed to do so in that notice. Complete all bid items specified in the termination notice. That work includes punch list items and all work necessary to ensure the safety of the public, to properly secure work already constructed or partially constructed, and to secure the project site. Perform this work, which may include bid items not in the original contract, as specified in the contract. The contract is sufficiently complete upon completion and acceptance of all bid items specified in the termination notice, except punch list items. After completion of the punch list items and all contract-required documents, the department will terminate the contract by issuing a final certificate and payment. The department reserves the right to declare in default a contractor who does not carry out the conditions of a termination for convenience.

(4) If the department orders termination of the contract for convenience, the department will pay for all completed bid items as of that date at the contract price. The department will pay for partially-completed bid items at agreed prices or by force account methods specified in 109.4.5 provided, however, that that payment does not exceed the contract price for the bid item under which the work was performed. The department will pay for bid items that are eliminated in their entirety by the termination only to the extent provided in 109.5. The department will pay for new items, if any, at agreed prices or paid for by force account methods specified in 109.4.5.

(5) The department may allow the contractor to purchase materials that the department obtained for the work but that have not been incorporated into the work at actual cost delivered to a designated location or otherwise disposed of as mutually agreed.

(6) The department may, at the department's option, purchase unused materials that the contractor has obtained and that the department has inspected, tested, and accepted, at the points of delivery as the department designates and at a cost shown by receipted bills or other proper evidence.

(7) If the engineer directs, the contractor shall promptly remove equipment and supplies from the project site or other department property. If the contractor does not remove the equipment and supplies as directed, the engineer may do so at the contractor's expense.

(8) Within 60 calendar days of the effective termination date, submit claims for additional costs actually incurred. Do not include claims for loss of anticipated profits on work not performed. The contractor may claim one or more of the following:

1. Costs for reasonable idle equipment time or mobilization efforts.
2. Bidding and project investigative costs.
3. Overhead expenses attributable to the terminated project.
4. Subcontractor costs not otherwise paid for.
5. Actual idle labor cost if work is stopped before the termination date.
6. Guaranteed payments for private land usage as part of the original contract.

(9) Make cost records available to the department to the extent necessary to determine the validity and amount of each item claimed.

(10) The department will not relieve the contractor of contractual responsibilities for the work completed. The department does not relieve the contractor's surety of its obligations for and concerning a just claim arising from work performed due to a termination of the contract.

108.14 Terminating the Contractor's Responsibility

(1) The contractor's responsibilities are terminated, except as set forth in the contract bond and specified in 107.16, if all of the following conditions are met:

1. The contractor has completed all contract work.
2. The department has approved and accepted the project as specified in 105.11.2.4.
3. The department has paid the final estimate.

SECTION 109 MEASUREMENT AND PAYMENT

109.1 Measurement of Quantities

109.1.1 General

(1) If the department develops the contract plans and schedule of items in the US standard system, the engineer will use the US standard system to measure all work completed under the contract. If the department develops the contract plans and schedule of items in the SI metric system, the engineer will use the SI metric system to measure all work completed under the contract. The engineer will determine quantities of materials the contractor furnishes and work the contractor performs using measurement methods and computations conforming to standard engineering practice, modified to meet department requirements. The engineer will document these measurements using department procedures.

(2) The engineer will measure the work as specified in the contract measurement subsection for individual items. The department will measure the actual quantities of work the contractor acceptably completes and make final payment based on those actual measured quantities except as follows:

1. If the measurement subsection for a bid item specifically restricts the quantity measured for payment or allows for use of conversion factors.
2. If the engineer and contractor execute a written supplemental contract agreement stating that contract quantities for specific bid items or portions of bid items substantially agree with their actual quantities, the department will pay for those contract quantities without measurement. That payment is full compensation for those bid items, or portions of bid items, as specified in 109.2.
3. If the engineer executes a contract change order modifying the method of measurement for specific bid items, the engineer will measure the quantities of applicable bid items for payment using the change order methods.
4. If the engineer, under 105.3.1(2), approves a contractor requested plan dimension change between US standard and SI metric dimensions, the engineer will measure whichever of the following is less:
   - Actual quantities constructed.
   - Quantities derived from the original plan dimensions.
5. For substitutions made under 106.2.3 between US standard and SI metric products, the engineer will measure the actual quantities of the substitute products using the original contract measuring system.

109.1.2 Area

(1) If the contract designates payment for a measured area, the engineer will measure the length and width of the area actually constructed within engineer-designated limits, or the final dimensions measured along the surface of the completed work within the neat lines shown on the plans or designated by the engineer. The engineer will use the method or combination of methods of measurement that reflect, with reasonable accuracy, the actual surface area of the finished work as the engineer determines.

(2) If the contract permits, the engineer may weigh or determine a volume and convert to area for payment. The engineer will determine the weight-to-area or volume-to-area conversion factors. The engineer and contractor must agree on the conversion factor before the engineer converts a pay quantity.

109.1.3 Volume

(1) For material specified for measurement by volume in the vehicle, haul the material in engineer-approved vehicles. Ensure that the vehicle body type allows for ready and accurate measurement of the contents.

(2) The engineer will determine the approved capacity of vehicles to the nearest 1/10 cubic yard (0.1 m^3). Unless all approved vehicles on a job have the same capacity, mark each vehicle with a plainly legible identification mark showing the approved capacity. Do not change capacity markings without the engineer's consent.

(3) The engineer will measure the material in the vehicle at the point of delivery. The engineer will make no adjustment for the settlement of material during transit. The engineer may reject loads not hauled in approved vehicles.

(4) If the contract permits, the engineer may weigh material and convert to a volume for payment. The engineer will determine the weight to volume conversion factors. The engineer and contractor must agree on the conversion factor before the engineer converts a pay quantity.

109.1.4 Weight

(1) For aggregates and asphaltic mixtures specified for measurement by weight, weigh the material on platform scales or other engineer-approved scales. Include the cost to furnish scales in the bid price. Furnishing scales is incidental to the work. Use scales that the engineer has tested and determined to be satisfactory, or ensure that authorized testing firms or agencies test the scales as often as the engineer deems necessary to ascertain their accuracy.

(2) If weighing materials in the hauling vehicle, check gross weights and determine the vehicle tare weight whenever the engineer directs.

(3) If the contract permits, the engineer may measure the volume of material and convert to weight for payment. The engineer will determine the volume to weight conversion factors. The engineer and contractor must agree on the conversion factor before the engineer converts a pay quantity.

109.2 Scope of Payment

(1) If the department develops the contract plans and schedule of items in the US standard system, the department will use the US standard unit prices shown in the schedule of items to pay for the work. If the department develops the contract plans and schedule of items in the SI metric system, the department will use the SI metric unit prices shown in the schedule of items to pay for the work.

(2) The department will pay for the quantity of work acceptably completed and measured for payment as specified in the measurement subsection for each bid item. Payment is full compensation for everything specified in the payment subsection for a bid item as well as for all of the following not specifically excluded in that payment subsection:

1. Furnishing all materials, labor, tools, supplies, equipment, and incidentals necessary to perform the work.
2. All losses or damages, except as specified in 107.14, arising from one or more of the following, until the engineer makes final acceptance:
    - The nature of the work.
    - The action of the elements.
    - Unforeseen difficulties encountered during prosecution of the work.
3. All insurance costs, expenses, and risks connected with the prosecution of the work.
4. All expenses incurred because of an engineer-ordered suspension, except as specified in 104.2.2.3.
5. All infringements of patents, trademarks, or copyrights.
6. All other expenses incurred to complete and protect the work under the contract.

(3) The department may withhold payments due under the contract until the contractor proves to the department that the contractor has paid for all labor and materials used in the work.

109.3 Payment for Altered Quantities

(1) If the measured quantity for a bid item varies from the quantity given in the proposal, the department will make payment at the original contract bid price for the quantity measured as specified in 109.1.1(2). The department will adjust payment for revisions in plans or quantities of work requiring contract change orders as specified in 104.2.

(2) The department will not pay the contractor for loss of expected reimbursement or anticipated profits suffered or claimed by the contractor. The department will not make revisions to the contract bid prices except as specified in 104.2.

109.4 Price Adjustments for Contract Revisions

109.4.1 General

(1) If the department revises the contract under 104.2, the department will adjust the contract price using the sequence specified in 109.4.2 through 109.4.5. This price adjustment includes payment for performing the revised work, delay costs, and all other associated costs deemed reasonable by the engineer and not expressly precluded in 109.4.6. The department may, at anytime, direct the contractor to perform all or part of the revised work under force account.

(2) If a contract revision includes a time adjustment for compensable delays under items 2 through 5 of 108.10.3(2), the department will adjust the contract price for delay costs as specified in 109.4.7.

109.4.2 Contract Bid Prices

(1) Before proceeding to another pricing method, the engineer will attempt to price revised work using contract bid prices.

109.4.3 Minor Contract Revisions Not Covered by Contract Bid Prices

(1) The engineer and contractor may agree on the scope of, and a lump sum price for, work done under a contract revision meeting all of the following conditions:

1. The contract revision is not covered by contract bid prices.
2. The contract revision is limited in scope.
3. The absolute value of the revision will not exceed $5000. Determine the absolute value of the revision by summing the absolute dollar value of all deletions and the absolute dollar value of all additions.

(2) This agreed lump sum price includes payment for performing the revised work, delay costs, and all other associated costs. Do not proceed with the revised work without agreement. If the contractor and engineer do not agree on a lump sum price, the engineer will negotiate a price under 109.4.4 or have the contractor proceed under force account as specified in 109.4.5.

109.4.4 Negotiated Prices

(1) The engineer and contractor will negotiate the price of a contract revision for one or more of the following:

1. Adjustments in contract bid prices are necessary due to a significant change as specified in 104.2.2.4.
2. The engineer and contractor cannot agree on a revised price under 109.4.2 or 109.4.3.

(2) Provide an estimate of the proposed unit prices or lump sum price for the contract revision. Include the cost of performing the revised work, delay costs, all other associated costs, plus a reasonable allowance for profit and applicable overhead. The engineer may request that the contractor justify the estimate by providing one or more of the following:

1. Labor requirements by trade in hours for each task.
2. Equipment costs and time requirements.
3. Material costs.

(3) Provide the justification within 5 business days after the department's request. The department will respond to the estimate within 5 business days after receipt of the contractor's justification. The department and the contractor can mutually agree to extend these 5-day requirements.

(4) If the department negotiates with the contractor but does not agree on a price adjustment, the engineer may direct the contractor to perform all or part of the revised work under force account.

109.4.5 Force Account

109.4.5.1 General

(1) The engineer may direct the contractor to perform the revised work under force account. Submit a written proposal for the work including the planned equipment, materials, labor, and work schedule.

(2) The department will pay the contractor as specified in 109.4.5.2 through 109.4.5.6, as full compensation for performing the force account work, delay costs, and all other associated costs. At the end of each workday, the contractor's representative and the inspector shall compare records of the work done under force account. The department will make no force account payment before the contractor submits an itemized statement of the costs for that work.

(3) Provide the following content in itemized statements for all force account work:

1. Name, classification, date, daily hours, total hours, rate, and amount for all labor.
2. Designation, dates, daily hours, total hours of actual operation and stand-by operation, rental rate, and amount for each unit of equipment, or the applicable hourly equipment expense rate for each truck or other unit of machinery and equipment. Include the manufacturer's name or trademark, model number, and year of manufacture with the designation.
3. Quantities of materials and prices.
4. Transportation charges on materials, free on board (f.o.b.) at the job site.
5. Cost of property damage, liability, and workers compensation insurance premiums; unemployment insurance contributions; and social security tax.
6. Documentation showing payment for all invoiced work.
7. If materials are taken from contractor's stock and original receipted invoices for the materials and transportation charges cannot be provided, provide an affidavit and certify all of the following:
   - The materials were taken from the contractor's stock.
   - The quantity shown was actually used for the force account work.
   - The price and transportation costs represent the actual cost to the contractor.

(4) The engineer will review all rates and costs submitted by the contractor. The department will only pay for costs the engineer approves.

109.4.5.2 Labor

(1) The department will pay the contractor's labor costs, at prevailing wage rates or at wage rates previously agreed upon with the department in writing, for personnel directly involved in producing and supervising the force account work. The department will only pay for hours that personnel are actually engaged in force account work. The department will also reimburse the contractor for the actual costs paid to, or on behalf of, workers for subsistence and travel benefits, health and welfare benefits, pension fund benefits, or other contractor-paid benefits. The department will pay an additional 35 percent markup of these wages and benefits.

(2) The department will pay no part of wages or benefits for personnel connected with the contractor's forces above the classification of foreman and having only general supervisory responsibility for the force account work.

109.4.5.3 Insurance

(1) The department will pay the contractor's actual costs for property damage, liability, and workers compensation insurance premiums, unemployment insurance contributions, and social security taxes on force account work. The department will pay an additional 15 percent markup of these costs. The contractor shall furnish satisfactory evidence of the rates actually paid.

109.4.5.4 Materials

(1) The department will pay the contractor's actual invoice costs, including applicable taxes and actual freight charges, for engineer-approved materials the contractor uses in force account work. The department will pay an additional 15 percent markup of these costs. If the contractor uses materials from the contractor's stock, the department and the contractor will agree on the price. Do not incorporate materials into the work without agreement.

(2) The department reserves the right to furnish materials as it deems appropriate. Make no claims for costs, overhead, or profit on materials that the department provides.

109.4.5.5 Equipment

109.4.5.5.1 General

(1) The department will pay the contractor's costs for equipment the engineer deems necessary to perform the force account work for the time directed by the engineer or until the contractor completes the force account work, whichever happens first. The department will pay the contractor for equipment only during the hours that it is operated. The department will pay for non-operating hours at the stand-by rate as specified in 109.4.5.5.3. Report equipment hours to the nearest 1/2 hour.

(2) The department will pay for use of contractor-owned equipment the engineer approves for force account work at published rates. The department will pay the contractor expense rates, as modified in 109.4.5.5, given in the Rental Rate Blue Book for Construction Equipment (blue book) published by Primedia Information, Inc. Base all rates on the blue book rental rate chapter revisions effective on April 1 for all equipment used from that April 1 through the following March 31.

(3) For each piece of equipment the contractor uses, whether bought or rented, the contractor shall provide the engineer with the following information:

1. Manufacturer's name.
2. Equipment type.
3. Year of manufacture.
4. Model number.
5. Type of fuel used.
6. Horsepower rating.
7. Attachments required, together with their size or capacity.
8. All further information necessary to determine the proper rate.

(4) The contractor shall provide for the engineer's confirmation, the manufacturer's ratings and manufacturer approved modifications required to classify equipment for rental rate determination. For equipment with no direct power unit, use a unit of at least the minimum recommended manufacturer's rating.

(5) The department will not pay rental for tools or equipment with a replacement value of $500 or less.

(6) Use engineer-approved equipment in good working condition and providing normal output or production. The engineer may reject equipment not in good working condition or not properly sized for efficient performance of the work.

(7) For equipment not listed in the blue book, provide an expense rate and furnish cost data to support that rate. Obtain the engineer's written approval for the expense rate before using that equipment on force account work.

109.4.5.5.2 Hourly Equipment Expense Rates (Without Operators)

(1) The contractor shall determine, and the department will confirm, hourly equipment expense rates as follows:

HEER = [RAF X ARA X (R/176)] + HOC

Where:

HEER = Hourly equipment expense rate

RAF = Regional adjustment factor shown in the blue book

ARA = Age rate adjustment factor shown in the blue book

R = Current blue book monthly rate

HOC = Estimated hourly operating cost shown in the blue book

(2) The hourly operating cost shown in the blue book represents all costs of equipment operation, including fuel and oil, lubrication, field repairs, tires, expendable parts, and supplies.

109.4.5.5.3 Hourly Equipment Stand-By Rate

(1) For equipment that is in operational condition and is standing-by with the engineer's approval, the contractor shall determine, and the department will confirm, the hourly stand-by rate as follows:

HSBR = RAF X ARA X (R/176) X (1/2)

Where:

HSBR = Hourly stand-by rate

RAF = Regional adjustment factor shown in the blue book

ARA = Age rate adjustment factor shown in the blue book

R = Current blue book monthly rate

(2) The department will limit payment for stand-by to 10 hours or less per day up to 40 hours per week. The department will not pay the contractor for equipment that is inoperable due to breakdown. The department will not pay for idle equipment if the contractor suspends work or if the contractor is maintaining or repairing the equipment.

109.4.5.5.4 Hourly Outside-Rented Equipment Rate

(1) If the contractor rents or leases equipment from a third party for force account work, the contractor shall determine, and the department will confirm, the hourly outside-rented equipment rate as follows:

HORER = HRI + HOC

Where:

HORER = Hourly outside-rented equipment rate

HRI = Hourly rental invoice costs prorated for the actual number of hours that rented equipment is operated solely on force account work

HOC = Hourly operating cost shown in the blue book

109.4.5.5.5 Owner-Operated Equipment

(1) For rental of equipment owned and operated by persons other than the contractor or their subcontractors, the department will pay the contractor based on the actual paid invoice. Provide an

invoice that includes all costs for furnishing and operating the equipment. Obtain the engineer's written approval of the rental rates before starting the force account work.

(2) The department will allow the contractor to add a markup on the invoice for owner-operated equipment. Determine the markup in the same manner as specified in 109.4.5.6 for subcontractors.

109.4.5.5.6 Moving of Equipment

(1) The department will pay the contractor at the hourly equipment expense rate, as specified in 109.4.5.5.2, for time required to move needed equipment under its own power to the location of the force account work and to return it to its original location on the project. The department will pay the contractor at the hourly equipment expense rate, as specified in 109.4.5.5.2, for the transporting vehicle only if it is transporting equipment to, from, and within the project.

(2) The department will pay the contractor for actual freight costs of equipment moved by commercial carrier.

109.4.5.6 Force Account Work by Subcontractors

(1) If a subcontractor performs force account work, the department will allow the contractor a markup on work the subcontractor performs as follows:

1. Use a markup of 10 percent for the first $10,000 of work.
2. Use a markup of 2 percent for work in excess of $10,000.

109.4.6 Non-Allowable Charges for Adjustment of Contract Prices

(1) Whether contract revision price adjustments are based on contract bid prices, agreed lump sum prices, negotiated prices, or force account, the department will not reimburse the contractor for the following:

1. Profit in excess of that specified in 109.4.2 through 109.4.5.
2. Loss of anticipated profit.
3. Home office overhead.
4. Consequential damages, including loss of bonding capacity, loss of bidding opportunities, and insolvency.
5. Indirect costs.
6. Attorneys fees, claims preparation expenses, or costs of litigation.
7. Interest.

109.4.7 Price Adjustments for Delay Costs

109.4.7.1 General

(1) If the department agrees that it has caused a delay under items 2 through 5 of 108.10.3(2), the department will pay for the costs specified here in 109.4.7.2. The department will not pay for non-allowable charges specified in 109.4.6 nor duplicate payment made under 109.4.2 through 109.4.5.

(2) The department will only pay the contractor for costs the contractor actually incurs. The department will make no payment for delay costs before the contractor submits an itemized statement of those costs. Provide the content specified in 109.4.5.1(3), for the applicable items, in this statement.

109.4.7.2 Allowable Delay Costs

109.4.7.2.1 Extended Field Overhead

(1) The department will pay the contractor for extended field overhead costs that include costs for general field supervision, field office facilities and supplies, and for maintenance of field operations.

(2) General field supervision costs include, but are not limited to, field supervisors, assistants, watchman, clerical, and other field support staff. Compute these labor costs as specified in 109.4.5.2(1). For salaried personnel, calculate the daily wage rate actually paid by dividing the weekly salary by 5 days per week.

(3) Field office facility and supply costs include, but are not limited to, field office trailers, tool trailers, office equipment rental, temporary toilets, and other incidental facilities and supplies. Compute these costs on a calendar-day basis using actual costs incurred due to the delay to provide these services.

(4) Maintenance of field operations costs include, but are not limited to, telephone, electric, water, and other similar expenses. Compute these costs on a calendar-day basis using actual costs incurred due to the delay to maintain these services.

109.4.7.2.2 Extended Labor

(1) Compute labor costs during delays as specified in 109.4.5.2 for all non-salaried personnel remaining on the project as required under collective bargaining agreements or for other engineer-approved reasons.

109.4.7.2.3 Escalated Labor

(1) To receive payment for escalated labor, demonstrate that the department-caused delay forced the work to be performed during a period when labor costs were higher than planned at the time of bid. Provide adequate support documentation for the costs, allowances, and benefits specified in 109.4.5.2.

109.4.7.2.4 Equipment Stand-By or Equipment Demobilization

(1) The department will pay the contractor the stand-by rate calculated in 109.4.5.5.3 for equipment, other than small tools, that must remain on the project during delays. The department will pay the contractor's transportation costs to remove and return equipment not required on the project during delays.

109.4.7.2.5 Materials Escalation or Material Storage

(1) The department will pay the contractor for increased material costs or material storage costs due to the delay. Obtain the engineer’s approval before storing material due to a delay.

109.5 Eliminated Items

(1) If the department eliminates a bid item as specified in 104.2.2.5, the department will pay contractor costs incurred due to that elimination. The department will pay a fair and equitable amount covering all costs incurred as of the date the work was deleted. Immediately submit a certified statement covering all money expended for the eliminated bid item.

(2) The department will execute a contract change order for the following costs related to an eliminated bid item:

1. Preparation expenses defined as follows:
   - If preparation for the eliminated bid item has no value to other contract bid items, the department will reimburse the contractor in full for that preparation.
   - If preparation for work on the eliminated bid item would ordinarily be distributed over other contract bid items, the department will prorate reimbursement based on the value of the eliminated bid item compared to the total value of all associated contract bid items.
2. All restocking and cancellation charges.
3. A markup as computed in 109.4.5.6 for subcontractors doing force account work.

(3) If the department eliminates a bid item, the department may pay for, and take ownership of, materials or supplies the contractor has already purchased.

109.6 Progress Payments

109.6.1 General

(1) The department will first prepare a progress payment estimate as described in 109.6.3, and then will make a progress payment based on the engineer's estimate of the quantities of work completed. Payment will be at the contract or agreed unit or lump sum prices. The department may suspend progress payments if the contractor does not comply with the engineer's directions as specified in the contract. The department will notify the contractor immediately whenever progress payments are suspended.

(2) The department will restrict progress payments, as specified in 108.4, until the engineer accepts the contractor's progress schedule. Progress payment restrictions are specified in 108.4.2.1(5) for bar chart schedules, in 108.4.3.2(5) for RBC schedules, and in 108.4.4.3(6) for CPM schedules.

(3) The department's payment of an estimate before final acceptance of the work does not constitute the department's acceptance of the work, and does not relieve the contractor of responsibility for:

1. Protecting, repairing, correcting, or renewing the work.
2. Replacing all defects in the construction or in the materials used in the construction of the work under the contract, or responsibility for damage attributable to these defects.

(4) The contractor is responsible for all defects or damage that the engineer may discover on or before the engineer's final inspection and acceptance of the work. The engineer is the sole judge of these defects or damage, and the contractor is liable to the department for not correcting all defects or damage.

(5) The department will take ownership of all material and work covered by progress payments. However, the contractor remains solely responsible for all materials and work covered by progress payments and for the restoration of damaged work as specified in 107.14. Also, by making the progress payment, the department waives no requirement, right, or term of the contract as specified in 107.16.

109.6.2 Frequency

(1) The department will make 2 progress payments each month, as feasible, if the contractor is due a payment of $1,000 or more. The department may reduce this minimum payment due for contracts of $25,000 or less.

109.6.3 Preparation of Progress Payment Estimate

109.6.3.1 General

(1) The department will compute quantities to reflect the approximate amount of work completed, or substantially completed, under the pertinent contract bid items to the date of the progress payment estimate. The department will adjust quantities to cover contingencies and costs for finishing or maintaining the work. If the engineer bases the progress payment estimate on contract quantities, the department will adjust quantities to cover variations between the contract and final quantities.

109.6.3.1.1 Pending Contract Change Order Work

(1) Between the times the engineer authorizes a contract change order and the department executes it, the engineer will include, in the progress payment estimate, the value of the acceptably completed change order work. The department will pay at least 90 percent of the value of the work as it is completed under an unexecuted change order. After the department executes the change order, the department will deduct payments made on the unexecuted change order work from future payments due the contractor.

109.6.3.2 Materials

109.6.3.2.1 General

(1) The engineer may include in the progress payment estimate the value of materials that:

1. Are specifically manufactured, produced, or purchased for incorporation as a permanent part of the work.
2. Are delivered to the project or stored at a location off the project as specified in 106.4.
3. Are stored separately and irrevocably assigned to the project if stockpiled at plants or fabrication sites.

(2) The engineer will require the contractor to document costs for materials included in a progress payment estimate. Provide the required invoice, billing, title, or assignment documents including a complete material description, identification, and cost data.

(3) If the contractor does not satisfy all vendor claims made against the contractor for materials within 30 calendar days after receiving the progress payment, the department may cancel the applicable materials payment in the next progress payment estimate.

(4) If making progress payments for materials, the engineer will not exceed the delivered cost or contract amount for the material complete in place. The engineer will use those amounts paid for materials to reduce future payments due the contractor for completed work incorporating those materials.

109.6.3.2.2 Structural Steel

(1) On contracts containing 250 tons (250 Mg) or more of structural steel, the engineer may also include in the progress payment estimate the value of Structural Carbon Steel or High-Strength Structural Steel, or both, to be used in the completed work and which has been delivered to the fabricator.

(2) In addition to the information required in 109.6.3.2.1, provide the weights, dimensions, and heat and unit numbers.

(3) Store the structural steel separately. Use stored structural steel only for fabrication of structural components to be used on the contract.

(4) Present acceptable evidence indicating satisfactory fabrication of structural steel. The engineer may include, in the estimate prepared for progress payment, the value of this fabricated material, determined by multiplying the total unit weight of the material by 80 percent of the contract unit price.

109.6.3.3 Retainage

(1) The department will withhold retainage from progress payment estimates for liquidated damages and claims including all of the following:

1. To provide for recovery of liquidated damages assessable against the contract under 108.11.
2. To cover claims against the contract filed with the department under chapter 779 of the Wisconsin statutes.
3. To provide for recovery of damage and tort claims assessable against the contract under 107.12.

(2) In addition to the above retainage, the department will retain 5 percent of each estimate that exceeds 75 percent of the original contract value until the department finally accepts the work. When the contractor substantially completes the work under the contract or upon completion and acceptance of the work, and pending final payment, the engineer may choose to reduce the amount retained.

109.7 Acceptance and Final Payment

(1) After the department makes final acceptance of the work as specified in 105.11.2 and receives required document submittals and materials test reports, the engineer will submit to the contractor the semi-final estimate of the quantities for the work performed by the contractor.

(2) Within 90 calendar days after receiving the semi-final estimate, submit to the engineer a written statement of agreement or disagreement with the semi-final estimate. For an acceptable statement of disagreement, submit an item-by-item list with reasons for each disagreement. If the contractor does not submit this written statement within those 90 days, the engineer will process the final estimate for payment. The engineer and the contractor can mutually agree to extend this 90-day submission requirement.

(3) If the contractor submits an acceptable statement of disagreement, the department will withhold payment of the final estimate and determine the validity of the contractor's disagreement. After considering the contractor's statement, the department may revise the final estimate based on the engineer's judgment of the validity of the contractor's disagreement.

(4) The department will make final payment within one year after the date the contractor provides the department with written confirmation of the semi-final estimate, or within one year after expiration of the 90-day period specified in 109.7(2), whichever applies. If the department does not make payment as required, the department will pay interest, compounded monthly, on the balance due at the rate specified in section 16.528(2)(a) of the Wisconsin statutes.

(5) If the department has been notified that there are multiple claims against the amount held and the department concludes that it cannot appropriately choose between or among the conflicting claims, the department may withhold payment of the amount at issue pending resolution of those conflicts. Upon resolution of all issues affecting rights to the amount held, the department will make payment to the claimant or claimants.

(6) The department may correct progress estimates and payments in the final estimate and payment.

109.8 No Assignment of Payments

(1) The department will pay the contractor all payments due under the contract, or any part of the contract, as specified in section 109. The department will recognize no contractor-executed assignment or order directing payment of all, or any portion of, the funds to any other person or persons.

PART II
EARTHWORK

201.2 Construction Methods

Replace paragraph two with the following:

(2) Unless specifically designated otherwise on the plans or by the engineer, the contractor shall cut off and dispose of all trees, brush, shrubs, or other vegetation occurring within the clearing limits. Within the grubbing limits the contractor shall remove debris not suitable for the roadway foundation, stumps and associated roots, logs, timber, brush, and matted roots to the following minimum depths:

1. In cut areas, one foot (300 mm) below final subgrade.
2. In embankment areas, one foot (300 mm) below the existing grade.

201.3.1 Forty Meter Unit

Replace the entire text with the following:

(1) When so provided, the department will measure clearing or measure grubbing by the full 40 m survey unit along the roadway centerline or reference line. When 2 or more roadways occur, the department will measure clearing or measure grubbing by the full 40 m survey unit along the centerline or reference line of each roadway. For divided highways, units for each roadway will extend, in width, from 1.5 m outside the grading limit of that roadway to a line mid-way between the reference lines or centerlines for each roadway.

(2) Only 40 m survey units within which it is necessary to remove at least four trees or stumps 75 mm or over in diameter, or any tree or stump or combination of trees or stumps 75 mm or over in diameter whose diameter or total diameters equal or exceed 300 mm will be included for payment. The department will determine diameter as specified in 201.3.2.

(3) The department will pay for all units included for payment as full units.

204.1 Description

Replace paragraph one with the following:

(1) This work consists of wholly or partially removing structural elements occurring as follows:

1. Within the roadway and interfering with new construction.
2. Within the limits of Obliterating Old Road, whether specified or found necessary and required.
3. Outside the limits of construction and beyond the limits of Obliterating Old Road, if specified.

Add the following between paragraphs one and two as paragraph one-a:

(1a) The removals under 204.1(1) include pavements, surface and base courses, curb, gutter, curb and gutter, sidewalks and steps, lip curbs, concrete slope paving, marker posts, masonry, surface drains, railroad track, guardrail, fences, utility poles, concrete bases, buildings, septic tanks, underground tanks, manholes, catch basins, and inlets. This work includes material disposal and removal area backfilling; and if specified, site clearance and abandoning culvert pipes, manholes, catch basins, inlets, or wells.

Add the following to the end as paragraph eleven:

(11) Removing Marker Posts consists of removing and stockpiling marker posts for others to salvage.

204.2.1 Breaking Down and Removing

Add the following to the end as paragraph twenty-eight:

(28) The contractor shall avoid damaging marker posts during removal and store the removed posts in neat piles on the right-of-way for others to salvage. The contractor shall fill and tamp the resulting hole immediately after removal.

204.2.2 Abandoning Pipes and Structures

Replace paragraph twelve with the following:

(12) Chips in the 6 mm to 10 mm range shall be used for sealing wells of 100 mm diameter, and chips in the 10 mm to 20 mm range shall be used for sealing wells larger than 100 mm diameter. The chips shall be screened prior to use to remove particles smaller than the smallest standard size in the selected range. The rate of pour into the well shall not exceed one 22.7 kg bag in 3 minutes to avoid bridging in the well.

204.3 Method of Measurement

Add the following to the end as paragraph twenty-five:

(25) The department will measure Removing Marker Posts as each individual post acceptably removed and completed.

204.4 Basis of Payment

Add the following to the list of items in paragraph one:

Removing Marker Posts ..... Each

Replace paragraph four with the following:

(4) If the contract does not include items for removal of the listed miscellaneous structures from within the roadway, the department will measure and pay for excavation for those removals as Common Excavation, except the department will pay for excavation for removal of concrete structures exceeding one cubic yard (m^3) and not otherwise specified for removal in the contract at 5 times the unit price bid for Common Excavation. Other work involved in the removal or abandonment within the roadway of those structures is incidental to other items of work. The department will determine the volume of excavation for removal of concrete structures as the area of the structure times the depth removed.

