

CERTIFICATION

I hereby certify the attached supplemental specifications for the April 20, 2007 North Dakota Department of Transportation bid opening.

Darcy R. Rosendahl
Darcy R. Rosendahl, P.E., Director
Office of Operations

07 MAR 2007
Date



**NORTH DAKOTA DEPARTMENT OF TRANSPORTATION
SUPPLEMENTAL SPECIFICATIONS**

Bid Opening 4-20-2007

The following specifications are supplementary to the 2002 Edition of the *Standard Specifications for Road and Bridge Construction* as they apply to this Contract.

TABLE OF CONTENTS **Page III** **11-19-04**

Delete the Section 302 entry (approximately 10 lines from the bottom of the page) and replace it with the following:

302 Salvaged Base Course, Aggregate Base Course or Aggregate Surface Course 149

TABLE OF CONTENTS **Page V** **11-19-04**

Insert the following entry between the Section 816 and 818 entries (approximately 12 and 13 lines from the top of the page, respectively):

817 Salvaged Base Course..... 512

101.02 DEFINITIONS. **Page 17** **04-16-04**

Add "product data sheets," after "shop drawings," in the second line of the **Working Drawings** definition.

102.07 PREPARATION OF PROPOSALS. **Page 19** **02-11-05**

In Section 102.07 A, delete the first paragraph (beginning "The Bidder shall submit..."), in its entirety, and replace it with the following:

The Bidder shall submit the Proposal Form furnished by the Department (including any and all addenda), through one of the following methods:

1. Electronic bid on the internet using Bid Express, as specified below.
2. Electronic bid on a 3½" computer diskette or compact disc (hereinafter diskette) with accompanying printout.
3. Paper bid on Department-furnished bid schedule, as specified below. Any paper bid submitted on or after July 1, 2005 shall be accompanied by a check or money order payable to "North Dakota Dept. of Transportation" in the amount of \$30.00 per proposal.

Any and all Department addenda to the Proposal shall be a part of the Bidder's Proposal.

The Bidder shall file with the Department a properly executed blanket bid bond, or shall submit an individual bid bond or certified check with the proposal, as specified in Section 102.09 of the Standard Specifications. To be eligible to submit electronic bids on the internet, the Bidder shall have a properly executed annual bid bond on file with the Department.

If discrepancies are found between proposals submitted by the same Bidder in different media, hand prepared paper bids shall govern over electronic printouts, electronic printouts shall govern over diskettes and diskettes shall govern over electronic bids submitted over the internet.

The Department will provide bidding information through the Bid Express on-line bidding exchange at <http://www.bidx.com/> and the Departments web page. The department will also post notice of all addenda to each proposal on each web site, no later than 4:00 P.M. Central Time two days before the bid opening. All Bidders shall consult Bid Express, after 5:00 P.M. Central Time two days before the bid opening, to ensure that all addenda files have been downloaded before submitting the final bid.

Interested parties can subscribe to the Bid Express on-line bidding exchange by following the instructions provided at the www.bidx.com website or by contacting:

Info Tech Inc.
5700 SW 34th Street, Suite 1235
Gainesville, FL 32608-5371
email: <mailto:customer.support@bidx.com>

102.07 PREPARATION OF PROPOSALS.

Page 21

02-11-05

Add the following to the end of Section 102.07:

- D. **Electronic Bidding On The Internet.** Prior to submitting electronic bids over the internet, the Bidder shall have a digital identification (ID) on file with and enabled by Info Tech Inc. Using this digital ID shall constitute the bidder's signature for proper execution of the bidding proposal.

Bidders desiring to use this bid submission method should not sign, notarize, nor return the bidding proposal as described in other Sections of the Standard Specifications and shall:

1. Download the schedule of items, all addenda, and DBE bin files from the Bid Express website.
2. Use Expedite software to enter a unit price for every item in the schedule of items.
3. Submit the bid according to the requirements of the Expedite software and the Bid Express web site. Bidders should not submit a bid on a diskette with accompanying printout or a paper bid, when submitting internet bids. If the bidder does submit a bid on a diskette with accompanying printout or a paper bid in addition to the internet submittal, the department will disregard the internet bid.
4. Submit the bid before the time and date designated in the Notice to Bidders.

The Department will consider bids submitted over the internet as accepted, at the time and date specified in the Notice to Bidders and not before such time and date.

- E. **Electronic Bidding On A Diskette With Accompanying Printout.** Bidders desiring to use this bid submission method shall comply with all other requirements of Section 102 and may:
1. Download the schedule of items and all addenda from the North Dakota pages of the Bid Express website or the Department's website.
 2. Use Expedite software to prepare and print the schedule of items.

- a. After providing a valid amount for all price fields, bidders should follow the software instructions and review the help screens provided on the Bid Express website to assure that the schedule of items is prepared properly.
- b. An 8 ½ by 11 inch printout of the Expedite generated schedule of items shall be stapled to the other proposal documents submitted to the department as a part of the bidder's sealed bid. As a separate submittal (not in the sealed bid envelop) and due at the same time and place as the sealed bid, the Expedite generated schedule of items shall be submitted on a diskette. Each diskette shall be labeled with the bidder's name, the department-assigned bidder-identification code, and a list of the proposal numbers included on that diskette, as indicated in the following example:

Bidder Name
 Bidder ID
 Proposals: 1,12,14,16,& 22

- c. If bidding on more than one proposal in the bid opening, the bidder may include all proposals for that letting on one diskette. However, only submitted proposals (with no incomplete or extraneous files) may be on the diskette.

The bidder-submitted printout of the bid-item schedule shall be the governing contract document (as qualified above) and must conform to all requirements of Section 102 of the Standard Specifications. If a printout must be altered, the printed information shall be crossed out with ink or typewriter and the new information entered. All such corrections shall be initialed, by the Bidder, in ink.

102.08 IRREGULAR PROPOSALS.

Page 21

02-11-05

Add the following to the end of Section 102.08 A.2, as a new sentence:

Bidders using Electronic Bidding on the Internet, as specified in Section 102.07 D, are not required to submit the entire authorized Proposal Form Booklet.

102.08 IRREGULAR PROPOSALS.

Page 22

02-11-05

Add the following to the end of Section 102.08 B:

7. The check code printed on the bottom of the printout of the Expedite-generated schedule of items is not the same on each page.
8. The check code printed on the printout of the Expedite generated schedule of items is not the same as the check code for that proposal provided on the diskette.
9. On or after July 1, 2005, the bidder fails to pay the \$30 administrative fee with their paper bid, before the day and time designated on the Notice to Bidders.

102.10 DELIVERY OF PROPOSALS.**Page 22****02-11-05**

Add the following to the end of Section 102.10:

Mailed bids will be accepted, if all other bidding requirements have been met and the bids are received prior to the date and time designated on the Notice to Bidders. If a check or money order is required, as specified in other parts of Section 102, such check or money order must accompany any mailed bid.

103.08 ESCROW OF BID DOCUMENTATION.**Page 25****02-20-04**

Delete the first paragraph of Section 103.08 D. in its entirety and replace with the following:

After award, the Department and the Contractor will jointly deliver the sealed container and affidavit to a banking institution or other bonded document storage facility selected by the Contractor and approved by the Department for placement in a safety deposit box, vault, or other secure accommodation. The document storage facility shall be located in Bismarck, North Dakota unless otherwise approved by the Department. The Contractor will provide escrow instructions to the document storage facility consistent with this Section.

104.03 ALTERATION AND CHANGE OF PLANS OR CHARACTER OF WORK.**Page 27****06-16-06**

In section 104.03, after the first paragraph, add the following:

The Contractor shall perform any extra work at unit bid prices except as provided elsewhere in this Section. When the Contract does not contain unit bid prices for the extra work and the extra work is not covered by the Contract price schedule for miscellaneous items (PS-1), the Engineer and the Contractor shall either agree to a negotiated unit price for the work or complete the work under Force Account as specified in 109.04. When requested by the Engineer to prepare a unit price for extra work, the Contractor shall provide a breakdown of labor, equipment and materials of the unit bid price.

When extra work is performed solely by a subcontractor at a negotiated unit price, reimbursement to the Prime Contractor for overhead and profit will be in accordance with the following:

Value of Extra Work by Subcontractor	Prime Contractor Reimbursement for Overhead and Profit
To \$15,000	10%
Over \$15,000	\$1,500 + 5% of excess over \$15,000

No additional Prime Contractor reimbursement is allowed for work of a subcontractor employed by a subcontractor. Extra work completed by a subcontractor at existing unit bid prices is not eligible for additional Prime Contractor reimbursement.

104.03 ALTERATION AND CHANGE OF PLANS OR CHARACTER OF WORK.**Page 29****06-16-06**

Delete Section 104.03.D in its entirety.

104.06 B. Submission of the Claim**Page 31****11-19-04**

In the first sentence of the second paragraph (beginning "If the Contractor signs..."), delete the word "voucher" and replace it with the word "statement".

105.03 COOPERATION WITH UTILITIES**Page 36****07-16-04**

In the third paragraph (beginning "These utilities will be relocated..."), delete the word "owners" and replace it with "owner's".

105.03 COOPERATION WITH UTILITIES**Page 36****05-21-04**

Add the following sentence to the end of the sixth paragraph (beginning "The Contractor shall make arrangements..."):

Unless a pay item is shown on the plans, any and all costs associated with such protections shall be incidental to the prices bid for other items.

105.03 COOPERATION WITH UTILITIES**Page 36****04-16-04**

Delete the seventh paragraph (beginning "The Contractor shall notify...") in its entirety and insert the following:

Utilities shown on the plans, if any, are for reference purposes only and may not constitute an exhaustive representation of all utilities within the project limits. The Contractor shall notify the North Dakota One Call System (1-800-795-0555) prior to the beginning of construction, so they may locate and mark all utilities in the project area. Separate Plans, if any, showing relocation or adjustment work will be made available to the Contractor, upon request to the Engineer. The Contractor shall be responsible for locating NDDOT-owned, publicly-owned and privately-owned utilities, whether on or off the One Call System. Subcutting or scarifying over utility lines may be eliminated if, in the opinion of the Engineer, a hazardous situation exists.

105.03 COOPERATION WITH UTILITIES**Page 37****05-21-04**

Delete the second sentence of the eleventh paragraph (i.e. third paragraph on the page, beginning "The Contractor shall prevent...") and insert the following sentence in its place:

"Damage to underground utilities caused by the Contractor's operations shall be corrected at the Contractor's expense."

105.06 CHARACTER OF WORKERS**Page 38****02-14-03
03-14-03**

Delete the first sentence of Section 105.06 C. in its entirety and insert the following:

When the methods and equipment to be used are specified, other methods and equipment shall not be used without authorization of the Engineer.

Delete Section 105.08 in its entirety and insert the following:

105.08 PLANS AND WORK DRAWINGS.

- A. **General.** Plans will show the location and details of all structures, lines, grades, and typical cross sections of the roadway. When required by the contract documents, the Plans will be supplemented by work drawings necessary to adequately control the work.
- B. **Work Drawings Submitted By The Contractor.** Work drawings, necessary to complete the work, which are supplied by the Contractor shall be submitted to the Engineer prior to the performance of the work. The drawings shall be submitted on sheets no larger than 11" x 17" unless otherwise allowed by a work item specification.

Each sheet of the work drawings submitted shall be stamped as approved by the contractor performing the work. At a minimum, the stamp will include the signature and title of the person approving the work drawing and the date of the approval.

The Engineer shall review the work drawings as indicated in the plans, proposal, specifications, or other contract documents. Any submittal and review of work drawings by the Engineer shall not constitute approval of nor acceptance of items represented by such drawings and shall not relieve the Contractor of any responsibility under the Contract. Such responsibility includes, but is not limited to:

1. Successful completion of the work.
2. Errors, omissions, or deviations from the contract requirements.
3. Accuracy of dimensions and details.
4. Agreement and conformity with the Contract.
5. Proper and safe design done by the Contractor.
6. Proper and safe construction of the work.

In addition to any time requirements which may be specified for a work item, the Contractor shall allow sufficient time for the Engineer to review and comment on the submittal, and the Contractor to respond to the comments, prior to performance of the work. The Contractor shall not change any requirements as shown in the contract documents without the Engineer's written authorization. A cover letter to be included with each work drawing submittal shall include, at a minimum:

1. The project number.
2. The prime contractor name.
3. The subcontractor name, if applicable.
4. Verification that the work drawings have been reviewed and approved by the contractor performing the work.
5. The items of work covered in the work drawing. Each item shall be identified by the specification, code, and description.

6. An itemized list of any deviations from the contract documents.
7. Any other information as required by the Engineer.

The Contract price will include the cost of furnishing all required work drawings.

106.02 LOCAL MINERAL AGGREGATE SOURCES	Page 45	07-16-04
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Delete the third sentence in paragraph 3 of Section 106.02 B., beginning "(Time will be counted from...)", in its entirety.

106.06 STOCKPILING AGGREGATE AND SALVAGED MATERIALS	Page 47	02-20-04
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Delete the last paragraph of Section 106.06 and insert the following:

Equipment will not be permitted on salvaged bituminous material that will remain the property of the Department or that will be used for hot recycled bituminous pavement. When the plans specify the material to be salvaged for these purposes the material shall not be stockpiled higher than 15 feet.

106.09 BUY AMERICAN PRODUCTS.	Page 48	02-14-03
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Delete the heading of Section 106.09 and replace with the following:

106.09 BUY AMERICA PRODUCTS.

107.04 HISTORIC PRESERVATION RESPONSIBILITIES.	Page 50 & 51	06-20-03
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Delete the first paragraph of Section 107.04 in its entirety and replace with the following:

- A. **Department Owned or Optioned Areas.** When the Contractor is operating within the right of way, easement areas, or within Department optioned areas and encounters the remains of prehistoric dwelling sites, human burials, or historical or archeological artifacts, operations at that location shall be temporarily discontinued. The Contractor shall inform the Engineer and the Department's Cultural Resource Section of the discovery and shall move construction operations to another part of the project. The Contractor shall not resume construction operations until the Department obtains clearance from the State Historic Preservation Officer (SHPO). The Contractor will make all reasonable efforts to protect the material until the matter has been reviewed by the SHPO. If cultural resources are discovered that are eligible for inclusion in the National Register of Historic Places, compliance with Section 106 of the National Historic Preservation Act of 1966 and the Advisory Council on Historic Preservation "Procedures for the Protection of Historic and Cultural Properties" (36 CFR, Pt. 800) will be required. When directed, the Contractor shall excavate the site to preserve the artifacts encountered. Such excavation shall be paid for as "Extra Work." If the Contractor fails to notify the Engineer of the discovery, the Contractor shall be liable for all standby costs, all damage incurred, and all costs associated with the salvage and preservation activities specified in this section.

Delete Section 107.04 in its entirety and replace with the following:

107.04 ENVIRONMENTAL PROTECTION AND CULTURAL RESOURCE PRESERVATION RESPONSIBILITIES

A. Contractor-Optioned Areas.

1. General. At least 30 calendar days prior to using contractor optioned material sources any ground disturbance, the Contractor shall provide the Project Engineer with a legal description completed SFN 58466 and map. The map shall include any contractor optioned material sources (including rip-rap and material from commercial sources), and any other area of planned ground disturbing activities, such as staging area(s), plant site, stockpile area(s), and haul access road(s).

The completion of this process (Section 107.04 review process) is weather dependent and may take longer than 30 days; surveys cannot be completed during adverse weather conditions or poor ground visibility.

2. Environmental Review Process. The Department's Environmental Section, in cooperation with the US Fish and Wildlife Service (USFWS), will investigate the proposed material source area(s) to determine if there is a potential for threatened or endangered species, wetlands, or Department of Transportation Act Section 4(f) properties (easement wetlands, grassland easements, waterfowl production areas, wildlife management areas, or National Wildlife Refuge properties).

If environmental resources are not identified, environmental approval will be granted at that time. The Department's Cultural Resource Section will be notified of the findings by the Environmental Section and will begin the Cultural Review Process, as identified in Section 107.04 A.3.

If the potential for environmental resources exists, the Environmental Section will coordinate with the USFWS to conduct an onsite review of the proposed material source area(s) to ensure avoidance of environmental resources. If approved, the Cultural Resource Section will be notified of the findings by the Environmental Section and will begin the Cultural Review Process, as identified in Section 107.04 A.3. If not approved, the Contractor will be notified by the Project Engineer.

The Department's review and subsequent approval does not relieve the Contractor of the responsibility of complying with all Federal and State laws and regulations which govern the protection of wetlands protected under the Clean Water Act and Executive Order 11990, threatened and endangered species protected under the Endangered Species Act, and Section 4(f) properties protected under Section 4(f) of the Department of Transportation Act.

3. Cultural Review Process. The Cultural Resource Section will investigate the proposed material source area(s) to determine what may be necessary to ensure compliance with Section 106 of the National Historic Preservation Act (NHPA). There may be a need for cultural resource investigations. These investigations typically would include a Class III cultural resource inventory of the proposed material source area(s). The Project Engineer will notify the Contractor if additional cultural resource work is required. After completion of all required cultural resource

work, the Project Engineer will provide the Contractor written approval to proceed.

The Contractor is responsible for all costs associated with Section 106 (NHPA) compliance, including Class III cultural resource inventory, testing, and data recovery. The Contractor will not receive payments or compensation for delays resulting from the Department's review. Discoveries will be handled pursuant to Section 107.04.C.

If cultural resource work is recommended for a proposed material source area(s) that is located on Indian Trust (allotted) lands, an Archaeological Resources Protection Act (ARPA) permit must be obtained from the Bureau of Indian Affairs (BIA) prior to this work beginning. The Contractor must obtain written permission from the property owners and the tribe before the BIA will issue the ARPA permit. The Department will not be responsible for, nor participate in, costs that are incurred or claimed by the Contractor resulting from delays or other inconvenience encountered in obtaining the permit.

The Department's review and subsequent independent completion of the Section 106 (NHPA) process will not relieve the Contractor of the responsibility of complying with all Federal and State laws and regulations which govern the discovery of human remains and the salvage and preservation of cultural resources that are discovered during material source operations.

4. Out of State Sources. If the contractor optioned material source is located out of state, the Contractor must provide the Project Engineer documentation from the out of state agency showing the material source is available for use according to each state's review process. The Contractor will be notified by the Project Engineer of the need for any additional review prior to using the proposed material source(s) in the state of North Dakota.

B. Department Owned or Optioned Areas.

1. General. All necessary clearances will be obtained prior to bidding.

C. Discoveries.

1. Environmental Process. When the Contractor is operating within the right-of-way, easement areas, or within Contractor optioned, or Department owned or optioned material source area(s) and encounters a threatened or endangered species at the project site, work at that location shall be temporarily discontinued. The Contractor shall report the sighting immediately to the Project Engineer and shall not resume work until the Department obtains clearance from the US Fish and Wildlife Service and approval to proceed is provided in writing from the Department.

If the Contractor fails to notify the Project Engineer within 24 hours of the sighting, the Contractor shall be liable for all standby costs, all damage incurred, and all costs associated with the preservation and protection of the species pursuant to the resource and regulatory agencies guidance. In addition, the Contractor is liable to the Department for any violation penalties because of the failure to comply with Federal and State laws.