205.2.1 General

Replace the entire text with the following:

(1) The department classifies excavation as Common Excavation, Rock Excavation, Stone Piles and Stone Fences, or Marsh Excavation. If the contract contains Common Excavation and Rock Excavation, the engineer will classify that excavation as either common or rock, based on unfrozen material, as the contractor performs the work.

(2) The department classifies all excavation below subgrade outside of marshes as Common Excavation or Rock Excavation.

205.2.2 Common Excavation

Replace the entire text with the following:

(1) Common Excavation consists of the excavation of all materials not classified as Rock Excavation, Stone Piles and Stone Fences, or Marsh Excavation. For contracts without Rock Excavation, the department will pay 5 times the contract bid price of Common Excavation to remove boulders having volumes of one cubic yard (m^3) or more.

205.2.6 Unclassified Excavation
Delete the entire text and replace the subsection heading with the following:

205.2.6 (Vacant)

205.3.1 Preparing Roadway Foundation
Replace paragraphs one and two with the following:

(1) Vegetation of a height greater than one foot (300 mm) shall be cut and properly disposed of before ground is broken for excavation or before embankment is placed thereon. Heavy sod, perishable material, unstable topsoil, and other undesirable foundation material underlying proposed roadway embankments within the limits of the assumed one to one slopes extending outward from the outer limits of the finished shoulders shall be removed. Muck, peat and other unstable material shall be removed, disposed of, or otherwise treated as shown on the plans.

(2) All suitable topsoil material within the areas of excavation and within the limits described above for embankment areas, necessary and suitable to cover the slopes for the items of Salvaged Topsoil or Topsoil, shall be removed as Salvaged Topsoil as specified in 625.3.2 "Processing Topsoil or Salvaged Topsoil". Unstable topsoil lying within the limits described above for embankment areas, in excess of amounts necessary to cover the slopes for the items Salvaged Topsoil or Topsoil, shall be removed as specified in 205.3.3 and paid for as Excavation Below Subgrade.

205.3.3 Excavation Below Subgrade
Replace paragraph one with the following:

(1) The contractor shall remove deposits of frost-heave material, unstable silty soils, wet and unstable soil, material salvaged from old road cores in marshes, topsoil containing considerable amounts of humus or vegetable matter, rocks, or other undesirable foundation material to the depth below finished grade as the plan shows or the engineer directs. If feasible, the contractor shall slope and drain the excavation bottoms to prevent water accumulation.

205.5.1 Excavation
Replace paragraph two with the following:

(2) For minor quantities, the engineer may elect to measure Common Excavation by the cubic yard (m^3) in the vehicle. The engineer will determine the capacity of each haul vehicle to the nearest 0.1 cubic yard (0.1 m^3).

205.6.1 Excavation
Replace paragraphs one and two with the following:

(1) The department pays for Common Excavation, Rock Excavation, Stone Piles and Stone Fences, and Marsh Excavation, as measured above, at the contract unit price. That price is full compensation for all work specified under section 205 for which no separate unit prices are included in the contract, except as otherwise specified in sections 203 and 204 for the removal of concrete structures and for excavation below subgrade performed after completion of rough grading operations. The cost of removing walls, foundations, etc., the satisfactory disposal of material resulting from those removals, and the backfilling of basements or openings resulting from those removals, for which no separate unit prices are included in the contract, is included in the contract unit price for excavation items, except for the removal of concrete structures. No extra or additional compensation will be made for that work, except payment for furnishing and placing the required Granular Backfill will be made at the contract unit price for that item, and, except as specified above for the removal of concrete structures and excavation below subgrade performed after completion of rough grading. Such payment shall include full compensation for all equipment, tools, labor and incidentals necessary to complete the work. The contract unit price shall include all haul except as outlined in 205.4.

(2) The department will pay for excavation below subgrade (EBS), performed after the rough grading operations are complete in the EBS area and requiring the contractor's return to perform the EBS, at 3 times the unit price bid for Common Excavation. The department will measure EBS as specified in 205.5.1.

206.3.12 Backfill

Replace the entire text with the following:

206.3.12.1 Materials

(1) Material used for backfill shall be of a quality acceptable to the engineer and shall be free from frozen lumps, wood or other extraneous or perishable material. Approved material from excavation may be used for backfilling unless Structure Backfill is specified. When Structure Backfill is specified, material from excavation meeting the requirements for Structure Backfill may be used for backfilling in accordance with the provisions of 104.8. Stone used in backfilling shall be enveloped entirely by finer material.

206.3.12.2 Construction Methods

206.3.12.2.1 General

(1) All spaces excavated and not occupied by the new structure shall be backfilled to the elevation and section existing prior to excavation, except backfill shall not be placed above the required section for the finished work. Backfill shall be sufficient to provide allowance for settlement.

(2) Except as required for the safety of workers, substructure units shall not be backfilled until the area involved shall have been cleared of all falsework, sheet piling, cribbing, shoring, bracing, forms, and rubbish. Cofferdams shall be backfilled prior to removal of sheeting, unless otherwise permitted by the engineer.

(3) When required for the safety of workers and with the approval of the engineer, sheet piling, cribbing, shoring, and bracing may be removed as backfilling progresses.

(4) Backfilling shall be so performed as to prevent wedging action against the structure. Existing slopes shall be stepped, terraced or otherwise treated as necessary to prevent slippage and wedging of the backfill.

(5) Unless otherwise specified, backfill shall be placed in continuous horizontal layers not more than 8 inches (200 mm) thick that are brought up uniformly, as far as practicable, on all sides of each substructure unit or culvert. Each layer shall be adequately compacted, before the next layer is placed, by means of approved rollers or portable mechanical or pneumatic tampers or vibrators.

(6) If there is water in an excavation, backfilling operations in the excavation shall be so performed that such water will be displaced by the backfill and not trapped therein. Water shall not be used to expedite settlement of backfill except with the written approval of the engineer, but this provision shall not require an excavation to be dewatered before placing backfill. When the use of water is permitted, the entire excavation shall be kept inundated during the period that backfill is placed, except when jetting is allowed.

(7) Backfilling operations shall be conducted in such a manner that no portion of the structure is damaged or deflected out of alignment. Backfilling material transported in trucks or other vehicles shall be dumped so that the contents of each vehicle are gradually deposited instead of dumping the entire contents as one mass. Insofar as practicable, all clams, dippers and similar containers of backfill shall be lowered to within 5 feet (1.5 m) of the surface of the previously deposited backfill, or of the water surface, before they are dumped.

(8) Backfill may be end dumped from the structure or approach embankment if the material is spread and placed in the above-described 8 inches (200 mm) horizontal layers after it is end dumped. Backfill shall not be placed in or from narrow ramps or driveways up to or from the structure.

(9) Backfilling of structural plate pipe and pipe arches shall be accomplished as specified in 527.4.2.

(10) Backfill along the front face of abutments, retaining walls, and wing walls shall extend to within 6 inches (150 mm) of the weep holes, unless otherwise designated.

(11) When weep holes are designated on the plans for culverts, abutments, and retaining walls there shall be placed behind the culvert, abutment or retaining wall at the level of the weep holes a deposit or deposits of coarse gravel or broken stone. The dimensions of those deposits shall conform to the dimensions indicated on the plans.

(12) Backfill shall not be placed against any portion of any substructure unit until the required curing, surface preparation, dampproofing, and waterproofing of the work to be covered by backfill has been completed.

206.3.12.2.2 Self-Supported Abutments and Retaining Walls

206.3.12.2.2.1 General

(1) Self supported structures must develop sufficient strength before they can be backfilled.

206.3.12.2.2.2 Backfill on One Side of the Structure

(1) The Contractor may backfill structures that have attained the specified compressive strength or upon expiration of the minimum time periods tabulated below:

STRUCTURE TYPE[1]	GENERAL PURPOSE CONCRETE in days[2]	HIGH EARLY STRENGTH CONCRETE in days[2]	COMPRESSIVE STRENGTH in psi (MPa)
Abutment type A1, A2, A5	2	1	2000 (13.8)
Abutment type A3[3]	2	1	2000 (13.8)
Abutment type A4	14	7	3000 (20.7)
Full retaining abutments	14	7	3000 (20.7)
Concrete masonry retaining walls	14	7	3000 (20.7)

[1] Abutment types:

A1: Body about 5 feet (1.5 m) tall with 1 row of piles.
A2: Body about 5 feet (1.5 m) tall with 2 rows of piles.
A3: Body about 5 feet (1.5 m) tall with backwall and 2 rows of piles
A4: Body about 13 feet (4 m) tall with backwall and 2 or more rows of piles.
A5: Body about 10 feet (3 m) tall with 1 row of piles extending to within 2 feet (0.6 m) of abutment top.
Full retaining: Body extending from lower roadway/river elevation to beam seats.

[2] Only count days where the concrete temperature did not fall below 40 F (4 C).

[3] Upon obtaining the required compressive strength, the contractor may backfill the body of A3 abutments before the backwall is placed.

206.3.12.2.2.3 Backfill on Both Sides of the Structure

(1) Footings may be backfilled to the top of the footings, sill abutments may be backfilled to the berm elevation, and retaining walls and piers may be backfilled uniformly and simultaneously on both sides to the elevation of the front ground surface immediately upon removal of the forms.

206.3.12.2.3 Rigid Frame Structures

(1) Backfill shall not be placed against any abutment or wall that is designed to gain support from a superstructure until the superstructure has been poured and cured.

(2) One quarter of total wall height of box culverts may be backfilled after the wall compressive strength has reached 2000 pounds per square inch (13.8 Mpa). Box Culverts may be backfilled entirely after concrete in the top of the box has been poured and cured.

206.3.13 Disposal of Excavated Material
Replace paragraph one with the following:

(1) The contractor may use suitable excavated material as riprap or backfill. If the contract contains Common Excavation or Borrow Excavation items and there is a need for material in the embankment at the time of disposal, the contractor shall use suitable excavated material, not used as riprap or backfill, in the embankment. The department will pay for excavated material used in embankments at the contract unit price for Borrow Excavation, or absent a Borrow Excavation item, at the contract unit price for Common Excavation. The department will determine the quantity of excavated material used in embankments as specified in 205.5.1. The contractor shall not overhaul excavated material placed in embankments.

211.4.5.3 Asphaltic Treated Surfaces and Pavements
Replace the entire text with the following:

(1) Remove areas that will cause raveling, shoving, or bleeding of the overlying pavement. If the engineer directs, remove other areas the engineer deems unsuitable. Remove protruding joint filler from cracks to at least the surface of the old pavement and remove excess joint filler and joint sealant materials from the pavement surface.

(2) Clean all loose material from holes in the existing asphaltic surface. Fill the holes with asphaltic surfacing mixture and consolidate the mixture over its full depth.

PART III
BASE COURSES

304.1 Description

Replace paragraphs one and two with the following:

(1) Crushed Aggregate Base Course consists of a dense graded compacted base course composed of one or more courses or layers of coarse aggregate, either crushed gravel or crushed concrete or crushed stone or crushed asphaltic pavement; fine aggregate; and binder or filler. Aggregate produced from crushed gravel, crushed concrete, or crushed stone may be supplemented with crushed aggregate produced from industrial by-products or recycled/reclaimed materials as described in 304.2.1. All materials shall be blended as necessary to produce an intimate mixture of the required gradation and stability, constructed on the prepared foundation in accordance with the specifications and in reasonably close conformity with the lines, grades, thicknesses and typical cross-sections shown on the plans or established by the engineer.

(2) Crushed Aggregate Base Course, Open Graded, consists of an open graded, compacted base course composed of one or more courses or layers of coarse aggregate, either crushed gravel or crushed concrete or crushed stone, and fine aggregate. Aggregate produced from crushed gravel, crushed concrete, or crushed stone may be supplemented with crushed aggregate produced from industrial by-products or recycled/reclaimed materials as described in 304.2.1. All materials shall be blended as necessary to produce an intimate mixture of the required gradation and stability, constructed on the prepared foundation in accordance with the specifications and in reasonably close conformity with the lines, grades, thickness, and typical cross-sections the plans show or the engineer establishes.

Replace paragraph seven with the following:

(7) (Vacant)

Replace paragraph eight with the following:

(8) Salvaged Asphaltic Pavement, Base Course, consists of the necessary processing of the stockpile, loading, hauling and placing salvaged asphaltic pavement as base course, at the locations shown on the plans or as the engineer directs, in accordance with the specifications.

304.2.1 General Conditions

Add the following to the end as paragraph five:

(5) Limited amounts of aggregate produced from an allowed industrial by-product or an allowed recycled/reclaimed material may be blended with crushed gravel, crushed concrete, or crushed stone. Specific materials and allowable percentages, by weight, are listed in 304.2.3. These materials shall be substantially free of deleterious substances and shall be crushed, screened, and blended with the crushed gravel, crushed concrete, or crushed stone to produce a uniform mixture. This blended material shall contain only one industrial by-product or one recycled/reclaimed material. This blended material shall not be used in the upper 3 inches (75mm) of Crushed Aggregate Base Course used as an aggregate shoulder or in the upper 3 inches (75mm) of a temporary or permanent aggregate roadway.

304.2.3 General Requirements

Replace the entire text with the following:

(1) The aggregates for Crushed Aggregate Base Course consists of hard, durable particles of crushed stone or crushed concrete or crushed gravel and a filler of natural sand, stone sand or other finely divided mineral matter. The aggregates for Crushed Aggregate Base Course, Open Graded, consists of hard, durable particles of crushed stone or crushed gravel or crushed concrete. Except for applications excluded in 304.2.1, Crushed Aggregate Base Course and Crushed Aggregate Base Course, Open Graded may contain up to the listed maximum percent, by weight, of one of the following permitted industrial by-products or recycled/reclaimed materials:

MATERIAL	MAXIMUM PERCENT (by weight)
Glass	12
Foundry slag	7
Steel mill slag	15
Bottom ash	8
Pottery cull	7

(2) Oversize material encountered in deposits from which the material is taken shall be removed by screening or shall be crushed to the required sizes. The composite material shall be substantially free from vegetable matter, shale and lumps or balls of clay, and shall conform to the pertinent gradation requirements.

(3) Unless otherwise specified in the contract, the aggregate, including any industrial by-product or recycled/reclaimed material, shall have a percentage of wear of not more than 50, as determined according to AASHTO T 96.

(4) The aggregate, including any blended filler and any industrial by-product or recycled/reclaimed material, shall have a liquid limit of not more than 25 and a plasticity index of not more than 6, except in the case of aggregates for base courses placed between old and new pavements, where the plasticity index shall not exceed 3.

(5) For aggregate for crushed aggregate base course, a minimum of 45 percent, by count, of the number of particles of aggregate retained on the No. 4 (4.75 mm) sieve shall have at least one fractured face.

(6) For aggregate for open graded base course, a minimum of 90 percent, by count, of the number of particles retained on the No. 4 (4.75 mm) sieve shall have at least one fractured face.

304.2.3.1 (Vacant)

304.2.3.2 Salvaged Asphaltic Pavement, Base Course

(1) Stockpiled salvaged asphaltic pavement material to be used as base course, gradation No. 1, as specified in 304.2.6, shall be processed as necessary so 100 percent will pass a 1 1/2 inch (37.5 mm) sieve.

(2) Stockpiled salvaged asphaltic pavement material to be used as base course, gradation No. 2 or No. 3, as specified in 304.2.6, shall be processed as necessary so 100 percent will pass a one-inch (25.0 mm) sieve.

(3) Other requirements of 304.2 shall not apply.

304.2.4 Soundness

Replace the entire text with the following:

(1) When the fraction of the aggregates, including any industrial by-product or recycled/reclaimed material, retained on the No. 4 (4.75 mm) sieve is subjected to 5 cycles of the sodium sulfate soundness test according to AASHTO T 104, the weighted loss shall not exceed 18 percent by mass for crushed aggregate base course, or 12 percent for crushed aggregate base course, open graded, unless otherwise specified in the contract. If the quality of material or conditions of deposition in a quarry or deposit make questionable the continuous compliance with this soundness requirement, the engineer reserves the right to require maintenance of a stockpile or stockpiles of produced material sufficiently large to preclude use of material which has not been previously approved by test.

304.2.6 Gradation Requirements

Replace paragraph three with the following:

(3) Unless otherwise specified in the special provisions; the contractor shall use gradation No. 3 in the top 3 inches (75 mm) of unpaved or unstabilized shoulders adjacent to live traffic lanes or paved shoulders, and use either gradation No. 2 or No. 3 in the balance of the shoulder.

304.2.7 Sampling and Testing

Replace paragraph one with the following:

(1) Sampling and testing will be according to the following AASHTO methods, except as revised with the engineer's approval:

Sampling aggregates	T 2
Material finer than No. 200 (75 µm) sieve	T 11
Sieve analysis of aggregates	T 27
Sieve analysis of mineral filler	T 37
Liquid limit of soils	T 89
Plastic limit of soils	T 90
Plasticity index of soils	T 90
Los Angeles abrasion of coarse aggregate	T 96
Specific gravity and absorption of fine aggregate	T 84
Specific gravity and absorption of coarse aggregate	T 85[1]
Sodium sulfate soundness of aggregates	T 104

[1] As revised by the department's method T 85-1.

304.4.2 Hauling and Spreading

Replace the entire text with the following:

(1) For material measured by volume in the vehicle, conform to 109.1.3. Do not use vehicles or methods of operation that damage the subgrade or base course in place. Use equipment designed and operated to spread material in uniform layers without significant segregation.

304.9.1 General

Replace paragraph one with the following:

(1) The department will measure Crushed Aggregate Base Course; Crushed Aggregate Base Course, Detours; Salvaged Crushed Aggregate Base Course; Producing and Stockpiling Crushed Aggregate Base Course; Hauling and Placing Crushed Aggregate Base Course; Crushed Aggregate Base Course, Open Graded Number (-); and Salvaged Asphaltic Pavement, Base Course by the ton (Mg), or in the vehicle by the cubic yard (m^3) whichever the contract specifies. The department will measure material acceptably completed either in place or in stockpiles.

Replace paragraph six with the following:

(6) The department will measure Shaping Shoulders in partial 100 foot survey stations (m) along each side of the traveled way.

304.10 Basis of Payment
Replace paragraph two with the following:

(2) The department will pay for Crushed Aggregate Base Course, Open Graded Number (_),as measured above, at the contract unit price. That price is full compensation for furnishing, producing, crushing, screening, loading, hauling, placing, watering unless otherwise specified, drying and compacting; for maintaining; for preparing foundation, unless otherwise specified; for dust abatement, unless otherwise specified; for stockpiling, if required; and for furnishing all labor, tools, equipment and incidentals necessary to complete the work.

Delete paragraph six.

Replace paragraph seven with the following:

(7) The department will pay for Salvaged Asphaltic Pavement, Base Course, as measured above, at the contract unit price. That price is full compensation for the necessary processing of the stockpile, loading, hauling, placing and compacting; for maintaining; for preparing foundation; and for furnishing all labor, tools, equipment and incidentals necessary to complete the work.

306.7.1 Asphaltic Base Course
Replace paragraph one with the following:

(1) The department will pay for Asphaltic Base Course, as measured above, at the contract unit price. That price is full compensation for furnishing all materials, except asphaltic materials; for preparing, mixing, hauling, placing and compacting; for preparing foundation, unless otherwise provided; and for all labor, tools, equipment and incidentals, including maintenance until acceptance, necessary to complete the work.

306.7.2 Asphaltic Base Course Widening
Replace paragraph one with the following:

(1) The department will pay for Asphaltic Base Course Widening, as measured above, at the contract unit price. That price is full compensation for all excavation, reconstructing earth shoulders, satisfactory disposal of surplus or unsuitable excavated material; for the preparation and compaction of the foundation; for furnishing, preparing, handling, placing and consolidating the asphaltic mixture; for furnishing all materials, except asphaltic materials; and for all labor, tools, equipment and incidentals necessary to satisfactorily complete the work.

307.3.1.3 Curing of Concrete
Replace the subsection heading and the entire text with the following:

307.3.1.3 Opening Concrete Base Course to Traffic

(1) The procedures and opening criteria for Concrete Base Course shall be the same as specified in 415.5.15 for grade A concrete used in concrete pavement; except when the contractor takes measures to prevent loading within 6 inches of the edge:

1. The engineer will allow the contractor to open Concrete Base Course to traffic when the concrete reaches 2000 pounds per square inch (13.8 MPa).
2. In the absence of compressive strength information, the engineer may allow the contractor to open Concrete Base Course upon the expiration of 3 equivalent curing days.

308.3.2 Concrete Patching
Replace paragraph three with the following:

(3) The contractor shall cure the concrete as specified for concrete pavement in 415.5.10.

308.5 Basis of Payment

Replace paragraph one and two with the following:

(1) The department will pay for Base Patching; Base Patching, Asphaltic; or Base Patching, Concrete, as measured above, at the contract unit price. That price is full compensation for furnishing all materials, except pavement ties and dowel bars installed in the existing concrete pavement; for the removal of old pavement, including any patching or surfacing materials, with the exception of sawing; for all excavation, except as hereinafter provided; for the preparation of the foundation, including all necessary cutting and trimming, filling of depressions to shape the subgrade to grade and section and satisfactory compaction; for disposal of all removed or excess materials; for furnishing, placing, consolidating, finishing and curing concrete masonry; for furnishing, placing and compacting asphaltic mixture, including the asphalt; and for furnishing all labor, tools, equipment and incidentals necessary to complete the work.

(2) The department will pay for Special High Early Strength Base Patching, Concrete, as measured above, at the contract unit price. That price is full compensation for furnishing all materials, except pavement ties and dowel bars installed in the existing concrete pavement; for removal of existing concrete pavement, with the exception of sawing; for all excavation except as hereinafter provided; for the preparation of foundation; for the disposal of removed or excess materials; for furnishing, placing, consolidating, finishing, curing and protecting concrete masonry; for preparing and testing concrete cylinders and providing test data; and for furnishing all labor, tools, equipment and incidentals necessary to complete the work.

PART IV
PAVEMENTS

401.2.3 General Requirements
Replace paragraph two with the following:

(2) The department may prohibit the use of crushed stone from limestone/dolomite deposits having thinly bedded strata or strata of a shalely nature. The department may also prohibit the use of aggregates from deposits or formations known to produce unsound material.

401.2.4 Soundness
Replace the subsection heading and the entire text with the following:

401.2.4 Sodium Sulfate Soundness

(1) The department will conduct 5 cycles of the sodium sulfate soundness test, according to AASHTO T 104, on aggregate retained on the No. 4 (4.75 mm) sieve. The weighted loss shall not exceed 12 percent.

(2) When all aggregates used in the work are produced from the same deposit or source, the test may be made on a composite sample. The composite sample will contain the job mix formula percentages of each component aggregate. When the component aggregates are produced from more than one deposit or source, the tests will be made on one sample from each deposit or source.

401.2.7 Sampling and Testing
Replace paragraph one with the following:

(1) Sampling and testing will be according to the following AASHTO methods, except as revised with the engineer's approval:

Sampling aggregates	T 2
Material finer than No. 200 (75 µm) sieve	T 11
Sieve analysis of aggregates	T 27
Mechanical analysis of extracted aggregate	T 30
Sieve analysis of mineral filler	T 37
Liquid limit of soils	T 89
Plastic limit of soils	T 90
Plasticity index of soils	T 90
Los Angeles abrasion of coarse aggregate	T 96
Freeze-thaw soundness of coarse aggregate	T 103
Sodium sulfate soundness of aggregates	T 104
Extraction of bitumen	T 164

401.3.1 General Requirements
Replace paragraph five with the following:

(5) The grade of penetration graded or viscosity graded asphaltic materials, including asphalt emulsions used for tack coat, may be changed by the contractor one step at no change in unit price when permitted by the engineer in writing. No change in the grade of performance graded asphaltic materials will be permitted.

401.3.4 Asphalt, Type AC
Delete the text and table previously added in Supplemental Specifications - 1997 Edition.

Add the following to the end as paragraph five:

(5) Performance graded asphalt cements shall meet the binder specifications and test method tolerances as tabulated in the most recent edition of the department's "Certification Method of Acceptance for Asphalt Cements".

402.2 Materials
Replace paragraph two with the following:

(2) Asphaltic material shall be MS-2, SS-1, SS-1h, CSS-1, CSS-1h, or Modified Emulsified Asphalt, unless otherwise specified in the contract.

402.4.1 General
Replace paragraph three with the following:

(3) The existing surface designated for tack coat treatment shall receive a coat of asphaltic material of the type and grade specified in the contract. The diluted tack coat material shall be applied at an estimated rate of 0.025 gallons per square yard (1L/10m^2) of surface area unless otherwise specified in the contract. Daily application shall be limited to approximately that area of surface reasonably expected to be paved during the same day.

403.3.2 Laboratory Requirements
Replace paragraph three with the following:

(3) The contractor shall accommodate the engineer's request to conduct calibration and condition inspections of the contractor's measuring and testing devices. The contractor shall calibrate and correlate all testing equipment according to the department's test method number 1559 and QMP procedure manual, and the requirements of AASHTO MP2 and AASHTO PP28.

403.3.3.1 Required Tests for a Contract of 4600 Megagrams of Mixture or Greater
Replace paragraph one with the following:

(1) The contractor shall use the test methods identified below, or other methods the engineer approves, to perform the following tests at a frequency greater than or equal to that indicated:

Blended aggregate according to AASHTO T11 and T27:

Drum plants:

- Field extraction by department test method number 1560.
- Belt samples, optional for virgin mixtures, obtained from stopped belt or from the belt discharge using a sampling device approved by the engineer.

Batch plants:

- Field extraction by department test method number 1560.

Asphaltic content (AC) in percent:

AC by calculation.

AC by nuclear gauge reading, optional.

Bulk specific gravity of the compacted mixture according to AASHTO T166.

Maximum specific gravity according to AASHTO T209.

Air voids by calculation.

Voids in the mineral aggregate by calculation.

Replace paragraph eight with the following:

(8) Retain the split portion of the contractor asphaltic mixture and blended aggregate for 14 calendar days at the laboratory site. This 14-day retention period may be decreased if approved by the engineer. At the completion of the project, the remaining samples may be disposed of with the approval of the engineer. The samples shall be stored in a dry and protected location.

403.3.3.3 Required Tests for a Contract of Less Than 460 Megagrams of Mixture
Correct the subsection number.

Replace the entire text with the following:

(1) The engineer may waive all testing. If all testing is waived, the department will not measure or pay for Quality Management Program, Asphaltic Mixture.

403.3.3.4 Required Tests for Temporary Pavements
Replace the entire text with the following:

(1) Temporary pavements are defined as those pavements that will be placed and removed before the completion of the contract.

(2) The engineer may waive all testing. If all testing is waived, the department will not measure or pay for Quality Management Program, Asphaltic Mixture.

403.3.4.2 Control Charts

Replace paragraph three with the following:

(3) The contractor shall record the following data on the standardized control charts:

- Blended aggregate gradation tests in percent passing. Of the following, plot those sieves the design specifications require: 37.5 mm, 25.0 mm, 19.0 mm, 12.5 mm, 9.5 mm, 2.36 mm, and 75 µm.
- Asphalt content in percent.
- Bulk specific gravity of the compacted mixture.
- Maximum specific gravity.
- Air voids in percent.
- Voids in the mineral aggregate in percent.

403.3.5 Control Limits
Replace the entire text with the following:

(1) The following control limits for the job mix formula and warning limits are based on a running average of the last 4 data points:

ITEM	JOB MIX FORMULA LIMITS	WARNING LIMITS
Percent passing given sieve:		
37.5 mm	± 6.0	± 4.5
25.0 mm	± 6.0	± 4.5
19.0 mm	± 5.5	± 4.0
12.5 mm	± 5.5	± 4.0
9.5 mm	± 5.5	± 4.0
2.36 mm	± 5.0	± 4.0
75 µm	± 2.0	± 1.5
Asphalt content in percent	± 0.4	± 0.3
Air voids in percent	± 1.3	± 1.0
Voids in the mineral aggregate in percent	- 1.5	- 1.2

403.4 Quality Assurance
Replace paragraph one with the following:

(1) The engineer will test split samples taken from the contractor's quality control samples or from other samples as the engineer directs. The engineer may take a split from any contractor retained sample. The engineer will test a minimum of one split sample for each 15 contractor quality control tests the contract requires, taking at least one split from the first 2 days' production. The engineer will provide test results to the contractor within 2 mixture production days after the contractor takes the sample. An asphaltic technician certified at level one under the department's highway technician certification program, or a department certified assistant a level one directly supervises, will perform all assurance tests and analyze the data. The engineer will post the names and telephone numbers of all assurance personnel for the project.

Replace paragraph four with the following:

(4) Differences between the contractor's and engineer's split sample test results are acceptable if within the following limits:

ITEM	ALLOWABLE DIFFERENCE
Percent passing given sieve:	
37.5 mm	6.5
25.0 mm	6.5
19.0 mm	6.0
12.5 mm	6.0
9.5 mm	6.0
2.36 mm	4.0
75 µm	2.0
Bulk specific gravity of the compacted mixture	0.030
Maximum specific gravity	0.020

403.7 Basis of Payment
Add the following to the end as paragraph two:

(2) If all testing is waived under 403.3.3.3 and 403.3.3.4, the department will not measure or pay for Quality Management Program, Asphaltic Mixture.

405.3.4 Tack Coat
Replace the entire text with the following:

(1) Tack coat shall be applied, as specified in section 402, to each lower layer and to each upper layer, of a plant-mixed asphaltic base or pavement scheduled to be overlaid with asphaltic mixture under the same contract.

405.3.9.2 Thickness

Replace the entire text with the following

(1) Leveling, lower, and upper layers shall conform with the thicknesses shown on the plans. The following thickness limits shall apply unless the plans specify otherwise:

NOMINAL SIZE	MINIMUM LAYER THICKNESS in inches (mm)	MAXIMUM LOWER LAYER THICKNESS in inches (mm)	MAXIMUM UPPER LAYER THICKNESS in inches (mm)
37.5 mm	3.5 (89)	5 (127)	4.5 (114)
25.0 mm	3.25 (83)	5 (127)	4 (102)
19.0 mm	2.25 (57)	4 (102)	3 (76)
12.5 mm[1]	1.75 (44)	3 (76)[2]	2.5 (64)
9.5 mm[1]	1.5 (38)	3 (76)[2]	2 (51)

[1] SMA mixtures use nominal size 12.5 mm or 9.5 mm.

[2] SMA mixtures with nominal sizes of 12.5 mm and 9.5 mm have no maximum lower layer thickness specified.

SECTION 407 ASPHALTIC CONCRETE PAVEMENT

Replace the entire text with the following:

407.1 Description

(1) This work consists of mixture design, and construction of plant-mixed asphaltic concrete pavement on the approved prepared foundation, base course, or existing surface according to these specifications and conforming to the lines, grades, thickness and typical cross sections the plans show or the engineer establishes.

(2) The requirements of section 405 apply to this work, except as otherwise specified within section 407.

(3) For plans and special provisions developed using asphaltic concrete pavement mixture types HV, MV, LV, or superpave make the following substitutions throughout the contract:

1. Substitute mixture type E-0.3 for mixture type LV, superpave, or superpave for shoulders.
2. Substitute mixture type E-1, E-3, E-10, E-30, or E-30x, whichever is called for in the schedule of items, for mixture type MV, HV, or superpave.

407.2 Materials

407.2.1 General

(1) All materials shall conform to the requirements of sections 401 and 405 except as otherwise specified within section 407. Mineral filler used in SMA mixtures shall conform to the requirements of 401.2.5.1 and shall have a plasticity index of 4 or less. Virgin or resultant blended asphaltic material shall be as designated in the contract special provisions.

(2) Interpret materials related abbreviations and acronyms used in section 407 as follows:

SMA	Stone matrix asphalt
RAP	Reclaimed asphaltic pavement
PG	Performance graded
JMF	Job mix formula
G_{mm}	Maximum specific gravity
VMA	Voids in mineral aggregate

407.2.2 Composition of Pavement Mixtures

407.2.2.1 General

(1) Paving mixtures shall be a homogeneous mixture of coarse aggregate, fine aggregate, mineral filler, SMA asphalt concrete stabilizer when required, and asphaltic material. Mixtures made in the design laboratory with aggregates and asphalt cement proposed for the work shall meet the properties in tables 407-1 and 407-2. The contractor shall submit samples for mixture design review as required in the department's test method number 1559.

407.2.2.2 Contractor Asphaltic Mixture Design

(1) The contractor shall submit, for each layer and for the engineer's review, an asphaltic mixture design meeting all necessary criteria. The asphaltic mixture design shall be conducted according to procedures in the latest version of AASHTO MP2, AASHTO PP28, and department's test method number 1559 and shall be signed by an asphaltic technician certified at level III. The department will review the quality of the aggregate and the asphaltic mixture design, and issue a report. The asphaltic mixture design shall be in effect until modified in writing by the engineer or for a maximum of 3 years whichever comes first.

TABLE 407-1 MIXTURE REQUIREMENTS

Mixture type	E - 0.3	E - 1	E - 3	E - 10	E - 30	E - 30x	SMA
ESALs x 10^6 (20 yr design life)	< 0.3	0.3 - < 1	1 - < 3	3 - < 10	10 - < 30	≥ 30	___
LA Wear (AASHTO T 96)							
100 revolutions(max % loss)	13	13	13	13	13	13	13
500 revolutions(max % loss)	50	50	45	45	45	45	45
Soundness (AASHTO T 104) (sodium sulfate, max % loss)	12	12	12	12	12	12	12
Freeze/Thaw (AASHTO T 103) (specified counties, max % loss)	18	18	18	18	18	18	18
Fractured Faces (ASTM 5821) (one face/2 face, % by count)	60 / __	65 / __	75 / 60	85 / 80	98 / 90	100/100	100/90
Thin or Elongated (ASTM D4791) (max %, by weight)	5 (5:1 ratio)	5 (5:1 ratio)	5 (5:1 ratio)	5 (5:1 ratio)	5 (5:1 ratio)	5 (5:1 ratio)	20 (3:1ratio)
Fine Aggregate Angularity (AASHTO T304, method A, min)	40	40	43	45	45	45	45
Sand Equivalency (AASHTO T 176, min)	40	40	40	45	45	50	50
Gyratory Compaction							
Gyrations for N_{ini}	6	7	7	8	8	9	8
Gyrations for N_{des}	40	60	75	100	100	125	100
Gyrations for N_{max}	60	75	115	160	160	205	160
Air Voids, $\%V_a$ ($\%G_{mm}$ @ N_{des})	4.0 (96.0)	4.0 (96.0)	4.0 (96.0)	4.0 (96.0)	4.0 (96.0)	4.0 (96.0)	4.0 (96.0)
% G_{mm} @ N_{ini}	< 91.5[1]	< 90.5[1]	< 89.0[1]	< 89.0	< 89.0	< 89.0	___
% G_{mm} @ N_{max}	≤ 98.0	≤ 98.0	≤ 98.0	≤ 98.0	≤ 98.0	≤ 98.0	___
Dust to Binder Ratio[2] (% passing $0.075/P_{be}$)	0.6 - 1.2	0.6 - 1.2	0.6 - 1.2	0.6 - 1.2	0.6 - 1.2	0.6 - 1.2	1.2 - 2.0
Voids filled with Binder (VFB or VFA, %)	70 - 80 [4] [5]	65 - 78 [4]	65 - 75 [4]	65 - 75 [3] [4]	65 - 75 [3] [4]	65 - 75 [3] [4]	70 - 80
Tensile Strength Ratio - TSR (ASTM 4867)							
no antistripping additive	0.70	0.70	0.70	0.70	0.70	0.70	0.70
with antistripping additive	0.75	0.75	0.75	0.75	0.75	0.75	0.75
Draindown @ Production Temperature (%)	___	___	___	___	___	___	0.30

[1] The percent maximum density at initial compaction is only a guideline.

[2] For a gradation that passes below the boundaries of the caution zone(ref. AASHTO MP3), the dust to binder ratio limits are 0.6 - 1.6.

[3] For 9.5mm nominal maximum size mixtures, the specified VFB range is 73 - 76%.

[4] For 37.5mm nominal maximum size mixes, the specified VFB lower limit is 67%.

[5] For 25.0mm nominal maximum size mixes, the specified VFB lower limit is 67%.

407.2.3 Acceptance of Pavement Mixtures

407.2.3.1 Quality Management Program

(1) If the contract contains Quality Management Program, Asphaltic Mixture, acceptance of the asphaltic mixtures included under that item will be based on the provisions of section 403. The target maximum density will be determined based on the G_{mm} value using the method contained in the latest copy of the department's quality management program guide/procedure manual.

407.2.3.2 Quality Management Program not Required in Contract

(1) The department's acceptance testing will be conducted by an asphaltic technician certified at level I. The engineer will conduct acceptance tests on samples taken by the contractor under the observation of and in a manner approved by the engineer. The tests will be conducted as specified in 403.3.3.1 for blended aggregate and asphalt content. The target maximum density will be determined by using the G_{mm} value indicated on the contractor's current mixture design.

(2) The asphaltic mixture test results shall conform to the current JMF within the following single-test tolerances:

Percent Passing 12.5 mm and larger sieves	± 8 percent
Percent Passing 9.5 mm and 4.75 mm sieves	± 8 percent
Percent Passing 2.36 mm sieve	± 7 percent
Percent Passing 75 µm sieve	± 2 percent
Asphaltic Material	± 0.5 percent

(3) The engineer will base final acceptance of the mixture on the results of testing made on samples during the acceptance process. A request for a JMF adjustment may be made by the contractor with the approval of the engineer as specified in 403.3.7.

407.2.4 Aggregate

407.2.4.1 General

(1) Aggregates shall consist of hard durable particles and shall not contain more than a combined total of one percent, by mass, of lumps of clay, loam, shale, soft particles, organic matter, adherent coatings, and other deleterious matter. The composite aggregates shall conform to the percent fractured faces, and thin or elongated requirements in table 407-1. For each aggregate that is a composite of materials from different deposits or sources, the material from each deposit or source shall have a percentage of wear which meets the requirements.

(2) The contractor shall submit samples as required under the department's aggregate source approval policy, representative of the aggregate proposed to be used in the work, for aggregate quality testing. Samples shall arrive in the laboratory at least 14 days before use in the work. No aggregate shall be used in the production of mixtures without prior approval of the engineer. Have a technician certified to take samples sample the aggregates.

407.2.4.2 Soundness

(1) Aggregate shall conform to the soundness requirements of 401.2.4. In addition, the department will conduct freeze-thaw soundness tests, according to AASHTO T 103, on crushed stone aggregates produced from sources in limestone/dolomite formations in specified counties when those aggregate are used in upper layers. The department will test aggregate retained on the No. 4 (4.75 mm) sieve using either method A with 50 cycles, method B with 16 cycles, or method C with 25 cycles. The weighted average loss shall not exceed 18 percent.

(2) The department will conduct freeze-thaw tests on material from sources in the following counties:

Brown	Fond du Lac	Iowa	Oconto	Walworth
Columbia	Grant	Jefferson	Outagamie	Winnebago
Dane	Green	Lafayette	Rock	
Dodge	Green Lake	Marinette	Shawano	

(3) The department may waive this requirement for soundness testing by freezing and thawing for existing quarries determined to be in either the Silurian system or the Prairie du Chien group of the Ordovician system of rocks in Wisconsin.

(4) When all aggregates used in the work are produced from the same deposit or source, the test may be made on a composite sample. The composite sample shall contain the JMF percentages of each component aggregate. When the component aggregates are produced from more than one deposit or source, the tests will be made on one sample from each deposit or source.

407.2.4.3 Aggregate Gradation Master Range

(1) The aggregates, RAP, and mineral filler when required, shall conform to the gradation requirements in table 407-2 based on their nominal size. Gradation values listed are extreme limits for design. Production testing tolerances may allow mixture production values that exceed the aggregate master range.

TABLE 407-2 AGGREGATE GRADATION MASTER RANGE AND VMA REQUIREMENTS

SIEVE SIZE	PERCENTS PASSING DESIGNATED SIEVES						
	NOMINAL SIZE						
	37.5 mm	25.0 mm	19.0 mm	12.5 mm	9.5 mm	SMA 12.5 mm	SMA 9.5 mm
50.0 mm	100						
37.5 mm	90 -100	100					
25.0 mm	90 max	90 -100	100				
19.0 mm	___	90 max	90 -100	100		100	
12.5 mm	___	___	90 max	90 -100	100	90 - 97	100
9.5 mm	___	___	___	90 max	90 -100	58 - 72	90 - 100
4.75 mm	___	___	___	___	90 max	25 - 35	35 - 45
2.36 mm	15 - 41	19 - 45	23 - 49	28 - 58	20 - 65	15 - 25	18 - 28
75 µm	0 - 6	1 - 7	2 - 8	2 - 10	2 - 10	8 - 12	10 - 14
PERCENT MINIMUM VMA	11.0	12.0	13.0	14.0	15.0	15.5	16.5

(2) Unless otherwise designated in the contract, the nominal size of the aggregate used in the mixture shall conform to the following:

PAVEMENT LAYER	NOMINAL SIZE
Lower layer pavement	19.0 mm
Upper layer pavement	12.5 mm
Stone matrix layer pavement	12.5 mm

407.2.5 Additives

407.2.5.1 Hydrated Lime Antistripping Agent

(1) Hydrated lime, when used in asphaltic mixtures, shall meet requirements for hydrated lime in ASTM C 977 and shall be limited to a maximum of 8 percent unhydrated oxides as received. Hydrated lime shall be added at a rate of one percent or more by mass of the total dry aggregate. The method of introducing and mixing the lime and aggregate is subject to the engineer's approval before beginning production.

407.2.5.2 Liquid Antistripping Agent

(1) When a liquid antistripping agent is used, it shall be added to the asphalt cement before introduction into the mix. If the engineer finds any antistripping agent or particular concentration of antistripping agent to be harmful to the asphalt material or which changes the characteristics of the original asphalt cement by more than ±400 poises for viscosity or more than -4 or +10 for penetration, the antistripping agent or particular concentration shall be changed to comply with these characteristics.

407.2.5.3 Stone Matrix Asphalt, Asphalt Concrete Stabilizer

(1) Asphaltic Concrete Pavement, Type SMA shall contain an asphaltic concrete stabilizer additive. The asphaltic concrete stabilizer additive shall be either an organic fiber, an inorganic fiber, a polymer-plastic, or a polymer-elastomer. The contractor shall select the additive system, asphaltic binder and stabilizer additive. However, only one type of additive system shall be used in all SMA pavement.

(2) If proposing to use a stabilizer additive not listed in 407.2.5.3(1), the contractor shall submit the proposed additive system and material samples to the department at least 14 days before the project let date. The department will approve or reject that proposed system no later than 48 hours before the project let date.

407.2.6 Reclaimed Asphaltic Pavement Materials

(1) The contractor may use up to 35 percent RAP material in lower layer and base mixtures and up to 20 percent in upper layer mixtures. The combined RAP and virgin aggregate shall meet the aggregate requirements from table 407-1.

407.2.7 Recovered Asphaltic Materials

(1) The percentage of recovered asphaltic materials from RAP shall be established for the mixture design according to AASHTO T 164 using the appropriate dust correction procedure. When test results indicate that a change has occurred in the percentage of RAP, the contractor or the engineer may request a change in the design recovered asphaltic material from RAP. The request shall include at least 2 recent RAP extractions from the contractor's mixture design laboratory.

(2) When PG asphaltic materials are specified in the contract, the contractor may use up to 25 percent RAP for lower layers and up to 20 percent RAP for upper layers without a change in PG grade. If greater amounts of RAP are used, the virgin asphaltic material shall have a low temperature property that is one PG grade lower than designated in the contract, unless contractor or supplier testing indicates that the resultant asphaltic material blend meets the PG grade originally specified in the contract.

407.3 Construction

407.3.1 General

(1) Unless the contract specifies otherwise, the contractor may produce asphaltic concrete mixtures in either a batch or a drum plant. All equipment shall conform to the requirements of section 405.

(2) The construction methods shall be as specified in section 405. All pavements shall be built using the maximum density method unless otherwise specified. Compaction of leveling layers, wedging layers, patching layers, driveways and other non-traffic areas will be accomplished according to the ordinary compaction procedure specified in 405.3.10.2.

407.3.2 Asphaltic Concrete Pavement Density, Maximum Density Method

407.3.2.1 Minimum Required Density

(1) All layers of plant mixed asphaltic mixtures shall be compacted to the percent of the target maximum density shown in table 407-3 for the applicable mixture, location, and layer.

TABLE 407-3 MINIMUM REQUIRED DENSITY[1]

LOCATION	LAYER	PERCENT OF TARGET MAXIMUM DENSITY		
		MIXTURE TYPE		
		E-0.3, E-1, and E-3	E-10, E-30, and E-30x	SMA
TRAFFIC LANES[2]	LOWER	91.5[3]	92.0[3]	94.0
	UPPER	91.5	92.0	94.0
SHOULDERS AND APPURTENANCES	LOWER	89.5	89.5	91.0[4]
	UPPER	90.5	90.5	91.0[4]

[1] The table values are for lot density. If any individual density test result falls below 88% of the target maximum density, the engineer may investigate the acceptability of that material.

[2] Includes parking lanes as determined by the engineer.

[3] Minimum reduced by 2 percent for < 3 million ESALs and one percent for > 3 million ESALs, when the first lift of lower layer constructed on crushed aggregate or recycled base courses.

[4] Minimum density will be 94.0 when the shoulders are paved integrally with the mainline pavement.

407.3.2.2 Pavement Density Determination

(1) The engineer will determine the pavement density using the department's established methods. Before beginning the project the engineer and contractor shall agree on the method, either nuclear density or the density of sawed/cored samples. The engineer will establish random testing locations. When required, the contractor shall cut pavement samples from the completed work with power equipment and restore the surface with new, well-compacted mixture for no additional compensation. Density determinations will be made as soon as it is practical after placement and compaction and before placement of subsequent layers.

(2) Compacted mixtures represented by samples or tests having deficient densities shall not be re-rolled.

(3) The contractor shall not operate below the specified minimum density on a continuing basis. Production shall be stopped until the source of the problem is determined and corrective action is taken to bring the work into compliance with specifications.

(4) A lot shall represent 750 tons (680 Mg) of a mixture placed within a single layer for each location and target maximum density category indicated in table 407-3.

(5) When density is determined by the nuclear method, 5 random tests will be taken on each lot. The department's nuclear testing will be performed by a nuclear density technician certified at level I. When sawed or cored samples are used to determine density, 3 random samples, each at least 28 square inches (18,000 mm^2) in size, will be tested from each lot. The lot density is the average of all samples taken for that lot.

407.3.2.3 Waiving Density Testing

(1) The engineer may waive density testing for one or more of the following reasons:

1. It is not practical to determine density by the lot system.
2. The contract contains less than 750 tons (680 Mg) of a given mixture type placed within the same layer and target maximum density category.

(2) If the department waives density testing, the department will accept the mixture by the ordinary compaction procedure as specified in 405.3.10.2.

407.4 Measurement

(1) The department will measure Asphaltic Concrete Pavement acceptably completed by the ton (Mg) as specified in 405.4.

(2) The department will measure Producing and Stockpiling Aggregates for Asphaltic Concrete Pavement acceptably produced and stockpiled by the ton (Mg) or by the cubic yard (m^3).

407.5 Payment

407.5.1 Asphaltic Concrete Pavement

407.5.1.1 General

(1) The department will pay for Asphaltic Concrete Pavement, as measured above, at the contract unit price subject to one or more of the following adjustments:

1. Disincentive for asphaltic concrete pavement density as specified in 407.5.1.2.
2. Incentive for asphaltic concrete pavement density as specified in or 407.5.1.3.
3. Reduced payment for defective smoothness as specified in 405.5.1.3.
4. Reduced payment for unsatisfactory mixtures as specified in 403.3.8.

(2) For Asphaltic Concrete Pavement, Type E-0.3, E-1, E-3, E-10, E-30, or E-30x, that price is full compensation for providing asphaltic mixture designs, furnishing, preparing, hauling, mixing and placing of all materials, except asphaltic materials; for compacting mixtures; for preparing foundation, unless otherwise provided; and for all labor, tools, equipment, and incidentals, including maintenance, necessary to complete the work.

(3) For Asphaltic Concrete Pavement, Type SMA, that price is full compensation for providing asphaltic mixture designs, furnishing, preparing, hauling, mixing and placing of all materials, including asphaltic materials, asphalt concrete stabilizer, and hydrated lime or liquid antistripping agent when required; for compacting mixtures; for preparing foundation, unless otherwise provided; and for all labor, tools, equipment, and incidentals, including maintenance, necessary to complete the work.

(4) If provided for in the plan quantities the department will measure and pay for a leveling layer, placed to correct irregularities in an existing paved surface before overlaying, under the pertinent paving item. Absent a plan quantity, the department will pay for a leveling layer as extra work.

(5) Except for SMA mixes, the department will pay for asphaltic materials separately under Asphaltic Materials for Plant Mixes as specified in 405.5.2. Except for SMA mixes, hydrated lime or liquid antistripping agent, when required, is included in the contract price for the asphaltic material.

(6) If the department waives density testing under 407.3.2.3, the department will not adjust pay under either 407.5.1.2 or 407.5.1.3.

407.5.1.2 Disincentive for Asphaltic Concrete Pavement Density

(1) If the lot density is less than the specified minimum in table 407-3, the department will reduce pay under Asphaltic Concrete Pavement and Asphaltic Material for Plant Mixes for that lot as follows:

DISINCENTIVE PAY REDUCTION FOR ASPHALTIC CONCRETE PAVEMENT DENSITY

PERCENT LOT DENSITY BELOW SPECIFIED MINIMUM	PAYMENT FACTOR (percent of contract price)
From 0.5 to 1.0 inclusive	98
From 1.1 to 1.5 inclusive	95
From 1.6 to 2.0 inclusive	91
From 2.1 to 2.5 inclusive	85
From 2.6 to 3.0 inclusive	70
More than 3.0	See footnote[1]

[1] The lot shall be removed and replaced with a mixture at the specified density and, when acceptably replaced, will be paid for at the contract unit price per ton (Mg); or the engineer may permit the unacceptable material to remain in place with a 50 percent payment factor.

407.5.1.3 Incentive for Asphaltic Concrete Pavement Density

(1) If the lot density is greater than the minimum specified in table 407-3 and all individual air voids test results for that mixture placed during the same day are within +1.0 percent or - 0.5 percent of the design target in table 407-1, the department will adjust pay for that lot as follows:

INCENTIVE PAY ADJUSTMENT FOR ASPHALTIC CONCRETE PAVEMENT DENSITY

PERCENT LOT DENSITY ABOVE SPECIFIED MINIMUM	PAY ADJUSTMENT PER LOT[1]
From -0.4 to 1.0 inclusive	$ 0
From 1.1 to 1.8 inclusive	$ 300
More than 1.8	$ 600

[1] The department will prorate the pay adjustment for a partial lot.

(2) The department will adjust pay under Density Incentive, Asphaltic Concrete Pavement. Adjustment under this item is not limited, either up or down, to the bid amount shown on the schedule of items.

(3) The department will restrict incentive payment as follows:

1. For shoulders paved integrally with the traffic lane, if the traffic lane does not meet incentive requirements, the department will not pay incentive on the integrally paved shoulder.
2. If part of a lot is started or finished on a day when an individual air void test does not meet the air void criteria of 407.5.1.3(1), the entire lot will not be eligible for incentive.

407.5.2 Producing and Stockpiling Aggregates for Asphaltic Concrete Pavement

(1) The department will pay for Producing and Stockpiling Aggregates for Asphaltic Concrete Pavement, as measured above, at the contract unit price. That price is full compensation for furnishing, producing, crushing, screening, loading, hauling and stockpiling; for preparing the stockpile site; and for furnishing all labor, tools, equipment and incidentals necessary to complete the work.

410.1 Description

Replace the entire text with the following:

(1) Salvaged Asphaltic Pavement consists of the complete removal of existing asphaltic surfacing at the locations required by the contract or as the engineer directs, together with hauling and stockpiling of the salvaged material.

(2) Salvaged Asphaltic Pavement, Milling consists of removing and salvaging existing asphaltic pavement by milling at the location and to the thickness the contract indicates, or the engineer directs, together with hauling and stockpiling the salvaged material.

(3) Unless otherwise required in the contract, all salvaged asphaltic pavement material not incorporated in the work shall become the property of the contractor.

410.3.1 Salvaged Asphaltic Pavement

Replace paragraph one with the following:

(1) The existing asphaltic pavement shall be removed in its entirety, taking all practical care to avoid incorporation of or damage to the underlying materials. Inclusion of excessive amounts of underlying materials or of aggregates from shoulders shall be cause for immediate suspension of the work until corrective procedures are instituted. The asphaltic pavement thus removed shall be stockpiled at a location which will permit incorporation in the asphaltic base, asphaltic pavement or salvaged asphaltic pavement, base course.

Delete paragraphs three and four.

410.3.2 Salvaged Asphaltic Pavement, Milling
Delete paragraphs three, six, and seven.

410.5 Basis of Payment
Replace the entire text with the following:

(1) The department will pay for Salvaged Asphaltic Pavement, as measured above, at the contract unit price. That price is full compensation for removing, hauling, and stockpiling; and for furnishing all labor, equipment, tools and incidentals necessary to complete the work.

(2) The department will pay for Salvaged Asphaltic Pavement, Milling, as measured above, at the contract unit price. That price is full compensation for removal by milling, hauling, and stockpiling, and for furnishing all labor, equipment, tools and incidentals necessary to complete the work.

Add the following section:

SECTION 411. ASPHALTIC SURFACE

411.1 Description

(1) Asphaltic Surface consists of the construction of a plant mixed asphaltic surface on the approved prepared foundation, base course or existing surface in accordance with the specifications and in reasonably close conformity with the lines, grades, thicknesses and typical cross sections the plans show and as the engineer directs.

(2) Asphaltic Surface, Detours consists of furnishing and placing an asphaltic surface conforming to the above requirements at various locations and depths on the detour route, as the plans show and as the engineer directs.

(3) Asphaltic Surface, Patching consists of furnishing and placing an asphaltic surface conforming to the above requirements at various patching locations and depths as the engineer directs.

(4) Asphaltic Surface, Safety Islands consists of furnishing and placing an asphaltic surface at the safety island locations and depths, as the plans show or as the engineer directs.

(5) Asphaltic Surface, Driveways and Field Entrances consists of furnishing and placing an asphaltic surface at the various driveway and field entrance locations and depths, as the plans show or as the engineer directs.

(6) Asphaltic Surface, Temporary consists of furnishing and placing a temporary asphaltic surface at the locations and depths as the plans show or as the engineer directs.

411.2 Materials

(1) The requirements of section 401 shall not apply to this work except as required in section 407 for type E-0.3, E-1, or E-3 mixtures.

411.3 Composition of Mixture

(1) Asphaltic Surface; Asphaltic Surface, Detours; and Asphaltic Surface, Patching shall meet the mixture requirements for either type E-0.3, E-1, or E-3 as specified in section 407.

(2) The asphaltic mixture for the items of Asphaltic Surface, Safety Islands; Asphaltic Surface, Driveways and Field Entrances; and Asphaltic Surface, Temporary consists of an intimate mixture of coarse and fine mineral aggregates, with or without salvaged or reclaimed asphaltic pavement materials, uniformly coated and mixed with a type AC asphaltic material in a suitable mixing plant.

411.4 Construction Methods

411.4.1 General

(1) The requirements of section 403 shall not apply to this work. The requirements of section 405 shall not apply to this work except as hereinafter specified.

(2) The mixture for the items of Asphaltic Surface, Safety Islands and Asphaltic Surface, Patching may be placed by hand methods described in 405.3.9.

411.4.2 Compaction

(1) Compaction for the items of Asphaltic Surface; Asphaltic Surface, Detours; Asphaltic Surface, Patching; Asphaltic Surface, Driveways and Field Entrances; and Asphaltic Surface, Temporary shall be accomplished by the ordinary compaction procedure as described in 405.3.10.2.

(2) Compaction for Asphaltic Surface, Safety Islands shall be accomplished to the extent the engineer directs.

411.4.3 Surface Requirements

(1) The surface produced under the items of Asphaltic Surface; Asphaltic Surface, Detours; and Asphaltic Surface, Temporary shall be tested with a 3 m straightedge and shall show no variation greater than 6 mm from the testing edge of the straightedge between any 2 contracts with the surface. All humps and depressions exceeding the specified tolerance shall be corrected by removing defective work and replacing it with new material or by other methods of repair the engineer approves.

(2) The surface produced under the items of Asphaltic Surface, Patching; Asphaltic Surface, Safety Islands; and Asphaltic Surface, Driveways and Field Entrances shall be smooth and contoured as the engineer directs.

411.5 Maintenance

(1) The contractor shall be responsible for maintaining the asphaltic surface produced under Asphaltic Surface, Temporary. Maintenance shall be done at no additional cost to the department and shall be done to the satisfaction of the engineer for the time period specified in the contract. Maintenance furnished by the contractor shall include all labor, materials, equipment, tools and incidentals needed to accomplish the work.

411.6 Method of Measurement

(1) The department will measure all items described in 411.1 by the ton (Mg) as specified in 405.4.

(2) The department will not measure asphaltic materials, required for and incorporated in the mixture, separately for payment.

411.7 Basis of Payment

(1) The department will pay for Asphaltic Surface; Asphaltic Surface, Detours; Asphaltic Surface, Patching; Asphaltic Surface, Safety Islands; and Asphaltic Surface, Driveways and Field Entrances, as measured above, at the contract unit price. That price is full compensation for providing an asphaltic mixture design, when required; for furnishing, preparing, hauling, mixing and placing of all materials, including asphaltic material and any salvaged or reclaimed asphaltic pavement materials; for compacting the mixture; for preparing the foundation; and for all labor, tools, equipment and incidentals necessary to complete the work.

(2) The department will pay for Asphaltic Surface, Temporary, as measured above, at the contract unit price. That price is full compensation for furnishing, preparing, hauling, mixing and placing all materials, including asphaltic material and any salvaged or reclaimed asphaltic pavement materials; for compacting the mixture; for preparing the foundation; for maintenance during the time period specified in the contract; and for all labor, tools, equipment and incidentals necessary to complete the work.

415.2.2 Concrete

Replace paragraph two with the following:

(2) The contractor shall provide grade A, A2, A3, A-S, A-S2, A-IS, A-FA or A-IP Air-Entrained Concrete, as specified in section 501, except as otherwise specified for Special High Early Strength Concrete Pavement Repair in 416.2.5 and for Concrete Pavement Repair in 416.2.4.

415.2.5 Concrete Curing Agents

Replace the entire text with the following

415.2.5.1 Liquid Membrane-Forming Compounds

(1) The contractor shall provide liquid curing compound conforming to AASHTO M 148, type 2, except for water retention testing. The department will conduct water retention tests according to AASHTO T 155, except as follows:

1. The edges of the specimen will not be sealed.
2. The curing compound will be applied at one gallon per 200 square feet (0.20 L /m^2) of surface or at the manufacturer's recommended rate whichever is greater.

415.2.5.2 Burlap

(1) The contractor shall provide burlap conforming to AASHTO M 182, Class 3 or 4. The contractor may use 2 layers of Class I or 2 in lieu of one layer of Class 3 or 4.

415.2.5.3 (Vacant)

415.2.5.4 Polyethylene Sheeting

(1) The contractor shall provide polyethylene sheeting conforming to AASHTO M 171for white opaque polyethylene film.

415.2.5.5 Polyethylene-Coated Burlap

(1) The contractor shall provide polyethylene-coated burlap conforming to AASHTO M 171 for white burlap-polyethylene sheet.

415.5.4 Consistency

Replace the entire text with the following:

(1) A uniform consistency shall be continuously maintained in consecutive batches of concrete. Slump tests of concrete will be made according to AASHTO T 119. Slump for various techniques shall be as follows:

SLIP-FORMED	NOT SLIP-FORMED WITH INTERNAL VIBRATION	NOT SLIP-FORMED WITH SURFACE VIBRATION
2.5 inches (65 mm) or less	One to 3 inches (25 to 75 mm)	1.5 to 3 inches (38 to 75 mm)

415.5.6.2 Placing Continuous Pavement Reinforcement

Replace the entire text with the following:

(1) After the subgrade has been properly prepared, the bar steel reinforcement shall be placed. The longitudinal bars shall be placed on top of the transverse bars and firmly tied or fastened together at each intersection. The assembled bars shall be supported on bar chairs with bars located at a depth as shown on the plans. The bar chairs shall meet the approval of the engineer and shall be sufficient in strength and number to hold the steel reinforcement in required position during the construction operations.

(2) Splices of longitudinal bars shall be made with the bars lapped as shown on the plans and firmly tied or fastened together. The arrangement of splices shall be as shown on the plans. Additional steel reinforcement as shown on the plans shall be installed at construction joints.

(3) All bar steel reinforcement left protruding from the slab for any extended period of time shall be protected from deterioration caused by exposure.

(4) The bar steel reinforcement shall not be bent or subjected to loading or forces which distort the steel or weaken the bond with the concrete.

(5) Coated bars shall be tied using a procedure, equipment, and materials that will not damage or cut the coating. Ties for use with coated reinforcement shall be an approved plastic or nonmetallic material; stainless steel wire; or nylon, epoxy, or plastic-coated wire.

415.5.8 Transverse Joints

Replace paragraph three with the following:

(3) Dowel bar baskets shall be of an approved type and firmly maintain the dowels in their correct position and alignment during construction. No bonded longitudinal bars or reinforcement shall extend across a transverse expansion or contraction joint.

415.5.9.6.3 Design Speed-65 KM/H Plus

Replace the entire text with the following:

(1) Texture and tine freshly placed pavement as soon as it is practical after floating. Texture with an artificial turf drag as specified in 415.5.9.6.2. Tine with a self-propelled tining machine. Complete before the concrete is torn or unduly roughened by the tining.

(2) Tine with a 10-foot (3.022 m) rake constructed with individual 1/8 inch (3 mm) tines randomly spaced as specified in subsection 8.10 of the department's construction and materials manual. Draw the rake transversely across the full pavement width without overlapping passes. Produce uniformly deep grooves approximately 1/8 to 3/16 inch (3 mm to 5 mm) deep. Provide a finished surface free of defects caused by improper handling of the tining machine.

(3) For rural pavements, the contractor is encouraged to tine at a 1:6 skew, left side forward. Unskewed transverse tining is also acceptable. The contractor may select either skewed or unskewed tining, but must use that pattern exclusively throughout the project.

(4) For urban pavements use unskewed transverse tining.

(5) Where using a tining machine is not practical, randomly tine areas to a similar appearance by hand. Use a rake with individual 1/8 inch (3 mm) tines randomly spaced between 3/8 of an inch (10 mm) and 2 1/4 inches (57 mm).

(6) Restore rain-damaged pavement by redragging or retining if the concrete is still plastic.

415.5.9.8.2 Profilograph

Add the following to the beginning as paragraph one:

(1) The provisions of 415.5.9.8.2 shall be applicable to the work when required by special provision in the contract.