2. Cultural Process. When the Contractor is operating within the right-of-way, easement areas, or within Contractor optioned, or Department owned or optioned area(s) and encounters prehistoric dwelling sites, human remains, or concentrated historic or prehistoric artifacts, work at that location shall be temporarily discontinued. The Contractor shall inform the Project Engineer immediately of the discovery and shall protect the discovery area from further disturbance until directed otherwise by the Project Engineer. The Contractor shall not resume work in the vicinity of the discovery until approval to proceed is provided in writing from the Department.

If cultural resources are discovered, procedures identified in 36 CFR 800.13 will be followed. If the discovery includes human remains, the procedures in North Dakota Administrative Rule 40-02 in accordance with State Law 23-06-27, or 43 CFR Part 10 in accordance with Public Law 101-

601 will be followed, as applicable and defined in each.

If the Contractor fails to notify the Project Engineer within 24 hours of the discovery, the Contractor shall be liable for all standby costs, all damage incurred, and all costs associated with salvage and preservation activities that may result from the discovery. In addition, the Contractor is liable to the Department for any violation penalties because of the failure to comply with Federal and State laws.

D. Reporting.

1. General. The permittee is responsible for complying with all reporting requirements contained in the regulatory permit(s). Documentation of all reporting pursuant to the conditions of the permit(s) shall be copied to the Project Engineer and Environmental Section for inclusion in the project record.

107.05 RESPONSIBILITY TO THE PUBLIC.

Page 52

11-21-03

The following sentence shall be added after the fourth sentence of the second paragraph of Section 107.05 A.1.:

... and farms. Details on location of access points and construction procedures shall be worked out with the Engineer in the field prior to the start of the project. The cost of ...

107.05 RESPONSIBILITY TO THE PUBLIC.

Page 53

05-21-04

Add the following paragraph to the end of Section 107.05 A.5:

The Contractor shall not use private property to park vehicles or equipment, to store materials, or as a work area without written permission from the property owner. The Contractor, at his sole expense, shall repair, to the property owner's satisfaction, any private-property damages resulting from the Contractor's activities.

107.05 RESPONSIBILITY TO THE PUBLIC.

Page 53

11-19-04

In the second paragraph of Section 107.05 A.6, delete the last sentence (beginning "Costs shall be...") and insert the following in its place:

If, in the opinion of the Engineer, the dust control provided by the vacuum or pickup sweeper is not adequate, water shall be used in conjunction with the sweeper to control fugitive dust. Washing material into storm or sanitary drainage systems shall not be permitted. Any roadway open to traffic shall be maintained to provide a safe, clean driving surface. All costs for dust control and cleaning (including, but not limited to labor, vacuum, pickup sweepers, water, etc.) shall be incidental to other items bid.

The following paragraph shall be added to Section 107.05 D.:

The Contractor shall protect the existing pavement outside of the construction limits during the course of construction. Surface repair which is required because of the Contractor's operations, other than designated haul roads, shall be repaired by the Contractor at the Contractor's expense.

In Section 107.06 B, add the following to the end of the last sentence of the last paragraph (beginning "If flagging of railroad traffic..."):

and the Contractor will reimburse the Department for these expenses. The costs for this flagging shall be incidental to other items bid.

Delete Section 107.10 in its entirety.

Insert the following in its place:

107.10 INERT WASTE DISPOSAL.

- A. This work consists of the proper recycling or disposal of inert material waste on a project. Inert waste includes, but is not limited to; Clearing and Grubbing (as defined in Section 201.02 B), Concrete, Steel, Bituminous Pavements and Pavement Base. For additional information regarding inert waste classification, reference the North Dakota Department of Health – Division of Waste Management's "GUIDELINE 17 – WASTES EXCLUDED FROM ACCEPTANCE AT LANDFILLS."

When inert material on a project is designated the property of the contractor, and the contractor chooses to waste the material, the material must be disposed in one of two ways:

1. Disposal of the material at an approved permanent waste management facility.
2. If waste cannot be reasonably recycled, reused or managed at an approved landfill, the North Dakota Department of Health may consider allowing a variance for disposal. An "INERT WASTE DISPOSAL VARIANCE APPLICATION," SFN 50278, is available from the North Dakota Department of Health – Division of Waste Management. For guidance in filing the application refer to the North Dakota Department of Health – Division of Waste Management's "GUIDELINE 22A – INERT WASTE DISPOSAL VARIANCE." Upon approval of the variance, the contractor shall furnish the engineer with an approved copy, before any material is disposed at the approved site.

Locations of permanent waste facilities, and a variance application and guideline can be obtained at the North Dakota Department of Health – Division of Waste Management, 701-328-5166. A list of municipal and Inert waste landfills is available at the North Dakota Department of Health website at: <http://www.health.state.nd.us/ndhd/envIRON/wm/lists.htm>.

Guideline 17 and 22A and other North Dakota Department of Health guidance are available at: <http://www.health.state.nd.us/ndhd/environ/wm/pubs.htm#swpubs>.

- B. If the Contractor fails to comply with all requirements of Section 107.10, the Department reserves the right to:
1. Suspend progressive estimate payments.
 2. Invoke any other disincentive allowed by the contract.
 3. Request the North Dakota Department of Health to take any and all enforcement actions provided by applicable law.
- C. Nothing in Section 107.10 shall be construed to prevent the beneficial recycling or reuse of waste materials on this project, as allowed in other sections of the specifications/plans, or on other projects of the Contractor's choice, including stockpiling the material at a Contractor obtained storage facility so long as the materials are restricted to recyclable inert materials, they are not placed in environmentally sensitive areas such as floodplains, steep areas, wetlands, ravines, etc. and the activities are in accordance with any state and local zoning and health requirements.
- D. Unless a bid item is shown on the plans, all costs associated with inert waste disposal shall be incidental to the price bid for other items.

108.04 J. Failure to Complete on Time.

Page 65

2-09-07

Delete the Schedule of Liquidated Damages in its entirety and insert the following in its place:

Original Contract Over – To & Including	Amount of Liquidated Damages	
	Calendar Day	Working Day
\$ 0 - \$ 50,000	\$200	\$300
50,000 - 100,000	\$400	\$550
100,000 - 250,000	\$600	\$800
250,000 - 500,000	\$750	\$1000
500,000 - 1,000,000	\$900	\$1300
1,000,000 - 2,000,000	\$1100	\$1550
2,000,000 - 3,000,000	\$1300	\$1800
3,000,000 - 5,000,000	\$1550	\$2100
5,000,000 - 8,000,000	\$1900	\$2600
8,000,000 - UP	\$2400	\$3200

109.05 PARTIAL PAYMENT.

Page 73

**05-20-05
11-17-06**

Delete Section 109.05 in its entirety.

Insert the following in its place:

109.05 PARTIAL PAYMENT.

Partial payment will be made at least once each month as the work progresses. Payments may be made twice a month or more often if the Engineer determines the amount of work performed is sufficient to warrant such payment. Payments will be based on estimates prepared for the value of the

work performed, and for materials delivered according to Section 109.06.

Failure to perform any of the obligations under the Contract will be considered adequate reason for withholding any payments until compliance is achieved.

From the total amounts payable, 2% of the whole will be deducted and retained by the Department. The balance of 98%, less all previous payments, will be certified for payment. Once 2% of the total Contract price is retained, the balance of total amounts payable less all previous payments and retainage will be certified for payment.

After 90% of the work has been completed and:

- 1) all pit releases, receipts of payment, and haul road releases are on file with the Department; and
- 2) all payrolls have been submitted and are up to date; and
- 3) the remaining work can be completed without accrual of liquidated damages; and
- 4) the Contractor is making a diligent effort to complete the work remaining on the project;

the Engineer may prepare a semifinal estimate for the work completed and retain not less than 1% of the dollar amount of work completed. The remainder, less all previous payments, will then be certified for payment.

After all original Contract work is completed and conditions 1) through 4) above have been met, the Engineer may prepare a semifinal estimate for the work completed and retain less than one percent of the dollar amount of work completed. The actual amount of retainage must be approved by the Construction Engineer.

Payments authorized under this section shall not constitute final acceptance of any portion of the project. The Contractor shall be responsible for final delivery of the project as specified in the contract documents, regardless of any payments made.

Delete Section 109.06 in its entirety and insert the following:

Payment will not be made for materials delivered to, or stockpiled on, the project until incorporated in the work in their final position, except as specified in this Section.

Requests for payment of material on hand shall be submitted in writing to the Engineer. A delivery invoice itemizing the material must be supplied for all stockpiled materials, except materials manufactured by the Contractor. A statement from the Contractor certifying that the material meets specifications, or in the case of stockpiled aggregate - that it will meet specifications at the time of placement, is required for payment of material on hand. For Contractor manufactured materials to be eligible for payment, a fully documented statement of production costs; including the type of material, amount of material stockpiled, location of stockpile and itemized breakdown of the cost for producing the material shall be submitted to the engineer.

The Contractor shall furnish paid invoices for all stored materials that have not been incorporated into the permanent work within 35 days of the date the Department submitted the estimate for payment. An estimate submitted for payment date is shown on the top of the detail pages. The paid invoice shall include a notarized statement from the supplier or fabricator certifying that payment has been received. If a paid invoice is not furnished, the quantity of any previously allowed material remaining in storage will be deducted from the next progressive estimate, and further payment will not be made until the material is incorporated into the work.

Payment for material on hand will be limited to the appropriate portion of the value of the Contract item and will not exceed the Contract Unit Price for the work item in which the material is used. Payment will not be made for materials in excess of Plan quantities. As materials are used in the work, credits equaling the partial payments for them will be taken on future estimates.

To be eligible for payment, the value of the stored material to be used in one item of work must exceed \$2,000.00.

Payment for material on hand will not include payment for fuels, supplies, form lumber, falsework, temporary structures, or other materials which will not become an integral part of the finished work item.

No partial payment will be made on living or perishable plant materials until planted.

The material shall be delivered to or stockpiled near the project or other Engineer-approved storage facility.

Payment may be made for structural steel to be used on bridge girders prior to fabrication. Structural steel stockpiled at production plants or fabrication sites must be stored separately to qualify for payment and shall be used only for the assigned Contract. Payment will not be made for reinforcing steel prior to fabrication.

If stored material is lost, stolen, or damaged, the materials value will be deducted from the subsequent estimate or estimates. Payments authorized shall not constitute final acceptance of the material and the Contractor shall be responsible for such materials. Payment of partial estimates for stored material, acceptance of the materials to be stored, or approval of the storage method does not relieve the Contractor's responsibility for all materials and work upon which payments have been made or the restoration of any damaged work. The payments are not a waiver by the Department of any other Contract provisions or of its rights to require fulfillment of all Contract terms.

Materials paid for by the Department are the property of the Department, but the risk of loss shall remain with the Contractor. If materials for which the Department has paid are later found to be unacceptable, then the Department may withhold amounts reflecting such unacceptable materials from payments

otherwise due the Contractor.

In the event of default, the Department may use or cause to be used all paid-for materials in any manner that is in the best interest of the Department.

151.03 HAULING EQUIPMENT.

Page 90

04-11-03

Delete Section 151.03 A. in its entirety and insert the following:

- A. **Water-Hauling Equipment.** Water hauling units shall be equipped with a spraying device capable of evenly distributing water over the designated area. The water tank and all connections shall be watertight.

151.07 SCALES.

Page 96

06-20-03

Insert the following paragraph as paragraph 2 to Section 151.07 E. 1.:

Loader Bucket Scales shall comply with the requirements of items 2 through 4 of this Section. The weight indicated shall be accurate to within 1.0 percent of the true weight.

153.01 BATCHING AND WEIGHING EQUIPMENT.

Page 102

06-16-06

In Section 153.01 A, add the following sentence to the end of the second paragraph:

A scalping screen or other device which is capable of removing deleterious, oversized material from the aggregate prior to charging the bins shall be placed on each bin at the batching plant.

153.05 SLIP FORM PAVING EQUIPMENT.

Page 106

02-11-05

Delete the last sentence (beginning "The paver shall vibrate...") and add the following as new paragraphs/sections, after the first paragraph:

When placing and finishing portland cement concrete pavement with slip form paving equipment, the paving equipment shall be equipped with vibrators and a vibrator monitoring system meeting the following requirements:

- A. **Vibrators.** The slip form paving equipment shall be capable of consolidating the full width and depth of concrete in a single pass using an approved internal or surface vibrator. Internal vibrators shall be operable over the entire frequency range of 3500 to 8000 vibrations per minute. Surface vibrators shall be operable over the entire frequency range of 3000 to 6000 vibrations per minute. However, both types of vibrators shall be operated as specified in Section 550 of the Standard Specifications.

Horizontal spacing of vibrators shall not exceed the manufacturer's recommendations, but in no case exceed 16 inches from center to center.

The longitudinal axis of the vibrator body shall be mounted approximately parallel to the direction of paving with the exception that the trailing end of each vibrator shall be tilted downward to an approximate slope of 15 degrees below horizontal.

Vibrators shall meet or exceed the following specifications at manufacturer's design frequency of 10,000 vpm:

1. amplitude (peak to peak) 0.070 inches (1.75 mm)
2. centrifugal force 1200 pounds (5500 N)

B. **Vibrator Monitoring System.** An electronic monitoring device displaying the operating frequency of each individual internal vibrator shall be provided for slip-form paving equipment.

The monitoring device shall have a readout display near the operator's controls and be visible to the paver operator and the Engineer. It shall operate continuously while paving, and shall display all vibrator frequencies with manual or automatic sequencing among all individual vibrators. The monitoring system shall be capable of producing the record required in Section 550.04 G.3.

153.06 ROADBED PLANERS.

Page 106 & 107

04-11-03

Delete the first sentence of the second paragraph in its entirety and insert the following:

The planer shall be equipped with rotary cutting mechanisms capable of trimming the subgrade and base to the required lines and grades within the tolerances of Section 302.04 F.3 Surface Tolerance Type C.

153.10 HAND FINISHING EQUIPMENT.

Page 108

10-20-06

Add the following as the second sentence in the second paragraph:

Roller screeds may be used if there is no visible deflection or bounce of the tube while screeding. The tube shall be straightedged prior to using.

201.02 CONSTRUCTION REQUIREMENTS.

Page 117

04-16-04

In Section 201.02 B, delete the last two paragraphs, in their entirety. The first paragraph begins "Materials and debris may be..." and the second paragraph begins "When permitted by the Engineer..." and insert the following:

"Clearing and Grubbing, if wasted, must be disposed according to Section 107.10 – INERT WASTE DISPOSAL."

{Note: modification to Section 107.10, above}

202.02 CONSTRUCTION REQUIREMENTS.

Page 119

09-24-04

From Section 202.02 A, delete the last sentence (beginning "Copies of all agreements...") from the first paragraph. Also, delete the phrase "and shall be disposed of in a manner satisfactory to the property owners and governing agencies" from the next to last sentence in the first paragraph. Insert the following as a new sentence at the end of the first paragraph:

If the Contractor chooses to waste the removed material, it shall be disposed of according to Section 107.10.

202.02 CONSTRUCTION REQUIREMENTS.**Page 120****05-20-05**

In Section 202.02 C, add the following to the end of the first paragraph:

Disposal of excess excavation shall be off the right of way, at a location approved by the engineer.

202.02 CONSTRUCTION REQUIREMENTS.**Page 120****09-24-04**

Add the following as a new paragraph to the end of Section 202.02 D (Removal of Pavement, Sidewalks, Curbs, etc.):

Removal of manholes shall consist of removing the casting, rings, barrel and base; plugging or capping the existing lines; and backfilling to grade. All labor, equipment, materials, and disposition of items involved in the removal shall be included in the price bid for "Removal of Manholes."

202.03 METHOD OF MEASUREMENT.**Page 120****05-20-05**

Add the following as a new paragraph at the end of the section:

Excavation and disposal of excess excavation for Removal of Pipe Culverts will not be measured for payment, but shall be incidental to other items bid.

203.02 CONSTRUCTION REQUIREMENTS.**Page 123****11-21-03
10-20-06**

The following shall be added to Section 203.02 A.:

6. **Coal.** When coal is encountered, it shall be removed to a depth of 6 feet below the subgrade profile between the graded shoulders. From the graded shoulders to the top of the backslopes, it shall be removed to a depth of 1 foot below the final surface elevation. All coal removed shall be paid for as Common Excavation.
-

203.02 CONSTRUCTION REQUIREMENTS.**Page 123****11-21-03**

The following two sentences shall be added after the first sentence of Section 203.02 B.:

... grading limits. Salvaged topsoil that is stockpiled within the clear zone must be stockpiled in a manner that is safely traversable. The stockpile must have slopes which are 4:1 or flatter if they are located within the clear zone. Additional areas ...

210.04 METHOD OF MEASUREMENT.**Page 135****11-21-03**

The following paragraph shall be added to Section 210.04 B.:

Excavation shall include Channel Excavation, Class 1 Excavation, and Class 2 Excavation unless these are specified as separate bid items.

216.05 METHOD OF MEASUREMENT.

Page 137

02-11-05

At the end of the second line, change "8.34" to "8.33".

230.02 CONSTRUCTION REQUIREMENTS.

Page 138

11-21-03

The following two sentences shall be added after the first sentence of Section 230.02 A.4.:

... the Engineer. Salvaged topsoil that is stockpiled within the clear zone must be stockpiled in a manner that is safely traversable. The stockpile must have slopes which are 4:1 or flatter if they are located within the clear zone. Topsoil shall ...

230.03 METHOD OF MEASUREMENT.

Page 140

09-24-04

In the first sentence of Section 230.03 D replace the phrase "Square Yards" with "Stations".

SECTION 300 TABLE OF CONTENTS

Page 147

11-19-04

Delete the Section 302 title, at the top of the page, and replace it with the following:

**SECTION 302
SALVAGED BASE COURSE, AGGREGATE BASE COURSE
OR AGGREGATE SURFACE COURSE**

SECTION 300 TABLE OF CONTENTS

Page 147

11-19-04

Delete the Section 302.02 A title and replace it with the following:

Aggregate or Salvaged Material

**302 AGGREGATE BASE
OR SURFACE COURSE**

Page 149

11-19-04

Delete the section title, in its entirety, and replace it with the following:

**SECTION 302
SALVAGED BASE COURSE, AGGREGATE BASE COURSE
OR AGGREGATE SURFACE COURSE**

**302 AGGREGATE BASE
OR SURFACE COURSE**

Page 149

11-19-04

In Section 302.01, delete the paragraph in its entirety and add the following paragraph in its place:

This work consists of furnishing and placing one or more courses of aggregate or salvaged materials and additives, on a prepared foundation.

302.02 MATERIALS

Page 149

11-19-04

In Section 302.02 A, change the title to "Aggregate or Salvaged Material" and add the following at the end of the section:

Salvaged material shall meet the specifications of Section 817.

302.02 MATERIALS

Page 149

11-19-04

In Section 302.02 B, add quotation marks around the word "lot" in the first sentence.

302.02 MATERIALS

Page 149

11-19-04

In Section 302.02 B and the last paragraph on the page (beginning "The physical properties of the..."), insert "(excluding salvaged base)" after the word "aggregate".

302.02 MATERIALS

Page 150

11-19-04

In Section 302.02 B, insert the following as a new paragraph, after the first paragraph on the page (beginning "If a fraction of a lot..."):

Routine bitumen-content testing of Contractor-supplied Salvaged Base will be performed on lots of 10,000 tons or fraction thereof for the final lot. If the average of the three extraction results is greater than 3.5%, a reduction in the unit price will be made according to the formula below. If the average percentage of bitumen exceeds 4.0%, the material will be rejected.

Unit Price Reduction: Percent Reduction = 20 X 0.1% above the allowable bitumen content
(i.e. a 2% reduction per 0.1% above the allowable)

302.04 CONSTRUCTION REQUIREMENTS

Page 150

11-19-04

In Section 302.04 D, at the end of the first sentence (beginning "Compaction shall be carried out..."), insert the phrase "or the fabric manufacturer's requirements (if fabric is specified), whichever is greater".

302.04 CONSTRUCTION REQUIREMENTS

Page 151

11-19-04

In Section 302.04 G, replace all instances of the word "aggregate" with the words "aggregate or salvaged material".

**302 AGGREGATE BASE
OR SURFACE COURSE**

Page 151 and 152

11-19-04

In Section 302.05 and Section 302.06, replace all instances of the word “aggregate” with the words “aggregate or salvaged”.

302.06 BASIS OF PAYMENT

Page 152

11-19-04

Remove “, Square Yard” from the list of Subgrade Preparation pay units.

304.04 CONSTRUCTION REQUIREMENTS.

Page 155

02-14-03

Delete the first sentence in Section 304.04 B.2. and insert the following:

2. **Compaction.** Compaction of the permeable base shall be according to Section 302.04 D. except the roller shall be a 10 ton, double drum, steel wheeled roller.
-

306.04 CONSTRUCTION REQUIREMENTS.

Page 160

02-14-03

Delete the second sentence of Section 306.04 H. in its entirety and insert the following:

The surface shall be finished using a Surface Tolerance Type B as specified in Section 302.04 F.

401.05 METHOD OF MEASUREMENT.

Page 173

05-16-03

Delete paragraph C. of Section 401.05 in its entirety.

401.06 BASIS OF PAYMENT.

Page 173

05-16-03

Delete the Pay Item Water in Section 401.06 in its entirety.

405.03 METHOD OF MEASUREMENT.

Page 180

11-19-04

In Section 405.03 B, add “cleaning/brooming water;” after the word “brooming”, in the second line of the last paragraph.

408.04 CONSTRUCTION REQUIREMENTS.

Page 191

05-20-05

In Section 408.04 A, add “and Section 106.06” to the end of the first sentence (beginning “Stripping of the pit...”).

408.04 CONSTRUCTION REQUIREMENTS.**Page 192****03-14-03
09-24-04**

Section 408.04 B., add the following sentence at the end of the second paragraph (Currently beginning "The Contractor will provide..."):

Regardless of who is preparing the mix design, the Contractor shall provide the Department with the bitumen, aggregate and blend portions for the mix design, a minimum of 7 days before production begins.

408.04 CONSTRUCTION REQUIREMENTS.**Page 192****03-14-03**

Delete footnote 3 of the mix design table in Section 408.04 B., in its entirety and insert the following:

The mix design will be approved if the laboratory mix meets one of the three properties, % VMA, Fines/Asphalt Ratio, Film Thickness and all of the other specified properties.

408.04 CONSTRUCTION REQUIREMENTS**Page 195****02-17-06**

Section 408.04 I.1, add the following sentence to the end of the second paragraph:

The Engineer has the option to remove the pneumatic-tired roller if compaction can be achieved without the equipment.

408.05 ACCEPTANCE.**Page 199****05-20-05
02-17-06**

In Section 408.05 A.1, "Gradation", add the sentence below as shown:

If any two tests in a lot result in the variance of any one or more sieve from the JMF gradation target value by more than the tolerances listed below, a deduction on the entire lot will be applied. A deduction will be calculated for each sieve out of the acceptable range. The total deduction will be the sum of the deductions calculated for each sieve out of the acceptable range. The following formulas will be used to calculate the Deduction and Lot Pay Factor:

$$\text{Deduction} = (\text{Percent Deviation from the Target Range}^*) / 100$$

$$\text{Lot Pay Factor} = 1.00 - \sum (\text{Deduction})$$

*Target Range = target value + or – the acceptable tolerance value listed below:

AGGREGATE TOLERANCES	
5/8 sieve ¹	-2%
1/2" - #8 sieve ²	± 7%
#16 - #50 sieve ²	± 6%
#200 sieve ²	± 2%

¹ A tolerance of 2% in the amount passing the 5/8" sieve will be permitted providing all material passes the 3/4" sieve.

² The target value + or – the tolerance allowed shall not exceed the specified gradation range.

The deduction will be waived by the Engineer if; the daily air voids of the marshall plugs as determined in Section 408.05 C.1 are between 3 and 5% and the aggregate gradation for each sieve is not outside the gradation band for the class of aggregate specified. If both of these conditions are met, the Lot Pay Factor will be 1.00.

408.06 METHOD OF MEASUREMENT.

Page 203

**11-21-03
02-20-04**

The following shall be added to Section 408.06:

- D. **Rumble Strips.** When a bid item is included in the plans, the quantity for rumble strips is determined by project length for each shoulder per mile. The quantity paid for will be the quantity shown in the Contract, provided the project is constructed as shown in the plans. A deduction in length will not be made for discontinued rumble strips across road approaches, ramps, etc. as identified in the notes in the standard drawings.

When the bid item for rumble strips is each, payment will be for all rumble strips installed at a stop intersection in one lane.

408.07 BASIS OF PAYMENT.

Page 204

04-11-03

The following item shall be added to this section:

Pay Item	Pay Unit
Rumble Strips	Each or Mile

409.04 CONSTRUCTION REQUIREMENTS.

Page 206

03-14-03

Delete the words "Special Provision" in line 11 of the first paragraph under Quality Control Plan in Section 409.04 and insert the word "Specification".

409.04 CONSTRUCTION REQUIREMENTS.

Page 206

03-24-05

In the Quality Control Laboratory section, add the following to the end of the first paragraph (beginning "The Contractor will furnish..."):

This laboratory will be measured and paid according to Section 706.

409.04 CONSTRUCTION REQUIREMENTS.

Page 206

09-24-04

In section 409.04 A, add "106." after the word "section" in the first sentence. The first sentence should read "Stripping of the pit and pit operations shall be conducted according to section 106."

409.04 CONSTRUCTION REQUIREMENTS.**Page 207****03-14-03**

Delete the following sentence in lines 5 and 6 of the second paragraph of Section 409.04 A., in its entirety:

The Department will develop the mix design for the project.

409.04 CONSTRUCTION REQUIREMENTS.**Page 207****02-11-05****03-24-05**

In Section 409.04 A., delete the first sentence of the fourth paragraph on page 207 (beginning “The Contractor will provide...”) and insert the following in its place:

The Contractor shall provide the Engineer with copies of the test results for each stockpile of aggregate that will be incorporated into the mix, within 48 hours of sample collection.

409.04 CONSTRUCTION REQUIREMENTS.**Page 208****03-14-03**

Delete the statement “as revised in October 1998” in lines 3 and 4 in the first paragraph of Section 409.04 B., in there entirety.

409.04 CONSTRUCTION REQUIREMENTS.**Page 210****02-14-03**

Delete the table for the Determination of Surface Area in Section 409.04 B.2.c. and insert the following table:

Determination of Surface Area

Sieve Analysis % Passing								
Sieve	Maximum Size	No. 4	No. 8	No. 16	No. 30	No. 50	No. 100	No. 200
Combined Grading	***	***	***	***	***	***	***	***
Coefficient	0.02	0.02	0.04	0.08	0.14	0.30	0.60	1.60

In section 409.04 O, **Quality Control Sampling and Testing, Table A, QUALITY CONTROL TESTING FREQUENCIES**, add to the second column heading the word “**Daily**” in front of the word “**Frequency**” so that the heading will read “**Daily Frequency**”.

409.04 CONSTRUCTION REQUIREMENTS.

In section 409.04 P, **Verification Testing**, delete the sentence in the second paragraph (begins with “The Engineer will observe. . .”) and replace it with the following sentence:

The Engineer will make random checks for Asphalt Content as specified in Section 409.04 O.

409.06 METHOD OF MEASUREMENT.

At the end of Section 409.06 D. **Testing**, delete the phrase “will be measured and paid at the unit price per ton for testing.” and insert the following in its place:

will not be measured separately and shall be included in the price bid for other items.

410.02 MATERIALS.

Delete Table 1 of Section 410.02 B. and insert the following:

**Table 1
Initial Control Points for Superpave Aggregate Blend Gradation**

Sieve Size	Nominal Aggregate Size* ½" (12.5 mm) % Passing	
	Min	Max
5/8" (15.9 mm)	100	100
½" (12.5 mm)	90	100
#8 (2.36 mm)	28	58
#200 (75 μ)	2.0	7.0

*Nominal aggregate size is defined as one sieve size larger than the first sieve to retain more than 10 percent.

410.04 CONSTRUCTION REQUIREMENTS.**Page 224****03-24-05**

In the Quality Control Laboratory section, add the following to the end of the second paragraph (beginning "The Contractor will furnish..."):

This laboratory will be measured and paid according to Section 706.

410.04 CONSTRUCTION REQUIREMENTS.**Page 224****03-17-06**

In the Engineer's Laboratory section, add the following to the end of the paragraph (beginning "The Contractor will provide..."):

This laboratory will be measured and paid according to Section 706.

410.04 CONSTRUCTION REQUIREMENTS.**Page 225****02-17-06**

In Section 410.04 A.2.a, "Contractor Developed Mix Design", modify the first sentence (beginning "After production of 5,000 tons") as follows:

After production of 5,000 tons and before production of 10,000 tons of aggregate, the Contractor shall develop a preliminary Superpave mix design and submit the results to the Department.

In the same section, delete the last sentence (beginning "In lieu of the Gyratory Mix Design").

410.04 B Volumetric Mix Design.**Page 227****02-11-05**

In Table 4, replace the second through fourth AASHTO Designations (PP28, PP2 and MP2) with R 35, R 30 and M 323, respectively.

Delete Table 5 in Section 410.04 B.1, in its entirety, and insert the following in its place:

**TABLE 5
MIX DESIGN**

Procedure/Property/Test	Criteria	Reference
Gyratory Compaction Effort, # Gyration	As specified on Plans	AASHTO R 35
Voids in Mineral Aggregate, % Minimum	14.0 for 1/2" Nominal Maximum Aggregate ¹	AASHTO M 323 AASHTO T 166
Voids Filled with Asphalt, %	As specified on Plans	AASHTO M 323 AASHTO T 166
% G _{mm} @ N _{ini} ² (Desired)	As specified on Plans	AASHTO M 323 AASHTO T 166
% G _{mm} @ N _{ini} ²	98.0 Maximum	AASHTO M 323 AASHTO T 166
Dust/Effective Asphalt Ratio	0.6 – 1.3 (Top Lift) 0.6 – 1.4 (Bottom Lift)	AASHTO M 323 AASHTO T 166
Desired Moisture Sensitivity, Min. % Strength Retention ²	70 @ 7.0 ± 1% Air Voids	AASHTO T 283 AASHTO R 30
Asphalt Film Thickness ² (Microns)	7.5 – 13	See Below

¹ Nominal maximum aggregate size is defined as one sieve size larger than the first sieve size to retain more than ten percent of the aggregate.

² Desired value, final determination to be made by Materials and Research Engineer.

Delete the title of Table 5 in Section 410.04 B.1. and insert the following:

**TABLE 5
MIX DESIGN**

Delete the table for the Determination of Surface Area in Section 410.04 B.1. and insert the following table:

Determination of Surface Area

Sieve Analysis % Passing								
Sieve	Maximum Size	No. 4	No. 8	No. 16	No. 30	No. 50	No. 100	No. 200
Combined Grading	***	***	***	***	***	***	***	***
Coefficient	0.02	0.02	0.04	0.08	0.14	0.30	0.60	1.60

410.04 CONSTRUCTION REQUIREMENTS.**Page 229****02-14-03**

Delete Section 410.04 B.2.c and 410.04 B.2.d in their entirety and insert the following:

- c. 1/2% above the optimum AC content determined by the Trial Mix Design.
 - d. 1.0% below the optimum AC content determined by the Trial Mix Design.
-

410.04 CONSTRUCTION REQUIREMENTS.**Page 232****11-21-03**

Delete the Allowable Working Ranges for Fine Aggregate Angularity and Clay Content in Table 8, Section 410.04 P.2. and replace with the following:

Fine Aggregate Angularity	Not less than the minimum specified
Clay Content	Not less than the minimum specified

410.05 ACCEPTANCE.**Page 234****11-21-03
02-20-04**

In the first sentence of the last paragraph of Section 410.05 A.1., delete “2\$” and replace with “2%”.

410.05 ACCEPTANCE.**Page 236****02-14-03
03-14-03**

Delete Section 410.05 C.1.b. in its entirety and insert the following:

- b. Compact two gyratory specimens with each sample taken to determine the field gyratory density. The number of gyrations applied to the gyratory specimens shall be as specified in the plans or as specified by the Engineer, and the temperature of the mix shall be 270⁰ F plus or minus 5⁰ F; and
-

410.06 METHOD OF MEASUREMENT.**Page 239****03-24-05**

At the end of Section 410.06 D. **Testing**, delete the phrase “will be measured and paid at the unit price per ton for testing.” and insert the following in its place:

will not be measured separately and shall be included in the price bid for other items.

411.03 CONSTRUCTION REQUIREMENTS.**Page 241****02-17-06**

In Section 411.03, last paragraph, second sentence (beginning with "If the milled surface. . ."), delete the sentence in its entirety and replace with the following:

The Contractor will be responsible to repair any breakups, or damage that occurs to the roadway after it is milled and prior to paving.

411.04 METHOD OF MEASUREMENT.**Page 241****11-19-04**

In Section 411.04 A, add "cleaning/brooming water," after the word "brooming", in the second line of the first paragraph.

420.02 MATERIALS.**Page 243****02-17-06**

In Section 420.02 B, delete the section in its entirety, and insert the following:

Cover Coat Material. Cover Coat Material shall meet Section 816 for the class specified. The aggregate shall be tested in accordance with Department procedures.

The testing frequency is a minimum of one per day, or one per lot, whichever is greater. A lot is defined as 1,200 tons of material. If plan quantity is less than 1,200 tons, a lot will be equal to plan quantity. If the final lot is less than 600 tons, it will be included in the previous lot. If the final lot is 600 tons or greater, it will be considered a separate lot.

Three random samples will be taken for each lot of material. The samples will be tested and the material accepted if the average of the three samples meets the gradation specified. When the average of the three samples does not meet the gradation specified, the material will either be rejected or a reduction in the Contract Unit Price will be made.

If the Engineer determines a deduction is the appropriate action, a Unit Price Adjustment will be calculated as shown:

Unit Price Reduction; No. 200 Sieve: 1 percent deduction for each 0.1 percent deviation from the specification range limits.

Unit Price Reduction; Other Sieves: Percent of Deduction = 5 × percent of deviation from the specification range limits.

If the aggregate fails to meet the specified gradation on one or more sieves, the reduction will be the sum of the deductions.

If the tested material deviates from the specified gradation for two consecutive lots, incorporation of additional material into the work will not be allowed until the Contractor takes the necessary corrective action to meet the specifications.

420.02 MATERIALS.**Page 243****07-21-06**

In Section 420.02 C, delete the first sentence in its entirety and insert the following:

The cover coat material shall be spread uniformly over the bituminous material with an aggregate spreader immediately after the application of the bituminous material.

420.04 CONSTRUCTION REQUIREMENTS.**Page 245****02-20-04
04-16-04
09-24-04**

In Section 420.04 E., delete the last sentence (beginning "The flaggers shall provide..."), including the printed notice verbiage, from the first partial paragraph on the page and replace it with the following sentence:

Flaggers and pilot car(s) shall not be bid separately, but shall be included in the price bid for other items.

In Section 420.04 E., delete the phrase "and printed notices" from the fifth full paragraph on the page (beginning "On four-lane highways the additional...").

550.04 CONSTRUCTION REQUIREMENTS.**Page 256****02-11-05**

In Section 550.04 G.3.b, delete the second paragraph (beginning "Vibration shall be accomplished..."), delete the last paragraph (beginning "If forward movement..."), and insert the following at the end of the section:

During paving operations, a constant and uniform head of concrete shall be maintained in front of the paver. This head shall be maintained at a depth within the range of 0.5 to 2 times the depth of the finished slab.

- (1). Consolidation – Vibrator Operation. The slip-form paving equipment shall consolidate the full width and depth of concrete in a single pass, using an approved internal or surface vibrator. Internal vibrators shall penetrate into the concrete pavement slab to mid slab or as deep as possible while passing above any reinforcing steel. An operating position-locking device shall be provided so that no part of the vibrating unit can be lowered to the extent that it will come in contact with reinforcing steel or tie bars while paving. Internal vibrators shall be operated within a frequency range of 4000 to 8000 vibrations per minute. The Engineer may authorize the minimum vibration frequency lowered to 3500 vibrations per minute for particular sections of paving such as super elevations. However, in no case shall the frequency exceed 8000 vibrations per minute. Surface vibrators shall be operated within a frequency range of 3500 to 6000 vibrations per minute. Vibrators shall not be operated in a manner to cause separation of the mix ingredients (either a downward displacement of large aggregate particles or an accumulation of laitance on the surface of the concrete). Mix-separation avoidance may require a reduction in vibrator frequency when forward motion of the paver is reduced.

If a vibrator fails to operate within the specifications, the Contractor shall repair or change the vibrator before the paving begins the following day or begins the same day, if the continuous paving is stopped at a header or at the end of a session.

If two adjacent vibrators fail to operate within specifications, the paving operation shall stop and repairs made or vibrators replaced.

Vibrators shall be stopped whenever forward motion of the paver is stopped.

A vibrator monitor shall be operated to record, at a minimum, the clock time, station location, paver track speed, and operating frequency of individual vibrators. Recordings shall be made after each 25 feet of paving or after each 5 minutes of time, whichever occurs first. An electronic and printed record of the data shall be provided to the Engineer, daily. The Engineer may

determine that more frequent submission is necessary, particularly if equipment malfunctions occur. Either the printed or electronic records (or both) shall be produced in their final form prior to the records being removed from the paver (i.e. the Contractor shall either produce a printout or diskette from the recording device, on the paver and present this record to the Engineer, in the field). If only one record is produced at the paver, the other may be produced in an office. However, the first record shall be presented to the Engineer prior to any of the data entering an office environment. The electronic record shall be a comma or spaces delimited text file, adequate for insertion into a computerized spreadsheet software package. Additionally, the Contractor shall, once per week (or as directed by the Engineer), provide a written explanation of vibrator setting changes, out-of-tolerance vibratory operations, and monitoring-device malfunctions.

If the electronic monitoring device fails to operate properly, the vibrators shall immediately be checked manually. If the vibrators are functioning properly, paving may continue, but the Contractor shall make all efforts to correct the malfunction in a reasonable amount of time. If the recording device fails to operate, paving may continue but the Contractor shall correct the malfunction within 3 paving days. The Engineer may allow additional time if, in the sole opinion of the Engineer, circumstances are beyond the Contractor's control.

550.04 CONSTRUCTION REQUIREMENTS.**Page 258****02-17-06**

In Section 550.04 I.2, paragraph 5, delete the last sentence (beginning with “After the dowel bar assembly. . .”) in its entirety and replaced with the following:

After the dowel bar assembly is staked to the roadbed and the dowel bars are held firmly in place, the assembly ties running parallel to the dowel bars shall not be removed but shall remain in place to maintain the proper alignment of the dowel bars.