415.5.10 Curing of Concrete

Replace the entire text with the following:

415.5.10.1 General

(1) The contractor shall maintain adequate moisture throughout the concrete mass to support hydration until the concrete has developed sufficient strength to open it to service. The contractor shall cure all concrete by one or a combination of the following methods:

1. Impervious coating.
2. Impervious sheeting.
3. Continuous wet cure.
4. Alternate method approved by the engineer.

(2) If the contractor fails to cure concrete as specified here in 415.5.10, the engineer may suspend concrete placement operations.

415.5.10.2 Impervious Coating Method

(1) After finishing operations, and as soon as the free water has disappeared, the contractor shall spray the concrete surface with a uniform coating of curing compound meeting the requirements for curing agents specified in 415.2.5.1. The contractor shall seal moisture in the concrete by applying a continuous water-impermeable film on all exposed concrete surfaces.

(2) The contractor shall provide sufficient agitation during the spraying operation to ensure uniform consistency and dispersion of pigment within the curing compound as applied.

(3) The contractor shall apply the curing compound with an approved self-propelled mechanical power sprayer where practical. The contractor may use hand-operated spraying equipment for:

1. Irregular, narrow, or variable width sections.
2. Re-coating applications or after form removal.
3. Special applications as approved by the engineer.

(4) For tined surfaces, the contractor shall apply the curing compound uniformly at a minimum rate of one gallon per 150 square feet (0.27 L/m^2). For all other surface finishes, the contractor shall apply the curing compound uniformly at a minimum rate of one gallon per 200 square feet (0.20 L/m^2).

(5) If the curing compound coating is damaged within 72 hours after being applied, the contractor shall recoat the affected area without delay. When forms are removed within 72 hours after placement of the concrete, the contractor shall coat newly exposed surfaces within 30 minutes after form removal.

415.5.10.3 Impervious Sheeting Method

(1) As soon as the concrete has been finished and has hardened sufficiently to prevent excessive marring, the contractor shall cover all exposed concrete surfaces with one or a combination of the following impervious sheeting materials:

1. Polyethylene sheeting meeting the requirements for curing agents specified in 415.2.5. 4.
2. Polyethylene-coated burlap meeting the requirements for curing agents specified in 415.2.5.5. The polyethylene-coated burlap should be prewetted and placed with the uncoated side against the concrete.
3. When approved by the engineer, insulated curing blankets with an impervious coating.
4. Alternate impervious sheeting materials approved by the engineer.

(2) The contractor shall provide sheeting material sufficient to cover all exposed edges, with enough excess to hold the material securely in place by weighting or an alternate anchoring method. The contractor shall provide a minimum of 12 inches (300 mm) overlap between adjacent pieces of

sheeting. The contractor shall place the sheeting material so that it is in direct contact with all exposed concrete surfaces.

(3) The contractor shall maintain the sheeting material in place until the concrete meets the opening criteria specified in 415.5.15. Where temporary removal is required to remove forms or perform other necessary work, the Contractor shall re-cover all exposed concrete as quickly as practical, or as the engineer directs.

(4) If approved by the engineer, the contractor may reuse sheeting materials that are in serviceable condition.

415.5.10.4 Continuous Wet Cure Method

(1) As soon as the concrete has been finished and has hardened sufficiently to prevent excessive marring, the contractor shall spray or fog the exposed surfaces of the concrete to keep it moist until the concrete meets the opening criteria specified in 415.5.15. The contractor may choose to apply a layer of thoroughly wetted burlap to protect the surface from the mechanical impact of the spray.

(2) If there is evidence that the concrete surface is being eroded by the curing water, the engineer will immediately suspend the spraying or fogging. The contractor shall remedy the conditions causing erosion or switch to another curing method.

(3) When ambient temperatures are predicted to fall below 40 F(5 C) within the next 24 hours, the contractor shall suspend continuous wet curing and switch to another curing method.

415.5.10.5 Alternate Curing Methods

(1) If requested by the contractor, the engineer may approve the use of alternate materials or curing methods. If requested by the engineer, the contractor shall supply technical specifications, test results, or performance records to support their proposed alternative method.

415.5.13 Cold Weather and Night Concreting
Replace the subsection heading and the entire text with the following:

415.5.13 Cold Weather Concreting

415.5.13.1 General

(1) The contractor is responsible for the quality of the concrete placed in cold weather. The contractor shall take all precautions necessary to prevent freezing of the concrete until it has developed sufficient strength to open it to service. The contractor shall remove and replace frozen or frost damaged concrete at no expense to the department.

(2) Unless the engineer issues written permission to continue, the contractor shall suspend concreting operations when a descending air temperature in the shade and away from artificial heat falls below 35 F (2 C). The contractor shall not resume concreting operations until an ascending air temperature in the shade and away from artificial heat reaches 30 F (-1 C). The engineer may require the contractor to measure the concrete temperature, at the point of placement, when the ambient air temperature falls below 40 F (5 C). The contractor shall maintain the temperature of the concrete at or above 50 F (10 C) at the point of placement.

(3) If necessary to maintain placement temperature, the contractor may heat the water, aggregates, or both. The contractor shall uniformly heat, with steam or by other means, aggregates that are frozen or contain frost. The contractor shall accurately control the temperature of the mixing water if it is heated. The temperature of either the mixing water or the aggregates shall not exceed 100 F (38 C) when placed together with the cement in the mixer. The contractor shall control the temperature of the water and the aggregates so that the temperature of the concrete discharged from the mixer is between 50 F (10 C) and 80 F (27 C) inclusive.

(4) The contractor shall not: heat the cement, add salt or chemical admixtures to the concrete mix to prevent freezing, or place concrete on a frozen base or subgrade.

415.5.13.2 Protective Covering

(1) The contractor shall arrange to have available a sufficient quantity of material to provide thermal protection for concrete that has yet to meet the opening criteria specified in 415.5.15. The contractor may provide clear, black, or white polyethylene sheeting meeting the requirements, except for color and reflectance, specified in 415.2.5.4. The engineer may allow other curing materials with suitable water resistance, strength, and insulating properties.

(2) When the official Weather Bureau forecast for the construction area predicts temperatures of less than 17 F (-8 C) within the next 24 hours, the contractor shall arrange to have available a sufficient quantity of straw or hay to protect all concrete that has yet to meet the opening criteria specified in 415.5.15. When approved by the engineer, the contractor may use other materials placed to the thickness necessary to provide the same insulating protection as the required thickness of loose, dry straw or hay.

(3) At any time of the year, when the official Weather Bureau forecast for the construction area predicts freezing temperatures within the next 24 hours or when freezing temperatures actually occur, the contractor shall provide the minimum level of thermal protection specified below for concrete that has yet to meet the opening criteria specified in 415.5.15.

PREDICTED OR ACTUAL AIR TEMPERATURE	MINIMUM EQUIVALENT LEVEL OF PROTECTION
22 to <28 F (-6 to <-2 C)	single layer of polyethylene
17 to <22 F (-8 to<-6 C)	double layer of polyethylene
<17 F (<-8 C)	6" of loose, dry straw or hay between 2 layers of polyethylene

(4) The contractor shall place protective material as soon as the concrete has been finished and has set sufficiently to prevent excessive marring of the surface. The contractor shall maintain the protective material in place until the concrete meets the opening criteria specified in 415.5.15. Where removal of the coverings is necessary to saw joints or perform other required work, and if approved by the engineer, the contractor may remove the covering for the minimum time required to complete that work.

415.5.15 Opening to Traffic

Replace the subsection heading and the entire text with the following:

415.5.15 Opening to Service

415.5.15.1 General

(1) The contractor shall maintain moisture, temperature, and physical protection for concrete until it has developed sufficient strength to open it to service. The engineer will use the same criteria to allow the opening of non-pavement concrete items to service as is used to allow the opening of pavement items to traffic.

(2) The engineer will allow the contractor to open pavement to construction and public traffic when the concrete attains a verified compressive strength of 3000 pounds per square inch (20.7 MPa). In the absence of compressive strength information, the engineer may allow the contractor to open pavement upon the expiration of the following minimum time periods as adjusted for changes in the ambient air temperature on the project.

APPLICATION	EQUIVALENT CURING DAYS
High early strength concrete	3
General purpose concrete (Grades A, A2, and A3)	4
General purpose concrete (Grades A-FA and A-IP)	5
General purpose concrete (Grades A-S, A-S2, and A-IS)	7

(3) The equivalent curing day is based on a daily average ambient temperature of 60 F (16 C). The daily average ambient temperature is calculated as the average of the high and low temperatures on the project site, as recorded by the project engineer, for each day. When this daily average ambient temperature falls below 60 F (16 C), equivalent curing days are accumulated at a reduced rate. For a daily average ambient temperature of:

1. 60 F (16 C) or more; accumulate 1 equivalent curing day per calendar day.
2. 40 to less than 60 F (4 to <16 C); accumulate 0.6 equivalent curing day per calendar day.
3. Less than 40 F (<4 C); accumulate 0.3 equivalent curing day per calendar day.

(4) The contractor may operate concrete saws and profilographs on concrete not meeting these opening criteria. When approved by the engineer, the contractor may operate other necessary light equipment on concrete not meeting these opening criteria. The engineer may suspend or delay operations that injure the surface or otherwise damage the concrete. The contractor shall clean the surface before traffic of any kind is permitted to use the pavement.

415.5.15.2 Opening Strength

415.5.15.2.1 General

(1) The contractor shall determine opening strength and provide the engineer with the information required to verify that strength by one or a combination of the following methods:

1. Compressive strength testing of cylinders.
2. Maturity method.
3. Compressive strength testing of cores.

(2) The resulting opening strength, when verified by the engineer, will apply to concrete on the same project meeting the following criteria:

1. Of the same mix design as the test location.
2. Cured under similar or more desirable conditions.
3. Placed on or before the test location.

(3) When neither direct compressive strength test results nor maturity data are available, the engineer may estimate compressive strength based on test results of concrete of the same mix design placed contiguously under similar conditions on the same project.

415.5.15.2.2 Compressive Strength Testing of Cylinders

(1) The contractor shall submit the compressive strength test results to the engineer for verification. The contractor shall compute the opening strength as the average of compressive strength test results for 2 cylinders. When the strength of a cylinder is less than 90 percent of the required strength, the engineer will reject the resulting average. The contractor shall field cure cylinders under conditions similar to those prevailing for the pavement they represent. The contractor shall fabricate cylinders according to AASHTO T 23 and test the cylinders according to AASHTO T 22. The department will consider costs associated with the fabrication and testing of concrete cylinders for the determination of opening strength as incidental to the related concrete bid item.

415.5.15.2.3 Compressive Strength Testing of Cores

(1) The contractor shall submit the core test results to the engineer for verification. The contractor shall determine the opening strength from the compressive strength of cores obtained and tested according to AASHTO T 24. The department will consider costs associated with obtaining and testing cores for the determination of opening strength as incidental to the related concrete bid item.

415.5.15.2.4 Maturity Method

(1) The contractor shall submit the maturity test results to the engineer for verification. The contractor shall determine the opening strength from the maturity of the in-place concrete, according to ASTM C1074, using the temperature-time factor method with a 32 F (0 C) datum temperature. The contractor shall provide the engineer with a strength/maturity calibration curve based on either laboratory developed strength results or on strength results from test slabs incorporated in the project. The contractor shall develop a new strength/maturity calibration curve whenever the mix design is changed. The department will consider costs associated with maturity evaluation for the determination of opening strength as incidental to the related concrete bid item.

415.5.16 Tolerance in Pavement Thickness

Replace the entire text with the following:

415.5.16.1 General

(1) The pavement shall be constructed to the thickness shown on the plans. Determination of the pavement thickness will be based on an acceptance program that considers the results of the following:

1. Contractor Quality Control Tests.
2. Validation of Contractor Quality Control Test Procedures.
3. Verification Tests.
4. Dispute Resolution Process.

(2) Contractor probing of the freshly placed concrete will be the primary method for determination of thickness. Acceptance and payment will be based on the contractor's quality control tests until it can be shown through the validation, verification, or dispute resolution process that the contractor's test results are in error. The required contractor quality control test measurements shall be recorded and will become part of the permanent project record.

(3) Areas with deficient thickness, as defined below, will be determined by coring and accepted and paid for as specified in 415.7.1.2.

415.5.16.2 Definitions

(1) These definitions are used to describe thickness within 415.5.16.

Acceptable	Greater than or equal to the plan thickness minus 3/8 inch (10 mm).
Marginal	Greater than or equal to the plan thickness minus 1 inch (25 mm) but less than the plan thickness minus 3/8 inch (10 mm).
Deficient	Less than the plan thickness minus 1 inch (25 mm).
Measured Thickness	The thickness determined as the average of the contractor quality control measurements taken for a pavement unit.
Final Thickness	The thickness determined after validation, verification, and resolution of disputes for an area of pavement.

415.5.16.3 Pavement Units

(1) Generally, the pavement shall be divided into basic units 250 feet (80 m) long, measured along the pavement centerline. Fractional units less than 250 feet (80 m) but greater than or equal to 100 feet (30 m) long shall be considered a whole basic unit. Fractional units less than 100 feet (30 m) long shall be included as a part of a contiguous basic unit.

(2) The width of a basic unit shall be one lane, as measured from the pavement edge to the adjacent longitudinal joint; from one longitudinal joint to the next; or between pavement edges where there is no longitudinal joint.

(3) Special units shall be established for areas of fillets, intersections, gaps, ramps and other special areas not included in basic units.

415.5.16.4 Contractor Quality Control Tests

415.5.16.4.1 General

(1) The measured thickness of a pavement unit shall be determined as:

1. For a basic unit containing no deficient areas, the average of the 2 required contractor probings made within that unit.
2. For a special unit containing no deficient areas, the average of the available measurements made within that unit as agreed upon by the engineer.
3. For units containing deficient areas, the average thickness of the remaining portion of that unit that has not been defined as deficient. This determination shall be based on adjacent required tests and, if agreed upon by the engineer, may include additional measurements provided by the contractor.

(2) In computing the measured thickness for a unit, individual measurements in excess of the plan thickness by more than 1/4 inch (6 mm) shall be considered as the plan thickness plus 1/4 inch (6 mm).

415.5.16.4.2 Probing Method

(1) The contractor shall make a series of 2 probings for each basic unit. Both probings shall be at a single longitudinal location selected at random. Individual probings shall be at transverse locations as agreed upon by the engineer. The probing locations may be changed as the engineer approves or directs.

(2) All probing tests shall be conducted as prescribed in subsection 13.20.9 of the department's construction and materials manual.

415.5.16.4.3 Alternate Methods

(1) An alternate method, agreeable to the engineer, may be employed to determine the measured thickness of special units. The contractor shall measure the depth of a special unit at a minimum of 2 locations as agreed upon by the engineer. Contractor measurements and a brief description of the method employed shall be recorded and will become part of the permanent project record.

415.5.16.5 Validation of Contractor Quality Control Test Procedures

(1) The engineer will periodically observe the contractor’s testing procedure to assure that the test is being performed properly. At the engineer’s request, the probing assembly shall be brought to the edge of the pavement for the engineer to validate the accuracy of the measurements recorded by the contractor.

415.5.16.6 Verification Tests

(1) The engineer will use probing to verify that the pavement thickness is acceptable. Verification tests will be performed at a frequency of at least once for each half-day of paving. The engineer may elect to increase the verification testing frequency as necessary to assure that the pavement has an acceptable thickness.

(2) The engineer will select a longitudinal location at random and designate the transverse positions for a series of 2 probings in each lane of pavement at that location. The contractor shall perform the probing as prescribed in subsection 13.20.9 of the department's construction and materials manual. The engineer will be present and observe both placement of the plates and probing of the freshly placed concrete.

(3) The engineer will record the individual measurements and calculate the average thickness for each lane. In computing the average thickness for verification tests, measurements in excess of the plan thickness by more than 1/4 inch (6 mm) will be considered as the plan thickness plus 1/4 inch (6 mm). The engineer will make available the results of the verification tests to the contractor without delay.

(4) When verification tests indicate acceptable thickness, the final thickness will be accepted as equal to the contractor's measured thickness for the affected pavement and no further action is required.

(5) When verification tests indicate marginal or deficient thickness and the contractor's tests do not, the contractor and engineer will jointly investigate that discrepancy immediately. If this investigation does not lead to a mutually agreeable explanation of the discrepancy, either the contractor or the engineer may invoke the dispute resolution provisions as specified in 415.5.16.7 to determine the final thickness of the affected pavement.

(6) Where the contractor and engineer agree that the pavement is deficient, the extent of the deficient area will be determined as specified in 415.5.16.10.

415.5.16.7 Dispute Resolution

(1) Resolution of a disputed thickness will be based on coring. Dispute resolution coring will be performed by the engineer according to AASHTO T 24 and evaluated by the engineer according to AASHTO T 148. Costs associated with dispute resolution coring, except costs for filling of the holes with concrete or mortar, will be shared equally by the contractor and the department.

415.5.16.8 Acceptable Areas

(1) When the final thickness of a pavement unit is acceptable, no more measurements are required and that unit will be paid for at the full contract price.

415.5.16.9 Marginal Areas

(1) When the final thickness of a pavement unit is marginal, the pay adjustment for that unit will be contingent upon the final thickness of the next unit in that lane. If the location for the next required random probing series is within 125 feet (40 m) of the first test location, the contractor may select and document a new random location to provide space for corrective action.

(2) If the final thickness of the next unit is acceptable, then no pay adjustments will be assessed for either unit. If the final thickness of the next unit is not acceptable, pay will be adjusted for both units. Pay adjustment will continue for each succeeding unit until a unit with acceptable final thickness is produced.

415.5.16.10 Deficient Areas

(1) Pavement will be considered deficient if one or more of the following is true:

1. An individual required contractor probe measurement is deficient.
2. The outcome of an investigation of a discrepancy between contractor and verification test results indicates a deficient final thickness.
3. A dispute resolution core is deficient.

(2) The engineer will take additional measurements by coring of the hardened concrete to determine the extent of this deficient area. Cores will be taken at points approximately 20 feet (6 m) in each direction of the deficient measurement on a line generally parallel to the centerline or longitudinal axis of the unit. Coring will continue until a core that is not deficient is located in each direction. The limits of the deficient area will be determined, at each end, by lines drawn across the unit of pavement midway between the location of the last 2 cores.

(3) Core testing will be performed by the engineer according to AASHTO T 24 and evaluated by the engineer according to AASHTO T 148. Coring, including filling of the holes with concrete or mortar, shall be paid for by the contractor.

415.7.1 Concrete Pavement

Replace the entire text with the following:

415.7.1.1 General

(1) Except as otherwise specified in 415.7.1.2 for pavement thinner than plan thickness minus 3/8 inch (10 mm), the department will pay for Concrete Pavement, as measured above, at the contract unit price. That price is full compensation for furnishing, hauling, preparing, placing, curing and protecting of all materials, including cement, concrete masonry, joints and joint materials, dowels and tie bars, unless otherwise provided; for preparing foundation, unless otherwise provided; for thickness measurement, except as specified in 415.5.16.7; for filling all core holes; for furnishing, operating, maintaining and repairing a profilograph, performing profilograph testing of the pavement surface, providing all special traffic control required for profilograph testing, and performing all necessary corrective actions and corrective work associated with profilograph testing, all if required by special provision in the contract; and for all labor, equipment, tools and incidentals necessary for constructing the pavement complete, exclusive of reinforcement.

415.7.1.2 Pay Adjustment for Final Thickness

(1) Payment, for pavement units subject to pay adjustment as specified in 415.5.16, will be:

FOR PAVEMENT WITH A FINAL THICKNESS THINNER THAN PLAN THICKNESS BY:	PERCENT OF THE CONTRACT UNIT PRICE
more than 3/8 inch (10 mm) but less than or equal to 1/2 inch (15 mm)	80
more than 1/2 inch (15 mm) but less than or equal to 3/4 inch (20 mm)	60
more than 3/4 inch (20 mm) but less than or equal to 1inch (25 mm)	50

(2) Areas of pavement determined to have deficient final thickness, as specified in 415.5.16.10, shall be either:

1. Removed and replaced by the contractor with concrete pavement of acceptable thickness and paid for at the full contract price.
2. Left in place, if permitted by the engineer, and not paid for.

416.1 Description

Replace paragraph four with the following:

(4) Pavement Terminal Units consists of the construction of pavement terminal units, at the locations and in accordance with the design and details shown on the plans. A pavement terminal unit consists of a reinforced concrete sleeper slab and a structural steel wide flange beam. The work shall conform to the curing requirements for Concrete Pavements specified in 415.5.10.

Replace paragraphs eleven and twelve with the following:

(11) Concrete Surface Drains consists of the construction of concrete surface drains of the design shown on the plans or as modified by the engineer, at the required locations. The work shall conform to the curing requirements for Concrete Pavements specified in 415.5.10.

(12) Concrete Headers consists of construction of a header block extending the full width of the pavement, at the locations and of the design shown on the plans. The work shall conform to the curing requirements for Concrete Pavements specified in 415.5.10.

416.2.1 Pavement Terminal Units

Replace paragraph one with the following:

(1) Concrete masonry used in the work shall conform to the requirements for concrete masonry grade A, A-S, A-IS, A-FA, A-IP, C, C-S, C-IS, C-FA or C-IP as specified under section 501. Reinforcement steel shall conform to the requirements of section 505.

416.2.6 Concrete Pavement Gaps
Replace the entire text with the following:

(1) The contractor shall construct gaps with concrete of the same proportions as specified for the contiguous pavement. If the contractor obtains permission, as specified in 416.3.9, to pave through the gap; the contractor shall provide concrete of the proportions specified for grade E in 501.5.2 and that meets all the other requirements for the contiguous pavement; use grade A or A2 air-entrained high early strength concrete; or substitute grade C air-entrained concrete.

416.3.1 Concrete Pavement Approach Slab
Delete paragraph five.

416.3.7 Concrete Pavement Repair
Delete paragraphs five and six.

416.3.8.5 Curing
Delete the entire text and replace the subsection heading with the following:

416.3.8.5 (Vacant)

416.3.9 Concrete Pavement Gaps
Replace the entire text with the following:

(1) The contractor shall form gaps by constructing a transverse construction joint as specified in 415.5.8 or, if approved by the engineer, by an alternate method. If approved by the engineer, the contractor may elect to pave continuously through the gap.

416.3.10 Continuous Diamond Grinding
Replace paragraph six with the following:

(6) Solid and liquid residue from grinding shall be removed from the roadway by vacuuming. Residue and water shall not be permitted to flow or be blown across lanes used by public traffic; or to enter any storm sewer, stream, lake, reservoir or marsh. Residue and water shall be disposed of at an acceptable material disposal site, except that residue from pavements in rural areas may be disposed of on the roadway, beyond the shoulder edge, in a manner satisfactory to the engineer.

416.5 Basis of Payment
Replace paragraph nine with the following:

(9) The department will pay for Concrete Pavement Gaps, as measured above, at the contract unit price. That price is full compensation for furnishing, hauling and placing all materials used to form the header; for forming the header; and for furnishing all labor, tools, equipment and incidentals necessary to complete the work. If the contractor obtains permission, as specified in 416.3.9, to pave through the gap; the department will pay the full contract price for each gap eliminated. Payment for furnishing and placing concrete material is included under Concrete Pavement.

PART V
STRUCTURES

Add the following new subsection:

501.3.4.4 Non-Chloride Accelerating Admixtures

(1) Non-chloride accelerating admixtures incorporated in concrete masonry shall conform to AASHTO M 194, type C or type E.

501.3.6.3.6 Size Requirements

Replace the entire text with the following:

(1) Fine aggregate shall be well graded from coarse to fine and shall conform to the following gradation requirements:

SIEVE SIZE	PERCENT PASSING BY MASS
3/8 in. (9.5 mm)	100
No. 4 (4.75 mm)	90 - 100
No. 8 (2.36 mm)	80 - 100
No. 16 (1.18 mm)	50 - 85
No. 30 (600 µm)	25 - 60
No. 50 (300 µm)	10 - 30[1]
No. 100 (150 µm)	2 - 10[1]

[1] For fine aggregate used in concrete pavement, base course, or grade E concrete, minima passing the No. 50 (300 µm) and No. 100 (150 µm) sieves may be reduced to 5 and 0 percent, respectively.

501.3.6.4.4 Physical Properties

Replace the entire text with the following:

(1) The department will conduct the wear test according to AASHTO T 96. The percent wear shall not exceed 50.

(2) The department will conduct 5 cycles of the sodium sulfate soundness test, according to AASHTO T 104, on aggregate retained on the No. 4 (4.75 mm) sieve. The weighted loss shall not exceed 12 percent.

(3) The department will conduct freeze-thaw soundness tests, according to AASHTO T 103, on crushed stone aggregates produced from sources in limestone/dolomite formations in specified counties when those aggregates are used in concrete pavements or bridge decks. The department will test aggregate retained on the No. 4 (4.75 mm) sieve using either Method A with 50 cycles, Method B with 16 cycles, or Method C with 25 cycles. The weighted average loss shall not exceed 18 percent.

(4) The department will test material produced from sources in the following counties:

Brown	Fond du Lac	Iowa	Oconto	Walworth
Columbia	Grant	Jefferson	Outagamie	Winnebago
Dane	Green	Lafayette	Rock	
Dodge	Green Lake	Marinette	Shawano	

(5) The department may waive the requirement for soundness testing by freezing and thawing for existing sources determined to be in either the Silurian system or the Prairie du Chien Group of the Ordovician system of rocks in Wisconsin.

(6) The department may prohibit the use of crushed stone from limestone/dolomite deposits having thinly bedded strata or strata of a shalely nature. The department may also prohibit the use of aggregates from deposits or formations known to produce unsound material.

(7) When all coarse aggregates used in the work are produced from the same deposit or source, the tests for wear, sodium sulfate soundness, and soundness by freezing and thawing will be made on a composite sample. The composite sample will contain equal percentages of each component coarse aggregate incorporated in the work. When the component coarse aggregates are produced from more than one deposit or source, the tests for wear, sodium sulfate soundness, and soundness by freezing and thawing will be made on one sample from each deposit or source.

501.3.6.4.5 Size Requirements

Replace paragraph four with the following:

(4) The contractor shall provide coarse aggregate consisting entirely of size No. 1 as follows:

1. When approved by the engineer, for concrete masonry grade A, A2, A3, A-FA, A-IP, A-S, A-S2, or A-IS.
2. Except for concrete pavement repair and when grade C, C-FA, C-S, C-IS, or C-IP is substituted for grade A Air Entrained High Early Strength Concrete as specified in 501.4.1, for concrete masonry grade C, C-FA, C-S, C-IS, or C-IP.
3. When approved by the engineer, for concrete masonry grade D.
4. Except for concrete pavement repair, for concrete masonry grade E.
5. For concrete masonry in prestressed concrete members.

501.3.6.5 Sampling and Testing

Replace paragraph one with the following:

(1) Sampling and testing will be according to the following AASHTO methods, except as revised with the engineer's approval:

Sampling aggregates	T 2
Lightweight pieces in aggregate	T 113
Material finer than No. 200 (75 µm) sieve	T 11
Unit mass of aggregate	T 19
Organic impurities in sands	T 21
Sieve analysis of aggregates	T 27
Effect of organic impurities in fine aggregate	T 71
Los Angeles abrasion of coarse aggregate	T 96
Freeze-thaw soundness of coarse aggregate	T 103
Sodium sulfate soundness of aggregates	T 104
Specific gravity and absorption of fine aggregate	T 84
Specific gravity and absorption of coarse aggregate	T 85
Sampling fresh concrete	T 141
Making and curing concrete compressive strength test specimens	T 23
Compressive strength of molded concrete cylinders	T 22

501.3.7 Fly Ash

Replace paragraph three with the following:

(3) The contractor shall have the fly ash tested by a recognized laboratory as defined in 501.3.3, 30 days prior to the proposed use of the fly ash and every 30 days during the progress of the work. The manufacturer shall have daily uniformity tests conducted on the fly ash. These daily uniformity tests consist of a determination of the specific gravity, percent retained on the 45 mm sieve, loss on ignition, moisture content, sulfur trioxide content, and air content of the mortar. The department may reduce the required frequency of the uniformity testing for specific tests on specific fly ash sources when statistical analysis of current data shows no significant probability of exceeding uniformity or specification limits.

501.3.8 Slag
Replace the entire text with the following:

(1) For grade A-S, A-S2, B-S, and C-S concrete, the contractor shall provide ground granulated blast furnace slag conforming to ASTM C 989, grade 100 or 120.

501.3.9 Pozzolans
Add the following new subsection:

(1) The contractor may use pozzolans as a direct replacement for fly ash in concrete mixes. Conform to the replacement limits specified under 501.5.2 for fly ash. Use only as a complete replacement for fly ash. Do not combine pozzolans or use pozzolans with fly ash in the same mix.

(2) Furnish pozzolans conforming to the physical, chemical, and performance requirements specified for Class C fly ash in ASTM C618, except the definition of origin of the material does not apply. Obtain material from a manufacturer on the department's approved product list with an in-place quality management program that includes the following daily uniformity tests:

- Specific gravity.
- Percent retained on the No. 325 (45µm) sieve.
- Loss on ignition.
- Moisture content.
- Activity index with portland cement.

501.4.3 Grades of Concrete
Replace the entire text with the following:

501.4.3.1 General

(1) Unless otherwise specified in the contract, and except as specified for pre-stressed concrete members in section 503 and for Special High Early Strength Concrete Pavement Repair in 416.2.5, the contractor shall provide the grade of concrete as specified in 501.4.3.2 or 501.4.3.3. When the contractor selects and uses a specific grade of concrete for an item of work, the contractor shall use that grade throughout the entire construction of the item, except as specified in 501.4.3.3 or as approved by the engineer.

501.4.3.2 Special Restrictions

(1) When the geologic composition of the coarse aggregate is primarily igneous or metamorphic materials, the contractor shall provide concrete for concrete pavement, approach slabs, barrier walls, surface drains, driveways, alleys, sidewalks, and curb and gutter as follows:

Grade A, A-FA, and A-S : When type II portland cement is used.

Grade A-S2 : When these items are placed by a slip-formed process and type II portland cement is used.

Grade C, C-FA, C-S, C-IS, and C-IP : When Types I or III portland cement are used.

501.4.3.3 General Use

(1) For all concrete not included under 501.4.3.2, the contractor shall use the grade of concrete for different items of work as follows:

Grade A, A-FA, A-S, A-IS, and A-IP : Except as specified for other grades; for Concrete Pavement, Concrete Masonry in structures, and incidental construction.

Grade A-FA, A-S, A-IS, A-IP and D : Concrete Masonry for structures when used in decks, curbs, railings, parapets, medians and sidewalks.

Grade A2 and A-S2, : For Concrete Pavement, Curb, Gutter, Curb and Gutter, Barrier Wall, or Sidewalk when these items are placed by a slip-formed process.

Grade A3 : For Concrete Pavement and incidental construction on low volume State Trunk Highways and other roads under municipal or local jurisdiction in areas where a proven performance record exists for similar mixes. Use only in locations and applications specifically delineated in the contract.

Grade B, B-FA, B-S, B-IS, and B-IP : For Concrete Base Course.

Grade C, C-FA, C-S, C-IS, and C-IP : For concrete pavement repair and other uses when required in the contract.

Grade D : For Concrete Masonry, Seal modified as specified in 502.3.6.3.

Grade E : For Concrete Masonry overlays and repairs on decks of structures and approaches.

501.5.2 Proportions for Concrete

Replace the "Proposed Master Limits of Job Mix" table with the following:

QUANTITIES FOR A NOMINAL CUBIC YARD[1]

CONCRETE GRADE [2][3][6]	CEMENT[4][5] (lb)	CLASS C FLY ASH (lb)	SLAG[7] (lb)	WEIGHT TOTAL AGG (lb)	PERCENT FINE AGG[8] (% total agg)	DESIGN WATER (gals)	MAXIMUM WATER (gals)
A	565	-	-	3120	30-40	27	32
A2	530	-	-	3190	"	25	30
A3	517	-	-	3210	"	25	30
A-FA[9][10]	395	170	-	3080	"	27	32
A-S[9][10]	395	-	170	3100	"	27	32
A-S2[10]	285	-	285	3090	"	27	32
A-IP[9]	565	-	-	3100	"	27	32
A-IS[9]	565	-	-	3090	"	27	32
B	400	-	-	3300	"	25	31
B-FA[10]	280	120	-	3270	"	25	31
B-S[10]	280	-	120	3280	"	25	31
B-IP	400	-	-	3280	"	25	31
B-IS	400	-	-	3280	"	25	31
C	660	-	-	2980	"	30	36
C-FA	560	100	-	2960	"	30	36
C-S	560	-	100	2970	"	30	36
C-IP	660	-	-	2970	"	30	36
C-IS	660	-	-	2950	"	30	36
D	610	-	-	3040	"	29	34
E	823	-	-	2810	50	32	35

QUANTITIES FOR A NOMINAL CUBIC METER[1]

CONCRETE GRADE [2][3][6]	CEMENT[4][5] (kg)	CLASS C FLY ASH (kg)	SLAG[7] (kg)	WEIGHT TOTAL AGG (kg)	PERCENT FINE AGG[8] (% total agg)	DESIGN WATER (liters)	MAXIMUM WATER (liters)
A	335	-	-	1854	30-40	134	157
A2	315	-	-	1892	"	126	148
A3	307	-	-	1907	"	123	147
A-FA[9][10]	235	100	-	1828	"	134	157
A-S[9][10]	235	-	100	1843	"	134	157
A-S2[10]	169	-	169	1836	"	134	157
A-IP[9]	335	-	-	1840	"	134	157
A-IS[9]	335	-	-	1836	"	134	157
B	237	-	-	1959	"	126	154
B-FA[10]	166	71	-	1940	"	126	154
B-S[10]	166	-	71	1947	"	126	154
B-IP	237	-	-	1947	"	126	154
B-IS	237	-	-	1948	"	126	154
C	392	-	-	1766	"	149	176
C-FA	332	60	-	1757	"	149	176
C-S	332	-	60	1763	"	149	176
C-IP	392	-	-	1763	"	149	176
C-IS	392	-	-	1752	"	149	176
D	362	-	-	1803	"	145	170
E	488	-	-	1667	50	156	171

[1] A "nominal" cubic yard or a "nominal" cubic meter, by definition, has the specified weight of cement and total aggregate, the "design" mix water, and 6.0 percent air.

[2] For all grades, the contractor shall use a water reducing admixture meeting the requirements of 501.3.4.3 and 501.5.4.4.

[3] For all grades, the contractor shall provide air entrainment as specified in 501.5.4.2.

[4] The contractor shall only use type IP cement in grade A-IP, B-IP, and C-IP.

[5] The contractor shall only use type IS cement in grades A-IS, B-IS, and C-IS.

[6] The contractor shall use a water reducing admixture, as specified in 501.5.4.4, for grade D. The contractor shall not use type A (M 194) water reducing admixture when a set retarding admixture is used as required in 501.5.4.3.2.

[7] The contractor shall only use grade 120 slag for grade C-S concrete.

[8] For mixes using crushed stone or recycled concrete coarse aggregate, the engineer may allow up to 45 percent fine aggregate to improve workability.

[9] For bridge substructures, the contractor may use a non-chloride accelerating admixture meeting the requirements of 501.3.4.4.

[10] The fly ash and slag quantities shown in table are the maximums allowable. Calculate required cement and fly ash or slag contents for these mixes if table values are not used as follows: Start with the base cement content for the grade A or B mix and add 1.0 pounds (1.0 kg) or more fly ash or slag for each 1.0 pound (1.0 kg) of cement removed. Minimum fly ash or slag replacement shall be 15% of base cement content.

501.5.5 Fly ash
Delete the entire text and replace the subsection heading with the following:

501.5.5 (Vacant)

501.5.6 Slag
Delete the entire text and replace the subsection heading with the following:

501.5.6 (Vacant)

501.7.4 Admixtures
Replace the entire text with the following:

501.7.4.1 General

(1) Admixtures may be proportioned by volume or by mass. The contractor shall follow an approved procedure for adding the specified amount of each admixture. Admixtures shall be added during initial batching of the concrete except as specified in 501.7.4.2.

(2) When more than one admixture is used, each admixture shall be added in a manner which precludes intermixing of the admixtures prior to incorporation in the mixture. The admixture may be introduced into the water line, directly into the mixer during the introduction of the water or be uniformly dispensed into the fine aggregate just prior to incorporation in the mix.

501.7.4.2 Field Addition of Air-Entraining Admixtures

(1) Retempering with air-entraining admixtures will be permitted at the site of the work for concrete delivered in truck mixers.

(2) When addition of air entraining admixture is needed at the site of the work to raise the air content of the concrete above the lower specification limit, it shall be measured in a calibrated container and then added to the mixer in a dilute solution with water. The concrete shall then be mixed at mixing speed for at least 30 revolutions prior to discharge.

501.8.2 Delivery
Replace paragraph three with the following:

(3) For Ready-Mixed Concrete delivered in agitating vehicles, the contractor shall deliver and completely discharge the concrete within the following limits, beginning when water is added to the cement or when cement is added to the aggregates.

1. 1 hour for air temperature 60 F (16 C) or higher at placement when the contractor does not use an approved retarder.
2. 1.5 hour for air temperature less than 60 F (16 C) at placement.
3. 1.5 hour for air temperature 60 F (16 C) or higher at placement and the contractor uses an approved retarder.

501.8.3 Mixers and Mixing
Replace paragraphs eleven through seventeen with the following:

(11) When concrete is mixed in a truck mixer, the contractor shall mix each batch for 70 or more revolutions at the manufacturer designated mixing speed. No batch shall have more than 300 total revolutions, the sum of the revolutions at mixing and agitating speeds. All materials, including mixing water, shall be in the mixer before revolutions are started.

(12) The mixing water shall be added at the batching plant, but if additional mixing water is required to obtain the specified slump, water may be added with the permission of the engineer. The total of all free and added water shall not be in excess of that permitted elsewhere in these specifications. If additional water is added at the site of the work, a minimum of 20 revolutions of the truck mixer at mixing speed will be required before discharge of any concrete. The additional water shall be added

and the additional mixing done at the site of the work within 45 minutes after the introduction of the mixing water to the cement or the cement to the aggregates. The time limit for adding water and additional mixing may be extended, by the engineer, to 75 minutes for those grades of concrete mixed under the conditions described in 501.8.2 for which the delivery time limit is 1-1/2 hours. When additional revolutions at mixing speed are required because of water added at the site the sum of the revolutions at mixing and agitating speeds shall not exceed 300.

(13) When a truck mixer or agitator is used to transport concrete completely mixed in a stationary mixer, the drum or agitator shall rotate during transportation and until discharge at the agitating speed.

(14) Truck mixers shall be equipped with an approved revolution counter. Unless equipped to control and count revolutions at mixing speed, mixing shall be done at the batching plant or job site with the mixer operated at agitating speed while in transit.

(15) For truck mixers operating from plants erected for the sole purpose of supplying concrete to highway projects, and when the delivery time is short enough so that the maximum number of revolutions at mixing speed cannot be exceeded in transit, the mixer may be operated at mixing speed in transit.

(16) When a stationary mixer is used for partial mixing of the concrete, the mixing time in the stationary mixer may be reduced to the minimum required to intermingle the ingredients, about 30 seconds.

(17) When a truck mixer is used to finish the partial mixing done in a stationary mixer, the contractor shall mix each batch for 50 or more revolutions at the manufacturer designated mixing speed. No batch shall have more than 300 total revolutions, the sum of the revolutions at mixing and agitating speeds.

501.10.1 Slump

Replace paragraph one with the following:

(1) Concrete for structures or placed in forms, except for grade E and as specified in 502.3.6.3 for underwater placement, shall have 2 inch (50 mm) to 4 inch (100 mm) slump when hand-consolidated and one-inch (25 mm) to 4 inch (100 mm) slump when vibrated. The engineer may increase the slump up to 5 inches (125 mm) for difficult, hand-consolidated placements.

501.11 Placing

Replace the entire text with the following:

(1) Except as allowed in 501.8.2 for Ready-Mixed Concrete, the contractor shall place concrete within 30 minutes after the water is first added to the batch. The contractor shall use placement techniques that minimize segregation. The contractor shall batch, mix, place, and finish concrete for a monolithic unit as continuously as possible.

(2) For concrete used in structures, except when used in seals, the contractor shall maintain the temperature of the fresh concrete at or below 80 F (27 C) during placement.

501.12.3.1 General

Replace the entire text with the following:

(1) Unless the engineer directs otherwise, the contractor shall protect all concrete masonry mixed or placed under one or more of the following conditions:

1. Mixing or placement occurs from December 1 through March 31 inclusive.
2. The air temperature is 40 F (5 C) or less.
3. The air temperature is predicted to be 40 F (5 C) or less within 6 days following placement.

(2) The contractor shall protect all concrete for structural masonry from freezing until it has reached a compressive strength of 3500 pounds per square inch (24 MPa). The contractor shall determine compressive strength by one or both of the following methods:

1. Compressive strength testing of field cured cylinders.
2. Maturity of the in place concrete, according to ASTM C1074, using the temperature-time factor method with a 32F (0 C) datum temperature.

501.12.3.2 Mixing
Replace paragraph one with the following:

(1) The contractor shall heat the mixing water, aggregates, or both under one or both of the following conditions:

1. The air temperature is 40 F (5 C) or less at the time of mixing or placement.
2. The air temperature is predicted to be 40 F (5 C) or less within 24 hours following placement.

502.2.3 Liquid Membrane-Forming Compounds
Replace the entire text with the following:

(1) For curing concrete in structures, the contractor shall provide liquid curing compound conforming to AASHTO M 148, type 1-D, Clear or Translucent with Fugitive Dye, except as modified for testing in 415.2.5.1.

502.2.6 Non-Bituminous Joint Sealer
Replace the entire text with the following:

(1) Furnish gray sealant complying with ASTM C920 for nonsagging grade NS, class 25, traffic area use T, and either single-component type S or multicomponent Type M.

502.3.2 Composition of Concrete
Replace paragraph four with the following:

(4) The contractor shall provide the grade of concrete specified in 501.4.3.3.

502.3.5.2 Falsework
Replace paragraph four and the "Grade of Concrete" table with the following:

(4) When field operations are not controlled by cylinder tests, the contractor shall maintain in-place, falsework supporting concrete masonry in bridges, including slabs, beams, girders, arches, or concrete slabs on steel or concrete girders. The contractor may remove that falsework after the following minimum times:

SPAN LENGTH in feet (m)	GRADES A, A-FA, A-S, A-IP, A-IS, or D in days[1]	GRADES A-H.E.S, C, C-FA, C-S, C-IP, or C-IS in days[1]
12 (3.66) or less	7	3
Over 12 (3.66)	14	6

[1] Only count days where the concrete surface temperature did not fall below 40 F (4 C).

502.3.6.1 General
Replace paragraph ten with the following:

(10) Where concrete is conveyed or placed by pumping, the equipment shall be suitable in kind and adequate in capacity for the work. The equipment shall be so arranged that no vibrations result which might damage freshly placed concrete. The operation of the pump shall be such that a continuous stream of concrete without air pockets is produced. When pumping is completed, the concrete remaining in the pipeline, if it is to be used, shall be ejected in such a manner that there

will be no contamination of the concrete or separation of the ingredients. After this operation, the entire equipment shall be thoroughly cleaned.

Add the following between paragraphs ten and eleven as paragraph ten-a:

(10a) When placing concrete by pumping, the contractor shall take action to minimize entrained air loss. The point of discharge from the flexible hose at the end of the boom shall be higher than the lowest point of the flexible hose. When the boom is extended, this may be accomplished by laying part of the flexible hose on the deck. When the flexible hose is completely suspended from the boom, this shall be accomplished by tying the discharge end of the flexible hose back toward the end of the rigid boom to form a partial loop. The engineer may approve alternate methods if the contractor can demonstrate that the air loss in the concrete imparted by the pumping process does not exceed 1.0 percent in any boom orientation.

502.3.6.3 Depositing Concrete Underwater

Replace paragraph two with the following:

(2) The contractor shall provide grade D concrete as specified for concrete masonry in section 501 except that the slump shall be 5 to 9 inches (125 to 225 mm). For concrete used in seals, the contractor may use up to 40 gallons per cubic yard (200 L/m^3) of mixing water.

502.3.9 Curing

Replace paragraphs fourteen through sixteen with the following:

(14) (Vacant)

(15) Concrete Masonry in the inside faces of railings and parapets shall be cured by covering with wetted burlap immediately after the forms are removed and the required surface finish is applied and keeping such covering thoroughly wet for a period of at least four days; or by covering for a like period with thoroughly wetted polyethylene-coated burlap meeting the requirements of 415.2.5.5. Coverings shall be satisfactorily secured along all edges to prevent loss of moisture.

(16) Concrete Masonry in the outside faces of railings, parapets, exterior girders and similar parts of the structure shall be cured by applying membrane curing material immediately after the forms are removed and the required surface finish is applied; or by covering with wetted burlap immediately after the forms are removed and the required surface finish is applied and keeping such covering thoroughly wet for a period of at least four days; or by covering for a like period with thoroughly wetted polyethylene-coated burlap meeting the requirements of 415.2.5.5. Coverings shall be satisfactorily secured along all edges to prevent loss of moisture.

502.3.11.2 Superstructures

Replace the entire text with the following:

(1) When approved by the engineer, the contractor may store small articles or operate necessary light equipment on concrete decks that have cured sufficiently to prevent damage to the concrete. When the in-place strength is determined by testing cylinders, the contractor may operate loaded trucks or heavy equipment on the superstructure after the affected concrete attains a compressive strength of 3500 pounds per square inch (24.2 MPa). In the absence of cylinder test information, the contractor shall not operate loaded trucks or heavy equipment on the superstructure until the affected concrete has cured, under favorable conditions, for at least 21 days. When grade A-FA, A-S, A-IS, or A-IP concrete is used, that period will be extended to 28 days.

(2) The contractor shall determine the attained strength of the concrete as the average of compressive strength test results for 2 cylinders. When the strength of a cylinder is less than 90 percent of the required strength, the engineer will reject the resulting average. The contractor shall field cure cylinders under conditions similar to the most unfavorable conditions prevailing in the portion of the structure they represent.

(3) On structures where the deck concrete conforms to 502.3.11.2(1) and 502.3.11.2(2); the contractor may operate hauling equipment, as necessary to perform subsequent pours, on the structure after curbs or parapets have been in place for 24 hours. For the first 24 hours the contractor shall limit loadings applied directly over the exterior girders to those imposed during concrete unloading operations.

502.3.12 Name Plates
Replace paragraph three with the following:

(3) Each plate shall be rigidly attached to concrete structures by means of 2 lugs at least 75 mm long cast integral with the plate. The plate lugs shall be imbedded or epoxied in the concrete with the outer face of the border flush with the face of the concrete.

502.5.1 Description
Replace paragraphs two and three with the following:

(2) Concrete Masonry Anchors, Type L consists of drilling holes and furnishing and placing epoxy resin cartridges, and placing reinforcing bar anchors of the length and bar size shown on the plan.

(3) Concrete Masonry Anchors, Type S consists of drilling holes and providing either mechanical wedge or epoxy resin anchors of the type and size the plan shows.

502.5.2.2 Anchors, Type S
Replace the entire text, including all three enclosed subsections, with the following:

(1) The contractor shall provide anchors that develop the pullout strength the plans show. When the plans show using reinforcing bars in type S anchors, those bars shall conform to 505.2.3 for High Strength Bar Steel Reinforcement and be epoxy anchored.

(2) As the plans show, the contractor shall provide anchors, bolts, studs, nuts, and washers either hot dipped or mechanically zinc coated according to AASHTO M 232 or AASHTO M 298, respectively, or made of stainless steel.

(3) For epoxied anchors, the contractor shall provide a 2-part epoxy resin mixed according to the manufacturer's recommendations.

502.7.6 Protective Surface Treatment
Replace the entire text with the following:

(1) The department will measure Protective Surface Treatment in square yards (m^2). The quantity measured for payment shall be the actual area of bridge deck and appurtenances treated in accordance with the contract.

502.8.6 Protective Surface Treatment
Replace the entire text with the following:

(1) The department will pay for Protective Surface Treatment, measured as provided above, at the contract unit price. That price is full compensation furnishing and applying all materials, for preparing and cleaning all surfaces, and for furnishing all labor, tools, equipment, and incidentals necessary to complete the work in accordance with the contract.

502.8.7.2 Anchors, Type S
Add the following to the end as paragraph two:

(2) When the plans show using reinforcing bars in type S anchors, the department will pay for those bars separately under the appropriate High Strength Bar Steel Reinforcement or Coated High Strength Bar Steel Reinforcement item described in section 505.

503.2.1 General
Replace the entire text as follows:

(1) Furnish materials conforming to the following:

Bar steel reinforcement ..... section 505

(2) Galvanize, epoxy coat, or furnish non-ferrous materials for all hardware incorporated into the finished structure.

503.2.2 Concrete
Replace paragraph one with the following:

(1) Furnish concrete as specified in section 501. If the design ultimate stress, the plans show as f'_c, is 8000 psi (55.2 MPa) or higher for a prestressed concrete I-type girder, extend all 28-day strength requirements for that girder within section 503 to 56 days.

503.3.2.2.1 Steam Curing
Replace paragraph three with the following:

(3) The temperature within the enclosure during the curing period shall be maintained between 50 F (10 C) and 160 F (71 C). The temperature adjacent to the concrete in different locations within the housing shall not vary more than 20 F (12 C) at any one time.

503.3.2.4 Surface Finish
Replace paragraph one with the following:

(1) Exposed surfaces of prestressed concrete members shall have a sack-rubbed surface finish as specified in 502.3.8.5 before shipment from the plant. Surfaces to be bonded shall have a wire brush or stiff broom finish. After the sack-rubbed finish has adequately cured, approved concrete sealer for non-trafficked surfaces shall be uniformly applied to all sack-rubbed surfaces using the manufacturer's recommended rate and procedures.

Add the following new subsection:

505.2.5 Welded Steel Wire Fabric for Concrete Reinforcement

(1) Welded steel wire fabric for concrete reinforcement shall conform to AASHTO M 55M. The mass and design of the fabric shall be as shown on the plans.

505.2.6 Dowel Bars and Tie Bars
Replace the entire text with the following:

505.2.6.1 General

(1) Furnish coated bars conforming to AASHTO M 31, grade 40 or 60 (300 or 420). For dowel bars and straight tie bars, there is no requirement for bend tests. Assure that the bars are the diameter and length the plans show.

(2) The contractor need not coat or patch sawed ends, sheared ends, cut ends, ends left bare during the coating process, or ends with damaged coating.

(3) The contractor need not repair circumferential coating damage from shipping, handling, or installation, if the following conditions are met:

1. The damaged area is 1/4 inch (6 mm) square or smaller.
2. The total damaged area in any one foot (300 mm) length does not exceed 2 percent of the circumferential area in that length.

(4) Repair all areas of damaged circumferential coating larger than 1/4 inch (6 mm) square. Reject all bars with total damage greater than 2 percent of the bar's circumferential area.

505.2.6.2 Dowel Bars

(1) Coat dowel bars with a thermosetting epoxy conforming to AASHTO M 254, type B. The coating applicator's plant must be certified by the Concrete Reinforcing Steel Institute. Assure that the bars are straight, round, smooth, and free from burrs or other deformations detrimental to the free movement of the bar in the concrete.

(2) Saw or shear dowel bars to the required length. The department will allow shearing only if the coating is not damaged and shearing distortions do not exceed the following:

1. No distorted diameter is more than 0.04 inches (1 mm) greater than the true diameter.
2. No distortion extends more than 0.40 inches (10 mm) from the sheared end.

(3) Apply a surface treatment, or furnish manufacturer treated bars, capable of preventing bond between the epoxy-coated bars and the concrete. Apply field surface treatments when loading bars in the dowel bar inserter or after staking the dowel basket to the grade.

505.2.6.2 Tie Bars

(1) Coat tie bars as specified in 505.2.4 for coated high strength bar steel reinforcement. Assure that the tie bars are the shape the plans show.

(2) Repair, with compatible coating material, the bend location of field-straightened coated tie bars.

505.3.3 Splicing
Add the following to the end as paragraph fifteen:

(15) Sheets of welded steel wire fabric shall overlap each other sufficiently to maintain a uniform strength and shall be securely fastened at the ends and edges. The edge lap shall be not less than one mesh in width.

505.3.4 Placing and Fastening
Replace paragraph ten with the following:

(10) Tie coated bars using a procedure, equipment, and materials that will not damage or cut the coating. Tie coated reinforcement with one of the following:

1. Ties made from an approved plastic or nonmetallic material.
2. Stainless steel wire.
3. Nylon, epoxy, or plastic-coated wire.

506.2.4.3 Casting
Replace paragraph one with the following:

(1) The contractor shall provide a name plate cast to conform to dimensions and details the plans show.

506.2.6.2. Preformed Fabric, Class A
Replace the entire text with the following:

(1) This material consists of preformed fabric pads composed of multiple layers of 8-ounce (227 g) cotton duck impregnated and bound with high-quality natural rubber or of equivalent and equally suitable materials compressed into resilient pads of uniform thickness. The number of plies shall be such as to produce the specified thickness after compression and vulcanizing. The finished pads shall withstand compression loads perpendicular to the plane of the laminations of not less than 10,000 pounds per square inch (69 MPa) without detrimental extrusion or reduction in thickness, under testing conducted in accordance with MIL-C-882E procedures.

506.2.6.3. Non-Laminated Elastomeric

Replace paragraph two and the entire table of required physical properties with the following:

(2) The pads shall conform to the following physical properties:

	NATURAL RUBBER	CHLOROPRENE
Grade (durometer)	60	60
Physical properties		
Hardness (ASTM D 2240)	60±5	60±5
Tensile strength, kPa (ASTM D 412)	15 500	15 500
Ultimate elongation, min. percent	400	350
Heat resistance, 70 hrs. at 70 C (ASTM D 573)		
Hardness, max. points change	+10	+15
Tensile strength, max. percent change	-25	-15
Ultimate elongation, max. percent change	-25	-40
Compression set (ASTM D 395, Method B)		
22 hrs. at 70 C max. percent	25	N.A.
22 hrs. at 100 C max. percent	N.A.	35
Ozone (ASTM D 1149), 20 percent strain,38±1 C, mounting procedure ASTM D 518, method A		
25 pphm ozone in air by volume, 48 hrs.	No cracks	N.A.
100 pphm ozone in air by volume, 100 hrs.	N.A.	No cracks

506.2.6.4.3 Testing

Replace paragraph two with the following:

(2) The pads shall conform to the following physical properties:

	NATURAL RUBBER	CHLOROPRENE
Adhesion test:		
Bond made during vulcanization, (ASTM D 429, method B)	18 kg/25 mm	18 kg/25 mm
Low temperature test:		
Brittleness at -40 C, (ASTM D746, procedure B)	No failure	No failure

507.2.2.6.1 General

Replace paragraph three with the following:

(3) Unless otherwise specifically specified in the contract, the preservative treatment of structural lumber and timber shall be with one of the following: creosote- coal tar solution, a pentachlorophenol solution in petroleum solvent, a chromated copper arsenate solution, an ammoniacal copper arsenate solution, an ammoniacal copper zinc arsenate solution, a copper napthenate solution, or an ammoniacal copper quat solution, except that Coastal Douglas Fir shall not be treated with chromated copper arsenate or ammoniacal copper quat, and Hem-Fir shall not be treated with copper naphthenate.

Add the following to the end as paragraph eleven:

(11) The ammoniacal copper quat solution shall conform to the requirements specified under 507.2.3.8.

Add the following new subsection.

507.2.3.8 Ammoniacal Copper Quat

(1) Ammoniacal copper quat solution used in the preservative treatment of lumber and timber shall conform to type D, as specified in AWPA P5.

508.5.3 Timber Piling, Delivered
Replace paragraph two with the following:

(2) The department will pay for preparing and pointing of salvaged pile cutoffs, designated by the engineer to be used for piling, at a price per piling prepared and pointed. This price will be determined by multiplying the contract unit price for Timber Piling, Delivered, Treated or Untreated, as the case may be, by 5 for US standard measure projects (2 for SI metric projects). This price shall be payment in full for furnishing all labor, tools, equipment and incidentals necessary to prepare the salvaged pile cutoff for driving.

509.1 Description
Replace paragraph three with the following:

(3) The items of Preparation, Decks, Type 1; Preparation, Decks, Type 2; and Preparation, Approaches consists of the removal of all asphaltic patches and unsound or disintegrated areas of concrete decks and approach pavements as the plans show or as the engineer directs.

509.2 Materials
Replace paragraph four with the following:

(4) The contractor shall use concrete for Joint Repair, Curb Repair, and Full Depth Deck Repair conforming to grade C, C-FA, C-S, C-IS, C-IP, D, or E Concrete Masonry as specified in section 501; except as follows:

1. The mix temperature requirement specified in 501.11 shall not apply.
2. The slump of grade E concrete may be increased to 3 inches (75 mm).
3. Ready-Mixed Concrete may be used.

509.4.2 Preparation
Add the following between paragraphs one and two as paragraphs one-a and one-b:

(1a) Under Preparation, Decks, Type 1, existing asphaltic patching and unsound bridge deck concrete shall be removed only to that depth which will expose 1/2 of the peripheral area of the top or bottom bar steel in the top mat of reinforcement.

(1b) Under Preparation, Decks, Type 2, existing unsound bridge deck concrete shall be removed below the limit of the type 1 removal described above. The minimum depth of type 2 removal shall be one inch (25 mm) below the bottom of the top or bottom bar steel in the top mat of reinforcement. Further removal shall be as the engineer directs.

509.4.3 Joint Repair
Replace paragraph two with the following:

(2) The concrete at an existing joint to be replaced shall be removed to the limits the plans show, or as the engineer directs. The bottom edge of the deck shall have a 1/2 inch (13 mm) deep saw cut placed at the line of removal to control concrete breakout or have the line of removal covered by a 1 1/2 inch (38 mm) thick layer of concrete to cover all reinforcing steel exposed during joint repair. The contractor shall use removal equipment that will not cause damage to the portion of the concrete floor, curbs and reinforcing steel that is to remain in place. The contractor shall not use tractor-mounted rams for removal operations within 9 inches (225 mm) of the edge, or within the depth of the slab from the edge, whichever is less.

509.5 Method of Measurement
Replace paragraph two with the following:

(2) The department will measure Preparation, Decks, Type 1; Preparation, Decks, Type 2; and Preparation, Approaches by the square yard (m2) acceptably completed. Areas of type 2 removal will not be subtracted from areas of type 1 removal. Areas of Full Depth Deck Repair directed by the engineer prior to beginning the type 1 or type 2 deck removals will be subtracted from the areas of the type 1 or type 2 removals. Areas of Full Depth Deck Repair directed by the engineer after type 1 or type 2 deck removals are underway will not be subtracted from the areas of the type 1 or type 2 removals. Areas of Joint Repair will not be measured under these items.

509.6.2 Preparation
Replace the entire text with the following:

(1) The department will pay for Preparation, Decks, Type 1, Preparation, Decks, Type 2 or Preparation, Approaches, as measured above, at the contract unit price. That price is full compensation for removing asphaltic patches and unsound concrete; for disposal of waste materials; and for furnishing all equipment, tools, labor and incidentals necessary to complete the work in accordance with the contract.

509.6.6 Full Depth Deck Repair
Replace paragraph one with the following:

(1) The department will pay for Full Depth Deck Repair, as measured above, at the contract unit price. That price is full compensation for the complete removal of the deteriorated concrete areas; for disposal of waste material; for forming; for salvaging and using the existing bar steel reinforcement; and for furnishing all equipment, tools, labor and incidentals necessary to complete work in accordance with the contract. This item will be paid at the contract unit price regardless of whether it is directed by the engineer before or after beginning the type 1 or type 2 removals.

510.5.1 Cast In Place Concrete Piling, Delivered and Driven
Replace paragraph two with the following:

(2) The department will pay for field splices for necessary extensions to ordered and delivered lengths of piling at the total of one splice per pile; if the pile, when delivered, was at least the length shown on the plan, and the spliced pile has been driven and accepted. Splices meeting these qualifying conditions will be paid for at a unit price each, determined by multiplying the contract unit price for Cast In Place Concrete Piling, Delivered and Driven, (Size), by 6 for US standard measure projects (2 for SI metric projects). This price shall be payment in full for performing all welding and for furnishing all labor, tools, equipment, welding materials and incidentals, except lengths of piling, necessary to complete each splice.

511.5 Basis of Payment
Replace paragraph two with the following:

(2) The department will pay for field splices for necessary extensions to ordered and delivered lengths of piling at the total of one splice per pile; if the pile, when delivered, was at least the length shown on the plan, and the spliced pile has been driven and accepted. Splices meeting these qualifying conditions will be paid for at a unit price each, determined by multiplying the contract unit price for Steel Piling, Delivered and Driven, (HP Size Mass), by 9 for US standard measure projects (3 for SI metric projects). This price shall be payment in full for performing all welding and for furnishing all labor, tools, equipment, welding materials and incidentals, except lengths of piling, necessary to complete each splice.

512.4.2 Permanent Steel Sheet Piling, Driven
Replace the entire text with the following:

(1) The department will measure Permanent Steel Sheet Piling, Driven by the square foot (m^2) of wall acceptably completed. The department will measure the area of the wall from the sheet pile tip elevation to the top cutoff. The department will make no allowance for overlap of the piles.

512.4.3 Temporary Steel Sheet Piling
Replace the entire text with the following:

(1) The department will measure Temporary Steel Sheet Piling by the square foot (m^2) of wall acceptably completed. The department will measure the area of the wall from the sheet pile tip elevation to the retained grade elevation plus an additional one foot (300 mm) height of wall above the retained grade. The department will make no allowance for overlap of the piles.

520.3.3 Laying Pipe
Add the following as paragraph four:

(4) At the contractor's option, sealers meeting the requirements of 607.2.3, 607.2.4, 607.2.5 or 607.2.6 may be used instead of the geotextile fabric joint wrap. Construction methods for sealing the joints with these sealers shall comply with 607.3.4. There shall be no additional compensation to the contractor for using sealers instead of geotextile fabric.

520.6 Basis of Payment
Replace paragraph one with the following:

(1) The department will pay for the specified size Culvert Pipe, (Class), Pipe Cattle Pass, or Temporary Culvert Pipe, as measured above, at the contract unit price. That price is full compensation for furnishing, hauling and placing the pipe, including bands, geotextile joint wrap when required, and joint tie when required; for all excavation, including foundation or bed and any associated dewatering; for furnishing and placing Granular Backfill or graded aggregate for granular foundation or cushion; for backfilling, except as provided below; and for furnishing all labor, tools, equipment and incidentals necessary to complete the work. Concrete or stone headwalls will be paid for in accordance with the provisions of the specifications for the items of work involved.