550.04 CONSTRUCTION REQUIREMENTS.**Page 258****02-17-06**

In Section 550.04 I.2, paragraph 6, delete the first sentence (beginning with “A thin uniform coat . . .”) in its entirety and replaced with the following:

A uniform coat of Tectyl 506, or approved equal, shall be applied by the manufacturer to the full length of the dowel bars to act as a release agent.

550.04 CONSTRUCTION REQUIREMENTS.**Page 258****06-16-06**

In Section 550.04 I.3, in the second paragraph, delete the last sentence (beginning with “After the dowel bar assembly. . .”) in its entirety and replaced with the following:

After the dowel bar assembly is staked to the roadbed and the dowel bars are held firmly in place, the assembly ties running parallel to the dowel bars shall not be removed but shall remain in place to maintain the proper alignment of the dowel bars.

550.04 CONSTRUCTION REQUIREMENTS.**Page 262****10-20-06**

In Section 550.04 J.7, add the following as the second sentence in the first paragraph (begins with “After texturing. . .”):

The station markings shall be imprinted every 500 feet and “tick” marks shall be imprinted at 100 foot intervals between the 500 foot station markings.

In Section 550.04 J.7, add the following as the third and fourth paragraphs:

An “O” shall be imprinted at each edge drain outlet location. Outlets occur approximately every 500 feet.

At each reference point (RP), the RP number shall be imprinted into the pavement. The imprints will occur approximately one per mile.

550.04 CONSTRUCTION REQUIREMENTS.**Page 262****11-21-03**

The following shall be added to Section 550.04 J.:

8. **Rumble Strips.** When a bid item is included in the plans, the quantity for rumble strips is measured by project length for each shoulder per mile, and paid for by plan quantity. No

deduction in length will be made for discontinued rumble strips as identified in the notes in the standard drawings.

550.04 CONSTRUCTION REQUIREMENTS.

Page 265

11-21-03

Delete the last paragraph of Section 550.04 N. in its entirety and insert the following:

When bituminous pavement or any colored concrete is applied adjacent to P.C.C. pavement, the adjacent P.C.C. pavement shall be protected from spills and smears. Discolored P.C.C. pavement shall be cleaned at the Contractor's expense. The P.C.C. pavement shall not be used to stockpile or mix any material unless approved by the Engineer.

550.04 CONSTRUCTION REQUIREMENTS.

Page 265

**02-20-04
05-21-04**

Delete Section 550.04 O. in its entirety and insert the following:

- O. Opening to Traffic.** Newly constructed concrete pavement shall not be opened to public traffic until the concrete has attained a flexural strength of 550 psi or a compressive strength of 3000 psi. Specimen beams and cylinders used for testing shall be cured under the same conditions as the concrete pavement or cores may be taken from the pavement. Pavement that has not reached the required flexural and compressive strengths shall not be opened to public traffic or heavy equipment until it has aged at least 14 days. In addition to the strength requirements, the newly constructed concrete pavement shall not be opened to public traffic until all joints have been sealed. Construction traffic may be permitted on the concrete pavement when all of the following conditions have been met:
1. The strength requirements are met
 2. The initial relief cut has been made on all joints and
 3. Joint widening (or the second joint cut) has not been done on any joints, unless the widened joints have been sealed, in conformance with the final plan requirements.

550.05 METHOD OF MEASUREMENT.

Page 271

02-14-03

Add the following to the first paragraph in Section 550.05 D.:

When separate payment is not made for Doweled Expansion or Contraction Joint Assemblies, the cost to provide and install the assemblies will be incidental to the Concrete Pavement.

550.05 METHOD OF MEASUREMENT.

Page 271

10-21-05

Add the following as Section 550.05 I:

Sawing and Sealing Joints. On projects where a separate bid item for sawing and sealing of joints is not included in the plans, the work will not be measured separately but shall be included in the price bid for other items.

550.06 BASIS OF PAYMENT.

Page 272

11-21-03

The following item shall be added to this section:

Pay Item	Pay Unit
Non-Reinforced Concrete Pavement Cl. AE - Doweled	Square Yard

570.04 CONSTRUCTION REQUIREMENTS.

Page 277

02-14-03

Delete the first paragraph in Section 570.04 A.1. and insert the following:

1. **Restoring the Subgrade.** Concrete in full depth repair areas shall be removed by lifting with adequately sized equipment that will minimize disruption to the existing subgrade. Construction equipment will not be allowed in areas where the concrete has been removed. Voids deeper than one inch beneath the removed concrete shall be filled and compacted with granular fill as directed by the Engineer.

570.04 CONSTRUCTION REQUIREMENTS.

Page 278

07-16-04

In Section 570.04 A.6.b.(2), replace all instances of the word "tiebars" with "tie bars".

570.04 CONSTRUCTION REQUIREMENTS.

Page 278

07-16-04

Add the following sentence to the end of Section 570.04 A.6.b.(2):

The price bid for full-depth repair shall include the costs for all material, equipment and labor required to make the repairs, as specified above.

570.04 CONSTRUCTION REQUIREMENTS.

Page 278

11-19-04

Delete the first paragraph of Section 570.04 A.7 (beginning "Place full-depth repairs..."), in its entirety and replace it with the following:

Full-depth repairs 100 feet and shorter in longitudinal dimension shall be placed the same day the concrete removal is initiated. Repairs longer than 100 feet shall be placed within 48 hours of the initiation of concrete removal.

570.04 CONSTRUCTION REQUIREMENTS. **Page 278** **07-18-03**
11-21-03

Delete the first two sentences of Section 570.04 A.8 and insert the following:

Shape the longitudinal joint reservoir 1/4-inch wide by 3/4-inch deep in areas of full-depth repairs. Clean the joint as directed by the Engineer and seal with a Type 2 Hot Applied Joint Sealant.

570.04 CONSTRUCTION REQUIREMENTS. **Page 281** **05-21-04**

In Section 570.04 C.1.e, delete Patchroc 10-60 from the first sentence.

570.04 CONSTRUCTION REQUIREMENTS. **Page 282** **11-21-03**

The following shall be added to Section 570.04 C.2.:

- I. **Opening to traffic.** The dowel bar retrofit portion of the project will not be opened to traffic until the surface has been ground.
-

570.04 CONSTRUCTION REQUIREMENTS. **Page 283** **11-19-04**

In Section 570.04 D.3, replace all instances of "driving lane" with "ground lane".

570.04 CONSTRUCTION REQUIREMENTS. **Page 284** **07-16-04**

In Section 570.04 D.4, delete the word "Pavement" from the section title and replace it with "Payment".

570.04 ACCEPTANCE. **Page 284** **02-17-06**

In Section 570.04 D.5, "Joints", Add the following sentence as the first sentence in the Section:

Joints to be cleaned and resealed shall be done so in accordance with Section 550.04 M.

602.03 CONSTRUCTION REQUIREMENTS **Page 304** **02-20-04**
03-26-04

Delete the last sentence in the first paragraph of Section 602.03 F.2.c. and insert the following:

The geotextile fabric or burlap shall be kept continuously moist for 7 days or covered with a waterproof material such as polyethylene until the end of the 7 day period.

602.03 CONSTRUCTION REQUIREMENTS.**Page 305****11-21-03**

Delete the third sentence of Section 602.03 F.3. and replace with the following:

The wet cure material shall be placed and the wet cure started no later than 30 minutes after the finish of the completed area.

604.04 CONSTRUCTION REQUIREMENTS.**Page 312****05-19-06**

At the end of Section 604.04 A add the following as the sixth paragraph of the section:

Calculations and work drawings produced by the supplier used in the design of prestressed concrete beams shall be signed, sealed, and dated by a Professional Engineer duly registered in the State of North Dakota.

604.04 CONSTRUCTION REQUIREMENTS.**Page 312****06-16-06**

In Section 604.04 A, third paragraph, in the second (begins with "Two copies of . . .") and fourth (begins with "The time required . . .") sentence replace the word "approval" with the word "review".

604.04 CONSTRUCTION REQUIREMENTS.**Page 312****06-16-06**

In Section 604.04 A, third paragraph, in the last sentence (begins with "Six copies of . . .") replace the word "approved" with the word "reviewed".

606.04 CONSTRUCTION REQUIREMENTS.**Page 316****06-16-06**

In Section 606.04, in the first paragraph, first sentence (begins with "The Contractor shall . . .") replace the word "approval" with the word "review."

606.04 CONSTRUCTION REQUIREMENTS.**Page 316****05-19-06**

At the end of the first paragraph in Section 606.04 A (following ". . . materials coordinator of the date and location of fabrication.") add the following sentence:

Calculations and work drawings produced by the supplier used in the design of precast reinforced concrete box culverts shall be signed, sealed, and dated by a Professional Engineer duly registered in the State of North Dakota.

616.03 CONSTRUCTION REQUIREMENTS.**Page 328****04-21-06**

In Section 616.03 E.1, in the second paragraph, delete the first sentence in its entirety and replace with the following:

AASHTO 270 Grade 50 W steel to be used in unpainted applications shall be stored above ground on platforms, skids, or other supports.

Delete the letter I preceding subsection Tubular Markers and Flexible Delineators and insert the letter H. The new subsection title will be as follows:

H. Tubular Markers and Flexible Delineators.

Delete Subsection 2 of Section 704.02 H. in its entirety and insert the following:

2. **Flexible Delineators.** The flexible delineators shall be installed in the locations shown on the plans. The posts shall be resilient and be orange in color. The delineator posts shall be made of PVC or polyethylene and shall be pre-approved for use by the Design Division. Posts currently approved are Services and Material Co. Inc., Deluxe delineator post and Safety Guide's Traf-Flex Post or Flex Stake.

The post shall have 4-inch wide white bands as shown on the plans. The reflective intensity of the bands shall meet the requirements of Type III B, Type III C, or Wide Angle Prismatic flexible reflective sheeting as provided in Section 894.02

Delete the last sentence of the second paragraph after Section 704.03 A.3 and insert the following:

The Contractor shall provide documentation showing the requirements are being met for any sign supports used that do not comply with NDDOT's Standard Drawings.

Delete Section 704.03 M. in its entirety and insert the following:

- M. Flexible Delineator Application.** The delineator base shall be attached to the pavement as shown on the plans. The contractor shall maintain the delineators until they are removed. The delineators shall be removed as soon as the new roadway is opened to traffic. The flexible delineators shall remain the property of the contractor.

If the contractor uses a two sided delineator such as Safety Guide's Flex Stake, the delineator shall have the wide side towards traffic. If the delineator is to be seen by side traffic, an additional delineator shall have the wide side placed facing the side traffic. The side traffic delineators shall not be paid for, but shall be included to the price bid for "Flexible Delineators."

If the contractor uses the butyl pad for attaching the flexible delineator to concrete roadways, the contractor shall remove the butyl pad down as close as possible to the pavement using a mechanical scraper such as a loader-type machine with a bucket.

All costs for providing, installing, maintaining, and removing the flexible delineators with butyl pad when used shall be included in the unit price bid for "Flexible Delineators."

704.03 CONSTRUCTION REQUIREMENTS.

Page 394

**07-18-03
08-15-03**

The following shall be added to Section 704.03 U.:

- 3. **Traffic Signal Maintenance.** On projects where permanent or interim traffic signals are being installed, the Contractor shall designate an experienced person in this area that can troubleshoot any possible problems that may occur with the traffic signal maintenance. This maintenance person shall be in addition to the traffic control supervisor and the watchperson as specified in Sections 704.03 U.1 and 704.03 U.2.

The traffic signal maintenance person, or experienced alternate, must be accessible to the job site within one hour of notification and be "on call" on a 24-hour basis. In the event of emergency control, refer to Section 704.03 V.

The Contractor shall be required to maintain the interim or permanent traffic signals until the project has been accepted by the Engineer.

704.03 CONSTRUCTION REQUIREMENTS.

Page 394

**07-18-03
08-15-03**

Delete the first sentence of Section 704.03 V. in its entirety and replace with following:

- V. **Emergency Control.** Written notification shall be provided to the Engineer, the State Police, and local law enforcement agencies, of the names, addresses, and the telephone numbers of the Contractor's Superintendent, an alternate for the superintendent, Traffic Control Supervisor, Watchperson, and Traffic Signal Maintenance Person.

704.03 CONSTRUCTION REQUIREMENTS.

Page 394

**07-16-04
11-19-04**

In Section 704.03 W., modify the first sentence of the second paragraph (currently beginning "At the time of...") to read "Except when devices are to become Department property (as indicated below), at the time of..." and add the following as paragraph 3 of this section:

When the plans indicate that temporary traffic-control devices are to become Department property, these devices shall be new upon delivery to the project and be classified acceptable upon project completion.

704.05 BASIS OF PAYMENT.

Page 398

05-19-06

Add the following as Section 704.05 I:

- I. When there is a bid item which includes precast concrete median barriers (barriers) which are furnished by the state, payment will be made in accordance with the following schedule:

50% of the bid amount will be paid when:

The barriers have been placed on the project site in accordance with the plans and all other applicable requirements of this section have been satisfied.

The remaining 50% of the bid amount will be paid when:

The barriers have been removed from the project, transported to the storage area designated

in the plans, have been determined to be in serviceable condition, and all hardware is accounted for as shown in the written inventory. Acceptability and full payment will be as determined by the Engineer.

The Engineer shall be informed a minimum of two weeks prior to the date that the Contractor plans to take control of the barriers. Prior to the Contractor taking control of the barriers, the Contractor and the Engineer shall take a written inventory of all barriers and associated materials to be received by the Contractor. The Contractor and the Engineer shall each sign, date, and retain a copy of the inventory.

The Engineer shall be informed a minimum of two weeks prior to the date that the Contractor plans to transport the barriers to the location designated in the plans for storage. Upon delivery to the site, the Contractor and Engineer shall take an inventory of the barriers and associated materials being returned to the control of department. Any barriers that have been damaged and any associated materials that have been lost or damaged while under the control of the Contractor shall be replaced at the contractor's expense.

The cost of obtaining, transporting, installing, moving, and maintaining the barriers shall be included in the state furnished precast concrete median barrier bid item.

708.02 SEEDING, SODDING, AND MULCHING.

Page 404

09-24-04

In Section 708.02 B.1.d, modify the Class II and Class III seed application rates to the following (varieties, species and units are to remain unchanged):

Western Wheatgrass	8
Switchgrass	4
Green Needlegrass	6
Sideoats Grama	6
Slender Wheatgrass	<u>5</u>
	29

708.02 SEEDING, SODDING, AND MULCHING.

Page 404

**03-17-06
07-21-06**

In Section 708.02 B.1.d, delete the current specification for the Class IV seed (Temporary Cover Crop) and replace with the following:

Class IV (Temporary Cover Crop) – The Contractor will have the option of using any one of the following grass species applied at the specified rate:

Grass Species	Variety	Pounds Pure Live Seed Per Acre
Oats		30
Rye		50
Winter Wheat		50

In Section 708.02 B.1.e.(2), delete the last paragraph (beginning "The required fertilizer shall be...") in its entirety.

Delete 708.02 B.3 in its entirety and replace with the following the following:

3. **Mulching.**

- a. **Hydro - Mulch:** Hydro-mulch shall contain no germination or growth inhibiting factors and shall have the property of becoming evenly dispersed and suspended when agitated in water. Fiber mulch that is blended with recycled paper is not allowed.

When sprayed uniformly with hydraulic seeding equipment on the surface of the soil, the fibers shall form a blotter like ground cover, which will readily absorb water and allow infiltration to the underlying soil without restricting emergence of seedlings. Weight specification from suppliers, and for all applications, shall refer only to air dry weight of the fiber, considered to be 10% moisture.

The fiber mulch material shall be supplied in packages marked by the manufacturer to show the air dry weight content. Suppliers shall certify that laboratory and field testing of their product has been accomplished, and that it meets all specified requirements.

- b. **Grass Hay or Straw Mulch:** Grass or straw mulching material shall consist of native hay or straw from cereal grain and shall be seed free to prevent introduction of weeds as defined by the rules and regulations of the North Dakota Department of Agriculture. At least 50% of the mulch by weight shall be at least eight inches in length. The mulch shall be baled dry, in bales of approximately equal weight and shall be relatively dry when applied. Materials having characteristics making them unsuitable for the purpose intended will be rejected.

Mulch will be rejected for the following reasons:

1. Chopped or ground mulch; or
2. Mulch that is musty, moldy, rotted, or contains noxious weed or grass seed-bearing stalks; or
3. Mulch containing stones, dirt roots, stumps, and other foreign material.

- c. **Bonded Fiber Matrix:** Bonded fiber matrix shall consist of a continuous layer of elongated fiber strands held together by a water resistant bonding agent. The bonded fiber matrix shall be uniformly applied and shall have no gaps between the product and the seeded soil. The product shall be 100 percent biodegradable and composed of 90% wood fiber, 9% natural binder and 1 % organic and mineral activators (all by weight). The treatment shall be installed with hydraulic seeding equipment.

708.02 SEEDING, SODDING, AND MULCHING.**Page 407****02-17-06**

In Section 708.02 C.1.a.(1), add the following sentence as the second sentence in the Section:

The specification may be waived if the Contractor can prove to the satisfaction of the Engineer that the seeding method used allows for acceptable placement and retention of the seed in the soil.

708.02 SEEDING, SODDING, AND MULCHING.**Page 408****03-17-06**

In Section 708.02 C.1.e.(1), Classes I, II, and V, add the following paragraph to the end of the section:

In areas which have been seeded with a temporary cover crop, and the area has achieved vegetative coverage of 25% or greater of the pre-disturbed condition, the Contractor shall use a no-till method of application for the permanent seeding. The percentage of established vegetative coverage shall be as determined by the Engineer.

708.02 SEEDING, SODDING, AND MULCHING.**Page 408****09-24-04**

In Section 708.02 C.1.e.(2), delete the paragraph (the entire section following the title) in its entirety and replace it with the following:

Seed-drilling equipment meeting the requirements for Classes I, II and V seed shall be used, when Class III (Hydro-Mulch) seeding is specified. If drilling equipment cannot physically access an area (in the opinion of the Engineer) or the slope to be seeded is steeper than 3:1 (H:V), hydraulic spraying equipment capable of mixing the specified seed in water for uniform distribution may be used. In all cases, the mulch shall be applied within 24 hours following seed application, using hydraulic spray equipment capable of mixing the specified mulch in water for uniform distribution.

708.02 SEEDING, SODDING, AND MULCHING.**Page 409****09-24-04**

In Section 708.02 C.1.f, delete the last sentence (currently beginning "The fertilizer may be...") in its entirety and replace it with the following:

The fertilizer shall be mixed with the Class III (Hydro-Mulch) mulch mixture, as the mixture is applied. If the seed is applied with hydraulic spraying equipment, the fertilizer may be mixed with the seed mixture. Otherwise, as stated above, the fertilizer may not be mixed with the seed (including under Class III application).

708.02 SEEDING, SODDING, AND MULCHING.**Page 409****08-15-03**

The following shall be added to Section 708.02 C.1.h.:

Hydroseeding completed after October 1 will not be provided Temporary Care. However, hydroseeding completed after October 1 will not be accepted until it shows evidence of established growth after May 15 of the following year.