521.6 Basis of Payment
Replace paragraph one with the following:

(1) The department will pay for the specified size Corrugated Steel Culvert Pipe, Corrugated Steel Pipe Arch or Corrugated Steel Pipe Cattle Pass, as measured above, at the contract unit price. That price is full compensation for furnishing, hauling and placing the pipe or pipe arch, including bands and concrete walkway for pipe cattle pass; for all excavation, including foundation or bed and any associated dewatering; for furnishing and placing Granular Backfill or graded aggregate for granular foundation or cushion; for backfilling, except as provided below; and for furnishing all labor, tools, equipment and incidentals necessary to complete the work. Concrete or stone masonry headwalls will be paid for in accordance with the provisions of the specifications for the items of work involved.

522.2.2 Reinforced Concrete Pipe
Replace paragraph one with the following:

(1) The contractor shall provide reinforced concrete pipe for culverts that conforms to AASHTO M 170M, for the class of pipe specified, except for the following requirements. The concrete mixture shall not contain less than 565 lbs of cementitious materials per cubic yard (335 kg/m^3). The combination of cementitious materials used in the concrete shall be one of the following:

- Portland cement only.
- Portland blast furnace slag cement only.
- Portland pozzolan cement only.
- A combination of portland cement and fly ash where the fly ash is between 5 and 25 percent by weight of total cementitious material.
- A combination of portland cement and ground granulated blast furnace slag where the slag is between 5 and 25 percent by weight of total cementitious material.

522.6 Basis of Payment
Replace paragraph one with the following:

(1) The department will pay for the specified size Reinforced Concrete Culvert Pipe (Class) or Reinforced Concrete Pipe Cattle Pass, as measured above, at the contract unit price. That price is full compensation for furnishing, hauling and placing the pipe, including concrete walkway for pipe cattle pass, geotextile joint wrap, and joint ties when required; for all excavation, including foundation or bed and any associated dewatering; for furnishing and placing Granular Backfill or graded aggregate for granular foundation or cushion; for backfilling, except as provided below; and for furnishing all labor, tools, equipment and incidentals necessary to complete the work. Concrete or stone masonry headwalls will be paid for in accordance with the provisions of the specifications for items of work involved.

523.2.2 Reinforced Concrete Horizontal Elliptical Pipe
Replace paragraph one with the following:

(1) The contractor shall provide reinforced concrete horizontal elliptical pipe for culverts that conforms to AASHTO M 207M, for the class of pipe specified, except for the following requirements. The concrete mixture shall not contain less than 565 lbs of cementitious materials per cubic yard (335 kg/m^3). The combination of cementitious materials used in the concrete shall be one of the following:

- Portland cement only.
- Portland blast furnace slag cement only.
- Portland pozzolan cement only.
- A combination of portland cement and fly ash where the fly ash is between 5 and 25 percent by weight of total cementitious material.
- A combination of portland cement and ground granulated blast furnace slag where the slag is between 5 and 25 percent by weight of total cementitious material.

523.6 Basis of Payment
Replace paragraph one with the following:

(1) The department will pay for the specified size Reinforced Concrete Horizontal Elliptical Culvert Pipe (Class), as measured above, at the contract unit price. That price is full compensation for furnishing, hauling and placing the pipe, geotextile joint wrapping, and joint ties when required; for all excavation, including foundation or bed and any associated dewatering; for furnishing and placing Granular Backfill or graded aggregate for granular foundation or cushion; for backfilling,

except as provided below; and for furnishing all labor, tools, equipment and incidentals necessary to complete the work.

524.6 Basis of Payment
Replace paragraph one with the following:

(1) The department will pay for the specified size Salvaged Culvert Pipe, Salvaged Corrugated Steel Pipe Arch or Salvaged Pipe Cattle Pass, as measured above, at the contract unit price. That price is full compensation for excavating and removing pipe from existing location, cleaning and transporting; for all excavation, including foundation or bed and any associated dewatering; for placing pipe, including the furnishing of any necessary new bands; for furnishing and placing Granular Backfill or graded aggregate for granular foundation or cushion; for backfilling, except as provided below; for furnishing and placing geotextile joint wrap when required and joint ties when required and for furnishing all labor, tools, equipment and incidentals necessary to complete the work.

525.6 Basis of Payment
Replace paragraph one with the following:

(1) The department will pay for the specified size Corrugated Aluminum Culvert Pipe, as measured above, at the contract unit price. That price is full compensation for furnishing, hauling and placing the pipe, including bands; for all excavation, including foundation or bed and any associated dewatering; for furnishing and placing Granular Backfill or graded aggregate for granular foundation or cushion; for backfilling, except as provided below; and for furnishing all labor, tools, equipment and incidentals necessary to complete the work. Concrete or stone masonry headwalls will be paid for in accordance with the provisions of the specifications for the items of work involved.

528.6 Basis of Payment
Replace paragraph one with the following:

(1) The department will pay for the specified size Polymer Coated Corrugated Steel Culvert Pipe or Polymer Coated Corrugated Steel Pipe Arch, as measured above, at the contract unit price. That price is full compensation for furnishing, hauling and placing the pipe or pipe arch, including bands; for all excavation, including foundation or bed and any associated dewatering; for furnishing and placing Granular Backfill or graded aggregate for granular foundation or cushion; for backfilling, except as provided below; and for furnishing all labor, tools, equipment and incidentals necessary to complete the work. Concrete or stone headwalls will be paid for in accordance with the provisions of the specifications for the items of work involved.

529.6 Basis of Payment
Replace paragraph one with the following:

(1) The department will pay for the specified size Aluminum Coated Corrugated Steel Culvert Pipe or Aluminum Coated Corrugated Steel Pipe Arch, as measured above, at the contract unit price. That price is full compensation for furnishing, hauling and placing the pipe or pipe arch, including bands; for all excavation, including foundation or bed and any associated dewatering; for furnishing and placing Granular Backfill or graded aggregate for granular foundation or cushion; for backfilling, except as provided below; and for furnishing all labor, tools, equipment and incidentals necessary to complete the work. Concrete or stone headwalls will be paid for in accordance with the provisions of the specifications for the items of work involved.

530.6 Basis of Payment

Replace paragraph one with the following:

(1) The department will pay for the specified size Corrugated Polyethylene Culvert Pipe, as measured above, at the contract unit price. That price is full compensation for furnishing, hauling and placing the pipe, including bands; for all excavation, including foundation or bed and any associated dewatering; for furnishing and placing Granular Backfill or graded aggregate for granular foundation or cushion; for backfilling, except as provided below; and for furnishing all labor, tools, equipment and incidentals necessary to complete the work. Concrete or stone headwalls will be paid for in accordance with the provisions of the specifications for the items of work involved.

PART VI
INCIDENTAL CONSTRUCTION

601.2 Materials
Replace paragraph two with the following:

(2) The contractor shall provide concrete masonry that conforms to the requirements for concrete masonry, grade A, A-2, A-FA, A-S, A-S2, A-IS or A-IP as specified in section 501.

601.4.6 Protection and Curing
Replace paragraph two with the following:

(2) The contractor shall cure the concrete as specified for concrete pavement in 415.5.10.

602.2 Materials
Replace paragraph two with the following:

(2) The contractor shall provide concrete masonry that conforms to the requirements for concrete masonry, grade A, A-2, A-FA, A-S, A-S2, A-IS or A-IP as specified in section 501.

602.3.1.6 Curing and Protection
Replace the entire text with the following:

(1) The contractor shall cure the concrete as specified for concrete pavement in 415.5.10. The contractor shall protect sidewalks as specified for concrete pavement in 415.5.14, except that the engineer may allow the contractor to open sidewalks to pedestrian traffic after the concrete has developed sufficient strength to prevent damage to the surface.

603.1 Description
Replace paragraphs six through nine with the following:

(6) Temporary Precast Concrete Barrier, Contractor Furnished and Delivered, consists of the contractor furnishing, delivering to the worksite(s) within the project, and removing precast reinforced concrete barrier conforming to the shape, dimensions and details shown on the plans.

(7) Temporary Precast Concrete Barrier, State Owned, Contractor Delivered consists of the contractor loading the state owned precast reinforced concrete barrier at the designated site, delivering it to the worksite(s) within the project, and removing and returning it to the designated site.

(8) Temporary Precast Concrete Barrier, Contractor Furnished, Contractor Installed consists of the contractor installing, and subsequently moving and reinstalling, precast reinforced concrete barrier furnished by the contractor. Subsequent moving and reinstalling shall be as identified in the contract or as the engineer directs.

(9) Temporary Precast Concrete Barrier, State Owned, Contractor Installed consists of the contractor installing, and subsequently moving and reinstalling, state owned precast reinforced concrete barrier. Subsequent moving and reinstalling shall be as identified in the contract or as the engineer directs.

603.2 Materials
Replace paragraph two with the following:

(2) The contractor shall provide concrete masonry that conforms to the requirements for concrete masonry, grade A, A-2, A-FA, A-S, A-S2, A-IS or A-IP as specified in section 501.

603.3.3.2 Contractor Furnished and Delivered

Replace paragraph one with the following:

(1) The contractor shall furnish and deliver the temporary precast barrier to project worksites and remove it from the project upon completion of the work. The contractor shall deliver the temporary precast barrier to a project worksite in one of the following ways:

1. Deliver the temporary precast barrier from outside the project.
2. Load the temporary precast barrier onto a truck from a different worksite within the project, haul it, and unload it.

603.3.3.4 State Owned, Contractor Delivered

Replace the entire text with the following:

(1) The contractor shall deliver the state owned temporary precast barrier to project worksites and remove it from the project upon completion of the work. The contractor shall deliver the state owned temporary precast barrier to a project worksite in one of the following ways:

1. Deliver the state owned temporary precast barrier from the state stockpile site.
2. Load the state owned temporary precast barrier onto a truck from a different worksite within the project, haul it, and unload it.

(2) The contractor shall provide connecting pins to connect barrier sections together. The pins shall remain the property of the contractor after completion of the work.

(3) The contractor shall replace missing or damaged reflective delineators with approved reflective delineators at maximum intervals of 25 feet (7.6 m) on the vertical face of the barrier exposed to traffic.

(4) Upon completion of the work, the contractor shall return the state owned precast temporary barrier to the original state stockpile site or to a location designated in the special provisions.

603.4 Method of Measurement

Replace paragraphs two and three with the following:

(2) The department will measure Temporary Precast Concrete Barrier, Contractor Furnished and Delivered or Temporary Precast Concrete Barrier, State Owned, Contractor Delivered, as applicable to the contract, once for each worksite within the project if that delivery includes a truck haul.

(3) The department will measure Temporary Precast Concrete Barrier, Contractor Furnished, Contractor Installed and Temporary Precast Concrete Barrier, State Owned, Contractor Installed by the lineal foot (m), measured in-place along the base of the barrier. The department will measure each initial installation acceptably completed and, where the contract specifies or the engineer directs a move, each re-installation acceptably completed.

603.5.2 Temporary Barrier

Replace the entire text with the following:

(1) The department will pay for Temporary Precast Concrete Barrier, Contractor Furnished and Delivered, as measured above, at the contract unit price. That price is full compensation for furnishing acceptable concrete barrier including reflectors; for delivery; for removal after completion of the work; and for all labor, tools, equipment, materials and incidentals necessary to complete the work, including disposal.

(2) The department will pay for Temporary Precast Concrete Barrier, State Owned, Contractor Delivered, as measured above, at the contract unit price. That price is full compensation for pickup, hauling and, delivery; for furnishing connecting pins; for furnishing and installing necessary reflectors; for removal and return to original pickup site or another designated location after

completion of the work; and for all labor, tools, equipment, materials and incidentals necessary to complete the work.

(3) The department will pay for Temporary Precast Concrete Barrier, Contractor Furnished, Contractor Installed, as measured above, at the contract unit price. That price is full compensation for installing acceptable concrete barrier; and for all labor, tools, equipment and incidentals necessary to complete the work.

(4) The department will pay for Temporary Precast Concrete Barrier, State Owned, Contractor Installed, as measured above, at the contract unit price. That price is full compensation for installing acceptable concrete barrier; and for all labor, tools, equipment and incidentals necessary to complete the work.

604.3.3.1 General

Replace paragraph two with the following:

(2) The contractor shall cure concrete slope paving as specified for concrete pavement in 415.5.10. If the impervious coating method is used, the contractor shall provide clear or translucent membrane curing material as specified in 502.2.3 for curing concrete in structures. During cold weather, the contractor shall protect the concrete as specified in 415.5.13 for concrete pavement.

606.3.4 Grouted Riprap

Replace paragraph two with the following:

(2) The contractor shall place grout from the bottom to the top and the sweep the surface with a stiff broom. After grouting is completed, the contractor shall cure the surface as specified for concrete pavement in 415.5.10. If the impervious coating method is used, the contractor shall provide clear or translucent membrane curing material as specified in 502.2.3 for curing concrete in structures. During cold weather, the contractor shall protect the concrete as specified in 415.5.13 for concrete pavement.

608.2 Materials

Replace paragraph two with the following:

(2) The contractor shall provide reinforced concrete pipe intended for storm sewers that conforms to AASHTO M 170M, for the class of pipe specified, except for the following requirements. The concrete mixture shall not contain less than 565 lbs of cementitious materials per cubic yard (335 kg/m^3). The combination of cementitious materials used in the concrete shall be one of the following:

- Portland cement only.
- Portland blast furnace slag cement only.
- Portland pozzolan cement only.
- A combination of portland cement and fly ash where the fly ash is between 5 and 25 percent by weight of total cementitious material.
- A combination of portland cement and ground granulated blast furnace slag where the slag is between 5 and 25 percent by weight of total cementitious material.

(3) Regardless of the basis of acceptance of the pipe, the placement of reinforcement shall conform to AASHTO M 170M.

610.2 Materials
Replace paragraph two with the following:

(2) The contractor shall provide reinforced concrete horizontal elliptical pipe for storm sewers that conforms to AASHTO M 207M, for the class of pipe specified, except for the following requirements. The concrete mixture shall not contain less than 565 lbs of cementitious materials per cubic yard (335 kg/m^3). The combination of cementitious materials used in the concrete shall be one of the following:

- Portland cement only.
- Portland blast furnace slag cement only.
- Portland pozzolan cement only.
- A combination of portland cement and fly ash where the fly ash is between 5 and 25 percent by weight of total cementitious material.
- A combination of portland cement and ground granulated blast furnace slag where the slag is between 5 and 25 percent by weight of total cementitious material.

611.6 Adjusting Catch Basin, Manhole, and Inlet Covers
Replace paragraph one with the following:

(1) Unless the contract provides otherwise, adjust existing covers, including frames and grates or lids, to the required elevation. Remove the existing fixture, adjust the top of the existing structure, and reinstall the fixture. Support the fixture on a collar of concrete masonry, brick masonry, concrete brick or block masonry, a precast concrete grade ring, or a grade ring from the department's approved product list, constructed to hold the covers firmly in place.

612.6 Basis of Payment
Replace paragraph one with the following:

(1) The department will pay for the specified size Pipe Underdrain (Size); Pipe Underdrain, Unperforated (Size); Pipe Underdrain, Wrapped (Size); Pipe Underdrain, Wrapped and Plowed (Size); or Pipe Underdrain, Drain Tile (Size), as measured above, at the contract unit price. That price is full compensation for furnishing, transporting, handling and placing all materials, including pipe, geotextile wrapping, connections, fittings, rodent screens and caps or plugs; for all excavation, plowing and recompaction, salvage and placement of upper tillable or agricultural soil suitable for supporting vegetation, disposal of surplus material and restoring the site of the work; for all backfill, except as provided below; and for all labor, tools, equipment and incidentals necessary to complete the work. The department will measure and pay for open-graded material required for trench backfill in the edgedrain system for concrete pavements under Crushed Aggregate Base Course, Open Graded No. 1 or No. 2.

614.1 Description
Replace paragraph one with the following:

(1) This work consists of the construction of cable guard fence, steel plate beam guard, steel thrie beam structure approach, anchorages, terminal ends, crash cushions including replacement cartridges, impact attenuators and marker posts; the construction and removal of temporary steel plate beam guard and anchorages; the salvaging of guard fence; and the adjusting of steel plate beam guard; all at the locations and in accordance with the design and details indicated on the plans and provided by the contract.

Add the following to the end as paragraphs twenty-two and twenty-three:

(22) Steel Plate Beam Guard, Slotted Rail Terminal, consists of furnishing and installing slotted rail terminal ends for Steel Plate Beam Guard.

(23) Steel Plate Beam Guard, Energy Absorbing Terminal, consists of furnishing and installing energy absorbing terminal ends for Steel Plate Beam Guard.

Add the following new subsection:

614.2.3.1 Energy Absorbing Terminal

(1) Materials furnished for use in energy absorbing terminals for steel plate beam guard shall conform to the manufacturer's specifications.

Add the following new subsection:

614.3.3.1 Energy Absorbing Terminal

(1) Energy absorbing terminals for steel plate beam guard shall be installed in accordance with the manufacturer's instructions, the plans and pertinent parts of these specifications.

614.4 Method of Measurement

Replace paragraph two with the following:

(2) The department will measure Steel Plate Beam Guard (Class), Temporary Steel Plate Beam Guard, or Adjusting Steel Plate Beam Guard by the lineal foot (m) acceptably completed, measured along the face of the rail element the details show. The department will measure Steel Plate Beam Median Guard by the lineal foot (m) acceptably completed, measured along the centerline of the completed installation.

Replace paragraph four with the following:

(4) The department will measure Marker Posts; Marker Posts for Right of Way; Anchorages for Cable Guard Fence; Anchorages for Steel Plate Beam Guard; Anchorages for Temporary Steel Plate Beam Guard; Anchor Assemblies for Steel Plate Beam Guard; Impact Attenuators; Steel Plate Beam Guard, Slotted Rail Terminal; and Steel Plate Beam Guard, Energy Absorbing Terminal as each individual unit acceptably completed.

614.5 Basis of Payment

Add the following to the end as paragraphs thirteen and fourteen:

(13) The department will pay for Steel Plate Beam Guard, Slotted Rail Terminal, as measured above, at the contract unit price. That price is full compensation for furnishing and installing all materials required under this system; for setting and driving of posts; for all excavation, backfilling and disposal of surplus material; and for all labor, tools, equipment and incidentals necessary to complete the work.

(14) The department will pay for Steel Plate Beam Guard, Energy Absorbing Rail Terminal, as measured above, at the contract unit price. That price is full compensation for furnishing and installing all materials required under the selected system; for setting and driving of posts; for all excavation, backfilling and disposal of surplus material; and for all labor, tools, equipment and incidentals necessary to complete the work.

SECTION 617 HAULING

Replace the entire text with the following:

617.1 Description

(1) This section describes transporting materials from the point of supply to the work site.

617.2 Construction

(1) Haul materials from the pit, crushing plant, quarry, railroad car, or other material source to the work site in an engineer-approved vehicle. The engineer may approve any size or type of vehicle for hauling provided that vehicle conforms to the following:

1. Applicable legal restrictions imposed by other jurisdictions as specified in 107.1.
2. For material specified for measurement by volume in the vehicle, the provisions of 109.1.3.

(2) Conform to additional hauling requirements specified under the individual bid items for the material being hauled.

(3) Unless the contract specifies otherwise, build and maintain private roads, bridges, culverts, and structures as necessary to reach the work site from the material source. Also maintain, repair, and restore previously constructed private roads, bridges, culverts, and structures used to pre-hauling condition.

617.3 Measurement

(1) The department will measure Hauling (Material) by the cubic yard mile (m^3km) acceptably completed. The department will determine the total quantity for payment by multiplying the number of cubic yards (m^3) hauled and placed in each zone by the mile (km) number of the zone. The department will determine mile (km) zones along the shortest and most practical line of haul from the loading point to and along the project. The department will only measure hauling of materials specifically included in a Hauling bid item.

617.4 Payment

(1) The department will pay for measured quantities at the contract unit price under the following bid items:

ITEM NUMBER	DESCRIPTION	UNIT
61701-61710 et seq.	Hauling (Material)	CYMI

(2) Payment for Hauling (Material) is full compensation for hauling the specified materials and, unless the contract specifies otherwise, costs associated with private roads, bridges, culverts, and structures used to haul material under this bid item.

(3) If the contract does not include the Hauling bid item, all hauling is incidental to the related work. Hauling materials not specifically included in a Hauling bid item is also incidental to related work.

620.1 Description

Replace the entire text with the following:

(1) Concrete Corrugated Median consists of the construction of concrete corrugated median including nose section, placed in one course on a prepared foundation, at the locations and in reasonably close conformity with the design, dimensions, lines and grades; all as the plans show and the contract provides.

(2) Concrete Median Blunt Nose consists of construction of a blunt concrete median nose section only, at the locations and to the design the plans show.

(3) Concrete Median Sloped Nose consists of construction of a sloped concrete median nose section only, at the locations and to the design the plans show.

620.3.2 Placing Concrete
Replace paragraph five with the following:

(5) The contractor shall cure the concrete as specified for concrete pavement in 415.5.10.

620.4 Method of Measurement
Replace the entire text with the following:

(1) The department will measure Concrete Corrugated Median by the square foot (m^2), including the nose section, acceptably completed.

(2) The department will measure Concrete Median Blunt Nose and Concrete Median Sloped Nose by the square foot (m^2), for the nose section only, acceptably completed.

620.5 Basis of Payment
Replace the entire text with the following:

(1) The department will pay for Concrete Corrugated Median, as measured above including nose section, and will pay for Concrete Median Blunt Nose or Concrete Median Sloped Nose, as measured above for nose section only, at the contract unit price. That price is full compensation for preparation of foundation, for furnishing all materials, including concrete masonry, joint filler and tie bars; for hauling, placing, consolidating, shaping, finishing, curing and protecting the concrete; for disposal of surplus materials; and for furnishing all labor, tools, equipment and incidentals necessary to complete the work.

621.3.3 Curing and Protecting
Replace the entire text with the following:

(1) The contractor shall cure cast in place concrete monuments for 72 hours by one of the methods described for concrete pavement in 415.5.10.

(2) The contractor shall protect placed concrete monuments as specified for concrete pavement in 415.5.14.

(3) The contractor shall protect cast in place concrete monuments from freezing for 7 days.

622.1 Description
Replace paragraph three with the following:

(3) Asphaltic Shoulder Rumble Strip consists of the construction of milled asphaltic rumble strips on asphaltic concrete pavement shoulders.

622.3 Equipment
Replace the entire text with the following:

(1) For constructing asphaltic shoulder rumble strips, the contractor shall use a rotary head milling machine with a cutting tip pattern that will produce a relatively smooth cut of the size, shape, spacing, and smoothness shown in the plan details. The cutting heads shall be on a suspension independent from that of the power unit to allow the heads to self-align with slopes and irregularities in the shoulder surface. The machine shall have a guidance system that provides consistent alignment of the rumble strips as shown on the plan.

622.4.2 Asphaltic Shoulder Rumble Strip
Replace the entire text with the following:

(1) Prior to beginning the work, the contractor shall demonstrate to the engineer the ability to achieve the desired surface inside each depression without tearing or snagging the asphalt. The contractor shall place rumble strips according to the pattern and shape shown in the plan details. The contractor shall not install rumble strips prior to completion of the shoulder being used for live traffic.

(2) The contractor shall remove milling debris by sweeping or vacuuming prior to opening adjacent lanes to traffic. The contractor shall dispose of wasted material as specified in 204.2.3.

(3) At the end of each working day, the contractor shall remove all equipment and material to a location outside of the clear zone where it does not present a hazard to traffic; and clean the traveled way pavement and shoulder areas by sweeping or vacuuming.

622.5.2 Asphaltic Shoulder Rumble Strip
Replace the entire text with the following:

(1) The department will measure Asphaltic Shoulder Rumble Strip by the lineal foot (m) along each side of the traveled way, from the center of the first groove in a segment to the center of the last groove in that segment, for areas acceptably completed.

622.6.2 Asphaltic Shoulder Rumble Strip
Replace the entire text with the following:

(1) The department will pay for Asphaltic Shoulder Rumble Strip, as measured above, at the contract unit price. That price is full compensation for milling, sweeping or vacuuming, disposing of all waste materials; and for furnishing all labor, equipment, tools, and incidentals necessary to complete the work.

623 CALCIUM CHLORIDE SURFACE TREATMENT
Replace the section heading and the entire text with the following:

623 DUST CONTROL SURFACE TREATMENT

623.1 Description

(1) This section describes applying dust control surface treatment to aggregate bases, shoulders, and other drivable surfaces.

623.2 Materials

623.2.1 General

(1) Furnish either magnesium chloride or calcium chloride in either a liquid or solid state. Furnish solutions that are stable and have less than 1% sediment falling out of solution below 0 F (-18 C).

(2) Provide a certified report of test or analysis from the manufacturer or supplier certifying the composition of the dust control chemical. The department will accept material based on those certifications as specified in 106.3.3.

623.2.2 Magnesium Chloride

(1) Furnish liquid solutions containing 30% or more magnesium chloride by weight, less than 1% calcium chloride by weight, and less than 1% sodium chloride by weight.

(2) Furnish solid containing 47% or more magnesium chloride by weight, less than 1% calcium chloride by weight, and less than 1% sodium chloride by weight.

623.2.2 Calcium Chloride

(1) Furnish liquid solutions containing 38% or more calcium chloride by weight, less than 1% magnesium chloride by weight, and less than 1% sodium chloride by weight.

(2) Furnish solid containing 77% or more calcium chloride by weight, less than 1% magnesium chloride by weight, and less than 1% sodium chloride by weight.

623.3 Construction

(1) The contractor is responsible for dust control on the project as specified in 107.18. Treat vulnerable areas of the project as necessary to control dust from construction equipment and public traffic. Consult with engineer before applying dust control chemical. Apply chemical treatment as the engineer directs.

(2) Arrange to have available, within 24 hours of receiving notice from the engineer, a sufficient supply of dust control chemical to treat those areas of the project that are vulnerable at any time during construction. Also provide, within the same 24 hours, sufficient spreading equipment to apply the chemical. Provide spreading equipment capable of applying the dust control chemical, uniformly and without runoff, over the treated surface at the specified application rate.

(3) After shaping and compacting the surface to be treated, apply a sufficient amount of water to penetrate at least 2 inches (50 mm). After this pre-wetting and while the surface is still moist but not muddy, apply the required amount of chemical uniformly over that surface at the following rate:

1. For liquids, 0.33 gallons or more per square yard (1.5 L/m^2). Do not exceed 0.50 gallons per square yard (2.3 L/m^2).
2. For solids, 1.5 pounds or more per square yard (7.3 kg/m^2). Do not exceed 2 pounds per square yard (9.8 kg/m^2).

(4) Do not apply dust control chemical in the rain, when the official weather bureau forecasts rain within 24 hours, or under other conditions that might result in a significant loss of material.

623.4 Measurement

(1) The department will measure Dust Control Surface Treatment by the square yard (m^2) acceptably completed. The engineer may elect to calculate the square yards for payment using measured volume or weight and applying a conversion factor.

623.5 Payment

(1) The department will pay for measured quantities at the contract unit price under the following bid item:

ITEM NUMBER	DESCRIPTION	UNIT
62302	Dust Control Surface Treatment	S.Y.

(2) Payment is full compensation for furnishing, transporting, and applying the material and pre-wetting water.

625.3.2 Processing Topsoil or Salvaged Topsoil

Replace the entire text with the following:

(1) All areas from which topsoil is procured shall be cleared, if necessary, by means of mowing weeds or other vegetation to a height of approximately 6 inches (150 mm), and freed from any litter such as brush, rock or foreign material of objectionable size or quantity.

(2) The humus-bearing soil shall then be stripped off taking care to avoid incorporation of any underlying sterile soil. The topsoil may then be stockpiled on the right of way or placed directly on the designated areas.

(3) Salvaged Topsoil shall include the removal of suitable humus bearing topsoil from the sites of the proposed roadway embankments within the limits of the assumed one to one slopes extending outward from the outer limits of the finished shoulders. Suitable topsoil lying within these limits necessary to cover the slopes for Salvaged Topsoil or Topsoil shall be removed. Unstable topsoil lying within these limits, in excess of amounts necessary to cover the slopes, shall be removed as specified in 205.3.3 and paid for as Excavation Below Subgrade.

(4) The removal of topsoil from the site of the proposed roadway lying outside of the assumed one to one slopes in embankment areas shall only be paid for under Salvaged Topsoil or Topsoil if that material is necessary to cover the slopes. Salvaged Topsoil in excess of the contract quantity shall be used to supplant the requirements for contract quantities of Topsoil to be furnished by the contractor from sources outside the right of way. Material excavated in excess of the amounts required to cover the slopes shall be disposed of by the contractor with no additional compensation as described in 205.3.11.

628.1 Description

Replace paragraph three with the following:

(3) Erosion Bales: Furnish bales of straw, hay, or other suitable baled material to form erosion control structures other than ditch checks. Install and maintain at locations shown on the plans or as the engineer directs.

Add the following to the end as paragraphs nine through fourteen:

(9) Polyethylene Sheeting: Furnish, install, maintain, and remove polyethylene sheeting at locations shown on the plans or as the engineer directs.

(10) Turbidity Barriers: Furnish, assemble, install, maintain, and remove turbidity barriers at locations shown on the plans or as the engineer directs.

(11) Soil Stabilizer: Furnish soil stabilizer as a soil bonding agent to prevent or minimize erosion. Install on exposed soil surfaces of temporary or permanent slopes as shown in the plans or as the engineer directs.

(12) Furnish, install, maintain, and remove geotextile fabric, and fabric hold down and support systems for inlet protection as shown in the plans or as the engineer directs.

Inlet Protection, Type A: Use around field inlets until establishing permanent soil stabilization and around pavement inlets before placing curb & gutter.

Inlet Protection, Type B: Use on curb & gutter and pavement inlets after placement of the surrounding pavement surfaces.

Inlet Protection, Type C: Use on inlets with curb boxes.

(13) Temporary Ditch Checks: Furnish suitable ditch check materials. Install and maintain at locations shown on the plans or as the engineer directs.

(14) Culvert Pipe Ditch Checks: Furnish, install, and maintain sandbags at the inlet end of culvert pipes at locations shown on the plans or as the engineer directs to control erosion.

628.2.5.1 Geotextile Fabric

Replace the entire text with the following:

(1) The geotextile fabric consists of either woven or non-woven polyester, polypropylene, stabilized nylon, polyethylene, or polyvinylidene chloride. Non-woven fabric may be needle punched, heat bonded, resin bonded, or combinations thereof. All fabric shall meet the following requirements:

TEST REQUIREMENT	METHOD	VALUE[1]
Minimum grab tensile strength In the machine direction	ASTM D 4632	120 lbs. (550 N)
Minimum grab tensile strength In the cross machine direction	ASTM D 4632	100 lbs. (450 N)
Maximum apparent opening size Equivalent standard sieve	ASTM D 4751	No. 30 (600 µm)
Minimum permittivity	ASTM D 4491	0.05 s^{-1}
Minimum ultraviolet stability Percent of strength retained after 500 hours of exposure.	ASTM D 4355	70 %

[1] All numerical values represent minimum/maximum average roll values. (For example, the average of minimum test results on any roll in a lot should meet or exceed the minimum specified values.)

Add the following new subsection:

628.2.7 Sand Bags

(1) The contractor shall provide bags made of canvas, burlap, nylon, or other engineer approved material filled with concrete sand or other engineer approved granular material.

Add the following new subsection:

628.2.8 Polyethylene Sheeting

(1) The contractor shall provide 6 mil (0.152 mm) or thicker polyethylene sheeting conforming to ASTM D 4397.

Add the following new subsection:

628.2.9 Turbidity Barriers

(1) The contractor shall provide barrier made of coated impervious fabric capable of containing all sediment at the location placed. It shall have a cable, with a 5/16 inch (8 mm) or larger diameter, capable of supporting the barrier at the required height above the water. It shall have a self-contained ballast that weighs at least 0.7 pound per foot (1 kg/m). The ballast may be either chain or flexible cable. Barrier ends shall have grommets to lace together adjoining sections. Anchor posts shall be steel fence posts, steel pipes, or steel channels.