In Section 708.02 C.1.d, **Seasonal Limitations**, delete the first sentence and insert the following:

Class I, II, III, and V seed mixtures may be sown at any time during the year. However, if the contractor chooses to sow the mixtures between June 15 and September 1, the Contractor will be solely responsible for any failure of the seed which may occur. If the Contractor chooses to seed with Class I, II, III, and V seed mixtures between June 15 and September 1, and the seed mixtures fail to achieve 100 % coverage during the current or subsequent growing season, the Contractor shall reseed the failed areas at the Contractor's expense.

Delete Section 708.02 B.3.c SS-1, **Emulsion**, in its entirety.

Delete Section 708.02 C.3, **Hydro-Mulch**, in its entirety and replace with the following:

3. **Hydro-Mulch**

- a. **General.** The mulch shall be uniformly applied at a rate of one ton per acre and shall cover a minimum of 95% of the seedbed area. After application, the mulch shall permit percolation of water to the underlying soil. All traffic, signs, structures, and other objects shall be protected from being marked or splattered by the material.
- b. **Tackifier.** The tackifier shall consist of water soluble natural proteins, vegetable gums, or guar gums blended with gelling and hardening agents; or a water soluble blend of hydrophilic polymers, viscosifiers, sticking aids and other gums. Guar gum based tackifiers shall consist of a minimum of 95% guar gum, by weight. The remaining 5% shall consist of dispersing and cross-link additives.

Delete Section 708.02 C.4.d.(2), **Asphalt**, in its entirety and replace with the following:

Tackifier. The tackifier shall meet the requirements of specification 708.02 C.3 b. The tackifier shall be applied by spraying simultaneously with the mulch or by spraying a surface application immediately following mulching. The application rate shall be between 175 and 275 pounds per acre. All traffic, signs, structures, and other objects shall be protected from being marked or splattered by the material.

In Section 708.02 C add the following as Section 708.02 C.5:

5. **Bonded Fiber Matrix.** Rate of application shall be 3,900 pounds per acre (4,375 kg/hectare) and the mix shall consist of 50 pounds bonded fiber matrix to 125 gallons water (50 kg bonded fiber matrix to one cubic meter water) unless otherwise specified by the Engineer. Bonded fiber matrix shall be placed on a given area as soon as possible, or within 24 hours after seeding.

The following Section shall be added:

708.07 SILT FENCE.

- A. **Description.** This work shall consist of furnishing, installing, maintaining, and removing a geotextile barrier-fence designed to remove suspended particles from storm water runoff. The quantities of silt fence shown on the plans may be increased or decreased as directed by the Engineer based on weather, contractor operations or actual site conditions that occur during construction of the project. Such variations in quantity will not be considered as a change in character of work. A Pre-Fabricated silt fence will not be allowed.
- B. **Materials.**
1. **Posts.** Either wood or steel posts may be used. Wood posts shall be treated (Penta or Green Treated) and shall be a minimum of 6 feet long with minimum dimensions of 2 inches diameter for round posts or 1 ½ inches by 1 ½ inches for rectangular posts. Steel posts shall be a minimum of 5 feet long, weigh a minimum of 1.3 lbs/ft and have projections to aid in fastening the wire or fabric. Steel posts should also have a metal plate welded near the bottom such that when the post is driven to the proper depth, the plate will be below the ground level for added stability.
 2. **Woven Wire.** When backing for a filter fabric silt fence is required, a steel wire fence fabric shall be used. A woven wire fence shall conform to ASTM A 116, Class 1 zinc coating for wire. The woven wire support fence shall be at least 32 inches high and a maximum opening size of 6 inches by 6 inches. The wire shall be a minimum of 14 gage grade 60.
 3. **Filter Fabric.** Silt fence fabric shall conform to AASHTO M 288 silt fence specification. Filter fabric shall be composed of fibers consisting of long chain synthetic polymers composed of at least 95% by weight of polyolefins, polyesters or polyamides. The fibers shall be formed into a network such that the filaments or yarns retain dimensional stability relative to each other. The filter fabric shall be free of any treatment or coating which might adversely alter its physical properties after installation. The fabric shall be free of defects or flaws that significantly affect its physical and/or filtering properties. The fabric shall have a minimum width of 36 inches. The filter fabric shall be furnished with suitable wrapping for protection against moisture and extended ultraviolet exposure prior to placement.

The filter fabric shall meet the minimum physical requirements contained in Table 1. Unless otherwise indicated, numerical values represent the minimum average roll value. The required numerical value for the AOS is the maximum allowable in SI Units and the minimum allowable in U.S. Standard Sieve Numbers.

Table 1

Property		Test Method	Supported *	Unsupported
Grab Tensile Strength (lbs)		ASTM D-4632		
	Machine		90	123
	Cross Machine		90	101
Permittivity (sec ⁻¹)		ASTM D-4491	0.05	0.05
Water Flow Rate (gpm / ft ²)		ASTM D-4491	4.43	4.43
AOS (US Sieve #) mm Sieve #		ASTM D-4751	0.600 #30	0.600 #30
UV Resistance (%)		ASTM D-4355	70%@500hrs	70%@500hrs

*Silt fence support shall consist of 14 gage steel wire with a mesh maximum spacing of 6 by 6 inches.

C. Construction Requirements.

In addition to the Standard Drawing shown in the plans the following will apply:

- 1. Installation.** The geotextile at the bottom of the fence shall be buried in a "J" configuration to a minimum depth of 6 inches in a trench so that no flow can pass under the silt fence. Wire support fence if used shall also be buried a minimum of 2 inches. The trench on the upstream side of the silt fence shall be backfilled and the soil compacted over the geotextile.

Silt fence fabrics shall be spliced together only at support posts with a minimum of 18 inches of overlap and in such manner to prevent silt from passing between the two ends. At the time of installation, the fabric or fence will be rejected if it has any defects, deterioration, or other damage incurred during manufacture, transportation, storage, or installation.

Posts shall be spaced 4 feet apart and driven or placed a minimum of 20 inches into the ground. Depth shall be increased to 24 inches if fence is placed on a slope 3:1 or greater. Geotextiles shall be attached to posts by staples, wire, nails, or in accordance with the manufacturer's recommendations. Wire staples shall be a No. 17 gauge minimum and shall have a minimum 0.75 in. wide crown and 0.5 in. long legs. Staples shall be evenly placed with at least 4 per post. Nails shall be a minimum of 14 gauge, 1 inch long, with 0.75 button heads. Nails shall be evenly spaced with at least 4 per post.

Silt fences should be continuous and transverse to the flow. The silt fence should follow the contours of the site as closely as possible. The fence shall also be placed such that the water cannot flow around the end of the fence.

- 2. Maintenance.** Sediment deposits shall be removed when the deposit reaches half of the height of the silt fence at the lowest area or when directed by the Engineer. Silt fence shall be inspected by the Contractor immediately after each rainfall and at least daily during prolonged rainfall. Any deficiencies shall be immediately corrected. Filter fabric shall be removed and replaced whenever it has deteriorated to such extent that it reduces the effectiveness of the silt fence. In addition, the Contractor shall make daily review of the location of silt fences in areas where construction activities have changed the natural contour and drainage runoff to ensure that the silt fences are properly located for effectiveness. Where deficiencies exist, additional silt fences may be installed as directed by the Engineer.

If a silt fence, or portion of a fence, is located in an area where removing the sediment is not possible, then a second silt fence may be installed at the discretion of the Engineer. In this case, the silt fences or portions involved, will be measured and paid for at the unit price for silt fence.

Silt fence shall remain in place until the vegetative coverage is restored to seventy percent of preexisting vegetation. Fence materials that are removed will be disposed of by the Contractor. Upon removal, the Contractor shall dress the area to give a pleasing appearance, and vegetate all bare areas in accordance with the contract requirements. If the new reshaped area still poses an erosion threat, the Engineer may require the Contractor to erect a new silt fence. If vegetative coverage is not restored to seventy percent of preexisting vegetation prior to project acceptance, the silt fence will remain in place and will be removed by NDDOT.

- D. **Method of Measurement.** Silt fence will be measured to the nearest linear foot of fence actually installed in accordance with the plans or as required by the project Engineer. The measurement for payment excludes the fabric or fence material used for overlapping as well as fabric used for seam overlaps.

Silt fence will be paid for per linear foot in place and shall be full compensation for completing the work specified.

- E. **Basis of Payment.**

Payment will be made at the Contract Unit Price for the following:

Pay Item	Pay Unit
Silt Fence Supported	Linear Foot Installed
Silt Fence Unsupported	Linear Foot Installed

This payment will be full compensation for all materials, equipment and labor to install and remove the silt fence.

Cleaning of the sediment deposits shall be paid at the price listed in the "Price Schedule PS-1."

708.07 SILT FENCE. Page 418 10-21-05

In section 708.07 B.1, **Posts**, change "should also have" to "shall have" in the last sentence (begins with "Steel posts should also have . . .").

709.03 A. General. Page 419 02-11-05

In the first paragraph, second sentence (beginning "The fabric shall be placed..."), delete the words "tension, stress or". The new sentence shall read "The fabric shall be placed free of wrinkles and shall..."

709.03 CONSTRUCTION REQUIREMENTS. Page 420 11-21-03

The following paragraph shall be added to Section 709.03 B.:

Geotextile fabric for wrapping the joints of pre-cast box culverts shall meet the specifications of Section 858.01 A., separation fabric Type S2.

709.03 E. Geotextile Reinforcement Fabric.**Page 421****02-11-05
02-17-06**

Delete the first paragraph (beginning "When placing the fabric..."), in its entirety and replace it with the following:

The reinforcement fabric shall be unrolled parallel to the centerline of the road and shall be placed as shown in the plans. The fabric shall be placed such that it is taut and pinned, using a minimum of 6" pins. The pins shall be placed at a nominal 15' spacing along all edges and at all corners, prior to placing any material on the fabric.

714.02 BASIS OF PAYMENT.**Page 424****05-19-06**

In Section 714.02 A in paragraph three, add the following sentence:

At locations where new end sections are to be placed on existing pipe, the contractor is required to identify whether the type of end section needed is male or female.

714.03 CONSTRUCTION REQUIREMENTS.**Page 424****09-24-04**

In Section 714.03, add the following as a general paragraph prior to subpart A:

If the existing drainage facilities become inoperable before the new drainage system is functioning, the contractor shall provide sufficient temporary pumping and/or drainage facilities to keep the roadway drained to the satisfaction of the engineer. The cost of providing sufficient temporary pumping and drainage shall not be bid separately but shall be included in the price bid for other items.

714.03 CONSTRUCTION REQUIREMENTS.**Page 425****05-20-05**

In Section 714.03 A.1, add the following, as a new paragraph at the end of the section:

Disposal of excess excavation from pipe trenches shall be off the right of way, at a location approved by the engineer.

714.03 CONSTRUCTION REQUIREMENTS.**Page 426****09-24-04**

Add the following as 714.03 A.10:

10. **Connection to Manholes and Inlets.** If the proposed pipe or drain is to be connected to a manhole or inlet barrel, the cost of materials, equipment and labor to cut the manhole- or inlet-barrel entrance and to grout the pipe-to-barrel connections shall be incidental to other items.
-

714.04 METHOD OF MEASUREMENT.**Page 428****05-20-05**

In Section 714.04 A, delete the fourth paragraph (beginning "Excavation and backfill..." and insert the following in its place:

Excavation, disposal of excess excavation, and backfill for pipe will not be measured for payment.

714.04 METHOD OF MEASUREMENT.**Page 429****04-16-04**

Add "If a pay item is shown on the plans," at the beginning of the first sentence of the second paragraph of subsection **C. Underdrains.**, currently beginning "Granular Fill will be..."

714.05 BASIS OF PAYMENT.**Page 429****04-16-04**

Add "If a pay item is not shown on the plans," at the beginning of the last paragraph, currently beginning "Granular fill or trench backfill..."

720.03 CONSTRUCTION REQUIREMENTS.**Page 430****06-20-03**

The following paragraph shall be added to Section 720.03 A.:

All concrete alignment monuments shall be precast. Precast concrete alignment monuments will be furnished and placed by the Contractor on all centerline alignment PI's, section corners, quarter corners, and on section lines crossing the centerline alignment as shown on the Standard Drawings. When centerline alignment PI's are located outside the highway right of way, an iron monument (defined in the Standard Drawings) may be placed in lieu of the precast concrete alignment monuments. The precast concrete alignment monuments shall be placed on all grading projects, and all other projects where existing monuments will be disturbed. A licensed Registered Land Surveyor (including the Contractor's surveyor) must be involved in the placement and recording of all Public Land Corners (section corners and quarter corners), section line crossings, and PI monuments as required by the N.D.C.C. The costs associated with concrete monuments are to be included in the pay item "Monuments". A licensed Registered Land Surveyor is not required to be involved in the placement of the other alignment monuments, right of way markers, and right of way monuments. The price bid for "Monuments" shall include the cost of materials, installation, and the Registered Land Surveyor as required.

722.03 CONSTRUCTION REQUIREMENTS.**Page 431****05-20-05**

In Section 722.03 A, add the following, as a new sentence at the end of the paragraph:

Disposal of excess excavation from manhole, catch basin, and inlet installation shall be off the right of way, at a location approved by the engineer.

722.03 CONSTRUCTION REQUIREMENTS.**Page 432****09-24-04**

Add the following sentence to the end of 722.03 G:

The cost of materials, equipment and labor to make the connections shall be incidental to other items.

722.03 CONSTRUCTION REQUIREMENTS.

Page 433

09-24-04

Add the following as 722.03 M:

- M. Maintenance of Drainage.** If the existing drainage facilities become inoperable before the new drainage system is functioning, the contractor shall provide sufficient temporary pumping and/or drainage facilities to keep the roadway drained to the satisfaction of the engineer. The cost of providing sufficient temporary pumping and drainage shall not be bid separately but shall be included in the price bid for other items.

722.04 METHOD OF MEASUREMENT.

Page 433

05-20-05

In the last sentence of the section (beginning "Excavation, embankment, and..."), insert "or excess" between "unsuitable" and "material".

724.03 CONSTRUCTION REQUIREMENTS.

Page 435

05-20-05

In Section 724.03 B.1, add the following, as a new sentence at the end of the paragraph:

Disposal of excess excavation from water-appurtenance installation shall be off the right of way, at a location approved by the engineer.

724.03 CONSTRUCTION REQUIREMENTS

Page 436

09-24-04

Insert the following as Section 724.03 C.8.

8. Using a method approved by the Engineer, the Contractor shall provide temporary service to properties whose services will be interrupted for more than eight (8) hours. If the Contractor intends to perform the work without providing temporary services, all affected property occupants shall be notified, in writing, at least 24-hours in advance of the service interruption. At a minimum this notice shall contain the following information:
- a. Contractor contact information
 - b. Engineer contact information (as directed by the Engineer)
 - c. When the service will be interrupted
 - d. Approximately when the service will be restored
 - e. A general description of the work being done (e.g. "a fire hydrant is being installed", "a valve is being installed", "the water main is being replaced", etc.)

Prior to distribution, the Engineer shall approve the form and language of the notice. At the same time the property occupants are notified, a copy of the final version shall be provided to the Engineer. If any service is interrupted for more than eight (8) hours and temporary service has not been provided, the Contractor shall provide all necessary temporary services prior to continuing any other work. The cost of providing temporary water services and notifying property occupants, if required, shall be incidental to the price bid for "Water Main."

724.04 METHOD OF MEASUREMENT.

Page 437

05-20-05

In Section 724.04 D, insert the following as a new sentence at the end of the paragraph:

Disposal of excess excavation will not be measured for payment.

752.03 CONSTRUCTION REQUIREMENTS**Page 448****03-26-04
07-16-04**

Insert the following as Section 752.03 G.

- G. **Temporary Safety Fence.** The temporary safety fence shall be four feet high, colored bright orange and constructed of a polyethylene web. The weight of a 4' X 100' roll shall be a minimum of 32 pounds. The fence shall be supported, at a minimum, by a 7-foot, 1.12-pound/foot channel steel post or an approved equal. Fencing placed across asphalt or concrete may be supported by barricades, delineator drums, or by other means approved by the Engineer. All supports used shall be capable of supporting the fence. The fence shall be securely attached to the supports and be maintained in good condition. The temporary fence installation shall be approved by the Engineer.

752.04 METHOD OF MEASUREMENT**Page 448****03-26-04**

Delete the first sentence of the first paragraph in Section 752.04 and insert the following:

New, Temporary Safety Fence and reset fence will be measured by the Linear Foot.

752.05 BASIS OF PAYMENT**Page 449****03-26-04**

Add the following as a Pay Item to Section 752.05:

<u>Pay Item</u>	<u>Pay Unit</u>
Temporary Safety Fence	Linear Foot

754.03 CONSTRUCTION REQUIREMENTS.**Page 454****03-14-03**

Remove all references to Flange Channel in Section 754.03 E.3.

754.03 CONSTRUCTION REQUIREMENTS.**Page 454****05-16-03
07-16-04**

In Section 754.03 E.4. delete, from this section, all occurrences of the word "single".

754.03 CONSTRUCTION REQUIREMENTS.**Page 454****06-20-03**

Delete the word "base" in line 3 in Section 754.03 E.4. and insert the word "foundation".

754.03 CONSTRUCTION REQUIREMENTS.	Page 454	05-16-03
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Add the following sentence to Section 754.03 E.4:

Welders shall meet the requirements of Section 105.06 D.

754.03 CONSTRUCTION REQUIREMENTS.	Page 457	07-18-03
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Delete the last sentence of Section 754.03 E.6.a. in its entirety.

754.03 CONSTRUCTION REQUIREMENTS.	Page 458	06-20-03
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Delete Section 754.03 H. in its entirety and replace with the following:

H. Remove Sign Foundations. This item consists of removing signs, steel supports, and foundations or H-pile footings and restoring the surface to match the surrounding area. Foundations and H-pile footings shall be removed to a depth of 2 feet below the ground line unless otherwise specified in the plans. The signs, steel supports, H-pile footings and foundations removed shall become property of the Contractor and be disposed of outside the highway right of way.

754.04 METHOD OF MEASUREMENT.	Page 459	03-14-03
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Remove all references to Flange Channel in Section 754.04 B.

754.04 METHOD OF MEASUREMENT.	Page 460	05-16-03
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Delete the first line of Section 754.04 B.2 in its entirety and insert the following:

2. **Galvanized Steel Posts – Standard Pipe.** Pipe post signs will be

754.04 METHOD OF MEASUREMENT.	Page 460	10-21-05 02-17-06
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In section 754.04 B.1, **Galvanized Steel Posts – Telescoping Tube and Flange Channel**, at the end of the second paragraph insert the following:

The Pulley Wench, Pulleys, Cable, Fabricated Plates, Perforated Tubes and hardware shall be included in the price bid for "Galvanized Steel Posts - Telescoping Perforated Tube".

In section 754.04 B.2, at the end of the section insert the following:

The Pulley Winch, Pulleys, Cable, Fabricated Plates, Perforated Tubes and hardware shall be included in the price bid for "Galvanized Steel Posts - Standard Pipe".

754.04 METHOD OF MEASUREMENT.	Page 460	10-21-05 02-17-06
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In section 754.04 B.3, **Galvanized Steel Posts – W-shaped Posts (single)**, at the end of the section insert the following:

The Wind Beams and Anchor Plates shall be included in the price bid for "Galvanized Steel Posts - Telescoping Perforated Tube". The Pulley Winch, Pulleys, Cable, Fabricated Plates, Perforated Tubes and hardware shall be included in the price bid for "Galvanized Steel Posts – W-shaped Posts".

754.04 METHOD OF MEASUREMENT. **Page 460** **07-18-03**
08-15-03

Delete the last sentence of Section 754.04 B.3 in its entirety and insert the following:

The post length and the 14 foot pile length as shown in the plans, will be included in the length of the post to be measured and paid for.

754.04 METHOD OF MEASUREMENT. **Page 461** **06-20-03**

Delete the first sentence in Section 754.04 K. in its entirety and insert the following:

K. **Remove Sign Foundations.** The item "Remove Sign Foundations" will be measured by the number of foundations and H-piling footings removed.

754.04 METHOD OF MEASUREMENT. **Page 461** **05-21-04**

Insert the following:

N. **Reset Mile Post.** The item "Reset Mile Post" will be measured by the number of locations at which a mile post has been reset. The quantities measured will be paid for at the contract price and shall be full compensation for all labor, equipment, and material necessary to complete the work.

754.05 BASIS OF PAYMENT. **Page 461** **03-14-03**

Remove all references to Flange Channel in Section 754.05.

754.05 BASIS OF PAYMENT. **Page 461** **05-16-03**

Delete the Pay Item _____" Galvanized Steel Post – Standard Pipe (Single Post) in Section 754.05 in its entirety and insert the following:

_____ " Galvanized Steel Post – Standard Pipe

754.05 BASIS OF PAYMENT. **Page 461** **05-21-04**

Insert the following item at the end of the Pay Item/Pay Unit table:

Reset Mile Post Each

762.02 MATERIALS.**Page 462****04-11-03**

Delete Section 762.02 in its entirety and replace with the following:

Pavement Marking material shall meet the following:

Item	Section
Pavement Marking Paint*	880.01
Glass Beads for Pavement Marking Paint	880.02
Plastic Pavement Marking Film*	880.03
Preformed Plastic Marking Film	880.04
Preformed Patterned Pavement Marking Film	880.05
Short-Term Pavement Marking	
Paint	880.06
Tape	880.06
Construction Zone Marking	880.07
Raised Pavement Markers	880.08
Epoxy Paint Pavement Marking	880.09

*Either "slow," "medium," or "fast dry" paint and either type of Plastic Marking Film may be used.

762.04 CONSTRUCTION REQUIREMENTS.**Page 464****02-11-05**

In Section 762.04 B.6 add the following as a new line between the Depth and Width tolerance lines of the first paragraph:

Smoothness	Ridges, within the groove, shall be no more than 6 mils higher than either adjacent valley.
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762.04 CONSTRUCTION REQUIREMENTS.**Page 464****02-20-04**

The following two sentences shall be added to the first paragraph of Section 762.04.C.2.

Two-way traffic shall be maintained on 2-lane roadways, and ½ of the roadway shall be open to traffic on multi-laned roadways at all times. The cost to furnish, erect, and maintain cones, signs, and barricades including the cost for flagging and shadow vehicles, shall be incidental to the cost of pavement marking.

762.04 CONSTRUCTION REQUIREMENTS.**Page 467****03-26-04**

Move Section 762.04 D 2.c. to Section 762.04 D 2.d and insert the following as the new Section 762.04 D 2.c:

- c. **Plastic Pavement Marking Film Rolled in Hot Asphalt.** The plastic pavement marking shall be rolled into the hot asphalt surface. The contractor shall arrange to have the plastic pavement markings placed on the hot asphalt in the position shown on the plans at the time of final asphalt rolling operations. The plastic pavement markings shall receive at least one rolling. The requirements not allowing installation prior to June 1 or after September 1 will not apply. The temperature of the hot asphalt pavement during application shall be as specified by the manufacturer. The cost of placing and rolling the pavement markings into the hot asphalt pavement shall be included in the price bid for the item "Plastic Pavement Marking Film Line or Message."

Delete Section 762.04 D.3 in its entirety and insert the following:

3. **Preformed Patterned Pavement Marking Film.**

- a. **General.** Preformed Patterned pavement marking film applied as a permanent pavement marking shall not be applied before June 1 nor after September 1 of any year. The permanent marking film shall not be applied when the pavement surface temperature is 50°F. or colder, nor shall the film be placed over painted markings. The pavement surface shall be prepared for installation as required by the manufacturer. The film shall be lap or butt spliced when required to join 2 lengths of film, and the film shall be cut at open joints or cracks in the pavement. The cut ends shall be firmly tamped in place.
- b. **Preformed Patterned Pavement Marking Film Application.** Application of preformed patterned pavement marking film shall be according to the manufacturer's recommendation.
- c. **Preformed Patterned Pavement Marking Film Rolled in Hot Asphalt.** The contractor shall provide Preformed Patterned Pavement Marking Film for longitudinal lines and messages. The preformed patterned pavement marking shall be rolled into the hot asphalt surface. The contractor shall arrange to have the preformed patterned pavement markings placed on the hot asphalt in the position shown on the plans at the time of the final rolling operations. The preformed patterned pavement markings shall be rolled at least twice. The requirements not allowing installation prior to June 1 or after September 1 will not apply. The temperature of the hot asphalt pavement during application shall be as specified by the manufacturer. The cost of placing and rolling the pavement markings into the hot asphalt pavement shall be included in the price bid for the item "Preformed Patterned Pavement Marking Line or Message."

In Section 762.04 E.4, delete the first paragraph (beginning "In order to be...") through section 762.04 E.4.a.(1), inclusive, and replace these sections with the following:

Upon initial inspection, as specified below, epoxy pavement marking shall demonstrate satisfactory retroreflectivity, good adhesion (resisting chipping), and proper daytime and nighttime colors.

a. **Retroreflectivity.**

- (1). Acceptable Minimum Retroreflectivity Values.

**MINIMUM AVERAGE RETROREFLECTIVITY VALUES
FOR EPOXY PAVEMENT MARKING
(mcd/m²/lux)**

Period	White	Yellow
Initial*	275	180

*At least two weeks after date of marking placement.

762.04 CONSTRUCTION REQUIREMENTS.**Page 473****02-11-05**

Delete Sections 762.04 E.4.a.(3).(c).4) and .5) (beginning “Wait at least...” and “Take after-one-winter...”, respectively). Then, renumber the remaining subsections of 762.04 E.4.a.(3).(c). Finally, renumber Section 762.04 E.4.a.(5) to 762.04 E.4.a.(4).

762.04 CONSTRUCTION REQUIREMENTS.**Page 474****02-20-04****02-11-05**

Delete Section 762.04 E.4.b.(4), in its entirety, and insert the following in its place:

- (4) Where retroreflectivity falls below the minimum acceptable levels, but not more than 20%, the Engineer may require satisfactory repair or may accept the work at a reduced unit price which is in direct proportion to the percent of the deficiency. Where the deficiency in retroreflectivity exceeds 20% (i.e. less than 220 mcd/m²/lux for white and 144 mcd/m²/lux for yellow), the Engineer may require the removal and replacement to the satisfaction of the Engineer unless other means are approved by the Engineer.
-

762.05 METHOD OF MEASUREMENT.**Page 475****03-14-03**

In Section 762.05 C.3. and Section 762.05 C.5., delete “Type KNURL” and replace with “Type NR”.

762.06 BASIS OF PAYMENT.**Page 476****03-14-03**

Delete the Pay Item Short Term-___-Inch Line, Type KNURL in Section 762.06 and insert the following:

Short Term-___-Inch Line, Type NR

764.03 CONSTRUCTION REQUIREMENTS.**Page 479****02-17-06**

In Section 764.03 C, second paragraph, in the third sentence (begins with “One copy is for the Project Engineer. . .”) replace the term “Traffic Control Engineer” with the term “Traffic Safety Engineer.”

764.03 CONSTRUCTION REQUIREMENTS.**Page 480****03-26-04****04-16-04****02-17-06**

Delete Section 764.03 H in its entirety and insert the following:

- H. **Completion Requirements.** On projects where existing guardrail is to be removed or removed and replaced or reinstalled, and the roadway will be open to traffic during construction, the guardrail installation at each site shall be completed within 10 working days from the day all other controlling items of work are sufficiently complete to allow guardrail installation to commence. A guardrail installation is defined as each individual run of guardrail (i.e., a typical bridge would have four guardrail installations). Controlling items of work for a guardrail installation include, but are not limited to: structure, structure end block, barrier, paving, guardrail and grading work (all within each individual run of guardrail).

Prior to any guardrail removal, a written construction schedule for work at the guardrail-installation area shall be developed by the Contractor and Subcontractors (if any), and reviewed by the Engineer. At a minimum, the schedule of work will include a sequence of controlling items and the timing of each. If the Contractor removes guardrail prior to the work plan being reviewed by the Engineer, the Engineer may apply the disincentives listed below. Work shall not cease at any individual guardrail installation for more than four (4) working days, between controlling items of work. Additionally, the Contractor shall give each controlling item of work the constant attention necessary to facilitate continuous progress, at each guardrail installation.

If the Contractor fails to complete the required work, at fixed objects, within the time allowed, the Contractor shall provide the "Short-Term End Treatment for Bridges" shown in the Standard Drawings. The type of treatment shall be at the option of the Contractor. The cost of furnishing and installing the Short-Term End Treatment for Bridges shall be included in the price bid for guardrail installation. If the Contractor chooses to place the guardrail end treatment, the material used for this installation shall not be reused in the final guardrail installation. The Short-Term End Treatment shall remain the property of the Contractor.

Prior to removing the existing guardrail at steep-slope or culvert-extension sites, the Contractor shall essentially complete all work except guardrail installation, if any.

If the Contractor fails to comply with all requirements of Section 764.03 H, the Department reserves the right to:

1. Suspend progressive estimate payments.
2. Apply a contract price reduction of \$300 per day, if the deficiency is not remedied within 24 hours of notification to correct such item.
3. Have the Short-Term End Treatment installed by other forces, with the costs deducted from monies due or that become due the Contractor. Materials from this installation shall become the Prime Contractor's property, upon removal, and shall not be used for the permanent installation.
4. Invoke any other disincentive allowed by the contract.

764.03 CONSTRUCTION REQUIREMENTS.

Page 480

05-21-04

In the last paragraph of Section 764.03 I, delete the next to last sentence (beginning "The contractor shall furnish...") and insert the following in its place:

Within fifty (50) days of contract execution by the Department, the Contractor shall furnish to the Engineer, for review, eight (8) sets of shop drawings for crash-attenuating cushion, in accordance with Section 105.08.

{Note the modifications to Section 105.08, above}

770.02 MATERIALS.**Page 7 Vol. 2****Revised 05-21-04**

In Section 770.02 B, in the first sentence (beginning “Required shop drawings...”), delete the word “approval” and insert “review” in its place.

In Section 770.02 B, in the second sentence of the second paragraph (beginning “The Engineer’s review and...”), delete the words “and approval”.

In Section 770.02 B, delete the last sentence of the second paragraph (beginning “The approved shop drawings...”), in its entirety.

770.02 C. Certificates.**Page 8, Vol. 2.****02-11-05**

Change “Section 801.02” to “Section 106.01”.

770.02 MATERIALS.**Page 8 Vol. 2****05-21-04**

In Section 770.02 E, in the next to last sentence of the first paragraph (beginning “They shall contain...”), delete the word “approved” and insert “reviewed” in its place.

770.03 CONSTRUCTION REQUIREMENTS.**Page 12 Vol. 2****09-24-04**

In Section 770.03 H, add the following as paragraph 3:

The light standards shall be placed to provide the greater minimum horizontal and vertical clearances to power lines required by the National Electric Code (NEC), current addition, or as follows for the indicated power line voltages:

Power Line Voltage (V)	Horizontal Clearance (ft)	Vertical Clearance (ft)
0 - 22,000	5	6
Greater than 22,000	5 + 0.033 per kV greater than 22 kV	6 + 0.033 per kV greater than 22 kV

However, the plan light standard locations shall not be adjusted without the prior approval of the Engineer.

770.03 CONSTRUCTION REQUIREMENTS.**Page 14 Vol. 2****02-17-06**

In Section 770.03 Q.1, “Materials”, delete the second paragraph and replace with the following:

The base and lower 12 feet of light standards with attached pedestrian signal heads shall be painted as specified in section 772.03 Q.

772.02 MATERIALS.**Page 18 Vol. 2****Revised 05-21-04**

In Section 772.02 B, in the first sentence (beginning “Required shop drawings...”), delete the word “approval” and insert “review” in its place.

In Section 772.02 B, in the second sentence of the second paragraph (beginning “The Engineer’s review and...”), delete the words “and approval”.

In Section 772.02 B, delete the next to last sentence of the second paragraph (beginning “The approved shop drawings...”), in its entirety.

772.02 C. Certification. **Page 20, Vol. 2.** **02-11-05**

Change “Section 801.02” to “Section 106.01”.

772.03 CONSTRUCTION REQUIREMENTS. **Page 21 Vol. 2** **09-24-04**

In Section 772.03 B, add the following as paragraph 2:

The Concrete Foundations shall be placed to provide the greater minimum horizontal and vertical clearances between the signal standards/mast arms/appurtenances and power lines required by the National Electric Code (NEC), current addition, or as follows for the indicated power line voltages:

Power Line Voltage (V)	Horizontal Clearance (ft)	Vertical Clearance (ft)
0 - 22,000	5	6
Greater than 22,000	5 + 0.033 per kV greater than 22 kV	6 + 0.033 per kV greater than 22 kV

However, the plan Concrete Foundation locations shall not be adjusted without the prior approval of the Engineer.

772.03 H. Traffic Signal Standards and Combination Signal and Light Standards. **Page 26, Vol. 2.** **02-11-05**

In Section 772.03 H, add the following as a new item:

6. For all anchor base installations, rodent protection shall be provided using wire mesh with a maximum size opening of 1/4". Wire mesh shall be placed continuously around the inside of the lower plate to prevent rodents from accessing the base through the space between the concrete foundation and the lower plate. The mesh shall be secured to the anchor bolts and lower plate.

772.03 CONSTRUCTION REQUIREMENTS. **Page 29, Vol. 2.** **02-17-06**

Delete Section 772.03 Q, Painting, in its entirety and replace with the following

Q. Signal Painting. The traffic signal system components shall be painted in accordance with the following:

All new mast arms standards, combo mast arm signal standards, 4 inch signal standards and the base and lower 12 feet of the light standard with attached pedestrian signal heads shall be factory painted with two part epoxy primer and acrylic top coat. The light standard extension shall not be

painted but shall be finished as specified in section 896.07 C.5. The type and method of painting shall be submitted with the shop drawings. The color will be specified on the plans.

The yellow color shall be No. 13538 of the Federal Standard No. 595 B.

All areas requiring painting or touch up paint shall be prepared as follows:

1. If rusted:
 - a. Completely remove all rust and loose paint.
 - b. Sand all painted areas with 40 grit paper.
 - c. Wash down with "no rinse pre-paint cleaner" as recommended by the manufacturer.
 - d. Prime bare metal as recommended by the manufacturer.
 - e. Top coat with paint supplied by the original pole manufacture.

2. All other non-rust paint areas:
 - a. Remove loose paint.
 - b. Sand all paint areas with 40-grit paper.
 - c. Wash down with "no rinse pre-paint cleaner" as recommended by the manufacturer.
 - d. Prime bare metal as recommended by the manufacturer.
 - e. Top coat with paint supplied by the original pole manufacture.

772.04 METHOD OF MEASUREMENT.

Page 32, Vol. 2.

03-24-05

Add the following as a new section:

D. **Pedestrian Countdown Signal Head.** When required in the plans, the contractor shall furnish and install a countdown timer module and provide all items necessary to perform the required work, as specified in Section 896.09 D. Countdown timers shall not be bid separately but shall be included in the price bid for the Traffic Signal System.

772.03 CONSTRUCTION REQUIREMENTS.

Page 30, Vol. 2.

02-14-03

03-14-03

Delete Sections 772.03 T.1, 772.03 T.2, and 772.03 T.3., and insert the following:

1. **Initial Inspection.** An initial functional inspection shall be made approximately 15 days after all signals or flashing beacons under the Contract are operational, except when snow or ice conditions are present preventing observation of installed equipment, or when extreme cold conditions prevent proper observation of equipment operations and adjustments.
 - a. When the above conditions exist, the initial inspection will be delayed. The Engineer will determine when conditions have improved so the inspection can be scheduled.
 - b. During the time of delayed inspection, all signals or flashing beacons in operation shall be maintained by the Contractor. When conditions permit initial inspection to be performed, the other inspections will be performed as specified.

2. **Final Inspection.** A final functional inspection will be made 30 or more days after the initial inspection. The Contractor will request the Engineer to schedule the final inspection. The Engineer shall notify the Traffic Operations Engineer to coordinate a time for the final inspection. The final inspection shall not be made until all items noted on the initial inspection have been corrected. Minor finish work items, such as dirt leveling, will not prevent the final inspection. The traffic signals or flashing beacons shall be in operation during this time. When snow, ice or

extreme cold conditions are present preventing the proper observation of the installed equipment, the final inspection will be delayed. The Engineer will determine when the conditions have improved so the inspection can be scheduled. The Contractor shall maintain the signals or flashing beacons during the period between the initial inspection and final functional inspection.

3. **Final Acceptance.** Final acceptance will not be made until the system has been operating for 14 consecutive days after the final inspection without interruption due to malfunctions attributable to defective equipment or improper workmanship. The Contractor shall be responsible for the electrical and communications costs for the system until the traffic signals and/or flashing beacons are accepted by the State.

772.04 METHOD OF MEASUREMENT **Page 31, Vol. 2.** **02-11-05**

In Section 772.04 B.4, add the words "rodent protection," after "painting," in the last line.

SECTION 800 TABLE OF CONTENTS **Page 487** **11-19-04**

Insert the following entry above the Section 818 entry, near the top of the page:

**SECTION 817
SALVAGED BASE COURSE**

817.01 GENERAL REQUIREMENTS.

817.02 MATERIALS.

- A. General.
- B. Bituminous Combined Material
- C. Concrete Combined Material

802.01 DESCRIPTION. **Page 499** **05-21-04**

Insert the following, at the end of the first paragraph of Section 802.01 C.6:

Fly ash shall meet the requirements of Section 820.

804.01 CEMENT. **Page 505** **11-18-05**

Delete the specification in its entirety and replace with the following:

Portland cement shall conform to AASHTO M-85 for the type specified except as herein modified:

Allow the addition of 5.0% limestone by mass (weight) in the cement. Only interground limestone that is naturally occurring, consisting of at least 70% by mass of one or more of the mineral forms of calcium carbonate will be allowed.

Fineness shall be measured by the air permeability test (all cement types except Type III):

Fineness, specific surface Air permeability test	
Air Permeability Test	Square Meter per Kilogram
Average value, min	360.0

Minimum value, any one sample	340.0
Average value, max	420.0
Maximum value, any one sample	440.0

When specifications require that low alkali cements be used the total alkalis in the Portland cement ($\text{Na}_2\text{O} + 0.658 \text{K}_2\text{O}$) shall not exceed 0.60 percent. The total alkalis in the cementitious material shall not exceed 5.0 pounds per cubic yard.

Blended Hydraulic cement shall conform to AASHTO M-240.