(2) The fabric shall meet the following requirements:

TEST REQUIREMENT	METHOD	VALUE[1]
Minimum grab tensile strength	ASTM D 4632	200 lbs (890 N)
Minimum puncture strength	ASTM D 4833	90 lbs (400 N)
Maximum permeability	ASTM D 4491	$1x10^{-7}$ cm/s
Minimum ultraviolet stability Percent of strength retained after 500 hours of exposure	ASTM D 4355	70 %

[1] All numerical values represent minimum/maximum average roll values. For example, the average of minimum test results on any roll in a lot should meet or exceed the minimum specified values.

Add the following new subsection:

628.2.10 Soil Stabilizer

(1) Soil stabilizer Type A is either a cementitious soil binder added to wood cellulose fiber mulch or a bonded fiber matrix. Soil stabilizer Type B is a polyacrylimide.

(2) The contractor shall provide soil stabilizer products selected from the department's erosion control product acceptability list (PAL). Interested parties may obtain copies of the erosion control PAL and prequalification procedure from the bureau of highway construction.

Add the following new subsection:

628.2.11 Inlet Protection

(1) The contractor shall use a type FF geotextile fabric conforming to 645.2.1 except that the fabric shall be polypropylene.

(2) The contractor shall provide type FF geotextile fabrics selected from the department's erosion control product acceptability list (PAL). Interested parties may obtain copies of the erosion control PAL and prequalification procedure from the bureau of highway construction.

628.3.1 General
Replace the entire text with the following:

(1) The contractor shall deliver 25 percent of the plan quantity of Erosion Mat, Erosion Bales, Silt Fence, or manufactured alternative materials for Temporary Ditch Checks as the case may be, to the project site before construction begins unless the engineer directs otherwise. The contractor shall deliver the balance required, based on actual site conditions and determined by consulting with the engineer, in time to install each material as specified in the contract.

628.3.2 Erosion Mat
Add the following to the end as paragraph eight:

(8) Type Urban erosion mat shall not be overlapped with Type Urban or other type erosion mat.

628.3.3 Erosion Bales
Replace the entire text with the following:

(1) The contractor shall place bales at locations the plans show or as the engineer directs. The contractor shall maintain the bales as required including removal and disposal of sediment deposits. The contractor shall remove erosion bales after slopes and ditches are stable and turf develops enough to make future erosion unlikely. The engineer will determine when these criteria are met. The contractor may use bales as mulch. The contractor shall dispose of bales not used as mulch in a manner acceptable to the engineer. The contractor shall reshape ditches; fill sumps and trenches; dispose of excess eroded material; and topsoil, fertilize, and seed the affected area.

628.3.4.2 Inspection and Maintenance
Replace paragraph two with the following:

(2) The contractor shall remove sediment deposits when the build-up exceeds approximately one half the volume capacity of the silt fence. The engineer may order the contractor to remove deposits if the engineer determines that one half the volume capacity of the silt fence has been exceeded. The contractor shall dress, to the existing grade, sediment deposits remaining in place after the silt fence is no longer required. The contractor shall topsoil, fertilize, and seed the affected area.

Add the following new subsection:

628.3.9 Polyethylene Sheeting

(1) The contractor shall secure the sheeting from dislocation by wind or water. Before placement, the contractor shall remove stones, roots, sticks, and other materials that interfere with the sheeting bearing completely on the soil. The contractor shall overlap adjacent sheets a minimum of 3 feet (1 m) in the direction of flow and seal the edges with waterproof tape or other engineer approved method. The contractor shall patch damaged areas with sheeting overlapped a minimum of 3 feet (1 m) and seal the joints with waterproof tape or other engineer approved method. The contractor shall maintain the sheeting and make satisfactory repairs of damaged areas.

(2) Upon completion of the work, the contractor shall remove the polyethylene sheeting. The contractor shall assume ownership of all removed material.

Add the following new subsection:

628.3.10 Turbidity Barriers

(1) The contractor shall place all barriers, before beginning adjacent construction, in a manner that causes minimum disturbance of the stream bed and banks. The barrier shall extend into the stream banks far enough to preclude washing out or erosion around the ends. The contractor shall drive posts securely into the stream bed at 10 foot (3 m) intervals along the alignment of the barrier installation. The contractor shall fasten the barrier to the posts and securely anchor the barrier load lines at the barrier ends and at 10 foot (3 m) intervals between the barrier ends, unless the engineer directs otherwise. The contractor shall provide additional anchoring as necessary to maintain the barrier location during construction operations. The contractor shall install sand bags as the plans show to anchor the barrier to the stream bed. The engineer may require additional sand bags to assure adequate performance. The contractor, as required by permit under 107.19, shall provide and anchor both danger buoys and navigational markers.

(2) The contractor shall maintain the integrity of the barrier as necessary to contain erosion from adjacent construction operations. The contractor shall promptly correct all deficiencies. Maintenance of the barrier includes removing and disposing of accumulations of soil and other detrimental material.

(3) The contractor shall remove the barrier after completion of the adjacent work. The contractor shall delay removal until accumulated soils and other suspended materials are removed and disposed of, and all suspended materials have settled. The contractor shall minimize disturbance of the stream bed and banks during the removal operation.

(4) If the engineer approves, the contractor may substitute sheet pile installed as a part of their construction operation for all or part of the turbidity barrier the plans show. If approved, the department will pay for the plan quantity of turbidity barrier replaced.

Add the following new subsection:

628.3.11 (Vacant)

Add the following new subsection:

628.3.12 Soil Stabilizer

628.3.12.1 Soil Stabilizer Type A

(1) The contractor shall apply soil stabilizer with conventional hydraulic seeding equipment. The contractor shall take care to ensure that surrounding surfaces, structures, signs, trees, and shrubs are not over-sprayed. The engineer will not accept the work until the contractor satisfactorily cleans over-sprayed surfaces. The finished application shall be 3/16 inch (4 mm) to 1/4 inch (7 mm) thick.

(2) For permanent slope applications, the contractor shall sow seed separately, before applying the soil stabilizer, to ensure that the seed has direct contact with the soil.

628.3.12.2 Soil Stabilizer Type B

(1) The contractor shall apply soil stabilizer with conventional hydraulic seeding equipment or by dry spreading. The contractor shall apply the material at the manufacturer's recommended rate unless the engineer directs otherwise.

(2) For permanent slope applications, the contractor shall apply a department approved mulch when the soil stabilizer is applied or after it is applied to protect the seed.

Add the following new subsection:

628.3.13 Inlet Protection

(1) For type C inlet protection the contractor shall use a wooden 2x4, wrapped and secured in type FF geotextile fabric, placed in front of the curb head as the plans show. The wood shall not block the entire opening of the curb box.

(2) For all types of inlet protection, the contractor may provide manufactured alternatives selected from the department's erosion control product acceptability list (PAL). Interested parties may obtain copies of the erosion control PAL and prequalification procedure from the bureau of highway construction.

Add the following new subsection:

628.3.14 Temporary Ditch Checks

(1) The contractor shall construct temporary ditch checks using a double row of erosion bales or a manufactured alternative from the department's erosion control product acceptability list (PAL). The contractor shall place temporary ditch checks across ditches at locations the plans show or as the engineer directs immediately after shaping the ditches or slopes. The contractor shall excavate upstream sumps as the engineer directs.

(2) The contractor shall remove sediment deposits when the build-up exceeds approximately one half the volume capacity of the erosion bale structure. The engineer may order the contractor to remove deposits if the engineer determines that one half the volume capacity of the erosion bale structure has been exceeded. The contractor shall dispose of excess sediment as the engineer directs.

(3) The contractor shall remove ditch checks after the slopes and ditches are stable and the turf develops enough to make future erosion unlikely. The engineer will determine when these criteria are met. The contractor may use bales as mulch. The contractor shall dispose of bales not used as mulch in a manner acceptable to the engineer. The contractor shall reshape the ditch; fill sumps and trenches; dispose of excess eroded material; and topsoil, fertilize, and seed the affected area.

Add the following new subsection:

628.3.15 Culvert Pipe Ditch Checks

(1) The contractor shall install sand bag ditch checks the plans show or as the engineer directs immediately after installing new culverts. The contractor shall place sand bags on the inlet end of the culvert only. The contractor shall maintain the sand bags in place until slopes and ditches are stable and turf develops enough to make future erosion unlikely. The contractor shall remove and dispose of the used sand bags. The contractor shall remove accumulated sediment or spread it to form a surface suitable for seeding.

628.4.5 Silt Fence, Delivered
Replace the entire text with the following:

(1) The department will measure Silt Fence, Delivered by the lineal foot (m) of acceptable fence delivered to the work and measured for payment in 628.4.6.

628.4.6 Silt Fence, Installed
Replace the entire text with the following:

(1) The department will measure Silt Fence, Installed by the lineal foot (m) acceptably completed, measured along the base of the fence, center-to-center of end posts, for each section of fence.

Add the following new subsection:

628.4.13 Sand Bags

(1) The department will not measure sand bags for payment. The department will consider sand bags incidental to the items of work that use sand bags.

Add the following new subsection:

628.4.14 Polyethylene Sheeting

(1) The department will measure Polyethylene Sheeting by the square yard (m^2) of surface acceptably covered. The department will not measure the quantity of material delivered separately.

Add the following new subsection:

628.4.15 Turbidity Barriers

(1) The department will measure Turbidity Barrier by the square yard (m^2) acceptably completed. The department will make no allowance for portions of the turbidity barrier considered as part of the anchorages, required overlaps, or having a bottom flap greater than 48 inches (1200 mm).

(2) If sheet pile is substituted for turbidity barrier as allowed in 628.3.10, the department will measure that Turbidity Barrier as the plan quantity in square yards (m^2) of material replaced.

Add the following new subsection:

628.4.16 Soil Stabilizer

(1) The department will measure Soil Stabilizer, (Type) by the acre (ha) acceptably placed within the limits the contract designates or as the engineer directs.

Add the following new subsection:

628.4.17 Inlet Protection

(1) The department will measure Inlet Protection, (Type) as each individual location and type acceptably installed and completed.

Add the following new subsection:

628.4.18 Temporary Ditch Checks, Delivered

(1) The department will measure Temporary Ditch Checks, Delivered by the lineal foot (m) of acceptable material delivered to the project and measured for payment under 628.4.19.

Add the following new subsection:

628.4.19 Temporary Ditch Checks, Installed

(1) The department will measure Temporary Ditch Checks, Installed by the lineal foot (m) acceptably completed. When erosion bales are used, the department will only measure the length across the ditch, not the length of each row of bales. The department will not measure ditch checks constructed with a single row of bales.

Add the following new subsection:

628.4.20 Culvert Pipe Ditch Checks

(1) The department will measure Culvert Pipe Ditch Checks as each individual location acceptably installed and completed.

628.5.4 Erosion Bales, Installed
Replace paragraph one with the following:

(1) The department will pay for Erosion Bales, Installed at the contract unit price each. That price is full compensation for placing all materials, including stakes; for anchoring the bales; for all excavation, including trenches and sumps; for removing excess sediment during construction; for removal and disposal of the bales and all waste or surplus materials, including eroded materials; for shaping and restoring ditches; and for furnishing all labor, tools, equipment and incidentals necessary to complete the work.

628.5.5 Silt Fence, Delivered
Replace the entire text with the following:

(1) The department will pay for Silt Fence, Delivered, as measured above, at the contract unit price. That price is full compensation for furnishing and delivering acceptable silt fence for the work, including all miscellaneous materials; for protection and storage on the project; and for furnishing all labor, tools, equipment and incidentals necessary to complete the work in accordance with the contract.

628.5.6 Silt Fence, Installed
Replace the entire text with the following:

(1) The department will pay for Silt Fence, Installed, as measured above, at the contract unit price. That price is full compensation for erecting fence, including all excavation, placing of posts, backfilling, and attaching geotextile fabric; for removing the fence at completion of the project; and for furnishing all labor, tools, equipment and incidentals necessary to complete the work in accordance with the contract.

Add the following new subsection:

628.5.13 Polyethylene Sheeting

(1) The department will pay for Polyethylene Sheeting at the contract unit price. That price is full compensation for furnishing and delivering the polyethylene sheeting to the project site; for storing on the project; for installing the sheeting; for all excavation and backfilling; for the securing the sheeting and sealing the edges of the sheeting; for removal and disposal of the sheeting and surplus materials; and for all labor, tools, equipment and incidentals necessary to complete the work.

Add the following new subsection:

628.5.14 Turbidity Barriers

(1) The department will pay for Turbidity Barriers at the contract unit price. That price is full compensation for furnishing, assembling, installing, maintaining, and removing the turbidity barrier; and for all labor, tools, equipment, sandbags, buoys, navigational markers, anchors, anchor ropes and incidentals necessary to complete the work.

(2) If sheet pile is substituted for turbidity barrier as allowed in 628.3.10, the department will pay for the plan quantity of Turbidity Barrier replaced.

Add the following new subsection:

628.5.15 Soil Stabilizer

(1) The department will pay for Soil Stabilizer, (Type) at the contract unit price. That price is full compensation for furnishing, mixing, and applying soil stabilizer; and for all labor, equipment, tools and incidentals necessary to complete the work.

Add the following new subsection:

628.5.16 Inlet Protection

(1) The department will pay for Inlet Protection, (Type) at the contract unit price each. That price is full compensation for furnishing, transporting, and installing all materials; for maintaining and removing the Inlet Protection, (Type) devices; and for furnishing all labor, tools, and equipment necessary to complete the work.

Add the following new subsection:

628.5.17 Temporary Ditch Checks, Delivered

(1) The department will pay for Temporary Ditch Checks, Delivered, as measured above, at the contract unit price. That price is full compensation for furnishing and delivering the ditch check material, including stakes, to the project site; for protection and storage on the project; and for furnishing all labor, tools, equipment, and incidentals necessary to complete the work.

Add the following new subsection:

628.5.18 Temporary Ditch Checks, Installed

(1) The department will pay for Temporary Ditch Checks, Installed, as measured above, at the contract unit price. That price is full compensation for installing and removing ditch checks at project completion or as the engineer directs; for repairing and reseeding damaged areas; for disposal of all surplus and waste material; and for furnishing all labor, tools, equipment, and incidentals necessary to complete the work.

(2) The department will not pay for installing ditch checks if constructed of a single row of erosion bales.

Add the following new subsection:

628.5.19 Culvert Pipe Ditch Checks

(1) The department will pay for Culvert Pipe Ditch Checks, as measured above, at the contract unit price each. That price is full compensation for furnishing and installing sand bags; for all excavation; for removal and disposal of the sand bags and all waste, surplus, or eroded materials; for shaping and restoring the area; and for furnishing all labor, tools, equipment, and incidentals necessary to complete the work.

630.2.1.5.1.1.1 Composition

Revise the entry for Salt Grass in the first table of paragraph two as follows:

SPECIES COMMON NAME	SPECIES BOTANICAL NAME	ACCEPTABLE VARIETIES
Salt Grass	Puccinella distans	Fult's
	Puccinella distans	Salty

631.1 Description

Replace paragraph two with the following:

(2) The contractor shall provide the type of sod the plan designates or the engineer directs consistent with the following criteria:

Lawn Sod: Use in areas where the property owner will provide all necessary maintenance, including mowing, fertilizing, and watering, and where the primary objective is for aesthetics. Do not use in urban or suburban areas where maintenance is limited to mowing by the property owner or municipality.

Erosion Control Sod: Use on limited areas of a project where a quick stand of vegetation is desired for erosion control purposes, or in urban or suburban areas where the primary objective is aesthetics, but where maintenance is limited to mowing.

Erosion Control Sod, Sandy Soil: Use in the same areas as Erosion Control Sod, but where sandy or gravelly soils predominate.

Add the following to the end as paragraph three:

(3) Watering Sodded Areas consists of furnishing and applying water to sodded areas.

631.2.1 Sod

Add to the end as paragraphs five through seven:

(5) Lawn Sod shall have a lush appearance, be dense, have a uniform texture, and be bright in color throughout. The sod shall not contain blade widths of 1/4 inch (7 mm) or greater. The sod shall be weed free and shall contain no more than 3/8 inch (10 mm) of thatch over the base soil. The sod shall consist of a blend or mix of at least 4 fine-leafed turfgrasses. At least 2/3 of the grasses by mass, as determined by initial seeding proportions, shall be of improved/elite type Kentucky bluegrass varieties.

(6) Erosion Control Sod shall be a low maintenance type, dense, and of uniform texture. The sod shall be free of noxious weeds and shall contain a combined total of 3 percent or less grassy weeds, sedges, broadleaf weeds, or coarse grasses. The sod shall consist of a blend or mix of at least 4 fine-leafed turfgrasses. At least 70 percent of the grasses by mass, as determined by initial seeding proportions, shall be of acceptable low maintenance varieties or species as listed by the UW Extension. This list may be obtained from the UW Madison, horticulture department, turfgrass extension.

(7) Erosion Control Sod, Sandy Soil shall meet all requirements for Erosion Control Sod and shall be commercially produced on soil having 10 percent or less organic matter by mass.

631.4 Method of Measurement

Replace paragraph one with the following:

(1) The department will measure sodding items by the square yard (m^2) acceptably placed within the limits designated in the contract or as the engineer directs. The following are sodding items:

- Lawn Sod.
- Erosion Control Sod.
- Erosion Control Sod, Sandy Soil.

631.5.1 Sodding
Replace paragraph one with the following:

(1) The department will pay for sodding items, as measured above, at the contract unit price. That price is full compensation for preparing the earth bed; for furnishing, placing, staking, and rolling the sod; for watering unless otherwise provided; and for all labor, equipment, tools, and incidentals necessary to complete the work. The following are sodding items:

- Lawn Sod.
- Erosion Control Sod.
- Erosion Control Sod, Sandy Soil.

633.2.1 Delineator Posts
Replace paragraph one with the following:

(1) Posts shall be a flanged channel section of approximately the plan design, weigh 1.12 pounds per lineal foot (1.67 kg/m) or more before zinc coating, and be made of steel with the following properties:

Minimum tensile strength .....50 ksi (345 Mpa)
Minimum tensile yield strength.....36 ksi (250 Mpa)
Minimum elongation .....5.0 percent in 2 inches (50 mm)

633.2.3.2 Reflecting Requirements
Replace paragraph one with the following:

(1) Regardless of reflector orientation, the brightness of each reflector shall equal or exceed the following:

DIVERGENCE ANGLE in degrees	ENTRANCE ANGLE in degrees	MINIMUM SPECIFIC INTENSITY in candela/foot-candle (cd/lx)	
		CRYSTAL	YELLOW
0.1	0	115 (10.7)	70 (6.5)
0.1	20	45 (4.2)	25 (2.3)

636.1 Description
Replace the entire text with the following:

(1) This item of work consists of the construction of concrete masonry footings intended for supporting structural steel sign supports or sign bridges, in conformity with the requirements of the plans and specifications. Structural steel sign supports and sign bridges are described in section 641.

636.3.4 Placing Grout for Sign Bridges
Delete the entire text and replace the subsection heading with the following:

636.3.4 (Vacant)

636.5.1 Concrete Masonry
Replace paragraph one with the following:

(1) The department will pay for Concrete Masonry, Sign Supports, as measured above, at the contract unit price. That price is full compensation for furnishing, transporting, placing and curing the concrete; for furnishing and removing casing when applicable; for furnishing and installing required ground rods; for all required excavation; for placing post stubs or anchor bolts, and for furnishing and placing electrical conduit if required; for clean-up, repair of damage and disposal of excavation and surplus materials; and for furnishing all labor, tools, equipment and incidentals necessary to complete the work.

637.2.2.2 Type H Reflective Sheeting

Replace paragraph one with the following:

(1) Type H reflective sheeting shall comply with the following specification and minimum requirements:

Specification:	ASTM D 4956-93b.
Type:	III
Class:	1
Reflectivity:	2
Durability:	2200 hours (except orange and reboundable sheeting) 500 hours (orange and reboundable sheeting)
Color:	As specified in ASTM D 4956-93b

641.1 Description

Replace the entire text with the following:

(1) This work consists of furnishing and erecting sign bridges and sign supports fabricated from aluminum or structural steel, or combination thereof, consisting of trusses, crossarms, columns, braces, walkway supports, walkway, grating, handrails, guard chains, poles, mast arms, anchor bolts and all incidentals and accessories necessary to complete the work in accordance with the requirements of the plans and specifications. The furnishing and placing of signs or lighting of signs, or placing of concrete supports, except as specified hereinafter for Overhead Sign Support, Structure ____, will not be a part of this work.

(2) Sign Bridge, Single Pole Sign Support, One Sign, Structure ____ consists of furnishing and erecting single pole sign supports with attachments for signs facing in one direction.

(3) Sign Bridge, Single Pole Sign Support, Two Signs, Structure ____ consists of furnishing and erecting single pole sign supports with attachments for signs facing in opposite directions.

(4) Sign Bridge, Cantilevered, Structure ____ consists of furnishing and erecting cantilevered sign bridges with a single supporting structure.

(5) Sign Bridge, Structure Mounted, Structure ____ consists of furnishing and erecting sign bridges mounted on overhead roadway bridges.

(6) Sign Bridge, Structure ____ consists of furnishing and erecting sign bridges with multiple supporting structures.

(7) Overhead Sign Support, Structure ____ consists of furnishing and erecting commercially designed sign supports, fabricated from aluminum or steel, consisting of pole shafts, mast arms, anchor bolts, hardware, concrete supports and all other items necessary to complete the work in accordance with the requirements of the plan layout details and the contract.

641.2.9 Overhead Sign Supports

Replace the entire text with the following:

(1) Provide commercially fabricated sign supports designed for an 85 mile per hour (137 km/h) wind load. Conform to AASHTO design and fabrication standards for structural supports for highway signs. Submit shop drawings, design computations, and materials specifications to the engineer before erecting sign supports. Have a registered professional engineer sign and seal those drawings and certify that the design conforms to AASHTO standards and the contract.

(2) Provide steel pole shafts and mast arms that are zinc coated according to ASTM A 123. Provide bolts and other hardware conforming to 641.2.2.

(3) Provide concrete sign support bases conforming to 636.2 constructed as the plan details show. If the plan does not show design details for the sign support base, design the base and construct as that design specifies.

(4) For contractor-designed bases, include the following as a part of the sign support shop drawings:

1. Base size and configuration.
2. Reinforcing steel size and layout.
3. Elevations of the top of each concrete base pad.
4. Elevation of the roadway high point immediately under the sign.

(5) Also for contractor-designed bases, specify the following in the sign support shop drawings:

1. Concrete base pads protrude 2 inches (50 mm) or less above ground level.
2. Concrete compressive strength is 3500 psi (24.1 MPa) or more.
3. Reinforcing steel conforms to AASHTO M 31 for Grade 60 (420).
4. Anchor bolts conform to AASHTO M 314 for Grade 55.

641.3.3 Steel Sign Bridges
Replace paragraph six with the following:

(6) (Vacant)

641.4 Method of Measurement
Replace the entire text with the following:

(1) The department will measure the following items as a single lump sum unit for each sign bridge acceptably completed:

Sign Bridge, Single Pole Sign Support, One Sign, Structure ____

Sign Bridge, Single Pole Sign Support, Two Signs, Structure ____

Sign Bridge, Cantilevered, Structure ____

Sign Bridge, Structure Mounted, Structure ____

Sign Bridge, Structure ____

(2) The department will measure Overhead Sign Support, Structure ____ as a single lump sum unit for each overhead sign support acceptably completed.

641.5 Basis of Payment
Replace the entire text with the following:

641.5.1 Sign Bridges and Single Pole Sign Supports

(1) The department will pay for the following items, as measured above, at the contract lump sum price for:

Sign Bridge, Single Pole Sign Support, One Sign, Structure ____

Sign Bridge, Single Pole Sign Support, Two Signs, Structure ____

Sign Bridge, Cantilevered, Structure ____

Sign Bridge, Structure Mounted, Structure ____

Sign Bridge, Structure ____

(2) That price is full compensation for furnishing all materials, including anchor bolts, dampeners when required in the structure plans, but not including concrete supports paid for separately as described in section 636; for fabricating, including all cutting, preparing, welding and zinc coating; for transporting and erecting; and for furnishing all labor, tools, equipment and incidentals necessary to complete this item of work in accordance with the contract.

641.5.2 Overhead Sign Supports

(1) The department will pay for Overhead Sign Support, Structure ____, as measured above, at the contract lump sum price. That price is full compensation for designing the sign support structure and, if the plans do not show base details, designing the concrete sign support base; for excavating; for furnishing all materials, including anchor bolts, pole shafts, mast arms, required reinforcing steel, and concrete; for fabricating, including all cutting, preparing, welding, and zinc coating; for placing and curing concrete; for transporting and erecting; and for furnishing all labor, tools, equipment, and incidentals necessary to complete this item of work in accordance with the contract.

642.2.1 General

Add the following to the end as paragraphs three and four:

(3) A first aid kit shall be supplied by the contractor in each field office and field laboratory provided under the contract. The kits shall be readily accessible to project personnel. The contents of each kit shall be checked at least once each week and expended items shall be replenished. Each kit shall contain, at a minimum, a supply of latex or nitrile gloves, CPR masks, adhesive tape, pressure and cling bandages, antiseptic wipes, bite/sting swabs, cold packs, and safety goggles.

(4) In situations where the eyes or body of a worker may be exposed to corrosive or potentially harmful materials, the contractor shall provide emergency use facilities capable of flushing the eyes or drenching the body of an exposed worker with water for 15 minutes.

643.1 Description

Replace paragraph one with the following:

(1) This work consists of furnishing, erecting, maintaining, moving and removing traffic signs, including demountable legend plaques, pavement markings, drums, barricades, flexible tubular markers, arrow boards, lights and signals. This work shall be done in accordance with the latest revision of Part VI, Traffic Controls for Construction and Maintenance Operations of the Wisconsin Manual on Uniform Traffic Control Devices except as noted hereafter, the contract, and as the engineer directs. Sign sizes smaller than the standard sizes described in the manual shall not be used except where there are space limitations and as permitted in the manual.

643.2.1 General

Replace the entire text with the following:

(1) Furnish materials conforming to the MUTCD and maintain traffic control devices as follows:

1. Keep the retroreflective sheeting on drums, barricades and other devices clean.
2. Promptly correct scratches, rips and tears in the sheeting.
3. Correct or replace devices that have large areas of abrasion, missing reflective sheeting, asphalt splatter, concrete slurry or other residue.
4. Replace devices that have excessive color fading.
5. Do not use devices that are fractured, punctured, dented or deformed severely enough to affect their overall dimensions, stability, visibility or reflectivity.
6. Maintain the retroreflectance of all drums, posts and barricades at a level not less than 50 percent of the minimum value specified in 637.2.2.2 for type H reflective sheeting.

643.2.2.1 General

Replace paragraph one with the following:

(1) Provide arrow boards conforming to the MUTCD requirements for type C arrow panels.

643.2.4 Drums

Replace the entire text with the following:

(1) Provide nonmetallic reflectorized traffic control drums fabricated to accept type C or type A warning lights. All drums must meet the crashworthiness criteria of NCHRP Report 350, test level 3. If the engineer requests, furnish a letter from the manufacturer or distributor certifying that those crashworthiness criteria are met.

(2) Provide reflective sheeting on all drums. The reflective sheeting material must:

1. Be designed specifically for use on reboundable traffic control devices.
2. Conform to 637.2.2.2 for type H reflective sheeting.
3. Have received a good or better rating in AASHTO's 1-year NTPEP tests for shrinkage, cracking, blistering, colorfastness, reflectivity, adhesion, flexibility, and impact resistance.

(3) Weight each drum with sand bags or other engineer-approved material to keep the drum in its intended location. Do not fasten together or otherwise alter two-piece drums to perform in a way not intended by the manufacturer.

643.2.5 Barricades

Replace the entire text with the following:

(1) Provide reflective sheeting on all barricades. The reflective sheeting material must:

1. Be designed specifically for use on rigid traffic control devices.
2. Conform to 637.2.2.2 for type H reflective sheeting.
3. Have received a good or better rating in AASHTO's 1-year NTPEP tests for shrinkage, cracking, blistering, colorfastness, reflectivity, adhesion, and impact resistance.

(2) On National Highway System routes, barricades must meet the crashworthiness criteria of NCHRP Report 350, test level 3. If the engineer requests, certify in writing that those crashworthiness criteria are met. Include the FHWA acceptance letter WZ-number in that written certification.

(3) For type III barricades with no sign attached, provide barricades 8 feet (2.4 m) long unless the contract indicates otherwise or the engineer approves otherwise. For type III barricades with a sign attached, provide barricades 4 feet (1.2 m) or longer.

643.2.6.1 Flexible Tubular Marker Posts

Replace paragraphs two and three with the following:

(2) Flexible tubular marker posts shall be made with materials resistant to extreme temperature changes in the range of -29 C to 71 C, ultraviolet light, ozone, hydrocarbons, stiffening with age, and a series of direct wheel impacts with speeds varying up to 105 km/h, and having the capability of immediately restoring itself to a vertical position when struck by a standard vehicle. Flexible tubular marker posts shall be selected from an approved products list maintained by the department. A current list of approved products may be obtained from the technology advancement unit of the bureau of highway construction. The posts shall meet the crashworthiness criteria of NCHRP report 350, test level 3. Upon request of the engineer, the contractor shall furnish a letter from the post manufacturer or distributor which certifies that the posts meet the NCHRP 350 crashworthy requirements. The posts shall exhibit good quality and shall be free of burns, discoloration, contamination and other objectionable marks or defects which affect appearance or serviceability.

(3) The reflective sheeting for the flexible tubular marker posts shall meet or exceed the requirements of 637.2.2.2 and shall be suitable for use on reboundable traffic control devices. The sheeting shall have had acceptable performance, good evaluation ratings, in 1-year tests in AASHTO's National Transportation Product Evaluation Program (NTPEP), with regard to shrinkage, cracking, blistering, colorfastness, reflectivity, adhesion, flexibility, and impact resistance.

643.2.6.3 Tests
Delete the entire text and replace the subsection heading with the following:

643.2.6.3 (Vacant)

643.2.7 Hand Signaling Devices
Replace the entire text with the following:

(1) The sign paddle shall be the primary hand-signaling device. Flag use shall be limited to emergency situations. The sign paddle shall be mounted on a rigid handle with a 5-foot (1520 mm) minimum mounting height to the bottom of the sign.

643.2.8.1 General
Replace paragraph one with the following:

(1) The contractor may alter the message on standard construction signs by applying demountable plaque overlays or direct-applied, pressure-sensitive sheeting overlays. Do not apply more than one overlay per sign. Do not encompass more than one line of the sign message with the overlay. On W20-5 or W20-58 series signs, 2 overlays may be used to independently alter the right/left lane message and the ahead/distance message.

Add the following to the end as paragraphs four and five:

(4) Furnish sign face material for overlays that matches the base sign reflective sheeting material.

(5) Do not use sign overlays for non-word messages, except for the lane reduction transition sign, WO4-2.

643.2.8.2 Demountable Plaque Overlay
Replace paragraph two with the following:

(2) The sign face material for the plaque shall be reflective sheeting meeting the requirements of 637.2.2.1 or 643.2.12.

643.2.8.3 Sheeting Overlay
Replace the entire text with the following:

(1) The sheeting overlay shall be a pressure-sensitive sheeting meeting the requirements of 637.2.2.1 or 643.2.12.

Add the following new subsection:

643.2.12 Signs

643.2.12.1 General

(1) Sign layouts shall be according to the FHWA's Manual of Standard Highway Signs, unless the plans show otherwise.