816.03 AGGREGATES FOR SURFACING, BASE, ASPHALT MIXES, BLOTTER, AND SEAL COATS	Page 510	06-20-03 07-16-04
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Make the following changes to Table I of Section 816.03 B.:

- In Class 7 (Permeable Base), remove No. 16 sieve requirement in its entirety.
- In Class 3 and 3M (Aggregate for Subgrade Repair and for Blended Base, respectively), add a $\frac{3}{4}$ " sieve requirement of 80-100.

816.03 AGGREGATES FOR SURFACING, BASE, ASPHALT MIXES, BLOTTER, AND SEAL COATS	Page 511	07-16-04
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Make the following changes to Table II of Section 816.03 B.:

- In Class 27, 29, 31 and 33 (Asphalt Hot Mix Low to High Quality), revise the No. 200 sieve requirements to be 2.0–7.0.

816.03 AGGREGATES FOR SURFACING, BASE, ASPHALT MIXES, BLOTTER, AND SEAL COATS	Pages 510-511	11-19-04
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Add the following footnote to the "Aggr. for Subgrade Repair" and "Aggr. Base" column headers (i.e. Class 3 and 5, respectively) and to the list of footnotes for Tables I and II:

⁵ Salvaged Base meeting the requirements of Sections 302 and 817 may be substituted for Cl. 3 or Cl. 5 virgin aggregate, unless otherwise specified on the plans.

In Section 816.03 B, Table II: Aggregates for Asphalt Mixes, Blotter, and Seal Coats, add class 41 Chip Seal as follows:

Sieve Size Percent Passing	Chip Seal
	41
3" 1-1/2" 1-1/4"	
1" 3/4" 5/8"	
1/2" 3/8" No. 4	100 20-70
No. 8 No. 16 No. 30	0-17
No. 50 No. 200 Shale ¹	0-1.5 8.0%
L.A. Abrasion ¹ Plasticity Index ² Fractured Faces ³ Crushed Fines ⁴	40%

In Section 817.01 delete the wording “. . . as shown in the basis of estimate. . .” as shown below:

**SECTION 817
SALVAGED BASE COURSE**

817.01 GENERAL REQUIREMENTS.

Salvaged Base may be composed of the following materials: processed virgin aggregate, existing aggregate base, existing bituminous material, stockpiled bituminous material, existing concrete material, and/or stockpiled concrete material. All removal material shall be incorporated into the Salvaged Base as detailed in the plans unless otherwise approved in accordance with section 817.02 E. One-hundred percent (100%) processed virgin aggregate as specified in section 817.02 D may be supplied to make-up any difference between the Salvaged Base quantity producible from the removal quantities and the required Salvaged Base quantity. Additionally, any removal quantities in excess of that required for Salvaged Base production shall become the Contractor’s property.

The “Basis of Estimate” contained in the plans indicates the approximate removal quantities, the quantity of aggregate necessary to supplement the salvaged material, and the approximate blend percentages to be used to produce the Salvaged Base Course. Depending on the Contractor's operations, the Salvaged

material quantities shown in the Basis of Estimate may or may not be available when the Contractor needs to incorporate them back into the project as Salvaged Base. The Contractor is responsible for supplying the material required to make up any Salvaged Base short fall caused by project phasing. Any make up material supplied by the contractor shall meet the requirements of Section 817.02 A. All costs for supplying this make-up material shall be included in the price bid for Salvaged Base. Any material not available due to project phasing shall ultimately be incorporated into the Salvaged Base unless otherwise approved in accordance with section 817.02 E.

Materials composing the final combined Salvaged Base shall be combined with a conveyor, pugmill, bins or other mechanical device. Combining/blending on the roadway shall not be permitted.

The Contractor may elect to mine the existing pavement in place prior to removal from the roadway. If this method is used, the Contractor shall take measurements to ensure the proper depth is being mined. During the mining operation, the Contractor shall physically dig down, approximately every five hundred feet (each pass), to measure the existing pavement and base depth. The results of the measurements shall be made available to the Engineer daily.

The Salvaged Base shall be free of reinforcing steel, soil, scoria and other foreign materials.

817.02 MATERIALS.

A. **General.** All final combined materials (i.e. Salvaged Base) shall meet the following requirements:

Sieve Size	Percent Passing	
	General	Salvaged Base under Permeable Base
1 1/2 "	100	100
1 "	90-100	90-100
#4	35-85	N/A
#30	16-50	N/A
#200	0.0-12.0	N/A

The continuous-reinforced concrete pavement (CRCP), jointed concrete pavement (doweled or non-doweled), median paving, sidewalks, curb and gutter, driveways, parking lots, ditch liners, existing aggregate base and bituminous pavement shown in the plans for removal shall be incorporated into the salvaged base material. In addition to the aforementioned items, any other removed concrete or bituminous materials may (at the Contractor's option) be incorporated into the salvaged base.

The gradation "Salvaged Base under Permeable Base" will only be allowed for PCC salvaged material. The salvaged material must be verified as PCC recycle and free of deleterious materials to the satisfaction of the engineer prior to use on the project.

B. **Contractor Supplied Salvaged Material.** The Contractor may substitute contractor-supplied salvaged material (i.e. stockpiled material) for the removed material, as long as the removed material is not wasted and the use of the substitute material is acceptable and approved by the Engineer.

C. **Processed Virgin Aggregate for Blend.** Virgin aggregate used for blending with the salvage material shall be; composed of non-organic granular material, have a maximum shale content of 12%, and have a plasticity index of 0 - 6.

D. **Processed Virgin Aggregate In Lieu of Salvaged Base.** Any virgin aggregate used in lieu of Salvaged Base shall meet the requirements for Class 5 Aggregate Base as detailed in specification 816.

E. **Use of Removed Materials.** The Contractor may request not to incorporate removed material into the Salvaged Base if it is determined that such incorporation is impractical and not in the public's best interest. The request shall be in writing, include a detailed justification as to why the use of the removed material is impractical, and is subject to the approval of the engineer. Removal items not incorporated into the project shall become the property of the Contractor and disposed of in accordance with section 107.10.

F. **Bituminous Combined Material.**

1. If the Contractor intends to use a stockpile containing bituminous material as the final combined Salvaged Base, he shall, under supervision of the Engineer, supply the Engineer with three (3) random samples, prior to placing any of the material on the project. These samples shall be taken in accordance with AASHTO T 2 and be at the Contractor's expense. At the Owner's expense, the samples will be tested, by extraction (AASHTO T 164), for bitumen content and the results averaged. Stockpiled material with an initial average extraction of greater than 3.5% will not be allowed as the final Salvaged Base. Additionally, if any one sample has an extraction of greater than 4.0%, the material shall not be allowed for use as the final Salvaged Base. However, the Contractor may elect to blend the material with other materials to meet the requirements of Section 817. Additionally, as specified in Section 302.02 B, routine extraction testing will be performed, when stockpiled material is supplied. In all cases, the final combined Salvaged Base shall meet all other requirements of Section 817.
2. The Contractor may, at his option, combine stockpiled material containing bitumen with aggregate or salvaged concrete at a rate not to exceed 50% stockpile with 50% (or more) aggregate or salvaged concrete by weight, without the required extraction sampling and testing (either initial or routine as specified in Section 302.02 B). The combining of this material shall be done off of the road using mechanical equipment, as required above. The combined material shall not be stockpiled at the original stockpile site prior to delivery to the project (stockpiling in the project staging area will be allowed, as long as the staging area is not at the original stockpile site). Additionally, the final combined Salvaged Base shall meet all other requirements of Section 817.
3. If existing bituminous material from the project is incorporated into the Salvaged Base, the bituminous material shall be incorporated at a rate less than or equal to 50% bituminous to 50% (or more) aggregate or recycled concrete, by weight. No extraction testing will be required for this material.

G. **Concrete Combined Material.**

1. Salvaged concrete (either stockpiled or existing material) may constitute any portion, up to and including 100%, of the final combined material. However, the final combined Salvaged Base shall meet all other requirements of Section 817.
2. Salvaged concrete shall be free of reinforcing steel, bitumen, soil and other foreign materials. If bitumen is present in the salvaged material, the material shall become subject to the requirements of 817.02 B, above. If steel is present in material to be used as Salvaged Base, the Contractor may use any method acceptable to the Engineer to remove the steel, which will become the property of the Contractor. If the Contractor chooses to waste the steel, it shall be disposed of according to Section 107.10.

Delete Section 818.02 C in its entirety and insert the following:

MC 3000P shall meet the following requirements:

TEST	AASHTO NUMBER	MC-3000P
Kinnematic Vis @ 140°F	T201	3000-7000
Flash Point, F (TOC)	T79	150 min
Water, %	T55	0.2 max
Distillation Test: Distillate % Volume		
To 437°F		...
To 500°F		0 -15%
To 600°F		15-75%
% Residue To 680°F	T78	80 min
Tests On Residue From Distillation		
Penetration @ 77°F	T49 *	250 max
Ductility @ 77°F	T51	100 min
Absolute Vis @ 140°F	T202*	300-1200
Tests on Polymerized Base Asphalt		
Ductility @ 77°F	T51	100 min
Ductility @ 39°F (5 cm/min, cm)	T51	50 min
Toughness, in-pounds	**	75 min
Tenacity, In-Pounds	**	50 min
% Polymer		2% solids min
* Penetration or Viscosity is specified but in no case will both be required.		
** Benson Method for toughness/tenacity inch pounds @ 77° F; 20 inch minute pull tension head 7/8" diameter.		

818.02 SPECIFIC REQUIREMENTS.

**03-14-03
05-16-03
05-21-04**

Delete Section 818.02 D.2. in its entirety (including test table) and insert the following:

- Modified Cationic Emulsified Asphalt.** Emulsified asphalt grades shall meet the requirements of AASHTO M 316.

After the second paragraph in Section 818.02 E add the following specification:

<u>HFMS 2P</u>		
<u>Tests on Emulsions</u>	<u>Min</u>	<u>Max</u>
Viscosity, Saybolt Furol @ 122°F (50°C)	50	400
*Storage Stability	Passes	
**Cure Test	Passes	
Sieve (%)		0.1
Demulsibility 50ml 0.10 N CaCl ₂ , %	40	
***Oil Distillate by Volume of Emulsion, %		3.0
Residue by Distillation, %	65	
<u>Tests on Residue from Distillation Tests</u>		
Penetration @ 77°F (25°C)	100	200
Ductility @ 39°F (4°C) 5 cm/min, cm	30	
Softening Point (R & B) Degrees F	100	
Elastic Recovery @ 50°F (10°C)	55	
Float Test @ 140°F (60°C), sec	1200	
*Storage Stability: In addition to requirement of AASHTO T-59, on examination of the test cylinder after the emulsion has been standing undisturbed for 24 hours, the surface shall show no white, milky covered substance but shall be a homogenous brown color throughout.		
**The cure test is performed as follows: Pour approximately 1 gram of (HFMS-2P or HFRS-2P) emulsion onto a metal surface (lid of a 3 oz. Ointment tin). Allow the test sample to cure at temperatures of at least 80°F under a heat light for 4 hours. The outdoor sunlight may be used as a testing site. After the 4-hour curing period, the (HFMS-2P or HFRS-2P) emulsion shall show no tackiness or tendency to stick to the fingers when pressed.		
***The distillation test for CRS-2P emulsion shall be in accordance with AASHTO T 59, 8-12 except that the distillation temperature shall be what the emulsion manufacturer recommends.		

Delete the Ductility requirements from the property table in Section 818.02 E. in its entirety and replace with the following:

Property	ASTM Test	HFMS-2	HFRS-2P	HFRS-2
Ductility, 77° F., 5cm/min., cm, min.	AASHTO T-51		40	40

At the end of the second paragraph (beginning "Sampling and testing..."), insert ", except as described below."

Delete the third paragraph (beginning “The requirement for loss...”) and insert the following in its place:

The chemical composition of fly ash required to meet AASHTO M 295 shall be Class F (as described in Table 1 of AASHTO M 295) with the following modifications:

- The total of silicone dioxide (SiO₂) plus aluminum oxide (Al₂O₃) plus iron oxide (Fe₂O₃) shall be at least 66.0 percent by dry weight of the total fly ash composition.
- The silicon dioxide (SiO₂) shall be at least 40.0 percent by dry weight of the total fly ash composition.
- Loss on Ignition shall be no more than 2.0% maximum.
- The optional requirements of Table 2 shall be required.

In addition to the certificate described below, the Contractor shall supply fly ash test data to the Engineer in the form of a chemical and physical analysis report, prepared by an independent lab, prior to the Department proceeding with the concrete mix design. The Department may retest project samples to verify specification compliance. The Department will select an independent lab to perform verification testing and will be responsible for cost of the testing. When performed, the verification tests will be the basis of acceptance.

820.01 GENERAL.

Page 518

02-17-06

In Section 820.01, third paragraph, second sentence (beginning with “Also the optional. . .”), delete the sentence in its entirety and replace with the following:

Additionally, the fly ash shall have a maximum percent of available alkalis of 1.5%.

822.02 TESTING.

Page 520

03-14-03

The following requirements shall be added to this section:

C. Treatment Penetration.

Test	Minimum Depth	Method
Penetration	0.15 inch	DOT Procedure

D. Vapor Permeability.

Treated concrete shall retain its moisture vapor permeability as determined by the Department's test procedure.

826.02 MATERIALS

Page 522

11-19-04

In Section 826.02 A.1, replace “AASHTO M-173” in the first sentence with “AASHTO M 324 Type I”.

826.02 MATERIALS

Page 523

11-19-04

In Section 826.02 A.2, replace "AASHTO M301 (ASTM D-3405)" in the first line with "AASHTO M 324 Type IV".

826.02 MATERIALS

Page 523

02-20-04

Delete the Tack-Free Time test requirement in Section 826.02 B 1. Insert the following sentence after the second sentence in the first paragraph:

The silicone sealant material shall be tack free prior to opening the roadway to traffic.

834.02 MATERIALS

Page 527

05-20-05

In Section 834.02 C, delete "Class 30" and insert "Class 35 B", in its place.

834.04 PERMANENT METAL CONCRETE FORMS.

Page 532

02-14-03

Delete the paragraph in Section 834.04 in its entirety and insert the following:

Permanent metal forms for concrete floor slabs shall be of zinc-coated (galvanized) steel sheets meeting ASTM A924 with coating class of G235 according to ASTM A635.

**836.04 DOWEL BARS AND TIE BARS
FOR PAVEMENT JOINTS.**

Page 533

**08-15-03
11-21-03**

Delete the last paragraph in Section 836.04 in its entirety and insert the following:

Tie bars for the centerline joint and adjoining driving lanes in Portland Cement Concrete pavement shall be epoxy coated, meeting the requirements in 836.02 B. All other tie bars shall meet AASHTO M-31, Grade 40 deformed.

**836.04 DOWEL BARS AND TIE BARS
FOR PAVEMENT JOINTS.**

Page 533

04-21-06

Delete the first paragraph in its entirety and insert the following:

Dowel bars for transverse expansion or contraction joints in Portland Cement Concrete pavement shall be plain, round bars fabricated from steel meeting AASHTO M-31, or M 322.

**836.04 DOWEL BARS AND TIE BARS
FOR PAVEMENT JOINTS.**

Page 533

04-21-06

In the fourth paragraph, delete the first sentence in its entirety and insert the following:

All dowels shall be Epoxy coated in accordance with AASHTO M 284M/M 284-05.

856.02 STRAW AND FIBER MATS.

Page 537

06-16-06

In Section 856.02 E, the last sentence (begins with "One side shall. . ."), change "5/8 by 5/8 inches." to "3/4 by 3/4 inches."

880.01 PAVEMENT MARKING PAINT.

Page 545

04-22-05

In Section 880.01 A.2, delete the first sentence of the first paragraph (beginning "When preapproval of...") and insert the following in its place:

Unless the project quantities are less than 1,000 gallons, the paint shall be manufactured in lot sizes no smaller than 1,000 gallons. If the project quantities are less 1,000 gallons, the entire project quantity shall be manufactured in one lot.

880.01 PAVEMENT MARKING PAINT.

Page 548

**04-21-06
08-18-06**

Delete Section 880.01 C and 880.01 D in their entirety and insert the following:

C. Specific Requirements for Water Based Traffic Marking Paint. Acrylic waterborne pavement marking paint shall be capable of receiving and holding glass beads for producing retroreflective pavement marking. The paint shall contain no more than 3200 ppm lead or more than 800 ppm chromium, based on dry weight. The finished paint shall be formulated and manufactured from quality material and shall be a fast-drying, water-based, acrylic resin-type paint capable of withstanding air and roadway temperatures without bleeding, staining, discoloring or deforming. The dried paint film

shall be capable of maintaining original dimensions and placement without chipping, spalling or cracking. The dry paint film shall not deteriorate from contact with normal roadway chemicals or materials. The acrylic emulsion polymer used in the manufacture of the paint shall be Rohm & Haas HD-21, Dow DT400 or approved equal.

1. **Durability Testing.** Determination of conformance to this specification will include, but will not be limited to, the evaluation of test data from NTPEP or other NDDOT approved facilities. The maintained retroreflectivity and durability shall be in accordance with the following requirements after being installed on at least one NTPEP test deck in a northern, wet climate region for a minimum of six months, including December, January and February.
2. **Maintained Retroreflectivity.** Photometric quantity to be measured will be the coefficient of retroreflective luminance (RL) in accordance with the requirements of ASTM E 1743 for 15-meter geometry or ASTM E 1710 for 30-meter geometry. The average RL for concrete and bituminous surfaces shall be expressed in millicandelas per footcandle per square foot and shall be at least 100 for 15-meter geometry or 75 for 30-meter geometry, when measured in the wheel path area.
3. **Durability.** Paint shall have a durability rating of at least 4 for both concrete and bituminous surfaces when tested in the wheel path area of the NTPEP test deck.
4. **Mixed Paint.**
 - a. The paint shall be strained before filling using a screen or a sieving device no coarser than 40 mesh or equivalent.
 - b. The volatile content of the finished paint shall contain less than 150 grams of volatile organic matter per liter in accordance with ASTM D 3960.
 - c. The paint shall have the following physical properties:

Acrylic Waterborne Pavement Marking Paint Physical Properties

Property	Requirement
Viscosity, 77 F (25 C), KU	83-98
Grind (Hegman Gage), minimum	3
Laboratory Dry Time, ASTM D 711, @ 15 mil, minutes, max.	10
Dry Through Time, minutes, max.	150

5. **Color.** For white, the color shall closely match Color Chip 37925 of Federal Standard 595b. For yellow, the color shall closely match Color Chip 33538 of Federal Standard 595b. Color determination will be made for markings and the diffuse daytime color of the markings shall be in accordance with the below CIE Chromaticity coordinate limits. Color determination for liquid marking material will be made over the black portion of a 2A or 5C Leneta Chart or equal, at least 24 hours after application of a 15-mil wet film. Color readings will be determined in accordance with the requirements of ASTM E 1349 using CIE 1931 2-degree standard observer and CIE standard illuminant D65.

CIE Chromaticity Coordinate Limits (Initial)

Color	1		2		3		4	
	x	y	x	y	x	y	x	y
White	0.334	0.357	0.334	0.317	0.297	0.357	0.297	0.317
Yellow	0.531	0.483	0.531	0.429	0.471	0.483	0.471	0.429

6. **Flexibility.** The paint shall show no cracking or flaking when tested in accordance with Federal Specification TT-P-1952B.

7. **Water Resistance.** The paint shall conform to Federal Specification TT-P-1952B. There shall be no blistering or appreciable loss of adhesion, softening or other deterioration after examination.
8. **Freeze-Thaw Stability.** The paint shall show no coagulation or change in consistency greater than 10 Krebs Units when tested in accordance with Federal Specification TT-P-1952B.
9. **Heat Stability.** The paint shall show no coagulation, discoloration or change in consistency greater than 10 Krebs Units when tested in accordance with Federal Specification TT-P-1952B.
10. **Dilution Test.** The paint shall be capable of dilution with water at all levels without curdling or precipitation such that the wet paint can be readily cleaned up with water only.
11. **Storage Stability.** After 30 days of storage in a 3/4 filled, closed container, the paint shall show no caking that cannot be readily remixed to a smooth, homogeneous state, and shall show no skinning, livering, curdling or hard settling. The viscosity shall change no more than 5 Krebs Units from the viscosity of the original sample.
12. **Contrast Ratio.** The minimum contrast ratio (hiding power) shall be 0.96 when drawn down with a 0.005 mil film applicator on a 2A or 5C Leneta Chart or equal and air-dried for 24 hours. The contrast ratio shall be calculated as follows:

$$\text{Contrast Ratio} = \text{Black/White}$$

13. **Reflectance.** The daylight directional reflectance of a 15-mil (380 μm) wet film, applied to a 2A or 5C Leneta Chart or equal and dried for a minimum of 24 hours, shall be no less than 84 percent for the white paint and no less than 50 percent for the yellow paint.
14. **Bleeding.** The paint shall have a minimum bleeding ratio of 0.97 when tested in accordance with Federal Specification TT-P-1952B. The asphalt saturated felt shall be in accordance with ASTM D 226 for Type I.
15. **Dry Through Time.** The paint shall be applied to a non-absorbent substrate at a wet film thickness of 15 ± 1 mil and placed in a humidity chamber controlled at 90 ± 5 percent relative humidity and 72.5 ± 2.5 F (22.5 ± 1.4 C). The dry through time shall be determined in accordance with ASTM D 1640, except that the pressure exerted shall be the minimum needed to maintain contact with the thumb and film.
16. **Acceptance.**
 - a. When preapproval of pavement marking paint, solvent or water based, is specified, the Contractor shall obtain two, one-pint samples of paint from each lot after the paint has been shipped to some point within the state. Epoxy lined cans shall be used for sampling water based paint. Department personnel are to be notified and shall be present when each sample is obtained. The Department personnel will submit the samples to the Central Laboratory. The samples shall be submitted 30 days before the scheduled use of the marking paint. If the paint sample meets specifications, the lot being represented by the sample will be accepted. If a paint sample fails to meet specifications, the lot being represented by the sample will be rejected and replaced with paint that meets specifications. All costs incurred in replacing nonspecification paint shall be at the Contractor's expense.
 - b. If preapproval of the marking paint, solvent or water based, is not specified, the Department will take random samples of the marking paint. If the paint samples meet specifications, the lot being represented by the sample will be accepted. If the paint does not meet the specifications and the paint has not been applied to the road, the paint will be rejected and

replaced with paint that meets specifications. If the paint sample does not meet specifications and the paint has been applied to the road, and the work is found unacceptable, the lot being represented by the sample will be rejected and replaced with paint that meets specifications. All costs incurred in replacing nonspecification paint shall be at the Contractor's expense.

- c. No paint shall be used that is more than 15 months old.
- d. In addition to the requirements of this section, the certification supplied by the manufacturer shall include reference to the specific NTPEP test deck to which the paint formulation was applied, including NTPEP identification numbers and report numbers.

880.09 EPOXY PAINT PAVEMENT MARKING. Page 561 05-21-04

In Section 880.09 C., first sentence – delete the word “ASSHTO” and replace it with “AASHTO”.

894.05 POSTS AND HARDWARE FOR SIGNS. Page 575 02-14-03

In Section 894.05 B.1., second paragraph – “Section 5” should be “Section 6” and “Section 4” should be “Section 5.”

894.05 POSTS AND HARDWARE FOR SIGNS. Page 577 03-14-03

In Section 894.05 B.4.h.(5) delete “1/6” and insert “1/16”.

894.05 POSTS AND HARDWARE FOR SIGNS. Page 577 03-14-03

Delete all references to Flange Channel in Section 894.05 B.5. and 894.05 B.5.a.

894.06 DELINEATORS. Page 579 02-14-03

Delete the table in Section 894.06 B.2.c. and insert the following:

OBSERVATION ANGLE degrees	ENTRANCE ANGLE degrees	COEFFICIENT OF LUMINOUS INTENSITY cd/lx		
		CRYSTAL	YELLOW	RED
0.1	0	11.0	6.6	2.7
0.1	20	4.4	2.6	1.0

895.02 RIGID CONDUIT. Page 43, Vol. 2. 02-11-05

Delete Section 895.02 B, in its entirety and insert the following in its place:

B. Nonmetallic Conduit. Nonmetallic conduit shall be either polyvinyl chloride (heavy wall – PVC) or high-density polyethylene (HDPE) conduit, both as specified below.

- 1. **PVC.** PVC conduit shall meet the requirements of UL 651 suitable for direct burial applications and shall have a minimum wall thickness equivalent to Schedule 40 as

defined by ASTM 1785.

2. **HDPE.** HDPE conduit shall meet the requirements of UL 651 and either ASTM 2447 or ASTM 3035 suitable for direct burial applications. HDPE conduit shall have a minimum wall thickness equivalent to Schedule 40 as defined by ASTM 2447 or DR 15.5 as defined by ASTM 3035. HDPE conduit shall not be installed when either the conduit temperature or ambient temperature is below -10 °F.

895.03 CONDUCTORS.

Page 43, Vol. 2.

02-11-05

In Section 895.03 A.1, add the phrase “or THHN/THWN” to the end of the second sentence (beginning “The grounding conductor...”).

895.03 CONDUCTORS.

Page 44, Vol. 2.

02-14-03

Delete the last two sentences of Section 895.03 B.2.a.

895.06 LIGHTING STANDARDS.

Page 45, Vol. 2.

04-22-05

In Section 895.06 A:

1. From the end of the first sentence (beginning “Lighting poles shall...”), delete “(1994)” and insert “(4th Edition 2002 Interim)” in its place.
2. From the second sentence (beginning “A wind velocity...”), delete “85 mph” and insert “90 mph” in its place.

895.06 LIGHTING STANDARDS.

Page 45, Vol. 2.

07-15-05

In Section 895.06 A, immediately after “. . . wind pressure for the entire height of the structure.” insert the following:

Each structure component shall be designed using the requirements of Table 11-1, “Fatigue Importance Factors, I_F .” Fatigue Category I shall be used for High-Mast Lighting Assembly, Fatigue Category III shall be used for Lighting Standards.

895.06 LIGHTING STANDARDS.

Page 45, Vol. 2.

05-19-06

At the end of the first paragraph in Section 895.06 A add the following sentence:

Calculations and work drawings used in the design of light standards shall be signed, sealed, and dated by a Professional Engineer duly registered in the State of North Dakota.

895.06 LIGHTING STANDARDS.**Page 46, Vol. 2.****11-21-03**

Delete the last sentence of Section 895.06 F. and replace with the following:

The outlet box shall be welded inside of the pole, and the outlet cover shall be a water tight while-in-use cover. The festoon receptacle shall be provided with a single gang while-in-use cover. The body and plates shall be made of gray colored polycarbonate, with a gasket made of closed cell foam, neoprene blend regular density, UL rated HBF. Covers shall be mounted vertically with stainless steel screws. The cover shall comply with NEC requirements for installation in wet locations.

895.11 HIGH MAST SODIUM VAPOR LUMINAIRES.**Page 49, Vol. 2.****04-21-06**

In Sections 895.11 E and F, delete the sections in their entirety and replace with the following sections:

- E. **Symmetrical Luminaires.** The symmetrical luminaires shall be Holophane Symmetrical Luminaire, Catalog No. HMST C10HP 24S1; General Electric Asymmetrical Type X209 High Mast, Catalog No. X209CI. OL360. Quality Symmetrical Luminaire, Catalog No. 5527-240 or equal.
- F. **Asymmetrical Luminaires.** The asymmetrical luminaires shall be Holophane Asymmetrical Luminaire, Catalog No. HMST C10HP 24 A1; General Electric Asymmetrical Type X209 High Mast, Catalog No. X209CI. OL3B4 or equal.

895.14 HIGH-MAST LIGHTING ASSEMBLY.**Page 50, Vol. 2.****04-22-05**

In Section 895.14 B, to the end of the second sentence of the first paragraph (beginning "The shaft shall have...") add "and a minimum thickness of 3/8 inch".

895.14 HIGH-MAST LIGHTING ASSEMBLY.**Page 51, Vol. 2.****04-22-05**

In the first sentence of Section 895.14 C (beginning "The base plate material..."), replace "and" with a comma and at the end of the sentence insert "and the base plate shall have a minimum thickness of 3 inches".

896.02 RIGID CONDUIT.**Page 60, Vol. 2.****02-11-05**

Delete Section 896.02 B, in its entirety and insert the following in its place:

- B. **Nonmetallic Conduit.** Nonmetallic conduit shall be either polyvinyl chloride (heavy wall – PVC) or high-density polyethylene (HDPE) conduit, both as specified below.
1. **PVC.** PVC conduit shall meet the requirements of UL 651 suitable for direct burial applications and shall have a minimum wall thickness equivalent to Schedule 40 as defined by ASTM 1785.
 2. **HDPE.** HDPE conduit shall meet the requirements of UL 651 and either ASTM 2447 or ASTM 3035 suitable for direct burial applications. HDPE conduit shall have a minimum wall thickness equivalent to Schedule 40 as defined by ASTM 2447 or DR 15.5 as defined by ASTM 3035. HDPE conduit shall not be installed when either the conduit temperature or ambient temperature is below -10 °F.

896.03 A. Feeders.**Page 60, Vol. 2.****02-11-05**

In the second paragraph, add to the end of the second sentence (beginning "The grounding conductor...") the phrase "or THHN/THWN".

896.07 TRAFFIC SIGNAL STANDARDS.**Page 64, Vol. 2.****04-22-05**

In Section 896.07 A:

1. From the end of the first sentence (beginning "The design of..."), delete "(1994)" and insert "(4th Edition 2002 Interim)" in its place.
 2. From the second sentence (beginning "A wind velocity..."), delete "85 mph" and insert "90 mph" in its place.
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896.07 TRAFFIC SIGNAL STANDARDS.**Page 64, Vol. 2.****05-19-06**

At the end of the first paragraph in Section 896.07 A add the following sentence:

Calculations and work drawings used in the design of traffic signal standards shall be signed, sealed, and dated by a Professional Engineer duly registered in the State of North Dakota.

896.07 TRAFFIC SIGNAL STANDARDS.**Page 64, Vol. 2.****03-14-03**

In Section 896.07 B.1, first sentence – delete "AASHTO M-183" and replace with "ASTM A-36".

896.07 TRAFFIC SIGNAL STANDARDS.**Page 64, Vol. 2.****07-15-05**

In Section 896.07 A, immediately after ". . . average wind pressure for the entire height of the structures." insert the following:

Each structure component shall be designed using the requirements of Table 11-1, "Fatigue Importance Factors, I_F ." Fatigue Category III shall be used for Traffic Signal Standards less than 40 feet in height, Fatigue Category II shall be used for Traffic Signal Standards equal to or greater than 40 feet in height.

896.08 TRAFFIC SIGNAL HEADS.**Page 66, Vol. 2.****03-24-05
07-16-06**

Delete Section 896.08 A.1 (beginning "**General.** The design of the signal head..."), in its entirety, and insert the following in its place:

1. **General.**
 - a. The design of the traffic circular signal head shall allow the addition of a signal section with the aid of simple tools and the addition of certain standard parts. All circular signal heads with using Light Emitting Diodes (LED) shall conform to the latest standards of the

Institute of Transportation Engineers (ITE). All exposed screws and fasteners shall be 1808, Type 304 stainless steel.

- b. The Circular Signal Head LED Modules shall fit into traffic signal housings built to the Vehicle Traffic Control Signal Heads (VTCSH) Standard without modification to the housing, or shall be stand-alone units that incorporate a housing meeting the performance requirements of the VTCSH Standards.

Installation of a module into an existing signal housing shall not require special tools. The module shall connect directly to the existing electrical wire system.

- c. The vehicle arrow traffic head shall conform to the latest standards of the Institute of Transportation Engineers (ITE) VTCSH "Part 3: Light Emitting Diode (LED) Vehicle Arrow Traffic Signal Modules".

The module shall fit into signal housings built to the VTCSH Standard without modification to the housing.

Modules designed as retrofit replacements for existing signal lamps shall not require special tools for installation. Installation of the module into an existing signal housing shall only require the removal of existing optical components (i.e., lens, lamp module, gaskets, refractor), shall be weather tight and fit securely in the housing, and shall connect directly to existing electrical wiring.

896.08 A.2 Housing.

Page 66, Vol. 2.

03-24-05

Add the following sentence to the beginning of the paragraph in Section 896.08 A.2 (currently beginning "The housing of each section..."):

The traffic signal housings shall be built to the VTCSH Standard or shall be stand-alone units that incorporate a housing meeting the performance requirements of the VTCSH Standards.

896.08 A.3 Lens.

Page 66, Vol. 2.

**03-24-05
07-21-06**

Delete Section 896.08 A.3 (beginning "**Lens.** The circular lens..."), in its entirety, and insert the following in its place:

- 3. **Lens.** The LED lenses shall be standard Red, Yellow, and Green.

- a. The Circular Signal Head LED Module shall be suitable for replacement into an existing signal housing and shall only require the removal of the existing optical unit components, shall be weather tight and fit securely in the housing, and shall connect directly into the existing wiring. Installation shall not require special tools.

The module shall be hard coated or otherwise made to comply with material exposure and weathering-effects requirements of the Society of Automotive Engineers (SAE) J576.

The lens shall be tinted and shall use transparent film or material with similar color and transmissive characteristics.

The module shall be protected against dust and moisture intrusion, including rain and blowing rain.

- b. The vehicle arrow traffic head shall conform to the latest standards of the Institute of Transportation Engineers (ITE) VTCSH “Part 3: Light Emitting Diode (LED) Vehicle Arrow Traffic Signal Modules”.

The module shall fit into signal housings built to the VTCSH Standard with out modification to the housing.

The lens shall be tinted and shall use transparent film or material with similar color and transmissive characteristics.

Modules designed as retrofit replacements for existing signal lamps shall not require special tools for installation. Installation of the module into an existing signal housing shall only require the removal of existing optical components (i.e. lens, lamp module, gaskets, refractor), shall be weather tight and fit securely in the housing, and shall connect directly to existing electrical wiring.

If a polymeric lens is used, hard coat shall be used to provide surface abrasion resistance. The general configuration of the arrow icon is illustrated in Figure 1 of ITE VTCSH “Part 3: Light Emitting Diode (LED) Vehicle Arrow Traffic Signal Modules”, latest edition. The arrow should be oriented in the direction of its intended use.

The Contractor shall use an LED light source. The manufacturers shall certify that the ITE specifications are met. These certifications shall be supplied with the shop drawings.

896.09 PEDESTRIAN SIGNALS.

Page 68, Vol. 2.

03-24-05

Delete the first paragraph of Section 896.09 A.1.a (beginning “The incandescent pedestrian signal...”), in its entirety, and insert the following in its place:

The pedestrian signal shall be a two section UPRAISED HAND (symbolizing DON’T WALK) and WALKING PERSON (symbolizing WALK) type. In both cases, the symbol shall be the filled type; the outline-symbol type indication will not be accepted. The upper section shall display the UPRAISED HAND symbol and the lower section shall display the WALKING PERSON symbol. All pedestrian heads shall have incandescent lamps as light sources or light sources conforming to the latest standards of the Institute of Transportation Engineers (ITE) “Pedestrian Traffic Control Signal Indications – Part 2: Light Emitting Diodes (LED) Pedestrian Traffic Signal Modules”.

The manufactured pedestrian signal housings shall be in accordance with the ITE PTCSI Standard, latest edition.

896.09 A.1.b Reflector Housing.

Page 69, Vol. 2.

03-24-05

In the first sentence (currently beginning “The reflector housing shall...”), add “for incandescent lamps” after “The reflector housing”.

896.09 A.2 Lens.

Page 69, Vol. 2.

03-24-05

Delete Section 896.09 A.2 (beginning “**Lens.** The lens shall be mounted...”), in its entirety, and insert the following in its place:

2. **Lens.** The lens shall be mounted in a continuous neoprene gasket, which completely encompasses the edge of the lens and provides a cushion and positive seal between the lens and the door. The lens and the gasket shall be secured to the door by four lens clips.
 - a. LED modules installed into pedestrian-signal housings shall fit securely in the housings and shall connect directly into the existing wiring. Installation shall not require special tools. The module shall be protected against dust and moisture intrusion per the requirements of MIL-STD-810f Procedure I, Rain and Blowing Rain.
 - b. Installation of a module into an existing pedestrian-signal housing shall only require the removal of the existing optical unit components, shall be weather tight, fit securely in the housing and shall connect directly into the existing wiring. Installation shall not require special tools.
 - c. For new installations, the minimum size of the message-bearing surface of a module shall be determined by the length of the intended crosswalk, but in no case shall it be less than 9 inches by 9 inches. The size of the message bearing surface shall be in accordance with the minimum dimensions given in Table 1, ITE PTCSI Standard, "Part 2: Light Emitting Diode (LED) Pedestrian Traffic Signal Modules", latest edition.
 - d. For incandescent lamps, the legend of the prismatic glass lens shall be fired in, or shall be raised letters on the inside. The polycarbonate lens shall have a smooth surface on the outside and a diffusing surface on the inside. The WALKING PERSON indication shall be lunar white and the UPRAISED HAND indication shall be Portland orange, both meeting the ITE Standards. All of the lens surface shall be obscured by an opaque material. When not illuminated, the WALKING PERSON and UPRAISED HAND symbols shall not be visible to pedestrians at the far end of the crosswalk controlled by the pedestrian signal.
 - e. The LED Signal Module shall be capable of replacing the optical components of the pedestrian indication. The lens shall be tinted and shall use transparent film or materials with similar characteristics. Hard coat on a non-frosted polymeric lens surface coating or film shall be used to provide front surface abrasion resistance. The configurations of the walking person icon and the hand icon shall be in accordance with Figure 1 and Figure 2, respectively, of ITE PTCSI Standard, "Part 2: Light Emitting Diode (LED) Pedestrian Traffic Signal Modules", latest edition.

896.09 PEDESTRIAN SIGNALS.**Page 71, Vol. 2.****03-24-05**

Add the following as Section 896.09 D:

- D. **Pedestrian Countdown Signal Head.** When required in the plans, the contractor shall furnish and install an LED pedestrian signal meeting the requirements of Light Emitting Diodes (LED) Pedestrian Traffic Signal Modules conforming to the latest standards of the Institute of Transportation Engineers and count down timer module and provide all items necessary to perform the required work. The pedestrian signal shall be the filled-symbol type; the outline-symbol type will not be accepted. The pedestrian signal shall have the standard manufacturer's warranty.

The pedestrian signal shall be one of the following models or approved equal:

1. GELcore, 16"x18" led pedestrian Traffic signal Module.