(2) Use the materials and methods specified in section 637 for type II signs to manufacture and assemble signs with the following modifications:

1. The contractor may furnish exterior grade A-B plywood 1/2-inch (13 mm) or thicker as a sign base.
2. If using sheet aluminum as a base for signs wider than 35 inches (890 mm) mounted on barricades, provide a thickness of 0.100 inches (2.5 mm) or thicker.
3. Conform to 643.2.12.2 for signs with fluorescent orange prismatic sheeting.
4. Orange work zone traffic control signs mounted on portable sign supports may be fluorescent retroreflective roll-up signs as specified in 643.2.12.2.

(3) Standard construction signs shall have all messages and borders stenciled directly on the sign background, except as specified in 643.2.8 for sign overlays.

(4) The sign face material for signs R1-1 "Stop" R1-2 'Yield", R5-1 "Do Not Enter", and R5-1a or R5-9 "Wrong Way" shall conform to 637.2.2.2. All other sign face material shall conform to 637.2.2.1,

except as specified in the contract or except as specified hereinafter for orange work zone traffic control signs.

(5) Retroreflective sheeting on signs shall be kept clean. Scratches, rips and tears in the sheeting shall be corrected promptly by the contractor. Signs with abrasions, asphalt splatter, or concrete slurry on the sign face such that the message or any letters are illegible, shall be corrected or replaced. Signs with noticeable color fading shall be replaced.

(6) The retroreflectance of all signs, except orange work zone traffic control signs, shall be maintained at a level not less than 75 percent of the minimum value required in 637.2.2.1 for signs with standard reflective sheeting and not less than 50 percent of the minimum value required in 637.2.2.2 for signs with type H reflective sheeting.

643.2.12.2 Orange Work Zone Traffic Control Signs

(1) The sign face material for orange work zone traffic control signs shall be fluorescent orange prismatic retroreflective sheeting having an initial coefficient of retroreflection of not less than 100 cd/1x/m^2 at a 0.2 degree observation angle and a - 4 degree entrance angle, and 64 cd/1x/m^2 at a 0.5 degree observation angle and a - 4 degree entrance angle. The sheeting color shall comply with the following chromaticity coordinates and luminance factor:

LUMINANCE

1		2		3		4		Factor (Y%)	
X	Y	X	Y	X	Y	X	Y	Min.	Max.
0.583	0.416	0.523	0.397	0.560	0.360	0.631	0.369	28	---

(2) The sheeting color and initial coefficient of retroreflection shall be verified by independent testing as required by the department.

(3) The following work zone traffic control signs do not need to have fluorescent orange prismatic sheeting; materials meeting the requirements of 637.2.2.1 may be used:

1. G20-2a "End Road Work" signs.
2. M4-9/M4-8 series "Detour" signs, and MO5-x/MO6-x arrow plaques used in detour sign assemblies.
3. Special fixed message signs as specified in 643.2.11.
4. Orange plaques which supplement or cover a portion of existing green guide signs.

(4) Fluorescent orange prismatic sheeting shall be applied to new plywood bases, new aluminum bases, or reconditioned aluminum bases which have had all previous sheeting materials removed. Existing signs with prismatic sheeting shall not have their messages removed and new messages reapplied to the sign face except as specified for overlays in 643.2.8. Signs mounted on portable sign supports may be fluorescent retroreflective roll-up signs which meet or exceed the coefficient of retroreflection requirements of 643.2.12. Portable sign supports used with fluorescent retroreflective roll-up signs shall comply with the crashworthiness criteria of NCHRP Report 350, Test Level 3. Upon request of the engineer, the contractor shall provide written certification from the sign support distributor or manufacturer that the portable sign support was manufactured in accordance with a design accepted by the FHWA as meeting the NCHRP 350, test level 3 crashworthy requirements.

(5) The retroreflectance of all signs with fluorescent orange prismatic sheeting shall be maintained at a level not less than 50 cd/fc/ft^2 (50 cd/lx/m^2) at a 0.2 degree observation angle and - 4.0 degree entrance angle, and 32 cd/fc/ft^2 (32 cd/lx/m^2) at a 0.5 degree observation angle and - 4.0 degree entrance angle. The retroreflectance of all other orange signs shall be maintained at a level not less than 75 percent of the minimum value required in 637.2.2.1 for standard reflective sheeting.

643.3.4 Signs
Add the following to the end as paragraph two:

(2) Install post-mounted temporary traffic control signs with the bottom of the sign 7 feet (2.1 m) or higher above the top of curb or near edge of pavement. In rural areas with no view obstructions, the contractor may reduce the minimum mounting height to 5 feet (1.5 m). Mount associated secondary signs no lower than one foot (0.3 m) below these minimums.

643.3.5.2 Types A (Low Intensity Flashing) and C (Steady Burn)
Replace paragraph one with the following:

(1) Install type A or type C warning lights on traffic control drums, barricades, and signs as the contract specifies or the engineer directs. Warning light attachments must meet the crashworthiness criteria of NCHRP Report 350, test level 3 as follows:

1. Traffic control drums: Firmly affix the warning light to the drum with vandal resistant hardware. If the engineer requests, furnish a letter from the manufacturer or distributor certifying that the NCHRP crashworthiness criteria are met.
2. Barricades used on National Highway System routes: If the engineer requests, certify in writing that the NCHRP crashworthiness criteria are met.

Add the following to the end as paragraph three:

(3) Type A lights are not required on signs with fluorescent or non-fluorescent orange prismatic retroreflective sheeting.

643.3.7 Sign Message Overlays
Replace paragraph three with the following:

(3) Non-word messages cannot be a sign overlay, except for the lane reduction transition sign, WO4-2.

643.3.12 Fixed Message Signs
Add the following to the end as paragraph two:

(2) Install post-mounted fixed message signs at the height specified in 643.3.4. If the sign is larger than 50 square feet (5 m^2), install with the bottom of the sign 7 feet (2.1 m) or higher above the ground.

643.5.1 Traffic Control
Replace paragraph one with the following:

(1) The department will pay for Traffic Control, as measured above, at the contract lump sum price. That price is full compensation for constructing, assembling, painting, hauling, erecting, re-erecting, maintaining and removing traffic signs, drums, barricades and similar control devices, including arrow boards, unless otherwise provided; for furnishing, placing and maintaining lights and signals, including the fuel or power, unless otherwise provided; for furnishing, applying and removing pavement markings, unless otherwise provided; and for all labor, tools, equipment, services and incidentals necessary to complete the work.

645.2.4 Geotextile Fabric, Type DF (Drainage Filtration)
Replace paragraph one and the associated tables of physical requirements with the following:

(1) The fabric shall comply with the physical requirements of either schedule A, schedule B, or schedule C as the contract specifies.

SCHEDULE A TEST	METHOD	VALUE[1]
Grab tensile strength, N	ASTM D 4632	500 min.
Puncture strength, N	ASTM D 4833	175 min.
Apparent breaking elongation, %	ASTM D 4632	30 min.
Apparent opening size, µm	ASTM D 4751	300 max.
Permittivity, s^{-1}	ASTM D 4491	0.70 min.

SCHEDULE B TEST	METHOD	VALUE[1]
Grab tensile strength, N	ASTM D 4632	800 min.
Puncture strength, N	ASTM D 4833	300 min.
Apparent breaking elongation, %	ASTM D 4632	30 min.
Apparent opening size, µm	ASTM D 4751	300 max.
Permittivity, s^{-1}	ASTM D 4491	1.35 min.

SCHEDULE C TEST	METHOD	VALUE[1]
Grab tensile strength, N	ASTM D 4632	800 min.
Puncture strength, N	ASTM D 4833	300 min.
Apparent breaking elongation, %	ASTM D 4632	15 min.
Apparent opening size, µm	ASTM D 4751	600 max.
Permittivity, s^{-1}	ASTM D 4491	1.00 min.

645.2.6 Geotextile Fabric, Type R (Riprap)
Replace the entire text with the following:

(1) The fabric shall comply with the following physical properties:

TEST	METHOD	VALUE[1]
Grab tensile strength, N	ASTM D 4632	900 min.
Puncture strength, N	ASTM D 4833	350 min.
Apparent breaking elongation, %	ASTM D 4632	15 min.
Apparent opening size, µm	ASTM D 4751	600 max.
Permittivity, s^{-1}	ASTM D 4491	0.12 min.

645.2.7 Geotextile Fabric, Type HR (Heavy Riprap)
Replace the entire text with the following:

(1) The fabric shall comply with the following physical properties:

TEST	METHOD	VALUE[1]
Grab tensile strength, N	ASTM D 4632	1350 min.
Puncture strength, N	ASTM D 4833	450 min.
Apparent breaking elongation, %	ASTM D 4632	15 min.
Apparent opening size, µm	ASTM D 4751	600 max.
Permittivity, s^{-1}	ASTM D 4491	0.40 min.

646.2.3.1 General
Replace paragraph four with the following:

(4) The beads shall be essentially free from surface scratching or scarring and have a minimum of 75 percent true spheres.

646.2.4.4.3 Qualification
Replace the entire text with the following:

(1) The contractor shall provide a material that has demonstrated good performance on department. projects.

(2) If the epoxy material has not been used previously on a department project or is a "new improved" version of an accepted formula, the manufacturer shall submit to the bureau of highway operations 2 months before the bid date, the following for the proposed material:

1. A list of 2 or more successful installations, in the United States, at least 2 years old with at least 8 km of line.
2. A chemical composition report.
3. The manufacturer's application recommendations.

(3) The list of locations in item one of 646.2.4.4.3(2) shall include the project identification; length of the project; the contracting agency name; and the name, address, and telephone number of a contact person for each project.

(4) The bureau of highway operations will designate at least 8 km of line on a department project for field performance evaluation. The proposed material must meet the department's minimum retroreflectivity and durability requirements for one year in service. General approval will require further performance evaluation on one additional project

646.4.2 Applying Painted Markings
Add the following to the end as paragraph three:

(3) The paint shall be applied according to the manufacturer’s recommendation for minimum pavement temperature.

646.4.7 Locating No-Passing Zones
Replace paragraph four with the following:

(4) The sight distance requirements shall conform to the following:

SPEED CRITERIA in miles per hour (km/h)	SPOTTING SIGHT DISTANCE in feet (m)	MINIMUM DISTANCE BETWEEN ZONES in feet (m)
25 or 30 (40 or 50)	528 (160)	528 (160)
35 or 40 (55 or 65)	686 (210)	528 (160)
45 or 50 (70 or 80)	845 (260)	660 (201)
55 (90)	1108 (340)[1]	792 (240)
Where authorized	1373 (420)	792 (240)

[1]The district traffic section shall be consulted before spotting the no-passing zone.

647.1 Description
Replace paragraph eleven with the following:

(11) Pavement Marking, Curb, consists of the furnishing and application of reflectorized curb marking of the specified color, configuration and material. The contractor shall mark the vertical face and top of the curb.

649.2.3 Reflectorized Paint
Replace the entire text with the following:

(1) The paint shall be commercially available solvent-borne or waterborne paint intended for marking traffic lanes on both concrete and asphaltic highways. The paint shall conform to requirements of 646.2.1 and 646.2.2. Reflectorization of the paint shall be by means of glass beads. The glass beads shall conform to requirements of 646.2.3. The color of the paint shall be yellow or white, as required on the plans.

649.4 Construction Methods
Add the following to the end as paragraph ten:

(10) When no passing zone temporary pavement marking is required, the contractor shall be responsible for the referencing of the beginning and end of all existing no-passing zones prior to pavement resurfacing which will cover the pavement markings. The contractor shall be responsible for the accurate re-marking of the required temporary no-passing zones.

651.3 Construction Methods
Replace paragraph eight with the following:

(8) The electrical connection between the equipment grounding conductor and any equipment grounding electrode shall be made by the exothermic weld method.

658.1 Description
Replace paragraph six with the following:

(6) (Vacant)

658.2.5 Backplates
Delete the entire text and replace the subsection heading with the following:

658.2.5 (Vacant)

658.3.4 Backplates
Replace the entire text with the following:

(1) The contractor shall furnish and install backplates on all signal faces as shown on the plans.

658.4 Method of Measurement
Replace paragraph one with the following:

(1) The department will measure Trombone Arms, Monotube Arms, Traffic Signal Faces, Pedestrian Signal Faces and Pedestrian Push Buttons as each individual unit acceptably completed.

658.5 Basis of Payment
Replace paragraphs four and five with the following:

(4) The department will pay for Traffic Signal Faces, (Size), (Vertical or Horizontal), as measured above, at the contract unit price. That price is full compensation for furnishing and installing signal faces including lamps and backplates; and for all labor, tools, equipment and incidentals necessary to complete the work.

(5) (Vacant)

SCHEDULE OF BID ITEMS ADDED AND RETIRED BY THE 2000 SUPPLEMENTAL SPECIFICATIONS

BID ITEMS ADDED - U.S. STANDARD MEASURE (EAS VERSION 3)

ITEM NUMBER	DESCRIPTION	UNIT
10843	RBC Progress Schedule	LS
10844	CPM Progress Schedule	LS
20335	Removing Small Pipe Culvert	Each
20371-20390 et seq.	Removing Old Structure, Station ____	LS
20424	Removing Marker Posts	Each
40721	Asphaltic Concrete Pavement, Type E-0.3	Ton
40722	Asphaltic Concrete Pavement, Type E-1	Ton
40723	Asphaltic Concrete Pavement, Type E-3	Ton
40724	Asphaltic Concrete Pavement, Type E-10	Ton
40725	Asphaltic Concrete Pavement, Type E-30	Ton
40726	Asphaltic Concrete Pavement, Type E-30x	Ton
40727	Asphaltic Concrete Pavement, Type SMA	Ton
40728	Density Incentive, Asphaltic Concrete Pavement	Dollars
40729	Profile Index Incentive, Asphaltic Concrete Pavement	Dollars
41101	Asphaltic Surface	Ton
41102	Asphaltic Surface, Patching	Ton
41103	Asphaltic Surface, Detours	Ton
41104	Asphaltic Surface, Safety Islands	Ton
41105	Asphaltic Surface, Driveways and Field Entrances	Ton
41106	Asphaltic Surface, Temporary	Ton
41526	Concrete Pavement, 6 1/2-Inch	S.Y.
41527	Concrete Pavement, 7 1/2-Inch	S.Y.
41528	Concrete Pavement, 8 1/2-Inch	S.Y.
41529	Concrete Pavement, 9 1/2-Inch	S.Y.
41530	Concrete Pavement, 10 1/2-Inch	S.Y.
41531	Concrete Pavement, 11 1/2-Inch	S.Y.
41538	H.E.S. Concrete Pavement, 8 1/2-Inch	S.Y.
41539	H.E.S. Concrete Pavement, 9 1/2-Inch	S.Y.
41540	H.E.S. Concrete Pavement, 10 1/2-Inch	S.Y.
41541	H.E.S. Concrete Pavement, 11 1/2-Inch	S.Y.
50265	Protective Surface Treatment	S.Y.
50308	Prestressed Girder, I Type, 54W-Inch	L.F
50903	Preparation, Decks, Type 1	S.Y.
50904	Preparation, Decks, Type 2	S.Y.
61150	Manhole Covers, Type J-Special	Each
61172	Inlet Covers, Type HM-GJ	Each
61173	Inlet Covers, Type HM-GJ-S	Each
61410	Steel Plate Beam Guard, Class A, Over Low Fill Culverts	L.F.
61434	Steel Plate Beam Guard, Slotted Rail Terminal	Each
61435	Steel Plate Beam Guard, Energy Absorbing Terminal	Each
62002	Concrete Median Blunt Nose	S.F.

62003	Concrete Median Sloped Nose	S.F.
62302	Dust Control Surface Treatment	S.Y.
62815	Silt Fence, Delivered	L.F.
62816	Silt Fence, Installed	L.F.
62826	Erosion Mat, Delivered, Class I, Urban, Type A	S.Y.
62827	Erosion Mat, Installed, Class I, Urban, Type A	S.Y.
62828	Erosion Mat, Delivered, Class I, Urban, Type B	S.Y.
62829	Erosion Mat, Installed, Class I, Urban, Type B	S.Y.
62855	Polyethylene Sheeting	S.Y.
62860	Turbidity Barriers	S.Y.
62865	Soil Stabilizer, Type A	acre
62866	Soil Stabilizer, Type B	acre
62870	Inlet Protection, Type A	Each
62871	Inlet Protection, Type B	Each
62872	Inlet Protection, Type C	Each
62873	Inlet Protection, Type D	Each
62875	Temporary Ditch Checks, Delivered	L.F.
62876	Temporary Ditch Checks, Installed	L.F.
62880	Culvert Pipe Ditch Checks	Each
63110	Lawn Sod	S.Y.
63111	Erosion Control Sod	S.Y.
63112	Erosion Control Sod, Sandy Soil	S.Y.
64101-64105 et seq.	Sign Bridge, Single Pole Sign Support, One Sign, Structure ____	LS
64106-64110 et seq.	Sign Bridge, Single Pole Sign Support, Two Signs, Structure ____	LS
64112-64125 et seq.	Sign Bridge, Cantilevered, Structure ____	LS
64151-64155 et seq.	Sign Bridge, Structure Mounted, Structure ____	LS
64181-64185 et seq.	Overhead Sign Support, Structure ____	LS
64780	Pavement Marking, Diagonal, 6-Inch, Epoxy	L.F.
64792	Pavement Marking, Diagonal, 18-Inch, Epoxy	L.F.
65040	Construction Staking, Storm Sewer System	Each
65045	Construction Staking, Subgrade	L.F.
65050	Construction Staking, Crushed Aggregate Base Course	L.F.
65055	Construction Staking, Curb, Gutter, and Curb and Gutter	L.F.
65060	Construction Staking, Pipe Culverts	Each
65065-65069 et seq.	Construction Staking, Structure Layout, Structure ____	LS
65070	Construction Staking, Concrete Pavement	L.F.
65075	Construction Staking, Concrete Barrier	L.F.
65080	Construction Staking, Resurfacing Reference	L.F.
65085-65089 et seq.	Construction Staking, Electrical, Project ____	LS

65099	Construction Staking, Initial Layout	L.F.
65308	Pull Boxes, Steel, 12x30-Inch	Each
65309	Pull Boxes, Steel, 18x30-Inch	Each
65310	Pull Boxes, Steel, 24x42-Inch	Each
65311	Pull Boxes, Steel, 24x48-Inch	Each
65410	Concrete Bases, Type 6	Each
65719	Traffic Signal Standards, Steel, 3.5-Foot	Each
65724	Traffic Signal Standards, Steel, 10-Foot	Each
65729	Traffic Signal Standards, Aluminum, 3.5-Foot	Each
65734	Traffic Signal Standards, Aluminum, 10-Foot	Each
65939	Luminaire Arms, Truss Type, 6-inch Clamp, 15-Foot	Each
65940	Luminaire Arms, Truss Type, 6-inch Clamp, 12-Foot	Each
65941	Luminaire Arms, Truss Type, 6-inch Clamp, 10-Foot	Each
65944	Luminaire Arms, Single Member, 6-inch Clamp, 6-Foot	Each

BID ITEMS RETIRED - U.S. STANDARD MEASURE (EAS VERSION 3)

ITEM NUMBER	DESCRIPTION	UNIT
20503	Unclassified Excavation	C.Y.
40712	Asphaltic Concrete Pavement, Type HV	Ton
40713	Asphaltic Concrete Pavement, Type MV	Ton
40714	Asphaltic Concrete Pavement, Type LV	Ton
30421	Asphaltic Pavement, Base Course	C.Y.
30422	Asphaltic Pavement, Base Course	Ton
50230	Protective Surface Treatment	Gal.
50901	Preparation, Decks	S.Y.
61911-61925 et seq.	Mobilization, Project ____	LS
62301	Calcium Chloride Surface Treatment	Ton
62848	Silt Fence, Silty Soil, Delivered	L.F.
62849	Silt Fence, Sandy Soil, Delivered	L.F.
62850	Silt Fence, Silty Soil, Installed	L.F.
62851	Silt Fence, Sandy Soil, Installed	L.F.
63101	Sodding	S.Y.
64127	Sign Bridges, 20-Ft. Span	Each
64128	Sign Bridges, 25-Ft. Span	Each
64129	Sign Bridges, 30-Ft. Span	Each
64130	Sign Bridges, 35-Ft. Span	Each
64131	Sign Bridges, 40-Ft. Span	Each
64132	Sign Bridges, 45-Ft. Span	Each
64133	Sign Bridges, 50-Ft. Span	Each
64134	Sign Bridges, 55-Ft. Span	Each
64135	Sign Bridges, 60-Ft. Span	Each
64136	Sign Bridges, 65-Ft. Span	Each
64137	Sign Bridges, 70-Ft. Span	Each
64138	Sign Bridges, 75-Ft. Span	Each
64139	Sign Bridges, 80-Ft. Span	Each
64140	Sign Bridges, 85-Ft. Span	Each
64142	Sign Bridges, 90-Ft. Span	Each
64143	Sign Bridges, 95-Ft. Span	Each
64144	Sign Bridges, 100-Ft. Span	Each
64145	Sign Bridges, 105-Ft. Span	Each
64146	Sign Bridges, 110-Ft. Span	Each
64147	Sign Bridges, 115-Ft. Span	Each
64148	Sign Bridges, 120-Ft. Span	Each
64160	Single Pole Sign Supports, One Sign	Each
64165	Single Pole Sign Supports, Two Signs	Each
64180	Overhead Sign Supports	Each
65001	Construction Staking, Storm Sewer	L.F.
65002-65009 et seq.	Construction Staking, Storm Sewer, Project ____	L.F.

65010	Construction Staking, Subgrade	Sta.
65011-65019 et seq.	Construction Staking, Subgrade, Project ____	Sta.
65020	Construction Staking, Crushed Aggregate Base Course	Sta.
65021-65029 et seq.	Construction Staking, Crushed Aggregate Base Course, Project ____	Sta.
65030	Construction Staking, Curb, Gutter, and Curb and Gutter	L.F.
65031-65039 et seq.	Construction Staking, Curb, Gutter, and Curb and Gutter, Project ____	L.F.
65835	Backplates, 1 Section, 12-Inch Signal Faces	Each
65836	Backplates, 3 Section, 12-Inch Signal Faces	Each
65837	Backplates, 4 Section, 12-Inch Signal Faces	Each
65838	Backplates, 5 Section, 12-Inch Signal Faces	Each
65839	Backplates, 12-8-8 Inch Signal Faces	Each

SCHEDULE OF BID ITEMS ADDED AND RETIRED BY THE 2000 SUPPLEMENTAL SPECIFICATIONS

BID ITEMS ADDED - SI METRIC (EAS VERSION 4)

ITEM NUMBER	DESCRIPTION	UNIT
10843	RBC Progress Schedule	LS
10844	CPM Progress Schedule	LS
20335	Removing Small Pipe Culvert	Each
20371-20390 et seq.	Removing Old Structure, Station ____	LS
20424	Removing Marker Posts	Each
40721	Asphaltic Concrete Pavement, Type E-0.3	Mg
40722	Asphaltic Concrete Pavement, Type E-1	Mg
40723	Asphaltic Concrete Pavement, Type E-3	Mg
40724	Asphaltic Concrete Pavement, Type E-10	Mg
40725	Asphaltic Concrete Pavement, Type E-30	Mg
40726	Asphaltic Concrete Pavement, Type E-30x	Mg
40727	Asphaltic Concrete Pavement, Type SMA	Mg
40728	Density Incentive, Asphaltic Concrete Pavement	Dollars
40729	Profile Index Incentive, Asphaltic Concrete Pavement	Dollars
41101	Asphaltic Surface	Mg
41102	Asphaltic Surface, Patching	Mg
41103	Asphaltic Surface, Detours	Mg
41104	Asphaltic Surface, Safety Islands	Mg
41105	Asphaltic Surface, Driveways and Field Entrances	Mg
41106	Asphaltic Surface, Temporary	Mg
41526	Concrete Pavement, 165 mm	m^2
41527	Concrete Pavement, 190 mm	m^2
41528	Concrete Pavement, 215 mm	m^2
41529	Concrete Pavement, 240 mm	m^2
41530	Concrete Pavement, 265 mm	m^2
41531	Concrete Pavement, 290 mm	m^2
41538	H.E.S. Concrete Pavement, 215 mm	m^2
41539	H.E.S. Concrete Pavement, 240 mm	m^2
41540	H.E.S. Concrete Pavement, 265 mm	m^2
41541	H.E.S. Concrete Pavement, 290 mm	m^2
50265	Protective Surface Treatment	m^2
50308	Prestressed Girder, I Type, 1370W mm	m
50903	Preparation, Decks, Type 1	m^2
50904	Preparation, Decks, Type 2	m^2
61150	Manhole Covers, Type J-Special	Each
61172	Inlet Covers, Type HM-GJ	Each
61173	Inlet Covers, Type HM-GJ-S	Each
61410	Steel Plate Beam Guard, Class A, Over Low Fill Culverts	m
61434	Steel Plate Beam Guard, Slotted Rail Terminal	Each
61435	Steel Plate Beam Guard, Energy Absorbing Terminal	Each
62002	Concrete Median Blunt Nose	m^2

62003	Concrete Median Sloped Nose	m^2
62302	Dust Control Surface Treatment	m^2
62815	Silt Fence, Delivered	m
62816	Silt Fence, Installed	m
62826	Erosion Mat, Delivered, Class I, Urban, Type A	m^2
62827	Erosion Mat, Installed, Class I, Urban, Type A	m^2
62828	Erosion Mat, Delivered, Class I, Urban, Type B	m^2
62829	Erosion Mat, Installed, Class I, Urban, Type B	m^2
62855	Polyethylene Sheeting	m^2
62860	Turbidity Barriers	m^2
62865	Soil Stabilizer, Type A	ha
62866	Soil Stabilizer, Type B	ha
62870	Inlet Protection, Type A	Each
62871	Inlet Protection, Type B	Each
62872	Inlet Protection, Type C	Each
62873	Inlet Protection, Type D	Each
62875	Temporary Ditch Checks, Delivered	m
62876	Temporary Ditch Checks, Installed	m
62880	Culvert Pipe Ditch Checks	Each
63110	Lawn Sod	m^2
63111	Erosion Control Sod	m^2
63112	Erosion Control Sod, Sandy Soil	m^2
64101-64105 et seq.	Sign Bridge, Single Pole Sign Support, One Sign, Structure ____	LS
64106-64110 et seq.	Sign Bridge, Single Pole Sign Support, Two Signs, Structure ____	LS
64112-64125 et seq.	Sign Bridge, Cantilevered, Structure ____	LS
64151-64155 et seq.	Sign Bridge, Structure Mounted, Structure ____	LS
64181-64185 et seq.	Overhead Sign Support, Structure ____	LS
64780	Pavement Marking, Diagonal, 150 mm, Epoxy	m
64792	Pavement Marking, Diagonal, 450 mm, Epoxy	m
65040	Construction Staking, Storm Sewer System	Each
65045	Construction Staking, Subgrade	m
65050	Construction Staking, Crushed Aggregate Base Course	m
65055	Construction Staking, Curb, Gutter, and Curb and Gutter	m
65060	Construction Staking, Pipe Culverts	Each
65065-65069 et seq.	Construction Staking, Structure Layout, Structure ____	LS
65070	Construction Staking, Concrete Pavement	m.
65075	Construction Staking, Concrete Barrier	m
65080	Construction Staking, Resurfacing Reference	m
65085-65089 et seq.	Construction Staking, Electrical, Project ____	LS

65099	Construction Staking, Initial Layout	m
65308	Pull Boxes, Steel, 300 x 750 mm	Each
65309	Pull Boxes, Steel, 450 x 750 mm	Each
65310	Pull Boxes, Steel, 24x42-Inch	Each
65311	Pull Boxes, Steel, 24x48-Inch	Each
65410	Concrete Bases, Type 6	Each
65719	Traffic Signal Standards, Steel, 1.1 m	Each
65724	Traffic Signal Standards, Steel, 3.0 m	Each
65729	Traffic Signal Standards, Aluminum, 1.1 m	Each
65734	Traffic Signal Standards, Aluminum, 3.0 m	Each
65939	Luminaire Arms, Truss Type, 150 mm Clamp, 4.6 m	Each
65940	Luminaire Arms, Truss Type, 150 mm Clamp, 3.7 m	Each
65941	Luminaire Arms, Truss Type, 150 mm Clamp, 3.0 m	Each
65944	Luminaire Arms, Single Member, 150 mm Clamp, 1.8 m	Each

BID ITEMS RETIRED - SI METRIC (EAS VERSION 4)

ITEM NUMBER	DESCRIPTION	UNIT
20503	Unclassified Excavation	m^3
40712	Asphaltic Concrete Pavement, Type HV	Mg
40713	Asphaltic Concrete Pavement, Type MV	Mg
40714	Asphaltic Concrete Pavement, Type LV	Mg
30421	Asphaltic Pavement, Base Course	m^3
30422	Asphaltic Pavement, Base Course	Mg
50230	Protective Surface Treatment	L
50901	Preparation, Decks	m^2
61911-61925 et seq.	Mobilization, Project ____	LS
62301	Calcium Chloride Surface Treatment	Mg
62848	Silt Fence, Silty Soil, Delivered	m
62849	Silt Fence, Sandy Soil, Delivered	m
62850	Silt Fence, Silty Soil, Installed	m
62851	Silt Fence, Sandy Soil, Installed	m
63101	Sodding	m^3
64127	Sign Bridges, 6.1 m Span	Each
64128	Sign Bridges, 7.6 m Span	Each
64129	Sign Bridges, 9.1 m Span	Each
64130	Sign Bridges, 10.7 m Span	Each
64131	Sign Bridges, 12.2 m Span	Each
64132	Sign Bridges, 13.7 m Span	Each
64133	Sign Bridges, 15.2 m Span	Each
64134	Sign Bridges, 16.8 m Span	Each
64135	Sign Bridges, 18.3 m Span	Each
64136	Sign Bridges, 19.8 m Span	Each
64137	Sign Bridges, 21.3 m Span	Each
64138	Sign Bridges, 22.9 m Span	Each
64139	Sign Bridges, 24.4 m Span	Each
64140	Sign Bridges, 25.9 m Span	Each
64142	Sign Bridges, 27.4 m Span	Each
64143	Sign Bridges, 29.0 m Span	Each
64144	Sign Bridges, 30.5 m Span	Each
64145	Sign Bridges, 32.0 m Span	Each
64146	Sign Bridges, 33.5 m Span	Each
64147	Sign Bridges, 35.1 m Span	Each
64148	Sign Bridges, 36.6 m Span	Each
64160	Single Pole Sign Supports, One Sign	Each
64165	Single Pole Sign Supports, Two Signs	Each
64180	Overhead Sign Supports	Each
65001	Construction Staking, Storm Sewer	m
65002-65009 et seq.	Construction Staking, Storm Sewer, Project ____	m

65010	Construction Staking, Subgrade	m
65011-65019 et seq.	Construction Staking, Subgrade, Project ____	m
65020	Construction Staking, Crushed Aggregate Base Course	m
65021-65029 et seq.	Construction Staking, Crushed Aggregate Base Course, Project ____	m
65030	Construction Staking, Curb, Gutter, and Curb and Gutter	m
65031-65039 et seq.	Construction Staking, Curb, Gutter, and Curb and Gutter, Project ____	m
65835	Backplates, 1 Section, 300 mm Signal Faces	Each
65836	Backplates, 3 Section, 300 mm Signal Faces	Each
65837	Backplates, 4 Section, 300 mm Signal Faces	Each
65838	Backplates, 5 Section, 300 mm Signal Faces	Each
65839	Backplates, 300-200-200 mm Signal Faces	Each

ERRATA SHEET

Conversion Table (page 751):

Under the heading "Volume", change "millimeter" to "milliliter".

AASHTO Steel Designation:

Wherever it occurs throughout the specifications, replace AASHTO grade 400 steel with grade 420.